Riverside Energy Center
Water Quality Trading Plan

Town of Beloit
Rock County, WI

Prepared for:
Alliant Energy, Wisconsin Power & Light Co.

November 30, 2017
Revised June 15, 2018

Montgomery Associates
Resource Solutions, LLC • ma-rs.org
MARS Project #1723

119 South Main Street, Cottage Grove, WI 53527 | 608-839-4422

Table of Contents

List of Appendices

1 Introduction

1.1 Background and Purpose

Alliant Energy, Wisconsin Power & Light Company owns and operates the Riverside Energy Center, a 603 MW natural gas electrical generating facility in the Town of Beloit, Rock County, WI. The facility holds a WPDES permit issued by WDNR specifying discharge limits for various constituents; including a daily phosphorus (P) discharge limit. Plant operations have been modified to limit the addition of P to the process water and ultimately to plant discharge. However, these modifications have negatively impacted plant operating efficiency. Additionally, the construction of a new facility on the Riverside Energy Center campus will also result in additional P discharge from the operation. To meet existing permit P discharge limits for the existing and future facility, Alliant Energy has developed a Nutrient Trading Plan as a cost effective and environmentally sustainable alternative to construction of a wastewater treatment plant.

The primary source of P in the wastewater stream from the plant is groundwater withdrawn for cooling. Water is withdrawn via a Ranney well adjacent to the facility and cycled through the cooling system. It is eventually discharged untreated to the Rock River. To meet permitted P discharge limits the use of P-based additives to the system have been discontinued at the plant.

West Riverside is scheduled to begin operations in 2019 and provide 700 MW of electricity at peak generation. Additional cooling water to serve the new plant will be drawn from the existing well and waste water will be discharged to the existing outfall. The future plant will use water more efficiently and utilize a recirculating sand filter to provide wastewater treatment. Therefore, the portion of the total P discharge from the new plant will be less than that of the existing plant.

Alliant Energy proposes to establish a water quality trading plan utilizing land owned by the company near the permitted facility. Approximately 84 acres of land adjacent to the Riverside Plant and 28 acres immediately west of the property, purchased from the Town of Beloit, are proposed for inclusion in the trading plan. Both parcels were leased for agricultural production through 2017. The planned development of this land includes several future land uses: as part of the West Riverside Plant, converted to a solar array, developed as an electrical substation, or converted to perennial native vegetation. These land use areas are included in the nutrient trading plan and have been evaluated for P runoff reduction from conversion out of agricultural production.

Alliant Energy contracted with Montgomery Associates: Resource Solutions (MARS) to assist in developing the proposed nutrient trading plan. The remainder of this Water Quality Trading Plan will describe Alliant Energy's plan to meet the current WPDES permitted Total Phosphorus (TP) discharge limits for the combined discharge from the Riverside Energy Center and West Riverside Addition. TP credits will be established for each of the land uses described above.

1.2 Location

Outfall 001 discharges to the Rock River at approximately latitude 42.57436° N and longitude 89.03485° W. The outfall is located in HUC 12 Subwatershed 070900021502, The City of Beloit-Lower Rock River Basin. The approximate location of Outfall 001 is shown in ***Figure A1***.

1.3 Current Permit

The Riverside Energy Center currently operates under WPDES Permit No. WI-0061921-02-0. The only outfall for the combined discharge from both the existing and future plants is Outfall 001, to the Rock River. The current permit dictates that the TP load from the outfall cannot exceed 0.65 lb TP/day, on a monthly average. The total annual limit of P that may be discharged from the plant is 237.25 lb.

1.4 Phosphorus Discharge

Existing Riverside Plant

The future P discharge from the existing Riverside Plant was projected based on past plant monitoring data and scaled up to account for changes in plant operations. Plant operations (and therefore P discharge) varies throughout the year with fluctuating electrical demand. Therefore, weekly monitoring data from January 2015 through August 2016 was used to project the daily future P discharge by month. Data after August 2016 was not available because the plant was offline for several months for repairs and maintenance. A summary of the assumptions used in the discharge analysis are provided below. Monitoring data and loading calculations are provided in ***Appendix B***.

- It is assumed that the plant will be operating at 70-80% capacity factor (CF). The actual average CF was 62% during period of available monitoring data.
- P based antiscalent will be utilized at the plant, after previously discontinuing use. Antiscalent use is proportional to flow and increases P discharge by approximately 60%.
- Plant operating 5 days per week on average, or about 70% of the month (currently operating about 50-60% of the month)
- Outfall P concentrations conservatively estimated to increase by 50% from monitoring data.

The projected daily average P discharge is 0.35-1.10 lb/day, varying by month and plant capacity factor. The projected annual discharge from the existing plant, based on the available data, is 195.5-223.4 lb P/year. Additional, details are provided in ***Appendix B***.

New West Riverside Expansion

The projected discharge from the new plant was calculated based on the plant and wastewater treatment system designs. Alliant Energy is constructing a recirculating sand filter system to treat wastewater from the new West Riverside Plant. The system is designed to remove phosphorus, zinc, chlorine, and TSS from the waste stream via settlement and sand filtration. Phosphorus removal will be enhanced with a Ferric chemical dosing system prior to the settling tanks. The system has been designed to provide total maximum TP concentrations of 0.05 mg/L, based on the systems design

flows. This information was used to project the P discharge from the new West Riverside Plant. A summary of the calculation assumptions is below. Additional information is provided in ***Appendix B***.

- West Riverside outfall flow is 65% of that of the existing Riverside plant for the same CF.
- Treatment of wastewater stream from West Riverside will achieve P concentrations of 0.05mg/L.
- Plant will operate 5 days per week on average, or about 70% of the month.

The projected daily average P discharge is 0.07-0.24 lb/day, varying by month and plant capacity factor. The projected annual discharge from the new plant is 39.2-44.8 lb P/year. Additional, details are provided in ***Appendix B***.

Total Discharge

The projected total discharge from the combined plants was calculated to be 234.7-268.2 lb P/yr. The plant may discharge less P on an annual basis than the maximum allowable annual P discharge of 237.25 lb/yr. However, the plant is likely to exceed the monthly P limits most months of the year as is shown in the calculations in ***Appendix B***.

1.5 Credit Need

Alliant Energy and MARS evaluated the existing and projected P discharges from the Riverside Facility to determine the total credit need from the trading program. Based on historic plant use and operations data the average daily discharge (by month) from the existing Riverside plant and new West Riverside expansion was estimated to be 0.49-1.23 lb/day (***Table 1*** and ***Appendix B***). Given the assumptions of the projections the plant is expected to exceed the monthly P discharge limit of 0.65 lb/day during most months of the year. Due to the uncertainties in plant operations due to varying electrical demand and plant operations the actual number of credits used on an annual basis is likely to vary from the projection. The anticipated credit need for the combined Riverside/West Riverside plant to meet the current WPDES permit limits is 0-105 lb P. Alliant intends to generate more credits than this estimate to provide a factor of safety and ensure sufficient credit availability in the future.

Table 1. Anticipated Credit Need for both Plants at 80% Capacity Factor

Month	Existing Riverside (lb/day)	West Riverside (lb/day)	Total (lb/day)	Permitted discharge (lb/day)	Credit need (lb/day)	Total Credits Needed*
Jan	0.91	0.17	1.08	0.65	0.43	**9.42**
Feb	0.91	0.18	1.09	0.65	0.44	**8.84**
Mar	0.93	0.20	1.13	0.65	0.48	**10.50**
April	0.40	0.08	0.49	0.65	-	**-**
May	1.10	0.19	1.28	0.65	0.63	**13.94**
Jun	1.02	0.19	1.20	0.65	0.55	**11.61**
Jul	0.90	0.24	1.14	0.65	0.49	**10.70**
Aug	0.99	0.22	1.21	0.65	0.56	**12.23**
Sep	1.03	0.20	1.23	0.65	0.58	**12.24**
Oct	0.70	0.10	0.80	0.65	0.15	**3.25**
Nov	0.57	0.12	0.69	0.65	0.04	**0.79**
Dec	0.93	0.19	1.12	0.65	0.47	**10.44**
				Total Credit Need: 103.95 lb P		

*- Assumes both plants operating 70% of the month

2 Existing Land Use Analysis

2.1 Existing Land Use

Two agricultural parcels, totaling approximately 112 acres located near the Riverside Energy Center have been identified for inclusion in the P trading program. The proposed trading locations are shown in ***Figure A2***. The largest parcel is 84 acres on the east side of S Walters Rd, South of WBR Townline Rd, adjacent to the existing Riverside Energy Center. The remaining 28 acres is located on the west side of S Walters Rd. Each parcel has been managed for row crop production continuously for at least the last decade.

The fields on the east side of S Walters Rd., adjacent to the Riverside Energy Center, have been owned by Alliant Energy and leased to an agricultural operator since 2008. The operator alternated no-till soybeans and winter wheat production in these field. Fertilizer application typically averaged 125 lb/ac of diammonium phosphate in the spring. No soil testing was conducted by the operator prior to the initiation of this project, and the fields were not part of an approved nutrient management plan.

The fields on the west side of S Walters Rd. were purchased by Alliant Energy from the Town of Beloit in 2016. Previously these fields were leased to an agricultural operator by the Town. Alliant Energy continued this lease through the 2017 growing season. The fields were under a variable corn grain – soybeans – wheat rotation. Additionally, the Town utilized these areas for municipal sludge disposal from the Town's wastewater treatment plant. Cropping records, sludge disposal records, and sludge analysis results for these fields were provided by the Town to MARS. A selection of these records is included in ***Appendix B***. Fields received sludge applications in spring and/or fall, with application times and rates varying every year. The cropping and sludge application records were aggregated, and representative cropping rotation and nutrient application schedule was determined. The typical crop rotation over the period of record was determined to be 3-years corn -2 years soybeans - 2 years wheat. The average sludge application was 7,200 gal/ac/yr, which based on the sludge analysis results, amounted to 50 lb/ac/yr of P. Additionally, according to the town, 125 lb/ac of potassium sulfate and 50 lb/ac of ammonium phosphate were incorporated annually, with 100 lb/ac of ammonium nitrate added when wheat was planted.

2.2 Analysis Areas

The phosphorus trading areas were subdivided by the planned land use and restoration schedule. The planned land analysis areas are identified in ***Figure A2***. Areas are either considered to be "operational" or "restorations". Operational areas include 18.2 acres of land owned by Alliant Energy being set aside for construction of an electrical substation to be owned by American Transmission Company (ATC), 33.3 acres of land for construction of the West Riverside Addition, 24.0 acres reserved to be a future solar array mixed with perennial vegetation, and a total of 32.7 acres of native prairie restoration. Areas were further subdivided by the intended construction schedule and intermediate land use. Field ID's, areas, a brief description of the final land use, intermediate land use (during plant construction), and final restoration date is provided in ***Table 2***. Additionally, some areas adjacent to the Riverside Expansion construction will be utilized for construction laydown and/or parking.

Table 2. Analysis Areas and Proposed Land Use

Field ID	Area (ac)	Proposed Land Use	Intermediate Construction Use	Projected Final Restoration
*O1	6.0	Perennial vegetation (area reserved for future substation expansion)	Transmission Line Construction Laydown	2020
O2	12.2	ATC Kittyhawk Substation	-	2019
O3-A	7.8	Plant Operational Area (plant buildings and parking)	-	2020
O3-B	3.1	Plant Operational Area (temporary parking and plant green space)	Trailer parking	2020
O3-C	7.4	Plant Operational Area (permanent stormwater facilities)	-	2018
O4	15.0	Greenspace (disturbed by plant construction but not developed)	-	2020
O5	24.0	Future Solar Array with Perennial Vegetation	Parking and Laydown	2021
O6	1.7	Future Alliant Energy Substation	-	2019
R1	9.0	Native Prairie Restoration, "Southeast Green Space"	Laydown and Stockpiling	2018
R2	9.3	Native Prairie Restoration, "Southwest Green Space"	-	2020
R3	14.4	Transmission Corridor, Native Prairie Restoration	Laydown and Parking	2021

Field O1 is planned to be seeded to perennial vegetation after its use as the transmission line construction laydown. This area is reserved for future substation expansion by ATC, though the exact schedule is unknown at this time. When that expansion occurs, this plan will be amended, and revised credit calculations will be provided to WDNR.

2.3 Soil Sampling

Soil sampling was conducted by MARS staff covering the entire area of planned development. Soil sampling was completed in three phases. Soil sampling was completed on 4/5/2016, 1/20/2017, and 5/11/18. Additionally, three soil samples were collected by Eco Resource Consulting (ERC) on 11/01/2017, as part of the restoration planning for field R2. These soil samples were included in the SnapPlus analysis as well. ***Figure B1,*** in ***Appendix B*** shows the approximate locations of all soil samples collected. All soil samples collected were analyzed at the UW Soil and Plant Analysis Lab (SPAL), except the samples collected by ERC, which were analyzed at Rock River Laboratories, Inc. Additional description of the soil sampling and analysis is provided below:

- A composite sample was collected on 04/05/2016 covering the fields adjacent to the West Riverside Expansion. A total of 17 sub-samples were collected and composited. This composite sample was applied to fields O3, O4, O5, O6, R1, and R3 in the SnapPlus analysis.

- On 1/20/2017 a second composite sample was collected on the land purchased by Alliant Energy from the Town of Beloit. A total of 12 sub-samples were collected and composited for analysis. The composite soil sample was applied to fields O1, O2, and R2 in Snap Plus analysis.

- As part of the restoration planning for the first phase of prairie planting ERC collected 3 soil samples in field R2.

- Much more extensive soil sampling conforming to UW Extension guidance (Document A2100) for soil sampling was completed on 5/11/2018. Composite soil samples consisting of 10 sub-samples were collected for every 5 acres of land to be evaluated. However, due to ongoing construction activities some areas were not accessible, or were heavily disturbed, and therefore were not sampled. A total of 9 samples were collected and analyzed covering fields O1, O2, R1, R2, and R3.

A summary of the soil samples collected and applied to each field in the SnapPlus analysis are provided below in ***Table 3***, refer to ***Figure B1*** for locations and additional information.

Table 3. Soil Sample Summary by Field

Field ID	Soil Samples applied to Analysis	Notes
O1	1/20/17 Composite, 5/11/18: O1-1, O1-2	
O2	1/20/17 Composite, 5/11/18: O2-1, O2-2	May 2018 soil sampling access limited by substation construction, area analyzed in WinSLAMM so soil samples not used in P Trade Analysis
O3-A	4/5/16 Composite	May 2018 soil sampling access limited by plant construction, area analyzed in WinSLAMM so soil samples not used in P Trade Analysis
O3-B	4/5/16 Composite	
O3-C	4/5/16 Composite	
O4	4/5/16 Composite	May 2018 soil sampling access limited by plant construction
O5	4/5/16 Composite	May 2018 soil sampling access limited by plant construction
O6	4/5/16 Composite	May 2018 soil sampling access limited by plant construction, area analyzed in WinSLAMM so soil samples not used in P Trade Analysis
R1	4/5/16 Composite, 5/11/18: R1-1	May 2018 soil sampling access partially limited by plant construction
R2	1/20/17 Composite, 5/11/18: R2-1, R2-2, ERC Soil Samples 1, 2, and 3	
R3	4/5/16 Composite, 5/11/18: R3-1, R3-2	May 2018 soil sampling access partially limited by plant construction

Soil test P levels varied significantly across the site. The soils on the east side of Walters Rd with a relatively modest P application history, had relatively lower soil test P levels than the fields on the west side of S Walters Rd. Soil test analysis results are included in ***Appendix B***.

2.4 Phosphorus Runoff Modeling Approach

Two modeling tools were used to evaluate P runoff and determine potentially tradeable phosphorus (PTP), SnapPlus V2 17.0 (build 18127.1502) and WinSLAMM v10.3.3. SnapPlus was designed for agricultural use while WinSLAMM is intended for urban land use analysis. WinSLAMM cannot account for differences in soil P content or ground slope, among other potential P export factors. However, SnapPlus cannot model runoff from urban landscapes or stormwater treatment facilities.

Credits were also calculated for areas converted from agricultural land use to developed areas, subject to NR216.Credit cannot be taken for reductions in P export required under other permits, therefore, only limited credits will be taken for the developed areas covered by a stormwater permit. Construction of the West Riverside Plant Expansion, the Alliant Energy Substation, and Kittyhawk Substation are subject to stormwater management performance criteria described in NR151. There are no P reduction performance criteria explicitly described in NR151. However, newly developed sites are required to reduce total suspended solids (TSS) leaving the site by 80% on an annual average basis. WinSLAMM can be used to model TSS as well as total P and therefore a correlation between TSS and TP can be established. P credits were only generated for reductions greater than the required amount. Additional details of this calculation are provided in ***Sections 3.3 and 3.4***.

2.5 Potentially Tradeable Phosphorus

SnapPlus 17.0 was utilized for determining the PTP (in lb. P exported from each field) from existing fields that are to be converted to future perennial vegetation. These areas can be seen in ***Figure A3***, along with the identified critical slope. Alliant Energy elected not to include the sludge applications in the existing land use analysis in SnapPlus, as the sludge application is likely to be relocated within the watershed. Therefore, when analyzing the existing PTP, only chemical fertilizers were included in the crop rotation. Areas subject to NR 151 post construction stormwater management criteria were modeled in SnapPlus under existing conditions, however, these results were not used in the credit calculations.

A summary of the modeling results is provided in ***Table 4***. Two permit cycles were considered for the analysis, yielding an analysis period of 10 years. Detailed model input and output are provided in ***Appendix C***.

Table 4. Existing Land Use Potentially Tradeable Phosphorus

Field ID	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
O1	100	64	40	46	31	32	37	98	63	39
O2	Area subject to NR 151 stormwater management performance criteria									
O3-A	Area subject to NR 151 stormwater management performance criteria									
O3-B	Area subject to NR 151 stormwater management performance criteria									
O3-C	Area subject to NR 151 stormwater management performance criteria									
O4	13	12	13	13	13	13	14	14	14	14
O5	105	97	108	100	110	102	112	103	114	105
O6	Area subject to NR 151 stormwater management performance criteria									
R1	68	62	69	63	70	64	71	65	71	66
R2	61	64	73	184	127	82	90	60	64	29
R3	111	102	112	103	113	105	115	106	116	107

3 Proposed Land Use Analysis

3.1 Proposed Land Uses

Proposed land use on site includes land developed for both electric generating and distribution, as well as areas of native prairie restoration, as described in ***Table 2*** above and shown in ***Figure A3***. These areas have been subdivided into "fields" based on the proposed land use and construction schedule. Each field was individually evaluated for P loss under the final proposed condition.

3.2 Design

Areas of Perennial Vegetation (Restoration Areas)

These areas will be restored and maintained in accordance with NRCS Conservations Practice (327): Conservation Cover. All areas of perennial vegetative cover (O1, O4, O5, R1, R2, and R3) have been evaluated and restoration activities planned, based on the proposed construction schedule (***Section 4.4***). Some design details such as precise seed mixes, seed bed preparation, and seeding rates have not been evaluated at the time of the issuance of this report. Additional details will be developed as construction activities are completed on site. The areas of native restoration (R1, R2, and R3) will be evaluated by a trained ecologist for restoration methodology and seed mix selection.

Southeast, Southwest, and Transmission Corridor Green Spaces (R1, R2, R3):

Detailed seed bed preparation plans, and seed mixes has not been determined because these areas are expected to be heavily impacted by construction activities. A detailed investigation will be completed closer to the date of final restoration of each field. Field R2 will be the first area restored to native prairie and has been evaluated by Eco-Resource Consulting (ERC). Seed bed preparation and planting occurred in November 2017. The restoration methodology described by ERC is provided in ***Appendix D***. Similar methodology will be used for the remaining areas of restoration as construction activities are completed. Final restoration plans for each area can be submitted to WDNR as an addendum to this report prior to restoration activities occurring and credits are generated from these areas.

Solar Array (O5):

The solar array has been included in the proposed areas of perennial vegetation evaluated in SnapPlus. Detailed designs have not been finalized on the array; however, the intended design is to intermix perennial vegetation cover and potentially native species. At a minimum the area will be seeded with a perennial grass cover, such as WisDOT seed mix 40, that provides good cover and is somewhat drought and wet tolerant. The solar panels will provide sufficient ground cover in conjunction with the intermixed vegetation that risk of erosion is low. Additionally, traffic around the solar panels will be relatively low compared to plant operational areas and no P will be applied in these areas.

ATC Transmission Line Laydown/Future Expansion (O1):

The ATC Laydown area will be used for material and equipment storage during transmission line construction and restored to perennial vegetation after. The transmission line construction will take place in 2019 with restoration of the laydown area occurring by the beginning of 2020. The area will be seeded with a perennial grass seed mix developed by ATC for long term restorations, referred to as

ATC pasture mix. No P application will occur as part of the long-term management of the area, only potential intermittent mowing to control annual weed growth. The seed mix is described below.

ATC Pasture Mix:
Seeding Rate: 40 lbs/acre
Orchard Grass - 14 lbs/acre
Tall Fescue - 14 lbs/acre
Festulolium - 4 lbs/acre
Tetraploid Perennial Ryegrass - 4 lbs/acre
Intermediate Ryegrass - 4 lbs/acre

The laydown area has been set aside for potential future expansion of the Kittyhawk Substation. There is no planned schedule for expansion currently. This area will be withdrawn from the P trading program, or the credit calculations modified if the substation expansion occurs.

Riverside Plant Green Space (O4):
The green space associated with the Riverside expansion will be landscaped and planted with a perennial grass type seed, WisDOT seed mix 40, or similar approved equivalent. No P fertilizers will be applied as part of the ongoing maintenance of the area, with regular mowing to control growth and maintain aesthetics.

Areas Draining to Stormwater Facilities (Operational Areas)
Runoff from areas of developed impervious surfaces (O2, O3, and O6) will be treated by stormwater facilities designed to meet regulatory requirements for water quality (Total Suspended Solids) treatment. WinSLAMM was used to evaluate the corresponding P removal in these stormwater facilities and total P export from each site. Additional information on the site and stormwater design of these areas is provided in ***Appendix E.***

West Riverside Plant (O3):
Rain gardens adjacent to the parking areas provide potential for infiltration and sediment/P removal. Remaining runoff from the plant buildings, parking lots, driveways, and overflow from the rain gardens is captured by two vegetated swales on the east and west side of the plant. The swales both drain to a wet pond on the south side of the plant, which provides additional settling time for sediment and P removal. The wet pond discharges to the south toward an intermittent stream leading toward the Rock River.

Kittyhawk Substation (O2):
Runoff from the proposed Kittyhawk Substation will be collected in vegetated swales on the east and west side of the substation. All water is then diverted to a wet pond at the southeast corner of the pad. The wet pond provides water quality treatment (P removal) via settling. Outflow from the pond is split between being directed toward an infiltration facility or directed toward the S Walters Rd right of way. The infiltration facility provides additional particulate and dissolved P removal via infiltration and plant uptake.

Alliant Energy Substation (O6):
The new proposed Alliant Energy substation has not yet been designed, and therefore stormwater facilities have not been sized. Additionally, due to the relatively small size of the area relative to the other portions of the property and the low potential for credit generation this area was not modeled and is not generating any P credits as part of this trading plan.

3.3 Proposed Conditions P Export – SnapPlus

As described in ***Section 2.4***, two modeling methodologies were utilized for determination of the P export from each trading area under the proposed development conditions. Areas of proposed perennial vegetation cover were evaluated with SnapPlus to determine PTP. The same areas and critical slopes identified in the existing conditions analysis were used (***Figure A2***). The crop rotations were set to permanent grassland with no nutrient applications. The total calculated PTP under developed conditions for each field is provided in ***Table 5***. Additional modeling details are provided in ***Appendix B***.

Table 5. Proposed Land Use Potentially Tradeable Phosphorus

Field ID	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
O1	9	7	6	5	5	5	5	5	5	5
O2	Area subject to NR 151 stormwater management performance criteria									
O3-A	Area subject to NR 151 stormwater management performance criteria									
O3-B	Area subject to NR 151 stormwater management performance criteria									
O3-C	Area subject to NR 151 stormwater management performance criteria									
O4	1	1	1	1	1	1	1	1	1	1
O5	4	3	3	3	3	3	3	3	3	3
O6	Area does not generate P trading credits, but is included in table for completeness									
R1	14	8	8	7	7	7	7	7	7	7
R2	25	23	21	20	20	20	20	20	20	20
R3	23	14	13	12	12	12	12	12	12	12

3.4 Proposed Conditions P Export – WinSLAMM

Developed areas with impervious land use and subject to NR151 stormwater management performance criteria were modeled using WinSLAMM to determine the potentially available P credits. The industrial land use was selected for the substations, and plant area within WinSLAMM. Stormwater facilities (detention ponds and infiltration facilities) were modeled as nodes receiving runoff from each contributing area. Additional input/output from the WinSLAMM analysis is provided in ***Appendix C***. Results for the three sub areas of the plant (O3-A, O3-B, and O3-C) were combined as there were all analyzed within a single model.

P credits are only generated if P removal in the stormwater management facilities exceeds the permit requirements. Permit required P reductions were determined for each area using the WinSLAMM model output to calculate a correlation between total suspended solids (TSS) and Total Phosphorus (TP). A TP:TSS ratio was calculated for each area based on the modeled site outfall (i.e. treated runoff). The ratio varies because, different practices remove the P forms (i.e. particulate vs. dissolved) with varying levels of efficiency. Using the TP:TSS ratio, the permittable TP discharge from the site was calculated based on the NR151 required 80% TSS removal. The permittable P discharge was subtracted from the modeled P discharge to calculate the excess removal, and therefore the amount potentially available for credit. Additional information on these calculations is provided in ***Table 6*** with a model input/output summary provided in ***Appendix C***.

Table 6. Proposed Land Use Potentially Tradeable Phosphorus

Field ID	Discharge w/No Control Practices[1] (lb)		Discharge with Controls[1] (lb)		TP:TSS Ratio2	Permittable Discharge (lb)		P Removal beyond NR151 Requirements (lb)
	TSS	TP	TSS	P		TSS[3]	TP[4]	
O2	4,080	16.7	415.8	2.32	1:179	816	4.6	2.3
O3-A	8,519	31.7	127.2	0.38	1:335	1,704	5.1	4.7
O3-B								
O3-C								

1. From WinSLAMM Modeling
2. Calculated from pollutant runoff WinSLAMM results with runoff controls.
3. Based on 80% TSS reduction required by NR151 compared to no controls.
4. Calculated from TP:TSS ratio

4 Credit Analysis

4.1 Rock River TMDL

The Riverside Energy Center Outfall and water quality trading fields lie within the Rock River Watershed, thereby subject to the approved Rock River TMDL (approved by USEPA in 2012). These fields fall within Sub-basin 79 as delineated within the TMDL. According to Appendix H of the Rock River TMDL, non-point sources contributing to Reach 79 are required to reduce TP loads by 40% from baseline. The assumed baseline loading for agricultural fields is equivalent to a Phosphorus Index (PI) of 6. Given the required reduction of 40%, the credit threshold for these fields is 3.6 lb P/ac/yr. Only reduction of P losses from fields below 3.6 lb/ac/yr will generate long term credits. The reduction in P losses above 3.6 will generate interim credits (only available in the first 5 years of the practice).

This trading plan quantifies the generation of both long term and interim credits from conversion of land out of agricultural use.

4.2 Trade Ratios

Individual trade ratios were calculated for each field based on the guidance documents. Each of the five factors was considered in calculation of the final trade ratio for each field. For several fields that are to be restored to native prairie or other perennial vegetation, the WDNR mandated minimum trade ratio of 1.2:1 was determined to be appropriate. A brief discussion of the evaluation for each of the factors is provided below, while the final trade ratio calculated for each field is provided in ***Table 7***.

Delivery - All fields and the discharge outfall are located within the same HUC 12, so the factor does not apply.

Downstream – All fields on the east side of S Walters Rd. discharge to effectively the same location on the Rock River near the Riverside outfall. The fields to the west side of Walter's road drain to culverts under the roadway, directing runoff to the roadside ditch and across the trading areas on the east side of the road. Therefore, the downstream factor does not apply to any of the trading areas.

Equivalency – The proposed traded nutrients are the same form (TP to TP); the factor does not apply.

Uncertainty – Runoff from the plant operations areas and the substations will be treated with structural stormwater facilities (factor of 2), while the prairie restoration and greenspace areas are considered conservation easements (factor of 1).

Habitat – No proposed habitat adjustments, so the factor does not apply.

Table 7. Trade Ratios

Field ID	Delivery	Downstream	Equivalency	Uncertainty	Habitat	*Final Trade Ratio
O1: ATC Laydown	-	-	-	1	-	1.2:1
O2: ATC Substation	-	-	-	2	-	2.0:1
O3-A: Plant Operational Area	-	-	-	2	-	2:1
O3-B: Plant Stormwater Facilities	-	-	-	2	-	2:1
O3-C: Plant Green Space	-	-	-	2	-	2:1
O4: Offsite Plant Greenspace	-	-	-	1	-	1.2:1
O5: Solar and Green Space	-	-	-	1	-	1.2:1
O6: Substation	-	-	-	2	-	2:1
R1: SE Green Space	-	-	-	1	-	1.2:1
R2: SW Green Space	-	-	-	1	-	1.2:1
R3: Transmission Green Space	-	-	-	1	-	1.2:1

*WDNR minimum allowable trade ratio is 1.2:1

4.3 Construction and Implementation Timeline

Credits only become available after the practices have been installed, fully established, and reported to WDNR. To maximize credit availability as soon as possible, each parcel will be brought into the trading program when development on each is completed and ground cover established, rather than waiting until the whole area is fully developed. The intended construction schedule is described below.

2017: Construction activities begin on West Riverside Addition and ATC Kittyhawk Substation (O1, O2, O3, and O4). Areas south of the pad are used for construction time parking, laydown, and stockpiling (R1, R3, and O5).

December 2017: Prepare soil and seed of southwest greenspace native prairie restoration; schedule to be dependent on soil and weather conditions and contractor availability (R2).

Summer 2018: Restore stormwater facilities treating runoff from the West Riverside Plant (O3-B), and complete grading activities and seeding of pervious areas and stormwater facilities adjacent to Kittyhawk Substation (O2). Construct of Alliant Energy Substation (O6).

Fall 2018: Complete construction of Alliant Energy Substation (O6).

Spring 2019: Complete construction on Kittyhawk Substation (O2). Use of ATC Laydown area for transmission line construction begins (R2).

Summer 2019: Restore offsite greenspace areas immediately east of West Riverside Expansion (O4).

Spring 2020: Complete construction of West Riverside (O3-A, O3-B), restore native prairie of transmission line corridor (R3), solar array area (O5), and the southeast green space area (R1).

January 2021: All areas of trading plan generating credits.

4.4 Timeline of Total Credit Availability

The total credits available for each field were calculated as the difference between the existing PTP and the proposed PTP, divided by the trade ratio. The available credit for each year was then determined based on the projected project timeline.

A timeline of total credit availability was created based on the projected construction schedule described in ***Section 4.3***. It was generally assumed that credits will become available the beginning of the year following vegetation establishment. As described in ***Section 4.1***, interim credits are generated as part of this plan. Long term credits and interim credits available are shown in ***Tables 8 and 9*** respectively. When the entire area is fully developed and the plant fully operational in 2021, 160-163 credits will available for trading (***Table 10***). The variability in the total credits generated is due to the comparison of the continuous vegetative cover under the proposed condition (consistent P loss) compared to continuation of the existing cropping rotations which have variable P loss across the analysis period. Areas modeled within WinSLAMM generate the same number of credits every year. Additional details of the credit calculations are provided in ***Appendix F***.

Table 8. Long Term Credits

Field ID	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
O1			13.2	13.7	13.9	14.0	14.0	14.0	14.1	14.1
O2		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
O3-A			1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
O3-B			0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
O3-C		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
O4			10.0	10.0	10.0	10.0	10.9	10.9	10.9	10.9
O5				69.3	69.3	69.3	69.3	69.3	69.3	69.4
O6	Area does not generate P trading credits, but is included in table for completeness									
R1			20.7	20.8	20.9	20.9	20.9	20.9	20.9	20.9
R2	6.8	8.8	10.1	10.7	11.1	11.3	11.4	11.5	11.5	7.7
R3				32.7	32.9	32.9	32.9	33.0	33.0	33.0
Total	6.8	10.3	57.5	160.8	161.5	161.9	163.0	163.1	163.2	159.4

Table 9. Interim Credits

Field ID	2018	2019	2020	2021	2022
O1			15.3	20.3	7.8
O5				6.8	11.8
R1			30.6	25.6	31.4
R2	23.1	25.8	32.9	125.4	77.9
Total	23.1	25.8	78.8	220.8	179.9

Table 10. Total Projected Credits Generated By Year

Field ID	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Interim	23.1	25.8	78.8	220.8	179.9					
Long Term	6.8	10.3	57.5	160.8	161.5	161.9	163.0	163.1	163.2	159.4
Total	29.9	36.1	136.3	381.5	341.4	161.9	163.0	163.1	163.2	159.4

5 Proposed Compliance Approach

5.1 Inspections

To generate water quality trading credits, the proposed management practices need to be installed and maintained per WDNR or Natural Resource Conservation Service (NRCS) Conservation Practice Standards (CPS). Relevant CPS to this site are identified in ***Table 10***.

Table 10 –Conservation Practice Standards

NRCS Conservation Practice Standard	Number
Conservation Cover	327
WDNR Post Construction Technical Standard	**Number**
Bioretention for Infiltration	1004
Infiltration Basin	1003
Wet Detention Pond	1001

Areas of native prairie restoration will be inspected via meander survey a minimum of twice per year the first two years of growth. After the initial period of establishment, the fields will be inspected via meander survey annually in August by a qualified expert. Mowing, herbicide treatments, burning, or other maintenance will be performed based on recommendations provided to Alliant Energy. Additional details are provided in the Installation and Maintenance plan in ***Appendix D***.

A registered engineer will annually inspect all stormwater facilities and drainage features for the West Riverside Expansion, Kittyhawk Substation, and any other stormwater management facilities installed on the areas included in this trading plan. Inspections will include identification of sediment accumulation in stormwater facilities, proper vegetation establishment in ponds and infiltration facilities, verification of good vegetative cover and proper function of drainage swales, inspection of drainage culverts to ensure good function, and identification of any areas of significant erosion.

Practices will need to be registered with DNR after installation and records of inspection maintained. Annual submittals shall be provided to DNR certifying the practice is in place, including the previous year's inspection reports.

5.2 Reporting

Practice Registration

Management practices will not produce credits until fully established and registered with WDNR. As construction of areas of the proposed development are completed and restoration areas established, Alliant Energy will file completed Registration Form 3400-207 separately from this plan. A blank form is provided in ***Appendix F***.

Approved stormwater management plans for the developed areas will be provided upon practice registration. The WinSLAMM modeling described in this report is based on the designed stormwater facilities which meet NR 151 performance criteria. However, at the time of issuing this report the final

stormwater management plan for the West Riverside Expansion Plant area are being revised and has not been finalized.

Certification

Each month when the discharge report is filed with WDNR, Alliant Energy staff will certify that the management practices identified in this plan, and registered as described above, are installed and functioning as intended.

Inspection Reporting

Inspection reports for all practices will be created by Alliant Energy, or a contractor authorized by Alliant Energy, on an annual basis and for their own records. At a minimum, inspection reports shall include documentation of the condition of all practices, any issues identified, as well as a description of any recommended repairs or maintenance to be conducted. Inspection reports will be included in the annual Water Quality Trading Report submitted to WDNR. Final stormwater reports covering the stormwater facilities generating credits as part of this plan as part of the annual water quality trading report provided to DNR. A copy of the current approved stormwater plans for areas generating P from stormwater facilities (O2 and O3) are provided in ***Appendix H***.

Notification of Practice Failure

In the event any practices described in this plan fail in such a manner that the intended P credits are not being generated, Alliant Energy staff or a contracted representative shall notify WDNR staff of the failure by telephone within 24 hours or learning of the failure. Within 5 working days of learning of the failure, written notice shall be provided to WDNR. The notice shall include a description of the failure and why the intended P credits are not being generated. Additionally, any planned maintenance or repairs required to reestablish the generation of credits from the practice will be provided with 5-day written notice.

In Event Insufficient Credits are Generated

In the even that insufficient credits are generated to meet permit needs due to practice failure or other unanticipated events, Alliant may modify or curtail plant operations to meet stated permit limits. This may include reduced operation, reduced discharge, increased treatment system cycling, or changes in conditioning additives.

Water Quality Trading Report

A water quality trading report shall be prepared and submitted to WDNR by January 31. The report shall include a description of the credits used each month, inspection reports for all practices generating credits in the previous year, and a description of any occurrences of non-compliance or practice failures in the previous year.

Right to Inspect

Any duly authorized officer, employee, or representative of WDNR shall have the right to access and inspect the credit generating areas included in the trading plan pursuant to Wis. Stat. § 283.55(2), so

long as the Alliant Energy trade agreement with WDNR and this plan are in effect. A minimum of 48-hours' notice shall be provided to Alliant Energy to ensure that proper safety training can be scheduled and provided to any persons visiting the site.

Trade Agreement

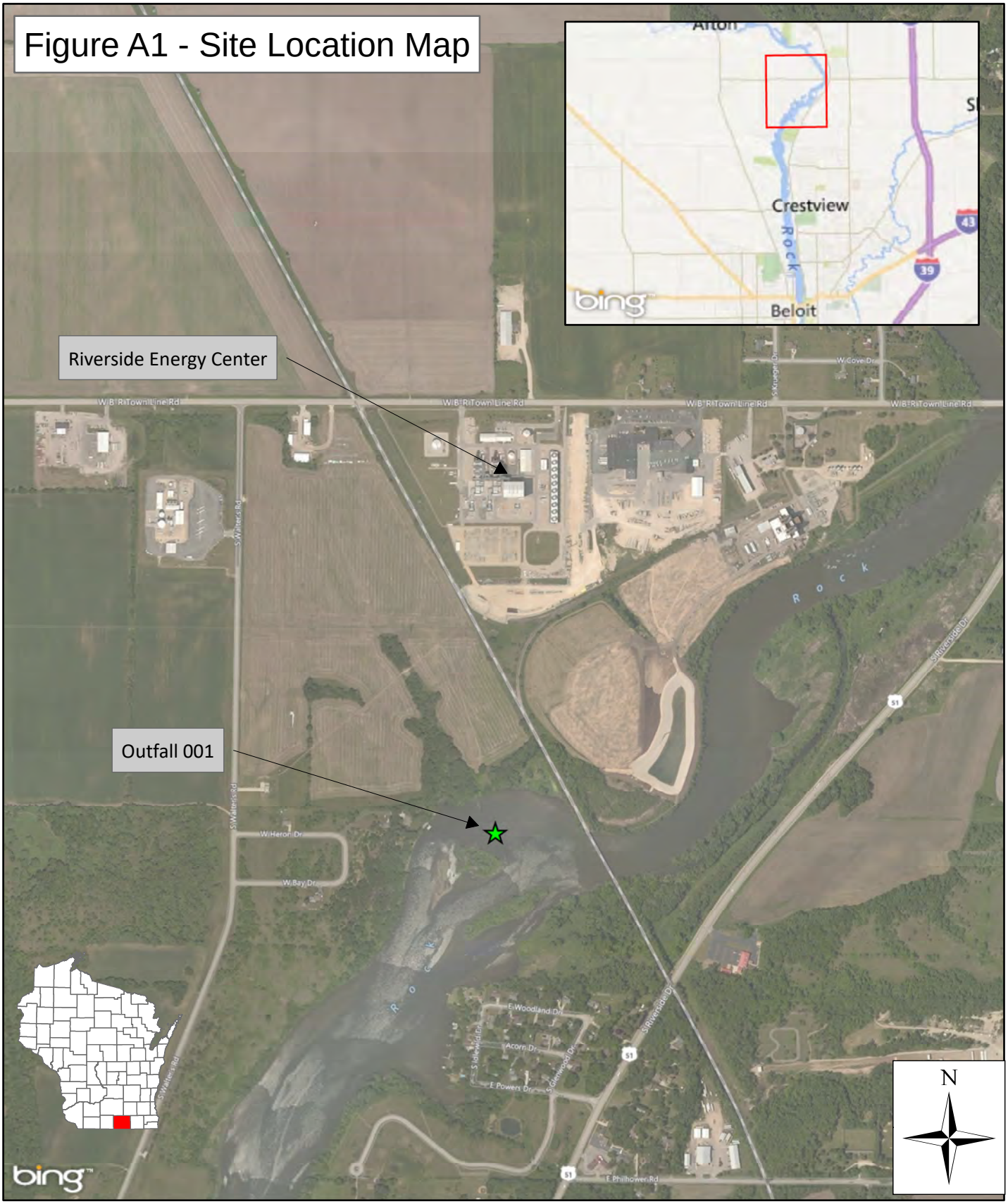
Pursuant s. 283.84(1), Wis. Stats, a trade agreement is required to be in place prior to using trading to help demonstrate compliance with the final phosphorus limits. Alliant Energy will be generating the credits themselves and therefore a trade agreement is being developed that will be entered by Alliant Energy and WDNR. This agreement is being developed concurrently at the time of the development of this plan. The agreement will be finalized prior to conditional approval of this plan.

