

Spray Irrigation Permit

Issued by: Groundwater Discharges Section
Division of Water
Department of Natural Resources
and Environmental Control
89 Kings Highway
Dover Delaware 19901
302-739-9948

State Permit No. LTS 5004-90-12
DEN Number: 359141-05
Effective Date: July 13, 2012
Amended Date: October 16, 2012
Amended Date: March 14, 2013
Amended Date: October 8, 2015
Amended Date: October 20, 2015
Amended Date: October 17, 2016
Expiration Date: July 12, 2017

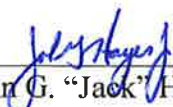


AUTHORIZATION TO OPERATE AND MAINTAIN
UNDER THE LAWS OF THE
STATE OF DELAWARE


PERMITTEE: Sussex County Council
PO Box 589
Georgetown DE 19947

FACILITY: Inland Bays Regional Wastewater Treatment Facility

1. Pursuant to the provisions of 7 Del. C. §6003, **Sussex County Council** is herein authorized to operate and maintain the facility known as **Inland Bays Regional Wastewater Treatment Facility** located on the north side of County Road 306, between County Road 307 and 303, Sussex County, Delaware (Sussex County Tax Map Parcel Number 2-34-22-14) to collect and treat domestic wastewater from the Long Neck Sanitary Sewer District (LNSSD), the Oak Orchard Sanitary Sewer District (OOSD), and the Angola Sanitary Sewer District (ANSSD) and to spray irrigate the treated wastewater on spray fields located both north and south of County Road 306, west of County Road 307, east of County Road 303, and north of County Road 297, Sussex County Delaware.
2. The effluent limitations, monitoring requirements and other permit conditions are set forth in Part I, II and III hereof.



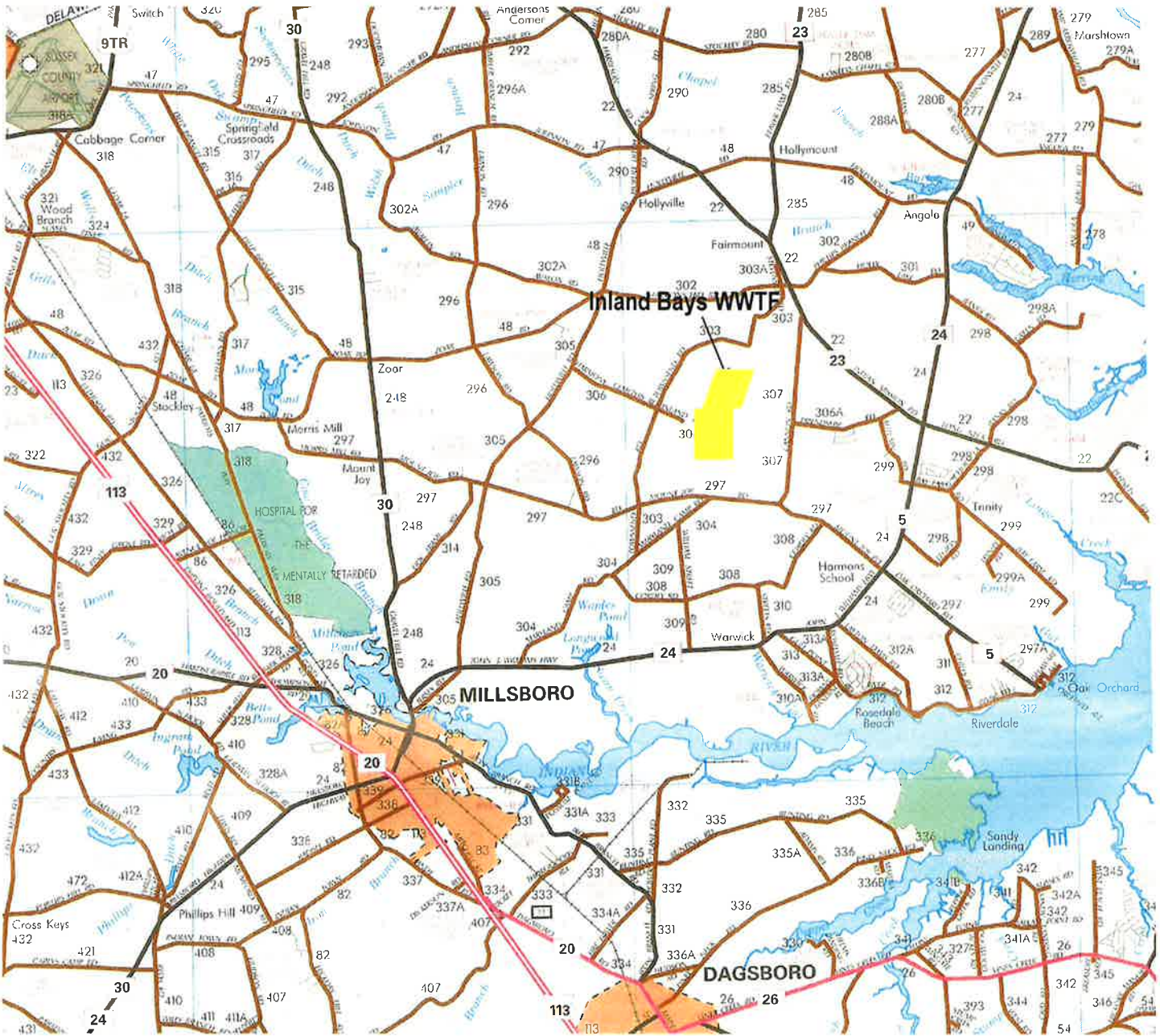
John G. "Jack" Hayes, Jr.
Environmental Program Manager
Groundwater Discharges Section
Division of Water
Delaware Department of Natural Resources
and Environmental Control



Date Signed

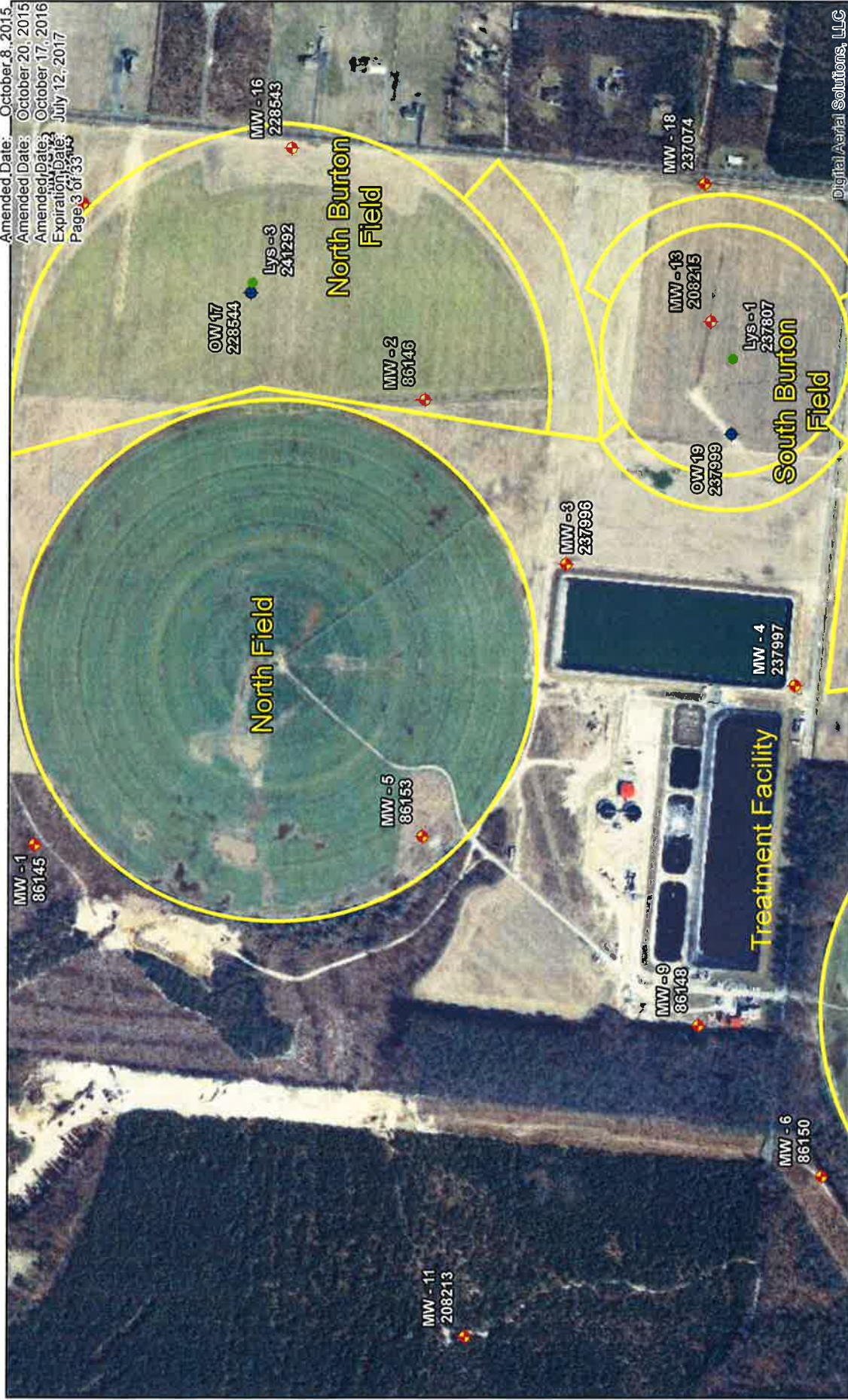
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LOCATION MAP



