APPLICATION FOR A PERMIT TO SPRAY IRRIGATE WASTEWATER

Ground Water Discharges Section, Division of Water Resources
Delaware Department of Natural Resources and Environmental Control
89 Kings Highway, Dover DE 19901
302-739-9948

Please complete all items in print or type.

1. Required Documentation (For new applicants only):

Please attach the following: Local Zoning Approval, a draft Trust Indenture (if applicable), and a copy of the Material Safety Data Sheets applicable to the facility.

2. Tax Map Number:	2-34-22 parcel 14
3. Permit Number (For renewals only):	L TS 5004-90-12 DEN # 359141-05

4. Facility Owner/Permittee Information:

Name of Facility:
INLAND BAYS REGIONAL WASTEWATER FACILITY

Name of Facility Owner/Permittee: SUSSEX COUNTY COUNCIL	Telephone Number: (302) 855-7730 Fax Number: (302) 539-0981

Facility Owner or designee's Email Address :
hsheridan@ sussexcountyde.gov

Facility Owner's Business Mailing Address (street, city, state and zip code): P.O. BOX 589 GEORGETOWN, DE 19947	Location of Facility (street, city, state and zip code): 29445 INLAND BAYS ROAD MILLSBORO, DE 19966

5. Facility Operator Information:

Facilities with more than two operators, please attach a separate listing of operator information including a chain of command.

Name of Operator in Direct ResponsiblCharge: Michael Winters	Telephone Number: (302) 947-0864 Fax Number:

Operator in Direct Responsible Charge's Business Mailing Address (street, city, state and zip code):

29445 INLAND BAYS ROAD/ MILLSBORO DE 19966

License Number: 290

APPLICATION FOR A PERMIT TO SPRAY IRRIGATE WASTEWATER

Name of Back Up Operator(s): RANDY PAUGH ; TAYLOR WARNER	Telephone Number: (302) 947-0864 Fax Number: (302) 947-0864

Back Up Operator's Business Mailing Address (street, city, state and zip code):

29445 INLAND BAYS ROAD
MILLSBORO, DE 19966

License Number(s):
TAYLOR WARNER: 861 RANDY PAUGH: 412

6. Permit Changes (For renewal applicants only):

Are there any requested changes to the existing permit?

___ Yes X___ No *If yes, please attach a detailed explanation of requested changes.*

7. Activities:

Will the activities at the site vary from those detailed in the approved Design Development Report?

_____ Yes __X___ No If yes, please attach a detailed explanation of any changes made.

8. Public Notification

Pursuant to 7 Del. C., Chapter 60, §6004, an advertisement shall be placed in a newspaper of general circulation in the county(ies) in which the activity is proposed and in a daily newspaper of general circulation through the State, notifying the public that the application has been received by the Department and offering a brief description of the nature of the proposed activity. In accordance with 7 Del. C., Chapter 60, §6004, the cost of such advertisement shall be borne by the applicant. This application will not be considered complete and cannot be processed unless accompanied by an advertising fee in the amount of One Hundred Forty Dollars ($140.00), payable to the State of Delaware.

9. Certification:

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate.

Printed Name of Applicant or Responsible Official: HEATHER L. SHERIDAN	Title of Applicant or Responsible Official: DIRECTOR OF ENVIRONMENTAL SERVICES
Signature of Applicant or Responsible Official:	Date: JANUARY 4, 2017

Any person who knowingly makes any false statements, representation or certification on this application may be punished by a fine of not more that $5,000 or by imprisonment for not more than six months, or both. (Delaware Environmental Protection Act, 7 Del. C., Chapter 60, Section 6013, Criminal Penalties.)

INLAND BAYS REGIONAL WASTEWATER FACILITY

LTS 5004-90-12

PERMIT RENEWAL

MAY 2017

Compliance Monitoring Report
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6.5.4.3.1	Soils Report	5	William J. Gangloff, PhD	Accent Environmental, llc	DNREC Class D Site Evaluator
6.5.4.3.2	Hydrogeologic Suitability Report	6	Stephen L. Mogilnicki, PG	WRA	DE Professional Geologist
6.5.4.3.3	Engineering/Operations Report	2	Hans M Medlarz, PE	Sussex County	DE PE
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6.5.4.3.5	Biosolids Management	1	Dennis J. Hasson, PE, BCEE	WRA	DE PE, DNREC Class C Designer
6.5.4.3.6	Overall Conclusions and Recommendations	1	Dennis J. Hasson, PE, BCEE	WRA	DE PE, DNREC Class C Designer

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6.5.4.3.5	Biosolids Management	1	Dennis J. Hasson, PE, BCEE	WRA	DE PE, DNREC Class C Designer
6.5.4.3.6	Overall Conclusions and Recommendations	1	Dennis J. Hasson, PE, BCEE	WRA	DE PE, DNREC Class C Designer
6.5.4.3.3	Engineering/Operations Report	2	Hans M Medlarz, PE	Sussex County	DE PE
6.5.4.3.4	Vegetative Management Plan	3	Sussex County	Sussex County	
6.5.1.4.1.7.6.9.1	Water, Nitrogen and Phosphorus Balances	4	Dennis J. Hasson, PE, BCEE	WRA	DE PE, DNREC Class C Designer
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6.5.4.3.2	Hydrogeologic Suitability Report	6	Stephen L. Mogilnicki, PG	WRA	DE Professional Geologist

Not Required for this CMR

Ref Section No.	Item
6.5.4.2.3	Request for Permit Modifications
6.5.4.2.4	Revised O&M Plan

INLAND BAYS REGIONAL WASTEWATER FACILITY

LTS 5004-90-12

PERMIT RENEWAL

OVERALL CONCLUSIONS AND RECOMMENCDATION INCLUDING BIOSOLIDS MANAGEMENT

SECTION 1

MAY 2017

DENNIS JUDE HASSON
REGISTERED
No. 11641
DELAWARE
PROFESSIONAL ENGINEER

5/12/17

CONCLUSIONS AND RECOMMENDATIONS

WRA has reviewed the following information pertaining to the Inland Bays Regional Wastewater Facility Permit: LTS 5004-90-12 Renewal Application:

1.) Application of a Permit to Spray Irrigate Wastewater dated January 4, 2017 as submitted by Sussex County
2.) An Engineering and Operations Report signed and sealed by Hans Medlarz, P.E. of Sussex County on March 2, 2017
3.) Vegetative Management Plans for the Disposal Fields compiled by Sussex County
4.) Nitrogen and Phosphorus Balances as compiled by Sussex County, including Inland Bays RWF related treatment plant flows and effluent quality and irrigation flow information
5.) Soil Chemical Analysis compiled by Keen Consulting Inc.
6.) Soils Report including a Cumulative Metal Loadings and Calculated Life Remaining Years dated April 25, 2017 developed by Class D Soil Scientist William Gangloff, PhD of Access Environmental, LLC
7.) Hydrogeologic Report for Compliance Monitoring at the Inland Bays Regional Wastewater Facilities by Whitman, Requardt and Assoicates dated January 30, 2017 signed and sealed by Stephen Mogilnicki, P.G.
8.) Permit AGU 1504 S 03 to Operate a Land Treatment System for the Agricultural Utilization of Sludge with an effective date of July 1, 2015.

Based on our review of this information, WRA provides the following recommendations and conclusions.

CONCLUSIONS

Groundwater Levels

As indicated in the Hydrogeologic Report included in Section 6, there is a relative lack of encroachment of the water table underneath the IBRWF spray fields into the 2-ft buffer during the 2011-2015 period. An exception was the July – August 2013 relatively wet period, which represents only 2 out of 60 months, or 3% of the 5 year period.

Effluent Storage

A water balance based on the actual wastewater effluent and irrigation is calculated for each year and is presented in Section 4. A design basis water balance is also calculated and presented in Section 4. The water balance based on the actual conditions for the period 2011-2015 indicates IBRWF has not experienced any effluent storage constraints. The wastewater influent flow during the period has averaged approximately 50% of its design capacity. Additionally, during this period studied, the County has not experienced extended periods of time (i.e. greater than 30 days) in which they were not able to spray irrigate due to weather conditions.

Vegetative Management Plan

The Vegetative Management Plan as presented in Section 3 incorporates a wide variety of information related to the planning, operations and performance of irrigation fields including:

1.) Goals and actual crop yields

2.) Seeding rates

3.) Chemical fertilization recommendations and actual applications

4.) Planned and actual crop rotation

5.) Planned and actual chemical applications

Sussex County also provided WRA with a separate spreadsheet of annual summary of actual crop yields, along with chemical and biosolids fertilization rates. The information from the summary spreadsheets is presented in the following table, and was used for the nitrogen balances discussed below.

Table 1. Crop Harvests and Fertilizer Rates

Field	Crop Harvest	Average Crop Yield	Nitrogen Chemical Fertilizer Applied	Crop Harvest	Average Crop Yield	Biosolids Applied – Total Nitrogen	Nitrogen Chemical Fertilizer Applied
	2011-2014	**bushels/ acre 2011-2014**	**lbs N/acre 2011-2014**	**2015**	**bushels/ acre 2015**	**lbs N/acre 2015**	**lbs N/acre 2015**
North Burton	Corn	70-131	30-157	Soybeans	37.3	0	0
South Burton	Corn	70-151	137-157	Soybeans	37.3	0	0
Northfield	Corn	70-171	30-157	Soybeans	37.3	0	0
Southfield	Corn	93-163	137-157	Corn	162.9	70	62.4
N Hettie Lingo	Corn	93-153	137-157	Corn	162.9	70	62.4
E Hettie Lingo	Corn	93-101	137-157	Corn	162.9	70	62.4
W Hettie Lingo	Corn	93-101	137-157	Corn	162.9	70	62.4
S Hettie Lingo	Corn	93-101	137-157	Corn	162.9	70	62.4

Nitrogen

Nitrogen balance tables are presented in Section 4. WRA developed the nitrogen balances to incorporate nitrogen gained and lost to the following factors, based on the information source indicated:

1.) Total nitrogen in the wastewater effluent applied to each field as reported by Sussex County

2.) Nitrogen applied as chemical fertilizer and biosolids as reported by Sussex County based on information from Vegetative Management Plan information.

3.) Nitrogen from precipitation, with nitrogen amounts based on the values provided by the National Atmospheric Disposition Program

4.) Ammonia volatilization based on a generally recognized ratio

5.) Crop uptake based on the average crop productivity from the Vegetative Management Plan information and University of Delaware Cooperative Extension factsheet titled 'Nitrogen Removal by Delaware Crops' estimating Nitrogen removal by corn of 0.69 lbs N per bushel of corn harvested, and 3.44 lbs N per bushel of soybeans harvested

6.) Fixation by soybean crops based on related information published by the University of Delaware and Cornell University that indicates soybeans supply approximately 30-50% of the

nitrogen required by fixation. The more conservative 50% value is used in the nitrogen balance.

The nitrogen balance calculates percolate volume incorporating the following factors:

1.) Wastewater effluent applied to each field provided by Sussex County

2.) Precipitation based on DNREC 'Climatological Normal Precipitation' as provided in Exhibit KK of the Groundwater Discharges Section

3.) Potential evapotranspiration based on DNREC 'Climatological Normal Precipitation' as provided in Exhibit II of the Groundwater Discharges Section. Negative percolate volumes are reported as zero (0) gallons.

The monthly nitrogen balances are calculated for each field for 2011 through 2015, with any negative monthly percolate nitrogen concentration reported as zero (0). The nitrogen balances indicates an excess of applied nitrogen (i.e. the percolate total nitrogen concentration exceeds 10 mg/L) occurs each time chemical fertilizer are applied to the fields. This is followed by a nitrogen deficit from the time a crop is planted until it is harvested. Overall for the year, there appears to be an excess of nitrogen being applied to the fields, primarily from the chemical fertilizer being applied.

From 2011 through 2014 the imbalance indicated a potential total nitrogen concentration in the percolate generally exceeding 10 mg-N/L. In 2015, the amount of chemical fertilizer was decreased from the levels applied in previous years. The 2015 nitrogen balance continued to be in excess in the fields that grew corn and chemical nitrogen was applied. The annual average calculated concentration of total nitrogen in the percolate is generally less than 3 mg-N/L. In the fields that grew soybeans and no chemical fertilizer was applied, the annual average nitrogen concentration in the percolate was negative, indicating nitrogen was removed from the soil.

There was also a decrease in total nitrogen in the wastewater effluent from the years 2011-2012 to the 2013-2015 period due to the upgrade of the treatment facility. The levels of total nitrogen in the effluent are typical of a well-managed lagoon system with cyclic aeration providing nitrogen removal.

The decrease in wastewater-applied nitrogen in 2014 and 2015 is reflected in overall lower nitrate concentrations in the analyzed groundwater samples, as noted in the Hydrogeologic Report presented in Section 7. Some of the downgradient monitoring wells consistently have nitrate concentrations in excess of 20 mg NO_3-N/L, including MW-12, 15 and 24. Several downgradient monitoring wells, including MW-2, 3, 4, 13, 14, 21, and 22 are generally in the same range (5-15 mg-NO_3-N/L) as the percolate in the calculated nitrogen balance.

From the nitrogen balance spreadsheets, it is the application of chemical fertilizer, not the application of wastewater that is the driver of excess nitrogen in the percolate. It is recommended chemical nitrogen fertilizer be eliminated or spread out over the growing season to affect the excess total nitrogen being applied, which is especially high in the month it is applied. With the elimination or modification of chemical nitrogen fertilizer application to the vegetative management plans, the fields indicate no issues to continuing to assimilate the nitrogen applied by wastewater effluent irrigation.

Phosphorus

The phosphorus balance tables presented in the end of Section 4 account for the phosphorus applied to the disposal fields by the wastewater effluent, and the crop uptake. In almost all of the years and fields, the crops remove more phosphorus than is applied with the irrigated effluent. The phosphorus in the wastewater generally accounts for 30-50% of the crop phosphorus uptake. Two fields in 2013 had low crop yields, and the overall phosphorus balance was slightly positive (i.e. more phosphorus was applied by the wastewater effluent than removed by the crops).

The Soils Report included in Section 5 identifies phosphorus as the limiting soil constituent. It also classifies the phosphorus levels in the soil, as indicated by cation exchange capacity, are excessive when compared to University of Delaware phosphorus fertility index values. At the same time, the majority of monitoring wells samples analyzed phosphorus at non-detect levels. A few of the samples did indicate phosphorus concentrations above 1 mg/L. From this groundwater data, the general conclusion is that

subsurface soils are removing phosphorus, and therefore the majority of the spray fields still have remaining capacity to accept additional phosphorus.

Given that the current irrigation rates, and crop schedules indicate a reduction in phosphorus in the soils, there are no conditions to limit or reduce the life of the disposal field.