Appendix A - Figures

Riverside Energy Center P Trading Plan
Town of Beloit, Rock County, WI
Alliant Energy WP&L

Montgomery Associates:
Resource Solutions, LLC
119 South Main St.
Cottage Grove, WI 53527

Figure A1 - Site Location Map

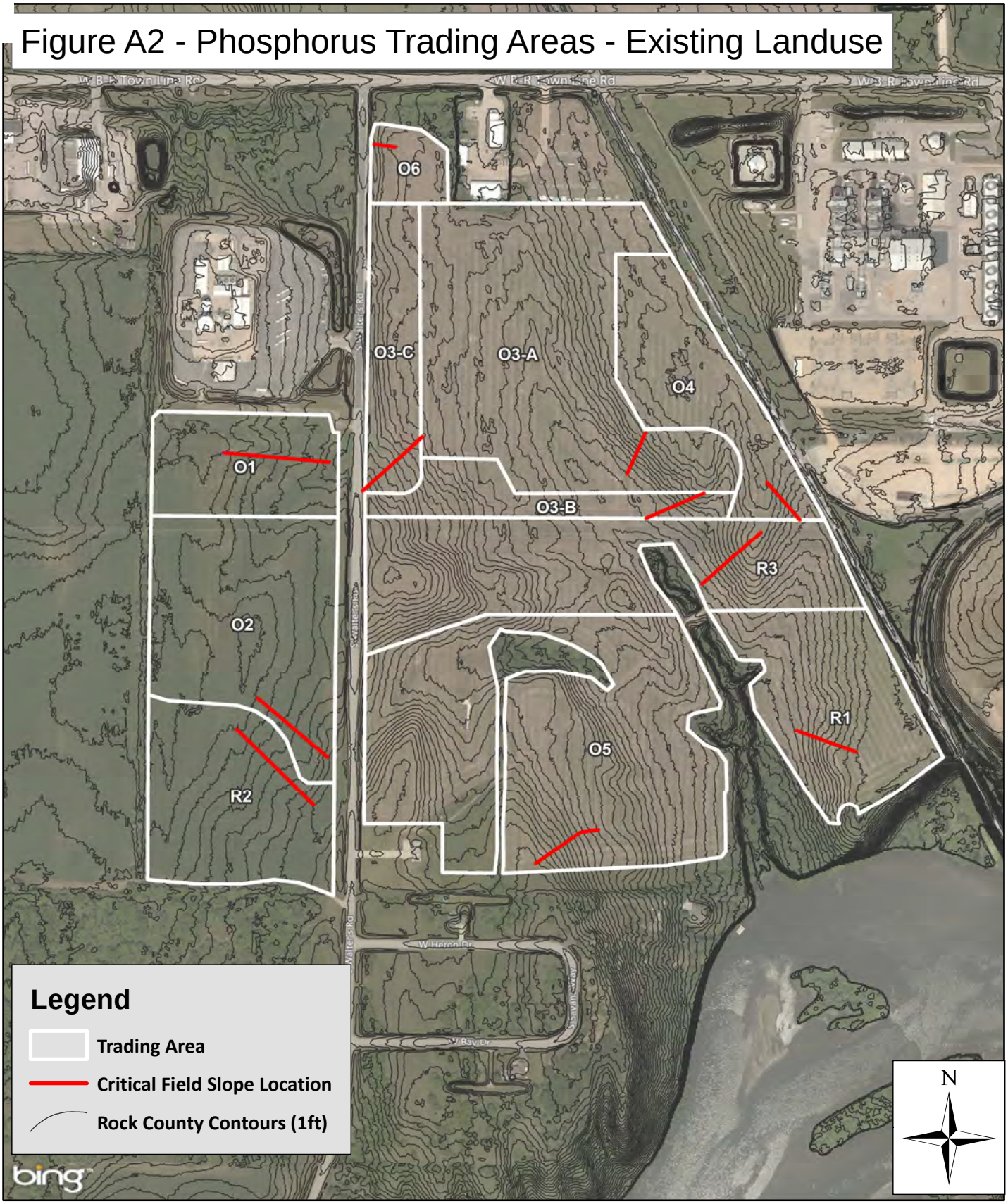


November 2017

Riverside Energy Center P Trading Plan
Town of Beloit, Rock County, WI
Alliant Energy WP&L

Montgomery Associates:
Resource Solutions, LLC
119 South Main St., Suite A
Cottage Grove, WI 53527

Figure A2 - Phosphorus Trading Areas - Existing Landuse



November 2017

0 250 500 1,000 Feet

Riverside Energy Center P Trading Plan
Town of Beloit, Rock County, WI
Alliant Energy WP&L

Montgomery Associates:
Resource Solutions, LLC
119 South Main St., Suite A
Cottage Grove, WI 53527

Figure A3 - Phosphorus Trading Areas - Proposed Land Use

November 2017

0 250 500 1,000 Feet

Appendix B – Data

Riverside and West Riverside
Phosphorus Discharge Projections

Weekly P data Max [P] 0.14 mg/L

P concentration scaled up to account for uncertainty in intake P concentration. Capped at 0.14 mg/L based on past data.

West Riverside flows projected to be 65% of existing Riverside plant flows.

Assuming P based antiscalents added to RV process water. Monitoring data indicates that antiscalents add 60% to the P discharge load.

West Riverside P discharge assuming wastewater at 0.05 mg P/L, based on treatement system design.

Credit need, total projected P discharge minus 0.65 lb P/day

RV Actual Data (average CF of 0.62)						RV Flow (MGD) scaled Up for Cap Factor			West Riverside Flow (MGD) - 0.65 of RV			RV lbs P/Day no AntiScalent			RV lbs P/Day with AntiScalent			WRV lbs P/day at .05mg/L			Total lb P/day			Credits Needed		
Week of:	Well [P]	Outfall [P]	P scaled up	Flow (MGD)	P lb/day	70%	75%	80%	70%	75%	80%	70%	75%	80%	70%	75%	80%	70%	75%	80%	70%	75%	80%	70% NCF	75% NCF	80% NCF
1/4/2015		0.12	0.14	0.39	0.39	0.44	0.47	0.50	0.29	0.31	0.33	0.51	0.55	0.59	0.82	0.88	0.94	0.12	0.13	0.14	0.94	1.01	1.08	0.29	0.36	0.43
1/11/2015	<0.025	0.11	0.14	0.55	0.5	0.62	0.67	0.71	0.40	0.43	0.46	0.73	0.78	0.83	1.16	1.24	1.33	0.17	0.18	0.19	1.33	1.42	1.52	0.68	0.77	0.87
1/18/2015		0.11	0.14	0.59	0.54	0.67	0.71	0.76	0.43	0.46	0.49	0.78	0.83	0.89	1.24	1.33	1.42	0.18	0.19	0.21	1.42	1.53	1.63	0.77	0.88	0.98
1/25/2015		0.09	0.13	0.42	0.31	0.47	0.51	0.54	0.31	0.33	0.35	0.52	0.56	0.60	0.84	0.89	0.95	0.13	0.14	0.15	0.96	1.03	1.10	0.31	0.38	0.45
2/1/2015		0.08	0.12	0.5	0.33	0.56	0.60	0.65	0.37	0.39	0.42	0.56	0.60	0.64	0.89	0.96	1.02	0.15	0.16	0.17	1.05	1.12	1.20	0.40	0.47	0.55
2/8/2015		0.06	0.09	0.46	0.22	0.52	0.56	0.59	0.34	0.36	0.39	0.38	0.40	0.43	0.60	0.65	0.69	0.14	0.15	0.16	0.74	0.80	0.85	0.09	0.15	0.20
2/15/2015		0.09	0.13	0.56	0.39	0.63	0.68	0.72	0.41	0.44	0.47	0.67	0.72	0.77	1.08	1.15	1.23	0.17	0.18	0.20	1.25	1.34	1.43	0.60	0.69	0.78
3/1/2015		0.05	0.08	0.55	0.24	0.62	0.67	0.71	0.40	0.43	0.46	0.41	0.44	0.47	0.66	0.71	0.75	0.17	0.18	0.19	0.83	0.89	0.95	0.18	0.24	0.30
3/8/2015		0.06	0.09	0.58	0.28	0.65	0.70	0.75	0.43	0.46	0.49	0.48	0.51	0.54	0.76	0.81	0.87	0.18	0.19	0.20	0.94	1.00	1.07	0.29	0.35	0.42
3/15/2015		0.06	0.10	0.53	0.28	0.60	0.64	0.68	0.39	0.42	0.44	0.48	0.51	0.55	0.77	0.82	0.88	0.16	0.17	0.19	0.93	1.00	1.06	0.28	0.35	0.41
3/22/2015		0.09	0.13	0.44	0.33	0.50	0.53	0.57	0.32	0.35	0.37	0.55	0.59	0.63	0.88	0.95	1.01	0.13	0.14	0.15	1.02	1.09	1.17	0.37	0.44	0.52
3/29/2015		0.07	0.11	0.53	0.31	0.60	0.64	0.68	0.39	0.42	0.44	0.52	0.56	0.60	0.84	0.90	0.96	0.16	0.17	0.19	1.00	1.07	1.14	0.35	0.42	0.49
4/5/2015		0.07	0.11	0.17	0.1	0.19	0.21	0.22	0.12	0.13	0.14	0.17	0.18	0.19	0.27	0.29	0.31	0.05	0.06	0.06	0.32	0.34	0.37	-	-	-
4/12/2015		0.09	0.13	0.17	0.13	0.19	0.21	0.22	0.12	0.13	0.14	0.21	0.22	0.24	0.33	0.36	0.38	0.05	0.06	0.06	0.39	0.41	0.44	-	-	-
4/19/2015		0.11	0.14	0.34	0.31	0.38	0.41	0.44	0.25	0.27	0.29	0.45	0.48	0.51	0.72	0.77	0.82	0.10	0.11	0.12	0.82	0.88	0.94	0.17	0.23	0.29
5/3/2015		0.10	0.14	0.22	0.18	0.25	0.27	0.28	0.16	0.17	0.18	0.29	0.31	0.33	0.46	0.50	0.53	0.07	0.07	0.08	0.53	0.57	0.61	-	-	-
5/10/2015		0.13	0.14	0.38	0.41	0.43	0.46	0.49	0.28	0.30	0.32	0.50	0.54	0.57	0.80	0.86	0.92	0.12	0.12	0.13	0.92	0.98	1.05	0.27	0.33	0.40
5/17/2015		0.10	0.14	0.53	0.45	0.60	0.64	0.68	0.39	0.42	0.44	0.70	0.75	0.80	1.12	1.20	1.28	0.16	0.17	0.19	1.28	1.37	1.46	0.63	0.72	0.81
5/24/2015		0.11	0.14	0.55	0.51	0.62	0.67	0.71	0.40	0.43	0.46	0.73	0.78	0.83	1.16	1.24	1.33	0.17	0.18	0.19	1.33	1.42	1.52	0.68	0.77	0.87
5/31/2015		0.12	0.14	0.57	0.57	0.64	0.69	0.74	0.42	0.45	0.48	0.75	0.81	0.86	1.20	1.29	1.37	0.17	0.19	0.20	1.38	1.48	1.57	0.73	0.83	0.92
6/7/2015		0.14	0.14	0.56	0.65	0.63	0.68	0.72	0.41	0.44	0.47	0.74	0.79	0.84	1.18	1.27	1.35	0.17	0.18	0.20	1.35	1.45	1.55	0.70	0.80	0.90
6/14/2015		0.12	0.14	0.46	0.46	0.52	0.56	0.59	0.34	0.36	0.39	0.61	0.65	0.69	0.97	1.04	1.11	0.14	0.15	0.16	1.11	1.19	1.27	0.46	0.54	0.62
6/21/2015	0.019	0.09	0.14	0.38	0.3	0.43	0.46	0.49	0.28	0.30	0.32	0.50	0.54	0.57	0.80	0.86	0.92	0.12	0.12	0.13	0.92	0.98	1.05	0.27	0.33	0.40
7/5/2015	0.016	0.09	0.13	0.6	0.44	0.68	0.73	0.77	0.44	0.47	0.50	0.75	0.81	0.86	1.21	1.29	1.38	0.18	0.20	0.21	1.39	1.49	1.59	0.74	0.84	0.94
7/12/2015	0.016	0.06	0.09	0.7	0.35	0.79	0.85	0.90	0.51	0.55	0.59	0.59	0.64	0.68	0.95	1.02	1.08	0.21	0.23	0.24	1.16	1.25	1.33	0.51	0.60	0.68
7/19/2015	<0.0074	0.01	0.02	0.68	0.07	0.77	0.82	0.88	0.50	0.53	0.57	0.12	0.12	0.13	0.18	0.20	0.21	0.21	0.22	0.24	0.39	0.42	0.45	-	-	-
7/26/2015	<0.0074	0.05	0.07	0.74	0.3	0.84	0.90	0.95	0.54	0.58	0.62	0.50	0.54	0.57	0.80	0.86	0.92	0.23	0.24	0.26	1.03	1.10	1.18	0.38	0.45	0.53
8/2/2015	<0.0074	0.04	0.06	0.56	0.18	0.63	0.68	0.72	0.41	0.44	0.47	0.31	0.33	0.35	0.49	0.53	0.56	0.17	0.18	0.20	0.66	0.71	0.76	0.01	0.06	0.11
8/9/2015	<0.0074	0.04	0.06	0.64	0.23	0.72	0.77	0.83	0.47	0.50	0.54	0.39	0.42	0.44	0.62	0.67	0.71	0.20	0.21	0.22	0.82	0.88	0.93	0.17	0.23	0.28
8/16/2015	<0.0074	0.10	0.14	0.56	0.08	0.63	0.68	0.72	0.41	0.44	0.47	0.74	0.79	0.84	1.18	1.27	1.35	0.17	0.18	0.20	1.35	1.45	1.55	0.70	0.80	0.90
8/23/2015	<0.0074	0.05	0.08	0.48	0.2	0.54	0.58	0.62	0.35	0.38	0.40	0.34	0.36	0.39	0.54	0.58	0.62	0.15	0.16	0.17	0.69	0.74	0.79	0.04	0.09	0.14
9/6/2015	<0.0074	0.06	0.08	0.51	0.23	0.58	0.62	0.66	0.37	0.40	0.43	0.40	0.42	0.45	0.63	0.68	0.72	0.16	0.17	0.18	0.79	0.85	0.90	0.14	0.20	0.25
9/13/2015		0.05	0.08	0.59	0.27	0.67	0.71	0.76	0.43	0.46	0.49	0.45	0.48	0.51	0.72	0.77	0.82	0.18	0.19	0.21	0.90	0.96	1.03	0.25	0.31	0.38
9/20/2015	0.02	0.10	0.14	0.64	0.55	0.72	0.77	0.83	0.47	0.50	0.54	0.84	0.90	0.96	1.35	1.45	1.54	0.20	0.21	0.22	1.55	1.66	1.77	0.90	1.01	1.12
10/4/2015	0.018	0.10	0.14	0.61	0.51	0.69	0.74	0.79	0.45	0.48	0.51	0.80	0.86	0.92	1.29	1.38	1.47	0.19	0.20	0.21	1.47	1.58	1.68	0.82	0.93	1.03
10/11/2015	0.066	0.11	0.14	0.24	0.22	0.27	0.29	0.31	0.18	0.19	0.20	0.32	0.34	0.36	0.51	0.54	0.58	0.07	0.08	0.08	0.58	0.62	0.66	-	-	0.01
10/25/2015		0.08	0.12	0.02	0.01	0.02	0.02	0.03	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.04	0.04	0.01	0.01	0.01	0.04	0.04	0.05	-	-	-
11/8/2015	0.025	0.07	0.10	0.19	0.11	0.21	0.23	0.25	0.14	0.15	0.16	0.18	0.19	0.20	0.28	0.30	0.32	0.06	0.06	0.07	0.34	0.37	0.39	-	-	-
11/15/2015		0.05	0.08	0.32	0.14	0.36	0.39	0.41	0.23	0.25	0.27	0.23	0.25	0.26	0.37	0.40	0.42	0.10	0.10	0.11	0.47	0.50	0.53	-	-	-
11/22/2015	0.025	0.06	0.09	0.35	0.17	0.40	0.42	0.45	0.26	0.28	0.29	0.29	0.31	0.33	0.47	0.50	0.53	0.11	0.11	0.12	0.57	0.61	0.66	-	-	0.01
11/29/2015	0.013	0.07	0.11	0.53	0.32	0.60	0.64	0.68	0.39	0.42	0.44	0.54	0.58	0.62	0.86	0.92	0.99	0.16	0.17	0.19	1.02	1.10	1.17	0.37	0.45	0.52
12/13/2015		0.07	0.10	0.55	0.31	0.62	0.67	0.71	0.40	0.43	0.46	0.53	0.57	0.60	0.85	0.91	0.97	0.17	0.18	0.19	1.01	1.09	1.16	0.36	0.44	0.51
12/20/2015	0.011	0.06	0.10	0.58	0.31	0.65	0.70	0.75	0.43	0.46	0.49	0.52	0.56	0.60	0.84	0.90	0.96	0.18	0.19	0.20	1.02	1.09	1.16	0.37	0.44	0.51
12/27/2015	0.015	0.06	0.09	0.54	0.28	0.61	0.65	0.70	0.40	0.42	0.45	0.47	0.51	0.54	0.76	0.81	0.86	0.17	0.18	0.19	0.92	0.99	1.05	0.27	0.34	0.40
1/3/2016	0.015	0.07	0.10	0.45	0.24	0.51	0.54	0.58	0.33	0.35	0.38	0.41	0.44	0.47	0.66	0.71	0.76	0.14	0.15	0.16	0.80	0.86	0.91	0.15	0.21	0.26
1/10/2016	0.013	0.06	0.09	0.37	0.18	0.42	0.45	0.48	0.27	0.29	0.31	0.30	0.32	0.34	0.48	0.51	0.54	0.11	0.12	0.13	0.59	0.63	0.67	-	-	0.02
1/17/2016	<0.0074	0.05	0.08	0.52	0.23	0.59	0.63	0.67	0.38	0.41	0.44	0.40	0.42	0.45	0.63	0.68	0.73	0.16	0.17	0.18	0.79	0.85	0.91	0.14	0.20	0.26
1/24/2016	0.016	0.06	0.09	0.51	0.24	0.58	0.62	0.66	0.37	0.40	0.43	0.41	0.44	0.47	0.66	0.70	0.75	0.16	0.17	0.18	0.81	0.87	0.93	0.16	0.22	0.28
1/31/2016	0.026	0.06	0.08	0.54	0.25	0.61	0.65	0.70	0.40	0.42	0.45	0.42	0.45	0.48	0.67	0.72	0.77	0.17	0.18	0.19	0.84	0.90	0.96	0.19	0.25	0.31
2/7/2016	0.0077	0.05	0.08	0.44	0.18	0.50	0.53	0.57	0.32	0.35	0.37	0.31	0.33	0.36	0.50	0.53	0.57	0.13	0.14	0.15	0.63	0.68	0.72	-	0.03	0.07
2/14/2016	0.012	0.07	0.10	0.55	0.31	0.62	0.67	0.71	0.40	0.43	0.46	0.53	0.57	0.60	0.85	0.91	0.97	0.17	0.18	0.19	1.01	1.09	1.16	0.36	0.44	0.51
2/28/2016	0.049	0.07	0.11	0.55	0.32	0.62	0.67	0.71	0.40	0.43	0.46	0.55	0.59	0.63	0.88	0.95	1.01	0.17	0.18	0.19	1.05	1.13	1.20	0.40	0.48	0.55
3/6/2016	0.05	0.07	0.10	0.63	0.36	0.71	0.76	0.81	0.46	0.50	0.53	0.61	0.66	0.70	0.98	1.05	1.12	0.19	0.21	0.22	1.18	1.26	1.34	0.53	0.61	0.69
3/13/2016	0.03	0.06	0.09	0.65	0.31	0.73	0.79	0.84	0.48	0.51	0.55	0.52	0.56	0.60	0.84	0.90	0.96	0.20	0.21	0.23	1.04	1.11	1.18	0.39	0.46	0.53
3/20/2016	0.013	0.05	0.08	0.61	0.27	0.69	0.74	0.79	0.45	0.48	0.51	0.47	0.50	0.53	0.74	0.80	0.85	0.19	0.20	0.21	0.93	1.00	1.06	0.28	0.35	0.41
3/27/2016	0.0077	0.06	0.08	0.65	0.3	0.73	0.79	0.84	0.48	0.51	0.55	0.51	0.55	0.59	0.82	0.88	0.94	0.20	0.21	0.23	1.02	1.09	1.17	0.37	0.44	0.52
4/3/2016	0.022	0.07	0.10	0.53	0.3	0.60	0.64	0.68	0.39	0.42	0.44	0.51	0.55	0.58	0.81	0.87	0.93	0.16	0.17	0.19	0.98	1.05	1.12	0.33	0.40	0.47
4/10/2016	0.0084	0.02	0.04	0.2	0.04	0.23	0.24	0.26	0.15	0.16	0.17	0.07	0.07	0.08	0.11	0.12	0.12	0.06	0.07	0.07	0.17	0.18	0.19	-	-	-
4/17/2016		0.06	0.09	0.03	0.02	0.03	0.04	0.04	0.02	0.02	0.03	0.02	0.03	0.03	0.04	0.04	0.04	0.01	0.01	0.01	0.05	0.05	0.05	-	-	-
4/24/2016	0.028	0.03	0.05	0.24	0.07	0.27	0.29	0.31	0.18	0.19	0.20	0.12	0.12	0.13	0.18	0.20	0.21	0.07	0.08	0.08	0.26	0.28	0.29	-	-	-
5/1/2016	0.017	0.06	0.09	0.55	0.27	0.62	0.67	0.71	0.40	0.43	0.46	0.47	0.50	0.53	0.75	0.80	0.85	0.17	0.18	0.19	0.91	0.98	1.04	0.26	0.33	0.39
5/15/2016	<0.0074	0.06	0.09	0.74	0.36	0.84	0.90	0.95	0.54	0.58	0.62	0.61	0.65	0.69	0.97	1.04	1.11	0.23	0.24	0.26	1.20	1.28	1.37	0.55	0.63	0.72
5/22/2016	<0.0074	0.07	0.11	0.72	0.45	0.81	0.87	0.93	0.53	0.57	0.60	0.76	0.82	0.87	1.22	1.31	1.39	0.22	0.24	0.25	1.44	1.54	1.65	0.79	0.89	1.00
6/5/2016	0.019	0.06	0.09	0.6	0.3	0.68	0.73	0.77	0.44	0.47	0.50	0.52	0.55	0.59	0.83	0.89	0.95	0.18	0.20	0.21	1.01	1.08	1.16	0.36	0.43	0.51
6/19/2016	0.016	0.08	0.11	0.61	0.39	0.69	0.74	0.79	0.45	0.48	0.51	0.65	0.70	0.75	1.05	1.12	1.20	0.19	0.20	0.21	1.23	1.32	1.41	0.58	0.67	0.76
6/26/2016	<0.015	0.04	0.06	0.57	0.19	0.64	0.69	0.74	0.42	0.45	0.48	0.32	0.35	0.37	0.52	0.55	0.59	0.17	0.19	0.20	0.69	0.74	0.79	0.04	0.09	0.14
7/3/2016	0.017	0.06	0.09	0.6	0.29	0.68	0.73	0.77	0.44	0.47	0.50	0.49	0.53	0.56	0.79	0.84	0.90	0.18	0.20	0.21	0.97	1.04	1.11	0.32	0.39	0.46
7/10/2016		0.05	0.07	0.61	0.24	0.69	0.74	0.79	0.45	0.48	0.51	0.40	0.43	0.46	0.65	0.69	0.74	0.19	0.20	0.21	0.83	0.89	0.95	0.18	0.24	0.30
7/17/2016	0.017	0.05	0.08	0.75	0.31	0.85	0.91	0.97	0.55	0.59	0.63	0.53	0.57	0.61	0.85	0.91	0.97	0.23	0.25	0.26	1.08	1.15	1.23	0.43	0.50	0.58
7/24/2016		0.05	0.08	0.74	0.32	0.84	0.90	0.95	0.54	0.58	0.62	0.54	0.58	0.62	0.87	0.93	0.99	0.23	0.24	0.26	1.10	1.17	1.25	0.45	0.52	0.60
8/7/2016	<0.015	0.07	0.11	0.77	0.47	0.87	0.93	0.99	0.57	0.61	0.65	0.80	0.86	0.92	1.29	1.38	1.47	0.24	0.25	0.27	1.52	1.63	1.74	0.87	0.98	1.09
8/14/2016	<0.015	0.05	0.08	0.75	0.34	0.85	0.91	0.97	0.55	0.59	0.63	0.57	0.61	0.65	0.92	0.98	1.05	0.23	0.25	0.26	1.14	1.23	1.31	0.49	0.58	0.66
8/21/2016	<0.015	0.09	0.14	0.6	0.45	0.68	0.73	0.77	0.44	0.47	0.50	0.76	0.82	0.87	1.22	1.31	1.39	0.18	0.20	0.21	1.40	1.50	1.60	0.75	0.85	0.95
8/28/2016	<0.015	0.04	0.07	0.65	0.24	0.73	0.79	0.84	0.48	0.51	0.55	0.40	0.43	0.46	0.65	0.69	0.74	0.20	0.21	0.23	0.85	0.91	0.97	0.20	0.26	0.32

Abbreviations

RV- Riverside Plant (existing)
WRV - West Riverside Plant (new)
CF- Capacity Factor
P - Phosphorus
[P] - Phosphorus Concentration

Assumed % days discharging per month: 70%

Existing Riverside - Projected P Discharge (lb/day)

Average daily discharge by month estimated from outfall monitoring data

Month	70% CF	75% CF	80% CF
1	0.796	0.853	0.910
2	0.799	0.856	0.914
3	0.811	0.869	0.926
4	0.352	0.377	0.403
5	0.960	1.029	1.097
6	0.890	0.954	1.018
7	0.787	0.843	0.899
8	0.864	0.925	0.987
9	0.901	0.966	1.030
10	0.609	0.653	0.696
11	0.495	0.531	0.566
12	0.814	0.872	0.930
Average	**0.769**	**0.824**	**0.879**
Min	0.352	0.377	0.403
Max	0.960	1.029	1.097

Existing Riverside - Projected P Discharge (lb/month)

Days/Mo	Days Running	70% NCF	75% NCF	80% NCF
31	22	17.51	18.76	20.01
28	20	15.99	17.13	18.27
31	22	17.83	19.11	20.38
30	21	7.40	7.93	8.46
31	22	21.12	22.63	24.14
30	21	18.70	20.04	21.37
31	22	17.31	18.55	19.78
31	22	19.00	20.36	21.71
30	21	18.93	20.28	21.63
31	22	13.40	14.36	15.32
30	21	10.40	11.14	11.89
31	22	17.90	19.18	20.46
lbs discharged		***195.49***	***209.45***	***223.41***

West Riverside - Projected P Discharge (lb/day)

Average daily discharge by month estimated from plant design

Month	70% CF	75% CF	80% CF
1	0.148	0.158	0.169
2	0.156	0.167	0.178
3	0.176	0.188	0.201
4	0.073	0.079	0.084
5	0.163	0.175	0.186
6	0.162	0.174	0.185
7	0.207	0.222	0.237
8	0.192	0.205	0.219
9	0.177	0.190	0.203
10	0.089	0.095	0.101
11	0.106	0.114	0.122
12	0.170	0.183	0.195
Average	**0.156**	**0.167**	**0.179**
Min	0.073	0.079	0.084
Max	0.207	0.222	0.237

West Riverside - Projected P Discharge (lb/month)

Days/Mo	Days Running	70% NCF	75% NCF	80% NCF
31	22	3.25	3.48	3.71
28	20	3.12	3.34	3.57
31	22	3.87	4.14	4.42
30	21	1.54	1.65	1.76
31	22	3.59	3.84	4.10
30	21	3.41	3.65	3.89
31	22	4.56	4.89	5.21
31	22	4.22	4.52	4.82
30	21	3.73	3.99	4.26
31	22	1.95	2.09	2.23
30	21	2.23	2.39	2.55
31	22	3.75	4.02	4.28
lbs discharged		***39.21***	***42.01***	***44.81***

Combined Projected P Discharge (lb/day)

Month	70% CF	75% CF	80% CF
1	0.943	1.011	1.078
2	0.955	1.024	1.092
3	0.986	1.057	1.127
4	0.426	0.456	0.487
5	1.123	1.203	1.283
6	1.053	1.128	1.203
7	0.994	1.065	1.136
8	1.055	1.131	1.206
9	1.079	1.156	1.233
10	0.698	0.748	0.798
11	0.602	0.645	0.688
12	0.984	1.054	1.124
Average	**0.908**	**0.973**	**1.038**

Total Projected P Discharge (lb/month)

Days/Mo	Days Running	70% NCF	75% NCF	80% NCF	Compliance
31	22	20.76	22.24	23.72	**20.15**
28	20	19.11	20.47	21.84	**18.20**
31	22	21.70	23.25	24.80	**20.15**
30	21	8.94	9.58	10.22	**19.50**
31	22	24.71	26.47	28.24	**20.15**
30	21	22.11	23.69	25.26	**19.50**
31	22	21.87	23.43	25.00	**20.15**
31	22	23.21	24.87	26.53	**20.15**
30	21	22.65	24.27	25.89	**19.50**
31	22	15.36	16.45	17.55	**20.15**
30	21	12.63	13.54	14.44	**19.50**
31	22	21.65	23.19	24.74	**20.15**
lbs discharged		***234.69***	***251.46***	***268.22***	***237.25***

* - red boxes indicate discharge higher than permitted limits (compliance column)

Total Credit Need (lb/day)

Month	70% CF	75% CF	80% CF
1	0.293	0.361	0.428
2	0.305	0.374	0.442
3	0.336	0.407	0.477
4	-	-	-
5	0.473	0.553	0.633
6	0.403	0.478	0.553
7	0.344	0.415	0.486
8	0.405	0.481	0.556
9	0.429	0.506	0.583
10	0.048	0.098	0.148
11	-	-	0.038
12	0.334	0.404	0.474
Average	**0.281**	**0.340**	**0.402**

* - calculations are lb/day discharged minus 0.65 lb (assumes plant would be discharging every day at the projected level)

Total Projected P Discharge (lb/month)

Days/Mo	Days Running	70% NCF	75% NCF	80% NCF
31	22	6.46	7.94	9.42
28	20	6.11	7.47	8.84
31	22	7.40	8.95	10.50
30	21	-	-	-
31	22	10.41	12.17	13.94
30	21	8.46	10.04	11.61
31	22	7.57	9.13	10.70
31	22	8.91	10.57	12.23
30	21	9.00	10.62	12.24
31	22	1.06	2.15	3.25
30	21	-	-	0.79
31	22	7.35	8.89	10.44
Total Credit Need		***72.72***	***87.94***	***103.95***

Total Credit Need (lb/day, lb discharged - 0.65)

Month	Existing 80% CF	West Riverside 80% CF	Total (lb/day) 80% CF	Permitted (lb/day)	Credit need (lb/day)	Total Credits (lb)
1	0.91	0.17	1.08	0.65	0.43	9.42
2	0.91	0.18	1.09	0.65	0.44	8.84
3	0.93	0.20	1.13	0.65	0.48	10.50
4	0.40	0.08	0.49	0.65	-	-
5	1.10	0.19	1.28	0.65	0.63	13.94
6	1.02	0.19	1.20	0.65	0.55	11.61
7	0.90	0.24	1.14	0.65	0.49	10.70
8	0.99	0.22	1.21	0.65	0.56	12.23
9	1.03	0.20	1.23	0.65	0.58	12.24
10	0.70	0.10	0.80	0.65	0.15	3.25
11	0.57	0.12	0.69	0.65	0.04	0.79
12	0.93	0.19	1.12	0.65	0.47	10.44
Average	**0.88**	**0.18**	**1.04**	**0.65**	**Total**	**103.95**

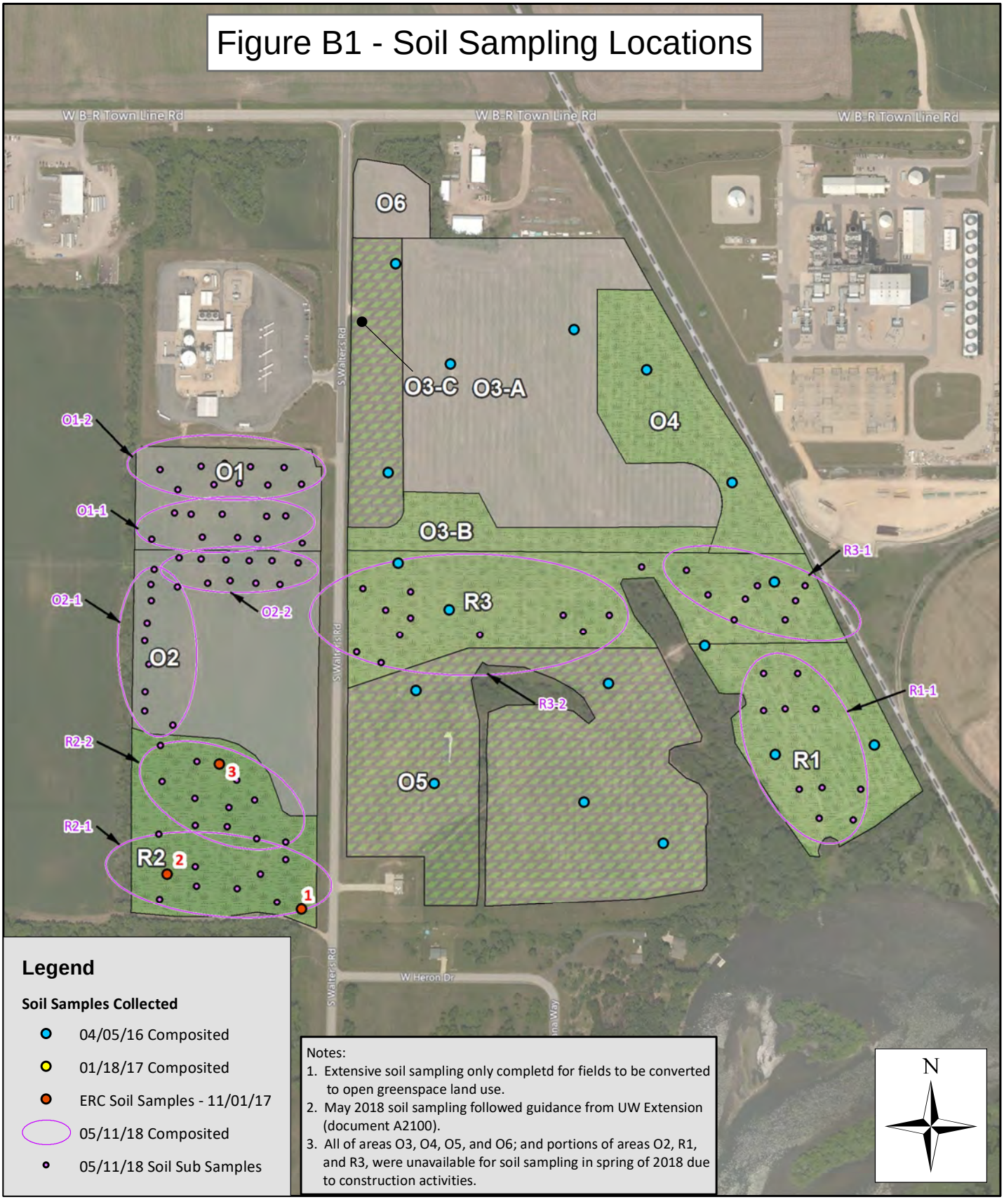
* - Total credit calculations assuming plant is operation 70% of the month

Soil Testing Results

Riverside Energy Center P Trading Plan
Town of Beloit, Rock County, WI
Alliant Energy WP&L

Montgomery Associates:
Resource Solutions, LLC
119 South Main St., Suite A
Cottage Grove, WI 53527

Figure B1 - Soil Sampling Locations



Legend

Soil Samples Collected

- 04/05/16 Composited
- 01/18/17 Composited
- ERC Soil Samples - 11/01/17
- 05/11/18 Composited
- 05/11/18 Soil Sub Samples

Notes:
1. Extensive soil sampling only completd for fields to be converted to open greenspace land use.
2. May 2018 soil sampling followed guidance from UW Extension (document A2100).
3. All of areas O3, O4, O5, and O6; and portions of areas O2, R1, and R3, were unavailable for soil sampling in spring of 2018 due to construction activities.

N

May 2018

0 250 500 1,000 Feet

Samples Analyzed By:
Soil & Forage Analysis Lab
2611 Yellowstone Dr
Marshfield, WI 54449
phone: (715) 387-2523

SOIL TEST REPORT

COOPERATIVE EXTENSION
University of Wisconsin-Extension
University of Wisconsin-Madison
Department of Soil Science

Results also available on-line at http://uwlab.soils.wisc.edu/reports
lab number: 2112 access code: zvy6x

LAB #: 2112

This Report is for:
Ryan Stenjem

Montgomery Associates-Resource Solutions - Ryan Stenjem
119 S Main St
Cottage Grove, WI 53527

County	Account No.
Rock	558424

Date Received	Date Processed
4/12/2016	4/13/2016

Slope	Acres	Plow Depth	Irrigated
4%	81	12"	No

Soil Name: Lorenzo — Tiled: No
loamy soil/medium yield potential
Field Name: 101
Previous Crop: Soybean, grain

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	Crop Nutrient Need P2O5	Crop Nutrient Need K2O	Fertilzer Credit Legume N	Fertilzer Credit Manure N	Fertilzer Credit P2O5	Fertilzer Credit K2O	Nutrients to Apply N	Nutrients to Apply P2O5	Nutrients to Apply K2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Soybean, grain	36-45 bu	0	60	85	0	0	0	0	0	60	85
Wheat, grain + straw	61-80 bu	see below	75	120	0	0	0	0	see below	75	120
Soybean, grain	36-45 bu	0	60	85	0	0	0	0	0	60	85
Wheat, grain + straw	61-80 bu	see below	75	120	0	0	0	0	see below	75	120

The lime required for this rotation to reach pH 6.3 is 2 T/a of 60-69 lime or 1.5 T/a of 80-89 lime.

SUGGESTED N APPLICATION RATES FOR WHEAT AT DIFFERENT N:WHEAT PRICE RATIOS

Loamy Soils		N:Wheat Price Ratio ($/lb N:$/bu) 0.05		0.075		0.1		0.125	
Previous Crop	PPNT	Rate	Range	Rate	Range	Rate	Range	Rate	Range
		lb N/a (Total to Apply)[1]							
Corn	< 50[2] or none	75	65-85	70	55-80	60	50-70	55	40-65
Corn	51 to 100	45	35-55	40	30-50	35	25-40	30	20-35
Corn	> 100	0	0-0	0	0-0	0	0-0	0	0-0
Soybean, Small grain	All[3]	55	45-65	50	40-60	45	35-50	40	35-45

[1] On loamy soils with < 2% organic matter, add 30 lb N/a to all rates. On soils with more than 10% organic matter, reduce rates by 30 lb N/a. Reduce N rates by 10 lb N/a for spring wheat on all soils. No N is required on organic soils. Manure N credits must be subtracted from these values.
[2] If wheat follows a forage legume or leguminous vegetable, use the MRTN rate for wheat following corn with PPNT < 50 and take the legume credit.
[3] Previous crop soybean or small grain: If a PPNT is taken and the PPNT is < 50 lb N/a, use the top end of the profitable range; if the PPNT is 51 to 100 lb N/a, use the bottom end of the profitable range; if the PPNT is > 100 lb N/a, no additional N is needed. Do not take a soybean legume credit.

For more information on the new N application rate guidelines for wheat see http://uwlab.soils.wisc.edu/pubs/MRTN/

ADDITIONAL INFORMATION

Parts of this field may not benefit from liming. Please see the unadjusted lime requirements in the Laboratory Analysis section below.

If lime has been applied in the last two years, more lime may not be needed due to incomplete reaction.

Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.