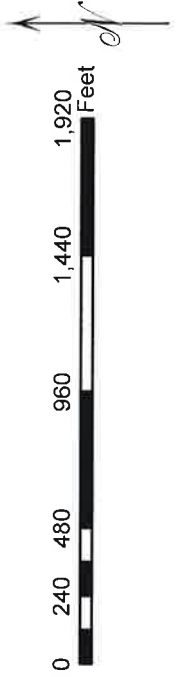
Inland Bays Regional Wastewater Treatment Facility Site Map - North

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Legend

- Lysimeters\$ Events
- 'Observation Wells\$' Events
- 'Monitoring Wells\$' Events



Digital Aerial Solutions, LLC

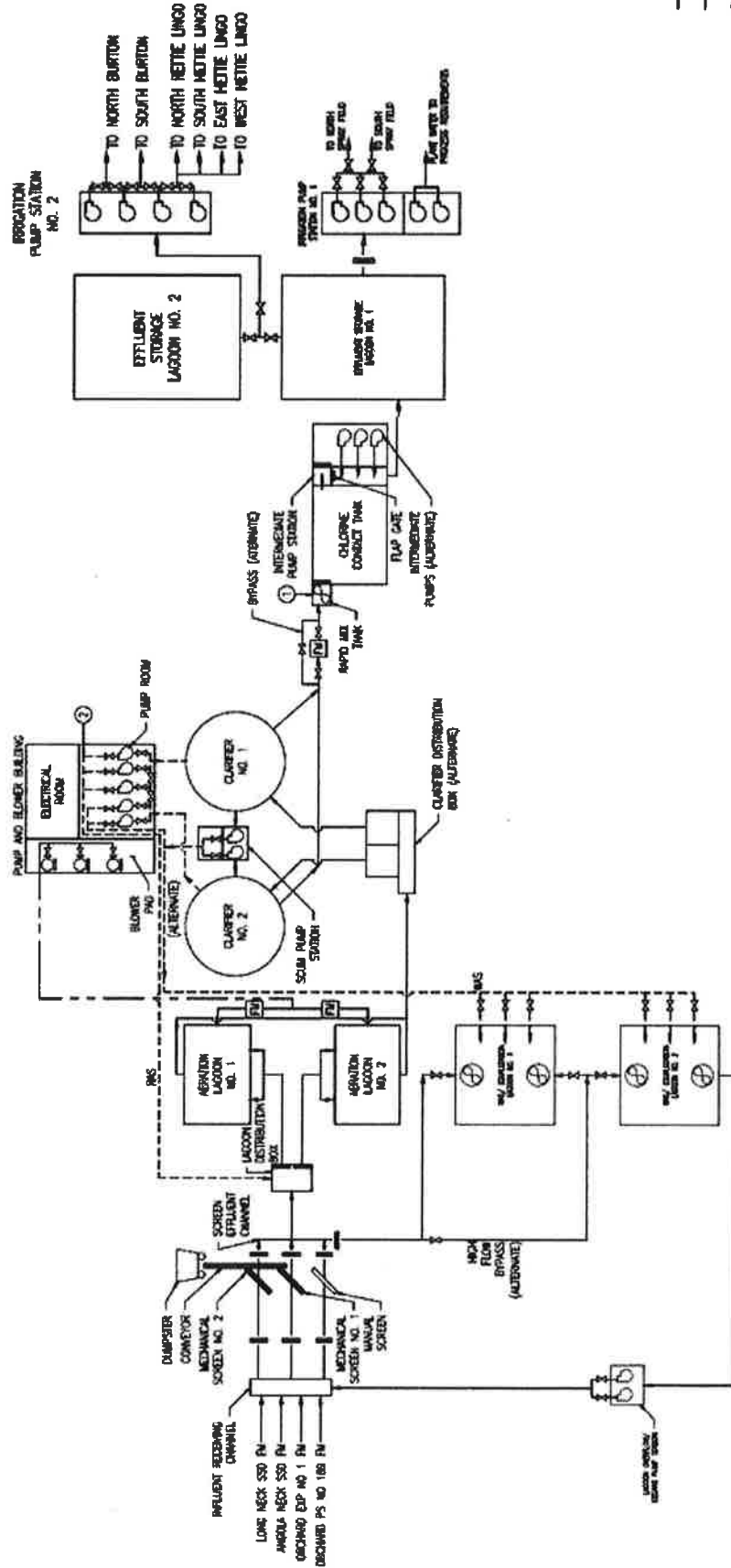
Inland Bays Regional Wastewater Treatment Facility Site Map - South

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FLOW DIAGRAM



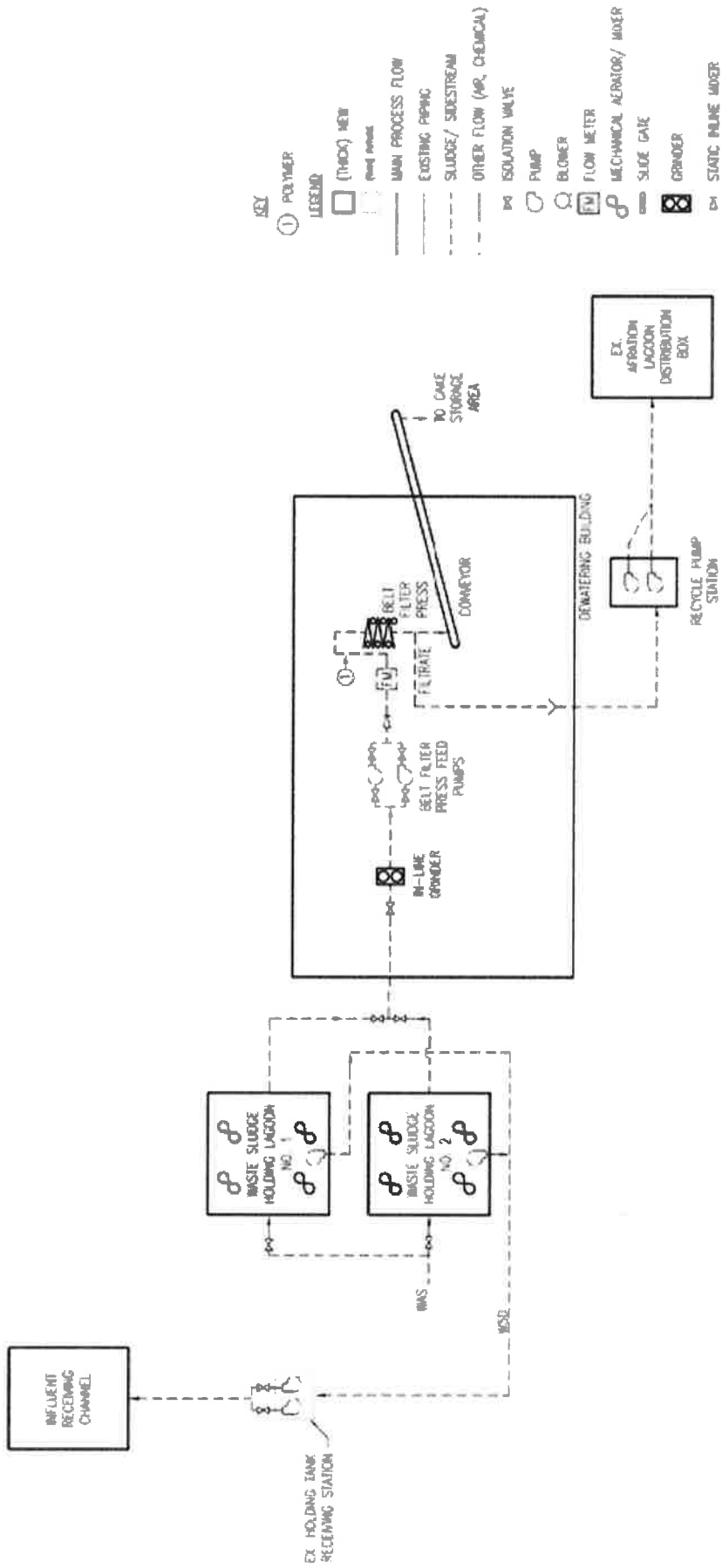
- KEY**
- ① SODIUM HYPOCHLORITE (CONTINUOUS)
 - ② SODIUM HYPOCHLORITE (MANUAL)
- LEGEND**
- (THICK) NEW
 - (Thin) EXISTING
 - MAIN PROCESS FLOW
 - EXISTING PIPING
 - - - SLUDGE/ SUBSTREAM
 - - - OTHER FLOW (WR. CHEMICAL)
 - PI ISOLATION VALVE
 - ☉ PUMP
 - ☉ BLOWER
 - ⊕ FLOW METER
 - ⊕ MIXER
 - ⊕ MECHANICAL AERATOR/ MIXER
 - SLIDE GATE