The County is planning to develop a regional sludge treatment facility at the IBRWF, to produce Class A biosolids. One use of these biosolids could be application on the existing spray irrigation fields. The Inland Bays biosolids have been tested to contain less than 1% phosphorus on a dry weight basis. Even with this lower than typical concentration, it is recommended that prior to biosolids application, the subsurface soils (2 feet below the surface) be sampled and analyzed, and the phosphorus retention curves be developed and interpreted for the capacity to accept additional phosphorus.

Sodium and Chlorides

The Hydrogeologic Report presented in Section 6 examined the sodium, chloride, and total dissolved solids in the groundwater monitoring samples. Although some of the samples exceed their respective drinking water secondary standards, the levels are generally below the secondary standards. In addition, the levels are reported as being steady, to slightly increasing, from 2011-2015.

The sodium and chloride concentrations are regularly measured on the treated wastewater effluent and are included in this Section.

Sodium and Chlorides in IBRWF Effluent Compared to Peak Precipitation

Date of Wastewater Effluent Sample	Peak Precipitation Prior to Sample	Date of Peak Precipitation	Sodium	Chlorides
	Inches per Day		mg/L	mg/L
9/1/2011	4.4	8/28/2011	135	271
12/1/2012	5.0	10/29/2012	240	384
12/18/2013	1.9	10/11/2013	880	137.5
12/16/2015	3.1	10/01/2015	311.5	392
Average of All Days Tested	N/A	N/A	205	250
Average Dry Weather	N/A	N/A	113	110

As indicated in the table, the concentrations spike when there is flooding of low lying areas within the collection system. This indicates brackish water is infiltrating into the collection system. There are also anecdotal reports of inflow of brackish water through cleanouts at the household connections.

During dry weather, the sodium and chloride levels measured in the IBWRF effluent (113 and 110 mg/L respectively) are at the high end of typical wastewater influent as indicated by the Water Environment Federation Manual of Practice No. 8 (MOP-8). The MOP-8 indicates typical wastewater will have sodium concentrations of 40-70 mg/L more than the local potable water concentrations, and chloride concentrations in raw wastewater of 30-90 mg/L. The elevated sodium and chloride levels may also be influenced by contributions from brine collected from domestic reverse osmosis drinking water treatment units.

In 2015, Sussex County contracted with EA Engineering, Inc. to perform an inflow/infiltration study of one of the larger private systems, Mariners Cove. Because the County felt the Mariner's Cove system needed the most upgrades, it was chosen as the first area to focus on. The study concluded that the collection system for Mariner's Cove experiences significant inflow and infiltration (I&I), with portions containing higher than average levels of sodium. Recommendations from the report to reduce the I&I were submitted

to Equity Lifestyle Properties, Inc., the owners of the Mariner's Cove property, for them to address. In response, the County has received a plan from the owner to address the I&I issues that were identified, and has also received updates with regard to the repairs/upgrades completed and upcoming.

It is recommended that the County continue to address infiltration and inflow of brackish water into the collection system. There does not appear to be any condition to limit effluent spray rates due to sodium, or chlorides at this time.

Metals

The Soils Report presented in Section 5 includes a calculation of the remaining life for each disposal field for metals including lead, zinc, copper, nickel and cadmium. The only remaining life that is less than 100 years are in the North and South Field based on the cadmium levels present and that being applied through the wastewater. South Field calculates to a remaining life of 63 years and North Field 87 years. It is noted that the cadmium concentrations measured in all of the effluent fields is below the detection limit. The detection limit varies through the period studied, but several samples in 2014 and 2015 were tested with a detection limit as low as 0.38 mg/kg. The calculated remaining lives do not constitute a reason to limit the application of wastewater on the fields.

Biosolids

The County holds an Agricultural Utilization of Sludge Permit No. AGU 1504-S-03. The permit includes biosolids generated at South Coast RWF, Wolfe Neck RWF, Inland Bays RWF, and Piney Neck RWF. It allows the application of stabilized sludge to four parcels of land totaling approximately 574 acres, and does not include any of the spray irrigation fields currently used by IBRWF.

Currently, all of the biosolids generated by the IBRWF are stored in lagoons at the facility. As mentioned above, Sussex County intends to develop a regional biosolids facility. The plan for the facility is to treat biosolids to a Class A level through a heat drying process. The facility is being sized to treat biosolids from Inland Bays RWF, South Coastal RWF, Wolfe Neck RWF, Rehoboth WWTP, Lewes WWTP and Seaford. The facility is projected to treat 1,990 dry tons of biosolids by 2025.

Several potential disposal routes are being investigated including land application on the Inland Bay RWF effluent disposal fields. As mentioned above, it is recommended that if biosolids are planned to be applied to the existing fields, phosphorus retention curves be conducted on the subsurface soils.

Future Inland Bay Regional Wastewater Facility Liquid Treatment Plans

Sussex County intends to expand the capacity of the liquid wastewater treatment capacity of the Inland Bays Regional Wastewater Facility from 2 MGD up to 4 MGD annual average flow. Recognizing the site limitation and planned expansion, WRA is currently providing studies of adjacent disposal area, for the planned expansion.

To increase the plant wastewater treatment capacity a number of proposed structures will be added to existing facility. Two proposed Biolac aeration lagoons will mirror the existing Biolac aeration lagoons. A proposed effluent storage will be sized based on the increased capacity of the plant.

The expansion of effluent disposal includes the addition of four spray fields in adjacent properties to the Inland Bays RWF. Based on the preliminary results the available lands have soils suitable for development of spray irrigation fields. The preliminary disposal capacity associated with this expansion would be 2.1 million gallons per day on days when spraying is allowed. These sites are currently wooded, and based on anecdotal evidence, the area has not been farmed for many decades. Therefore, it is expected these sites will not be nitrogen or phosphorus limited due to chemical fertilizer application.

In order to mitigate the impacts by the proposed change in cover types, the stormwater management plan will comply with local regulations and the Sussex County Soil Conversation Districts recommendations.

WRA has performed calculations of groundwater mounding on these sites using an analytical flow model to preliminarily assess the application rates. Completion of the hydrogeologic investigation, including wet season monitoring will be needed to finalize conclusions and recommendations on mounding.

RECOMMENDATIONS

Based on the information reviewed for the permit renewal application WRA provides the following recommendations:

1.) Decrease the chemical nitrogen fertilizer applied to the wastewater disposal sites,
2.) Prior to applying biosolids or phosphorus chemical fertilizer to the existing fields, a subsurface soil investigation should be conducted to develop phosphorus retention curves,
3.) The potential impact on offsite domestic wells should continue to be monitored by Sussex County,
4.) The County should conduct an investigation of the collection system to determine the sources of sodium in the wastewater.

INLAND BAYS REGIONAL WASTEWATER FACILITY

LTS 5004-90-12

ENGINEERING/OPERATION REPORT FOR PERMIT RENEWAL

SECTION 2

3/2/2017

JANUARY 2017

Infiltration:

In October 2010, Sussex County's consultants, Stearns & Wheler, completed an analysis of 5 years (2005-2010) of wastewater influent flow and precipitation data for the Inland Bays Regional Wastewater Facility. The result of the analysis showed that the facility did not have excessive inflow and infiltration according to the standards set by the EPA for municipal systems.

Past Expansions:

In 2010, Sussex County added 141.4 acres of spray irrigation by developing 3 additional spray fields: North Burton, South Burton & North Hettie-Lingo fields.

In 2012, Sussex County completed the Phase 1 expansion of the Inland Bays Wastewater Facility. The expansion included: headworks, 2 phased-aeration basins for biological nutrient removal (Biolac), 2 clarifiers, disinfection, waste storage lagoons.

In 2013, Sussex County added 85.1 acres of spray irrigation by developing 3 additions spray fields: East, West and South Hettie-Lingo fields.

In 2015, Sussex County completed the Phase 2 expansion of the Inland Bays Wastewater Facility. The expansion included: the division of the existing sludge lagoons into 2 waste sludge holding lagoons, installation of an impervious liner in each basin, installation of floating mixers, aerators and decant pumps in each new waste sludge lagoon, construction of a building to house sludge dewatering equipment, installation of 2 sludge feed pumps, polymer feed system, belt filter press, dewatered sludge cake belt conveyor, construction of a cake storage building.

Noncompliance:

August 2011 - the average effluent BOD concentration was 54.9 mg/l when the permit requires an average concentration of 50.0 mg/l. This increased BOD concentration was a result of treatment lagoon #1 being taken out of service during the expansion to install a Biolac treatment system.

September 2013 - On September 30th, the irrigation rig for the North Hettie Lingo site experienced a safety alarm which caused the rig to stop moving. Unfortunately, the alarm notifying the operators of this condition was not sent. Also the drain valve for the standpipe opened and the irrigation pumps continued to pump.

In addition to repairing the communication glitch, a pipe was attached to the drain valve so the drain water from the stand pipe is released on the soil rather than on the concrete pad. An earthen berm was constructed adjacent to the center of the pivot so water does not enter the adjacent drainage ditch

July 2015 – Phase 2 expansion construction was initiated without the required DNREC construction permit. This occurred due to a miscommunication between the County and their consultants, GHD. The Construction Permit was obtained in August 2015.

Ponding: As indicated in the hydrogeological report, there are areas of ponding within the spray irrigation sites. A subsurface investigation of the sites was performed by Whitman, Requardt & Associates in 2009. The investigation showed the majority of the ponding was due to compaction of soils during construction of the spray fields and during years of use. Sussex County included in the 2014 farm lease the requirement to till the irrigated fields to help alleviate this compaction. The farmer has also been deep plowing the ponded areas, which has significantly improved the drainage of the fields.

In addition, the irrigation systems are programmed to cease spraying over ponded areas.

Biosolids:

The current DNREC Biosolids permit AGU 1504-S-03 has been attached. Class B biosolids were applied to the Hettie Lingo field from May 7 - 12, 2012. 439 dry tons of biosolids was applied to 226 acres.

The existing sludge storage lagoon capacity is 3.35 million gallons. The current amount of liquid sludge in storage is 1.37 million gallons. Sussex County is currently in the design phase to upgrade the solid handling system to include a Class A dryer for processing sludge.

Performance Data:

The facility is operating very well and according to design. The effluent average total nitrogen for 2016 was 5.1 mg/l.

The Facility accepts domestic sewage from private communities who are responsible for the operation and maintenance of their wastewater collection systems. Several of these private collection systems are located on the long neck peninsula where tidal flooding occurs during storms. This can result in the introduction of bay water that has sodium chloride compounds present.

In 2015, Sussex County contracted with EA Engineering, Inc. to perform an inflow/infiltration study of one of the larger private systems, Mariners Cove. Because the County felt the Mariner's Cove system needed the most upgrades, it was chosen as the first area to focus on. The study concluded that the collection system for Mariner's Cove experiences significant I&I. Recommendations to reduce the I&I were included in the report and submitted to Equity Lifestyle Properties, Inc., the owners of the property. Sussex County received the following information from Bobby Lue, P.E., with regard to repairs/upgrades to their collection system on November 30, 2016:

Our initial focus will be to complete the following tasks: 1) Relocate lift stations; 2) Raising/extending manholes, then repaving roads; 3) Installing watertight manhole inserts; and 4) Replacing faulty flap gates. We're estimating the project costs will range between $150k & $175k. We are currently in the process of procuring proposals and contracts to begin the work as early as possible in 2017.

Mr. Lue informed the County that, as of February 1, 2017, the inserts were on site and the construction activities were to be coordinated the week of February 6, 2017. With these repairs to the system, a large amount of the high salinity water entering the system will no longer be occurring.

The other private developments discharging to the Inland Bays Facility, are owned by Tunnell Companies.; Pot nets Lakeside and Pot Nets Bayside. These systems appear to be well maintained to prevent excessive I&I. Sussex County representatives will make contact with Mr. Tunnell to discuss the

condition of his collection systems. If necessary, Sussex County will continue to work with Mr. Tunnell to repair/upgrade the systems to prevent the bay water from discharging to the facility.

In addition, during the flood tides when the County's pumping stations are impacted, it has been Sussex County's procedure to shut the flooded stations off to decrease the introduction of bay water into the collection system and facility. When the high tides recede, the stations are slowly brought back on line so as not to overwhelm the system or facility.

A spreadsheet has been attached to show the results of the quarterly effluent test results for sodium and chloride and the timing of the inland bays flooding. Data included shows the average concentrations for sodium and chloride for the other spray irrigation facilities owned by Sussex County; Piney Neck Wastewater Facility and Wolfe Neck Wastewater Facility. The average concentrations for these compounds is much lower than those at the Inland Bays Facility since they are not impacted by the flooding of the Inland Bays.

Future Expansion:

As noted in the conclusion of the Hydrogeologic Report prepared by Whitman, Requardt & Associates, LLP, Sussex County has initiated the design of the phase 3 expansion of the facility. The expansion will increase the treatment design capacity to 4.0 MGD and disposal capacity to 4.65 MGD.

INLAND BAYS REGIONAL WASTEWATER FACILITY - EFFLUENT SODIUM & CHLORIDE CONCENTRATIONS			
Date	Sodium, mg/l	Chloride, mg/l	
3/1/2011	71	101	
6/1/2011	162	116	
9/1/2011	135	271	bays flooded 8/27-28; 10/29/2011
12/1/2011	95	104	
3/1/2012	62	74	
6/1/2012	92	86	
9/1/2012	98	101	
12/1/2012	240	384	bays flooded 10/28-31/2012; 11/7 - 8/2012
3/6/2013	111	113	bays flooded 3/6/2013
6/5/2013	106	129	
9/6/2013	100.5	76.4	bays flooded 7/23-13/2013
12/18/2013	880	137.5	bays flooded 10/10-11/2013
1/29/2014	136		
3/20/2014	92.5	99.8	
6/4/2014	111.5	110	
9/9/2014	100	97	
12/17/2014	88	127	
3/4/2015	112	140	
6/3/2015	76	80.5	
9/2/2015	134	99	
12/16/2015	311.5	392	bays flooded 10/1-2/2015
3/23/2016	328.7	425	bays flooded 1/23-24/2016
6/22/2016	167.5	172.5	
9/2/2016	141.5	156	
12/7/2016	181	247	bays flooded 9/28-30/2016: 10/8-9/2016
2016 avg concentrations	Sodium, mg/l	Chloride, mg/l	
Inland Bays Faciltiy	205	250	
Piney Neck Facility	128	172	
Wolfe Neck Facility	98	87	

INLAND BAYS REGIONAL WASTEWATER FACILITY

LTS 5004-90-12

VEGETATIVE MANAGEMENT PLANS

2011-2015

SECTION 3

FEBRUARY 2017

Inland Bays 7 YEAR CROP ROTATION

FARM BLOCKS	FIELDS	TOTAL TILLABLE ACRES	TOTAL WETTED ACRES	2014 SPRING	2014 FALL	2015 SPRING	2015 FALL	2016 SPRING	2016 FALL	2017 SPRING	2017 FALL	2018 SPRING	2018 FALL	2019 SPRING	2020 FALL	2020 SPRING	2021 FALL
A	NF	127.35	103.9	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY	CORN	WHEAT
	NS		52.09	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT
	SE		41.36	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY	CORN	WHEAT
B	SF	235.5	103.9	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY
	EHL		34.46	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY
	WHL		20.18	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY
	SHL		30.46	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY
	NHL		47.5	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY

Total	432.9	432.35

: Jamie Stafford [mailto:staffordfarms99@gmail.com]
Sent: Thursday, April 23, 2015 8:33 PM
To: Michael Winters
Subject: 2015 Inland Bay Vegetation Plan for Soybeans

2015 Inland Bay Vegetation Plan for Soybeans

Everything on the north side of the driveway will be put in soybeans. Gypsum was spread first of April. Potash will be spread at the rate of 100lbs. to the acre. Soybeans will be planted around the last week of May. We will be spraying Canopy and Round-up. Will come back a month after beans are planted to spray Round-up again.