SOIL TEST INTERPRETATION FOR CROPPING SEQUENCE

	Very Low	Low	Optimum	High	Very High	Excessive
Phosphorus	PPPPPPPPPPPPPPPPPPPPPPPPPPPPP					
Potassium	KKKKKKKKKKKKKKKKKKKKKKKKK					
Rotation pH	XXXXXXXXXXXXXXXXXXXXXXXX					

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M %	Phosphorus ppm	Potassium ppm	60-69 Lime Req (T/a)	Calcium ppm	Magnesium ppm	Est. CEC (cmol/kg)	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm		Texture Code	Sample Density	Buffer pH
1	5.5	2.5	27	136	3.4									2	1.19	6.6
2	6.3	2.1	7	68	0									2	1.22	6.9
Adjusted Averages	5.9	2.3	17	102												

Notes:
1. Composite Samples For Fields O3, O4, O5, O6, R1, and R3 collected in April 2016.
2. Sample 1 - Top 8" of soil profile. Sample 2 - 8-12" depth of soil profile (not used in analysis)
3. See Figure B2 for approximate locations

Samples Analyzed By:
Soil & Forage Analysis Lab
2611 Yellowstone Dr
Marshfield, WI 54449
phone: (715) 387-2523

SOIL TEST REPORT

COOPERATIVE EXTENSION
University of Wisconsin-Extension
University of Wisconsin-Madison
Department of Soil Science

Results also available on-line at http://not available
lab number: 1110 access code: 653pk

LAB #: 1110

County	Account No.
Rock	558424

Date Received	Date Processed
1/20/2017	1/23/2017

Montgomery Associates-Resource Solutions - Ryan Stenjem
119 S Main St
Cottage Grove, WI 53527

This Report is for:
Ryan Stenjem

Slope	Acres	Plow Depth	Irrigated
3%	30	12"	No

Soil Name: Lorenzo — Tiled: No
loamy soil/medium yield potential

Field Name: 101

Previous Crop: Soybean, grain

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need			Fertilzer Credit				Nutrients to Apply		
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Corn, grain	151-170 bu	see below	0	75	0	0	0	0	see below	0	75
Soybean, grain	46-55 bu	0	0	100	0	0	0	0	0	0	100
Corn, grain	151-170 bu	see below	0	75	0	0	0	0	see below	0	75
Soybean, grain	46-55 bu	0	0	100	0	0	0	0	0	0	100

There is no lime recommendation.

SUGGESTED N APPLICATION RATES FOR CORN (GRAIN) AT DIFFERENT N:CORN PRICE RATIOS

Previous Crop	N:Corn Price Ratio ($/lb N:$/bu)							
Medium Yield Potential Soils	0.05		0.10		0.15		0.20	
	Rate[1]	Range	Rate[1]	Range	Rate[1]	Range	Rate[1]	Range
	lb N/a (Total to Apply)[2]							
Corn, Forage legumes, Leguminous vegetables, Green manures[3]	145	130-160	125	115-140	115	105-125	105	95-110
Soybean, Small grains[4]	130	110-150	100	85-120	85	70-95	70	60-80

[1] Rate is the N rate that provides the maximum return to N (MRTN). Range is the range of profitable N rates that provide an economic return to N within $1/a of the MRTN.
[2] These rates are for total N applied including N in starter fertilizer and N used in herbicide applications.
[3] Subtract N credits for forage legumes, leguminous vegetables, green manures and animal manures. This includes 1st, 2nd and 3rd year credits where applicable. Do not subtract N credits for leguminous vegetables on sand and loamy sand soils.
[4] Subtract N credits for animal manures and 2nd year forage legumes.

<u>Guidelines for choosing an appropriate N application rate for corn (grain)</u>

1) If there is more than 50% residue cover at planting, use the upper end of the range.
2) If 100% of the N will come from organic sources, use the top end of the range. In addition, up to 20 lb N/a in starter fertilizer may be applied in this situation.
3) For medium and fine textured soils with 10% or more organic matter, use the low end of the range; for medium and fine textured soils with less than 2% organic matter, use the high end of the range.
4) If there is a likelihood of residual N, then use the low end of the range or use the high end of the range and subtract preplant nitrate test (PPNT) credits.
5) For corn following small grains on medium and fine textured soils, the middle to low end of the range is most appropriate.

For more information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN/

ADDITIONAL INFORMATION

Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spring.

Because of excessively high P levels, no P_2O_5 fertilizer or manure is recommended on this field.

Year 1,3: If corn is harvested for silage instead of grain apply extra 90 lbs K_2O per acre to next crop.

SOIL TEST INTERPRETATION FOR CROPPING SEQUENCE

	Very Low	Low	Optimum	High	Very High	Excessive
Phosphorus	PPPPPPPPPPPPPPP	PPPPPPPPPPPPPPP	PPPPPPPPPPPPPPPPPP	PPPPPPPPPPPPPP	PPPPPPPPPPPPPP	PPPPPPPPPPPPPP
Potassium	KKKKKKKKK	KKKKKKKKK				
Rotation pH	XXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXX	XXXXXXXXXX			

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M %	Phosphorus ppm	Potassium ppm	60-69 Lime Req (T/a)	Calcium ppm	Magnesium ppm	Est. CEC (cmol/kg)	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm		Texture Code	Sample Density	Buffer pH
1	6.1	1.9	280	80	0									2	1.18	6.7
Adjusted Averages	6.1	1.9	280	80												

Notes:
1. Composite Samples For Fields O1, O2, and R2, collected in January 2017.
2. Sample 1 - Top 12" of soil profile.
3. See Figure B2 for approximate locations.

Soil Test Report - Field: Alliant SW Green Spa

ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

Account: 1913
Eco-Resource Consulting, Inc.
2554 County Road N
Stoughton, WI 53589

Report For:
PN 17165 MARS Beloit/Alliant Restoration

Town Line Road
Beloit, WI 53511

Lab #204803
County ROCK

Received 11/1/2017
Slope 0%
Field
Alliant SW Green Spa
Acres
Plow Depth 7.0
Soil Name
unknown
Previous Crop
Soybean, grain

Nutrient Recommendations

Cropping Sequence	Yield Goal (per acre)	Crop Nutrient Need (lbs/acre)			Fertilizer Credit (lbs/acre)				Nutrients to Apply(lbs/acre)		
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O
CRP, grass	n/a	0	0	45	20	0	0	0	0	0	45

There is no lime recommendation. Please see Additional Information below.

Laboratory Analysis for Field Alliant SW Green Spa, Lab No 204803

Sample Num	Soil pH	Om %	P ppm	K ppm	60-69 Lime Req(T/a)	Ca ppm	Mg ppm	Est Cec	B ppm	Mn ppm	Zn ppm	Sulfate-S ppm	Texture Code	Sample Density	Buffer Code
1	7.0	1.7	99	83		1220	373	10					2	1.13	N.R.
2	5.1	1.8	368	37	2.8	751	125	5					2	1.21	6.4
3	5.7	0.9	111	44		540	126	5					1	0.96	6.7
Adj Avg	**5.9**	**1.5**	**193**	**41**		**837**	**208**								

Additional Information, Secondary & Micronutrient Recommendations

First year legume N credit is based on a previous poor stand of soybean, grain with less than 8" of regrowth, as specified on sample submission form.
N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
Because of excessively high P levels, no P2O5 fertilizer or manure is recommended on this field.
Parts of this field may benefit from liming. Please see the unadjusted lime requirements in the Laboratory Analysis section below.
Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.
For CRP crops in the seeding year only, apply some nitrogen (15–30 lb N/a). See table 6.3 in publication A2809 for specific rates.
Nitrogen rate guidelines for corn can not be provided without knowledge of the soil series or county/soil map unit. Please consult Chapters 4 and 6 in UWEX Publication A2809 for more detail.
Ca - Opt Mg-Opt
%Base Saturation: Ca 69.8% Mg 28.4% K 1.7%
1: NO3=3.02ppm
2: NO3=10.92ppm
3: NO3=2.61ppm
Response to added Ca is unlikely.
Soil Mg is optimum. Maintain level with dolomitic lime.

Test Interpretation for Field Alliant SW Green Spa, Lab No 204803

Crop Name	Very Low	Low	Optimum	High	Very High	Excessive	Very Low	Low	Optimum	High	Very High	Excessive
CRP, grass	P						K					
Rotation pH	pH											

Notes:
1. Test pit samples For Field R2 collected by ERC in November 2017.
2. See Figure B2 for approximate locations.

Samples Analyzed By:
Soil & Forage Analysis Lab
2611 Yellowstone Dr
Marshfield, WI 54449
phone: (715) 387-2523

LAB #: 2472

SOIL TEST REPORT

Results also available on-line at http://not available
lab number: 2472 access code: 48tw8

COOPERATIVE EXTENSION
University of Wisconsin-Extension
University of Wisconsin-Madison
Department of Soil Science

Montgomery Associates-Resource Solutions - Ryan Stenjem
119 S Main St
Cottage Grove, WI 53527

This Report is for:
Montgomery Associates

County: Rock
Account No.: 558424
Date Received: 5/11/2018
Date Processed: 5/14/2018
Slope: 2.1%
Acres: 6
Plow Depth: 12"
Irrigated: No
Soil Name: Lorenzo
Tiled: No
loamy soil/medium yield potential
Field Name: O1
Previous Crop: no crop

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need			Fertilzer Credit				Nutrients to Apply		
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Corn, grain	151-170 bu	see below	0	45	0	0	0	0	see below	0	45
Soybean, grain	46-55 bu	0	0	70	0	0	0	0	0	0	70
Corn, grain	151-170 bu	see below	0	45	0	0	0	0	see below	0	45
Soybean, grain	46-55 bu	0	0	70	0	0	0	0	0	0	70

There is no lime recommendation.

SUGGESTED N APPLICATION RATES FOR CORN (GRAIN) AT DIFFERENT N:CORN PRICE RATIOS

Previous Crop	N:Corn Price Ratio ($/lb N:$/bu)							
Medium Yield Potential Soils	0.05		0.10		0.15		0.20	
	Rate[1]	Range	Rate[1]	Range	Rate[1]	Range	Rate[1]	Range
	lb N/a (Total to Apply)[2]							
Corn, Forage legumes, Leguminous vegetables, Green manures[3]	145	130-160	125	115-140	115	105-125	105	95-110
Soybean, Small grains[4]	130	110-150	100	85-120	85	70-95	70	60-80

[1] Rate is the N rate that provides the maximum return to N (MRTN). Range is the range of profitable N rates that provide an economic return to N within $1/a of the MRTN.
[2] These rates are for total N applied including N in starter fertilizer and N used in herbicide applications.
[3] Subtract N credits for forage legumes, leguminous vegetables, green manures and animal manures. This includes 1st, 2nd and 3rd year credits where applicable. Do not subtract N credits for leguminous vegetables on sand and loamy sand soils.
[4] Subtract N credits for animal manures and 2nd year forage legumes.

Guidelines for choosing an appropriate N application rate for corn (grain)

1) If there is more than 50% residue cover at planting, use the upper end of the range.
2) If 100% of the N will come from organic sources, use the top end of the range. In addition, up to 20 lb N/a in starter fertilizer may be applied in this situation.
3) For medium and fine textured soils with 10% or more organic matter, use the low end of the range; for medium and fine textured soils with less than 2% organic matter, use the high end of the range.
4) If there is a likelihood of residual N, then use the low end of the range or use the high end of the range and subtract preplant nitrate test (PPNT) credits.
5) For corn following small grains on medium and fine textured soils, the middle to low end of the range is most appropriate.

For more information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN/

ADDITIONAL INFORMATION

Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.

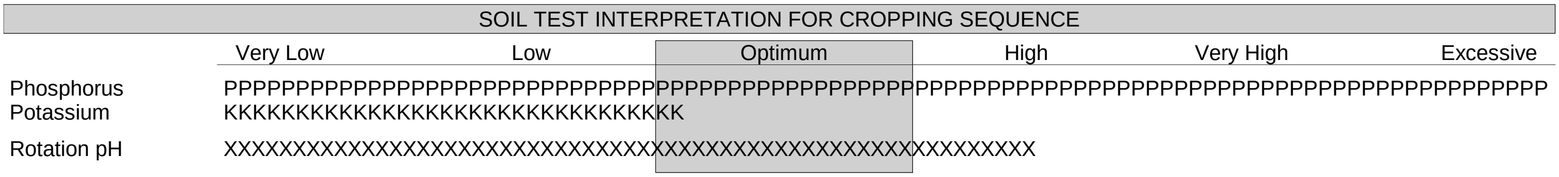
Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spring.

Because of excessively high P levels, no P_2O_5 fertilizer or manure is recommended on this field.

Year 1,3: If corn is harvested for silage instead of grain apply extra 90 lbs K_2O per acre to next crop.

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.

SOIL TEST INTERPRETATION FOR CROPPING SEQUENCE



LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M %	Phosphorus ppm	Potassium ppm	60-69 Lime Req (T/a)	Calcium ppm	Magnesium ppm	Est. CEC (cmol/kg)	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm		Texture Code	Sample Density	Buffer pH
1	6.4	2.4	359	117	0									2	1.21	6.9
2	6.8	1.7	63	86	0									1	1.23	N.R.
Adjusted Averages	6.6	2.1	211	102												

Notes:
1. Composite samples (2) for Field O1 Collected in May 2018.
2. Followed UW Exention guidance A2100.
3. See Figure B2 for approximate locations.

Recommendations based on UW Extension publication 'Nutrient Application Rate Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin' (A2809). Farmer's Copy

Samples Analyzed By:
Soil & Forage Analysis Lab
2611 Yellowstone Dr
Marshfield, WI 54449
phone: (715) 387-2523

SOIL TEST REPORT

COOPERATIVE EXTENSION
University of Wisconsin-Extension
University of Wisconsin-Madison
Department of Soil Science

Results also available on-line at http://not available
lab number: 2472 access code: 48tw8

LAB #: 2472

County	Account No.
Rock	558424

Date Received	Date Processed
5/11/2018	5/14/2018

This Report is for:
Montgomery Associates

Montgomery Associates-Resource Solutions - Ryan Stenjem
119 S Main St
Cottage Grove, WI 53527

Slope	Acres	Plow Depth	Irrigated
2%	12.2	12"	No

Soil Name: Lorenzo — Tiled: No
loamy soil/medium yield potential

Field Name: OZ

Previous Crop: no crop

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	Crop Nutrient Need P2O5	Crop Nutrient Need K2O	Fertilzer Credit Legume N	Fertilzer Credit Manure N	Fertilzer Credit P2O5	Fertilzer Credit K2O	Nutrients to Apply N	Nutrients to Apply P2O5	Nutrients to Apply K2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Corn, grain	151-170 bu	see below	0	75	0	0	0	0	see below	0	75
Soybean, grain	46-55 bu	0	0	100	0	0	0	0	0	0	100
Corn, grain	151-170 bu	see below	0	75	0	0	0	0	see below	0	75
Soybean, grain	46-55 bu	0	0	100	0	0	0	0	0	0	100

The lime required for this rotation to reach pH 6.3 is 2 T/a of 60-69 lime or 1.5 T/a of 80-89 lime.

SUGGESTED N APPLICATION RATES FOR CORN (GRAIN) AT DIFFERENT N:CORN PRICE RATIOS

Previous Crop — Medium Yield Potential Soils	N:Corn Price Ratio ($/lb N:$/bu) 0.05 Rate[1]	0.05 Range	0.10 Rate[1]	0.10 Range	0.15 Rate[1]	0.15 Range	0.20 Rate[1]	0.20 Range
	lb N/a (Total to Apply)[2]							
Corn, Forage legumes, Leguminous vegetables, Green manures[3]	145	130-160	125	115-140	115	105-125	105	95-110
Soybean, Small grains[4]	130	110-150	100	85-120	85	70-95	70	60-80

[1] Rate is the N rate that provides the maximum return to N (MRTN). Range is the range of profitable N rates that provide an economic return to N within $1/a of the MRTN.
[2] These rates are for total N applied including N in starter fertilizer and N used in herbicide applications.
[3] Subtract N credits for forage legumes, leguminous vegetables, green manures and animal manures. This includes 1st, 2nd and 3rd year credits where applicable. Do not subtract N credits for leguminous vegetables on sand and loamy sand soils.
[4] Subtract N credits for animal manures and 2nd year forage legumes.

Guidelines for choosing an appropriate N application rate for corn (grain)

1) If there is more than 50% residue cover at planting, use the upper end of the range.
2) If 100% of the N will come from organic sources, use the top end of the range. In addition, up to 20 lb N/a in starter fertilizer may be applied in this situation.
3) For medium and fine textured soils with 10% or more organic matter, use the low end of the range; for medium and fine textured soils with less than 2% organic matter, use the high end of the range.
4) If there is a likelihood of residual N, then use the low end of the range or use the high end of the range and subtract preplant nitrate test (PPNT) credits.
5) For corn following small grains on medium and fine textured soils, the middle to low end of the range is most appropriate.

For more information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN/

ADDITIONAL INFORMATION

Parts of this field may not benefit from liming. Please see the unadjusted lime requirements in the Laboratory Analysis section below.

Some parts of this field are more acid and may require additional lime.

If lime has been applied in the last two years, more lime may not be needed due to incomplete reaction.

Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spring.

Because of excessively high P levels, no P_2O_5 fertilizer or manure is recommended on this field.

Year 1,3: If corn is harvested for silage instead of grain apply extra 90 lbs K_2O per acre to next crop.

SOIL TEST INTERPRETATION FOR CROPPING SEQUENCE

	Very Low	Low	Optimum	High	Very High	Excessive
Phosphorus	PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP					
Potassium	KKKKKKKKKKKKKKKKKKKKKKKKKKKKKK					
Rotation pH	XXXXXXXXXXXXXXXXXXXXXXXX					

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M %	Phosphorus ppm	Potassium ppm	60-69 Lime Req (T/a)	Calcium ppm	Magnesium ppm	Est. CEC (cmol/kg)	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm		Texture Code	Sample Density	Buffer pH
1	5.7	2.5	754	100	4.3									2	1.18	6.5
2	6.5	2.2	257	91	0									2	1.20	6.9
Adjusted Averages	6.1	2.4	506	96												

Notes:
1. Composite samples (2) for Field O2 Collected in May 2018.
2. Followed UW Exention guidance A2100.
3. See Figure B2 for approximate locations.

Samples Analyzed By:
Soil & Forage Analysis Lab
2611 Yellowstone Dr
Marshfield, WI 54449
phone: (715) 387-2523

SOIL TEST REPORT

COOPERATIVE EXTENSION
University of Wisconsin-Extension
University of Wisconsin-Madison
Department of Soil Science

Results also available on-line at http://not available
lab number: 2472 access code: 48tw8

LAB #: 2472

This Report is for:
Montgomery Associates

Montgomery Associates-Resource Solutions - Ryan Stenjem
119 S Main St
Cottage Grove, WI 53527

County	Account No.
Rock	558424

Date Received	Date Processed
5/11/2018	5/14/2018

Slope	Acres	Plow Depth	Irrigated
2%	9.3	12"	No

Soil Name: Lorenzo — Tiled: No
loamy soil/medium yield potential
Field Name: RZ
Previous Crop: no crop

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	Crop Nutrient Need P2O5	Crop Nutrient Need K2O	Legume N	Fertilizer Credit Manure N	Fertilizer Credit P2O5	Fertilizer Credit K2O	Nutrients to Apply N	Nutrients to Apply P2O5	Nutrients to Apply K2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Corn, grain	151-170 bu	see below	0	75	0	0	0	0	see below	0	75
Soybean, grain	46-55 bu	0	0	100	0	0	0	0	0	0	100
Corn, grain	151-170 bu	see below	0	75	0	0	0	0	see below	0	75
Soybean, grain	46-55 bu	0	0	100	0	0	0	0	0	0	100

The lime required for this rotation to reach pH 6.3 is 2 T/a of 60-69 lime or 1.5 T/a of 80-89 lime.

SUGGESTED N APPLICATION RATES FOR CORN (GRAIN) AT DIFFERENT N:CORN PRICE RATIOS

Previous Crop — Medium Yield Potential Soils	N:Corn Price Ratio ($/lb N:$/bu) 0.05 Rate[1]	0.05 Range	0.10 Rate[1]	0.10 Range	0.15 Rate[1]	0.15 Range	0.20 Rate[1]	0.20 Range
	lb N/a (Total to Apply)[2]							
Corn, Forage legumes, Leguminous vegetables, Green manures[3]	145	130-160	125	115-140	115	105-125	105	95-110
Soybean, Small grains[4]	130	110-150	100	85-120	85	70-95	70	60-80

[1] Rate is the N rate that provides the maximum return to N (MRTN). Range is the range of profitable N rates that provide an economic return to N within $1/a of the MRTN.
[2] These rates are for total N applied including N in starter fertilizer and N used in herbicide applications.
[3] Subtract N credits for forage legumes, leguminous vegetables, green manures and animal manures. This includes 1st, 2nd and 3rd year credits where applicable. Do not subtract N credits for leguminous vegetables on sand and loamy sand soils.
[4] Subtract N credits for animal manures and 2nd year forage legumes.

Guidelines for choosing an appropriate N application rate for corn (grain)

1) If there is more than 50% residue cover at planting, use the upper end of the range.
2) If 100% of the N will come from organic sources, use the top end of the range. In addition, up to 20 lb N/a in starter fertilizer may be applied in this situation.
3) For medium and fine textured soils with 10% or more organic matter, use the low end of the range; for medium and fine textured soils with less than 2% organic matter, use the high end of the range.
4) If there is a likelihood of residual N, then use the low end of the range or use the high end of the range and subtract preplant nitrate test (PPNT) credits.
5) For corn following small grains on medium and fine textured soils, the middle to low end of the range is most appropriate.

For more information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN/

ADDITIONAL INFORMATION

Parts of this field may not benefit from liming. Please see the unadjusted lime requirements in the Laboratory Analysis section below.

If lime has been applied in the last two years, more lime may not be needed due to incomplete reaction.

Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spring.

Because of excessively high P levels, no P_2O_5 fertilizer or manure is recommended on this field.

Year 1,3: If corn is harvested for silage instead of grain apply extra 90 lbs K_2O per acre to next crop.

SOIL TEST INTERPRETATION FOR CROPPING SEQUENCE

Very Low | Low | Optimum | High | Very High | Excessive

Phosphorus PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
Potassium KKKKKKKKKKKKKKKKKKKKKKKKKKKKKK
Rotation pH XXXXXXXXXXXXXXXXXXXXXXX

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M %	Phosphorus ppm	Potassium ppm	60-69 Lime Req (T/a)	Calcium ppm	Magnesium ppm	Est. CEC (cmol/kg)	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm		Texture Code	Sample Density	Buffer pH
1	6.0	2.2	562	97	2.0									2	1.16	6.6
2	6.2	2.4	572	103	0									2	1.18	6.8
Adjusted Averages	6.1	2.3	567	100												

Notes:
1. Composite samples (2) for Field R2 Collected in May 2018.
2. Followed UW Exention guidance A2100.
3. See Figure B2 for approximate locations.

Samples Analyzed By:
Soil & Forage Analysis Lab
2611 Yellowstone Dr
Marshfield, WI 54449
phone: (715) 387-2523

SOIL TEST REPORT

COOPERATIVE EXTENSION
University of Wisconsin-Extension
University of Wisconsin-Madison
Department of Soil Science

Results also available on-line at http://not available
lab number: 2472 access code: 48tw8

LAB #: 2472

Montgomery Associates-Resource Solutions - Ryan Stenjem
119 S Main St
Cottage Grove, WI 53527

This Report is for:
Montgomery Associates

County	Account No.
Rock	558424

Date Received	Date Processed
5/11/2018	5/14/2018

Slope	Acres	Plow Depth	Irrigated
4.1%	9	12"	No

Soil Name: Lorenzo — Tiled: No
loamy soil/medium yield potential
Field Name: R1
Previous Crop: no crop

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need			Fertilzer Credit				Nutrients to Apply		
		N	P2O5	K2O	Legume N	Manure N	P2O5	K2O	N	P2O5	K2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Corn, grain	151-170 bu	see below	0	0	0	0	0	0	see below	0	0
Soybean, grain	46-55 bu	0	0	0	0	0	0	0	0	0	0
Corn, grain	151-170 bu	see below	0	0	0	0	0	0	see below	0	0
Soybean, grain	46-55 bu	0	0	0	0	0	0	0	0	0	0

There is no lime recommendation.

SUGGESTED N APPLICATION RATES FOR CORN (GRAIN) AT DIFFERENT N:CORN PRICE RATIOS

Previous Crop	N:Corn Price Ratio ($/lb N:$/bu)							
Medium Yield Potential Soils	0.05		0.10		0.15		0.20	
	Rate[1]	Range	Rate[1]	Range	Rate[1]	Range	Rate[1]	Range
	lb N/a (Total to Apply)[2]							
Corn, Forage legumes, Leguminous vegetables, Green manures[3]	145	130-160	125	115-140	115	105-125	105	95-110
Soybean, Small grains[4]	130	110-150	100	85-120	85	70-95	70	60-80

[1] Rate is the N rate that provides the maximum return to N (MRTN). Range is the range of profitable N rates that provide an economic return to N within $1/a of the MRTN.
[2] These rates are for total N applied including N in starter fertilizer and N used in herbicide applications.
[3] Subtract N credits for forage legumes, leguminous vegetables, green manures and animal manures. This includes 1st, 2nd and 3rd year credits where applicable. Do not subtract N credits for leguminous vegetables on sand and loamy sand soils.
[4] Subtract N credits for animal manures and 2nd year forage legumes.

Guidelines for choosing an appropriate N application rate for corn (grain)

1) If there is more than 50% residue cover at planting, use the upper end of the range.
2) If 100% of the N will come from organic sources, use the top end of the range. In addition, up to 20 lb N/a in starter fertilizer may be applied in this situation.
3) For medium and fine textured soils with 10% or more organic matter, use the low end of the range; for medium and fine textured soils with less than 2% organic matter, use the high end of the range.
4) If there is a likelihood of residual N, then use the low end of the range or use the high end of the range and subtract preplant nitrate test (PPNT) credits.
5) For corn following small grains on medium and fine textured soils, the middle to low end of the range is most appropriate.

For more information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN/

ADDITIONAL INFORMATION

Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spring.

Because of excessively high P levels, no P_2O_5 fertilizer or manure is recommended on this field.

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.

SOIL TEST INTERPRETATION FOR CROPPING SEQUENCE

Very Low | Low | Optimum | High | Very High | Excessive

Phosphorus PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
Potassium KKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK

Rotation pH XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M %	Phosphorus ppm	Potassium ppm	60-69 Lime Req (T/a)	Calcium ppm	Magnesium ppm	Est. CEC (cmol/kg)	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm		Texture Code	Sample Density	Buffer pH
1	7.2	4.3	357	242	0									2	1.08	N.R.
Adjusted Averages	7.2	4.3	357	242												

Notes:
1. Composite sample for Field R1 Collected in May 2018.
2. Area partially unavailable for soil sampling due to construction activities.
3. Followed UW Exention guidance A2100
4. See Figure B2 for approximate locations

Samples Analyzed By:
Soil & Forage Analysis Lab
2611 Yellowstone Dr
Marshfield, WI 54449
phone: (715) 387-2523

LAB #: 2472

SOIL TEST REPORT

COOPERATIVE EXTENSION
University of Wisconsin-Extension
University of Wisconsin-Madison
Department of Soil Science

Results also available on-line at http://not available
lab number: 2472 access code: 48tw8

Montgomery Associates-Resource Solutions - Ryan Stenjem
119 S Main St
Cottage Grove, WI 53527

This Report is for:
Montgomery Associates

County	Account No.
Rock	558424

Date Received	Date Processed
5/11/2018	5/14/2018

Slope	Acres	Plow Depth	Irrigated
4.5%	14.4	12"	No

Soil Name: Lorenzo — Tiled: No
loamy soil/medium yield potential
Field Name: R3
Previous Crop: no crop

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	Crop Nutrient Need P2O5	Crop Nutrient Need K2O	Fertilizer Credit Legume N	Fertilizer Credit Manure N	Fertilizer Credit P2O5	Fertilizer Credit K2O	Nutrients to Apply N	Nutrients to Apply P2O5	Nutrients to Apply K2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Corn, grain	151-170 bu	see below	0	0	0	0	0	0	see below	0	0
Soybean, grain	46-55 bu	0	0	0	0	0	0	0	0	0	0
Corn, grain	151-170 bu	see below	0	0	0	0	0	0	see below	0	0
Soybean, grain	46-55 bu	0	0	0	0	0	0	0	0	0	0

There is no lime recommendation.

SUGGESTED N APPLICATION RATES FOR CORN (GRAIN) AT DIFFERENT N:CORN PRICE RATIOS

Previous Crop — Medium Yield Potential Soils	0.05 Rate[1]	0.05 Range	0.10 Rate[1]	0.10 Range	0.15 Rate[1]	0.15 Range	0.20 Rate[1]	0.20 Range
	lb N/a (Total to Apply)[2]							
Corn, Forage legumes, Leguminous vegetables, Green manures[3]	145	130-160	125	115-140	115	105-125	105	95-110
Soybean, Small grains[4]	130	110-150	100	85-120	85	70-95	70	60-80

N:Corn Price Ratio ($/lb N:$/bu)

[1] Rate is the N rate that provides the maximum return to N (MRTN). Range is the range of profitable N rates that provide an economic return to N within $1/a of the MRTN.
[2] These rates are for total N applied including N in starter fertilizer and N used in herbicide applications.
[3] Subtract N credits for forage legumes, leguminous vegetables, green manures and animal manures. This includes 1st, 2nd and 3rd year credits where applicable. Do not subtract N credits for leguminous vegetables on sand and loamy sand soils.
[4] Subtract N credits for animal manures and 2nd year forage legumes.

Guidelines for choosing an appropriate N application rate for corn (grain)

1) If there is more than 50% residue cover at planting, use the upper end of the range.
2) If 100% of the N will come from organic sources, use the top end of the range. In addition, up to 20 lb N/a in starter fertilizer may be applied in this situation.
3) For medium and fine textured soils with 10% or more organic matter, use the low end of the range; for medium and fine textured soils with less than 2% organic matter, use the high end of the range.
4) If there is a likelihood of residual N, then use the low end of the range or use the high end of the range and subtract preplant nitrate test (PPNT) credits.
5) For corn following small grains on medium and fine textured soils, the middle to low end of the range is most appropriate.

For more information on the new N application rate guidelines for corn see http://uwlab.soils.wisc.edu/pubs/MRTN/

ADDITIONAL INFORMATION

Recommended rates are the total amount of nutrients to apply (N-P-K), including starter fertilizer.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spring.

Because of excessively high P levels, no P_2O_5 fertilizer or manure is recommended on this field.

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.

SOIL TEST INTERPRETATION FOR CROPPING SEQUENCE

	Very Low	Low	Optimum	High	Very High	Excessive
Phosphorus	PPPPPPPPPPPPPPPP	PPPPPPPPPPPPPPP	PPPPPPPPPPPPPPPPPPP	PPPPPPPPPPPPPPPPPPP	PPPPPPPPPPPPPPPPPPP	PPPPPPPPPPPPP
Potassium	KKKKKKKKKKKKKKK	KKKKKKKKKKKKKKK	KKKKKKKKKKKKKKKKKKK	KKKKKKKKKKKKKKKKKKK	KKKKKKKKKKKKKKKKKKK	KKKKKKKKKKKKK
Rotation pH	XXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXX	XXXXX	

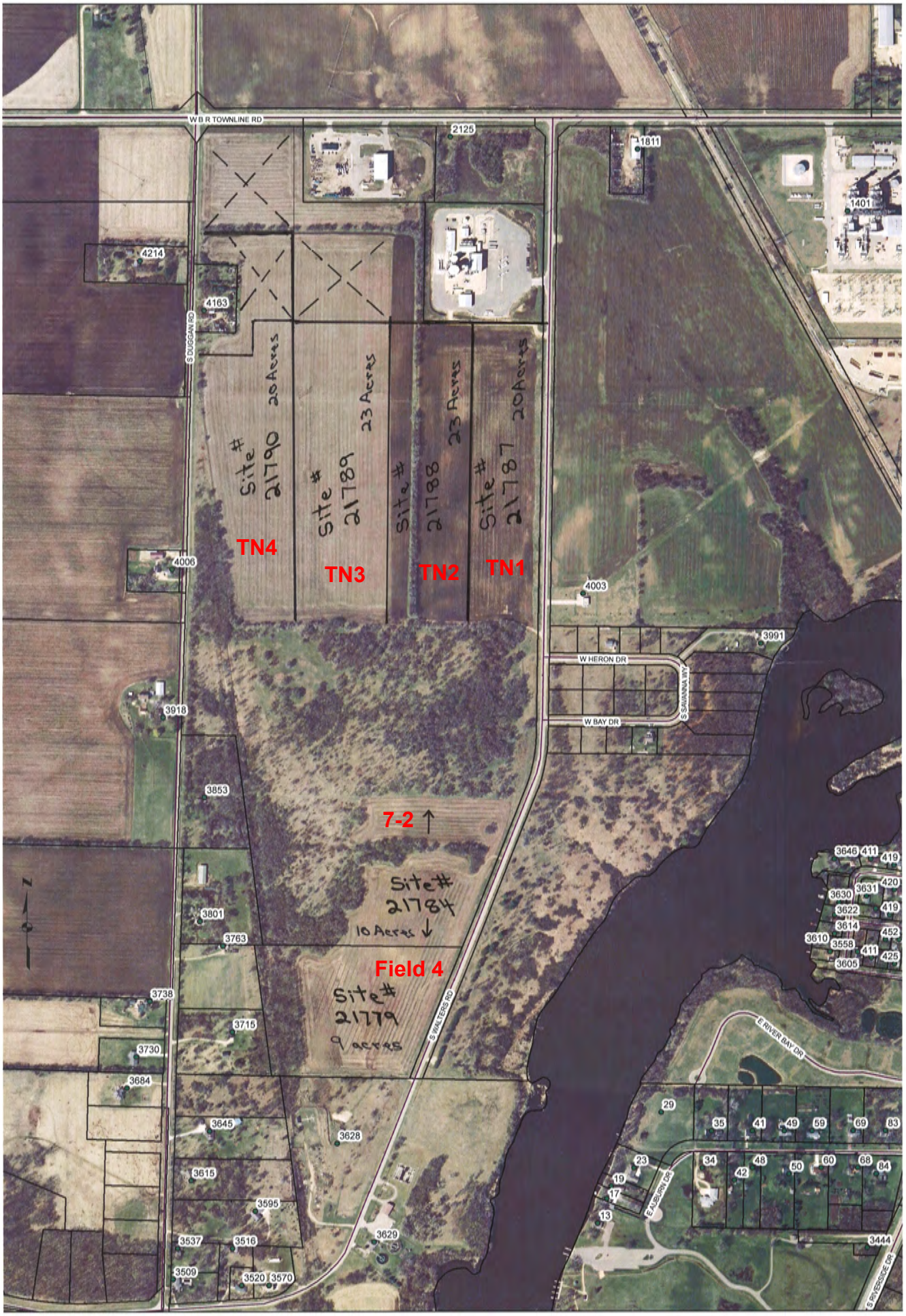
LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M %	Phosphorus ppm	Potassium ppm	60-69 Lime Req (T/a)	Calcium ppm	Magnesium ppm	Est. CEC (cmol/kg)	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm		Texture Code	Sample Density	Buffer pH
1	7.3	4.0	304	239	0									2	1.12	N.R.
2	7.4	3.2	279	226	0									2	1.19	N.R.
Adjusted Averages	7.4	3.6	292	233												

Notes:
1. Composite samples for Field R3 Collected in May 2018.
2. Area partially unavailable for soil sampling due to construction activities.
3. Followed UW Exention guidance A2100
4. See Figure B2 for approximate locations

Recommendations based on UW Extension publication 'Nutrient Application Rate Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin' (A2809). Farmer's Copy

Sludge Hauling Records



Batterman
engineers surveyors planners

1 inch = 500 feet

SLUDGE HAULING RECORDS FOR 2004

Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
05/27/04	23,000	TN-1	corn	16,341
05/28/04	18,400	TN-1	corn	13,073
06/29/04	10,200	TN-1	corn	9,253
06/30/04	23,000	TN-1	corn	20,864
07/07/04	27,600	TN-1	corn	17,373
07/08/04	11,500	TN-1	corn	7,239
07/12/04	18,400	TN-1	corn	9,553
07/13/04	16,100	TN-1	corn	8,359
07/14/04	23,000	TN-1	corn	11,941
08/18/04	23,000	TN-1	corn	11,061
08/19/04	18,400	TN-1	corn	8,849
08/20/04	16,100	TN-1	corn	7,743
08/23/04	23,000	TN-1	corn	14,068
08/24/04	23,000	TN-1	corn	14,068
09/13/04	20,700	TN-1	corn	11,444
09/14/04	20,700	TN-1	corn	11,444
09/15/04	16,100	TN-1	corn	8,901
09/21/04	23,000	TN-1	corn	25,036
11/02/04	11,500	TN-1	corn	26,384
11/08/04	20,700	TN-1	corn	14,180
11/09/04	16,100	TN-1	corn	11,029
11/10/04	23,000	TN-1	corn	15,205
11/11/04	13,800	TN-1	corn	9,123

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-1	440,300	20	22,015	15,126
Total Gallons	440,300			

SLUDGE HAULING RECORDS FOR 2005

Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
05/09/05	10,000	TN-3	Corn	17,773
05/10/05	5,000	TN-3	Corn	8,887
05/24/05	20,700	TN-3	Corn	11,374
05/25/05	25,300	TN-3	Corn	13,902
05/26/05	29,900	TN-3	Corn	10,200
05/27/05	29,900	TN-3	Corn	10,200
05/31/05	27,600	TN-3	Corn	12,262
06/01/05	23,000	TN-3	Corn	10,218
06/02/05	23,000	TN-3	Corn	14,620
06/03/05	23,000	TN-3	Corn	14,620
06/06/05	16,100	TN-3	Corn	11,088
06/13/05	29,900	TN-3	Corn	20,592
06/14/05	23,000	TN-3	Corn	21,928
06/15/05	9,000	TN-3	Corn	8,580
06/16/05	23,000	TN-3	Corn	20,134
06/17/05	23,000	TN-3	Corn	20,134
10/03/05	34,500	TN-3	Corn	9,857
10/04/05	34,500	TN-3	Corn	9,857
10/05/05	23,000	TN-3	Corn	6,571
10/06/05	32,000	TN-3	Corn	11,401
10/07/05	36,400	TN-3	Corn	12,968
10/10/05	39,100	TN-3	Corn	15,836
10/11/05	29,300	TN-3	Corn	11,867
10/12/05	45,000	TN-3	Corn	8,130
10/13/05	29,900	TN-3	Corn	5,402
10/19/05	4,600	TN-3	Corn	27,292
10/20/05	36,800	TN-3	Corn	20,994
10/21/05	25,000	TN-3	Corn	14,262

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-3	711,500	23	30,935	16,563
Total Gallons	711,500			

SLUDGE HAULING RECORDS FOR 2006

Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
05/24/06	34,500	TN-4	Corn	31,692
05/25/06	20,700	TN-4	Corn	31,692
06/08/06	28,000	TN-4	Corn	27,416
06/09/06	28,000	TN-4	Corn	27,416
06/16/06	54,000	TN-4	Corn	25,648
06/29/06	46,000	TN-4	Corn	29,220
07/10/06	38,000	TN-4	Corn	23,148
07/11/06	28,000	TN-4	Corn	23,148
07/13/06	30,000	TN-4	Corn	25,368
07/14/06	28,000	TN-4	Corn	25,368
07/17/06	20,000	TN-4	Corn	28,284
07/18/06	20,000	TN-4	Corn	28,284
10/29/06	20,000	Field 4	Beans	26,040
10/30/06	20,000	Field 4	Beans	26,040
10/31/06	30,000	Field 4	Beans	26,040
11/01/06	30,000	Field 4	Beans	26,040
11/02/06	20,000	Field 4	Beans	33,450
11/06/06	34,000	Field 4	Beans	33,450
11/07/06	34,000	Field 4	Beans	33,450
11/08/06	34,000	Field 4	Beans	33,450
11/09/06	20,000	Field 4	Beans	33,450
11/10/06	22,000	Field 4	Beans	33,450

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-4	375,200	20	18,760	16,334
Field 4	264,000	9	29,333	33,873
Total Gallons	639,200			

SLUDGE HAULING RECORDS FOR 2007				
Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
05/24/07	16,800	TN-2	Corn	29,960
05/25/07	20,000	TN-2	Corn	29,960
07/30/07	23,000	TN-2	Corn	29,960
07/31/07	23,700	TN-2	Corn	29,960
08/01/07	23,000	TN-2	Corn	30,216
08/02/07	27,400	TN-2	Corn	30,216
08/06/07	33,700	TN-2	Corn	25,152
08/07/07	33,000	TN-2	Corn	25,152
09/14/07	27,600	TN-2	Corn	27,569
10/23/07	33,000	TN-2	Corn	29,728
10/24/07	25000	TN-3	Beans	29,728
10/26/07	18400	TN-3	Beans	29,736
10/29/07	32,500	TN-2	Corn	29,736
10/30/07	46,000	TN-2	Corn	29,736
10/31/07	32,000	Field 4	Beans	30,248
11/01/07	32,000	Field 4	Beans	30,248
11/02/07	32,000	Field 4	Beans	30,248

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-2	339,700	23	14,770	15,102
TN-3	43,400	23	1,887	2,585
Field 4	96,000	9	10,667	10,083
Total Gallons	479,100			