NOTE:

1. NOT ALL VALVES SHOWN FOR CLARITY.
2. REFER TO MOULM FOR PHASE 1 DESIGN CRITERIA.

PHASE 1 PROCESS FLOW SCHEMATIC
 NOT TO SCALE

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PART I

A. DOCUMENTATION

The slow rate land treatment operation shall be conducted in accordance with the following documents:

1. The State of Delaware, Department of Natural Resources and Environmental Control's Guidance and Regulations Governing the Land Treatment of Wastes, (hereafter called Regulations).
2. The Design Development Report (DDR) submitted by Metcalf and Eddy, dated April 27, 1989; received May 8, 1989.
3. Plans and Technical Specifications submitted by Metcalf and Eddy dated December 27, 1989.
4. A letter dated March 20, 1990 from Robert J. Zimmerman to Mr. Robert Woods approving the DDR as submitted contingent upon several revisions to the final Plans and Specifications.
5. The Operations and Maintenance Manual dated October 1991; revised April 8, 1992.
6. A letter dated September 21, 1994 from D. Preston Lee, Jr. to Ronald E. Graeber transmitting additional information on the proposed wastewater treatment system and revised DDR.
7. October 18, 2005 *Soil Investigations of the Inland Bays Wastewater Treatment Facility Expansion Tracts* prepared by Geo-Sci Consultants, Inc. on behalf of Sussex County Council submitted to the Ground Water Discharges Section under cover letter dated July 18, 2006.
8. November 27, 2006 *Hydrogeologic Report for the Expansion of the Inland Bays Regional Wastewater Facilities* prepared by Whitman, Requardt and Associates, LLP.
9. April 2009 Design Development Report for the Expansion of the Inland Bays Regional Wastewater Facility to include Burton Field prepared for Sussex County by Stearns & Wheeler, LLC in association with Whitman, Requardt and Associates, LLP received May 6, 2009.
10. June 4, 2009 Hydro Geological Review performed by DNREC's Ground Water Protection Branch and forwarded to Sussex County via standard and electronic mail on June 9, 2009.
11. June 24, 2009 letter from Sussex County to the Ground Water Discharges Section.
12. September 2009 *Final Inland Bays Regional Wastewater Facility Design Development Report* prepared by Stearns & Wheeler Environmental Engineers & Scientists in association with Whitman, Requardt and Associates, LLP on behalf of Sussex County Council submitted to the Ground Water Discharges Section on October 2, 2009.
13. November 5, 2009 Plans and Technical Specifications for the Phase 1 project, Contract 09-19 prepared by Whitman, Requardt and Associates, LLP in association with Stearns and Wheeler on behalf of Sussex County Council submitted to the Ground Water Discharges Section on November 19, 2009.
14. May 24, 2012 Spray Irrigation Permit Application for renewal and an amendment to included Expansion 1 construction modifications to increase the treatment and disposal capacity of the Facility.
15. June 2012 Operation and Maintenance Plan Volumes 1 thru 6 titled *Sussex County Inland Bays Facility Expansion Number 1*.
16. August 15, 2012 *Application for a Permit to Spray Irrigate Wastewater*
17. October 2012 *Inland Bays Regional Wastewater Facility Phase 2A Expansion: Spray Irrigation Improvements Design Development Report* prepared by GHD Inc. in association with Whitman, Requardt

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and Associates, LLP on behalf of Sussex County Council submitted to the Ground Water Discharges Section on October 19, 2012.

18. December 2012 Final Plans/Drawings titled *Inland Bays Regional Wastewater Facility Phase 2A Expansion: Spray Irrigation Improvements* prepared by Davis, Bowen and Friedel, Inc. on behalf of Sussex County Council submitted to the Ground Water Discharges Section on December 21, 2012.
19. Emails providing additional calculations and clarification dated:
 - a. January 17, 2013 from Heather Sheridan, Sussex County
 - b. January 24, 2013 from John Stullken, GHD
 - c. March 1, 2013 from Heather Sheridan, Sussex County
20. Project Design Report titled *Inland Bays RWF Phase 2B Solids Dewatering Improvements* dated May 2013 prepared by GHD for Sussex County, received by the Groundwater Discharges Section on July 30, 2015.
21. Plans and Project Specifications for Contract 12-17 dated September 10, 2013 prepared by WR&A in Association with GHD for Sussex County, received by the Groundwater Discharges Section on July 30, 2015.
22. Application for a Construction Permit to Modify an Existing Wastewater Treatment Spray Irrigation Facility dated July 28, 2015.
23. Application for an Amended Operations Permit to include the Phase IIB dewatering improvements dated August 4, 2016 including Engineer's Inspection Report, Record Drawings, and an updated O&M.
24. Any other correspondence, documentation and/or reports related to the **Inland Bays Regional Wastewater Treatment Facility** received and approved by the Ground Water Discharges Section and/or sent by the Ground Water Discharges Section.

B. GENERAL DESCRIPTION OF OPERATION/DISCHARGES

The Inland Bays Regional Wastewater Treatment Facility (RWTF) collects and treats domestic wastewater from the Long Neck Sanitary Sewer District (LNSSD), the Oak Orchard Sanitary Sewer District (OOSSD), and the Angola Sanitary Sewer District (ANSSD).

The Inland Bays RWTF is a secondary treatment facility designed to treat a summer maximum monthly average daily flow of 2.0 MGD and consists of an activated sludge system with two phased-aeration basins for biological nutrient removal (BNR), two clarifiers, one chlorine contact chambers for disinfection, a 39 million gallon effluent storage lagoon, a 32 million gallon storage lagoon and solids handling, storage and dewatering facilities.

Sussex County disposes of biosolids via land application onto the Hettie Lingo field and the Tower Field at the Inland Bays RWTF, among other property under the same permit under State Permit AGU 1504-S-03 (effective July 1, 2015 to June 30, 2020). Prior to disposal, the sludge will be processed to achieve Class B Biosolids requirements per DNREC and federal regulations, and dewatered into cake.

The system’s design disposal capacity is 2.65 MGD. The treated wastewater is spray irrigated onto 432.5 acres via eight center pivot spray irrigation systems. The wetted fields will be planted in corn (grain) and soybean (grain) during the summer growing season and in winter wheat during the winter.