From: Jamie Stafford [mailto:staffordfarms99@gmail.com]
Sent: Thursday, April 23, 2015 8:31 PM
To: Michael Winters
Subject: 2015 Inland Bay Vegetation Plan for Corn

2015 Inland Bay Vegetation Plan for Corn

All Fields on the south side of driveway will be planted in corn. The Gypsum was spread first of April. Manure will be spread at a 2 ton rate then chisel plowed in. The ground will be worked making it ready to plant. Planting around May 1st will be sprayed after planted. Chemicals will be 1 qt of Princep 1 qt of Atrazine and a oz of sharpen. A PSNT test will be taken when corn is knee high to see how much Nitrogen it needs. The weeds will be looked at, at this time to see if we need to spray Halex. Fungicide will be flown on at tassel time.

From: Michael Winters
Date:01/30/2015 2:45 PM (GMT-05:00)
To: Heather Sheridan
Subject: vegetative management plan

Hi Heather,

Met with J. Stafford today. We discussed the need for a Vegetative Management Plan, something I could submit to DNREC and have for county records. Gordy's proposed crop rotation plan seemed to be a good starting point. With the south side corn and the north soybeans. Manure would be used for the south side corn. A Nutrient plan would be submitted at planting time detailing the manure Lbs/acre per year ,for the upcoming 2 -3 years. Not proposed to be over 100 lbs /acre a year. This nutrient plan would be based on soil samples. He will work (till) the entire farm 18" and then deep till 24" to 36" the problem soils and ponded areas. He says he has a problem with Wheat as a cover. And claims the way he plants Barley has done well. Wants an opportunity to "show his work" in that area. I told him we would consider it. He wants to deposit the manure on a couple spots. Edge of East Hettie field off N. stop and away from buffer off Cannon Rd and South Hettie field off the edge of the W. dirt road but not in line of the end gun. No monitoring wells are close to either location. Mr. Stafford wants to start working the south field the 2nd or 3rd week of april. The north side a few weeks later.

Michael Winters

From: Jamie Stafford <staffordfarms99@gmail.com>
Sent: Thursday, April 23, 2015 8:33 PM
To: Michael Winters
Subject: 2015 Inland Bay Vegetation Plan for Soybeans

2015 Inland Bay Vegetation Plan for Soybeans

Everything on the north side of the driveway will be put in soybeans. Gypsum was spread first of April. Potash will be spread at the rate of 100lbs. to the acre. Soybeans will be planted around the last week of May. We will be spraying Canopy and Round-up. Will come back a month after beans are planted to spray Round-up again.

JAMIE STAFFORD 2015

FS SOYBEANS 2

APPLY	AMT/ACRE	METHOD
Spring		
0-0-60 (POTASH)	200 pounds	BROADCAST

THE ABOVE MATERIAL SHOULD BE APPLIED AT LEAST 30 DAYS PRIOR TO PLANTING.

6% MANGANESE - FOLIAR	0.5 gallons	FOLIAR SPRAY

MAKE THIS FOLIAR APPLICATION WHEN THE BEANS ARE 12" TO 18" HIGH AND LATE IN THE DAY WHEN TEMPERATURES ARE COOLER. ADDING A PINT PER ACRE OF 30% NITROGEN WILL ENHANCE UPTAKE. IF APPLYING WITH CHEMICALS CHECK WITH YOUR SUPPLIER FOR ADVICE ON COMPATABILITY.

UNITS: AVERAGE LBS/ACRE

K	Mn
120.00	0.32

HORNEY **Watershed: 0079**

	CROP	TRACT ID	ACRES	GOAL	LIME	COST/AC
70	SOYBEANS (FS)	0603019608	9	50 bu	None	$55.50

INLAND BAYS **Watershed: 35,36**

	CROP	TRACT ID	ACRES	GOAL	LIME	COST/AC
NORTH	SOYBEANS (FS)		105.7	50 bu	None	$55.50
NORTH BURTC	SOYBEANS (FS)		53.2	50 bu	None	$55.50
SOUTH BURTO	SOYBEANS (FS)		37	50 bu	None	$55.50
BURTON DRY	SOYBEANS (FS)		41.5	50 bu	None	$55.50

JAMIE STAFFORD

2015

Recommendation Summary

WOLFE NECK

Watershed: 37

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
5-C	CORN	CORN 3	15.5	150 bu	1 HI MAG	$112.74
7	CORN	CORN 4	37.3	150 bu	None	$81.49
8	CORN	CORN 4	16.9	150 bu	None	$81.49

INLAND BAYS

Watershed: 35,36

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
NORTH	SOYBEANS (FS)	FS SOYBEANS 2	105.7	50 bu	None	$55.50
SOUTH	CORN (IRR)	IRRIGATED CORN 4	105.3	230 bu	None	$110.99
NORTH BURTO	SOYBEANS (FS)	FS SOYBEANS 2	53.2	50 bu	None	$55.50
SOUTH BURTO	SOYBEANS (FS)	FS SOYBEANS 2	37	50 bu	None	$55.50
BURTON DRY	SOYBEANS (FS)	FS SOYBEANS 2	41.5	50 bu	None	$55.50
PLANT	SOYBEANS (FS)	FS SOYBEANS 1	17.5	50 bu	1 HI MAG	$100.00
HETTIE LINGO	CORN (IRR)	IRRIGATED CORN 4	210.1	230 bu	None	$110.99

WARREN

Watershed: 37

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
550	CORN	CORN 3	29	150 bu	None	$62.74
551	CORN	CORN 3	7.6	150 bu	1 HI MAG	$112.74
552	CORN (IRR)	IRRIGATED CORN 2	13.7	230 bu	None	$104.36
553	CORN (IRR)	IRRIGATED CORN 2	73.1	230 bu	None	$104.36

HOLLAND

Watershed: 37

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
560	WHEAT	WHEAT 2	73.7	85 bu	None	$113.68
560	SOYBEANS (DC)	NO FERTILIZER REQUIRED	73.7	40 bu	None	$0.00
561	WHEAT	WHEAT 2	54.9	85 bu	None	$113.68
561	SOYBEANS (DC)	NO FERTILIZER REQUIRED	54.9	40 bu	None	$0.00

CORKEL

Watershed: 23

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
600	CORN	CORN 4	17.4	150 bu	1 HI MAG	$131.49
601	CORN	CORN 4	18.3	150 bu	1 HI MAG	$131.49
602	CORN	CORN 4	26.8	150 bu	1.5 HI MAG	$156.49

JAMIE STAFFORD

2015

IRRIGATED CORN 4

APPLY	Spring	AMT/ACRE	METHOD
GYPSUM		500 pounds	BROADCAST

THE ABOVE MATERIAL SHOULD BE APPLIED AT LEAST 30 DAYS PRIOR TO PLANTING.

21-0-0 (AMMONIUM SULFATE)	150 pounds	BROADCAST
0-0-60 (POTASH)	150 pounds	BROADCAST

THE ABOVE MATERIALS SHOULD BE BLENDED AND APPLIED AT THE RATE OF 300 LBS/ACRE JUST PRIOR TO PLANTING.

MANURE (AVG)	3 tons	48 HR INCORP

THE ABOVE MATERIAL SHOULD BE APPLIED JUST PRIOR TO PLANTING.

NITROGEN CREDIT	30 pounds

THE ABOVE CREDIT IS TO ACCOUNT FOR NITROGEN CONTRIBUTION VIA WASTEWATER APPLICATION DURING THE GROWING SEASON.

30% NITROGEN	21 gallons	SIDEDRESS

UTILIZING A PRE SIDEDRESS NITROGEN TEST (PSNT) WHEN CORN IS 8-12" TALL WILL HELP DETERMINE ACTUAL NITROGEN REQUIREMENTS. PLEASE CONTACT US REGARDING SAMPLING.

SPLITTING THIS APPLICATION WITH HALF BEING APPLIED AT V5 AND THE REMAINDER BEING APPLIED AT V12 WOULD BE BENEFICIAL.

UNITS: AVERAGE LBS/ACRE

N	P	K	S	Ca
238.78	201.66	290.70	116.00	105.00

INLAND BAYS **Watershed: 35,36**

	CROP	TRACT ID	ACRES	GOAL	LIME	COST/AC
SOUTH	CORN (IRR)		105.3	230 bu	None	$110.99
HETTIE LINGO	CORN (IRR)		210.1	230 bu	None	$110.99

03/19/2015

Soybeans 2015 Inland Bays

In the spring applied gypsum at 500lbs per acre. Chisel plowed around June 1st. Spread 60lbs of Potash June 5th. Worked the ground and planted the beans June 10th. Soybeans are going to need to be sprayed again but not at this time. When they do we would be spraying round-up.

AgroLab

Serving Agriculture and Soil Fertility Professionals

Account No. : 83

Manure Analysis Report

STAFFORD, JAMIE
6241 TODD RD
FEDERALSBURG MD 21632

Invoice No. : 1085602
Date Received : 03/27/2015
Date Reported : 03/30/2015

Lab No. : 3476

Results For : JAMIE STAFFORD
Sample ID : VINCES
POULTRY

	Analysis Dry Basis	Analysis As Is Basis	Lbs / Ton Dry Basis	Lbs / Ton As Is Basis	Lbs / Ton Available First Year
Organic N, % N	3.03	2.39	60.6	47.7	26.2
Ammonium, % N	0.330	0.2600	6.6	5.2	4.9
Nitrate, % N	0.002	0.0020	0.0	0.0	0.0
Total N (TKN), % N	3.36	2.65	67.2	52.9	31.2
Phosphorus, % P_2O_5	3.99	3.14	79.7	62.8	59.6
Potassium, % K_2O	3.70	2.91	74.0	58.3	55.4
Sulfur, % S	1.10	0.87	22.1	17.4	7.0
Calcium, % Ca	3.27	2.57	65.3	51.4	36.0
Magnesium, % Mg	0.80	0.63	16.0	12.6	8.8
Sodium, % Na	1.16	0.91	23.2	18.3	18.3
Sodium Adsorption Ratio (SAR)	14.87				
Zinc, ppm Zn	818.7	644.6	1.6	1.3	0.9
Iron, ppm Fe	922.6	726.4	1.8	1.5	1.0
Manganese, ppm Mn	619.9	488.0	1.2	1.0	0.7
Copper, ppm Cu	491.7	387.1	1.0	0.5	0.8
Aluminum, ppm Al	452.2	356.0	0.9	0.7	0.5
Boron, ppm B	42.0	33.1	0.1	0.1	0.1
pH	7.8				
Moisture, %	21.27				
Dry Matter (TS), %	78.73				

Note: The available first year Ammonium-N is calculated based on maximum availability, or incorporation within 24 hours. Advise a nutrient consultant for adjustments beyond 24 hr incorporation.

Reviewed By : W.R. Ruhrer - AgroLab, Inc. 3/30/2015 Copy : 1

Bus: 302-566-6094
Fax: 888-412-0873
admin@agrolab.us
www.agrolab.us
101 Clukey Dr.
Harrington, DE 19952

Corn 2015 Inland Bays

March 15, 2015 Spread Gypsum 500lbs per acre. Around April 20th we spread 2 tons of chicken manure per acre then chisel plowed and worked it in. Planted & sprayed the corn May 5th. We then sprayed Atrazine and princep both at 1qt per acre. Around June 10th sprayed Halex GT 2qts per acre. June 5th a PSNT test was done by Keen Consultant. It came back as we needed to apply ? (see attachment) Lbs of nitrogen per acre.

Manure applied South Side only
No Manure applied at IBAYS 2016

Field Summary Report

Grower : BALDWIN
Farm : Inldbys

<1> (2011130172)	30.84	10.77	55,091	983.78	31.89	N/A	N/A	7/7/2014
Totals	**30.84**	**10.77**	**55,091**	**983.78**	**31.89**	**N/A**	**N/A**	**7/7/2014**
		Average			Average			

Field Summary Report

Grower :	BALDWIN
Farm :	Inldbys

Field:	North fields
Year:	2014
Operation:	Grain Harvest
Product:	Corn - CORN
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Date Logged
14/09/30-13:16:34 (116807)	28.81	18.34	164,555	2,839.7	98.57	9/30/2014
14/10/01-08:38:18 (116807)	0.00	N/A	N/A	N/A	N/A	10/1/2014
14/10/01-08:51:44 (116807)	58.31	17.78	356,634	6,196.4	106.26	10/1/2014
14/10/01-17:16:15 (116807)	5.647	19.57	24,419	415.03	73.50	10/1/2014
14/10/02-08:49:44 (116807)	57.98	19.56	228,940	3,892.0	67.13	10/2/2014
14/10/02-16:57:21 (116807)	1.227	17.37	5,448.3	95.14	77.56	10/2/2014
14/10/03-08:49:20 (116807)	74.04	16.84	398,221	6,998.6	94.52	10/3/2014
14/10/03-16:53:24 (116807)	19.04	16.88	121,290	2,130.5	111.88	10/3/2014
Totals	**245.06**	**17.95** Average	**1,299,509**	**22,567**	**92.09** Average	**9/30/2014 - 10/3/2014**

Field:	South fields
Year:	2014
Operation:	Grain Harvest
Product:	Corn - CORN
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Actual Weight (Wet) lb	Error %	Date Logged
14/09/19-06:49:33 (116807)	60.45	18.11	296,093	5,124.2	84.77	N/A	N/A	9/19/2014
14/09/22-18:16:08 (116807)	47.17	17.76	318,524	5,535.6	117.35	N/A	N/A	9/22/2014
14/09/23-15:26:11 (116807)	55.02	18.11	380,023	6,576.4	119.52	N/A	N/A	9/23/2014
14/09/24-13:13:19 (116807)	12.42	16.17	52,884	936.88	75.44	N/A	N/A	9/24/2014
14/09/27-09:32:34 (116807)	70.23	16.80	342,456	6,021.5	85.74	N/A	N/A	9/27/2014
14/09/29-14:55:03 (116807)	34.83	17.96	235,593	4,084.4	117.26	N/A	N/A	9/29/2014
14/09/30-12:21:44 (116807)	0.00	N/A	N/A	N/A	N/A	N/A	N/A	9/30/2014
14/09/30-12:23:55 (116807)	6.795	15.89	38,696	687.84	101.23	N/A	N/A	9/30/2014
CAL A (116807)	0.436	18.29	3,254.3	56.20	129.04	3,235.9	0.569 %	9/23/2014
CAL B (116807)	0.458	18.20	3,322.0	57.42	125.41	3,321.9	0.0024 %	9/23/2014
Totals	**287.81**	**17.58** Average	**1,670,847**	**29,081**	**101.04** Average			**9/19/2014 - 9/30/2014**

Field:	South fields
Year:	2014
Operation:	Grain Harvest
Product:	Rye - Annual - RYE
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Actual Weight (Wet) lb	Error %	Date Logged

Sayre Baldwin 2013 Fert Recs.