SLUDGE HAULING RECORDS FOR 2008

Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
05/21/08	27,600	TN-1	Corn	30,152
06/18/08	36,800	TN-1	Corn	41,648
06/19/08	34,500	TN-1	Corn	41,648
06/20/08	29,900	TN-1	Corn	41,648
07/02/08	30,000	TN-1	Corn	27,492
07/15/08	55,200	TN-1	Corn	23,774
07/16/08	36,800	TN-1	Corn	23,774
07/30/08	20,000	TN-1	Corn	31,212
07/31/08	30,000	TN-1	Corn	31,212
08/11/08	32,000	TN-1	Corn	14,080
08/12/08	30,000	TN-1	Corn	14,080
08/13/08	40,000	TN-1	Corn	23,072
08/14/08	21,600	TN-1	Corn	23,072
08/15/08	18,400	TN-1	Corn	23,072
09/23/08	41,400	TN-1	Corn	26,916
09/24/08	46,000	TN-1	Corn	26,916
10/13/08	48,300	TN-2	Corn	30,604
11/04/08	34,500	TN-2	Corn	27,420

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-1	530,200	20	26,510	22,188
TN-2	82,800	23	3,600	2,523
Total Gallons	613,000			

SLUDGE HAULING RECORDS FOR 2009				
Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
05/11/09	35,900	TN-3	Corn	26,240
05/18/09	35,000	TN-3	Corn	28,840
05/20/09	37,500	TN-2	Corn	28,620
05/21/09	62,100	TN-2	Corn	28,620
05/22/09	42,500	TN-2	Corn	28,620
05/26/09	29,900	TN-2	Corn	28,620
05/27/09	29,900	TN-2	Corn	28,696
05/28/09	25,300	TN-2	Corn	28,696
06/11/09	23,000	TN-2	Corn	28,576
06/12/09	18,400	TN-2	Corn	28,576
06/15/09	35,000	TN-2	Corn	28,408
06/16/09	48,300	TN-2	Corn	28,408
07/07/09	31,200	TN-2	Corn	26,448
07/14/09	39,100	TN-2	Corn	26,448
07/15/09	42,500	TN-2	Corn	26,448
07/21/09	32,000	TN-2	Corn	27,792
07/27/09	23,000	TN-2	Corn	24,780
07/28/09	25,300	TN-2	Corn	24,780
07/29/09	62,100	TN-2	Corn	24,780
08/19/09	32,200	TN-2	Corn	17,636
08/20/09	45,000	TN-2	Corn	17,636
08/25/09	37,500	TN-2	Corn	20,552
08/26/09	41,400	TN-2	Corn	20,552
10/20/09	40,000	TN-4	Beans	29,300
10/21/09	40,000	TN-4	Beans	29,300

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-2	763,200	23	33,183	23,639
TN-3	70,900	23	3,083	2,395
TN-4	80,000	20	4,000	2,930
Total Gallons	914,100			

SLUDGE HAULING RECORDS FOR 2010				
Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
06/28/10	25,000	T-3	Corn	30,048
06/29/10	30,600	T-3	Corn	30,048
06/30/10	20,000	T-3	Corn	30,048
07/01/10	32,500	T-3	Corn	29,548
07/02/10	30,000	T-3	Corn	29,548
07/06/10	25,300	T-3	Corn	28,188
07/07/10	30,000	T-3	Corn	28,188
07/08/10	23,000	T-3	Corn	27,922
07/09/10	16,100	T-3	Corn	27,922
07/12/10	62,600	T-3	Corn	30,712
07/13/10	27,600	T-3	Corn	30,712
07/14/10	51,200	T-3	Corn	30,712
07/15/10	25,600	T-3	Corn	19,000
07/20/10	24,400	T-3	Corn	28,780
07/21/10	24,400	T-3	Corn	28,780
11/05/10	30,000	T-3	Corn	19,388
11/06/10	30,000	T-3	Corn	19,388
11/08/10	41,400	T-3	Corn	34,488
11/09/10	45,000	T-3	Corn	34,488
11/16/11	28,750	T-3	Corn	29,184
11/17/10	28,750	T-3	Corn	29,184
11/18/10	23,000	T-3	Corn	22,932
11/19/10	23,000	T-3	Corn	22,868
11/24/10	36,800	T-3	Corn	33,232
11/25/10	40,000	T-3	Corn	33,232

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-3	775,000	23	33,696	30,806
Total Gallons	775,000			

SLUDGE HAULING RECORDS FOR 2011				
Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
06/26/11	30000	TN-4	Corn	24,348
06/27/11	30000	TN-4	Corn	24,348
06/28/11	40000	TN-4	Corn	22,508
06/29/11	27600	TN-4	Corn	22,508
06/30/11	37500	TN-4	Corn	22,508
07/01/11	27600	TN-4	Corn	22,508
07/19/11	55200	TN-4	Corn	25,664
07/20/11	25300	TN-4	Corn	25,664
08/02/11	24500	TN-4	Corn	25,956
08/03/11	26100	TN-4	Corn	25,956
08/04/11	37500	TN-4	Corn	25,956
08/06/11	20000	TN-4	Corn	25,956
08/16/11	39100	TN-4	Corn	19,312
08/30/11	52900	TN-4	Corn	9,628
08/31/11	32500	TN-4	Corn	9,628
09/13/11	46,000	TN-1	Wheat	17,344
09/14/11	25,000	TN-1	Wheat	17,344
09/15/11	46,000	TN-1	Wheat	15,892
09/16/11	27,500	TN-1	Wheat	15,892
10/31/11	25,000	TN-1	Wheat	16,512
11/01/11	45,000	TN-1	Wheat	16,512
11/02/11	35,000	TN-1	Wheat	29,184
11/07/11	41,400	TN-1	Wheat	19,972

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-1	290,900	20	14,545	7,433
TN-4	505,800	20	25,290	16,622
Total Gallons	505,800			

SLUDGE HAULING RECORDS FOR 2012

Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
05/14/12	39100	TN-1	Wheat	30,268
05/15/12	46000	TN-1	Wheat	30,268
05/16/12	34500	TN-1	Wheat	29,476
05/17/12	37500	TN-1	Wheat	29,476
05/18/12	23000	TN-1	Wheat	29,476
05/21/12	36800	TN-1	Wheat	29,476
06/05/12	46000	TN-1	Wheat	25,372
06/06/12	25000	TN-1	Wheat	24,818
06/18/12	35000	TN-1	Wheat	26,704
06/19/12	57500	TN-1	Wheat	26,704
06/25/12	25000	TN-1	Wheat	21,272
06/26/12	23000	TN-1	Wheat	21,272
06/27/12	23000	TN-1	Wheat	27,688
06/28/12	34500	TN-1	Wheat	27,688
10/15/12	36800	Field 4	Beans	32660
10/16/12	39100	Field 4	Beans	32660
10/17/12	35000	Field 4	Beans	21340
10/18/12	34000	Field 4	Beans	21340
10/31/12	27600	Field 4	Beans	25564
11/01/12	27600	Field 4	Beans	25564
11/02/12	27600	7-2	Beans	22396
11/05/12	27600	7-2	Beans	22396
11/06/12	36800	7-2	Beans	23936
11/07/12	36800	7-2	Beans	23936
11/08/12	23000	7-2	Beans	18196
11/09/12	28750	7-2	Beans	25900
11/13/12	28750	7-2	Beans	25900

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-1	485900	20	24295	18998
Field 4	200100	9	22233	17681
7-2	209300	10	20930	16266
Total Gallons	895,300			

SLUDGE HAULING RECORDS FOR 2013

Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
06/03/13	32,100	Field 4	Wheat/Soy Beans	7351
06/03/13	30,000	7-2	Wheat/Soy Beans	6870
06/04/13	40,000	7-2	Wheat/Soy Beans	9160
06/05/13	25,600	7-2	Wheat/Soy Beans	6090
06/05/13	20,000	Field 4	Wheat/Soy Beans	4758
06/06/13	62,900	Field 4	Wheat/Soy Beans	14964
06/10/13	36,800	7-2	Wheat/Soy Beans	29,012
06/11/13	34,500	Field 4	Wheat/Soy Beans	7620
06/12/13	38,400	7-2	Wheat/Soy Beans	8481
06/13/13	16,800	7-2	Wheat/Soy Beans	3711
10/21/13	40,000	TN-2	Beans	19,476
10/22/13	54,000	TN-2	Beans	25,932
10/23/13	34000	TN-3	Beans	25,972
10/23/13	24,000	TN-2	Beans	25,972
10/24/13	70,000	TN-2	Beans	11,004
10/25/13	62,000	TN-1	Beans	10,088
11/04/13	26,000	TN-1	Beans	26,592
11/04/13	18000	TN-4	Beans	26,592
11/05/13	30000	TN-4	Beans	3,304
11/05/13	30000	TN-3	Beans	3,304
11/11/13	36,000	TN-1	Beans	7,816
11/20/13	28000	TN-3	Beans	18,692
11/20/13	30000	TN-4	Beans	18,692

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-1	124,000	20	6,200	2,225
TN-2	188,000	23	8,174	3,582
TN-3	92,000	23	23	2,086
TN-4	78,000	20	3,900	2,429
Field 4	149,500	9	16611	3,855
7-2	187,600	10	18760	6,332
Total Gallons	819,100			

SLUDGE HAULING RECORDS FOR 2014				
Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
05/05/14	38000	TN-1	Beans	7,307
05/05/14	40000	TN-2	Beans	7,691
05/05/14	22000	TN-3	Beans	4,230
05/06/14	60000	TN-1	Beans	11,537
05/06/14	22000	TN-2	Beans	4,230
05/06/14	40000	TN-3	Beans	7,691
05/07/14	50000	TN-2	Beans	9,614
05/07/14	42000	TN-3	Beans	8,076
05/08/14	12000	TN-2	Beans	2,307
05/08/14	28000	TN-3	Beans	5,384
10/23/14	54600	TN-3	Beans	10,498
10/27/14	94000	TN-3	Beans	18,074
10/28/14	16000	TN-4	Beans	3,076
10/29/14	78000	TN-4	Beans	14,998
10/30/14	58000	TN-4	Beans	11,152

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-1	98,000	20	4,900	942
TN-2	124,000	23	124,000	1,037
TN-3	280,600	23	280,600	2,346
TN-4	152,000	23	152,000	1,271
Total Gallons	654,600			

SLUDGE HAULING RECORDS FOR 2015				
Date	Gallons Applied	Field Location	Crop	Suspended Solids Applied (lb)
04/15/15	50,000	TN-4	Corn	30,372
04/16/15	40,000	TN-4	Corn	35,050
04/23/15	44,000	TN-4	Corn	29,332
04/24/15	76,000	TN-4	Corn	28,432
04/27/15	40,000	TN-4	Corn	34,420
04/28/15	50,000	TN-4	Corn	33,404
04/29/15	54,000	TN-4	Corn	14,032
09/22/15	3,200	TN-2	Wheat	28,140
09/23/15	78,000	TN-2	Wheat	27,372
09/24/15	26,000	TN-2	Wheat	24,604
10/19/15	66,000	TN-1	Wheat	20,156
10/20/15	82,000	TN-1	Wheat	11,596
10/21/15	84,000	TN-2	Wheat	11,596
10/22/15	68,000	TN-2	Wheat	19,624
10/26/15	60,000	TN-1	Wheat	16,544

Field	Total Gallons Applied	Acres in field	Gallons / Acre	TSS (lb/ac)
TN-1	208,000	20	10,400	2,415
TN-2	259,200	23	11,270	4,841
TN-4	354,000	23	15,391	8,915
Total Gallons	821,200			

Gallons of Sludge Applied

Year	TN-1	TN-2	TN-3	TN-4	Field 4	7-2	Total
2004	440,300						440,300
2005			711,500				711,500
2006				375,200	264,000		639,200
2007		339,700	43,400		96,000		479,100
2008	530,200	82,800					613,000
2009		763,200	70,900	80,000			914,100
2010			746,250				746,250
2011	290,900		28,750	505,800			825,450
2012	485,900				200,100	209,300	895,300
2013	124,000	188,000	92,000	78,000	149,500	187,600	819,100
2014	98,000	124,000	280,600	152,000			654,600
2015	208,000	259,200		354,000			821,200
Total	2,177,300	1,756,900	1,973,400	1,545,000	709,600	396,900	8,559,100

Suspended Solids Applied

	TN-1	TN-2	TN-3	TN-4	Field 4	7-2	Total
2004	302,528						302,528
2005			380,947				380,947
2006				326,684	304,860		631,544
2007		347,345	59,464		90,744		497,553
2008	443,768	58,024					501,792
2009		543,692	55,080	58,600			657,372
2010			679,356				679,356
2011	148,652		29,184	332,448			510,284
2012	379,958				159,128	162,660	701,746
2013	44,496	82,384	47,968	48,588	34,692	63,324	321,452
2014	18,843	23,843	53,954	29,227			125,866
2015	48,296	111,336		205,042			364,674
Total	1,386,541	1,166,624	1,305,953	1,000,589	589,424	225,984	5,675,114

Sludge Analysis Results

Year	% Solids	TP
2011	2.6%	3.3%
2012	-	-
2013	2.7%	3.0%
2014	2.3%	2.8%
2015	1.9%	2.5%
2016	2.7%	3.8%

Sludge Analysis Results

CHARACTERISTIC REPORT: s 283.55(1), Wis.Stats. Form 3400-49 Rev. 12-98 Permit No.: WI- 0026930

(Municipal Sludge, Industrial Sludge, Liquid Industrial Waste and By-Product Solids)

Facility: BELOIT TOWN WASTEWATER TREATMENT FACILITY
2871 South Afton Road
Beloit, WI 53511

Reporting Period: 01/01/2011 to 12/31/2011 Frequency: Annual
Form Due Date: 01/31/2012

Did you land apply this period? ____Yes_____ (Y/N)
If yes & Municipal Sludge:
A) Were Class ___B___ (A/B) Pathogen Requirements Satisified? ____Yes_____ (Y/N)
B) Were Vector Control Requirements Satisified? ___Yes___ (Y/N)

If Municipal Sludge then complete section B and C on the reverse side of this form.
Include copy of lab sheets, unless instructed otherwise

FIN: 6162
FID: 396022138

Region: South Central DOC: 223300
Office: FITCHBURG Date Received:

Return Form To: Bureau of Watershed Management/3
PO Box 7921
101 South Webster Street
Madison, WI 53707-7921

A) Parameters to be Sampled DNR Contact: Doris Thiele

Parameter Number	Parameter	Sample Point Number	Date Sample Taken	Sample Type	Analytical Results	Units	Limit	Municipal Sludge Only		Lab Certification Number
								High Quality Limit	Date Smpl Analyzed for Organics	
461	Solids, Total	002	7/12/2011	comp	2.6	Percent	*****	*****	*****	617013980
33	Arsenic Dry Wt	002	7/11/2011	comp	2.9	mg/kg	75	41	*****	617013980
86	Cadmium Dry Wt	002	7/11/2011	comp	< 2.2	mg/kg	85	39	*****	617013980
145	Copper Dry Wt	002	7/11/2011	comp	458	mg/kg	4300	1500	*****	617013980
262	Lead Dry Wt	002	7/11/2011	comp	19	mg/kg	840	300	*****	617013980
278	Mercury Dry Wt	002	7/12/2011	comp	1.2	mg/kg	57	17	*****	617013980
295	Molybdenum Dry Wt	002	7/11/2011	comp	9.7	mg/kg	75	*****	*****	617013980
313	Nickel Dry Wt	002	7/11/2011	comp	24.6	mg/kg	420	420	*****	617013980
421	Selenium Dry Wt	002	7/11/2011	comp	6.5	mg/kg	100	100	*****	617013980
551	Zinc Dry Wt	002	7/11/2011	comp	665	mg/kg	7500	2800	*****	617013980
335	Nitrogen, Total Kjeldahl	002	7/13/2011	comp	46.9	Percent	*****	*****	*****	617013980
324	Nitrogen, Ammonium (NH4-N) Total	002	7/22/2011	comp	1.6	Percent	*****	*****	*****	617013980
388	Phosphorus, Total	002	7/11/2011	comp	3.3	Percent	*****	*****	*****	617013980
686	Phosphorus, Water Extractable	002	7/11/2011	comp	3.9	% of Tot P	*****	*****	*****	617013980
395	Potassium, Total Recoverable	002	7/11/2011	comp	0.3	Percent	*****	*****	*****	617013980

Description of Facility Sampling Point: Sample faucet on Stand Pipe that fills sludge hauling trucks at sludge storage facility.

Comments:

I certify, under penalty of law that metal testing, pathogen monitoring and testing, and the vector control requirements; if reported on this form have been prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated this information. I am aware that there are signifcant penalities for false certification including the possibilty of fine and imprisonment.

Completion of this form is required. Failure to complete this form, as required by s. 283.55(1), Wis. Stats., may result in penalties pursuant to s. 283.91(4), Wis. Stats. Personally identifiable information on this form is not intented to be used for any other purpose.

Municipal Sludge Only

B) PATHOGEN CONTROL (EITHER CLASS A or B)

☐ Class A

FECAL COLIFORM [2] _____ MPN/g TS SAMPLE DATES [1,3] _____ to _____	OR	SALMONELLA _____ MPN/4g TS SAMPLE DATE [1] _____

AND one of the following

☐ Alkaline Treatment ☐ Composting ☐ Thermophilic Aerobic Digestion ☐ Prior test for Enteric Virus/Viable Helminth Ova

☐ Heat Drying ☐ Beta Ray Irradiation ☐ Temp/Time based on % Solids

☐ Heat Treatment ☐ Gama Ray Irradiation ☐ Pasteurization ☐ Post test for Enteric Virus/Viable Helminth Ova

☐ PFRP Equivalent

Description of which process is used & operating parameters

☒ Class B

FECAL COLIFORM [2] _____ CFU/g or 145,571 MPN/g TS

SAMPLE DATES [1,3] 7/6/2011 to 7/6/2011

OR one of the following, as specified in Ch. NR 204

☒ Aerobic Digestion ☐ Air Drying ☐ Alkaline Stabilization

☐ Anaerobic Digestion ☐ Composting ☐ PSRP Equivalent

Description of which process used & operating parameters:

1 - Each sample to be analyzed 2 - Geometric mean of 7 discrete samples 3 - Range should not be more than 3 weeks

C) VECTOR ATTRACTION REDUCTION

Check which option below is used and enter analytical result if appropriate

				ANALYTICAL DATE
☐	Volatile Solids Reduction	≥ 38 %	_____ % VSR	
☐	Aerobic SOUR Test	≤ 1.5 @ 20° C	_____ mg O_2 /hr/g TS	
☐	Aerobic Bench Scale	< 15 % VSR	_____ % VSR	
☐	Anaerobic Bench Scale	< 17 % VSR	_____ % VSR	

☐	Drying With Unstabilized Solids	> 90 % TS	_____ % ts
☐	Drying With Stabilized Solids	> 75 % TS	_____ % ts
☐	Aerobic Composting Process	> 40° C	
☐	pH Adjustment of Sludge		
☐	Injection when land apply		
☒	Incorporation when land apply		
☐	Approved Equivalent Process		

Municipal Sludge Only

B) PATHOGEN CONTROL (EITHER CLASS A or B)

☐ Class A

FECAL COLIFORM [2] _____ MPN/g TS SAMPLE DATES [1,3] _____ to _____	OR	SALMONELLA _____ MPN/4g TS SAMPLE DATE [1] _____

AND one of the following

☐ Alkaline Treatment ☐ Composting ☐ Thermophilic Aerobic Digestion ☐ Prior test for Enteric Virus/Viable Helminth Ova

☐ Heat Drying ☐ Beta Ray Irradiation ☐ Temp/Time based on % Solids

☐ Heat Treatment ☐ Gama Ray Irradiation ☐ Pasteurization ☐ Post test for Enteric Virus/Viable Helminth Ova

☐ PFRP Equivalent

Description of which process is used & operating parameters

_____

_____

☒ Class B

FECAL COLIFORM [2] _____ CFU/g or _____ MPN/g TS

SAMPLE DATES [1,3] _____ to _____

OR one of the following, as specified in Ch. NR 204

☒ Aerobic Digestion ☐ Air Drying ☐ Alkaline Stabilization

☐ Anaerobic Digestion ☐ Composting ☐ PSRP Equivalent

Description of which process used & operating parameters:

_____

_____

_____

1 - Each sample to be analyzed 2 - Geometric mean of 7 discrete samples 3 - Range should not be more than 3 weeks

C) VECTOR ATTRACTION REDUCTION

Check which option below is used and enter analytical result if appropriate

			ANALYTICAL DATE
☐ Volatile Solids Reduction	≥ 38 %	_____ % VSR	_____
☐ Aerobic SOUR Test	≤ 1.5 @ 20° C	_____ mg O_2 /hr/g TS	_____
☐ Aerobic Bench Scale	< 15 % VSR	_____ % VSR	_____
☐ Anaerobic Bench Scale	< 17 % VSR	_____ % VSR	_____

☐ Drying With Unstabilized Solids	> 90 % TS	_____ % ts
☐ Drying With Stabilized Solids	> 75 % TS	_____ % ts
☐ Aerobic Composting Process	> 40° C	
☐ pH Adjustment of Sludge		
☐ Injection when land apply		
☒ Incorporation when land apply		
☐ Approved Equivalent Process		

CHARACTERISTIC REPORT: s.283.55(1), Wis. Stats. Form 3400-49 Rev. 1-98

(Municipal Sludge, Industrial Sludge, Liquid Industrial Waste and By-Product Solids)

Permit No: **0026930**

Facility: BELOIT TOWN WASTEWATER TREATMENT FACILITY
2871 S. Afton Rd.
Beloit, WI 53511

FIN: 6162 Region: South Central Region DOC: 304346

FID: 154001760 Date Received:

Forms require electronic submittal.

Submit form electronically and keep a version of the form for your records.

Reporting Period: 01/01/2013 - 12/31/2013

Form Due Date: 01/31/2014

Did you land apply this period? Yes

If yes and Municipal Sludge:

A) Were Class B Pathogen Requirements Satisfied? Yes

B) Were Vector Control Requirements Satisfied? Yes

Submit a copy of your lab reports, to your facility's DNR sludge representative or basin engineer unless instructed otherwise. Email submittal is preferred.

A) Parameters to be Sampled

DNR Contact: Phillip A. Spranger

Sample Point Number	Parameter Number	Parameter	Date Sample Taken	Sample Type	Analytical Results	Units	Limit	Municipal Sludge Only		Lab Certification Number
								High Quality Limit	Date Analyzed for Organics	
002	461	Solids, Total	06/03/2013	COMP	2.7	Percent			06/06/2013	617013980
002	33	Arsenic Dry Wt	06/03/2013	COMP	2.4	mg/kg	75	41	06/10/2013	617013980
002	86	Cadmium Dry Wt	06/03/2013	COMP	<2.0	mg/kg	85	39	06/10/2013	617013980
002	145	Copper Dry Wt	06/03/2013	COMP	744	mg/kg	4300	1500	06/10/2013	617013980
002	262	Lead Dry Wt	06/03/2013	COMP	18.3	mg/kg	840	300	06/10/2013	617013980
002	278	Mercury Dry Wt	06/03/2013	COMP	1.7	mg/kg	57	17	06/11/2013	617013980
002	295	Molybdenum Dry Wt	06/03/2013	COMP	6.9	mg/kg	75		06/10/2013	617013980
002	313	Nickel Dry Wt	06/03/2013	COMP	19.6	mg/kg	420	420	06/10/2013	617013980
002	421	Selenium Dry Wt	06/03/2013	COMP	4.9	mg/kg	100	100	06/10/2013	617013980
002	551	Zinc Dry Wt	06/03/2013	COMP	900	mg/kg	7500	2800	06/10/2013	617013980
002	335	Nitrogen, Total Kjeldahl	06/03/2013	COMP	7.1	Percent			06/12/2013	617013980
002	324	Nitrogen, Ammonium (NH4-N) Total	06/03/2013	COMP	1.1	Percent			06/07/2013	617013980
002	388	Phosphorus, Total	06/03/2013	COMP	3.0	Percent			06/10/2013	617013980
002	686	Phosphorus, Water Extractable	06/03/2013	COMP	3.3	%ofTotP			06/10/2013	617013980
002	395	Potassium, Total Recoverable	06/03/2013	COMP	0.3	Percent			06/10/2013	617013980

OUTFALLS

002 - SLUDGE

CHARACTERISTIC REPORT: s.283.55(1), Wis. Stats. Form 3400-49 Rev. 1-98
(Municipal Sludge, Industrial Sludge, Liquid Industrial Waste and By-Product Solids)

Reporting Period: 01/01/2013 - 12/31/2013
Form Due Date: 01/31/2014

Permit No: **0026930**
Facility: BELOIT TOWN WASTEWATER TREATMENT FACILITY
2871 S. Afton Rd.
Beloit, WI 53511
FIN: 6162 Region: South Central Region DOC: 304346

Municipal Sludge Only

Pathogens

Sample Point Number	Requirement Met	Class	Process Code / Process Description	Bacteria	Amount	Unit	Start Date	End Date
002	Yes	B	Aerobic Digestion	Fecal Coliform	222143	MPN/g TS	06/03/2013	06/10/2013
			222,143 MPN/g TS average					

Vectors

Sample Point Number	Requirement Met	Vector Reduction	Amount	Date
002	Yes	Incorporation when land apply	Yes	

Description of Facility Sample Point:

Faucet on stand pipe that fills sludge hauling trucks.

Comments:

CHARACTERISTIC REPORT: s.283.55(1), Wis. Stats. Form 3400-49 Rev. 1-98

(Municipal Sludge, Industrial Sludge, Liquid Industrial Waste and By-Product Solids)

Permit No: **0026930**

Facility: BELOIT TOWN WASTEWATER TREATMENT FACILITY
2871 S. Afton Rd.
Beloit, WI 53511

FIN: 6162 Region: South Central Region DOC: 322912

FID: 154001760 Date Received:

Forms require electronic submittal.

Submit form electronically and keep a version of the form for your records.

Reporting Period: 01/01/2014 - 12/31/2014

Form Due Date: 01/31/2015

Did you land apply this period? Yes

If yes and Municipal Sludge:

A) Were Class B Pathogen Requirements Satisfied? Yes

B) Were Vector Control Requirements Satisfied? Yes

Submit a copy of your lab reports, to your facility's DNR sludge representative or basin engineer unless instructed otherwise. Email submittal is preferred.

A) Parameters to be Sampled

DNR Contact: Phillip A. Spranger

Sample Point Number	Parameter Number	Parameter	Date Sample Taken	Sample Type	Analytical Results	Units	Limit	Municipal Sludge Only		Lab Certification Number
								High Quality Limit	Date Analyzed for Organics	
002	461	Solids, Total	06/03/2014	COMP	2.3	Percent			06/04/2014	617013980
002	33	Arsenic Dry Wt	06/03/2014	COMP	2.0	mg/kg	75	41	06/06/2014	617013980
002	86	Cadmium Dry Wt	06/03/2014	COMP	<1.9	mg/kg	85	39	06/09/2014	617013980
002	145	Copper Dry Wt	06/03/2014	COMP	280	mg/kg	4300	1500	06/09/2014	617013980
002	262	Lead Dry Wt	06/03/2014	COMP	23.3	mg/kg	840	300	06/09/2014	617013980
002	278	Mercury Dry Wt	06/03/2014	COMP	1.8	mg/kg	57	17	06/16/2014	617013980
002	295	Molybdenum Dry Wt	06/03/2014	COMP	4.9	mg/kg	75		06/09/2014	617013980
002	313	Nickel Dry Wt	06/03/2014	COMP	8.8	mg/kg	420	420	06/09/2014	617013980
002	421	Selenium Dry Wt	06/03/2014	COMP	4.3	mg/kg	100	100	06/06/2014	617013980
002	551	Zinc Dry Wt	06/03/2014	COMP	552	mg/kg	7500	2800	06/09/2014	617013980
002	335	Nitrogen, Total Kjeldahl	06/03/2014	COMP	6.7	Percent			06/11/2014	617013980
002	324	Nitrogen, Ammonium (NH4-N) Total	06/03/2014	COMP	0.9	Percent			06/13/2014	617013980
002	388	Phosphorus, Total	06/03/2014	COMP	2.8	Percent			06/09/2014	617013980
002	686	Phosphorus, Water Extractable	06/03/2014	COMP	2.6	%ofTotP			06/09/2014	617013980
002	395	Potassium, Total Recoverable	06/03/2014	COMP	0.2	Percent			06/09/2014	617013980

OUTFALLS

002 - SLUDGE

CHARACTERISTIC REPORT: s.283.55(1), Wis. Stats. Form 3400-49 Rev. 1-98
(Municipal Sludge, Industrial Sludge, Liquid Industrial Waste and By-Product Solids)

Reporting Period: 01/01/2014 - 12/31/2014
Form Due Date: 01/31/2015

Permit No: **0026930**
Facility: BELOIT TOWN WASTEWATER TREATMENT FACILITY
2871 S. Afton Rd.
Beloit, WI 53511
FIN: 6162 Region: South Central Region DOC: 322912

Municipal Sludge Only

Pathogens

Sample Point Number	Requirement Met	Class	Process Code / Process Description	Bacteria	Amount	Unit	Start Date	End Date
002	Yes	B	Anaerobic Digestion	Fecal Coliform	1700000	MPN/g TS	06/03/2014	06/03/2014
			7 samples were taken from separate truck loads during a day of land spreading.					

Vectors

Sample Point Number	Requirement Met	Vector Reduction	Amount	Date
002	Yes	Incorporation when land apply	Yes	

Description of Facility Sample Point:

Comments:

Commercial Testing Laboratory, Inc.

514 Main Street • P.O. Box 526 • Colfax, Wisconsin 54730
Phone: 715-962-3121 • WWW.CTLCOLFAX.COM • Fax: 715-962-4030

ANALYTICAL REPORT

Howard Hemmer
Town of Beloit
2871 Afton Road
Beloit WI 53511

Report Number: 16032225 Page: 1
Report Date: 11/30/16
Date Received: 11/15/16

SLUDGE CHARACTERISTICS

Sample Number: 16-S683
Sample ID: Sludge-List 1,2
WEP
11/10/16

D.N.R. #	Parameter	Wet Weight (As Is)	Dry Weight (Dry Basis)	Date of Analysis	Method Used
789	Ammonia-Nitrogen, %	0.031	1.1	11/18/16	SM4500NH3C
33	Arsenic, mg/kg	0.070	2.6	11/22/16	7010
86	Cadmium, mg/kg	< 0.067	< 2.5	11/22/16	6010A
145	Copper, mg/kg	13.0	481	11/22/16	6010A
335	Kjeldahl-Nitrogen, %	0.151	5.6	11/29/16	SM4500NH3C
262	Lead, mg/kg	< 0.673	< 24.9	11/22/16	6010A
278	Mercury, mg/kg	0.032	1.2	11/28/16	245.5
295	Molybdenum, mg/kg	< 0.161	< 6.0	11/22/16	6010A
313	Nickel, mg/kg	0.534	19.8	11/22/16	6010A
388	Phosphorous,%	0.102	3.8	11/22/16	200.7 R4.4
395	Potassium, %	0.005	0.2	11/22/16	6010A
421	Selenium, mg/kg	0.152	5.6	11/22/16	7010
461	Total Solids, %	2.7		11/15/16	SM2540G
551	Zinc, mg/kg	19.8	733	11/22/16	6010A

WDNR Laboratory ID Number: 617013980

< Means "LESS THAN" Detectable Level

Authorized by:
Pamela Gane,Lab Manager

Reviewed by: T Kellar

Appendix C – Model Input/Output

County	Farm	Field	Year	PTP	Acres	Soil Series	Soil Symbol	Crop	Tillage	Slope	Slope Length	Below Field Slope	Below Field Slope Length	Soil Group	Soil Test OM	Soil Test P	Soil Loss	Contour	FilterStrip	Tiled	Irrigated
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2018	**100**	6.0	LORENZO	LoC2	Soybeans 30-36 inch row	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	12.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2019	**64**	6.0	LORENZO	LoC2	Wheat spring (grain)	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	7.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2020	**40**	6.0	LORENZO	LoC2	Wheat spring (grain)	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	4.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2021	**46**	6.0	LORENZO	LoC2	Corn grain	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	5.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2022	**31**	6.0	LORENZO	LoC2	Corn grain	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	3.6	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2023	**32**	6.0	LORENZO	LoC2	Corn grain	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	3.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2024	**37**	6.0	LORENZO	LoC2	Soybeans 30-36 inch row	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	4.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2025	**98**	6.0	LORENZO	LoC2	Soybeans 30-36 inch row	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	12.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2026	**63**	6.0	LORENZO	LoC2	Wheat spring (grain)	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	7.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2027	**39**	6.0	LORENZO	LoC2	Wheat spring (grain)	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	4.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2028	**45**	6.0	LORENZO	LoC2	Corn grain	Fall Chisel, no disk	2.1	390	2.1 - 6	1001 - 5000	B	2.1	211	5.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2018	**94**	12.2	LORENZO	LoB	Wheat spring (grain)	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2019	**103**	12.2	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	2.6	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2020	**69**	12.2	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	1.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2021	**73**	12.2	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	1.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2022	**83**	12.2	LORENZO	LoB	Soybeans 30-36 inch row	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	2.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2023	**209**	12.2	LORENZO	LoB	Soybeans 30-36 inch row	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	5.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2024	**144**	12.2	LORENZO	LoB	Wheat spring (grain)	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	3.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2025	**93**	12.2	LORENZO	LoB	Wheat spring (grain)	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2026	**102**	12.2	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	2.6	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2027	**69**	12.2	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	1.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2028	**72**	12.2	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	340	0 - 2	1001 - 5000	B	2.4	506	1.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2018	**85**	20.1	WARSAW	WaB	Soybeans 30-36 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	3.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2019	**78**	20.1	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	2.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2020	**86**	20.1	WARSAW	WaB	Soybeans 30-36 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2021	**80**	20.1	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2022	**88**	20.1	WARSAW	WaB	Soybeans 30-36 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2023	**82**	20.1	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2024	**90**	20.1	WARSAW	WaB	Soybeans 30-36 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2025	**83**	20.1	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2026	**91**	20.1	WARSAW	WaB	Soybeans 30-36 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2027	**84**	20.1	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2028	**93**	20.1	WARSAW	WaB	Soybeans 30-36 inch row	No Till	3.9	165	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2018	**16**	3.8	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	3.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2019	**15**	3.8	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	2.8	0	0	FALSE	FALSE

Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2020	**16**	3.8	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2021	**15**	3.8	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2022	**17**	3.8	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2023	**16**	3.8	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2024	**17**	3.8	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2025	**16**	3.8	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2026	**17**	3.8	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2027	**16**	3.8	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2028	**18**	3.8	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.4	230	2.1 - 6	301 - 1000	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2018	**16**	4.8	LORENZO	LoB	Soybeans 30-36 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2019	**15**	4.8	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2020	**16**	4.8	LORENZO	LoB	Soybeans 30-36 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2021	**15**	4.8	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2022	**17**	4.8	LORENZO	LoB	Soybeans 30-36 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2023	**15**	4.8	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2024	**17**	4.8	LORENZO	LoB	Soybeans 30-36 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2025	**16**	4.8	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2026	**17**	4.8	LORENZO	LoB	Soybeans 30-36 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2027	**16**	4.8	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2028	**18**	4.8	LORENZO	LoB	Soybeans 30-36 inch row	No Till	1.7	300	2.1 - 6	301 - 1000	B	2.5	27	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2018	**13**	7.5	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2019	**12**	7.5	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2020	**13**	7.5	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2021	**13**	7.5	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2022	**13**	7.5	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2023	**13**	7.5	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2024	**14**	7.5	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2025	**14**	7.5	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2026	**14**	7.5	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2027	**14**	7.5	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2028	**14**	7.5	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.1	180	2.1 - 6	301 - 1000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2018	**105**	24.0	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	3.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2019	**97**	24.0	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	2.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2020	**108**	24.0	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2021	**100**	24.0	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2022	**110**	24.0	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2023	**102**	24.0	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	2.9	0	0	FALSE	FALSE

Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2024	**112**	24.0	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2025	**103**	24.0	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2026	**114**	24.0	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2027	**105**	24.0	WARSAW	WaB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	2.9	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2028	**116**	24.0	WARSAW	WaB	Soybeans 30-36 inch row	No Till	4.6	270	6.1 - 12	0 - 300	B	2.5	27	3.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2018	**3**	1.7	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2019	**3**	1.7	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2020	**3**	1.7	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2021	**3**	1.7	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2022	**3**	1.7	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2023	**3**	1.7	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2024	**3**	1.7	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2025	**3**	1.7	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2026	**3**	1.7	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2027	**3**	1.7	WARSAW	WaA	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2028	**3**	1.7	WARSAW	WaA	Soybeans 30-36 inch row	No Till	4.5	80	0 - 2	1001 - 5000	B	2.5	27	0.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2018	**68**	9.0	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2019	**62**	9.0	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2020	**69**	9.0	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2021	**63**	9.0	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2022	**70**	9.0	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2023	**64**	9.0	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2024	**71**	9.0	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2025	**65**	9.0	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2026	**71**	9.0	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2027	**66**	9.0	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2028	**72**	9.0	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.1	400	6.1 - 12	0 - 300	B	3.4	192	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2018	**61**	9.3	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	1.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2019	**64**	9.3	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	1.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2020	**73**	9.3	LORENZO	LoB	Soybeans 30-36 inch row	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	2.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2021	**184**	9.3	LORENZO	LoB	Soybeans 30-36 inch row	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	5.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2022	**127**	9.3	LORENZO	LoB	Wheat spring (grain)	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	3.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2023	**82**	9.3	LORENZO	LoB	Wheat spring (grain)	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2024	**90**	9.3	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	2.6	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2025	**60**	9.3	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	1.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2026	**64**	9.3	LORENZO	LoB	Corn grain	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	1.8	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2027	**29**	9.3	LORENZO	LoB	Soybeans 30-36 inch row	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	1.5	199	2.1	0	0	FALSE	FALSE

Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2028	**185**	9.3	LORENZO	LoB	Soybeans 30-36 inch row	Fall Chisel, no disk	2	400	2.1 - 6	1001 - 5000	B	2.3	567	5.7	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2018	**111**	14.4	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2019	**102**	14.4	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2020	**112**	14.4	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2021	**103**	14.4	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2022	**113**	14.4	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2023	**105**	14.4	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2024	**115**	14.4	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2025	**106**	14.4	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2026	**116**	14.4	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.5	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2027	**107**	14.4	LORENZO	LoB	Winter wheat (forage) to Soybeans, 30 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2028	**118**	14.4	LORENZO	LoB	Soybeans 30-36 inch row	No Till	4.5	290	2.1 - 6	0 - 300	B	3.2	203	2.5	0	0	FALSE	FALSE

WQ1: P Trade Report

Reported For	Alliant Riverside Full Trading Analysis
Printed	2018-06-11
Plan Completion/Update Date	2017-11-17
SnapPlus Version 17.0 built on 2018-05-07	
P:\1723 - Alliant - P Trade analysis for Riverside Energy Center\Analysis \SNAP PLUS\Alliant Riverside Full Trading Analysis.snapDb	

Prepared for:
Alliant Riverside Full Trading Analysis
attn:Alliant Riverside Full Trading Analysis
Town of Beloit,

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov/** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP										
Field Name	Soil Series	Soil Symbol	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
O1: ATC Laydown	LORENZO	LoC2	6	100	64	40	46	31	32	37	98	63	39	45
O2: ATC Substation	LORENZO	LoB	12	94	103	69	73	83	209	144	93	102	69	72
O3-A: Plant Operating Area	WARSAW	WaB	20	85	78	86	80	88	82	90	83	91	84	93
O3-B: Plant Green Space	WARSAW	WaB	4	16	15	16	15	17	16	17	16	17	16	18
O3-C: Plant Operating Area	LORENZO	LoB	5	16	15	16	15	17	15	17	16	17	16	18
O4: Offsite Plant Green Space	WARSAW	WaA	7	13	12	13	13	13	13	14	14	14	14	14
O5: Solar and Green Space	WARSAW	WaB	24	105	97	108	100	110	102	112	103	114	105	116

P Trade Report				PTP										
Field Name	Soil Series	Soil Symbol	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
O6: Substation	WARSAW	WaA	2	3	3	3	3	3	3	3	3	3	3	3
R1: SE Green Space	LORENZO	LoB	9	68	62	69	63	70	64	71	65	71	66	72
R2: SW Green Space	LORENZO	LoB	9	61	64	73	184	127	82	90	60	64	29	185
R3: Transmission Green Space	LORENZO	LoB	14	111	102	112	103	113	105	115	106	116	107	118
Total			**113**	**672**	**615**	**605**	**695**	**671**	**722**	**708**	**656**	**672**	**547**	**755**

County	Farm	Field	Year	PTP	Acres	Soil Series	Soil Symbol	Crop	Tillage	Slope	Slope Length	Below Field Slope	Below Field Slope Length	Soil Group	Soil Test OM	Soil Test P	Soil Loss	Contour	FilterStrip	Tiled	Irrigated
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2018	9	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.4	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2019	7	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2020	6	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2021	5	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2022	5	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2023	5	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2024	5	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2025	5	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2026	5	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2027	5	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O1: ATC Laydown	2028	5	6.0	LORENZO	LoC2	Grasslands, permanent, not harvested	None	2	380	2.1 - 6	1001 - 5000	B	2.1	211	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2018	47	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.3	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2019	31	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2020	27	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2021	24	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2022	23	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2023	23	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2024	22	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2025	22	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2026	22	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2027	22	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O2: ATC Substation	2028	22	12.2	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	330	0 - 2	1001 - 5000	B	2.4	506	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2018	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2019	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2020	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2021	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2022	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2023	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2024	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2025	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2026	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2027	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-A: Plant Operating Area	2028	3	20.1	WARSAW	WaB	Grasslands, permanent, not harvested	None	3.8	155	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2018	1	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2019	1	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE

Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2020	1	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2021	1	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2022	1	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2023	0	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2024	0	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2025	0	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2026	0	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2027	0	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-B: Plant Green Space	2028	0	3.8	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.3	220	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2018	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2019	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2020	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2021	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2022	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2023	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2024	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2025	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2026	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2027	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O3-C: Plant Operating Area	2028	1	4.8	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.6	290	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2018	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2019	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2020	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2021	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2022	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2023	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2024	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2025	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2026	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2027	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O4: Offsite Plant Green Space	2028	1	7.5	WARSAW	WaA	Grasslands, permanent, not harvested	None	4	170	2.1 - 6	301 - 1000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2018	4	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2019	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2020	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2021	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2022	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2023	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE

Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2024	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2025	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2026	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2027	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O5: Solar and Green Space	2028	3	24.0	WARSAW	WaB	Grasslands, permanent, not harvested	None	4.5	260	6.1 - 12	0 - 300	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2018	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2019	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2020	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2021	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2022	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2023	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2024	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2025	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2026	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2027	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	O6: Substation	2028	0	1.7	WARSAW	WaA	Grasslands, permanent, not harvested	None	4.4	70	0 - 2	1001 - 5000	B	2.5	27	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2018	14	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2019	8	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2020	8	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2021	7	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2022	7	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2023	7	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2024	7	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2025	7	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2026	7	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2027	7	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R1: SE Green Space	2028	7	9.0	LORENZO	LoB	Grasslands, permanent, not harvested	None	4	390	6.1 - 12	0 - 300	B	3.4	192	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2018	25	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.1	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2019	23	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2020	21	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2021	20	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2022	20	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2023	20	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2024	20	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2025	20	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2026	20	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2027	20	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE

Rock	Alliant Riverside Full Trading Analysis	R2: SW Green Space	2028	**19**	9.3	LORENZO	LoB	Grasslands, permanent, not harvested	None	1.9	390	2.1 - 6	1001 - 5000	B	2.3	567	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2018	**23**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.2	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2019	**14**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2020	**13**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2021	**12**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2022	**12**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2023	**12**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2024	**12**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2025	**12**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2026	**12**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2027	**12**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE
Rock	Alliant Riverside Full Trading Analysis	R3: Transmission Green Space	2028	**12**	14.4	LORENZO	LoB	Grasslands, permanent, not harvested	None	4.4	280	2.1 - 6	0 - 300	B	3.2	203	0.0	0	0	FALSE	FALSE

WQ1: P Trade Report

Reported For	Alliant Riverside Full Trading Analysis
Printed	2018-06-11
Plan Completion/Update Date	2018-05-09
SnapPlus Version 17.0 built on 2018-05-07	
P:\1723 - Alliant - P Trade analysis for Riverside Energy Center\Analysis \SNAP PLUS\Alliant Riverside Full Trading Analysis - Prairie.snapDb	

Prepared for:
Alliant Riverside Full Trading Analysis
attn:Alliant Riverside Full Trading Analysis
Town of Beloit,

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov/** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

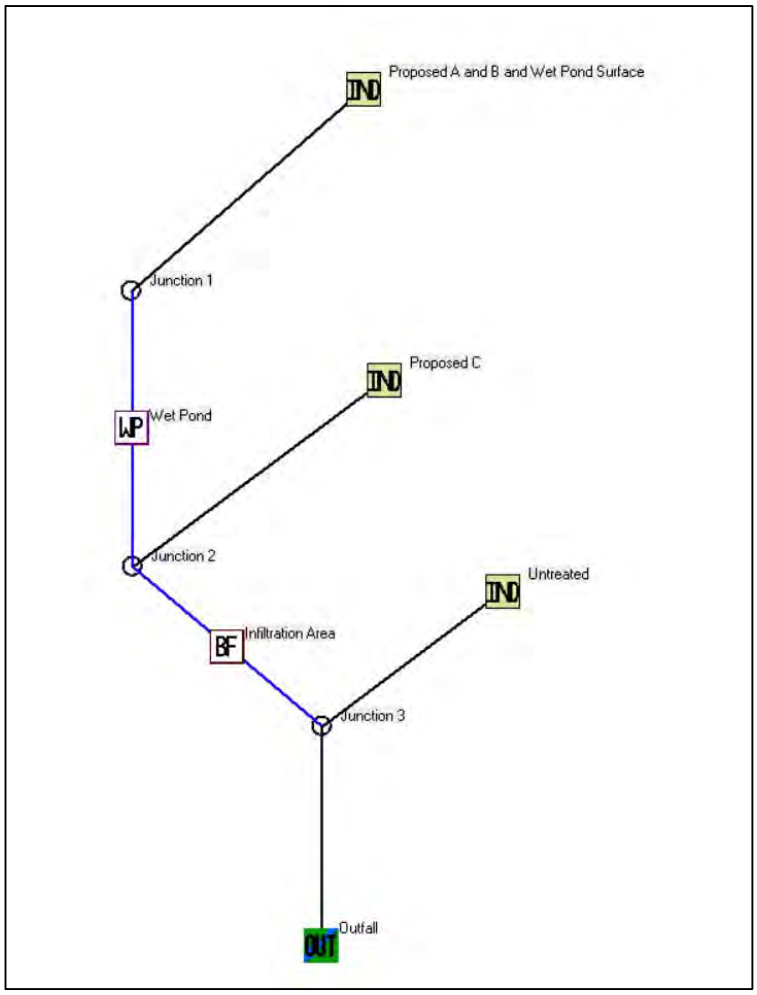
This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP										
Field Name	Soil Series	Soil Symbol	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
O1: ATC Laydown	LORENZO	LoC2	6	9	7	6	5	5	5	5	5	5	5	5
O2: ATC Substation	LORENZO	LoB	12	47	31	27	24	23	23	22	22	22	22	22
O3-A: Plant Operating Area	WARSAW	WaB	20	3	3	3	3	3	3	3	3	3	3	3
O3-B: Plant Green Space	WARSAW	WaB	4	1	1	1	1	1	0	0	0	0	0	0
O3-C: Plant Operating Area	LORENZO	LoB	5	1	1	1	1	1	1	1	1	1	1	1
O4: Offsite Plant Green Space	WARSAW	WaA	7	1	1	1	1	1	1	1	1	1	1	1
O5: Solar and Green Space	WARSAW	WaB	24	4	3	3	3	3	3	3	3	3	3	3

P Trade Report				PTP										
Field Name	Soil Series	Soil Symbol	Acres	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
O6: Substation	WARSAW	WaA	2	0	0	0	0	0	0	0	0	0	0	0
R1: SE Green Space	LORENZO	LoB	9	14	8	8	7	7	7	7	7	7	7	7
R2: SW Green Space	LORENZO	LoB	9	25	23	21	20	20	20	20	20	20	20	19
R3: Transmission Green Space	LORENZO	LoB	14	23	14	13	12	12	12	12	12	12	12	12
Total			**113**	**128**	**91**	**82**	**78**	**76**	**75**	**74**	**74**	**74**	**74**	**74**

WinSLAMM Analysis

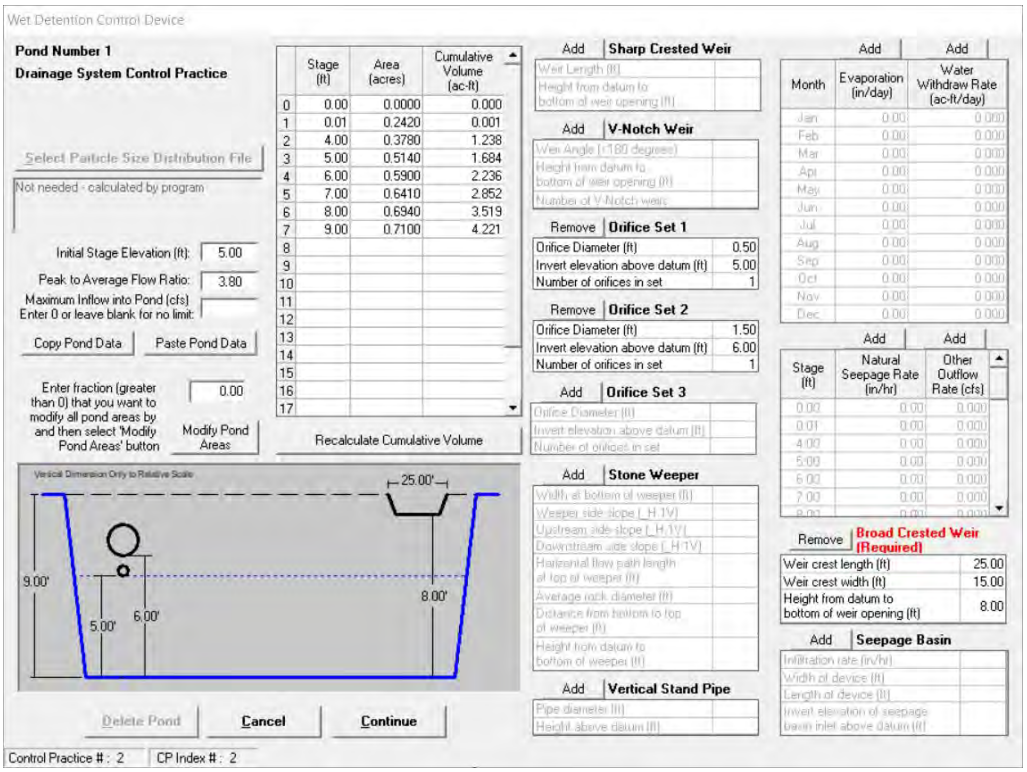
Kittyhawk Substation Proposed Conditions

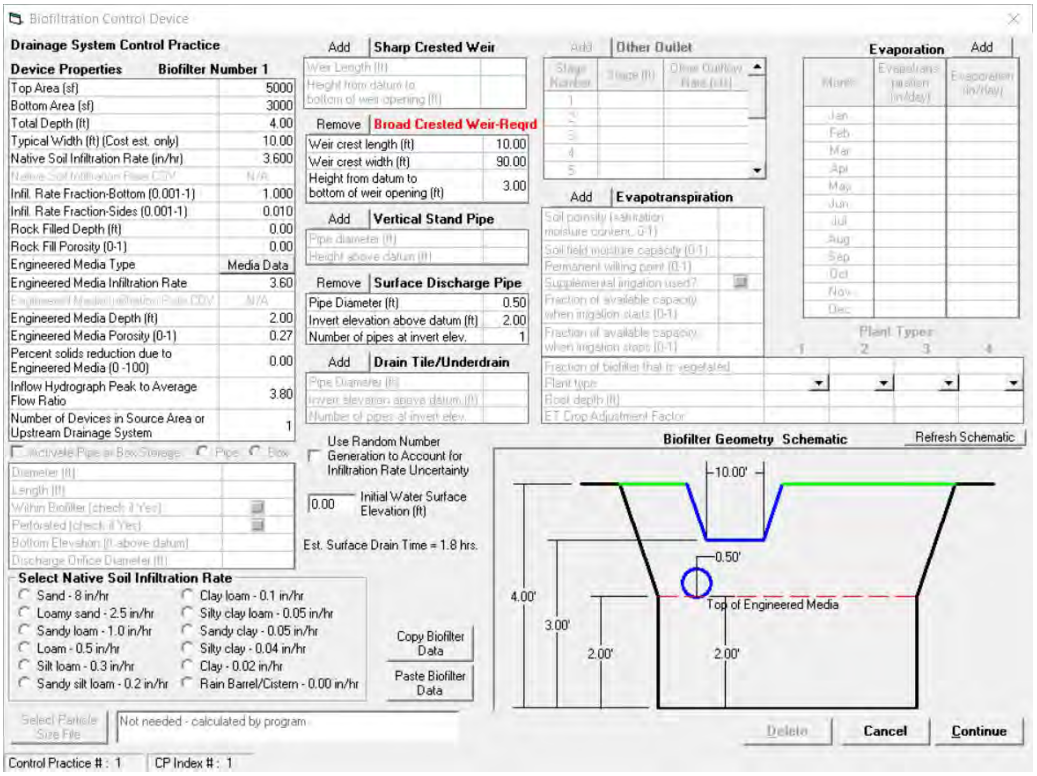


Land Use #	Land Use Type	Land Use Label	Land Use Area (acres)
1	Industrial	Proposed A and B and Wet Pond Surfa	8.145
2	Industrial	Proposed C	0.320
3	Industrial	Untreated	0.120

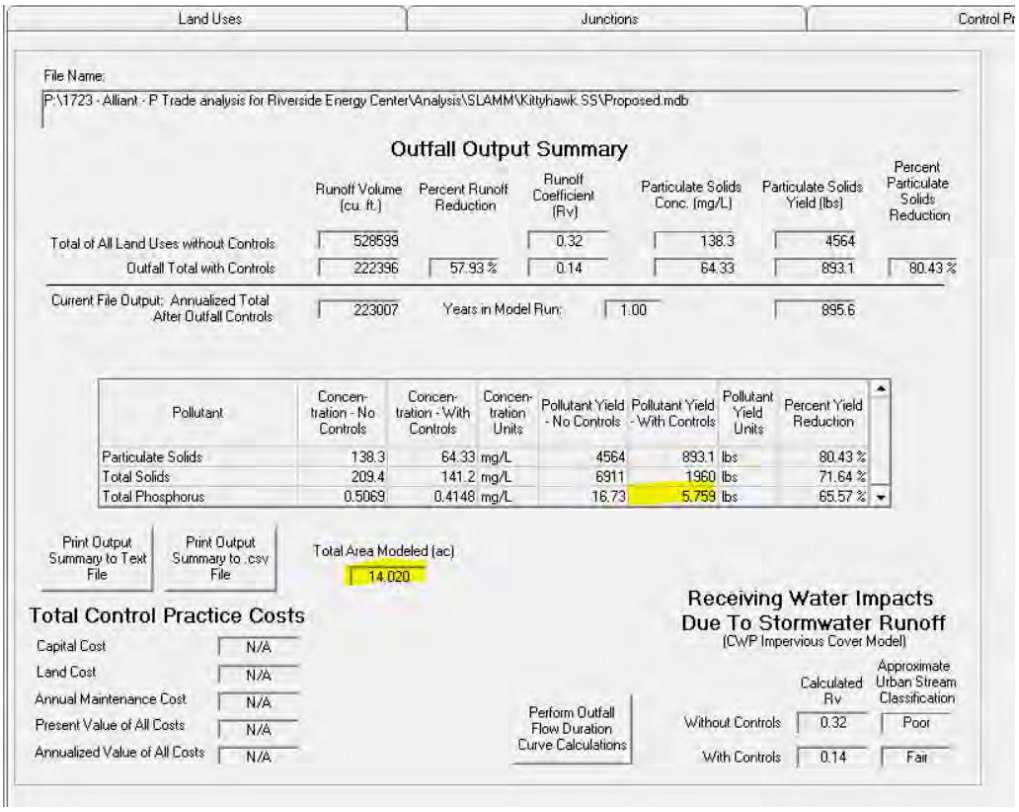
CP #	Control Practice Type	Control Practice Name or Location
1	Biofilter	Infiltration Area
2	Wet Detention Pond	Wet Pond

WinSLAMM Analysis





WinSLAMM Analysis



Land Uses | Junctions | Control Pr

File Name:

P:\1723 - Alliant - P Trade analysis for Riverside Energy Center\Analysis\SLAMM\Kittyhawk SS\Proposed.mdb

Outfall Output Summary

	Runoff Volume (cu. ft.)	Percent Runoff Reduction	Runoff Coefficient (Rv)	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of All Land Uses without Controls	528599		0.32	138.3	4564	
Outfall Total with Controls	222396	57.93 %	0.14	64.33	893.1	80.43 %
Current File Output: Annualized Total After Outfall Controls	223007	Years in Model Run:	1.00		895.6	

Pollutant	Concentration - No Controls	Concentration - With Controls	Concentration Units	Pollutant Yield - No Controls	Pollutant Yield - With Controls	Pollutant Yield Units	Percent Yield Reduction
Particulate Solids	138.3	64.33	mg/L	4564	893.1	lbs	80.43 %
Total Solids	209.4	141.2	mg/L	6911	1960	lbs	71.64 %
Total Phosphorus	0.5069	0.4148	mg/L	16.73	5.759	lbs	65.57 %

Print Output Summary to Text File | Print Output Summary to .csv File

Total Area Modeled (ac): 14.020

Total Control Practice Costs

Capital Cost	N/A
Land Cost	N/A
Annual Maintenance Cost	N/A
Present Value of All Costs	N/A
Annualized Value of All Costs	N/A

Perform Outfall Flow Duration Curve Calculations

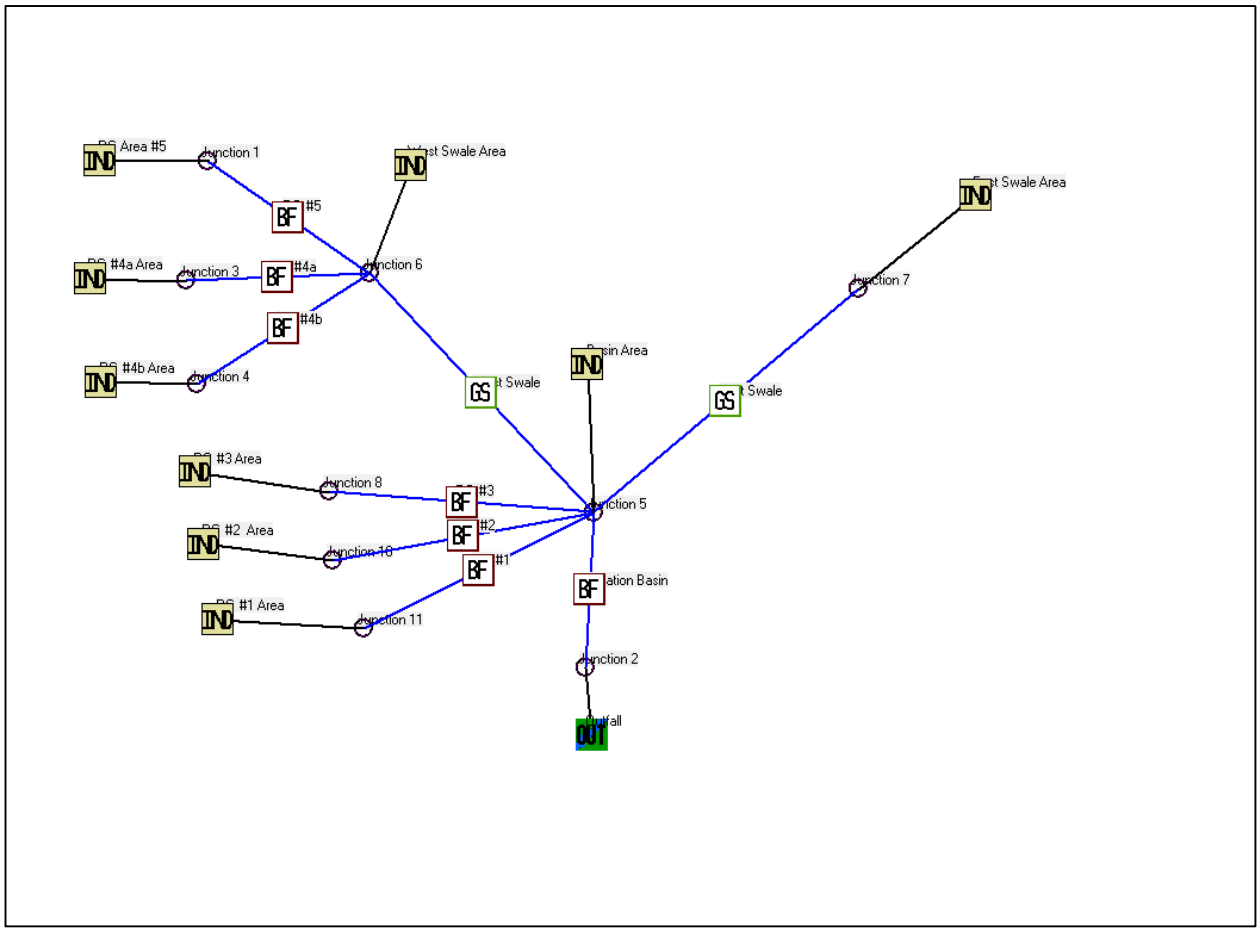
Receiving Water Impacts Due To Stormwater Runoff

(CWP Impervious Cover Model)

	Calculated Rv	Approximate Urban Stream Classification
Without Controls	0.32	Poor
With Controls	0.14	Fair

WinSLAMM Analysis

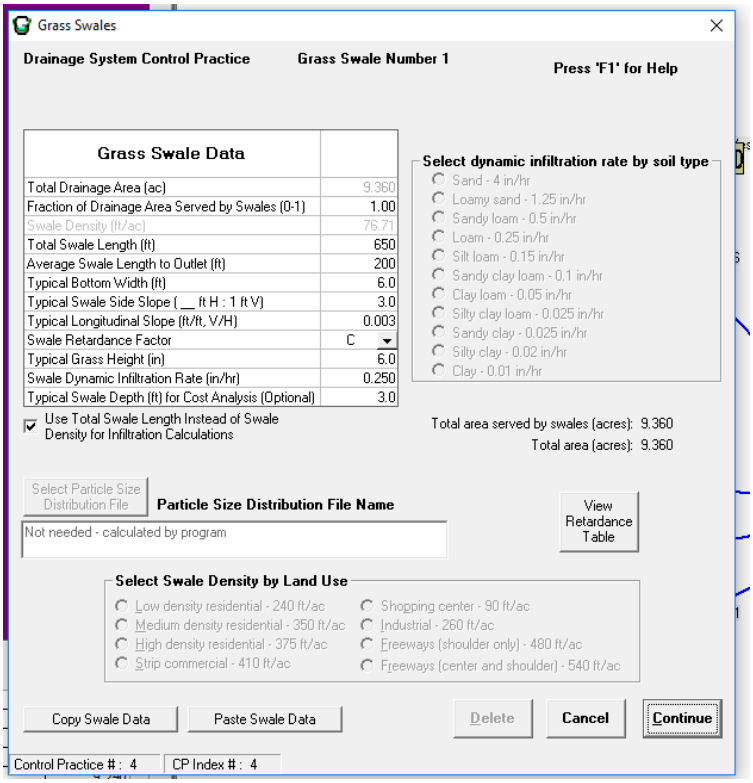
West Riverside Energy Center Proposed Conditions

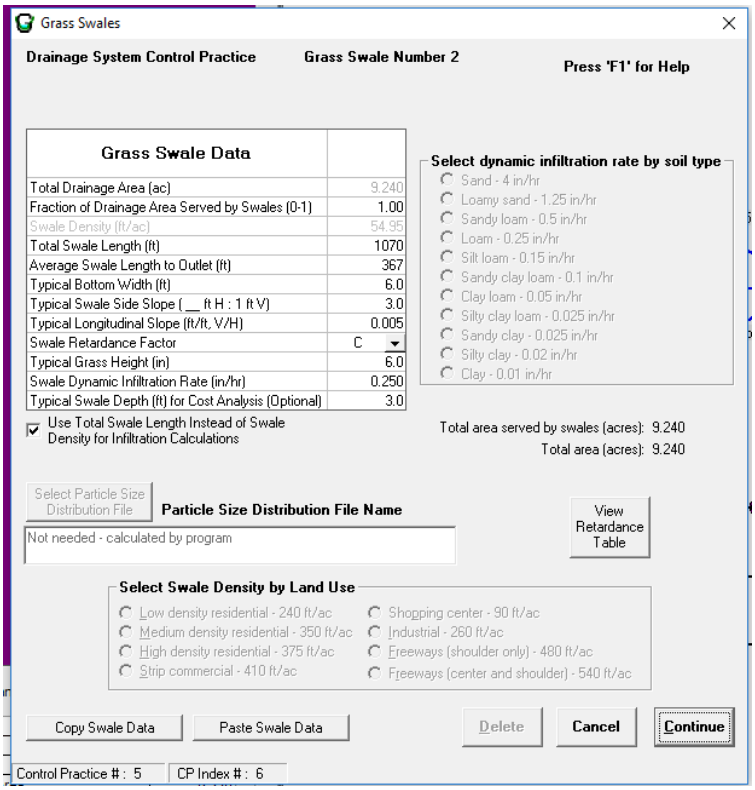


Land Use #	Land Use Type	Land Use Label	Land Use Area (acres)
1	Industrial	RG Area #5	0.680
2	Industrial	RG #4a Area	0.270
3	Industrial	RG #4b Area	1.690
4	Industrial	West Swale Area	6.720
5	Industrial	East Swale Area	9.240
6	Industrial	RG #3 Area	0.600
7	Industrial	Basin Area	7.620
8	Industrial	RG #2 Area	0.390
9	Industrial	RG #1 Area	0.390

CP #	Control Practice Type	Control Practice Name or Location
1	Biofilter	RG #5
2	Biofilter	RG #4a
3	Biofilter	RG #4b
4	Grass Swales	West Swale
5	Grass Swales	East Swale
6	Biofilter	RG #3
7	Biofilter	RG #2
8	Biofilter	RG #1
9	Biofilter	Infiltration Basin

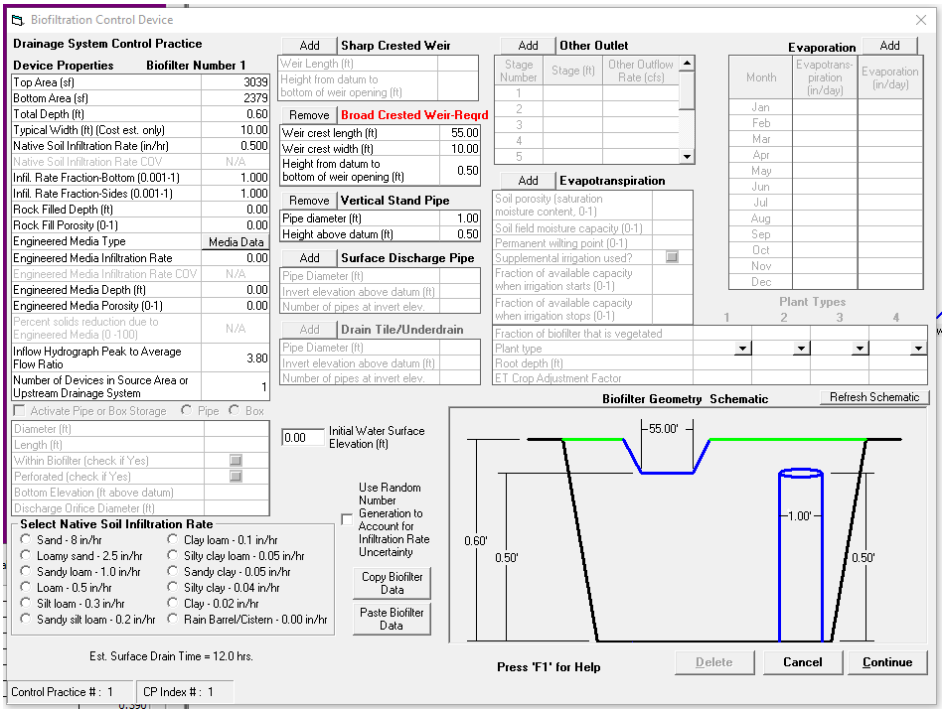
WinSLAMM Analysis



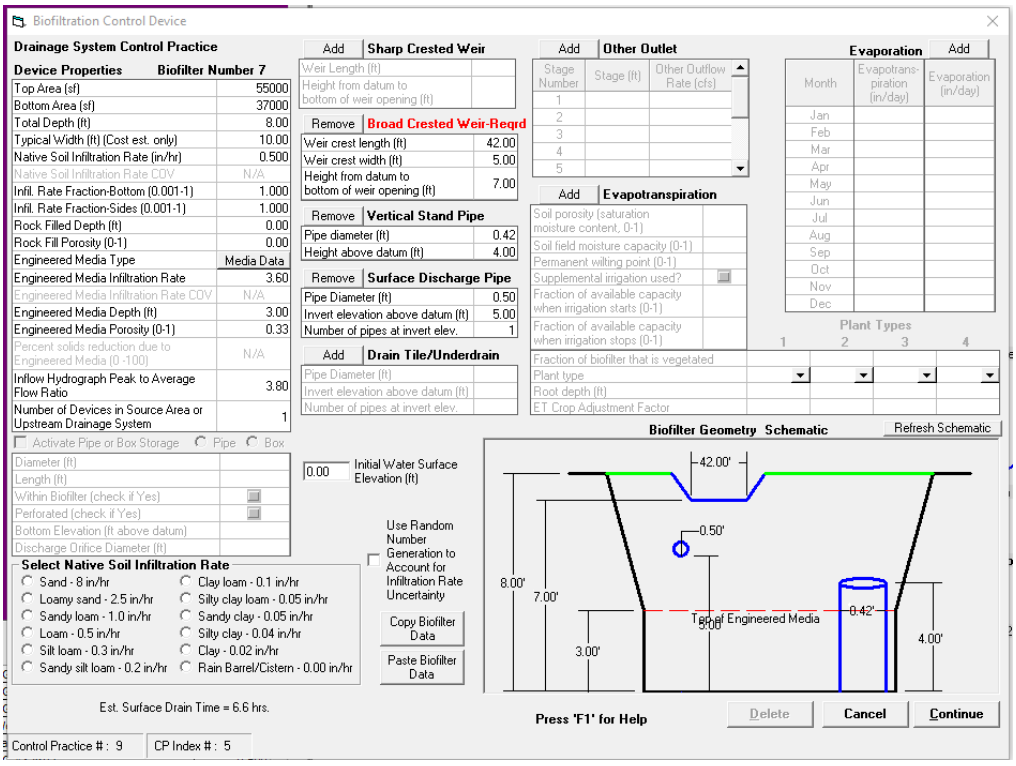


WinSLAMM Analysis

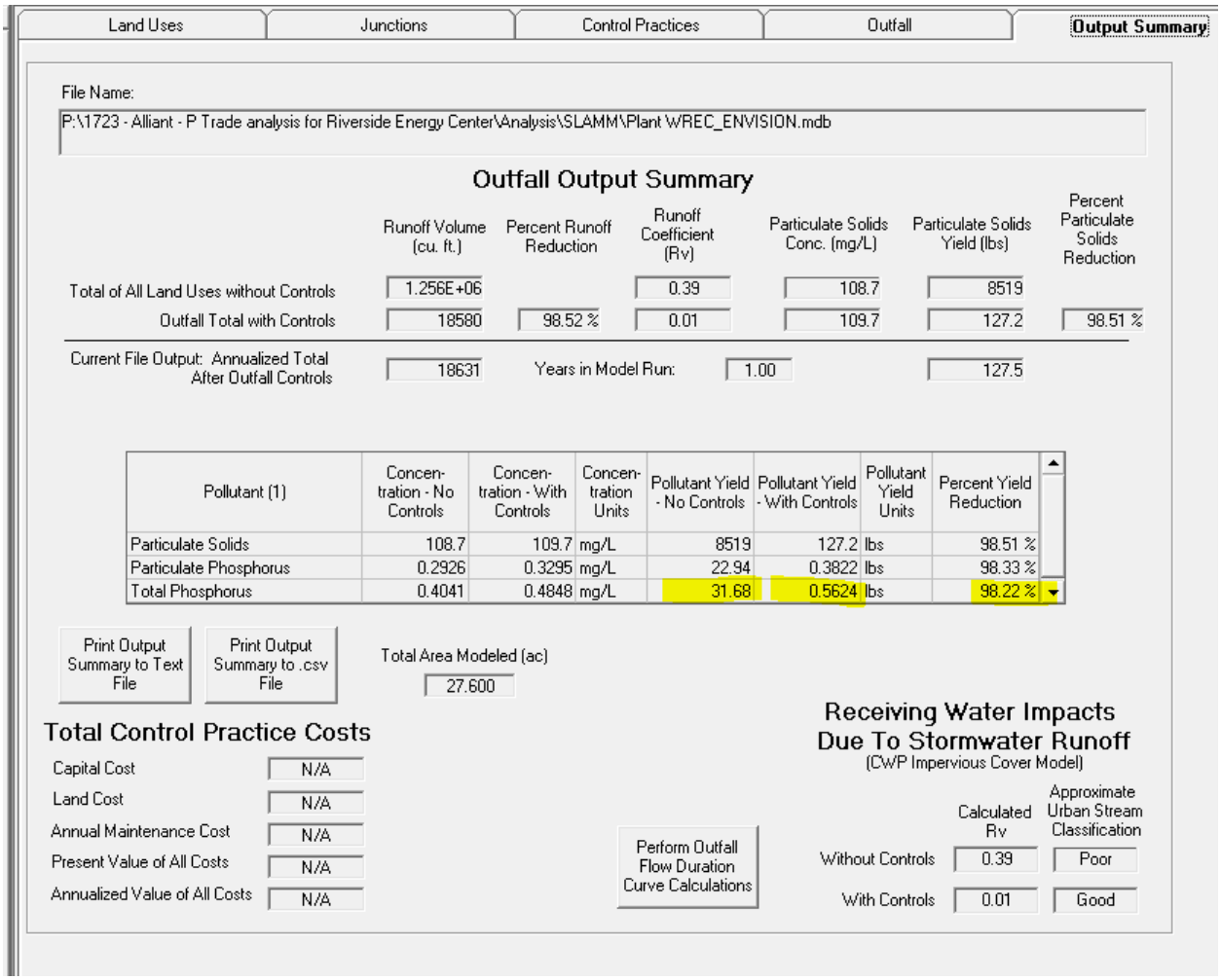
All Rain gardens modeled the same



Large Infiltration Area



WinSLAMM Analysis



Appendix D – Restoration and Maintenance Plans

Riverside Energy Center
Water Quality Trading
Operation and Maintenance Plan

Town of Beloit
Rock County, WI

Prepared for:
Alliant Energy, Wisconsin Power & Light Co.

November 30, 2017

Montgomery Associates
Resource Solutions, LLC • ma-rs.org

MARS Project #1723

119 South Main Street, Cottage Grove, WI 53527 | 608-839-4422

Table of Contents

List of Attachments

1 Background

This plan has been prepared to describe the operation and maintenance of the areas described in the Riverside Energy Center Water Quality Trading Plan. These areas will be managed to reduce the export of sediment and phosphorus from the site to meet the conditions of the trading plan. These management practices will control phosphorus export by reducing sediment export from erosion as well as reducing runoff volume. The management practices and contributing areas shall be inspected annually by Alliant Energy, or an authorized representative, with reports prepared and submitted to the Wisconsin DNR.

1.1 Areas Described

All areas described in this plan are part of the Riverside Energy Center Water Quality Trading Plan and identified on the attached *Figure 1*. The total site is approximately 112 acres south of WBR Townline Rd, on the east and west side of S Walters Rd in the Town of Beloit, Rock County, WI. The land is primarily divided into two land use types, perennial vegetation (primarily prairie restoration) areas and developed areas draining to stormwater facilities. Additional descriptions of the areas are provided in *Section 2*.

1.2 Access

All areas described within this plan shall be accessed by foot during inspections. Several parking areas are available at existing field access drives and driveways. The two fenced areas (West Riverside Energy Center and Kittyhawk Substation) will have more specific access conditions.

The areas and stormwater facilities within the fence at the Riverside Energy Center shall be inspected within the fence. Access to these areas shall be coordinated by contacting the Plant Manager (contact information below).

Observations of stormwater facilities and site conditions at Kittyhawk Substation shall be made by walking the site. Parking is available at one of the driveways on the west side of S Walters Rd. The general site conditions and stormwater facility inspections shall be performed on foot outside of the substation fence, additionally, conditions of the gravel pad shall be made from outside of the fence. Access within the fence is not anticipated unless significant erosion or runoff issues develop.

If it is determined that maintenance is required on any of the land management areas or stormwater practices, a specific access plan should be developed. The access plan will consider the scope of work and equipment needs. Ground disturbance shall be minimized to the extent possible, and environmentally sensitive areas avoided.

1.3 Contact information

The following people shall be contacted prior to performing any inspections on the areas described in this plan and if any maintenance is required. This section shall be updated if other individuals fill these rolls in the future.

Riverside Energy Center Plant Manager
Paul Gregor
401 W B-R Townline Road, Beloit WI 53511
Office: (608) 361-5116
paulgregor@alliantenery.com

Manager – Environmental Services, Compliance
Bill Skalitzky
4902 N. Biltmore Lane, Madison, WI 53718
Office: (608) 458-3108 | Cell: (608) 575-5831
williamskalitzky@alliantenergy.com

2 Operation, Inspection, and Maintenance

2.1 Restoration Areas

Areas covered

The areas converted to native prairie restoration, or perennial vegetative "green space" are as follows; the South West Green Space, the Transmission Green Space, the South East Green Space and, the Plant Green Space, the Solar and Green Space area, and the ATC laydown area. These areas are being evaluated and established over several years due to construction activities on the site, as described in the Water Quality Trading Plan. As each area is evaluated and restored, a unique maintenance plan will be developed amended to this plan.

The ATC laydown area shall be included as part of the restoration area operation and maintenance procedures when the area is restored after transmission line construction (2019). The area is set aside for future expansion of the Kittyhawk Substation. A planned schedule for this expansion has not been established at this time. Prior to this expansion, and after use for laydown, this area will be restored to perennial vegetation. When the substation expansion is planned and designed this location will be revaluated and this plan updated.

Inspections

The inspections will evaluate the overall vegetative cover as well as identify areas of rill or gulley erosion. Meander surveys will be conducted annually on all areas of native prairie restoration annually

in August. More frequent inspections are recommended in the first two years of vegetation establishment. These surveys will report the vegetation density and richness as well as note the presence of invasive species. Any areas of erosion will be noted and recommendations for maintenance provided (if necessary).

Maintenance

Maintenance of the perennial vegetation areas will be performed at the recommendation of an ecologist or trained engineer. In the first year of establishment it is recommended that the native restoration areas are mowed when the vegetation reaches a height of 12-14". Vegetation should be cut to a height of 6-8" to allow sunlight to reach slower growing vegetation and compete with weeds or invasive species. In the second growing season vegetation should be mowed after reaching a height of 24-26" and cut to a height of 12-14".

After the second growing season spot mowing or herbicide treatment may be needed to control invasive species. Areas of poor vegetation establishment shall be re-seeded as necessary. If areas of erosion are identified appropriate vegetation and/or structural practices shall be recommended.

Reporting

Detailed inspection and maintenance reports shall be created after each inspection and meander survey. These reports shall include descriptions of the vegetative cover and condition. Photo logs shall be included as an attachment to the report. These reports shall be provided to the DNR as described in the Riverside Energy Center Water Quality Trading Plan.

2.2 Stormwater Facilities

Areas Covered

The areas to be covered by these inspections include the stormwater facilities, as well as, the areas draining to the facilities. These areas include the Kittyhawk Substation, the Plant Parking and Green Space, the Plant Operating Area, the Plant Stormwater Facilities, and the Alliant Substation.

Inspections and Maintenance

Inspections on all stormwater facilities shall be completed a minimum of once per year. Permitted storm water facilities shall be inspected and maintained according to any recorded maintenance agreements. Both the West Riverside Energy Center and Kittyhawk Substation stormwater facilities have maintenance agreements with the Town of Beloit (see attached).

Contributing Areas

Contributing areas to stormwater facilities should be maintained to limit erosion and sediment losses. Areas of excessive erosion or poor ground cover shall be noted. The export of soil or other sediment from contributing areas can result in failure of stormwater facilities or increased maintenance frequency.

Areas of minor erosion or with poor vegetative cover may be maintained by seeding and mulching to re-establish good cover. Areas of significant erosion, such as large rills or gullies, may require minor regrading to convey channelized flow. Any areas of significant sediment generation, such as grave, or dirt roads, should be managed to prevent the transport of sediment to stormwater facilities. Recommendations may be made by a qualified engineer upon identification of an issue

Wet Ponds

Wet ponds maintenance shall conform to the recommendations of WDNR Conservation practice standard 1001 and any approved maintenance agreement. All inflow points to the pond shall be inspected for stability and areas of erosion noted. Embankments shall be inspected for erosion, seepage, or growth of woody vegetation. The permanent pool shall be evaluated to ensure an average depth of at least 3.5 ft. The outlet structure shall be inspected to ensure it is in good condition and functioning as designed.

Wet ponds shall be dredged to remove accumulated sediment when the permanent pool depth is less than 3.5 ft., to achieve a pool depth of at least 5 ft. Spoils shall be appropriately handled and disposed of according to NR 500, Wis Adm. Code. Woody vegetation shall be removed from the embankments or within the pond. Any additional issues that may impact the functionality of the pond shall be addressed as recommended by a qualified engineer.