Design Treatment Capacity: 2.0 MGD

Design Flows:

Season	Flow Rate (MGD)
Summer Maximum Month ADF	2.0 MGD
Summer Average Month ADF	1.8 MGD
Winter Maximum Month ADF	1.5 MGD
Winter Average Month ADF	1.4 MGD
Annual Average ADF	1.5 MGD
Peak Day Flow	3.7 MGD

Design Disposal Capacity:

Wetted Field Area	Acres	Rate (in/wk)	Effluent Disposal Capacity (MGD)	Sussex County Tax Map No.
North Field	103.0	1.86	0.73	2-34-22-12
South Field	103.0	1.86	0.73	2-34-22-16
North Burton Field	52.0	1.5	0.3	2-34-22-12
South Burton Field	41.9	1.0	0.18	2-34-22-12
North Hettie-Lingo Field	47.5	1.0	0.18	2-34-22-19
South Hettie-Lingo Field	30.48	2.0	0.24	2-34-22-19
East Hettie-Lingo Field	34.46	1.0	0.13	2-34-22-19
West Hettie-Lingo Field	20.16	2.0	0.16	2-34-22-19
Total	432.5		2.65	

C. INFLUENT LIMITATIONS

1. The average monthly quantity of influent to the wastewater treatment facility shall not exceed 2.0 Million Gallons per Day.

Design Treatment Capacity: 2.0 MGD

D. SPRAYED EFFLUENT LIMITATIONS

During the period beginning on the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge to the spray irrigation field(s) identified on page 1 of this permit the quantity and quality of effluent specified below:

1. The average monthly quantity of effluent discharged from the wastewater treatment facility to the spray fields shall not exceed 2.65 Million Gallons per Day in any calendar month.

Design Disposal Capacity: 2.65 MGD

2. The average weekly quantity of effluent discharged to the spray irrigation fields shall not exceed the following limits.

Wetted Field Area	Rate (in/wk/acre)
North Field	1.86
South Field	1.86
North Burton Field	1.5
South Burton Field	1.0
North Hettie-Lingo Field	1.0
South Hettie-Lingo Field	2.0
East Hettie-Lingo Field	1.0
West Hettie-Lingo Field	2.0

3. The quantity of effluent discharged to any portion of the spray irrigation field shall not exceed 0.25 inches/acre/hour.
4. There shall be a minimum rest period of three (3) hours between applications on each spray field. There must be a sufficient rest period between applications to prevent field saturation from occurring in any part of the field. If direct runoff occurs as a result of wastewater irrigation, application rates must be reduced.
5. There shall be a minimum one (1) hour rest period when the center pivot reaches any in-field end stops if the instantaneous application rate exceeds a rate of 0.125 inches/acre in any one hour.
6. The pH of the effluent shall not be less than 5.5 standard units nor greater than 9.0 standard units.
7. The total residual chlorine concentration shall not be less than 1.0 mg/L nor more than 4.0 mg/L.
8. The Chloride concentration of the effluent shall not exceed 250 mg/L on an average annual basis.

9. The Sodium concentration of the effluent shall not exceed 210 mg/L on an average annual basis.
10. The total amount of nitrogen that may be applied to each spray field acre shall not exceed 250 lbs/year. This amount includes supplemental fertilizers, the nitrogen supplied from the effluent, and any other source. The limitation of total nitrogen that can be applied to each acre may be adjusted by the Ground Water Discharges Section if it can be shown through subsequent analysis of the crop removed that the total nitrogen removed with the crop is equal to the amount applied from the effluent and additional fertilizer applications. Supplemental additions of commercial fertilizers shall be limited to amounts necessary to meet crop needs in accordance with the written recommendations of the University of Delaware Cooperative Extension Service for the specified crop and anticipated yield.
11. The discharge to the spray irrigation fields shall be free from material such as floating solids, sludge deposits, debris, scum, oil and grease in quantities that would be deleterious to the proper operation and maintenance of the spray fields.
12. Because the facility has been designed for Restricted Public Access, the effluent must meet the following limits:

Parameter	Daily Permissible Average Concentration at Design Flows
BOD ₅	50.0 mg/L
Total Suspended Solids	90.0 mg/L
Fecal Coliform	200 colonies/100 mL

E. BUFFER REQUIREMENTS

1. A buffer zone of at least 150 feet shall be maintained between the edge of the wetted field area and all highways, individual lots and property lines.
2. A buffer zone of 50 feet shall be maintained between the wetted edge of the spray field and the edge of any wetlands or any perennial lake or stream provided that the buffer zone is maintained in perennial vegetation.
3. A buffer zone of 100 feet shall be maintained between the wetted edge of the spray field and all other areas not previously mentioned in items 1 and 2 of Buffer Requirements.

F. GROUND WATER REQUIREMENTS

Operation of the wastewater treatment facility and spray irrigation system shall not cause the quality of Delaware's ground water resources to be in violation of applicable Federal or State Drinking Water Standards on an average annual basis.

G. MONITORING REQUIREMENTS

Permittee shall initiate periodic reporting required under Part I.I.2 upon initiation of irrigation activities for all of the following monitoring requirements.

During the period beginning on the effective date and lasting through the expiration date of this permit, the permittee is authorized to discharge to spray irrigation fields identified on page 1 of this permit. Such discharge shall be monitored by the permittee as specified as follows:

1. INFLUENT MONITORING REQUIREMENTS

Parameter	Sample Location	Unit Measurement	Monitoring Frequency	Sample Type
BOD ₅	Influent	mg/L	Monthly	Composite
Influent Flow	Plant Inlet	Gal/day	Continuous	Recorded/Totalized
pH	Influent	S.U.	Monthly	In-situ
TSS	Influent	mg/L	Monthly	Composite

2. SPRAYED EFFLUENT MONITORING REQUIREMENTS

Samples taken in compliance with the monitoring requirements for all parameters specified above shall be taken from the irrigation pump station wet well with the exception of Total Residual Chlorine, PH, and Fecal Coliform which shall be taken at the wet well located at the effluent end of the chlorine contact chamber.

Parameter	Unit Measurement	Monitoring Frequency	Sample Type
Ammonia Nitrogen	mg/L	Monthly	Composite
BOD ₅	mg/L	Twice per month	Composite
Cadmium	mg/L	Annually	Composite
Chloride	mg/L	Quarterly	Composite
Copper	mg/L	Annually	Composite
Effluent Flow	Gal/day	Continuous	Recorded/Totalized
Fecal Coliform	Col/100 ml	Twice per month	Grab
Lead	mg/L	Annually	Composite
Nickel	mg/L	Annually	Composite
Nitrate + Nitrite Nitrogen	mg/L	Monthly	Composite
Organic Nitrogen	mg/L	Monthly	Calculation
pH	S.U.	Daily	In-situ
Potassium	mg/L	Quarterly	Composite
Sodium	mg/L	Quarterly	Composite
Total Nitrogen	mg/L	Monthly	Composite
Total Phosphorus	mg/L	Monthly	Composite
Total Residual Chlorine	mg/L	Daily	Grab
Total Suspended Solids	mg/L	Twice per month	Composite
Zinc	mg/L	Annually	Composite

3. GROUND WATER MONITORING REQUIREMENTS

Groundwater samples shall be taken from each monitoring well for the facility as listed below. Groundwater monitoring well locations are depicted on the Site Maps found on Pages 3 and 4 of this Permit.

Samples taken in compliance with the monitoring requirements specified shall be taken at each monitoring well in accordance with procedures approved by the Department and listed in the State of Delaware, Field Manual for Groundwater Sampling (Custer, 1988).

Groundwater monitoring results for each monitoring well shall be reported using the State of Delaware Well Identification Tag Number that is required on all wells in accordance with the Delaware Regulations Governing the Construction and Use of Wells, Section 10, A.

All field sampling logs and laboratory results for samples obtained from a well shall be identified by the DNREC ID affixed to the well.