Inlandbays	250	Corn				
Starter						
	N	P	K	S	B	ZN
Starter Analysis	18	8	0	1.2	0.1	0.2
Lb plant food/acre	45	20	0	3	0.25	0.5
Starter Rate	250					

Strip Till						
	N	P	K	S	B	ZN
Broadcast Analysis	13	0	18	3	0	0
Lb plant food/acre	92.69	0	128	21.39	0	0
Broadcast Rate	713	Variable Rate Avg.				

Side Dress						
Irrigation	0	0	0	0	0	
	N	P	K	S	B	ZN
Broadcast Analysis	0	0	0	0	0	0
Lb plant food/acre	0	0	0	0	0	0
Broadcast Rate	0					
Dry land	NONE					

							Ac
Dry land Corn total	137.7	20	128	24.39	0.25	0.5	
Irrigated Corn Total	137.7	20	128	24.39	0.25	0.5	0

INLANDBYS	70	Rye				
1st Shot						
	N	P	K	S	B	ZN
Broadcast Analysis	9	0	12	4	0.1	0
Lb plant food/acre	45	0	60	20	0.5	0
Broadcast Rate	500					

INLANDBYS	70	Rye				
2nd Shot						
	N	P	K	S	B	ZN
Broadcast Analysis	26	0	0	2.4	0	0
Lb plant food/acre	59.8	0	0	5.52	0	0
Broadcast Rate	230	22gal/ac				

INLANDBYS		Limas				
Lima Fert						
	N	P	K	S	B	ZN
Starter Analysis	15	10	0		0.2	0.3
Lb plant food/acre	34.5	23	0	0	0.46	0.69
Broadcast Rate	230	22gal/ac				

INLANDBYS		Limas				
Lima Fert						
	N	P	K	S	B	ZN
Strip Till Analysis	8	0	20	2.4	0	0
Lb plant food/acre	44	0	110	13.2	0	0
Broadcast Rate	550					

Fertilizing Prescription (Liquid) 2013 - 1(CORN)

Target Rate(Liquid)
(gal(US)/ac)

- 70.00(86.11 ac)
- 67.50(89.74 ac)
- 65.00(91.87 ac)
- 62.50(88.32 ac)
- 60.00(84.49 ac)
- 57.50(87.23 ac)
- 55.00(86.70 ac)

As-Applied Summary

Dataset	Area ac	Total Amount gal(US)	Avg. Rate gal(US)/ac	Minimum Rate gal(US)/ac	Maximum Rate gal(US)/ac	Date Created
10:3/20/2013	613.18	38,350	62.54	55.00	70.00	3/20/2013
Totals	613.18	38,350	62.54 Average	55.00 Minimum	70.00 Maximum	3/20/2013

Operation Summary

Grower : Baldwin

Farm : Inidbys

Field : 1

Year : 2013

Operation : Fertilizing Prescription (Liquid)

Crop / Product : CORN

Op. Instance : Instance - 1

Area : 613.18 ac

Total Amount : 38,350 gal(US)

Avg. Rate : 62.54 gal(US)/ac

Minimum Rate : 55.00 gal(US)/ac

Maximum Rate : 70.00 gal(US)/ac

Count : 2896

Notes/Comments

Operator Signature and Date

Planting 2013 - North fields

As-Applied Summary

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.NORTH_FI	0.408	13.24	32.46	5/4/2013	5/4/2013
R0:8209943.NORTH_FI	2.632	85.03	32.31	5/5/2013	5/5/2013
R0:8209943.NORTH_FI	4.032	130.15	32.28	5/4/2013	5/4/2013
R0:8209943.NORTH_FI	5.566	178.94	32.15	5/4/2013	5/4/2013
R0:8209943.NORTH_FI	8.124	264.14	32.52	5/4/2013	5/4/2013
R0:8209943.NORTH_FI	9.091	295.84	32.54	5/5/2013	5/5/2013
R0:8209943.NORTH_FI	16.56	536.69	32.41	5/5/2013	5/5/2013
Totals	182.02	5,697.8	31.30 Average	4/26/2013 Minimum	5/5/2013 Maximum

Operation Summary

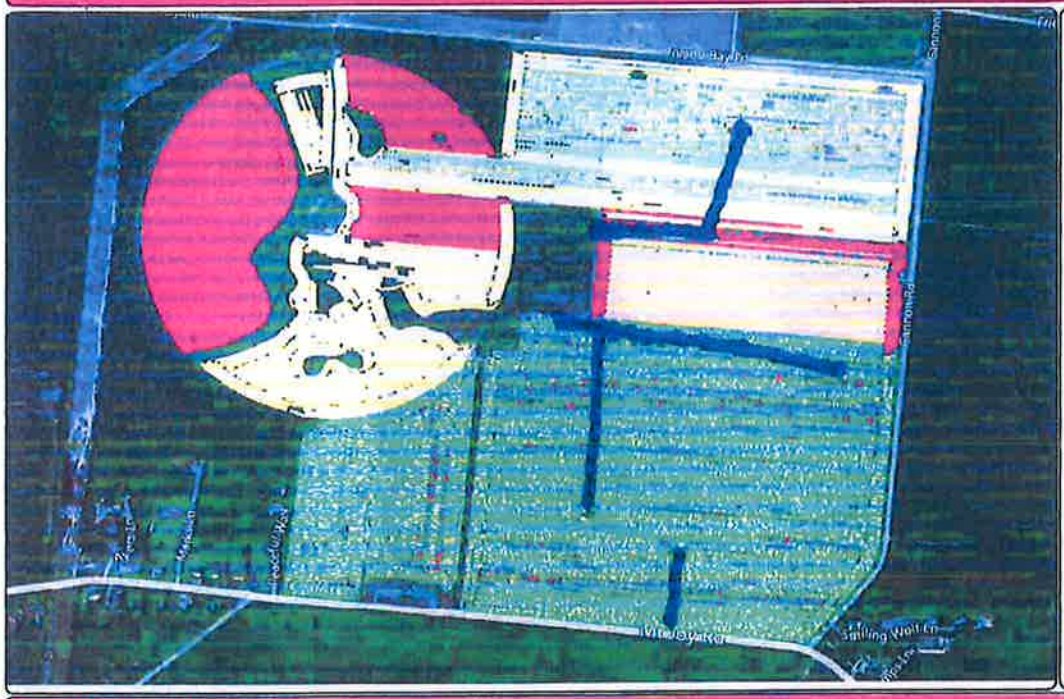
Grower : BALDWIN
Farm : Inldbys
Field : North fields
Year : 2013
Operation : Planting
Crop / Product : Multiple
Op. Instance : Planting - 1
Area : 182.02 ac

Est. Amount : 5,697.8 ksds
Avg. Rate : 31.30 ksds/ac
Start Date : 4/26/2013
End Date : 5/5/2013
Working Time : 15.92 hr
Avg. Productivity : 11.43 ac/hr
GPS Count : 58188

Notes/Comments

Operator Signature and Date

Planting 2013 - South fields



Product - Name	
6831RHXTRIB	(140.83 ac)
Dkc53-56	(42.73 ac)
Dkc60-63	(12.71 ac)
Dkc62-58	(43.27 ac)
RL6991HB	(22.03 ac)
RL7497YHB	(49.72 ac)

As-Applied Summary

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.SOUTH_FI	1.390	32.72	23.54	4/23/2013	4/23/2013
R0:8209943.SOUTH_FI	0.750	20.85	27.81	4/22/2013	4/22/2013
R0:8209943.SOUTH_FI	1.693	48.99	28.94	4/23/2013	4/23/2013
R0:8209943.SOUTH_FI	2.713	78.83	29.05	4/23/2013	4/23/2013
R0:8209943.SOUTH_FI	0.985	27.35	27.77	4/22/2013	4/22/2013
R0:8209943.SOUTH_FI	2.823	66.74	23.64	4/23/2013	4/23/2013
R0:8209943.SOUTH_FI	0.094	2.201	23.33	4/24/2013	4/24/2013
Totals	311.28	8,786.4	28.23 Average	4/22/2013 Minimum	5/7/2013 Maximum

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : South fields
Year : 2013
Operation : Planting
Crop / Product : Multiple
Op. Instance : Planting - 1
Area : 311.28 ac

Est. Amount : 8,786.4 ksds
Avg. Rate : 28.23 ksds/ac
Start Date : 4/22/2013
End Date : 5/7/2013
Working Time : 26.89 hr
Avg. Productivity : 11.58 ac/hr
GPS Count : 98268

Notes/Comments

Operator Signature and Date

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	285.85 ac	
Cover crop Amount	28584.76 lb	
Application Start Time	09/05/2012 7:49 AM	
Application End Time	11/10/2012 8:58 AM	
Soil Conditions		
Soil Temperature	78 ° F	
Soil Moisture Level	Optimal	
Soil Condition	Medium	
Crop Residue Level	Medium	
Tillage Type	Conventional	
Environmental		
Air Temperature	74 ° F	
Wind Speed	8 mph	
Wind Direction (From)	SW	
Sky Condition	Partly Cloudy	
Humidity	91 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	South fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM DD spreader
Implement:	GVM DD spreader

Application

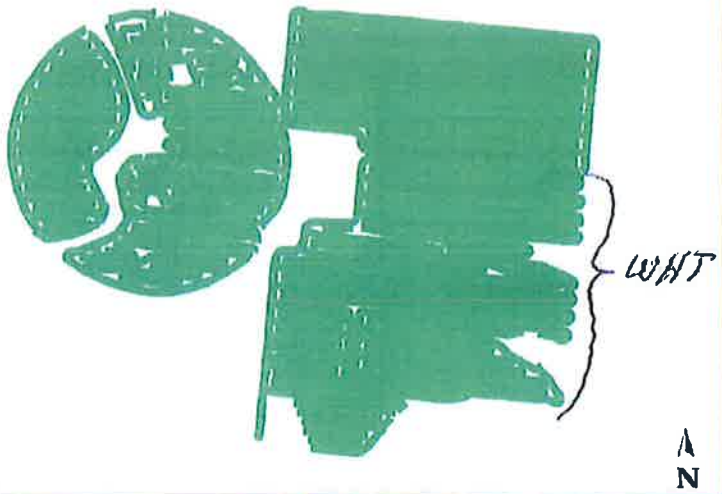
Timing:	Post Harvest
Placement:	Surface Broadcast

Application Date/Time

Start Time:	09/05/2012 7:49 AM
End Time:	11/10/2012 8:58 AM

Product: Cover crop
Applied Area: 285.85 ac

Product Coverage



Crop

Crop:	Rye + WHT
Growth Stage:	Germination

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	Not Observed

Target Pests

Cover crop	Not Observed
Not Observed	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
Cover crop	Dan		No	28584.76 lb	100.00 lb/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

Seeding 2012 - North fields(Cover crop)

Rate Applied(Mass)
(lb/ac)

- 102.58 - 472.93(25.29 ac)
- 100.72 - 102.58(38.12 ac)
- 99.87 - 100.72(38.67 ac)
- 99.14 - 99.87(38.41 ac)
- 98.24 - 99.14(38.08 ac)
- 95.56 - 98.24(37.20 ac)
- 0.00 - 95.56(32.69 ac)

As-Applied Summary

BALDWIN | Inland Bays | North fields
2012 | Seeding (Cover crop) | Seeding - 1

Dataset	Count	Area ac	Length ft
R1:	7328	248.46	144,305
Totals	7328	248.46	144,305

Operation Summary

Grower : BALDWIN
Farm : Inland Bays
Field : North fields
Year : 2012
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 248.46 ac

Est. Amount : 24,441 lb
Avg. Rate : 98.37 lb/ac
Start Date : 9/6/2012
End Date : 9/11/2012
Working Time : 2.036 hr
Avg. Productivity : 122.06 ac/hr
GPS Count : 7328

Notes/Comments

RYE SEED

Operator Signature and Date

Seeding 2012 - South side(Cover crop)

Rate Applied(Mass)
(lb/ac)

103.44 - 1,050.51	(17.81 ac)
100.96 - 103.44	(26.06 ac)
99.78 - 100.96	(27.06 ac)
98.68 - 99.78	(27.12 ac)
97.08 - 98.68	(26.36 ac)
91.30 - 97.08	(24.16 ac)
0.00 - 91.30	(20.95 ac)

As-Applied Summary

BALDWIN | Inldbys | South side
2012 | Seeding | Cover crop | Seeding - 2

Dataset	Count	Area ac	Length ft
R1:	5252	169.51	98,454
Totals	5252	169.51	98,454

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : South side
Year : 2012
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 2
Area : 169.51 ac

Est. Amount : 16,499 lb
Avg. Rate : 97.33 lb/ac
Start Date : 9/5/2012
End Date : 9/11/2012
Working Time : 1.459 hr
Avg. Productivity : 116.19 ac/hr
GPS Count : 5252

Notes/Comments

RYE SEED

Operator Signature and Date

Grain Harvest 2012 - North dry(SOYBEANS)

Estimated Volume (Dry)
(bu/ac)

- 30.81 - 230.69 (1.900 ac)
- 27.26 - 30.81 (2.060 ac)
- 24.60 - 27.26 (2.156 ac)
- 22.13 - 24.60 (2.177 ac)
- 19.28 - 22.13 (2.215 ac)
- 14.18 - 19.28 (2.315 ac)
- 5.14 - 14.18 (2.540 ac)

As-Applied Summary

BALDWIN | Inldbys | North dry
2012 | Grain Harvest | SOYBEANS | Harvest-1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	15.36	14.42	20,992	344.04	22.39	10/25/2012
Totals	15.36	14.42 Average	20,992	344.04	22.39 Average	10/25/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North dry