Rain Garden and Infiltration Areas

Rain gardens and infiltration areas shall be inspected and maintained in conformance with WDNR Conservation Practice Standard 1003 and any approved maintenance agreement. All embankments and side slopes shall be inspected for areas of erosion, seepage or extensive woody vegetation growth. Infiltration areas shall be inspected for signs of extended ponding such as dead vegetations or sediment rings, a sign of a clogged infiltration surface. Standing water should not be present in the infiltration area more than 3 days after rainfall. Vegetation should be maintained so that there are no areas bare of vegetation or have excessive vegetative growth that would limit the facility storage.

If surface infiltration has been impacted by accumulated sediment the top 3-4 inches of engineered soil media shall be removed and tilled to promote infiltration. Appropriate vegetation management will also help to promote infiltration by breaking up the sediment layer. Any additional issues that may impact the functionality of the facilities shall be addressed as recommended by a qualified engineer.

Swales

Vegetated swales shall be inspected and maintained in conformance with WDNR Conservation Practice Standard 1005 and any approved maintenance agreement. Swales should have good vegetative

cover in all areas, especially the channel flow line. Areas of erosion, dead vegetation, or sediment accumulation shall be noted as these factors may indicate insufficient swale conveyance capacity. Areas of excessive vegetation shall also be noted as it may reduce the swale conveyance capacity.

If persistent ponding is occurring within swales with grades less than 1%, an underdrain may be added to reduce ponding and improve drainage. Minor areas of dead vegetation shall be restored with seed and mulch, or erosion mat if located on the channel flow line. Grassed swales shall be mowed regularly to maintain channel capacity. With vegetation being cut to approximately 4" or shorter if vegetative growth exceeds 8". Any additional issues that may impact the functionality of the facilities shall be addressed as recommended by a qualified engineer.

Storm Sewers and Culverts

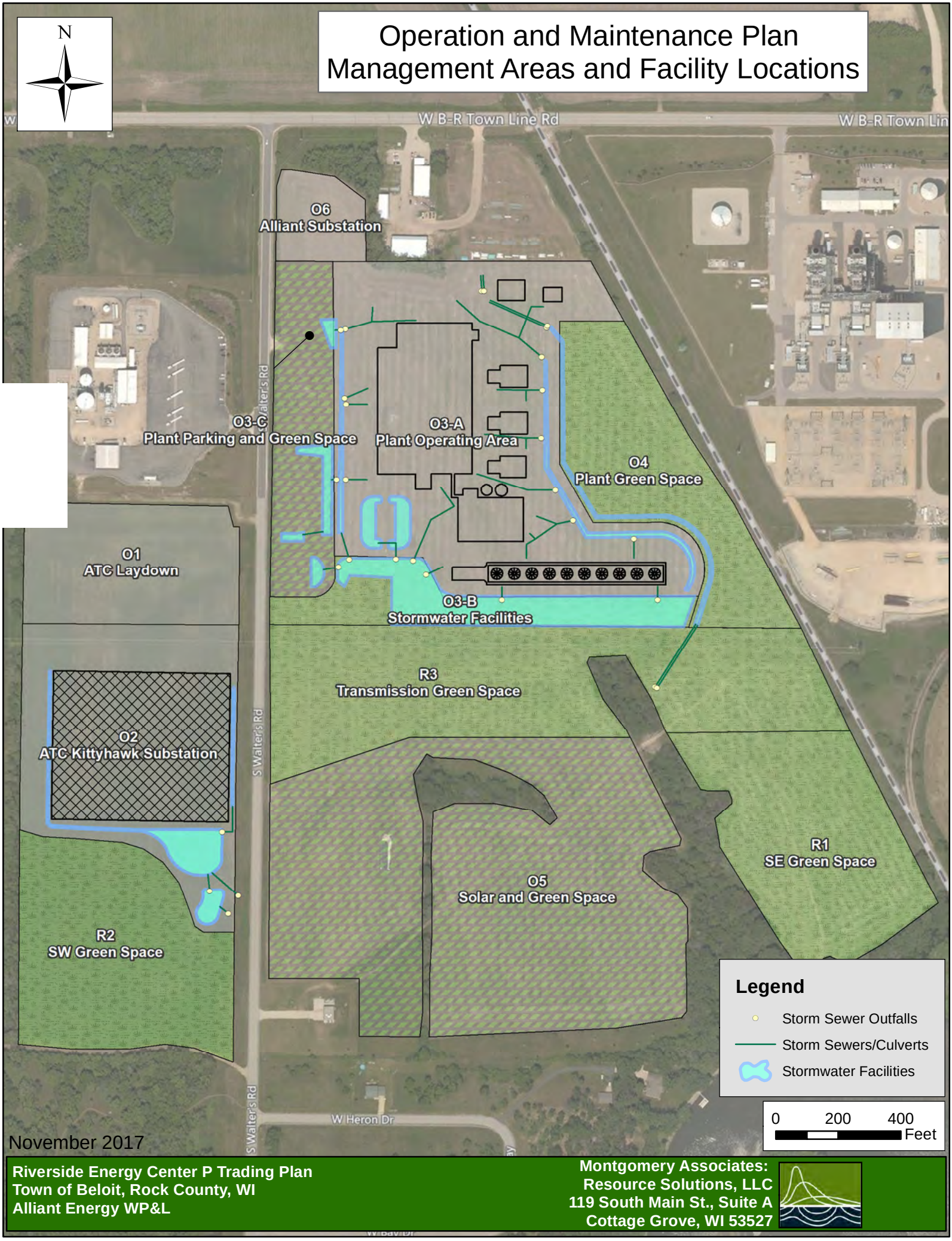
Storm sewers and culverts shall be inspected to ensure they are in good working condition. Pipes should not have accumulation of sediment or debris. Inlets and outlets shall be inspected for the presence of significant erosion or blockage. Driveway culverts should not be crushed or deformed.

Any accumulated debris and sediment shall be removed if the depth exceeds 2". Upstream sources of sediment shall be identified and remedied if possible. Areas of erosion around outlets shall be stabilized with a properly sized rip-rap pad. Any deformed or damaged culverts and storm sewers shall be replaced in a timely manner. Any additional issues that may impact the functionality of the facilities shall be addressed as recommended by a qualified engineer.

Reporting

Detailed inspection and maintenance reports shall be prepared after each inspection. These reports shall include descriptions of the vegetative cover and condition as well as the conditions of impervious areas. Stormwater facility conditions and recommended maintenance provisions (if needed) shall also be described. Photo logs shall be included as an attachment to the report. The attached inspection logs shall be completed during each inspection and attached to the report. These reports shall be provided to the DNR as described in the Riverside Energy Center Water Quality Trading Plan.

Figures


N
Operation and Maintenance Plan
Management Areas and Facility Locations
W B-R Town Line Rd
W B-R Town Lin
O6
Alliant Substation
S Walters Rd
O3-C
Plant Parking and Green Space
O3-A
Plant Operating Area
O4
Plant Green Space
O1
ATC Laydown
O3-B
Stormwater Facilities
R3
Transmission Green Space
O2
ATC Kittyhawk Substation
R1
SE Green Space
O5
Solar and Green Space
R2
SW Green Space
W Heron Dr
Legend
Storm Sewer Outfalls
Storm Sewers/Culverts
Stormwater Facilities
0
200
400
Feet
November 2017
Riverside Energy Center P Trading Plan
Town of Beloit, Rock County, WI
Alliant Energy WP&L
Montgomery Associates:
Resource Solutions, LLC
119 South Main St., Suite A
Cottage Grove, WI 53527

Approved Maintenance Agreements

STORM WATER MANAGEMENT PRACTICES
MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into this_____ day of _____, 2017, by and between Alliant Energy/Wisconsin Power and Light Company hereinafter called the "Owner", and the Township of Beloit, hereinafter called the "Town".

WITNESSETH:

WHEREAS, the Owner is the owner of the following described lands situated in the Town of Beloit, County of Rock County, State of Wisconsin, to-wit:

ASSESSORS PLAT
PT OUTLOTS 4 & 5 COM 50.01'
S OF N1/4 COR E 276.19',
SE ALG RR R/W 2798.43'
SW 25', SE 569.36',
W 2416.85' TO E LN
RD, N 2885.59', NE 92.53',
E 245.51', S 399.99', E 200'
N 399.99' TO POB
(EXC CSM 36-78)

hereinafter called the "Property".

WHEREAS, the Owner is developing the property; and

WHEREAS, the development provides for on-site storm water management practices within the confines of the Property; and

WHEREAS, the Town and the Owner, its successors and assigns, require that on-site storm water management practices as defined in Chapter 8 of the Town of Beloit Ordinance be constructed and maintained on the Property; and

WHEREAS, the Town requires that on-site storm water management practices as shown on the Plan be constructed and adequately maintained by the Owner, its successors and assigns.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The on-site storm water management practices shall be constructed by the Owner, its successors and assigns, in accordance with the development plans and specifications and applicable statutes, ordinances and rules.

2. The Owner, its successors and assigns, shall regularly inspect the storm water management practices and specifically the function of the approved storm water

management system as often as conditions require, but in any event at least once each year.

3. The Owner, its successors and assigns, shall adequately maintain the storm water management practices, including but not limited to pipes, channels, structures, improvements, and vegetation provided to control the quantity and quality of the storm water. Adequate maintenance is herein defined as keeping the storm water management devices in good working condition.

4. The Owner, its successors and assigns, hereby grant permission to the Community Development Department as the authorized agent and employees of the Town, to enter upon the Property and to inspect the storm water management practices as necessary to ascertain that the practices are being maintained and operated in accordance with the agreement.

5. The Town shall maintain public records of the results of the site inspections, inform the Owner of the inspection results, and to specifically indicate any corrective actions required to bring the storm water management practice into proper working condition.

6. The Owner, as the responsible for long term maintenance of the storm water management practices, shall be notified by the Town, Community Development Department or Public Works Department(s) of maintenance problems which require corrections. The specified corrective actions shall be undertaken within a reasonable time frame as set by the Community Development Department.

7. If the Owner does not make the required corrections in the specified time period, the Community Development Department has authorization to perform the corrected actions identified in the inspection report. The Town Finance Director/Treasurer shall enter the amount due on the tax rolls and collect the money as a special charge against the property pursuant to Subch. VII of Chapter 66, Wis. Stats.

Signatures

The undersigned agrees to the provisions set forth in this agreement.

_____

Signature or Authorized Agent for Owner

_____

Name and Title

_____

Date

Exhibit A
Minimum Storm Water Practice Maintenance Requirements

This exhibit explains the basic function of each of the storm water practices and the maintenance requirements beyond the minimum requirements to remain compliant with this Agreement. The maintenance activities listed below are aimed to ensure these practices continue serving their intended functions. The list of activities is not all inclusive, but rather indicates the minimum type of maintenance that can be expected for this particular site.

WET DETENTION POND
OPERATION AND MAINTENANCE

I. ROUTINE MAINTENANCE

A. Mowing

1. Side slopes, embankments, and emergency spillways that are not rock lined which have been planted with turf grasses should be mowed at least twice a year to prevent woody growth and control noxious weeds.

2. More frequent mowing, typically once a week during a normal growing season, is recommended for aesthetic and allergy control purposes.

3. Native grasses should be mowed to a height of 6" in mid to late summer or after they have achieved a height of 1-1/2 feet during the first growing season. Further mowing in subsequent growing seasons will not be required

B. Inspections

1. Inspections of the ponds shall he completed on a quarterly basis or after significant rainfall events.

2. The inspections should be completed during wet weather conditions to determine if the ponds are functioning properly.

3. Inspection priorities shall be as follows:

a. Inspect the embankments for subsidence, erosion, cracking and tree growth.

b. Inspect the condition of the emergency spillway and overland flow path.

c. Inspect the pond for accumulation of sediment.

d. Inspect the outlet control structure for clogs, debris and material failures.

e. Inspect upstream and downstream channels from an erosion perspective.

f. Inspect any modifications that may have been done to the ponds following their initial construction.

g. Inspect the side slopes of the pond for erosion, slumping, cracking or woody plant materials.

4. As-built plans shall accompany the person responsible for the pond inspections.

5. Documentation of the inspections should be completed and filed. Documentation should include at a minimum:

a. Inspectors name, affiliation and professional credentials if applicable.

b. Date, time and weather conditions.

c. Approximate rainfall total over a 24 hour period if applicable.

d. Existing embankment, outlet and inlet conveyance systems and vegetation condition.

e. Sediment depth at the outlet control structure and at a minimum one other location.

f. Identification of potential structural failures and repair needs

g. Other pond conditions such as vegetation growth, algae growth and emergency spillway conditions.

h. Repair recommendations.

C. Debris and Litter Removal.

1. Debris and litter removal from the pond surface shall be completed at least once a month.
2. Particular attention should be paid to debris accumulating around the riser pipe to prevent potential clogging.

D. Erosion Control.

1. The pond side slopes, embankments and emergency spillways may suffer from periodic slumpage and erosion.

2. Corrective measures shall include re-grading, filling and re-vegetation of the eroded or slumping areas.

3. Rip rap at the pond outlet and emergency spillways should be inspected for displacement or undermining. Repairs shall be made upon discovery.

E. Nuisance Control.

1. Biological control of algae and mosquitoes is preferred over chemical control. Consultation with local WDNR officials is recommended prior to the introduction of any biological control.

2. Maintaining the native grass perimeter will aide in the control of geese.

3. Mechanical controls should be used when feasible.

II. NON-ROUTINE MAINTENANCE

A. Structural Repairs and Replacement.

1. Annual inspection of the outlet structures will disclose any potential structural problems. If structural problems appear, repair or replace the outlet.

2. Excessive or chronic drawdown of the ponds may cause leaks or seepage through the embankments. Excessive drawdown should be avoided and thus corrective measures for leakage and seepage can be avoided.

B. Sediment Removal

1. A sediment clean out cycle of 10 to 15 years is recommended. Sediment removal may be necessary prior to 10 years if there is a substantial amount of land disturbance occurring within the contributory watershed. Annual inspections shall be made to insure that the design depth of the permanent water pool is maintained.

2. Sediment removed from the ponds shall be hauled to an upland area, spread and stabilized with vegetative material or disposed of in accordance with Chapter NR 528 of the Wisconsin Administrative Code.

3. Surveyed depths of the sediment storage area and permanent pool elevations shall be made immediately following the construction of the ponds and recorded on the as-built plans. Annual inspections shall include measure downs to determine sediment elevations in relation to the permanent pool elevation.

III. ADDITIONAL CONSIDERATIONS TO IMPROVE POND WATER QUALITY AND REDUCE MAINTENANCE COSTS.

A. General.

1. Improper disposal of yard wastes will affect the water quality of the wet ponds and may cause clogging of the outlet structure.

2. Improper fertilizer and pesticide application will affect the water quality of the wet ponds and add to algae growth.

3. Excess lawn watering will affect the water quality of the ponds due to increased water runoff that may contain fertilizers and pesticides.

B. Yard Care

1. It is recommended to consider routine yard care maintenance that is practical and environmentally sound.

2. Refer to the U.W. Extension's "Rethinking Yard Care" for additional information.

C. Leaves and Yard Trimmings.

1. It is recommended that leaves and yard trimmings be properly disposed of.

2. Refer to the U.W. Extension's "Managing Leaves and Yard Trimmings" for further information.

D. Lawn and Garden Fertilizers.

1. It is recommended to control fertilizer applications on lawn and gardens so as not to be detrimental to the water quality of the ponds.

2. Refer to the U.W. Extension's "Lawn and Garden Fertilizers" for further information.

E. Lawn and Garden Pesticides.

1. Lawn and garden pesticides may pollute surface and ground water.

2. Refer to the U.W. Extension's "Lawn and Garden Pesticides" for further information.

F. Lawn Watering.

1. Excess lawn watering will wash pollutants into the wet ponds.

2. Refer to the U.W. Extension's "Lawn Watering" for further information.

G. Lawn Weed Control.

1. Proper turf management will lower the amount of the chemicals that may runoff into the wet ponds during rain events.

2. Refer to the U.W. Extension's "Lawn Weed Control" for further information.

VEGETATED FILTER STRIPS
OPERATION AND MAINTENANCE

I. INSPECTION

A. Inspect quarterly and after every major storm event.

B. Inspect for erosion, accumulation of sediment, diversions and short circuiting, standing water and the accumulation of litter.

II. MAINTENANCE

A. Do not mow vegetation to a height lower than the design flow depth.

B. Minimize the use of fertilizers and pesticides.

C. Do not use heavy equipment to mow. Mowing should occur during dry periods to avoid compaction.

D. Repair and reseed eroded areas immediately upon discovery.

GRASSED SWALES
OPERATION AND MAINTENANCE

I. INSPECTION

A. Inspection should occur seasonally and after major rainfall events.

B. Inspect for sediment deposition, check dam bypassing, erosion and litter.

C. Nuisance conditions such as woody plant growth and mosquito breeding areas should also be identified and removed.

II. MAINTENANCE

A. Mow only to maintain the vegetation at a height greater than the design flow depth.

B. Maintain the vegetated liner in a vigorous condition.

C. Depending on the vegetative material, mowing may be infrequent or unnecessary.

D. Remove woody plants that may invade the swale.

E. If the swale is damaged by road salts, remove the damaged area and replant with salt tolerant grasses.

F. Discourage deposition of leaf litter and grass clippings by informing, typically by signage, local residents of the swales purpose.

CULVERTS
OPERATION AND MAINTENANCE

I. INSPECTION

A. Culverts should be inspected twice a year and after heavy rainfall.

B. Inspect for sediment deposition, scour at the ends of pipe, accumulations of trash and obstructions.

II. MAINTENANCE

A. Scour areas should be repaired with clean fill and replacement of end treatment (rip rap, TRM, etc.). Scour areas with no end treatment should be stabilized with topsoil, seed and erosion control mat at a minimum.

B. Sediment deposits, trash and obstructions should be removed from the pipe ends.

C. Material deposited within the pipe should be promptly removed to maintain the conveyance capacity of the pipe.

EXHIBIT A

Description of Property:

Owner:
Alliant Energy Wisconsin Power and Light Company

Property Address:
(To be provided upon receipt of driveway permit)

Property is located in the SE ¼ - NW ¼ of Section 2, T1N, R12E town of Beloit, Rock County.

Maintenance provisions:

Stormwater Management Maintenance Measures

- Facilities showing signs of soil erosion should be repaired with emphasis put on grassed waterways being maintained for proper stormwater conveyance.
- Facilities or parts of facilities with no vegetation shall be restored to good vegetated catch.
- To maximize filtration, mowing in buffer areas around stormwater ponds should be minimized. If occasional mowing is necessary, the mowing height is recommended to be no shorter than 6 inches.

Wet Detention Basins:

- The landowner shall visually inspect the wet detention basin outfalls and outlet structures annually. The inspections shall include checking for potential problems such as: subsidence erosion, tree growth in and around the embankment and outfall areas, sediment accumulation, clogging of the outfall structure, and damage to emergency spillway. Problems identified by the inspections shall be repaired as soon as is practical.
- All undesirable vegetation and volunteer tree growth shall be removed, including close proximity to any outfall and the outlet structures.
- Sediment accumulations shall be removed by dredging when sediment accumulation results in a permanent pool depth less than 3 feet. The dredged material shall be removed and disposed of in accordance with NR 347.
- The owner shall at a minimum maintain records of installation, inspections, mowing, clearing, and other maintenance of the system.

Infiltration Basins

- Inspections of the infiltration basins shall be done at least semi-annually in early spring and early fall, until permanent vegetation is established. Infiltration area inspections shall include inlet pipe and condition of vegetation as part of inspection. If standing water is observed over 50% of the pond floor 3 days after rainfall, the pond is clogged and measures should be undertaken to unclog it. Acceptable measures include removing the top 2 to 3 inches, chisel plowing and replacing engineered soil material. If deep tilling is used, the pond shall be drained and the soils dried to a depth of 8 inches. After procedures, the owner /operator shall replant with State-approved native plugs.

Prairie Restoration Maintenance Plans

ECO-RESOURCE CONSULTING, INC

MEMORANDUM

TO: ROBERT MONTGOMERY, RYAN STENJEM – MONTGOMERY ASSOCIATES: RESOURCE SOLUTIONS (MARS)

FROM: ECO-RESOURCE CONSULTING, INC.

SUBJECT: ALLIANT ENERGY RIVERSIDE ENERGY PARK – SW GREEN SPACE RESTORATION PLAN

DATE: 11/8/2017

CC: **STEVE HJORT, CLAY FRAZER**

RE: SW Green Space Preliminary Findings and Recommendations

Summary:
On October 31, 2017 ERC senior ecological staff members Clayton Frazer and Daniel Fuhs conducted a precursory field investigation of the 8 +/- acre "SW Green Space" unit at Alliant Energy's Riverside Energy Park. Observations were made on current vegetation, land use, and soil conditions with the intent of developing a Native Prairie Restoration Plan for this field/unit.

Three soil test pits were advanced to classify soil structure, type, horizons, and to collect soil for lab testing. The location of the test pits can be viewed on ERC Figure 4 (enclosed).

Vegetation:
The eastern 2/3 of the unit was planted (drilled) into a temporary cover crop of soybeans, winter wheat, and rye. This was likely a late season planting as the soybeans are underdeveloped (approx. 8"). Annual weeds are sparse and include pigweed, lambsquarters, and curly dock.

The western 1/3 of the unit was planted into corn in spring of 2017. This was presumably Roundup-Ready corn as weed control was excellent. The corn was harvested and heavy/dense residue persists (stalks, leaves, cobs).

Soil Type/Structure:
Mapped soils include loams and silt loams. The largest portion of the unit is mapped as a Lorenzo Loam with 2-5% slopes. Mapped soils on the balance of the field include; Warsaw Silt Loam 0-2% slope Warsaw Silt loam 2-6% slope, and Lorenzo Loam 6-12% slope – eroded. These mapped soils were consistent with ERC's on-site findings (see ERC Figure 2).

Soil Compaction:
Soils across the unit are generally lacking porosity and are heavily compacted down to a 20" depth. This is likely a hard pan layer that has developed following years of agricultural use.
Topography:
Topography on this unit is lightly rolling and trends from the northwest to the southeast. Drainage is more pronounced in the eastern third of the unit through a shallow swale.

Soil Test Results:
Soil pH was low on two samples. Organic Matter (OM) percentage is low (<2% on two samples) and very low (<1%) on sample 3. Phosphorus levels are high to excessive on each sample.

Additional Considerations:

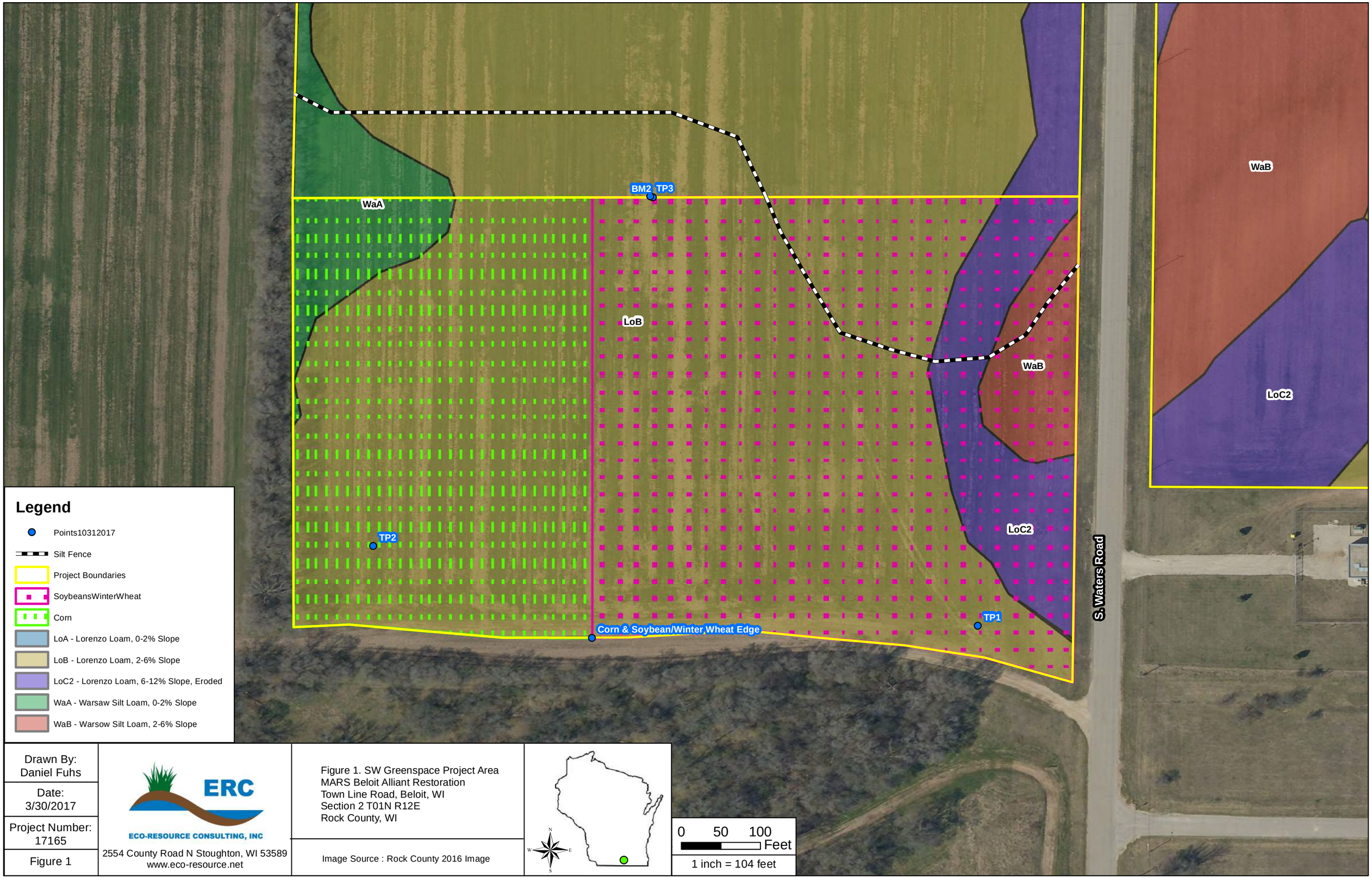
- Silt fence currently extends into the unit near the northeast corner (see ERC Figure 4).
- The tree lines along the west and south edges of the unit contain high densities of mature common buckthorn and Asian bush honeysuckle. These woody invasive species will propagate seedlings into the restoration unit and should be eradicated.

Preliminary Recommendations:
Based on the amount of surface vegetation, crop residue, compaction, and low pH levels, ERC recommends that seedbed preparation be conducted prior to installation of native seed. A heavy disk-ripper should be used to turn over surface residue and breakup the plow-pan layer. This action may also serve to increase soil pH slightly. During this seedbed preparation, Dolomitic limestone should be applied at 2.5- 3 tons per acre. Surface soils should be finished with a harrow-finisher. This will smooth clods and root balls, and will prepare an ideal soil surface for either broadcast seeding or no-till drill installation of a native seed mix.

If this seedbed preparation can be conducted in November or December, native seed can be broadcasted in the winter months up to the time 3-5 inches of snow exists on the site. A dormant winter seeding will increase seed germination rates of forbs and will result in a longer 2018 growing season. If site preparation cannot be conducted until the spring of 2018, the native seed mix can be drilled in May or June with a specialized no-till native seed drill.

Native Seed Mix:
ERC Ecologists will design a native seed mix ideal for soil and hydrology conditions which meets the client's objectives. Based on current conditions, ERC recommends a mix with a base of tall-stature C4 (warm season) grasses. Representative C4 grass species would be big bluestem, Indiangrass, and switchgrass along with a modest array of native forbs and legumes to help prevent broad-leaved weed incursion and to maximize nutrient uptake.

Attachments:
ERC Figure 2 – NRCS Web Soil Viewer
ERC Figure 4 – 10/31 Site Visit
Site Assessment Photos Available for Review



Drawn By: Daniel Fuhs

Date: 3/30/2017

Project Number: 17165

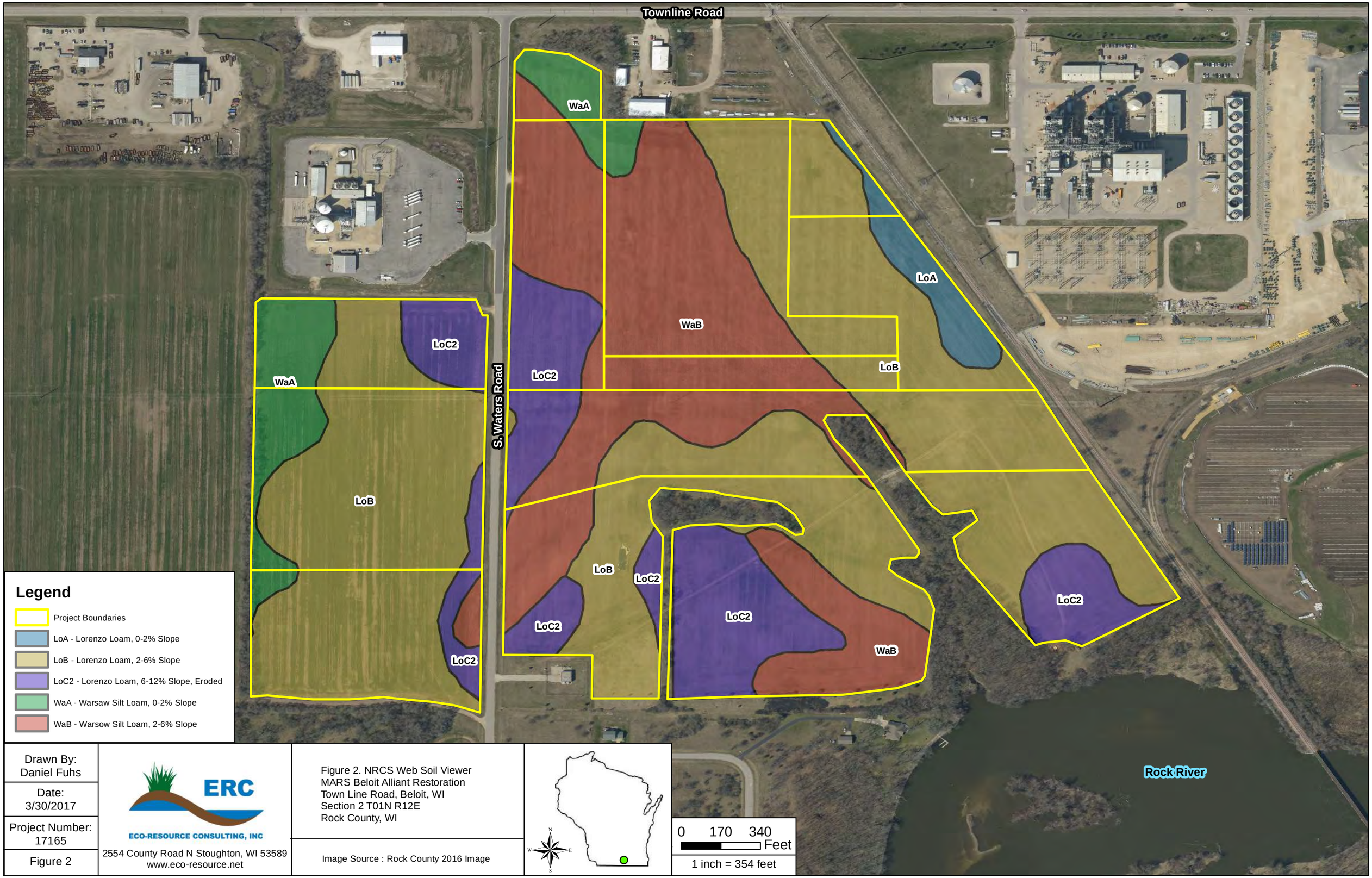
Figure 1

ERC
ECO-RESOURCE CONSULTING, INC

2554 County Road N Stoughton, WI 53589
www.eco-resource.net

Figure 1. SW Greenspace Project Area
MARS Beloit Alliant Restoration
Town Line Road, Beloit, WI
Section 2 T01N R12E
Rock County, WI

Image Source : Rock County 2016 Image



Drawn By: Daniel Fuhs

Date: 3/30/2017

Project Number: 17165

Figure 2

ERC
ECO-RESOURCE CONSULTING, INC

2554 County Road N Stoughton, WI 53589
www.eco-resource.net

Figure 2. NRCS Web Soil Viewer
MARS Beloit Alliant Restoration
Town Line Road, Beloit, WI
Section 2 T01N R12E
Rock County, WI

Image Source : Rock County 2016 Image

Stormwater Facility Inspection Report Templates

West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

General Information

Date of last inspection	
Date of current inspection	
Date of next inspection	

This inspection completed by: (include name of inspector, company, and phone number)		
Does inspector have a copy of the Stormwater Management Plan (Y/N)?		
Has the inspector reviewed the previous inspection report (Y/N, N/A)?		
Are there Maintenance Action Items that need to be checked during this inspection (Y/N)?		

Current weather conditions	
Recent weather conditions and precipitation (cite data source such as NOAA NOWData at www.weather.gov/climate/xmacis.php?wfo=mkx)	

Other people/equipment on site	

West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

General Site Conditions

Note: Mark on the "Site Plan" sheet as needed to clarify items on this sheet

General Site Conditions	Y/N	Describe Specific Location	Describe Condition (Notes)	Photo Number(s)	Maintenance Required? If "yes" see "Maintenance Action Items" sheet
Is there any erosion or are there any rills or gullies anywhere on site, other than the specific areas described on the "Specific Facility Conditions" sheet?					
Are there any bare spots (<70% cover) in areas that are to be vegetated?					
Are there any areas of erosion on site, outside of the stormwater facilities (not listed on the specific facility conditions pages)?					
Are there any temporary erosion control measures that should be removed from the site?					

West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

Specific Facility Conditions (1 of 4)

Note: Mark on the "Outlet Structure Details" sheet or "Site Plan" sheet as needed to clarify items on this sheet

Stormwater/Drainage Facilities		Describe Condition (Notes)	Photo Number(s)	Is Maintenance Required? If "yes" see "Maintenance Action Items" sheet
Wet Pond	Condition of the stone weeper leading out of the basin (freely draining or outflow affected by debris)			
	Description of vegetation			
	Water level relative to basin outlet structure, indication of high water mark (if any)			
	Sediment in basin			
	Sloughing, uneven settling, eroding of berm around basin, etc.			
	Condition of receiving area (from downstream end of stone weeper leading out of basin to property boundary)			
Rain Garden 1	Condition of the outlet structure of the basin (freely draining or outflow affected by debris)			
	Condition of curb cut or flume leading into basin			
	Description of vegetation			
	Any indications of extended ponding within the basin.			
	Sediment accumulation in basin			
	Sloughing, uneven settling, erosion around basin, etc.			
	Condition of receiving area (from downstream end of outlet pipe into swale or pond)			

West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

Specific Facility Conditions (2 of 4)

Note: Mark on the "Outlet Structure Details" sheet or "Site Plan" sheet as needed to clarify items on this sheet

Stormwater/Drainage Facilities		Describe Condition (Notes)	Photo Number(s)	Is Maintenance Required? If "yes" see "Maintenance Action Items" sheet
Rain Garden 2	Condition of the outlet structure of the basin (freely draining or outflow affected by debris)			
	Condition of curb cut or flume leading into basin			
	Description of vegetation			
	Any indications of extended ponding within the basin.			
	Sediment accumulation in basin			
	Sloughing, uneven settling, erosion around basin, etc.			
	Condition of receiving area (from downstream end of outlet pipe into swale or pond)			
Rain Garden 3	Condition of the outlet structure of the basin (freely draining or outflow affected by debris)			
	Condition of curb cut or flume leading into basin			
	Description of vegetation			
	Any indications of extended ponding within the basin.			
	Sediment accumulation in basin			
	Sloughing, uneven settling, erosion around basin, etc.			
	Condition of receiving area (from downstream end of outlet pipe into swale or pond)			

West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

Specific Facility Conditions (3 of 4)

Note: Mark on the "Outlet Structure Details" sheet or "Site Plan" sheet as needed to clarify items on this sheet

Stormwater/Drainage Facilities		Describe Condition (Notes)	Photo Number(s)	Is Maintenance Required? If "yes" see "Maintenance Action Items" sheet
Rain Garden 4	Condition of the outlet structure of the basin (freely draining or outflow affected by debris)			
	Condition of curb cut or flume leading into basin			
	Description of vegetation			
	Any indications of extended ponding within the basin.			
	Sediment accumulation in basin			
	Sloughing, uneven settling, erosion around basin, etc.			
	Condition of receiving area (from downstream end of outlet pipe into swale or pond)			
Rain Garden 5	Condition of the outlet structure of the basin (freely draining or outflow affected by debris)			
	Condition of curb cut or flume leading into basin			
	Description of vegetation			
	Any indications of extended ponding within the basin.			
	Sediment accumulation in basin			
	Sloughing, uneven settling, erosion around basin, etc.			
	Condition of receiving area (from downstream end of outlet pipe into swale or pond)			

West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

Specific Facility Conditions (4 of 4)

Note: Mark on the "Outlet Structure Details" sheet or "Site Plan" sheet as needed to clarify items on this sheet

Stormwater/Drainage Facilities		Describe Condition (Notes)	Photo Number(s)	Is Maintenance Required? If "yes" see "Maintenance Action Items" sheet
Other Facilities	**Perimeter Swales (surrounding substation):** Include description of vegetation, erosion, debris, sediment, etc.	Swale 1 (WesVegetated Swale):		
		Swale 2 (East Vegetated Swale):		
		Swale 3 (East Bypass Swale):		
	Storm Sewers: Include description of upstream end, downstream end, riprap, debris, sediment, overtopping, etc. Outlets from raingardens are not included in the storm sewer outfalls. Please note the conditions of outlet structures from rain gardens on the previous page.	Storm Sewer 1 (West Swale Outlet):		
		Storm Sewer 2 (Bypass Swale Upstream Pipe):		
		Storm Sewer 3 (Bypass Swale Outlet Pipe):		
		Storm Sewer Outfalls to Swale 1 (OF 1-4):		
		Storm Sewer Outfalls to Swale 2 (OF 5-8):		
		Storm Sewer Outfalls to Wet Pond (OF 9-14):		

West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

Maintenance Action Items

Note: Include one Maintenance Action Item for each issue that needs maintenance (each stormwater/drainage facility may have multiple Maintenance Action Items)

		MAI Status				Urgency		
MAI Number	Maintenance Action Item Description	Identified during current inspection	Identified previously, maint.completed	Identified previously, needs additional maint.	Identified previously, maint. not completed	Critical [1]	Urgent [2]	Not Urgent [3]

Notes:
1. Public safety could be at risk if MAI is not completed.
2. The site is not in compliance with the approved SWM plan if MAI is not completed.
3. MAI needs to be completed, but public safety is not at risk and site is still in compliance with SWM plan.