Groundwater samples shall be tested from the following wells for the following parameters:

a. GROUNDWATER QUALITY MONITORING

Local ID	DNREC ID
MW - 1	86145
MW - 2	86146
MW - 3	237996
MW - 4	237997
MW - 5	86153
MW - 6	86150
MW - 7	86151
MW - 8	86152
MW - 9	86148
MW - 10	89573
MW - 11	208213
MW - 12	208214

Local ID	DNREC ID
MW - 13	208215
MW - 14	208216
MW - 15	208217
MW - 16	228543
MW - 18	237074
MW - 21	238298
MW - 22	238299
MW - 23	238967
MW - 24	238968
MW - 25	238969
MW - 26	238970

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Parameter	Unit Measurement	Measurement Frequency	Sample Type
Ammonia as Nitrogen	mg/L	Quarterly	Grab
Chloride	mg/L	Quarterly	Grab
Depth to Water	hundredths of a foot	Monthly	In-Situ
Dissolved Oxygen	mg/L	Quarterly	Field Test
Fecal Coliform	Col/100mL	Quarterly	Grab
Nitrate + Nitrite as Nitrogen	mg/L	Quarterly	Grab
pH	S.U.	Quarterly	Field Test
Sodium	mg/L	Quarterly	Grab
Specific Conductance	µS/cm	Quarterly	Field Test
Temperature	°C	Quarterly	Field Test
Total Dissolved Solids	mg/L	Quarterly	Grab
Total Nitrogen	mg/L	Quarterly	Grab
Total Phosphorus	mg/L	Quarterly	Grab

b. GROUNDWATER TABLE ELEVATION MONITORING REQUIREMENTS

Ground water level measurements shall be taken from the following observation wells for the following parameters:

Local ID	DNREC ID	
OW 19	237999	South Burton Field
OW 17	228544	North Burton Field North Hettie-Lingo Field
OW 20	237998	Field
OW 27	242932	West Hettie-Lingo Field South Hettie-Lingo Field
OW 28	242933	Field

Parameter	Unit Measurement	Measurement Frequency	Sample Type
Depth to Water	hundredths of a foot	Monthly	In-Situ

- c. While performing the monitoring as required by Part I.G.3.a or I.G.3.b of this permit, if the 'Depth to Water' in any one of the following monitoring wells lies within 3 feet of the ground surface, the permittee shall be required to collect additional weekly depth to water measurements from that monitoring well. The permittee may discontinue the additional weekly sampling for depth to water when the water table in each well is deeper than 3 feet below ground surface. The additional monitoring is necessary to ensure that spray irrigation ceases on any area of the spray fields where the ground water lies within 2 feet of the ground surface in accordance with Part III.A.3 of this permit. The additional water table measurements must be recorded in the operator's log, and must be reported to the Ground Water Discharges Section in accordance with Part I.I.2 of this permit.

Spray Irrigation Field	Local ID	DNREC ID
South Field:	MW7	86151
	MW10	89573
	MW23	238967
	MW24	238968
North Field:	MW3	237996
	MW5	86153
North Burton Field:	MW2	86146
	MW16	228543
	OW17	228544
South Burton Field:	MW13	208215
	OW19	237999
North Hettie Lingo Field:	MW14	208126
	OW20	237998
East Hettie Lingo Field:	OW27	242932
West Hettie Lingo Field:	MW7	86151
	OW27	242932
South Hettie Lingo Field:	MW15	208217
	OW28	242933

4. LYSIMETER MONITORING REQUIREMENTS

Lysimeter monitoring sampling shall be taken from the following lysimeters for the following parameters. The constituents are listed below in highest priority first. In the event that enough sample is not obtained to test for all parameters listed, the sample shall be tested for as many constituents possible in the following order:

Local ID	DNREC ID	Field
Lys-1	237807	South Burton
Lys-2	237808	North Hettie-Lingo
Lys-3	241292	North Burton
Lys-4	241934	East Hettie-Lingo

Parameter	Unit Measurement	Measurement Frequency	Sample Type
Total Nitrogen	mg/L	Quarterly	Grab
Total Phosphorus	mg/L	Quarterly	Grab
Nitrate + Nitrite as Nitrogen	mg/L	Quarterly	Grab
Ammonia as Nitrogen	mg/L	Quarterly	Grab
Chloride	mg/L	Quarterly	Grab
Sodium	mg/L	Quarterly	Grab
Total Dissolved Solids	mg/L	Quarterly	Grab
pH	S.U.	Quarterly	Field Test
Specific Conductance	µS/cm	Quarterly	Field Test
Temperature	°C	Quarterly	Field Test

5. SOIL MONITORING REQUIREMENTS

Composite soil samples representing each soil series within the wetted spray field should be taken within the upper 12 inches of soil. A minimum of one composite sample for every 20 acres of each soil series is required.

Soil sample locations shall be plotted on a scaled drawing and labeled consistent with the sample nomenclature. Each field must also be identified so that sample results may be tracked and properly assessed for field life limiting factors.

Parameter	Unit Measurement	Measurement Frequency	Sample Type
pH	S.U.	Annually	Soil Composite
Organic Matter	%	Annually	Soil Composite
Phosphorus (as P2O5)	mg/kg	Annually	Soil Composite
Potassium	mg/kg	Annually	Soil Composite
Sodium Adsorption Ratio	meq/100g	Annually	Soil Composite
Cadmium	mg/kg	Once per 4 years	Soil Composite
Nickel	mg/kg	Once per 4 years	Soil Composite
Lead	mg/kg	Once per 4 years	Soil Composite
Zinc	mg/kg	Once per 4 years	Soil Composite
Copper	mg/kg	Once per 4 years	Soil Composite
Cation Exchange Capacity	meq/100g	*Only if soil pH changes significantly	Soil Composite
Phosphorus Adsorption	meq/100g	**Only if soil phosphorus levels become excessive for plant growth	Soil Composite
Percent Base Saturation	%	*Only if soil pH changes significantly	Soil Composite

*A significant change in soil pH is defined as a change of one or more standard units from the original value established in the Design Development Report.

** Excessive levels of soil phosphorus are defined by the Delaware Nutrient Management Commission. Soil phosphorus levels must be tested in accordance with the University of Delaware soil testing methods. If the soil phosphorus levels become excessive, the permittee shall perform a Phosphorus Site Index (PSI) study of the site. The results of the PSI study must be submitted to the Ground Water Discharges Section within 30 days of completion of the study. Based on the results of the PSI study, the Ground Water Discharges Section may require the permittee to submit a plan for Ground Water Discharges Section review and approval detailing steps the permittee will take to reduce the phosphorus loading rates at the site to crop uptake levels.

H. Schedule of Compliance

1. The permittee shall submit information necessary for proper operation of the spray irrigation system in accordance with the following schedule:

None

2. The permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance by specified date. In the event of noncompliance, the notice shall include the cause of noncompliance, any remedial action taken, and the probability of meeting the next scheduled requirement.

I. Monitoring and Reporting

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

The permittee shall automatically resample the wastewater and submit to the Department additional analyses if there has been significant increase (greater than 25%) in the characterization of any one parameter of the effluent wastewater as established in the Design Development Report. The permittee shall then be required to recharacterize the wastewater in order to determine if any change in the land limiting constituent has occurred. Any significant change in wastewater characteristics that affects the land limiting constituent shall be included in a revised Design Development Report which shall be submitted to the Department. After a review of these results, the Department may invoke the provisions of Part II.B.6 of this permit.

2. Reporting

Monitoring results obtained during the previous one month/quarter shall be summarized for each month/quarter and reported on an approved Spray Effluent Monitoring Report Form postmarked no later than the 28th day of the month following the completed reporting period. Signed copies of these, and all other reports required herein, shall be submitted to the Department at the following address:

Groundwater Discharges Section
Division of Water
Department of Natural Resources and Environmental Control
89 Kings Highway
Dover DE 19901
Telephone: (302) 739-9948 Office
(302) 542-9735 Cell

a. Additional Monitoring by Permittee

If the permittee monitors any parameter at the location(s) designated herein more frequently than required by this permit, using approved analytical methods specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the appropriate Monitoring Report Form. Such increased frequency shall also be indicated.

b. The permittee shall submit to the Department an annual operation report on or before February 1 of each year. The annual operation report shall summarize operational and maintenance activities at the facility along with management and administration of the facility and shall include the following:

- i. The annual volume of wastewater spray irrigated on each field along with the total nitrogen and phosphorus loading applied to each irrigation field in pounds per acre per field as well as total pounds removed;
- ii. A chemical analysis of soils from each field for the constituents identified in Part I.G.5 of this permit;

- iii. Identification of those portions of the field(s) which have been prone to ponding, pooling or runoff; and
 - iv. The vegetative management practices followed during the previous year and anticipated for the coming year.
 - v. The type and amount of crop removed under spray irrigation.
 - vi. Documentation verifying the calibration of influent and effluent flow meters.
 - vii. A summary of all sources of sludge/biosolids, regardless of origin, to all fields permitted for spray irrigation. The summary should at a minimum include the following:
 - (b) For the reporting year:
 - (i) All Nitrogen and Phosphorus sludge/biosolids sources.
 - (ii) The amount of Nitrogen and Phosphorus (lbs/acre) applied to each permitted spray irrigation field. A site map depicting sludge application locations.
 - (c) Proposed for the coming year:
 - (i) The projected Nitrogen and Phosphorus sludge/biosolids sources.
 - (ii) The projected amount of Nitrogen and Phosphorus (lbs/acre) to be applied to each permitted spray irrigation field.
 - (iii) A site map depicting the proposed sludge application locations.
- a. Compliance Monitoring Report

At least 180 days before the expiration date of this permit, the permittee must submit a five year Compliance Monitoring Report (CMR) with the application for renewal. The CMR must be in accordance with current Department Guidelines. CMR requirements are currently outlined in the November 13, 2008 amendment to the *Wastewater Treatment and Disposal System Siting, Design, and Operation: Supplemental Guidance to the Existing Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems and the Regulations Governing the Land Treatment of Wastes*. Please check with the Department prior to completing the CMR for the most current Guidelines regarding the CMR.