Year : 2012

Operation : Grain Harvest

Crop / Product : SOYBEANS

Area : 15.36 ac

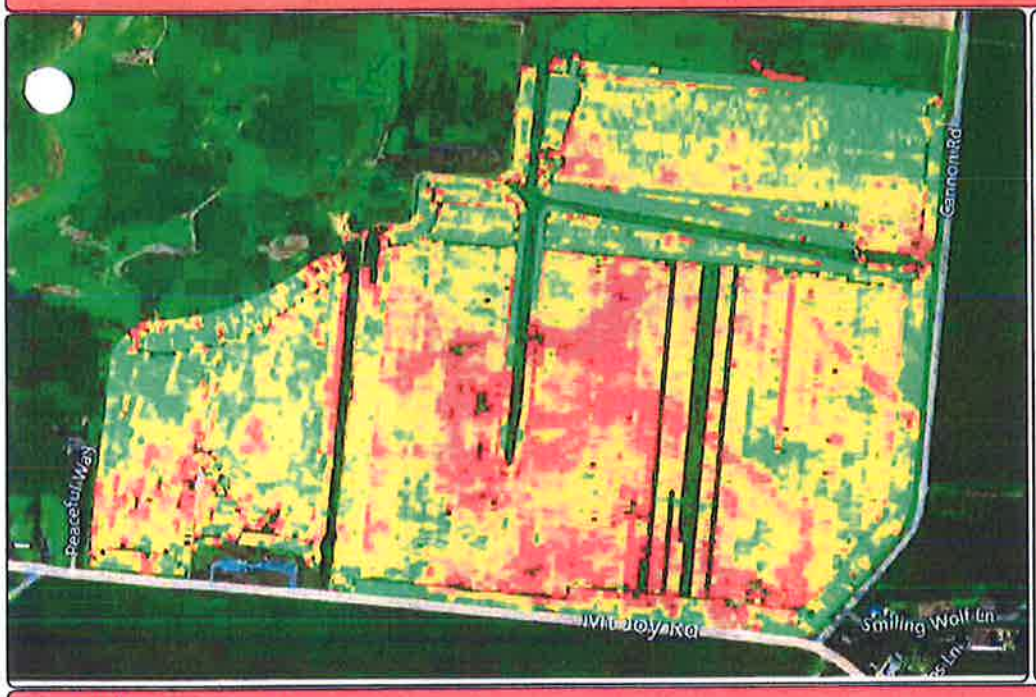
Avg. Yield : 22.39 bu/ac

Avg. Moisture : 14.42 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2012 - South side(SOYBEANS)



Estimated Volume (Dry)
(bu/ac)

- 31.57 - 225.64 (21.78 ac)
- 26.91 - 31.57 (22.39 ac)
- 23.44 - 26.91 (22.37 ac)
- 20.41 - 23.44 (22.17 ac)
- 17.22 - 20.41 (21.89 ac)
- 13.15 - 17.22 (21.88 ac)
- 5.00 - 13.15 (21.96 ac)

As-Applied Summary

BALDWIN / Inldbys / South side
2012 / Grain Harvest / SOYBEANS / Harvest 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	108.27	15.19	150,240	2,438.6	22.52	9/27/2012
L0:<4>	46.17	16.09	64,822	1,043.9	22.61	10/25/2012
Totals	154.44	15.46 Average	215,062	3,482.6	22.55 Average	9/27/2012 - 10/25/20

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South side

Year : 2012

Operation : Grain Harvest

Crop / Product : SOYBEANS

Area : 154.44 ac

Avg. Yield : 22.55 bu/ac

Avg. Moisture : 15.46 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2012 - North (CORN)

Estimated Volume (Dry)
(bu/ac)

- 169.63 - 394.87 (25.81 ac)
- 156.12 - 169.63 (29.82 ac)
- 145.84 - 156.12 (31.63 ac)
- 135.17 - 145.84 (33.11 ac)
- 116.05 - 135.17 (34.23 ac)
- 63.85 - 116.05 (34.78 ac)
- 5.01 - 63.85 (36.30 ac)

As-Applied Summary

BALDWIN | Inldbys | North irg
2012 | Grain Harvest | CORN | Harvest | <1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	225.67	20.35	1,660,570	27,891	123.59	8/21/2012
Totals	225.67	20.35 Average	1,660,570	27,891	123.59 Average	8/21/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North irg

Year : 2012

Operation : Grain Harvest

Crop / Product : CORN

Area : 225.67 ac

Avg. Yield : 123.59 bu/ac

Avg. Moisture : 20.35 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2012 - South side(CORN)

Estimated Volume (Dry)
(bu/ac)

- 175.97 - 396.61 (17.77 ac)
- 160.36 - 175.97 (20.48 ac)
- 145.55 - 160.36 (21.79 ac)
- 128.45 - 145.55 (22.95 ac)
- 111.53 - 128.45 (23.94 ac)
- 87.12 - 111.53 (24.23 ac)
- 5.02 - 87.12 (23.86 ac)

As-Applied Summary

BALDWIN | Inldbys | South side
2012 | Grain Harvest | CORN | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	155.03	21.95	1,213,769	20,034	129.23	8/22/2012
Totals	155.03	21.95 Average	1,213,769	20,034	129.23 Average	8/22/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South side

Year : 2012

Operation : Grain Harvest

Crop / Product : CORN

Area : 155.03 ac

Avg. Yield : 129.23 bu/ac

Avg. Moisture : 21.95 %

Notes/Comments

Operator Signature and Date

ALLEN CHORMAN & SON, INC.

A COMPLETE AERIAL APPLICATION SERVICE

Allen Chorman & Son, Inc. ~ Billing

Allen Chorman & Son, Inc.
30475 E Mill Rn
Milton, Delaware 19968

#7510
10/13/12

Bill To
Sayre Baldwin, Inc. *17882 Potatoe Lane* *Bridgeville, Delaware 19933*

Date	Invoice #
10/3/2012	*35281*

App Date	Type of App	Crop	Infestation	Applicator
8/28/2012	*AERIAL*	*Soy Beans*	*Fungicide*	*BT*

Wind & Humidity	*SW5 - M*		Time & Temperature	*10:00 am - 81 dgrs*

EPA Number	Description	Acres Treated	Price per Acre	Amount
18	*2.5 oz. Steward*		*0.00*	*0.00*
05905-50074	*8 oz. Penetrator Plus*		*0.00*	*0.00*
CC	*Chemicals furnished by customer*		*0.00*	*0.00*
AF	*Application Fee* *Inland Bays*	*170*	*10.50*	*1,785.00*

Please Remit to:30475 E MILL RN, MILTON, DE 19968
This is our new address as of June 2003.

Total *$1,785.00*

30475 E MILL RN • MILTON, DE 19968 • 302-684-2770/Fax 302-684-2766
Greenwood 302-349-5055

ALLEN CHORMAN & SON, INC.
A COMPLETE AERIAL APPLICATION SERVICE

Allen Chorman & Son, Inc. ~ Billing

Allen Chorman & Son, Inc.
30475 E Mill Rn
Milton, Delaware 19968

Bill To
Sayre Baldwin, Inc. *17882 Potatoe Lane* *Bridgeville, Delaware 19933*

Date	Invoice #
8/24/2012	*35013*

App Date	Type of App	Crop	Infestation	Applicator
7/25/2012	*AERIAL*	*Soy Beans*	*Disease*	*BT*

Wind & Humidity	*S3 - H*		Time & Temperature	*8:00 am - 75 dgrs*

EPA Number	Description	Acres Treated	Price per Acre	Amount
279-3313	*6.4 oz. Brigade 2 EC*		*0.00*	*0.00*
HA	*3.5 oz. Hyper-Active*		*0.00*	*0.00*
CC	*Chemicals furnished by customer*		*0.00*	*0.00*
AF	*Application Fee* *Inland Bays*	*170*	*10.00*	*1,700.00*

Please Remit to:30475 E MILL RN, MILTON, DE 19968
This is our new address as of June 2003.

Total *$1,700.00*

30475 E MILL RN • MILTON, DE 19968 • 302-684-2770/Fax 302-684-2766
Greenwood 302-349-5055

ALLEN CHORMAN & SON, INC.

A COMPLETE AERIAL APPLICATION SERVICE

Allen Chorman & Son, Inc. ~ Billing

Allen Chorman & Son, Inc.
30475 E Mill Rn
Milton, Delaware 19968

Bill To
Sayre Baldwin, Inc. *17882 Potatoe Lane* *Bridgeville, Delaware 19933*

Date	Invoice #
8/24/2012	*34986*

App Date	Type of App	Crop	Infestation	Applicator
6/26/2012	*AERIAL*	*Corn*	*Fungicide*	*BT*

Wind & Humidity	*SW3 - L*	Time & Temperature	*8:00 am - 80 dgrs*

EPA Number	Description	Acres Treated	Price per Acre	Amount
7969-00186	*9 oz. Headline*		*0.00*	*0.00*
100-1112-5905	*3.92 oz. Lambda-T*		*0.00*	*0.00*
CC	*Chemicals furnished by customer*		*0.00*	*0.00*
AF	*Application Fee* *Inland Bays*	*400*	*10.00*	*4,000.00*

Please Remit to:30475 E MILL RN, MILTON, DE 19968
This is our new address as of June 2003.

Total *$4,000.00*

30475 E MILL RN • MILTON, DE 19968 • 302-684-2770/Fax 302-684-2766
Greenwood 302-349-5055

Chorman Spraying, LLC

30475 East Mill Run
Milton, Delaware 19968
302-684-2770 ~ Milton ~ 302-684-2766 Fax
302-349-5055 ~ Greenwood ~ 302-349-4469 Fax

Bill To
Sayre Baldwin, Inc. Dan Baldwin 17882 Potatoe Lane Bridgeville, Delaware 19933

	Invoice #
4/9/2012	2243

Rep	App. Date	Type of App.	Crop	Infestation
JAC	3/7/2012	Aerial		Weeds

Acres Treat...	EPA Number	Description	Price Per Acre	Amount
250	Chemical	1 qt. Round Up	0.00	0.00
	CC	Chemicals Furnished By Customer	0.00	0.00
250	AF	Application Fee	10.50	2,625.00
		DE Waste Water Ground		
		3:00 pm - 50 dgrs - L/V - H		

#4/18/12
#4132

Please Remit To:Chorman Spraying, LLC, 30475 E Mill Rn., Milton, Delaware 19968

Total $2,625.00

A Complete Agricultural Aerial Application & Aerial Surveillance Survey Service

ALLEN CHORMAN & SON, INC.
A COMPLETE AERIAL APPLICATION SERVICE

Allen Chorman & Son, Inc. ~ Billing

Allen Chorman & Son, Inc.
30475 E Mill Rn
Milton, Delaware 19968

Bill To
Sayre Baldwin, Inc. *17882 Potatoe Lane* *Bridgeville, Delaware 19933*

Date	Invoice #
6/17/2012	*34627*

#4353
8/10/12

App Date	Type of App	Crop	Infestation	Applicator
6/2/2012	*AERIAL*	*Corn*	*Weeds*	*BT*

Wind & Humidity	*NW5 - L*		Time & Temperature	*7:30 pm - 78 dgrs*

EPA Number	Description	Acres Treated	Price per Acre	Amount
524-00539	*32 oz. Round-Up Original Max*		*0.00*	*0.00*
Chemical	*5 oz. Hellfire Chemicals*		*0.00*	*0.00*
CC	*Chemicals furnished by customer*		*0.00*	*0.00*
AF	*Application Fee* *Inland Bays*	*425*	*10.50*	*4,462.50*

Please Remit to:30475 E MILL RN, MILTON, DE 19968
This is our new address as of June 2003.

Total *$4,462.50*

30475 E. MILL RN • MILTON, DE 19968 • 302-684-2770/Fax 302-684-2766
Greenwood 302-349-5055

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	67.56 ac	
12 crn premerge Amount	1031.46 gal	
Application Start Time	04/14/2012 7:12 AM	
Application End Time	04/14/2012 7:49 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA
APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	South fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

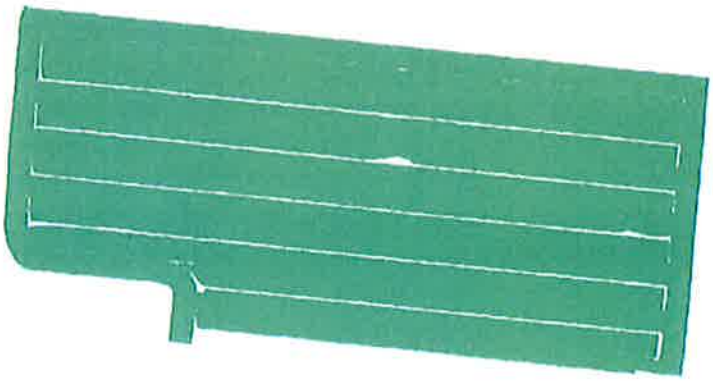
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	04/14/2012 7:12 AM
End Time:	04/14/2012 7:49 AM

Product: **12 crn premerge**
Applied Area: **67.56 ac**

Product Coverage



N

Crop

Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Nutrients	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12 crn premerge	Dan		No	1031.46 gal	15.27 gal/ac
Lexar	Syngenta	100-1201	Yes	206.29 qt	3.05 qt/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	176.21 ac	
12 soybn burndwn Amount	2792.71 gal	
Application Start Time	04/03/2012 6:51 AM	
Application End Time	04/03/2012 9:05 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	South dry	Farm:	Inland Bays
County:	Sussex	Description:	
Township:	Millsboro		
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

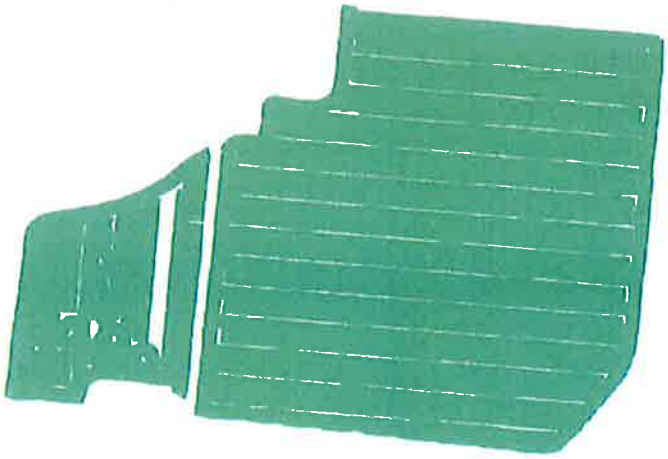
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	04/03/2012 6:51 AM
End Time:	04/03/2012 9:05 AM

Product: **12 soybn burndwn**
Applied Area: **176.21 ac**

Product Coverage



N

Crop

Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Nutrients	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12 soybn burndwn	Dan		No	2792.71 gal	15.85 gal/ac
Roundup PowerMax	Monsanto	524-549	No	4095.97 fl oz	23.24 fl oz/ac
OPTILL	BASF	7969-280	No	372.36 oz	2.11 oz/ac
Request	Helena		No	186.18 pt	1.06 pt/ac
dyne-Amic	Helena	Dyne-Amic	No	186.18 pt	1.06 pt/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	173.82 ac	
12sbpostherbb Amount	2688.42 gal	
Application Start Time	06/07/2012 10:30 AM	
Application End Time	06/07/2012 2:09 PM	
Soil Conditions		
Soil Temperature	75 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	None	
Tillage Type	Conventional	
Environmental		
Air Temperature	74 ° F	
Wind Speed	6 mph	
Wind Direction (From)	W	
Sky Condition	Sunny	
Humidity	62 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	South fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