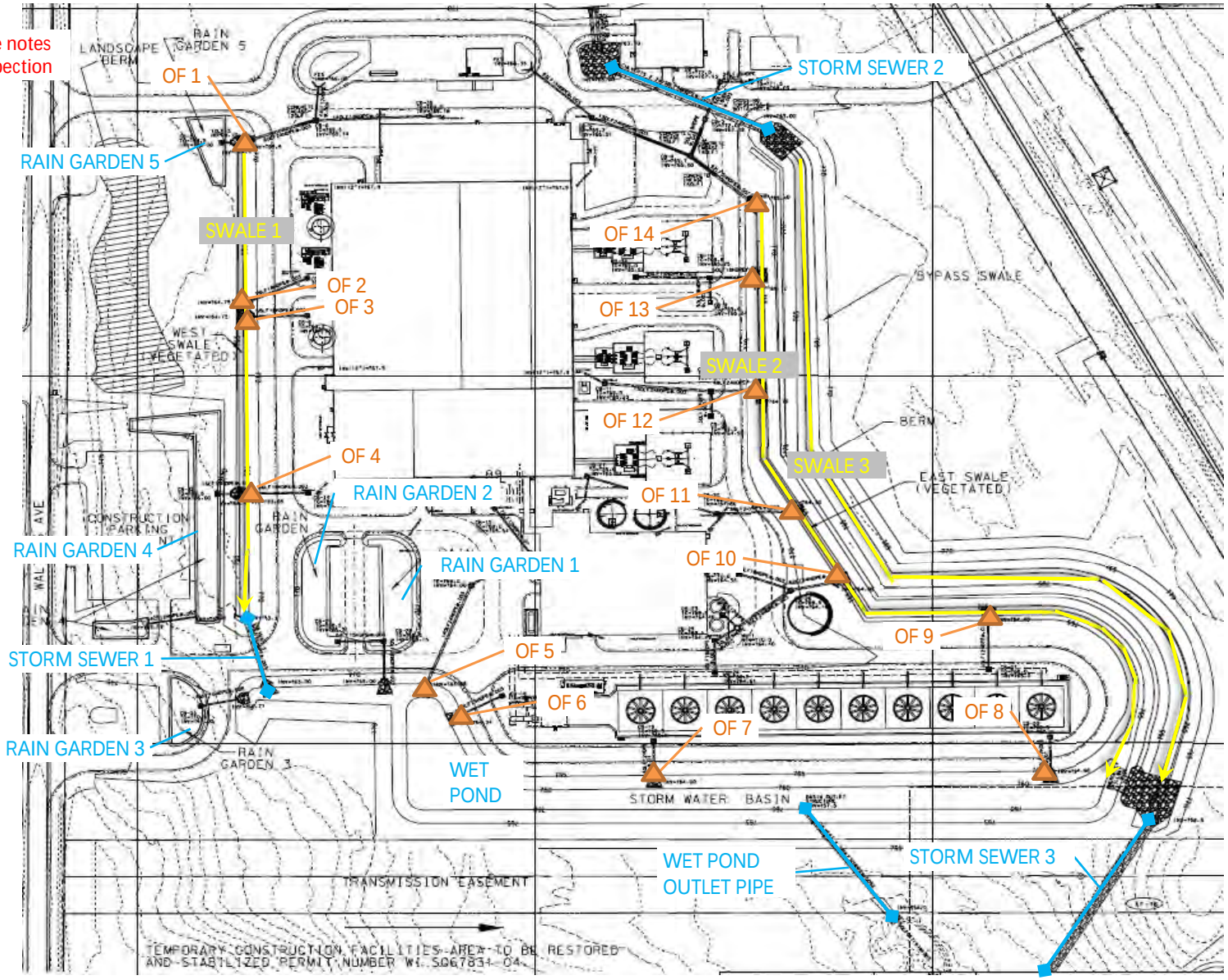
West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

Site Plan

Note: Mark on this "Site Plan" sheet as needed to clarify items on the "General Site Conditions" and "Specific Facility Conditions" sheets

Include any site notes from latest inspection



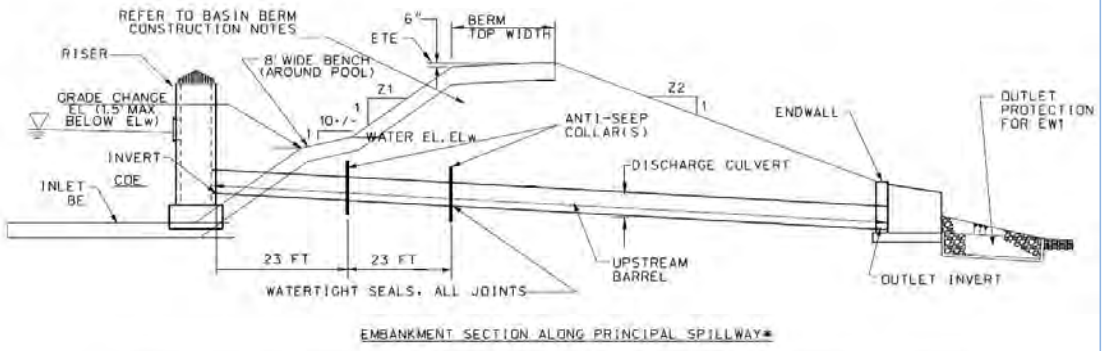
West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

Outlet Structure Details

Note: Mark on this sheet as needed to clarify items on the "Specific Facility Conditions" sheet(s)

WET POND OUTLET STRUCTURE

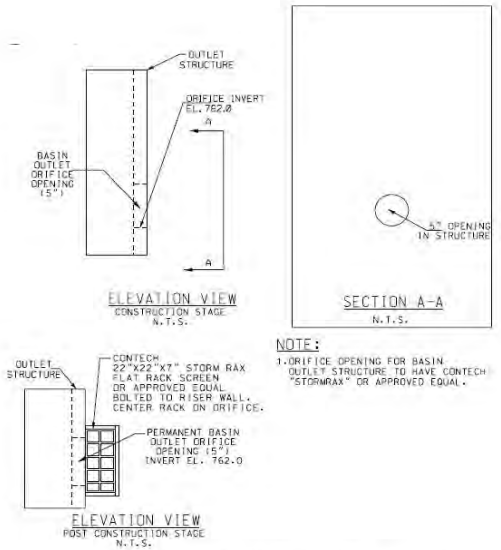


EMBANKMENT SECTION ALONG PRINCIPAL SPILLWAY*

SEDIMENT BASIN NO.	Z1 (FT)	Z2 (FT)	DISCHARGE BARREL Dia (IN)	DISCHARGE BARREL INLET ELEV (FT)	DISCHARGE BARREL MAT'L	DISCHARGE BARREL PIPE LENGTH (FT)	DISCHARGE BARREL OUTLET INVERT (FT)	EMBANKMENT TOP ELEV ETE (FT)	EMBANKMENT TOP WIDTH ETw (FT)	BASIN CLEAN OUT ELEV COE (FT)	BASIN BOTTOM ELEV BE (FT)
SB-3	3.0	3.0	30	757.5	HDPE	180	756.5	769.0	10	759.0	757.0

NOTE: A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEAN OUT ELEVATION ON THE STAKE.

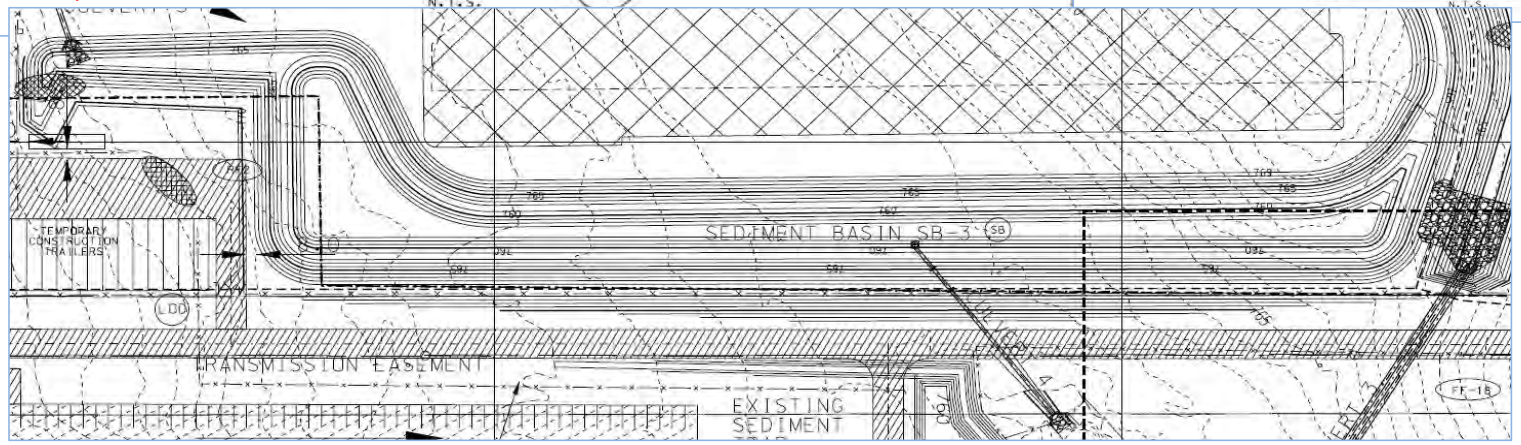
OUTLET STRUCTRE



OUTLET STRUCTURE CONNECTION DETAIL FOR SB-3 AND "WET" DETENTION BASIN

Include any site notes from latest inspection

SEDIMENT BASIN (SB)
N.T.S.



West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

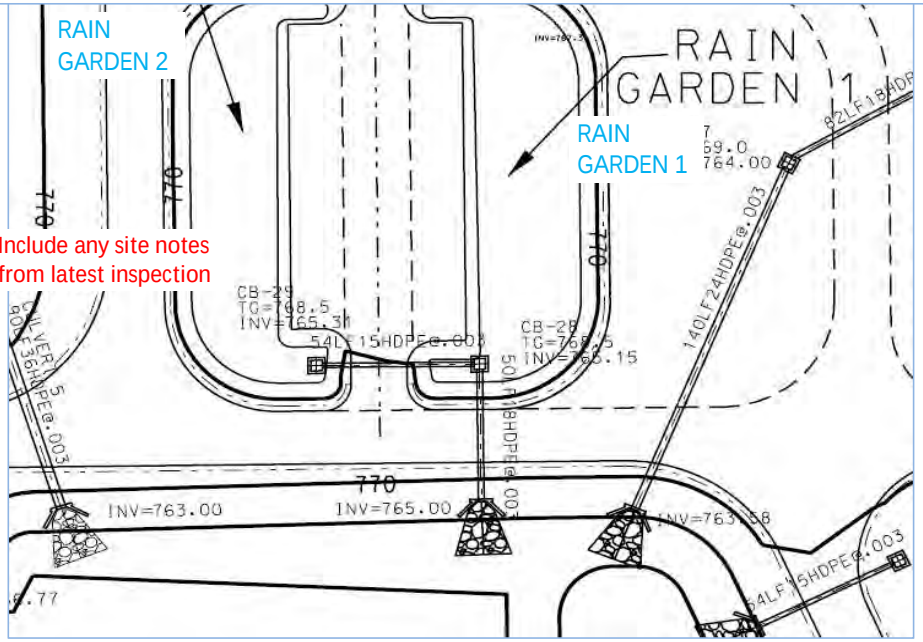
Stormwater/Drainage Facility Inspection Report

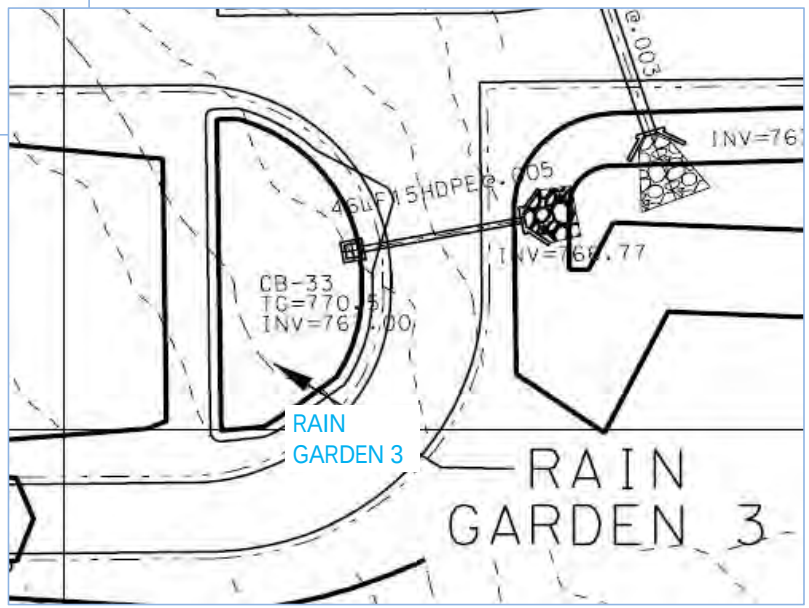
Outlet Structure Details

Note: Mark on this sheet as needed to clarify items on the "Specific Facility Conditions" sheet(s)

RAIN GARDEN NAME/NUMBER	DRAINAGE AREA		RAIN GARDEN AREAS			RAIN GARDEN ELEV'S		REMARKS
	TOTAL (AC.)	IMPERV. (SF)	MAX. (MP/3) (SF)	MIN. (MP/5) (SF)	PROP. (SF)	BOTTOM (FT)	OVERFLOW (FT)	
1	.51	14323	4774	2865	4152	767.5	768.5	OVERFLOW TO CB-28
2	.41	10592	3531	2118	3200	767.5	768.5	OVERFLOW TO CB-29
3	.70	11508	3836	2302	2788	769.5	770.5	OVERFLOW TO CB-33
4	1.80	36314	12105	7263	10730	768.5	769.5	TWO AREAS, OVERFLOW TO CB-32
5	.62	9516	3172	1903	3172	768.5	769.5	OVERFLOW TO CB-31

RAIN GARDENS SCHEDULE
N.T.S.





West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

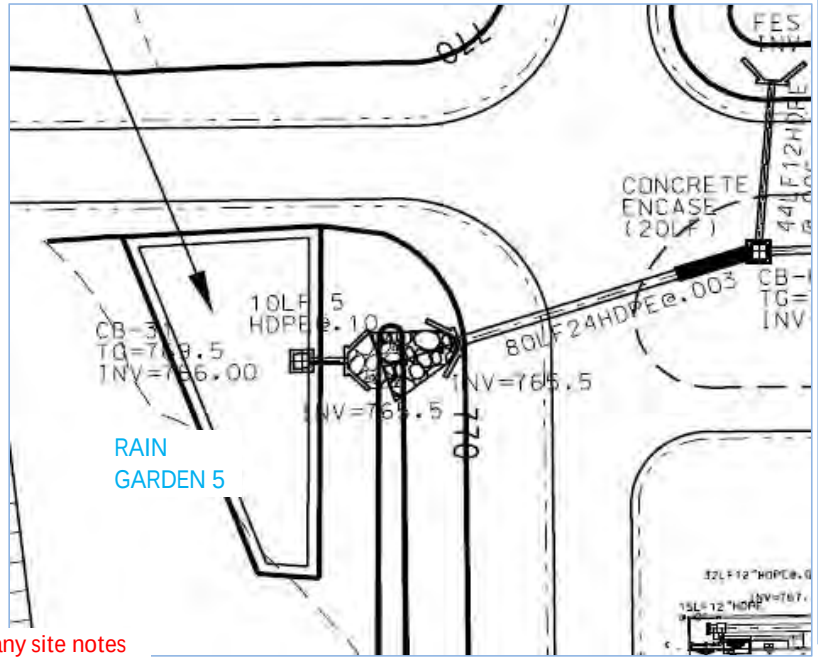
Stormwater/Drainage Facility Inspection Report

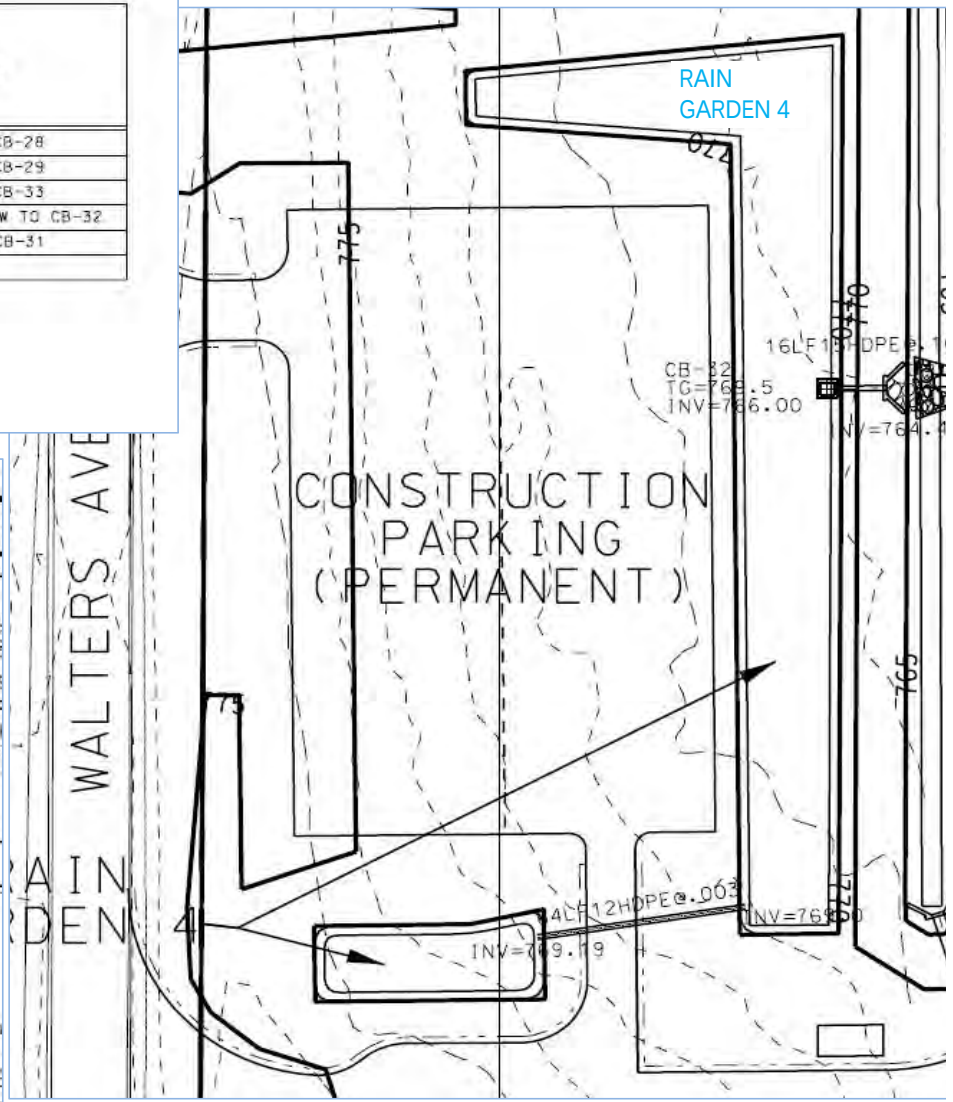
Outlet Structure Details

Note: Mark on this sheet as needed to clarify items on the "Specific Facility Conditions" sheet(s)

RAIN GARDEN NAME/NUMBER	DRAINAGE AREA		RAIN GARDEN AREAS			RAIN GARDEN ELEV'S		REMARKS
	TOTAL (AC.)	IMPERV. (SF)	MAX. (MP/3) (SF)	MIN. (MP/5) (SF)	PROP. (SF)	BOTTOM (FT)	OVERFLOW (FT)	
1	.51	14323	4774	2865	4152	767.5	768.5	OVERFLOW TO CB-28
2	.41	10592	3531	2118	3200	767.5	768.5	OVERFLOW TO CB-29
3	.70	11508	3836	2302	2788	769.5	770.5	OVERFLOW TO CB-33
4	1.80	36314	12105	7263	10730	768.5	769.5	TWO AREAS, OVERFLOW TO CB-32
5	.62	9516	3172	1903	3172	768.5	769.5	OVERFLOW TO CB-31

RAIN GARDENS SCHEDULE
N.T.S.





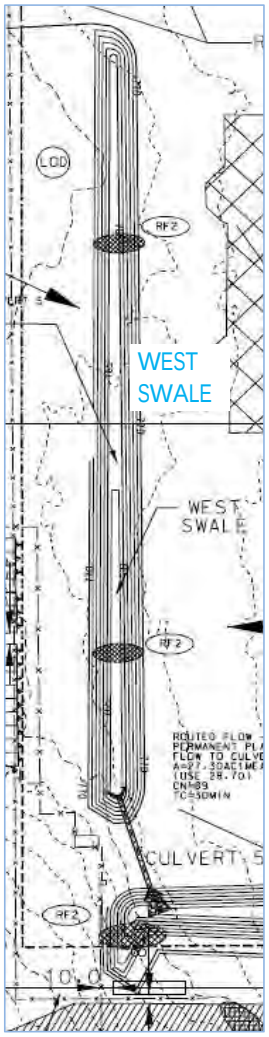
Include any site notes from latest inspection

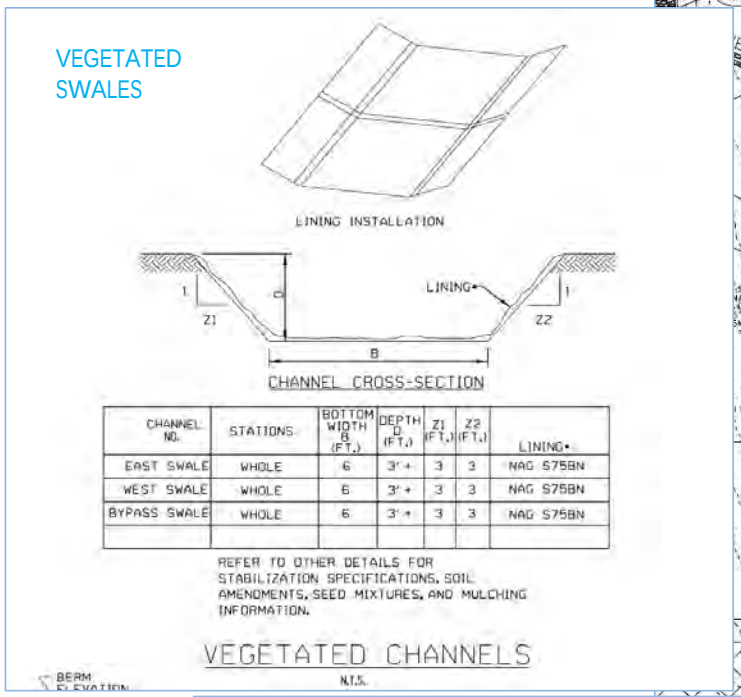
West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

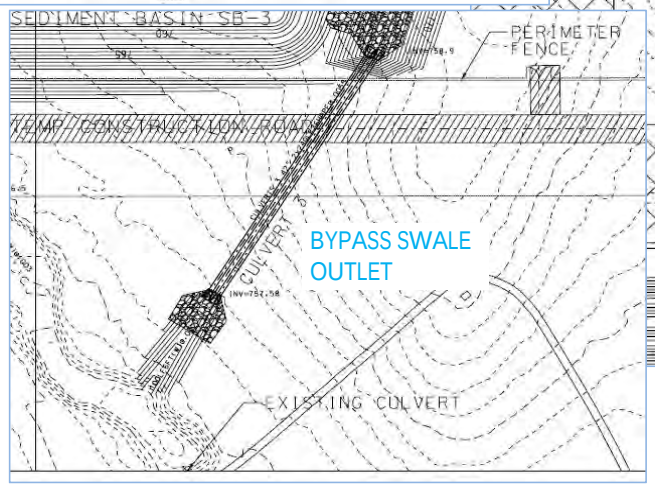
Outlet Structure Details

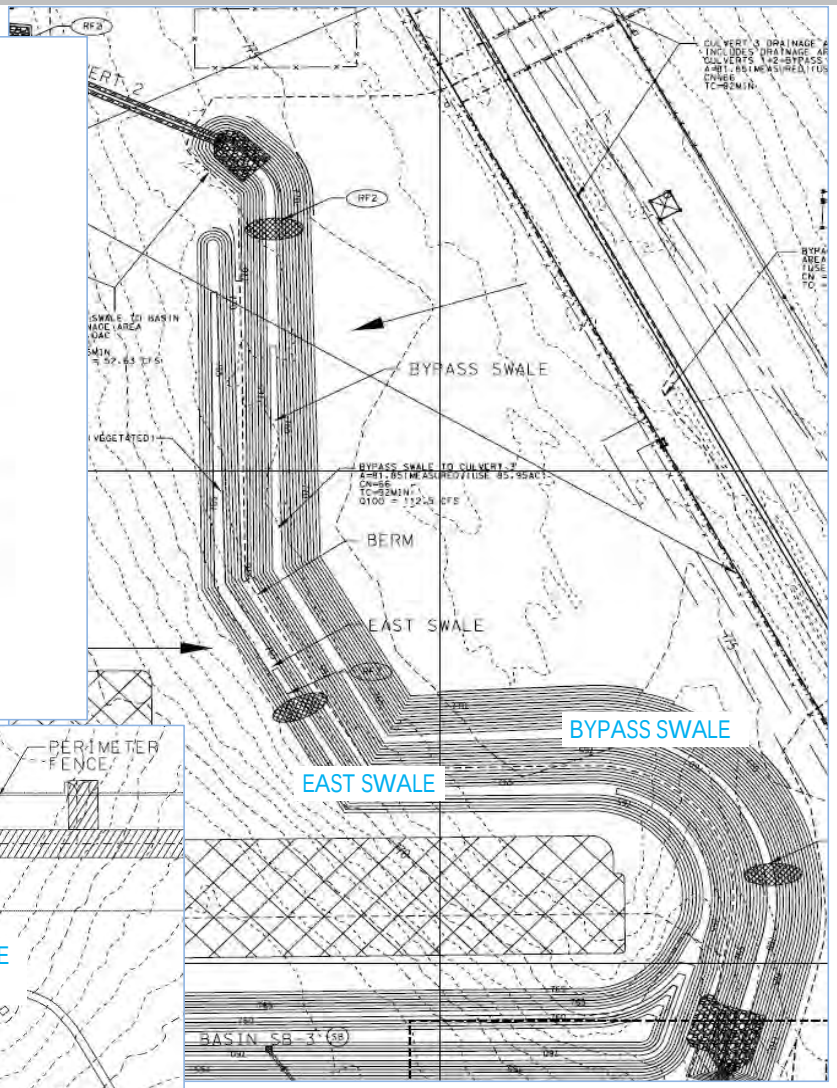
Note: Mark on this sheet as needed to clarify items on the "Specific Facility Conditions" sheet(s)





CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT.)	DEPTH D (FT.)	Z1 (FT.)	Z2 (FT.)	LINING*
EAST SWALE	WHOLE	6	3' +	3	3	NAG S75BN
WEST SWALE	WHOLE	6	3' +	3	3	NAG S75BN
BYPASS SWALE	WHOLE	6	3' +	3	3	NAG S75BN





West Riverside Energy Center
Site Location: Rock County, WI
Joint Use: Alliant Energy
Year Constructed: 2017-2019

Stormwater/Drainage Facility Inspection Report

Photo Log

Note: Attach photo log to this report and list file path of document, if available. Photo log should include direction the photographer was facing when the photo was taken, a description of the photograph subject, and any problems or issues identified in the photograph.

Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017-18

Stormwater/Drainage Facility Inspection Report

General Information

Date of last inspection	
Date of current inspection	
Date of next inspection	

This inspection completed by: (include name of inspector, company, and phone number)		
Does inspector have a copy of the Stormwater Management Plan (Y/N)?		
Has the inspector reviewed the previous inspection report (Y/N, N/A)?		
Are there Maintenance Action Items that need to be checked during this inspection (Y/N)?		

Current weather conditions	
Recent weather conditions and precipitation (cite data source such as NOAA NOWData at www.weather.gov/climate/xmacis.php?wfo=mkx)	

Other people/equipment on site	

Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017-18

Stormwater/Drainage Facility Inspection Report

General Site Conditions

Note: Mark on the "Site Plan" sheet as needed to clarify items on this sheet

General Site Conditions	Y/N	Describe Specific Location	Describe Condition (Notes)	Photo Number(s)	Maintenance Required? If "yes" see "Maintenance Action Items" sheet
Is there any erosion or are there any rills or gullies anywhere on site, other than the specific areas described on the "Specific Facility Conditions" sheet?					
Are there any bare spots (<70% cover) in areas that are to be vegetated?					
Is the gravel edge around the substation eroding in any way?					
Are there any temporary erosion control measures that should be removed from the site?					

Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017-18

Stormwater/Drainage Facility Inspection Report

Specific Facility Conditions (1 of 2)

Note: Mark on the "Outlet Structure Details" sheet or "Site Plan" sheet as needed to clarify items on this sheet

Stormwater/Drainage Facilities		Describe Condition (Notes)	Photo Number(s)	Is Maintenance Required? If "yes" see "Maintenance Action Items" sheet
Wet Pond	Condition of the stone weeper leading out of the basin (freely draining or outflow affected by debris)			
	Description of vegetation			
	Water level relative to basin outlet structure, indication of high water mark (if any)			
	Sediment in basin			
	Sloughing, uneven settling, eroding of berm around basin, etc.			
	Condition of receiving area (from downstream end of stone weeper leading out of basin to property boundary)			
Infiltration Basin	Condition of the stone weeper leading out of the basin (freely draining or outflow affected by debris)			
	Condition of riprap flume leading into basin			
	Description of vegetation			
	Water level relative to basin outlet structure, indication of high water mark (if any)			
	Sediment in basin			
	Sloughing, uneven settling, eroding of berm around basin, etc.			
	Condition of receiving area (from downstream end of stone weeper leading out of basin to property boundary)			

Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017-18

Stormwater/Drainage Facility Inspection Report

Specific Facility Conditions (2 of 2)

Note: Mark on the "Outlet Structure Details" sheet or "Site Plan" sheet as needed to clarify items on this sheet

	Stormwater/Drainage Facilities	Describe Condition (Notes)	Photo Number(s)	Is Maintenance Required? If "yes" see "Maintenance Action Items" sheet
Other Facilities	**Perimeter Swales (surrounding substation):** Include description of vegetation, erosion, debris, sediment, etc.	Swale 1 (West and South of Pad):		
		Swale 2 (East Side of Pad):		
	Driveway Culverts two total): Include description of upstream end, downstream end, riprap, debris, sediment, overtopping, etc.	Culvert 1 (North Driveway):		
		Culvert 2 (South Driveway):		

Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017-18

Stormwater/Drainage Facility Inspection Report

Maintenance Action Items

Note: Include one Maintenance Action Item for each issue that needs maintenance (each stormwater/drainage facility may have multiple Maintenance Action Items)

		MAI Status				Urgency		
MAI Number	Maintenance Action Item Description	Identified during current inspection	Identified previously, maint.completed	Identified previously, needs additional maint.	Identified previously, maint. not completed	Critical [1]	Urgent [2]	Not Urgent [3]

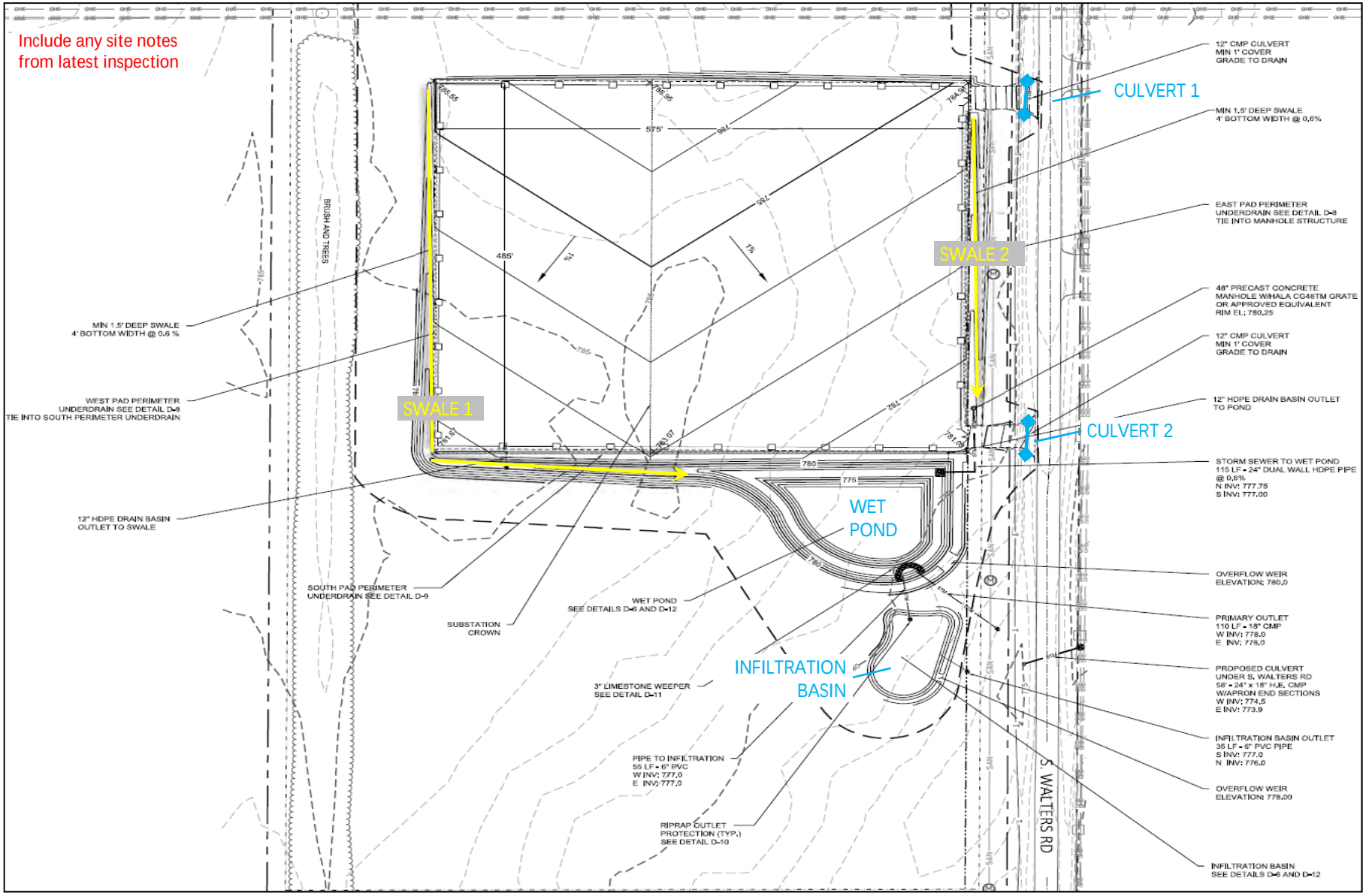
Notes:
1. Public safety could be at risk if MAI is not completed.
2. The site is not in compliance with the approved SWM plan if MAI is not completed.
3. MAI needs to be completed, but public safety is not at risk and site is still in compliance with SWM plan.

Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017-18

Stormwater/Drainage Facility Inspection Report

Site Plan

Note: Mark on this "Site Plan" sheet as needed to clarify items on the "General Site Conditions" and "Specific Facility Conditions" sheets

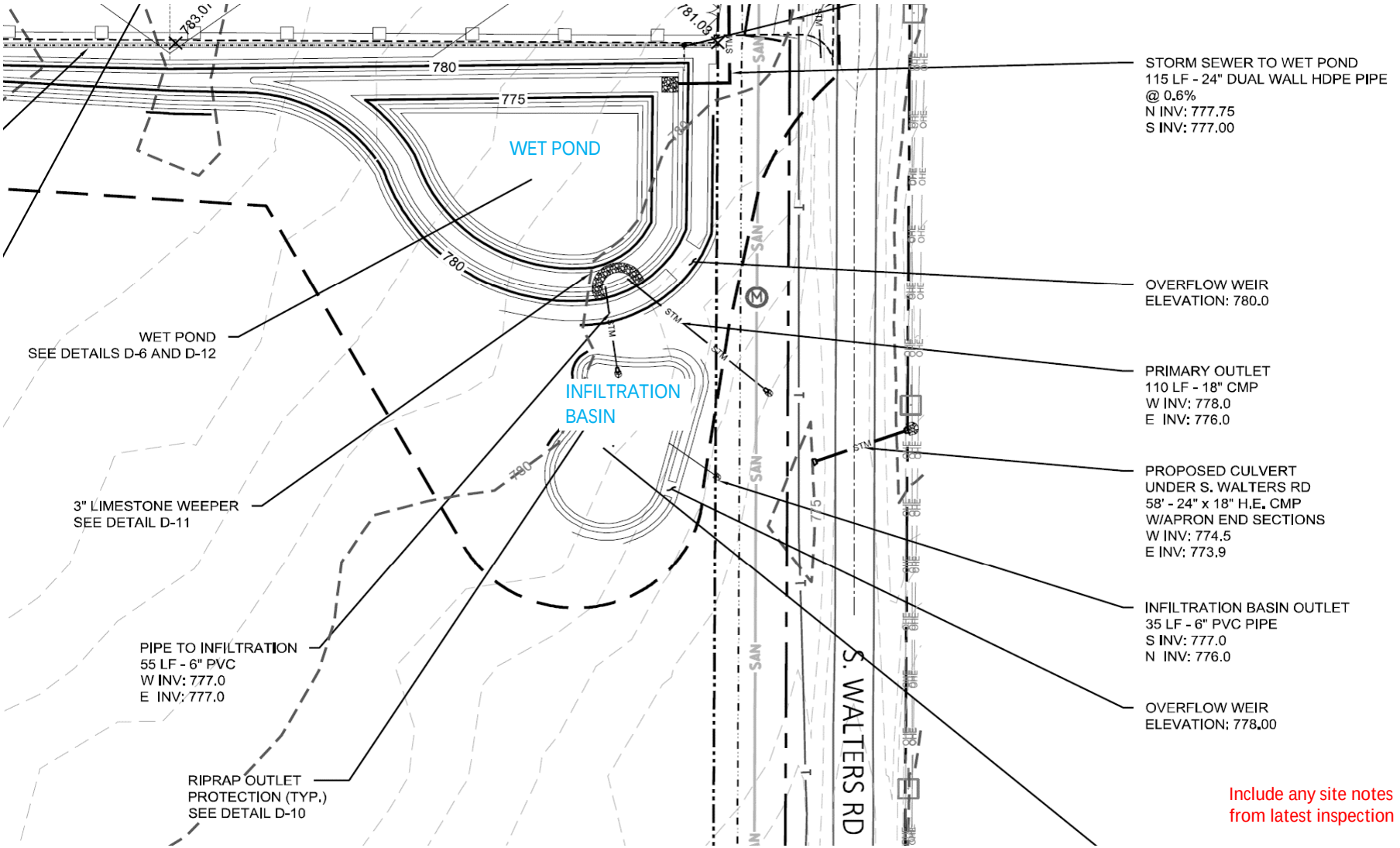


Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017

Stormwater/Drainage Facility Inspection Report

Outlet Structure Details

Note: Mark on this sheet as needed to clarify items on the "Specific Facility Conditions" sheet(s)



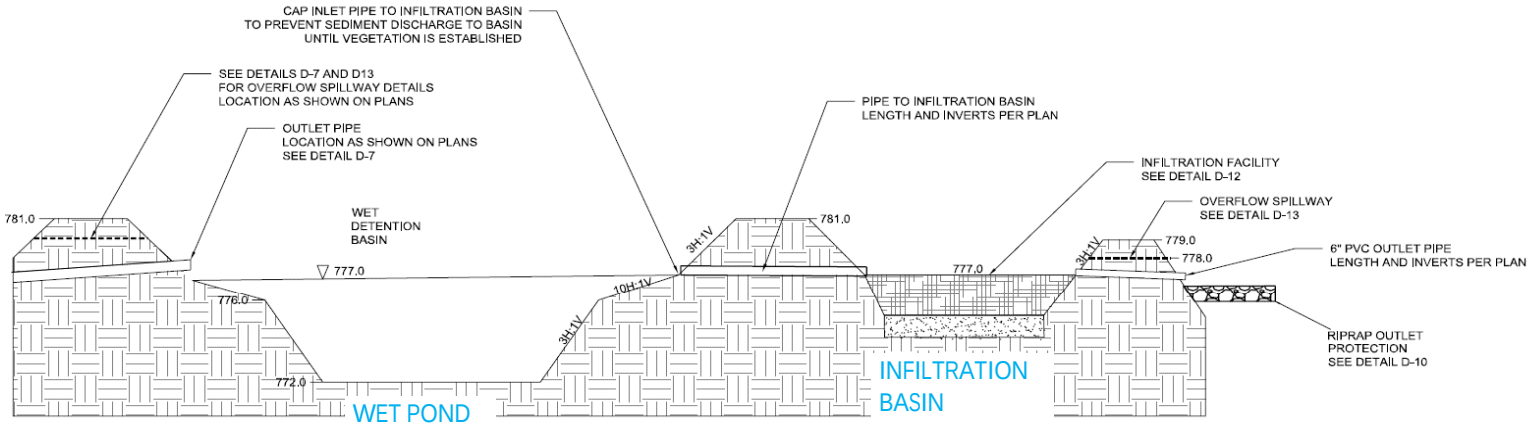
Include any site notes from latest inspection

Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017-18

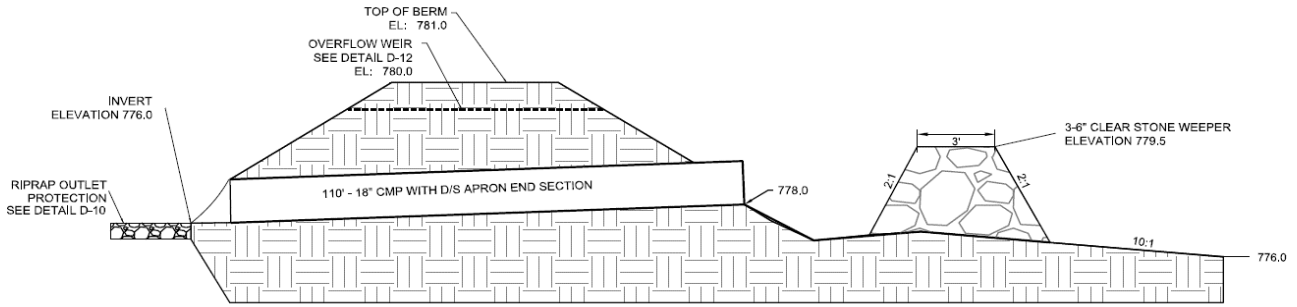
Stormwater/Drainage Facility Inspection Report

Outlet Structure Details

Note: Mark on this sheet as needed to clarify items on the "Specific Facility Conditions" sheet(s)



D-6 PROPOSED STORMWATER TREATMENT SYSTEM SCHEMATIC
N.T.S.



D-7 WET DETENTION BASIN PRIMARY OUTLET STRUCTURES
N.T.S.