3. Test Procedures

Test procedures for analysis of pollutants shall conform to the applicable test procedures identified in 40 C.F.R., Part 136 or the most recently adopted copy of Standard Methods unless otherwise specified in this permit.

Soil chemical testing should be in accordance with Methods of Soil Analysis published by the American Society of Agronomy, Madison, Wisconsin.

4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

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- a. The exact place, date and time of sampling and/or measurement;
- b. The person(s) who performed the sampling and/or measurement;
- c. The date(s) the analyses were performed and the time the analyses were begun;
- d. The person(s) who performed the analyses; and
- e. The results of each analysis.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed, calibration and maintenance of instrumentation and recording from continuous monitoring instrumentation shall be retained for five years. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the permittee, or as requested by the Department.

6. Quality Assurance Practices

The permittee is required to show the validity of all effluent monitoring and ground water monitoring data by requiring its laboratory to adhere to the following minimum quality assurance practice:

- a. Duplicate⁽¹⁾ and spiked⁽²⁾ samples must be run for each effluent monitoring and ground water monitoring constituent in the permit on 5% of the samples, or at least on one sample per quarter, whichever is greater. If the analysis frequency is less than one sample per quarter, duplicate and/or spiked samples must be run for each analysis;
- b. For spiked samples, a known amount of each constituent is to be added to the discharge sample. The amount of constituent added should be approximately the same amount present in the unspiked sample, or must be approximately that stated as maximum or average in the discharge permit;
- c. The data resulting from a and b shall be summarized in the annual report submitted pursuant to Part I.I.2.b of this permit in terms of precision; percent recovery; number of duplicate and spiked samples run; date and laboratory log number of samples run, and name of analyst;
- d. Precision shall be calculated by the standard deviation (s) formula $s = (\sum d^2/k)^{1/2}$, where d is the difference between duplicate results, and k is the number of duplicate pairs used in the calculations;
- e. Percent recovery (R) shall be reported on the basis of the formula $R = 100 (F-I)/A$, where F is the analytical result of the spiked sample, I is the result before spiking of the sample, and A is the amount of constituent added to the sample;
- f. The percent recovery in Quality Assurance Practice e above shall be summarized yearly in terms of mean recovery and standard deviation from the mean. The formula, $s = [\sum(x_{\text{mean}} - x)^2 / (n-1)]^{(1/2)}$, where s is the standard deviation around the mean \bar{x} , x is an individual recovery value, and n is the number of data points, shall be applied;
- g. The permittee or contract laboratory is required to annually analyze an external quality control reference sample for each pollutant. These are available through the EPA regional quality assurance coordinator. Results shall be included in the annual report, Quality Assurance Practice c above;
- h. The permittee and/or contract laboratory is required to maintain an up-to-date and continuous record of the method used, any deviations from the method or options employed in the reference method, reagent standardization, equipment calibration and the data obtained in Quality Assurance Practices a, b and f above; and
- i. If a contract laboratory is utilized, the permittee shall report the name and address of the laboratory and the parameters analyzed together with the monitoring data required.

(1) Duplicate samples are not required for the following parameters: color, temperature, and turbidity.

(2) Spike samples are not required for the following parameters: Acidity, Alkalinity, Bacteriological, Benzidine, Chlorine, Color, Dissolved Oxygen, Hardness, pH, Oil & Grease, Radiological, Residues, Temperature, Turbidity, BOD₅ and Total Suspended Solids.

J. DEFINITIONS

1. Bypass - The intentional diversion of wastes from any portion of a treatment facility.
2. Composite sample - A combination of individual samples obtained at intervals over a time period. Either the volume of each individual sample is proportional to discharge flow rates or the sampling interval (for constant volume samples) is proportional to the flow rates over the time period used to produce the composite. For a 8-24 hour discharge, a minimum of 24 individual grab samples shall be collected and combined to constitute a composite sample. For intermittent discharges of 4-8 hours duration, a minimum of 12 grab samples shall be collected and combined to constitute the composite sample for the discharge. For intermittent discharges of less than 4 hours, a minimum of individual grab samples shall be collected and combined to constitute the composite samples collected equal to the duration of the discharge in hours times 3 but not less than 3 samples.
3. Grab sample - An individual sample collected in less than 15 minutes.
4. In-situ – Data is collected in stream or in place without interrupting the normal flow process.
5. Field Test – A test or measurement performed in the field using a calibrated water-quality instrument. Such tests include, but are not limited to, pH, specific conductance, and temperature. For ground water sampling purposes, these parameters must be monitored during well purging and allowed to stabilize prior to the collection of samples for laboratory analysis.
6. Daily average concentration - The daily average concentration shall be determined by the summation of all the measured daily concentrations obtained from composite samples divided by the number of days during the calendar month when the measurements were made.
7. Daily maximum concentration - The concentration of a pollutant in terms of milligrams per liter which represents the value obtained from a composite sample of an effluent over a 24 hour period.
8. Land Treatment - A technology for the intimate mixing or dispersion of wastes into the upper zone of the plant-soil system with the objective of microbial stabilization, immobilization, selective dispersion, or crop recovery leading to an environmentally acceptable assimilation of the waste.
9. Spray Irrigation - the controlled application of treated wastewater to a vegetated soil surface.
10. Soil composite - At least ten individual cores which have been mixed together to form one sample. The cores shall be collected in a manner such that the final sample is representative of the soils found on the field.
11. Treatment - A process which alters, modifies, or changes the biological, physical, or chemical characteristics of sludge or liquid waste.

PART II

A. MANAGEMENT REQUIREMENTS

1. Spray Irrigation of Wastewater

An operator log must be kept on site at all times. Each spray system section shall be numbered and referred to by number in the operator log. All records and reports shall also be kept on site at all times. This log shall, at a minimum, include the following:

- a. Time spent at the treatment facility on any date;
- b. Details of the operation and maintenance performed on the wastewater treatment and spray irrigation facility on any date;
- c. The volume of wastewater sprayed on each field on any date and the acreage over which the wastewater was sprayed;
- d. Identification of those portions of the field(s) that were ponding on any date;
- e. A record of any deviations from the operation and maintenance manual;
- f. General daily weather conditions;
- g. A site map showing the spray area with each center pivot or solid set spray zone numbered;
- h. A record of all actions taken to correct violations of the Delaware Environmental Protection Act and the Department's regulations; and
- i. A record of all site management activities undertaken such as planting, reseeding, harvesting of crops, commercial fertilizer applications and any other chemical additions or applications.

2. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit.

Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be submitted to the Ground Water Discharges Section for approval in accordance with Part II. B. Subsection 203 (4) (b) [Major Modifications] of the Regulations. The procedure for making major modifications shall be the same as that used for a new permit under the regulations.

Any other activity which would constitute cause for modification or revocation and reissuance of this permit as described in Part II.B.6 of this permit shall be reported to the Ground Water Discharges Section. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

3. Non-compliance Notification

The permittee shall report to the Department's Enforcement Section at (800) 662-8802 any unpermitted release or discharge of any contaminant into the air, or a pollutant, including petroleum substances, into surface waters, ground water, or onto land as soon as the permittee has knowledge of the release or discharge.

The permittee shall report to the Ground Water Discharges Section orally within 24 hours from the time the permittee became aware of any noncompliance that may endanger the public health or the environment by contacting the Department at the telephone numbers cited in Part I.I.2 of this permit.

If for any reason the permittee does not comply with, or will be unable to comply with, any effluent limitations or other conditions specified in this permit, the permittee shall provide the Department with the following information in writing within 5 days of becoming aware of any actual or potential non-compliance:

- a. A description and cause of the non-compliance with any limitation or condition;
- b. The period of non-compliance including exact dates and times; or, if not yet corrected, the anticipated time the non-compliance is expected to continue; and
- c. The steps being taken or planned to reduce, eliminate and/or prevent recurrence of the non-compliant condition.