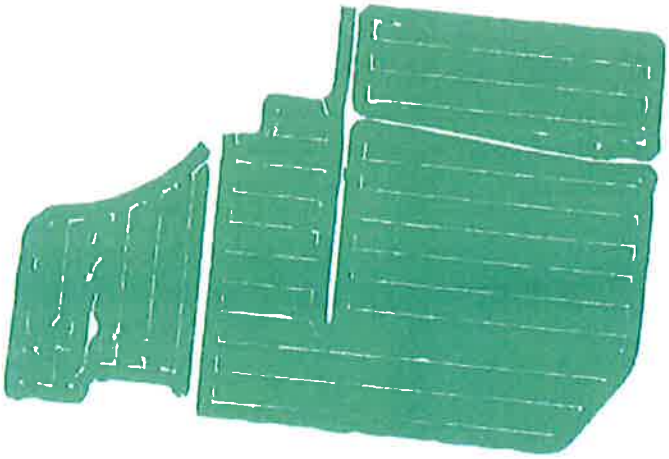
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	06/07/2012 10:30 AM
End Time:	06/07/2012 2:09 PM

Product: **12sbpostherbb**
Applied Area: **173.82 ac**

Product Coverage



N

Crop

Crop:	Soybeans
Growth Stage:	V2 - Second Node

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Pigweed	Morning glor
	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12sbpostherbb	Dan		No	2688.42 gal	15.47 gal/ac
Roundup PowerMax	Monsanto	524-549	No	3943.02 fl oz	22.68 fl oz/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	254.12 ac	
12 crn premerge Amount	3834.94 gal	
Application Start Time	04/14/2012 7:54 AM	
Application End Time	04/18/2012 9:09 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	North fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

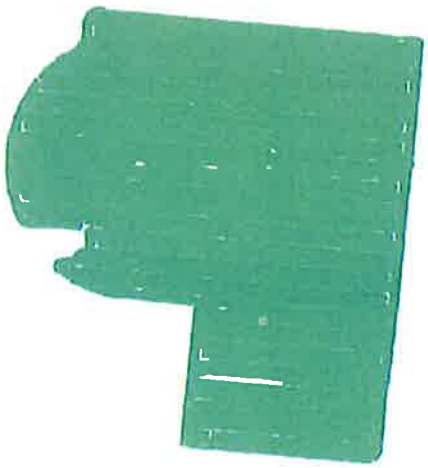
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	04/14/2012 7:54 AM
End Time:	04/18/2012 9:09 AM

Product: **12 crn premerge**
Applied Area: **254.12 ac**

Product Coverage



N

Crop

Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Nutrients	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12 crn premerge	Dan		No	3834.94 gal	15.09 gal/ac
Lexar	Syngenta	100-1201	Yes	766.99 qt	3.02 qt/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	17.73 ac	
12sbpostherbb Amount	263.62 gal	
Application Start Time	06/07/2012 11:37 AM	
Application End Time	06/07/2012 2:28 PM	
Soil Conditions		
Soil Temperature	75 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	None	
Tillage Type	Conventional	
Environmental		
Air Temperature	74 ° F	
Wind Speed	6 mph	
Wind Direction (From)	W	
Sky Condition	Sunny	
Humidity	62 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	North fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

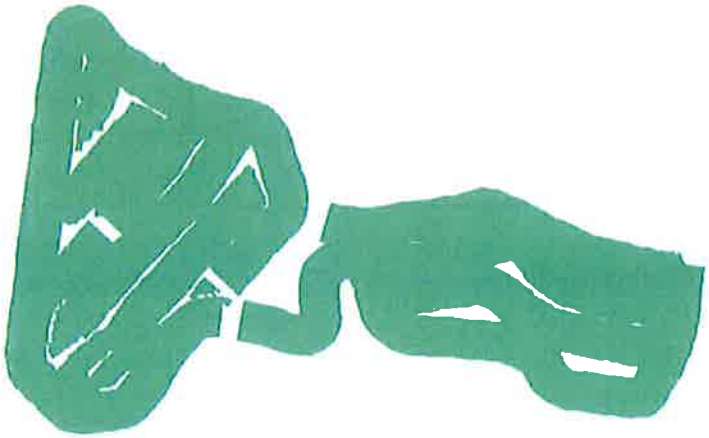
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	06/07/2012 11:37 AM
End Time:	06/07/2012 2:28 PM

Product: 12sbpostherbb
Applied Area: 17.73 ac

Product Coverage



N

Crop

Crop:	Soybeans
Growth Stage:	V2 - Second Node

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Pigweed	Morning glor
	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12sbpostherbb	Dan		No	263.62 gal	14.87 gal/ac
Roundup PowerMax	Monsanto	524-549	No	386.65 fl oz	21.81 fl oz/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	28.39 ac	
Corn burn down Amount	449.03 gal	
Application Start Time	04/01/2012 11:25 AM	
Application End Time	04/01/2012 12:09 PM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA
APPLICATION REPORT

Grower
Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field
Field: South dry
County: Sussex
Township: Millsboro
Range:
Section:
Farm: Inland Bays
Description:

Equipment Configuration
Vehicle: GVM Prowler
Implement: GVM spray tank90
Boom Height: 18 in

Application
Timing: Post Emerge
Placement: Surface Broadcast
Nozzle PN: 11004
Boom Pressure: 60 PSI

Application Date/Time
Start Time: 04/01/2012 11:25 AM
End Time: 04/01/2012 12:09 PM

Product: Corn burn down
Applied Area: 28.39 ac

Product Coverage

Crop
Crop: Wheat
Growth Stage: Stem Elongation

Restrictions
Crop Rotation Restrictions: No
Restricted Entry Interval (REI): 12 hours

Target Pests
Nutrients Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
Corn burn down	Dan		No	449.03 gal	15.82 gal/ac
Hel-fire	Helena		No	374.19 fl oz	13.18 fl oz/ac
Roundup PowerMax	Monsanto	524-549	No	658.58 fl oz	23.20 fl oz/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	92.98 ac	
Corn burn down Amount	1466.25 gal	
Application Start Time	04/01/2012 9:26 AM	
Application End Time	04/01/2012 11:22 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA
APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	North dry	Farm:	Inland Bays
County:	Sussex	Description:	
Township:	Millsboro		
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

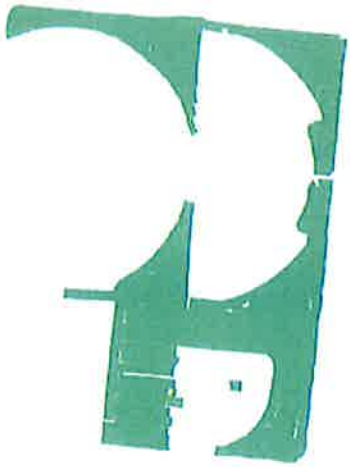
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	04/01/2012 9:26 AM
End Time:	04/01/2012 11:22 AM

Product: **Corn burn down**
Applied Area: **92.98 ac**

Product Coverage



N

Crop

Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Nutrients	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
Corn burn down	Dan		No	1466.25 gal	15.77 gal/ac
Hel-fire	Helena		No	1221.87 fl oz	13.14 fl oz/ac
Roundup PowerMax	Monsanto	524-549	No	2150.49 fl oz	23.13 fl oz/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	9.24 ac	
12 soybn burndwn Amount	116.98 gal	
Application Start Time	04/03/2012 9:18 AM	
Application End Time	04/03/2012 9:23 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	North dry	Farm:	Inland Bays
County:	Sussex	Description:	
Township:	Millsboro		
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	04/03/2012 9:18 AM
End Time:	04/03/2012 9:23 AM

Product: **12 soybn burndwn**
Applied Area: **9.24 ac**

Product Coverage

N

Crop

Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Nutrients	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12 soybn burndwn	Dan		No	116.98 gal	12.66 gal/ac
Roundup PowerMax	Monsanto	524-549	No	171.57 fl oz	18.57 fl oz/ac
OPTILL	BASF	7969-280	No	15.60 oz	1.69 oz/ac
Request	Helena		No	7.80 pt	0.84 pt/ac
dyne-Amic	Helena	Dyne-Amic	No	7.80 pt	0.84 pt/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

Soybean Planting 2012 - SOUTH(Ag4130)

Product - Name
Ag4130 (136.85 ac)

As-Applied Summary

BALDWIN | Inldbys | SOUTH
2012 | Soybean - Corn | Planting | Ag4130 | Planting - 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.SOUTH\20	0.659	120.52	182.91	5/13/2012	5/13/2012
R0:8209943.SOUTH\20	1.509	266.86	176.86	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	0.721	130.36	180.75	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	7.526	1,376.3	182.88	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	0.406	74.10	182.51	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	0.687	125.33	182.36	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	0.750	136.85	182.42	5/14/2012	5/14/2012
Totals	136.85	24,933	182.19 Average	5/13/2012 Minimum	5/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : SOUTH

Year : 2012

Area : 136.85 ac

Est. Amount : 24,933 ksds

Avg. Rate : 182.19 ksds/ac

Start Date : 5/13/2012

End Date : 5/17/2012

Working Time : 11.82 hr

Avg. Productivity : 11.58 ac/hr

GPS Count : 44321

Notes/Comments

Operator Signature and Date

Soybean Planting 2012 - TOWER(Ag4130)

Product - Name

Ag4130(29.96 ac)

As-Applied Summary

BALDWIN | Inldbys | TOWER

2012 | Soybean + Corn Planting | Ag4130 | Planting - 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.TOWER\20	0.943	317.62	336.86	5/12/2012	5/12/2012
R0:8209943.TOWER\20	0.091	32.49	356.47	5/12/2012	5/12/2012
R0:8209943.TOWER\20	0.918	175.49	191.19	5/12/2012	5/12/2012
R0:8209943.TOWER\20	28.01	5,086.9	181.60	5/12/2012	5/12/2012
Totals	29.96	5,612.5	187.31 Average	5/12/2012 Minimum	5/12/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : TOWER

Year : 2012

Area : 29.96 ac

Est. Amount : 5,612.5 ksds

Avg. Rate : 187.31 ksds/ac

Start Date : 5/12/2012

End Date : 5/12/2012

Working Time : 2.581 hr

Avg. Productivity : 11.61 ac/hr

GPS Count : 9679

Notes/Comments

Operator Signature and Date

Soybean Planting 2012 - BACK(Ag4130)

Product - Name
Ag4130(15.70 ac)

As-Applied Summary

BALDWIN | Inldbys | BACK
2012 | Soybean + Corn Planting | Ag4130 | Planting = 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.BACK\2012	15.70	2,846.1	181.25	5/12/2012	5/12/2012
Totals	15.70	2,846.1	181.25 Average	5/12/2012 Minimum	5/12/2012 Maximum

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : BACK
Year : 2012
Area : 15.70 ac
Est. Amount : 2,846.1 ksds

Avg. Rate : 181.25 ksds/ac
Start Date : 5/12/2012
End Date : 5/12/2012
Working Time : 1.227 hr
Avg. Productivity : 12.80 ac/hr
GPS Count : 4601

Notes/Comments

Operator Signature and Date

Fertilizing (Liquid) 2012 - South irg

Product - Name
- 10-0-12 (31.76 ac)
- 13 0 18 (102.36 ac)

As-Applied Summary

BALDWIN | Inldbys | South irg
2012 | Fertilizing (Liquid) | Multiple Products - Other | Fertilizing - 1

Dataset	Area ac	Avg Rate gal(US)/ac	Est. Volume gal(US)	Start Date	End Date
R0:<1>	31.76	92.75	2,945.6	4/9/2012	4/9/2012
R0:<1>	102.36	63.89	6,540.0	4/9/2012	4/11/2012
Totals	134.12	70.72 Average	9,485.6	4/9/2012 Minimum	4/11/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South irg

Year : 2012

Area : 134.12 ac

Est. Amount : 9,485.6 gal(US)

Avg. Rate : 70.72 gal(US)/ac

Start Date : 4/9/2012

End Date : 4/11/2012

Working Time : 9.466 hr

Avg. Productivity : 14.17 ac/hr

GPS Count : 34076

Notes/Comments

Operator Signature and Date

Corn Planting 2012 - South side

Product - Name

- 207-13vt3p (43.52 ac)
- Dk52-61 (32.98 ac)
- Dk57-50 (10.81 ac)
- DKC49-94 (71.91 ac)

As-Applied Summary

BALDWIN | Inldbys | South side

2012 | Soybean + Corn Planting | Multiple Products - Corn | Planting - 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.South_side	8.179	271.24	33.16	4/9/2012	4/9/2012
R0:8209943.South_side	0.082	1.641	20.11	4/9/2012	4/9/2012
R0:8209943.South_side	0.781	25.78	33.01	4/9/2012	4/9/2012
R0:8209943.South_side	0.030	0.862	28.71	4/9/2012	4/9/2012
R0:8209943.South_side	9.607	321.31	33.44	4/9/2012	4/9/2012
R0:8209943.South_side	2.997	100.03	33.38	4/9/2012	4/9/2012
R0:8209943.South_side	3.706	123.98	33.46	4/9/2012	4/9/2012
Totals	159.23	5,212.4	32.74 Average	4/9/2012 Minimum	4/12/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South side

Year : 2012

Area : 159.23 ac

Est. Amount : 5,212.4 ksds

Avg. Rate : 32.74 ksds/ac

Start Date : 4/9/2012

End Date : 4/12/2012

Working Time : 12.76 hr

GPS Count : 47832

Notes/Comments

Operator Signature and Date

Fertilizing (Liquid) 2012 - North irg

Product - Name
- 13 0 18(184.267 ac)
- 15 0 8 (6.014 ac)

As-Applied Summary

BALDWIN | Inldbys | North Irg
2012 | Fertilizing (Liquid) | Multiple Products - Other | Fertilizing - 1

Dataset	Area ac	Avg Rate gal(US)/ac	Est. Volume gal(US)	Start Date	End Date
R0:<1>	184.27	63.56	11,711	4/11/2012	4/16/2012
R0:<1>	6.014	75.22	452.32	4/17/2012	4/17/2012
Totals	190.28	63.92 Average	12,163	4/11/2012 Minimum	4/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North irg

Year : 2012

Area : 190.28 ac

Est. Amount : 12,163 gal(US)