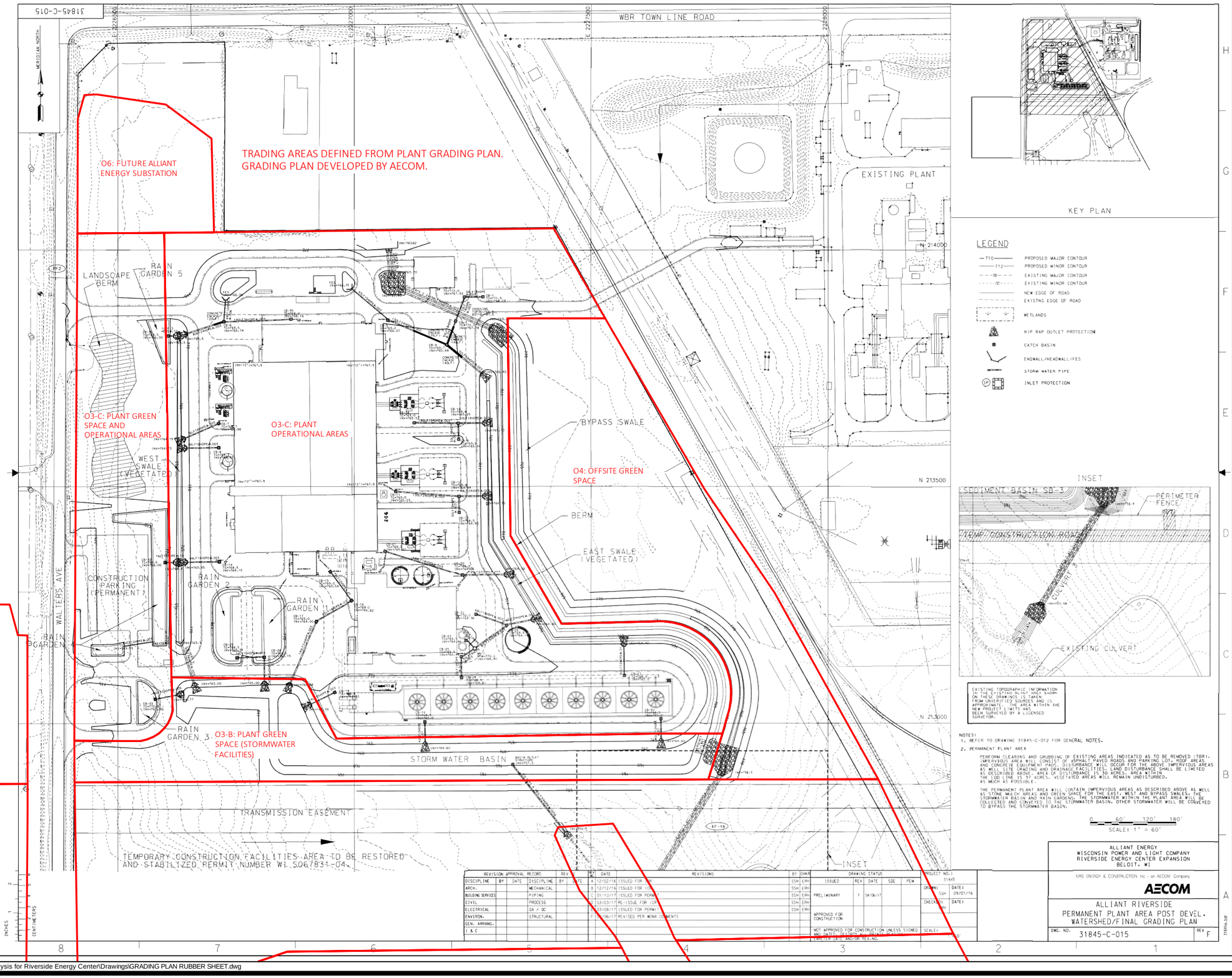
Kittyhawk Substation
Site Location: Rock County, WI
Joint Use: ATC Only
Year Constructed: 2017-18

Stormwater/Drainage Facility Inspection Report

Photo Log

Note: Attach photo log to this report and list file path of document, if available. Photo log should include direction the photographer was facing when the photo was taken, a description of the photograph subject, and any problems or issues identified in the photograph.

Appendix E – Construction Drawings



DRAWN BY RSS | CHECKED BY RSS

NO.	REVISION / ISSUE	DATE

MONTGOMERY ASSOCIATES: RESOURCE SOLUTIONS, LLC
119 SOUTH MAIN ST
COTTAGE GROVE, WI 53527
www.ma-rs.org

PROPOSED TRADING AREAS WEST RIVERSIDE EXPANSION

ALLIANT ENERGY PHOSPHORUS TRADING

Town of Beloit
Rock County, WI

Alliant Energy WP&L

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 ½ 1

SCALE
1" = 200'

PROJECT NO.	DATE
1732	11/17/17

SHEET NO.
1/1

P:\1723 - Alliant - P Trade analysis for Riverside Energy Center\Drawings\GRADING PLAN RUBBER SHEET.dwg

31845-C-015

E 2226500 E 2227000 E 2227500 E 2228000

N 214000 N 213500 N 213000

WBR TOWN LINE ROAD

EXISTING PLANT

MERIDIAN NORTH

RAIN GARDEN 5

LANDSCAPE BERM

RIP RAP OUTLET PROTECTION

BYPASS SWALE

WEST SWALE (VEGETATED)

BERM

EAST SWALE (VEGETATED)

CONSTRUCTION PARKING (PERMANENT)

RAIN GARDEN 2

RAIN GARDEN 1

RAIN GARDEN 4

WALTERS AVE

RAIN GARDEN 3

STORM WATER BASIN

BASIN OUTLET INV=757.5

TRANSMISSION EASEMENT

TEMPORARY CONSTRUCTION FACILITIES AREA TO BE RESTORED AND STABILIZED PERMIT NUMBER WI-S067831-04

INSET

SEDIMENT BASIN SB-3

PERIMETER FENCE

TEMP. CONSTRUCTION FLOW ROUTE

CULVERT 3

EXISTING CULVERT

KEY PLAN

EXISTING TOPOGRAPHIC INFORMATION IN THE EXISTING PLANT AREA SHOWN ON THESE DRAWINGS IS TAKEN FROM UNVERIFIED SOURCES AND IS APPROXIMATE. THE AREA WITHIN THE NEW PROJECT LIMITS HAS BEEN SURVEYED BY A LICENSED SURVEYOR.

LEGEND

- 710 — PROPOSED MAJOR CONTOUR
- 712 — PROPOSED MINOR CONTOUR
- --70-- EXISTING MAJOR CONTOUR
- --72-- EXISTING MINOR CONTOUR
- NEW EDGE OF ROAD
- EXISTNG EDGE OF ROAD
- WETLANDS
- RIP RAP OUTLET PROTECTION
- CATCH BASIN
- ENDWALL/HEADWALL/FES
- STORM WATER PIPE
- IP INLET PROTECTION

NOTES:
1. REFER TO DRAWING 31845-C-012 FOR GENERAL NOTES.
2. PERMANENT PLANT AREA

PERFORM CLEARING AND GRUBBING OF EXISTING AREAS INDICATED AS TO BE REMOVED (TBR). IMPERVIOUS AREA WILL CONSIST OF ASPHALT PAVED ROADS AND PARKING LOT, ROOF AREAS AND CONCRETE EQUIPMENT PADS. DISTURBANCE WILL OCCUR FOR THE ABOVE IMPERVIOUS AREAS AS WELL SITE GRADING AND DRAINAGE FACILITIES. LAND DISTURBANCE SHALL BE LIMITED AS DESCRIBED ABOVE. AREA OF DISTURBANCE IS 30 ACRES. AREA WITHIN THE LOD LINE IS 37 ACRES. VEGETATED AREAS WILL REMAIN UNDISTURBED AS MUCH AS POSSIBLE.

THE PERMANENT PLANT AREA WILL CONTAIN IMPERVIOUS AREAS AS DESCRIBED ABOVE AS WELL AS STONE MULCH AREAS AND GREEN SPACE FOR THE EAST, WEST AND BYPASS SWALES, THE STORMWATER BASIN AND RAIN GARDENS. THE STORMWATER WITHIN THE PLANT AREA WILL BE COLLECTED AND CONVEYED TO THE STORMWATER BASIN. OTHER STORMWATER WILL BE CONVEYED TO BYPASS THE STORMWATER BASIN.

0 60' 120' 180'
SCALE: 1" = 60'

REVISION APPROVAL RECORD				REV E			REV NO.	DATE	REVISIONS	BY	CHKR
DISCIPLINE	BY	DATE	DISCIPLINE	BY	DATE		A	12/02/16	ISSUED FOR IDR	SSH	ERH
ARCH.			MECHANICAL				B	12/12/16	ISSUED FOR ICR	SSH	ERH
BUILDING SERVICES			PIPING				C	01/10/17	ISSUED FOR PERMIT	SSH	ERH
CIVIL			PROCESS				D	03/03/17	RE-ISSUE FOR ICR	SSH	ERH
ELECTRICAL			QA / QC				E	03/08/17	ISSUED FOR PERMIT	SSH	ERH
ENVIRON.			STRUCTURAL				F	04/06/17	REVISED PER WDNR COMMENTS		
GEN. ARRANG.											
I & C											

DRAWING STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY	F	04/06/17		
APPROVED FOR CONSTRUCTION				

NOT APPROVED FOR CONSTRUCTION UNLESS SIGNED AND DATED. DESTROY ALL PRINTS BEARING EARLIER DATE AND/OR REV.NO.

PROJECT NO.: 31845
DRAWN: SSH DATE: 03/01/16
CHECKED: ERH DATE:
SCALE: 1"=60'

ALLIANT ENERGY
WISCONSIN POWER AND LIGHT COMPANY
RIVERSIDE ENERGY CENTER EXPANSION
BELOIT, WI

URS ENERGY & CONSTRUCTION Inc. – an AECOM Company
AECOM

ALLIANT RIVERSIDE
PERMANENT PLANT AREA POST DEVEL.
WATERSHED/FINAL GRADING PLAN

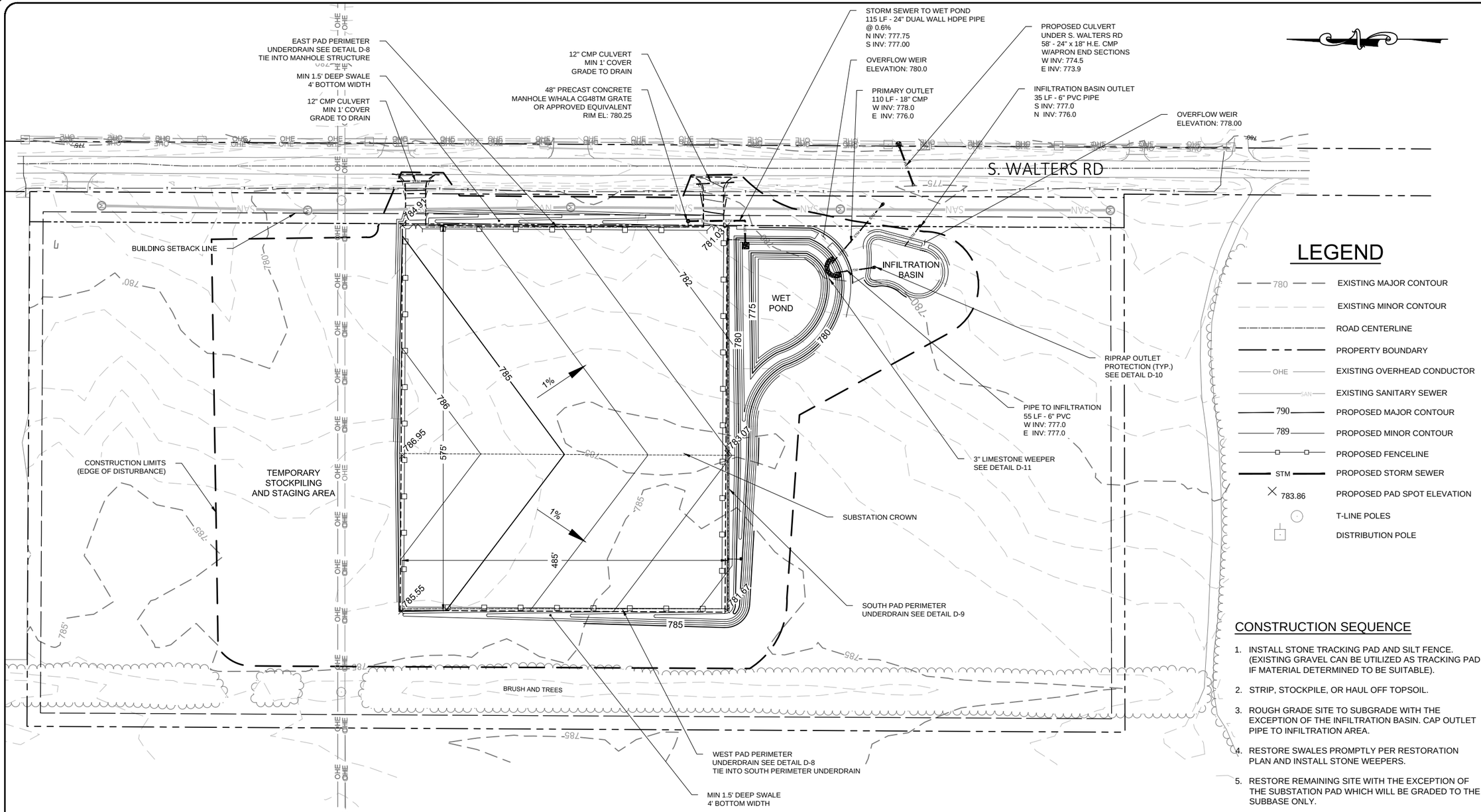
DWG. NO. 31845-C-015 REV F

31845.dgn

INCHES 1 2 3 4 5 6
CENTIMETERS 1 2 3 4 5 6

8 7 6 5 4 3 2 1

H G F E D C B A



LEGEND

- EXISTING MAJOR CONTOUR (780)
- EXISTING MINOR CONTOUR
- ROAD CENTERLINE
- PROPERTY BOUNDARY
- EXISTING OVERHEAD CONDUCTOR (OHE)
- EXISTING SANITARY SEWER (SAN)
- PROPOSED MAJOR CONTOUR (790)
- PROPOSED MINOR CONTOUR (789)
- PROPOSED FENCELINE
- PROPOSED STORM SEWER (STM)
- PROPOSED PAD SPOT ELEVATION (783.86)
- T-LINE POLES
- DISTRIBUTION POLE

CONSTRUCTION SEQUENCE

1. INSTALL STONE TRACKING PAD AND SILT FENCE. (EXISTING GRAVEL CAN BE UTILIZED AS TRACKING PAD IF MATERIAL DETERMINED TO BE SUITABLE).
2. STRIP, STOCKPILE, OR HAUL OFF TOPSOIL.
3. ROUGH GRADE SITE TO SUBGRADE WITH THE EXCEPTION OF THE INFILTRATION BASIN. CAP OUTLET PIPE TO INFILTRATION AREA.
4. RESTORE SWALES PROMPTLY PER RESTORATION PLAN AND INSTALL STONE WEEPERS.
5. RESTORE REMAINING SITE WITH THE EXCEPTION OF THE SUBSTATION PAD WHICH WILL BE GRADED TO THE SUBBASE ONLY.
6. GRADE THE INFILTRATION BASIN. PLACE ENGINEERED SOIL MIX AND SAND STORAGE LAYER PER DETAILS AND RESTORE PER THE RESTORATION PLAN.
7. COMPLETE BELOW GRADE WORK INTERIOR TO THE SUBSTATION FENCE AND PLACE SUBSTATION PAD AGGREGATE.
8. REMOVE TEMPORARY EROSION CONTROL MEASURES WHEN SITE IS FULLY STABILIZED.
9. CONSTRUCTION SHALL BE IN CONFORMANCE WITH ALLIANT ENERGY CONSTRUCTION SPECIFICATIONS.
10. BEFORE GRADING, CONTRACTOR SHALL CONFIRM THE EXISTING GROUNDING WELL LOCATION.

GRADING NOTES:

1. ALL GRADES SHOWN ARE TO BE CONSIDERED TO BE FINAL GRADES.
2. DRIVEWAY AND SUBSTATION PAD SUBGRADE CONSIDERED TO BE 12" BELOW FINISHED GRADE. AREAS TO BE VEGETATED TO BE BROUGHT TO FINAL GRADE WITH 6" OF PLACED TOPSOIL.
3. SUBGRADE PREPARATION, FILL PLACEMENT, AND COMPACTION SHALL BE COMPLETED PER ALLIANT ENERGY EARTHWORK SPECIFICATIONS.
4. LENGTHS, MATERIAL, AND INVERTS OF CULVERTS AND DRAIN PIPES SPECIFIED IN PLAN AND DETAILS.
5. PROTECT INFILTRATION BASIN FROM COMPACTION AND SEDIMENT DURING CONSTRUCTION. AVOID TRAFFIC IN THESE AREAS DURING CONSTRUCTION.
6. PERFORM COMPACTION MITIGATION IN INFILTRATION BASIN AFTER CONSTRUCTION IS COMPLETED, PER WDNR TECHNICAL STANDARD 1004.

DRAWN BY	CHECKED BY
RSS	DJH

NO.	REVISION / ISSUE	DATE

MONTGOMERY ASSOCIATES:
RESOURCE SOLUTIONS, LLC
119 SOUTH MAIN ST
COTTAGE GROVE, WI 53527
www.ma-rs.org

GRADING PLAN

ALT-152 Kittyhawk Substation
Town of Beloit
Rock County, WI
Alliant Energy

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE
0 ½ 1

SCALE
1"=150'

PROJECT NO.	DATE
1312-075	9/13/17

SHEET NO.
2/7

Appendix F – Credit Calculations

Existing PTP From SnapPlus (total lb)

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027	PTP 2028
O1: ATC Laydown	100.0	64.0	40.0	46.0	31.0	32.0	37.0	98.0	63.0	39.0	45.0
O2: ATC Substation	94.0	103.0	69.0	73.0	83.0	209.0	144.0	93.0	102.0	69.0	72.0
O3-A: Plant Operating Area	85.0	78.0	86.0	80.0	88.0	82.0	90.0	83.0	91.0	84.0	93.0
O3-B: Plant Green Space	16.0	15.0	16.0	15.0	17.0	16.0	17.0	16.0	17.0	16.0	18.0
O3-C: Plant Operating Area	16.0	15.0	16.0	15.0	17.0	15.0	17.0	16.0	17.0	16.0	17.0
O4: Offsite Plant Green Space	13.0	12.0	13.0	13.0	13.0	13.0	14.0	14.0	14.0	14.0	14.0
O5: Solar and Green Space	105.0	97.0	108.0	100.0	110.0	102.0	112.0	103.0	114.0	105.0	116.0
O6: Substation	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
R1: SE Green Space	68.0	62.0	69.0	63.0	70.0	64.0	71.0	65.0	71.0	66.0	72.0
R2: SW Green Space	61.1	64.3	72.9	183.9	126.9	81.9	89.6	60.5	63.6	28.7	185.2
R3: Transmission Green Space	111.0	102.0	112.0	103.0	113.0	105.0	115.0	106.0	116.0	107.0	117.0
	672	**615**	**605**	**695**	**672**	**723**	**710**	**657**	**672**	**548**	**752**

Existing PTP SnapPlus and WinSLAMM combined results

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	100.0	64.0	40.0	46.0	31.0	32.0	37.0	98.0	63.0	39.0
O2: ATC Substation	Areas modeled in WinSLAMM not modeled under existing conditions									
O3-A: Plant Operating Area	Areas modeled in WinSLAMM not modeled under existing conditions									
O3-B: Plant Green Space	Areas modeled in WinSLAMM not modeled under existing conditions									
O3-C: Plant Operating Area	Areas modeled in WinSLAMM not modeled under existing conditions									
O4: Offsite Plant Green Space	13.0	12.0	13.0	13.0	13.0	13.0	14.0	14.0	14.0	14.0
O5: Solar and Green Space	105.0	97.0	108.0	100.0	110.0	102.0	112.0	103.0	114.0	105.0
O6: Substation	Areas modeled in WinSLAMM not modeled under existing conditions									
R1: SE Green Space	68.0	62.0	69.0	63.0	70.0	64.0	71.0	65.0	71.0	66.0
R2: SW Green Space	61.1	64.3	72.9	183.9	126.9	81.9	89.6	60.5	63.6	28.7
R3: Transmission Green Space	111.0	102.0	112.0	103.0	113.0	105.0	115.0	106.0	116.0	107.0
	458.1	**401.3**	**414.9**	**508.9**	**463.9**	**397.9**	**438.6**	**446.5**	**441.6**	**359.7**

Existing Loss (lb/ac) from SnapPlus

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027	PTP 2028
O1: ATC Laydown	16.6	10.6	6.7	7.7	5.2	5.3	6.2	16.3	10.5	6.5	7.5
O2: ATC Substation	7.7	8.4	5.7	6.0	6.8	17.1	11.8	7.6	8.4	5.7	5.9
O3-A: Plant Operating Area	4.2	3.9	4.3	4.0	4.4	4.1	4.5	4.1	4.5	4.2	4.6
O3-B: Plant Green Space	4.2	3.9	4.2	3.9	4.5	4.2	4.5	4.2	4.5	4.2	4.7
O3-C: Plant Operating Area	3.3	3.1	3.3	3.1	3.5	3.1	3.5	3.3	3.5	3.3	3.5
O4: Offsite Plant Green Space	1.7	1.6	1.7	1.7	1.7	1.7	1.9	1.9	1.9	1.9	1.9
O5: Solar and Green Space	4.4	4.0	4.5	4.2	4.6	4.2	4.7	4.3	4.7	4.4	4.8
O6: Substation	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
R1: SE Green Space	7.6	6.9	7.7	7.0	7.8	7.1	7.9	7.2	7.9	7.3	8.0
R2: SW Green Space	6.6	6.9	7.9	19.8	13.7	8.8	9.7	6.5	6.9	3.1	20.0
R3: Transmission Green Space	7.7	7.1	7.8	7.2	7.9	7.3	8.0	7.4	8.1	7.4	8.1

Existing Loss (lb/ac) SnapPlus and WinSLAMM combined results

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	16.6	10.6	6.7	7.7	5.2	5.3	6.2	16.3	10.5	6.5
O2: ATC Substation	Areas modeled in WinSLAMM not modeled under existing conditions									
O3-A: Plant Operating Area	Areas modeled in WinSLAMM not modeled under existing conditions									
O3-B: Plant Green Space	Areas modeled in WinSLAMM not modeled under existing conditions									
O3-C: Plant Operating Area	Areas modeled in WinSLAMM not modeled under existing conditions									
O4: Offsite Plant Green Space	1.7	1.6	1.7	1.7	1.7	1.7	1.9	1.9	1.9	1.9
O5: Solar and Green Space	4.4	4.0	4.5	4.2	4.6	4.2	4.7	4.3	4.7	4.4
O6: Substation	Areas modeled in WinSLAMM not modeled under existing conditions									
R1: SE Green Space	7.6	6.9	7.7	7.0	7.8	7.1	7.9	7.2	7.9	7.3
R2: SW Green Space	6.6	6.9	7.9	19.8	13.7	8.8	9.7	6.5	6.9	3.1
R3: Transmission Green Space	7.7	7.1	7.8	7.2	7.9	7.3	8.0	7.4	8.1	7.4

Proposed PTP from Snap Plus

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027	PTP 2028
O1: ATC Laydown	9.4	6.7	5.8	5.2	5.0	4.9	4.8	4.8	4.8	4.7	4.7
O2: ATC Substation	47.4	30.8	26.7	24.2	23.1	22.6	22.3	22.1	22.0	21.9	21.9
O3-A: Plant Operating Area	3.2	2.8	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6
O3-B: Plant Green Space	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
O3-C: Plant Operating Area	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
O4: Offsite Plant Green Space	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O5: Solar and Green Space	4.0	3.5	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
O6: Substation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
R1: SE Green Space	13.6	8.3	7.5	7.4	7.3	7.3	7.2	7.2	7.2	7.2	7.2
R2: SW Green Space	25.2	22.8	21.2	20.5	20.1	19.8	19.7	19.6	19.5	19.5	19.5
R3: Transmission Green Space	22.7	14.0	12.8	12.5	12.3	12.3	12.2	12.2	12.2	12.2	12.2
	128	**91**	**82**	**78**	**76**	**75**	**74**	**74**	**74**	**74**	**74**

Proposed PTP SnapPlus and WinSLAMM combined results

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	9.4	6.7	5.8	5.2	5.0	4.9	4.8	4.8	4.8	4.7
O2: ATC Substation	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
O3-A: Plant Operating Area	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
O3-B: Plant Green Space	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
O3-C: Plant Operating Area	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
O4: Offsite Plant Green Space	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O5: Solar and Green Space	4.0	3.5	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3
O6: Substation										
R1: SE Green Space	13.6	8.3	7.5	7.4	7.3	7.3	7.2	7.2	7.2	7.2
R2: SW Green Space	25.2	22.8	21.2	20.5	20.1	19.8	19.7	19.6	19.5	19.5
R3: Transmission Green Space	22.7	14.0	12.8	12.5	12.3	12.3	12.2	12.2	12.2	12.2
	83.0	**63.3**	**58.7**	**56.8**	**56.0**	**55.5**	**55.2**	**55.0**	**54.9**	**54.9**

Proposed PTP (lb/ac) from SnapPlus

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027	PTP 2028
O1: ATC Laydown	1.6	1.1	1.0	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8
O2: ATC Substation	3.9	2.5	2.2	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8
O3-A: Plant Operating Area	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
O3-B: Plant Green Space	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
O3-C: Plant Operating Area	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
O4: Offsite Plant Green Space	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
O5: Solar and Green Space	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
O6: Substation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
R1: SE Green Space	1.5	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
R2: SW Green Space	2.7	2.5	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1
R3: Transmission Green Space	1.6	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8

Proposed PTP (lb/ac) SnapPlus and WinSLAMM combined results

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	1.6	1.1	1.0	0.9	0.8	0.8	0.8	0.8	0.8	0.8
O2: ATC Substation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
O3-A: Plant Operating Area	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
O3-B: Plant Green Space	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
O3-C: Plant Operating Area	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
O4: Offsite Plant Green Space	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
O5: Solar and Green Space	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
O6: Substation										
R1: SE Green Space	1.5	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
R2: SW Green Space	2.7	2.5	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1
R3: Transmission Green Space	1.6	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8

Reduction in P Export Predicted by SnapPlus

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027	PTP 2028
O1: ATC Laydown	90.6	57.3	34.2	40.8	26.0	27.1	32.2	93.2	58.2	34.3	40.3
O2: ATC Substation	46.6	72.2	42.3	48.8	59.9	186.4	121.7	70.9	80.0	47.1	50.1
O3-A: Plant Operating Area	81.8	75.2	83.3	77.3	85.4	79.4	87.4	80.4	88.4	81.4	90.4
O3-B: Plant Green Space	15.4	14.5	15.5	14.5	16.5	15.5	16.5	15.5	16.5	15.5	17.5
O3-C: Plant Operating Area	15.2	14.3	15.4	14.4	16.4	14.4	16.4	15.4	16.4	15.4	16.4
O4: Offsite Plant Green Space	11.9	11.0	12.0	12.0	12.0	12.0	13.0	13.0	13.0	13.0	13.0
O5: Solar and Green Space	101.0	93.5	104.6	96.7	106.7	98.7	108.7	99.7	110.7	101.7	112.7
O6: Substation	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
R1: SE Green Space	54.4	53.7	61.5	55.6	62.7	56.7	63.8	57.8	63.8	58.8	64.8
R2: SW Green Space	35.9	41.5	51.6	163.4	106.8	62.1	70.0	40.9	44.1	9.2	165.7
R3: Transmission Green Space	88.3	88.0	99.2	90.5	100.7	92.7	102.8	93.8	103.8	94.8	104.8
	544	**524**	**522**	**617**	**596**	**648**	**635**	**583**	**598**	**474**	**678**

Reduction in P Export Predicted SnapPlus and WinSLAMM combined results

Field	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	90.6	57.3	34.2	40.8	26.0	27.1	32.2	93.2	58.2	34.3
O2: ATC Substation										
O3-A: Plant Operating Area										
O3-B: Plant Green Space										
O3-C: Plant Operating Area										
O4: Offsite Plant Green Space	11.9	11.0	12.0	12.0	12.0	12.0	13.0	13.0	13.0	13.0
O5: Solar and Green Space	101.0	93.5	104.6	96.7	106.7	98.7	108.7	99.7	110.7	101.7
O6: Substation										
R1: SE Green Space	54.4	53.7	61.5	55.6	62.7	56.7	63.8	57.8	63.8	58.8
R2: SW Green Space	35.9	41.5	51.6	163.4	106.8	62.1	70.0	40.9	44.1	9.2
R3: Transmission Green Space	88.3	88.0	99.2	90.5	100.7	92.7	102.8	93.8	103.8	94.8
	382.1	**345.0**	**363.2**	**459.1**	**414.9**	**349.5**	**390.5**	**398.5**	**393.7**	**311.9**

Credit Calculations June 2018

Long Term Credits

Field	Trade Ratio	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	1.2			13.2	13.7	13.9	14.0	14.0	14.0	14.1	14.1
O2: ATC Substation	2.1		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
O3-A: Plant Operating Area	2			1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
O3-B: Plant Green Space	2			0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
O3-C: Plant Operating Area	2		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
O4: Offsite Plant Green Space	1.2			10.0	10.0	10.0	10.0	10.9	10.9	10.9	10.9
O5: Solar and Green Space	1.2				69.3	69.3	69.3	69.3	69.3	69.3	69.4
O6: Substation	2.1										
R1: SE Green Space	1.2			20.7	20.8	20.9	20.9	20.9	20.9	20.9	20.9
R2: SW Green Space	1.2	6.8	8.8	10.1	10.7	11.1	11.3	11.4	11.5	11.5	7.7
R3: Transmission Green Space	1.2				32.7	32.9	32.9	32.9	33.0	33.0	33.0
		6.8	**10.3**	**57.5**	**160.8**	**161.5**	**161.9**	**163.0**	**163.1**	**163.2**	**159.4**

Intermediate Credits

Field	Trade Ratio	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	1.2			15.3	20.3	7.8					
O2: ATC Substation	2.1										
O3-A: Plant Operating Area	2										
O3-B: Plant Green Space	2										
O3-C: Plant Operating Area	2										
O4: Offsite Plant Green Space	1.2			0.0	0.0	0.0					
O5: Solar and Green Space	2				6.8	11.8					
O6: Substation	2.1										
R1: SE Green Space	1.2			30.6	25.6	31.4					
R2: SW Green Space	1.2	23.1	25.8	32.9	125.4	77.9					
R3: Transmission Green Space	1.2				42.7	51.0					
		23.1	**25.8**	**78.8**	**220.8**	**179.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Total Credits

Field	Trade Ratio	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	1.2	0.0	0.0	28.5	34.0	21.7	14.0	14.0	14.0	14.1	14.1
O2: ATC Substation	2.1	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
O3-A: Plant Operating Area	2	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
O3-B: Plant Green Space	2	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
O3-C: Plant Operating Area	2	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
O4: Offsite Plant Green Space	1.2	0.0	0.0	10.0	10.0	10.0	10.0	10.9	10.9	10.9	10.9
O5: Solar and Green Space	2	0.0	0.0	0.0	76.1	81.1	69.3	69.3	69.3	69.3	69.4
O6: Substation	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R1: SE Green Space	1.2	0.0	0.0	51.2	46.4	52.3	20.9	20.9	20.9	20.9	20.9
R2: SW Green Space	1.2	29.9	34.6	43.0	136.2	89.0	11.3	11.4	11.5	11.5	7.7
R3: Transmission Green Space	1.2	0.0	0.0	0.0	75.4	83.9	32.9	32.9	33.0	33.0	33.0
		29.9	**36.1**	**136.3**	**381.5**	**341.4**	**161.9**	**163.0**	**163.1**	**163.2**	**159.4**

Total Credits accounting for Timeline

Field	Trade Ratio	PTP 2018	PTP 2019	PTP 2020	PTP 2021	PTP 2022	PTP 2023	PTP 2024	PTP 2025	PTP 2026	PTP 2027
O1: ATC Laydown	1.2			28.5	34.0	21.7	14.0	14.0	14.0	14.1	14.1
O2: ATC Substation	2.1		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
O3-A: Plant Operating Area	2			1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
O3-B: Plant Green Space	2			0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
O3-C: Plant Operating Area	2		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
O4: Offsite Plant Green Space	1.2			10.0	10.0	10.0	10.0	10.9	10.9	10.9	10.9
O5: Solar and Green Space	2				76.1	81.1	69.3	69.3	69.3	69.3	69.4
O6: Substation	2.1		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R1: SE Green Space	1.2			51.2	46.4	52.3	20.9	20.9	20.9	20.9	20.9
R2: SW Green Space	1.2	29.9	34.6	43.0	136.2	89.0	11.3	11.4	11.5	11.5	7.7
R3: Transmission Green Space	1.2				75.4	83.9	32.9	32.9	33.0	33.0	33.0
		29.9	**36.1**	**136.3**	**381.5**	**341.4**	**161.9**	**163.0**	**163.1**	**163.2**	**159.4**

Gray cells indicate areas analyzed with WinSLAMM

Green cells indicate areas analyzed with SnapPlus

Appendix G – Forms

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Water Quality Trading Management Practice Registration

Form 3400-207 (R 1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number WI-	Facility Site Number

Facility Address	City	State	ZIP Code

Project Contact Name (if applicable)	Address	City	State	ZIP Code

Project Name

Broker/Exchange Information (if applicable)

Was a broker/exchange be used to facilitate trade? ◯ Yes ◯ No

Broker/Exchange Organization Name	Contact Name

Address	Phone Number	Email

Trade Registration Information (Use a separate form for each trade agreement)

Type	Trade Agreement Number	Practices Used to Generate Credits	Anticipated Load Reduction	Trade Ratio	Method of Quantification
◯ Urban NPS ◯ Agricultural NPS ◯ Other					

County	Closest Receiving Water Name	Land Parcel ID(s)	Parameter(s) being traded

The preparer certifies all of the following:

- I have completed this document to the best of my knowledge and have not excluded pertinent information.
- I certify that the information in this document is true to the best of my knowledge.

Signature of Preparer	Date Signed

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed

Leave Blank – For Department Use Only

Date Received		Trade Docket Number
Entered in Tracking System ☐ Yes	Date Entered	Name of Department Reviewer

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Notification of Water Trade Agreement Termination

Form 3400-209 (1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., and ch. NR 217 Wis. Adm. Code, this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number WI-	Facility Site Number

Facility Address	City	State	ZIP Code

Project Contact Name (if applicable)	Address	City	State	ZIP Code

Project Name

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4/CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☐ Urban nonpoint source discharge
- ☐ Agricultural nonpoint source discharge
- ☐ Other - Specify:

Trade Agreement number(s) to be terminated including affected land parcel ID(s):

Amount of trading credit being terminated	Effective date of termination

Reason for termination

Is this agreement being updated or replaced?

- ◯ Yes
- ◯ No
- ◯ Unsure

Will this termination result in non-compliance with the effective limit or other permit requirements?

- ◯ Yes; Name:
- ◯ No
- ◯ Unsure

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- I have completed this document to the best of my knowledge and have not excluded pertinent information.

Signature of Preparer	Date Signed

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed

Appendix H – DNR Reviewer Comments

Comments Issued by Amy Garbe on 4/20/2018, MARS responses to comments in red

WPL – Riverside Water Quality Trading Plan

Plan Comments and Suggested Revisions

Draft: 4/20/2018, Amy Garbe

Section 1.4 – Credit Needed

Pleas provide more explanation of current operations and anticipated expansion as it relates to the 0.65 lbs/day existing phosphorus limits. Based on the values provided in the narrative, it would appear that 0-150 lbs/yr is the needed offset. More detailed calculations should be provided.

Additionally, through discussions with Riverside, there are plans to provide wastewater treatment to reduce the effluent from the expansion. Please provide more detail if available and how that would affect the needed credits.

Section 1.4 has been added to better described the proposed P discharge from the existing plant as well as the new plant. A very brief description of the wastewater treatment system and the contracted design parameters are provided.

Section 1.5 (previously 1.4) has been updated to describe the range of credits Alliant will require to be in compliance with the WPDES permit.

Section 2.3 – Soil Sampling

The UW Extension Soil Sampling Guidance (A2100) recommends taking a composite sample for every 5 acres of a field at plow depth or at least 6". According to the narrative, only 2 soil samples were taken. From the results provided in appendix B, samples were split by depth and not enough samples were taken for the acreage amount. There should have been at least 19 samples split-up by field.

Due to construction already in progress, some fields might not be available for additional sampling; however, for those fields not under construction soil sampling should be performed following the UW Extension guidance. Specifically focus on those fields using SnapPlus for modelling. Please include a map of the location of all samples taken by field.

Additional soil samples were collected in May 2018 following UW Extension guidance. Soil sampling was concentrated in areas analyzed with SnapPlus and areas to be restored to prairie. Due to construction activities on site new soil samples were not able to be collected for fields O4 and O5. Additionally, portions of fields O2, R2, and R1 were unable to be sampled due to construction activities. A soil sampling map has been provided in figure B1, all soil analysis results are provided in Appendix B, additional discussion is also provided in Section 2.3 of the trading plan.

Section 2.4 – Phosphorus Runoff Modeling Approach

Please rerun SnapPlus using the newest version (version 16) and update all applicable tables.

In reviewing the SnapPlus files, the incorrect soil type was used for fields O1 and O4. Both fields use LoB soil type, while the correct soil types are LoC2 and WaA, respectively. Please rerun SnapPlus to account for these changes and update the tables accordingly.

At the time of updating this analysis the latest version of SnapPlus available is SnapPlus version 17.0, build 18127.1502. Version 17.0 was downloaded and used for the revised analysis/, including the recommended changes to the soil types (described above) and the new addition of the new soil samples.

Section 2.5 – Potentially Tradeable Phosphorus

WPL-Riverside cannot take credit for reductions needed under another WPDES permit. Stormwater new construction permits require an 80% TSS reduction which does correlate to a phosphorus percent reduction as well. Therefore, credits are not generated at 100% as calculated, but rather a certain percent less is generated on the stormwater practices. This Is not considered a new threshold and no interim credits are generated in this process.

The 80% TSS reduction is approximately 60% for urban stormwater out of SLAMM but it depends on the practices being employed and the source areas. SLAMM can simulate both TSS and TP by switching the TP reports for the models and this is the best way to get a correlation between TSS and TP. For those fields using stormwater practices (O2, O3 and O6) please rerun SLAMM using the TP report to calculate the correlation and required TP percent reduction. Then apply that reduction to the potentially tradeable phosphorus and update the applicable tables. Please include a section in the WQT plan describing this.

Additional discussion of the credit generation from areas covered under other WPDES Permits has been added to section 2.5. A TP:TSS ratio has been calculated for each developed area allowing for a calculation of the TP load associated with a TSS reduction of 80%. The excess TP removed by the stormwater facilities was calculated and used to calculate P credits by applying the trade ratios. The description of this analysis has been added to Section 3.4.

Section 3.2 – Design

It is unclear what fields O1, O4 and O5 will be planted in; prairie or some other perennial vegetation. Please clarify.

Fields O4, and O5 will be planted with WisDOT standard seed mixes or similar mixes. Field O1 will be seeded with ATC pasture mix or a similar seed mix. Additional discussion has been added to section 3.2. Detailed designs have not been fully developed for these areas. In the event that the restoration plans for this area are changed these changes will be reflected in the annual water quality trading report to DNR.

Please state what NRCS standards will be followed for all best management practices.

All vegetative restoration management practices shall follow NRCS Conservation practice standard 327. This has been added in Section 3.2.

Section 4.2 – Trade Ratios

For the downstream trade factor, please show the calculation that lead to the factor used.
Upon more detailed investigation of the drainage patterns and available LiDAR data, it was determined that the fields on the west of Walters Rd (O1, O2, R2) drain to culverts under the roadway. Therefore, the eventual discharge location for all fields in the trading plan is effectively the same location as the Riverside outfall, and the downstream trade ratio does not apply.

Please rephrase the uncertainty factor. The practice is incorrectly listed as "whole field" management, but rather a conservation easement (land in perennial vegetation) is being used. It results in the same 1 uncertainty factor.
The text description under the uncertainty factor description has been updated.

Section 5.2 – Reporting

The stormwater reports should be included as part of inspection reports and annual WQT report. Please state this in the WQT plan in the inspection reporting section.

The notification of practice failure should be rephrased to make sure that maintenance activities and repairs will be included within the 5-day written notice. Additionally, any information should be included as to what Riverside's back-up plan is should a practice fail.

The requested change has been made to the plan. Proposed practice restorative measures shall be provided in writing within 5-days of noticing practice failure. Some proposed discharge mitigation measures have been provided in section 5.2.

Trade Agreement

Pursuant s. 283.84(1), Wis. Stats, a trade agreement is required to be in place prior to using trading to help demonstrate compliance with the final phosphorus limits. In this case, WPL-Riverside is generating the credits themselves and s. 283.84(1)(e), Wis. Stats applies, meaning that Riverside must enter into an agreement with WDNR. This agreement should be in place prior to conditional approval of the WQT plan.

Alliant Energy's legal department is currently working to develop the trade agreement with the DNR. The trade agreement will be provided as soon as it is approved by Alliant and the DNR. Language from this comment was added to Section 5.2 of the report to acknowledge this.