4. Facilities Operation

The permittee shall at all times properly maintain and operate as efficiently as possible all structures, systems and equipment for treatment control and monitoring which are used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes, but is not limited to, effective performance based on designed facility removals, adequate funding, effective management, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures.

5. Facility and Operation Changes

The permittee shall submit a written report to the Department for review and approval, of any changes to the facility or operation of the system within the following time periods:

- a. Thirty days before any planned activity, physical alteration to the permitted facility or addition to the permitted facility if that activity, alteration or addition would result in a change in information that was previously submitted to the Department;
- b. Thirty days before any anticipated change which would result in noncompliance with any permit condition or the regulations; or
- c. Immediately after the permittee becomes aware of relevant facts omitted from, or incorrect information submitted in, a permit application or report to the Department. Omitted facts or corrected information shall be submitted as soon as possible and will be included as part of the report.

6. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to waters of the state resulting from operation under this permit. Such steps shall include, but not be limited to, accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or reasonable mitigation of such impacts.

7. Bypassing

Any bypass of treatment facilities (including pretreatment, storage, distribution and land application facilities) necessary to maintain compliance with the terms and conditions of this permit is prohibited unless:

- a. The bypass is unavoidable to prevent loss of life, personal injury or severe property damage;
- b. There are no alternatives;
- c. The Department is orally notified within 24 hours after such bypass; and, a written submission regarding the bypass is submitted within five days of the permittee's becoming aware of the bypass. Where the need for a bypass is known (or should have been known) in advance, this notification shall be submitted to the Department for approval at least ten days prior or as soon as possible before the date of bypass; and
- d. The bypass is allowed under conditions determined by the Department to be necessary to minimize adverse effects as provided under 7 Del. C., Chapter 60, §6011.

8. Initiation of Facility Operations Notification

If this permit involves the construction of new facilities or modifications to existing facilities, the permittee shall notify the Department at least fifteen days prior to the intent to initiate operations. Permittee must schedule to have Ground Water Discharge Section staff present at the initiation of operations to perform a start up inspection. If the results of the inspection are satisfactory, written authorization will be issued for continued operation. In the event the inspection results are not satisfactory, a letter of deficiency will be issued detailing remedial action necessary. After remedial action has been completed, the permittee must schedule the Ground Water Discharges Section to perform another start up inspection. The permittee must obtain written authorization from the Ground Water Discharges Section prior to commencing operations.

9. Removed Substances

Solids, sludges, filter backwash or other pollutants removed in the course of treatment or control of wastewater shall be disposed of in a manner such as to prevent any pollutant from entering the surface water or ground water and to comply with applicable federal or state laws and regulations.

10. Power Failures

An alternative power source, which is sufficient to operate the wastewater treatment and disposal facilities, shall be available. If such alternative power source is not available, the permittee shall halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater facilities.

B. RESPONSIBILITIES

1. Reapplication for a Permit

At least 180 days before the expiration date of this permit, the permittee shall submit a new application for a permit or notify the Department of the intent to cease discharging by the expiration date. In the event that a timely and complete application has been submitted as determined by the Department, and the Department is unable, through no fault of the permittee, to issue a new permit before the expiration date of this permit, the terms and conditions of this permit are automatically continued and remain fully effective and enforceable until a decision is made on the new application.

2. Submission of As-Built Plans

Within 90 days following the completion of construction of new facilities or modifications to existing facilities, the permittee shall submit to the Department a set of as-built plans of the facility bearing the seal and signature of a Professional Engineer registered in the State of Delaware. As-built drawings shall incorporate the new contours, treatment system, and spray irrigation system, along with the elevations of monitoring wells at the top of the casing and at the ground surface, and local topography tied to a common bench mark. The location and screen depth must also be provided for the monitoring wells.

3. Right of Entry

The permittee shall allow, at reasonable times, the Secretary of the Department of Natural Resources and Environmental Control, or his authorized representatives, upon the presentation of credentials and such other documents as may be required by law:

- a. To enter upon the permittee's premises where the spray irrigation facility is located or where any records are required to be kept under the terms and conditions of this permit;
- b. To have access to and copy any records required to be kept under the terms and conditions of this permit;
- c. To inspect any facility, equipment, monitoring method, monitoring equipment, practice or operation permitted or required under this permit; and
- d. To sample or monitor for the purpose of assuring permit compliance with any condition of this permit, the regulations or 7 Del C., Chapter 60.

4. Transfer of Ownership and Control

No person shall transfer a permit from one location to another, or from one piece of equipment to another. No person shall transfer a permit from one person to another unless 30 days written notice is given to the Department, indicating the transfer is agreeable to both persons, and approval of such transfer is obtained in writing from the Department, and any conditions of the transfer approved by the Department are complied with by the transferor and the transferee.

The notice to the Department shall contain a written agreement between the transferor and the transferee, indicating the specific date of proposed transfer of permit coverage and acknowledging responsibilities of current and new permittees for compliance with and liability for the terms and conditions of this permit. The notice shall be signed by both the transferor and the transferee.

5. Availability of Reports

All reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department of Natural Resources and Environmental Control. Monitoring data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in 7 Del. C., §6013.

6. Permit Modification, Revocation and Termination

After notice and opportunity for a hearing, this permit may be modified, terminated, or revoked in whole or in part during its term for cause including, but not limited to, any of the following:

- a. Violation of any terms of conditions of this permit, the regulations, 7 Del. C., Chapter 60 or failure to pay applicable Department fees;
- b. Obtaining this permit by misrepresentation or failure to fully disclose all relevant facts;
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
- d. If the Department finds that the health, safety or welfare of the public requires emergency action, the Department shall incorporate findings in support of such action in a written notice of emergency revocation issued to the permittee. Emergency revocation shall be effective upon receipt by the permittee. Thereafter, if requested by the permittee in writing, the Department shall provide the permittee a revocation hearing and prior notice thereof. Such hearings shall be conducted in accordance with 7 Del. C., Chapter 60.

7. State Laws

This permit shall not be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation.

8. Property Rights

The issuance of this permit does not convey any property rights of either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

9. Severability

The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit, to any circumstances is held invalid; the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

PART III

A. GENERAL CONDITIONS

1. The spray irrigation fields shall be managed to assure at a minimum that:
 - a. Spray irrigation of wastewater shall not occur on barren fields.
 - b. The spray fields shall be maintained in such a manner as to prevent wastewater pooling and/or discharge of wastewater to any surface waters. Should pooled areas become evident, no spraying shall be conducted in those areas until saturated conditions no longer exist.
 - c. No aerosols or nuisance odors shall extend beyond the boundary of the spray irrigation site when treated wastewater is being applied. If odors are produced that are considered to be a public nuisance, the permittee shall take the necessary steps to eliminate such odors. All action taken shall be reported to the Department in accordance with Part II.A.3 of this permit.
 - d. Erosion controls are employed to prevent wastewater runoff from the spray irrigation fields. The permittee must notify the Department immediately if any wastewater runoff occurs.
 - e. The spray irrigation field's crops must be maintained in optimal condition, including any necessary weed management, reseeding, or other vegetative management.
 - f. Effective vegetative management shall be provided such that crops harvested on the spray irrigation sites are removed from the sites.
 - g. The wastewater must be applied in a manner such that the application is even and uniform over the irrigation area.
2. Spray irrigation is prohibited when saturated or frozen soil conditions exist.
3. The ground water mound created by the added infiltration shall at no time reach within two feet of the ground surface in any section of the spray irrigation fields. Should the ground water mound exceed this limit, the permittee shall cease all irrigation of wastewater to the affected fields until the ground water mound recedes to acceptable levels.
4. All construction activities shall be in agreement with the plans and specifications submitted under this project and approved by the Ground Water Discharges Section; and other applicable local utility construction specifications and standards. Connections or additions to the spray irrigation system other than those indicated on the approved plans are prohibited without prior approval from the Ground Water Discharges Section.
5. Roof downspouts, foundation drains, area drains, storm sewers, combined sewers or appurtenances thereto or any sewer or device carrying storm water shall not be connected to the spray irrigation system.
6. The permittee shall take appropriate measures to protect the spray irrigation system from damage due to sub-freezing conditions. Any leaks associated with such conditions shall be reported to the Department and repaired immediately.