Avg. Rate : 63.92 gal(US)/ac

Start Date : 4/11/2012

End Date : 4/17/2012

Working Time : 13.50 hr

Avg. Productivity : 14.10 ac/hr

GPS Count : 48586

Notes/Comments

Operator Signature and Date

Corn Planting 2012 - North side

Product - Name
- Dk53-45 (50.33 ac)
- Dk57-50 (110.29 ac)
- Dk58-83 (35.64 ac)
- FS4861VT3 (43.32 ac)

As-Applied Summary

BALDWIN | Inldbys | North side

2012 | Soybean - Corn Planting | Moisture Sensitive - Corn | Planting - 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.North_side	20.89	699.16	33.46	4/16/2012	4/16/2012
R0:8209943.North_side	2.459	67.31	27.37	4/16/2012	4/16/2012
R0:8209943.North_side	20.47	672.27	32.84	4/17/2012	4/17/2012
R0:8209943.North_side	6.510	213.04	32.73	4/17/2012	4/17/2012
R0:8209943.North_side	59.45	1,857.9	31.25	4/12/2012	4/12/2012
R0:8209943.North_side	16.00	509.81	31.85	4/13/2012	4/13/2012
R0:8209943.North_side	2.394	77.02	32.17	4/13/2012	4/13/2012
Totals	239.58	7,755.8	32.37 Average	4/12/2012 Minimum	4/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North side

Year : 2012

Area : 239.58 ac

Est. Amount : 7,755.8 ksds

Avg. Rate : 32.37 ksds/ac

Start Date : 4/12/2012

End Date : 4/17/2012

Working Time : 19.02 hr

GPS Count : 71332

Notes/Comments

Operator Signature and Date

Spectrum Analytic
1087 Jamison Road NW
Washington Court House, OH 43160-8748
www.spectrumanalytic.com

Report To
WILLARD AGRI-SERVICE
11523 LYNCH ROAD
WORTON, MD 21678

Prepared For
DAN BALDWIN/INLDBYS 39845

Sampled 12-22-2011
Tested 12-23-2011

Sample Number	Lab Number	pH Soil pH	pH Buffer pH	Organic Matter %	P-Fit Fertility Index Value	lbs/A - Rating Potassium K	Magnesium Mg	Calcium Ca	CEC	Base Saturation K %	Mg %	Ca %	ppm - Rating Sulfur S	Boron B	Zinc Zn	Iron Fe	Index - Rating Copper Cu	Manganese Mn
DRY N	F00773	5.9	7.1	0.3	174 X	143 M	104 L	557 M	2.0	9.1	21.6	69.3	7 L	0.2 L	6.6 G			
DRY S	F00774	5.9	7.0	0.9	266 X	114 M	114 M	567 M	2.0	7.2	23.4	69.5	8 L	0.2 L	7.6 G			
NEW PIVOT S	F00775	5.6	6.9	1.4	280 X	139 M	99 L	693 M	3.5	5.1	11.7	49.2	12 M	0.2 L	10.2 G			
TOWER	F00776	5.7	7.1	0.5	211 X	91 L	93 L	405 M	1.5	7.7	25.6	66.7	7 L	0.2 L	6.6 G			
IRG S EAST	F00777	6.4	7.2	0.6	240 X	60 L	143 M	528 M	2.0	3.9	29.8	66.3	4 L	0.2 L	5.0 G			
IRG S WEST	F00778	6.5	7.2	1.4	202 X	119 M	143 M	624 M	3.0	5.2	20.1	52.8	9 L	0.3 L	6.2 G			
IRG N EAST	F00779	6.7	7.2	1.0	268 X	123 M	208 M	921 G	4.1	3.9	21.3	56.8	8 L	0.4 L	7.1 G			
IRG N WEST	F00780	6.7	7.3	0.9	360 X	139 M	204 M	1008 G	4.3	4.1	19.6	58.2	8 L	0.4 L	9.6 G			
MIDDLE N PIVOT	F00781	5.6	7.0	0.7	448 X	124 M	72 L	620 M	2.0	7.9	15.0	77.1	11 M	0.2 L	8.2 G			
IRG N FRT	F00782	6.7	7.3	0.5	366 X	113 M	151 M	980 G	3.9	3.7	16.0	62.3	6 L	0.3 L	9.6 G			

Sample Number	Year	Acres	Previous Crop	Nitrogen Credit	Crop to be Grown	Tillage Method	Yield Goal
DRY N	2012	10	Idle	0	Soybeans, MD	Other	40 bu
DRY S	2012	194	Corn, MD	0	Soybeans, MD	Other	40 bu
NEW PIVOT S	2012	60	Corn, MD	0	Corn, MD	Other	200 bu
TOWER	2012	29.2	Corn, MD	0	Soybeans, MD	Other	40 bu
IRG S EAST	2012	40	Corn, MD	0	Corn, MD	Other	280 bu
IRG S WEST	2012	60	Corn, MD	0	Corn, MD	Other	280 bu
IRG N EAST	2012	49.3	Corn, MD	0	Corn, MD	Other	280 bu
IRG N WEST	2012	49.7	Corn, MD	0	Corn, MD	Other	280 bu
MIDDLE N PIVOT	2012	80	Soybeans, MD	15	Corn, MD	Other	280 bu
IRG N FRT	2012	57.2	Corn, MD	0	Corn, MD	Other	280 bu

Sample Number	Year	$CaCO_3$ Lime Tons	Recommendations N	P_2O_5	K_2O	Manure Type and Analysis % N/P2O5/K2O	Amt To Apply	Ramloder N	P_2O_5	K_2O	Nutrient recommendations expressed in broadcast rates of lbs/A except Mg	S	B	Cu	Fe Foliar	Mn Row	Zn
DRY N	2012	0.6 D	0	0	102						19	14	0.50				2
DRY S	2012	0.6 D	0	0	111	Poultry - 2.914/2.52/2.94	0.00 ton/A	0	0	111	18	13	0.50				6
NEW PIVOT S	2012	1.0 D	200	0	213						36	24	0.50				5
TOWER	2012	0.7 D	0	0	118	Poultry - 2.914/2.52/2.94	0.00 ton/A	0	0	118	21	14	0.50				4
IRG S EAST	2012	0.2 D	250	0	277						21	30	0.50				9
IRG S WEST	2012	0.0	250	0	259						43	26	0.50				9
IRG N EAST	2012	0.0	250	0	258						24	27	0.50				8
IRG N WEST	2012	0.0	250	0	253						25	27	0.50				5
MIDDLE N PIVOT	2012	0.7 D	250	0	258						41	25	0.50				7
IRG N FRT	2012	0.0	250	0	261						40	29	0.50				5

Analyzed by Spectrum Analytic Inc.
www.spectrumanalytic.com

HID:9460-0809-5090-0010

SAYRE BALDWIN INC.

17882 POTATO LANE

BRIDGEVILLE, DE.

2013 VEGETATIVE PLAN FOR INLAND BAYS

ALL FIELDS

All of cover crop will be chemically burned down in the spring. All fields will be Grid sampled(2 ½ acre grids). Nutrients will be applied (some variable rate) based on these samples And plant uptake. A nutrient management plan will be generated by WILLARD agri-service based on the Above.

.Pre-energe weed control will consist of Harness Xtra and roundup at labled rates

Seeding 2012 - North fields(Cover crop)

Rate Applied(Mass)
(lb/ac)

- 102.58 - 472.93(25.29 ac)
- 100.72 - 102.58(38.12 ac)
- 99.87 - 100.72(38.67 ac)
- 99.14 - 99.87(38.41 ac)
- 98.24 - 99.14(38.08 ac)
- 95.56 - 98.24(37.20 ac)
- 0.00 - 95.56(32.69 ac)

As-Applied Summary

Dataset	Count	Area ac	Length ft
R1:	7328	248.46	144,305
Totals	7328	248.46	144,305

Operation Summary

Grower : BALDWIN
Farm : Inland Bays
Field : North fields
Year : 2012
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 248.46 ac

Est. Amount : 24,441 lb
Avg. Rate : 98.37 lb/ac
Start Date : 9/6/2012
End Date : 9/11/2012
Working Time : 2.036 hr
Avg. Productivity : 122.06 ac/hr
GPS Count : 7328

Notes/Comments

RYE SEED

Operator Signature and Date

Seeding 2012 - South side(Cover crop)

Rate Applied(Mass)
(lb/ac)

103.44 - 1,050.51	(17.81 ac)
100.96 - 103.44	(26.06 ac)
99.78 - 100.96	(27.06 ac)
98.68 - 99.78	(27.12 ac)
97.08 - 98.68	(26.36 ac)
91.30 - 97.08	(24.16 ac)
0.00 - 91.30	(20.95 ac)

As-Applied Summary

Dataset	Count	Area ac	Length ft
R1:	5252	169.51	98,454
Totals	5252	169.51	98,454

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : South side
Year : 2012
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 2
Area : 169.51 ac

Est. Amount : 16,499 lb
Avg. Rate : 97.33 lb/ac
Start Date : 9/5/2012
End Date : 9/11/2012
Working Time : 1.459 hr
Avg. Productivity : 116.19 ac/hr
GPS Count : 5252

Notes/Comments

RYE SEED

Operator Signature and Date

Grain Harvest 2012 - North (CORN)

Estimated Volume (Dry)
(bu/ac)

- 169.63 - 394.87 (25.81 ac)
- 156.12 - 169.63 (29.82 ac)
- 145.84 - 156.12 (31.63 ac)
- 135.17 - 145.84 (33.11 ac)
- 116.05 - 135.17 (34.23 ac)
- 63.85 - 116.05 (34.78 ac)
- 5.01 - 63.85 (36.30 ac)

As-Applied Summary

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	225.67	20.35	1,660,570	27,891	123.59	8/21/2012
Totals	225.67	20.35 Average	1,660,570	27,891	123.59 Average	8/21/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North irg

Year : 2012

Operation : Grain Harvest

Crop / Product : CORN

Area : 225.67 ac

Avg. Yield : 123.59 bu/ac

Avg. Moisture : 20.35 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2012 - South side(CORN)

Estimated Volume (Dry)
(bu/ac)

- 175.97 - 396.61 (17.77 ac)
- 160.36 - 175.97 (20.48 ac)
- 145.55 - 160.36 (21.79 ac)
- 128.45 - 145.55 (22.95 ac)
- 111.53 - 128.45 (23.94 ac)
- 87.12 - 111.53 (24.23 ac)
- 5.02 - 87.12 (23.86 ac)

As-Applied Summary

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	155.03	21.95	1,213,769	20,034	129.23	8/22/2012
Totals	155.03	21.95 Average	1,213,769	20,034	129.23 Average	8/22/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South side

Year : 2012

Operation : Grain Harvest

Crop / Product : CORN

Area : 155.03 ac

Avg. Yield : 129.23 bu/ac

Avg. Moisture : 21.95 %

Notes/Comments

Operator Signature and Date

Fertilizing (Liquid) 2012 - North irg

Product - Name
13 0 18(184.267 ac)
15 0 8 (6.014 ac)

As-Applied Summary

Dataset	Area ac	Avg Rate gal(US)/ac	Est. Volume gal(US)	Start Date	End Date
R0:<1>	184.27	63.56	11,711	4/11/2012	4/16/2012
R0:<1>	6.014	75.22	452.32	4/17/2012	4/17/2012
Totals	190.28	63.92 Average	12,163	4/11/2012 Minimum	4/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North irg

Year : 2012

Area : 190.28 ac

Est. Amount : 12,163 gal(US)

Avg. Rate : 63.92 gal(US)/ac

Start Date : 4/11/2012

End Date : 4/17/2012

Working Time : 13.50 hr

Avg. Productivity : 14.10 ac/hr

GPS Count : 48586

Notes/Comments

Operator Signature and Date

Fertilizing (Liquid) 2012 - South irg

Product - Name
- 10-0-12(31.76 ac)
- 13 0 18(102.36 ac)

As-Applied Summary

Dataset	Area ac	Avg Rate gal(US)/ac	Est. Volume gal(US)	Start Date	End Date
R0:<1>	31.76	92.75	2,945.6	4/9/2012	4/9/2012
R0:<1>	102.36	63.89	6,540.0	4/9/2012	4/11/2012
Totals	134.12	70.72 Average	9,485.6	4/9/2012 Minimum	4/11/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South irg

Year : 2012

Area : 134.12 ac

Est. Amount : 9,485.6 gal(US)

Avg. Rate : 70.72 gal(US)/ac

Start Date : 4/9/2012

End Date : 4/11/2012

Working Time : 9.466 hr

Avg. Productivity : 14.17 ac/hr

GPS Count : 34076

Notes/Comments

Operator Signature and Date

Corn Planting 2012 - North side

Product - Name
- Dk53-45 (50.33 ac)
- Dk57-50 (110.29 ac)
- Dk58-83 (35.64 ac)
- FS4861VT3 (43.32 ac)

As-Applied Summary

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.North_side	20.89	699.16	33.46	4/16/2012	4/16/2012
R0:8209943.North_side	2.459	67.31	27.37	4/16/2012	4/16/2012
R0:8209943.North_side	20.47	672.27	32.84	4/17/2012	4/17/2012
R0:8209943.North_side	6.510	213.04	32.73	4/17/2012	4/17/2012
R0:8209943.North_side	59.45	1,857.9	31.25	4/12/2012	4/12/2012
R0:8209943.North_side	16.00	509.81	31.85	4/13/2012	4/13/2012
R0:8209943.North_side	2.394	77.02	32.17	4/13/2012	4/13/2012
Totals	239.58	7,755.8	32.37 Average	4/12/2012 Minimum	4/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North side