7. Signs must be posted along the perimeter of, and at all entry points to, areas utilizing treated wastewater for irrigation to discourage public contact with the effluent. The signs must indicate that the water being irrigated is treated wastewater. The signs must be legible.
8. Potable ground or surface water may be used for distribution system testing and irrigation to establish vegetation when sufficient treated effluent is not available.
9. In the event that the permittee installs new monitoring wells or replaces any existing monitoring wells, the permittee shall submit to the Ground Water Discharges Section new elevation details relative to the common benchmark previously established. Additionally, the permittee shall conduct a ground water quality sampling program prior to initiation of spray irrigation activities on the area incorporating the well. The sampling program shall be sufficient to establish a representative ground water quality at each well prior to initiation of the spray irrigation activities on the area incorporating the well. A minimum of three (3) samples shall be collected at least one month apart and analyzed. A Summary report which includes all analyses shall be submitted to the Ground Water Discharges Section prior to initiation of spray irrigation activities. Analyses shall include the following:

Ammonia Nitrogen		Nitrate + Nitrite Nitrogen	Temperature
Arsenic	Fecal Coliform		Total Dissolved Solids
Cadmium	Hardness	Organic Nitrogen	Total Nitrogen
Chloride	Iron	pH	
Chromium	Lead	Selenium	Total Phosphate as P
Copper	Manganese	Sodium	Total Phosphorus
Depth to water to 0.01ft from a surveyed point on TOC	Mercury	Specific Conductance	Total Suspended Solids
Dissolved Oxygen	Nickel	Sulfate	Zinc

10. The permittee must calibrate all flow meters in accordance with the Manufacturer's recommendations. Calibration shall include, but not be limited to influent, effluent, continuous online turbidity and chlorine residual monitors. The calibration documentation must be submitted with the Annual Report in accordance with Part I.I.2.b.vi.
11. The permittee shall operate and maintain the land treatment system in accordance with the approved Operation and Maintenance Plan.
12. Written permission must be obtained from the Ground Water Discharges Section prior to utilizing the freeboard in any lagoon.
13. This permit does not relieve the permittee of complying with any other applicable Federal, State or local regulations.
14. In the event that the Guidance and Regulations Governing the Land Treatment of Wastes or applicable federal regulations are revised, this permit may be opened and modified accordingly after notice and opportunity for a public hearing.

15. This permit supersedes all previous spray irrigation permits issued to the permittee.

B. FACILITY SPECIFIC CONDITIONS

1. A classification was performed on the permitted facility in accordance with Regulations Licensing Operators of Wastewater Facilities. The wastewater treatment system is designated as a Class IV Facility. The facility must be under the direction of a Class IV Licensed Operator in Direct Responsible Charge for the facility who is available at all times. A licensed operator, operating under the direction of the licensed operator in Direct Responsible Charge for the facility, must be available when the spray irrigation system is in operation.
2. Within 90 days of the issuance date of this Amended Permit, Permittee must address the "Requirements" in the February 6, 2013 DNREC Hydrogeological Review.
3. Within 90 days of the issuance date of this Amended Permit, Permittee must address the "Requirements Prior to Issuance of an Operation Permit" iterated in the February 24, 2013 email to Heather Sheridan, Sussex County.

C. SLUDGE HANDLING REQUIREMENTS

1. The permittee shall comply with all existing Federal and State laws and regulations that apply to its sludge use or disposal practice(s) including, but not limited to, Federal Regulations 40 CFR Part 258, Section 28 *Liquids Restrictions*; 40 CFR Part 503 *Standards for the Use and Disposal of Sludge*, February, 1993; and the Department's Guidance and Regulations Governing the Land Treatment of Wastes, including Part III.B, The Regulations Governing the Use and Disposal of Wastewater Sludge, October, 1999. If the Department determines that additional requirements or permit conditions are needed to ensure compliance with the referenced regulations, or if the Federal Government promulgates new regulations under Section 405(d) of the Act governing, (a) the treatment or disposal of sewage sludge, (b) sewage sludge management practices, or (c) concentrations of pollutants in sewage sludge, this permit may be reopened, and after notice and opportunity for public hearing, modified accordingly during its term. In the event that the Guidance and Regulations Governing the Land Treatment of Wastes or applicable federal regulations are revised, this permit may be opened and modified accordingly after notice and opportunity for a public hearing.
2. Prior to any planned change in the permittee's sludge use, treatment or disposal practice(s), the permittee shall notify the Department's Groundwater Discharges Section in accordance with the requirements of Part II.A.5 of this permit. A change in the permittee's sludge use, treatment or disposal practice(s) shall be considered cause for Permit Number AGU-1504-S-03 to be modified, or revoked and reissued.
3. An inventory of nutrient loading and residual nitrogen from the land application of sewage sludge performed in compliance with State Permit Number's AGU-1504-S-03 shall be included in the nutrient inventory for specific crop needs in addition to the nutrient loadings added by spray irrigation. At no time shall the TOTAL NUTRIENT LOADING exceed agronomic uptake rates for a particular crop.
4. The permittee shall maintain monthly sludge inventory data. This data shall include at a minimum (a) quantity of sludge generated, (b) quantity of sludge stored on site, and (c) quantity of sludge transported off site. Transportation records shall include the date, quantity, carrier used, and the final destination for each shipment. The inventory data shall be maintained at the facility and be made available to the Department in accordance with Part I.I.5 of this permit.

5. The Permittee shall provide a summary of all sources of sludge/biosolids, regardless of origin, to all fields permitted for spray irrigation with the Annual Report required in accordance with Part I.I.2.b of this Permit. The summary should at a minimum include the following:
 - a. For the reporting year:
 - i. All Nitrogen and Phosphorus sludge/biosolids sources.
 - ii. The amount of Nitrogen and Phosphorus (lbs/acre) applied to each permitted spray irrigation field. A site map depicting sludge application locations.
 - b. Proposed for the coming year:
 - i. The projected Nitrogen and Phosphorus sludge/biosolids sources.
 - ii. The projected amount of Nitrogen and Phosphorus (lbs/acre) to be applied to each permitted spray irrigation field.
 - iii. A site map depicting the proposed sludge application locations.

PART IV

A. AMENDMENTS TO STATE PERMIT LTS 5004-90-12 ISSUED JULY 13, 2012

1. Amended October 16, 2012

Part I.G.2 Page 9 Deleted monitoring requirement for Enterococcus

Part III.A.9 Page 22 Deleted monitoring requirement for Enterococcus

2. Amended March 14, 2013

Page 1 amended location information

Part I.A additional documentation added Numbers 16-19

Part I.B updated system's design disposal capacity to 2.65 MGD; disposal acreage to 432.5 acres

Part I.D.1 updated system's design disposal capacity to 2.65 MGD

Part I.D.2 included additional spray fields and discharge rate limits

Part I.G.3.b added ground water level measurement requirements

Part I.G.3.c relocated requirements from Part I.G.6

Part I.G.4 added lysimeter monitoring requirement for East Hettie Lingo Field

Part III.A.9 modified monitoring requirements

Part III.B.2 added requirement for Permittee to address the "Requirements" in the February 6, 2013 DNREC Hydrogeological Review

Part III.B.3 added requirement for Permittee to address the "Requirements Prior to Issuance of an Operation Permit" iterated in the February 24, 2013 email to Heather Sheridan, Sussex County.

3. Amended October 8, 2015

Part I.D.4 amended the minimum rest period from 24 to 3 hours between applications on each spray field.

Part I.G.3.c added specific wells affiliated with the meeting the 2 feet DTW requirement for each field.

4. Amended October 20, 2015

Part I.G.3.c corrected/switched OW 27 (242932) and OW 28 (242933)

5. Amended October 4, 2016

Page 3 and 4 updated Site Map

Page 6 inserted process flow diagram for sludge dewatering

Part I.A additional documentation added Numbers 20-23

Part I.B added biosolids dewatering info

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Part I.G.3 added list of monitoring and observation wells and relocated and added verbiage for clarity, deleted listing of fields in verbiage

Part I.G. added list of Lysimeters for clarity, deleted listing of fields in verbiage

Part I.I.2 updated DNREC address

Part I.I.2.b added requirement for the annual report to include a summary of all sources of sludge/biosolids, regardless of origin, to all fields permitted for spray irrigation

Part III.B.1 Adjusted facility classification to a IV

Part III.C added Sludge Handling Requirements