Year : 2012

Area : 239.58 ac

Est. Amount : 7,755.8 ksds

Avg. Rate : 32.37 ksds/ac

Start Date : 4/12/2012

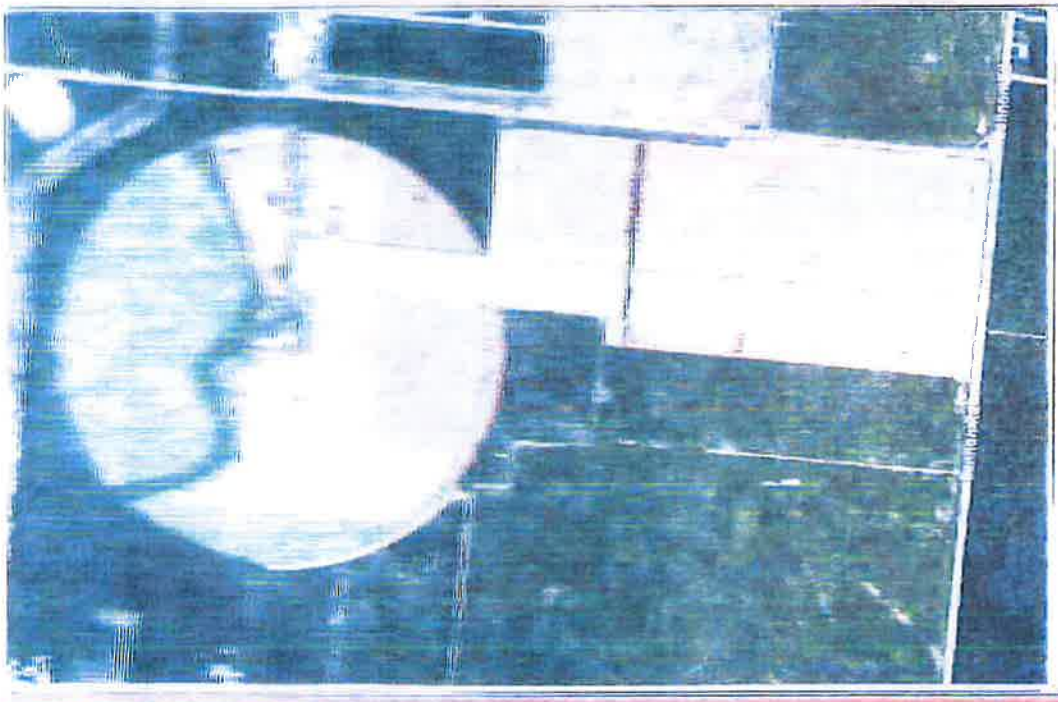
End Date : 4/17/2012

Working Time : 19.02 hr

GPS Count : 71332

Notes/Comments

Operator Signature and Date



Product - Name
207-13vt3p (43.52 ac)
Dk52-61 (32.98 ac)
Dk57-50 (10.81 ac)
DKC49-94 (71.91 ac)

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.South_sid	8.179	271.24	33.16	4/9/2012	4/9/2012
R0:8209943.South_sid	0.082	1.641	20.11	4/9/2012	4/9/2012
R0:8209943.South_sid	0.781	25.78	33.01	4/9/2012	4/9/2012
R0:8209943.South_sid	0.030	0.862	28.71	4/9/2012	4/9/2012
R0:8209943.South_sid	9.607	321.31	33.44	4/9/2012	4/9/2012
R0:8209943.South_sid	2.997	100.03	33.38	4/9/2012	4/9/2012
R0:8209943.South_sid	3.706	123.98	33.46	4/9/2012	4/9/2012
Totals	159.23	5,212.4	32.74 Average	4/9/2012 Minimum	4/12/2012 Maximum

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : South side
Year : 2012
Area : 159.23 ac
Est. Amount : 5,212.4 ksds

Avg. Rate : 32.74 ksds/ac
Start Date : 4/9/2012
End Date : 4/12/2012
Working Time : 12.76 hr
GPS Count : 47832

Notes/Comments

Operator Signature and Date

Seeding 2011 - North irrg bck(Cover crop)

Rate Applied(Mass)
(lb/ac)

153.54 - 1,176.82	(11.23 ac)
150.74 - 153.54	(15.05 ac)
149.37 - 150.74	(15.53 ac)
148.05 - 149.37	(15.41 ac)
146.24 - 148.05	(15.80 ac)
140.56 - 146.24	(15.62 ac)
0.00 - 140.56	(14.24 ac)

As-Applied Summary

BALDWIN | Inland Bays app | North irrg bck
2011 | Seeding | Cover crop | Seeding - 1

Dataset	Count	Area ac	Length ft
R1:	4226	102.88	64,022
Totals	4226	102.88	64,022

Operation Summary

Grower : BALDWIN
Farm : Inland Bays app
Field : North irrg bck
Year : 2011
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 102.88 ac

Est. Amount : 15,054 lb
Avg. Rate : 146.32 lb/ac
Start Date : 9/11/2011
End Date : 9/12/2011
Working Time : 1.174 hr
Avg. Productivity : 87.64 ac/hr
GPS Count : 4226

Notes/Comments

Operator Signature and Date

Seeding 2011 - North irrg frt(Cover crop)

Rate Applied(Mass)
(lb/ac)

- 152.66 - 190.57 (6.640 ac)
- 150.85 - 152.66 (6.761 ac)
- 149.49 - 150.85 (6.763 ac)
- 148.04 - 149.49 (7.408 ac)
- 146.27 - 148.04 (7.047 ac)
- 140.15 - 146.27 (6.961 ac)
- 0.94 - 140.15 (6.012 ac)

As-Applied Summary

BALDWIN | Inland Bays app | North irrg frt
2011 | Seeding | Cover crop | Seeding - 1

Dataset	Count	Area ac	Length ft
R1:	577	13.60	8,461.9
R2:	1188	33.99	21,154
Totals	1765	47.59	29,616

Operation Summary

Grower : BALDWIN
Farm : Inland Bays app
Field : North irrg frt
Year : 2011
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 47.59 ac

Est. Amount : 6,900.2 lb
Avg. Rate : 144.98 lb/ac
Start Date : 9/11/2011
End Date : 9/11/2011
Working Time : 0.490 hr
Avg. Productivity : 97.07 ac/hr
GPS Count : 1765

Notes/Comments

Operator Signature and Date

Seeding 2011 - South irrg(Cover crop)

Rate Applied(Mass)
(lb/ac)

- 154.31 - 2,666.18 (10.30 ac)
- 150.92 - 154.31 (13.64 ac)
- 149.24 - 150.92 (13.99 ac)
- 147.46 - 149.24 (14.23 ac)
- 144.91 - 147.46 (14.34 ac)
- 139.11 - 144.91 (13.89 ac)
- 0.00 - 139.11 (11.90 ac)

As-Applied Summary

BALDWIN | Inland Bays app | South irrg
2011 | Seeding (Cover crop) | Seeding - 1

Dataset	Count	Area ac	Length ft
R1:	3768	92.27	57,422
Totals	3768	92.27	57,422

Operation Summary

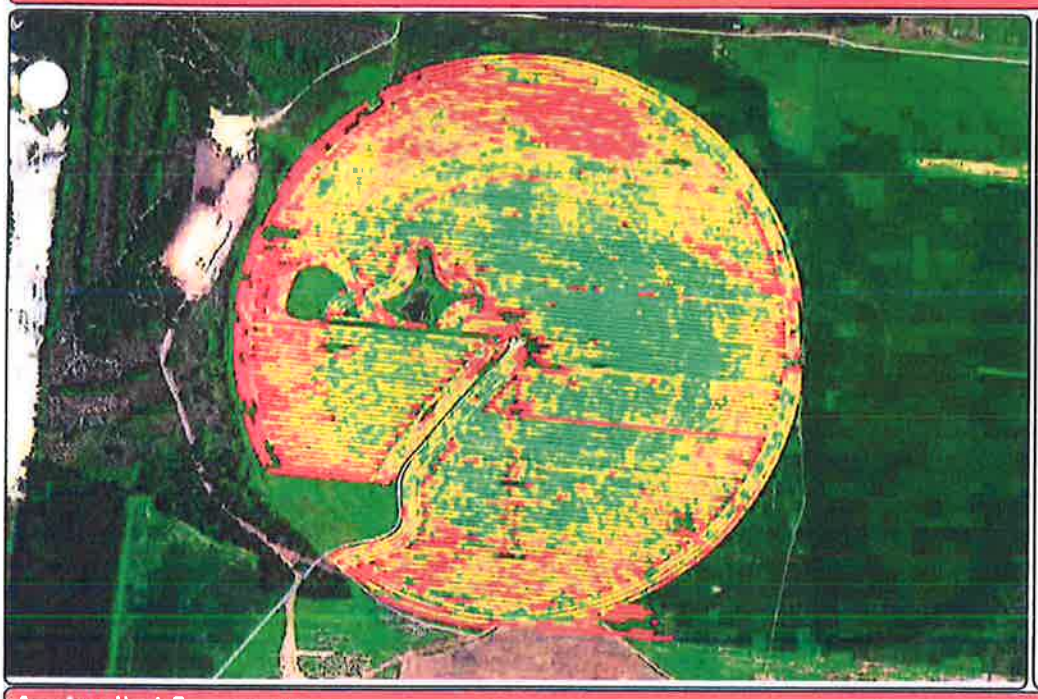
Grower : BALDWIN
Farm : Inland Bays app
Field : South irrg
Year : 2011
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 92.27 ac

Est. Amount : 13,473 lb
Avg. Rate : 146.01 lb/ac
Start Date : 9/12/2011
End Date : 9/12/2011
Working Time : 1.047 hr
Avg. Productivity : 88.16 ac/hr
GPS Count : 3768

Notes/Comments

Operator Signature and Date

Grain Harvest 2011 - IRRG N BK 39845(CORN)



Estimated Volume (Dry)
(bu/ac)

- 228.03 - 395.59 (12.87 ac)
- 209.16 - 228.03 (13.17 ac)
- 193.90 - 209.16 (13.24 ac)
- 176.57 - 193.90 (13.47 ac)
- 153.02 - 176.57 (13.71 ac)
- 111.23 - 153.02 (14.16 ac)
- 9.96 - 111.23 (15.18 ac)

As-Applied Summary

BALDWIN | INLDBYS 39845 | IRRG N BK 39845
IRM | Grain Harvest | CORN | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:ibirgnbk39845.sl	95.79	22.79	1,010,283	16,428	171.50	9/25/2011
Totals	95.79	22.79 Average	1,010,283	16,428	171.50 Average	9/25/2011

Operation Summary

Grower : BALDWIN

Farm : INLDBYS 39845

Field : IRRG N BK 39845

Year : 2011

Operation : Grain Harvest

Crop / Product : CORN

Op. Instance : Harvest - 1

Area : 95.79 ac

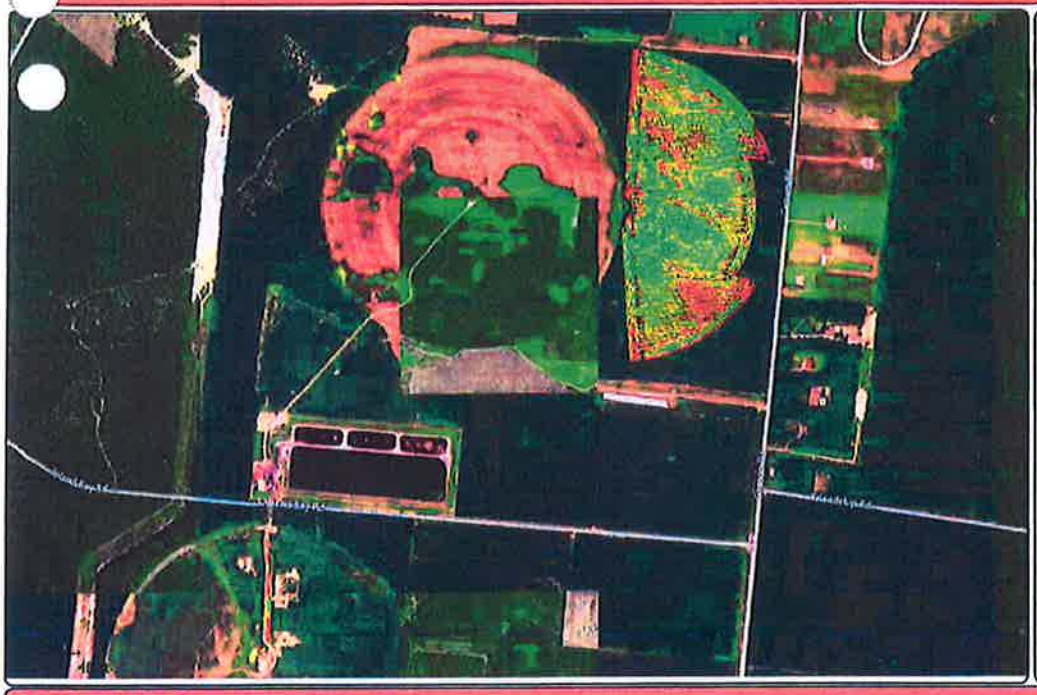
Avg. Yield : 171.50 bu/ac

Avg. Moisture : 22.79 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2011 - IRRG N FRT 39845(CORN)



Estimated Volume (Dry)
(bu/ac)

- 182.76 - 352.76 (6.529 ac)
- 161.23 - 182.76 (6.934 ac)
- 143.90 - 161.23 (7.080 ac)
- 125.72 - 143.90 (7.179 ac)
- 106.70 - 125.72 (7.264 ac)
- 80.32 - 106.70 (7.322 ac)
- 9.98 - 80.32 (7.254 ac)

As-Applied Summary

BALDWIN | INLDBYS 39845 | IRRG N FRT 39845
Grain Harvest | CORN | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:iblrgnfrt39845.sl	49.56	23.37	403,184	6,504.8	131.25	9/25/2011
Totals	49.56	23.37 Average	403,184	6,504.8	131.25 Average	9/25/2011

Operation Summary

Grower : BALDWIN

Farm : INLDBYS 39845

Field : IRRG N FRT 39845

Year : 2011

Operation : Grain Harvest

Crop / Product : CORN

Op. Instance : Harvest - 1

Area : 49.56 ac

Avg. Yield : 131.25 bu/ac

Avg. Moisture : 23.37 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2011 - IRRG S 39845(CORN)

Estimated Volume (Dry)
(bu/ac)

- 219.03 - 397.47 (10.29 ac)
- 203.90 - 219.03 (11.07 ac)
- 189.39 - 203.90 (11.35 ac)
- 171.23 - 189.39 (11.60 ac)
- 145.57 - 171.23 (11.92 ac)
- 100.13 - 145.57 (12.21 ac)
- 9.95 - 100.13 (12.75 ac)

As-Applied Summary

BALDWIN | INLDBYS 39845 | IRRG S 39845
2011 | Grain Harvest | CORN | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:iblrgs39845.shp	81.19	21.50	804,750	13,290	163.69	9/25/2011
Totals	81.19	21.50 Average	804,750	13,290	163.69 Average	9/25/2011

Operation Summary

Grower : BALDWIN

Farm : INLDBYS 39845

Field : IRRG S 39845

Year : 2011

Operation : Grain Harvest

Crop / Product : CORN

Op. Instance : Harvest - 1

Area : 81.19 ac

Avg. Yield : 163.69 bu/ac

Avg. Moisture : 21.50 %

Notes/Comments

Operator Signature and Date

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2010-2011 Planned Crop	2010-2011 Yield Goal	Previous Crop	Yield Goal Justification
6A	InLand Bays	48.1	Sandy Loam	No	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields
6B	InLand Bays	34.4	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6C	InLand Bays	36.4	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6D	InLand Bays	35.2	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6E	InLand Bays	23.3	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6F	InLand Bays	30.6	Sandy Loam	No	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields

Soil Test Results:

Laboratory: AgroLab
Results Report in: ppm/ac

Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
6A	InLand Bays	5.8	1.40	98	53	319	50
6B	InLand Bays	6.4	1.50	273	91	582	93
6C	InLand Bays	6.4	1.30	280	60	470	67
6D	InLand Bays	6.5	1.30	409	91	740	81
6E	InLand Bays	6.8	1.50	351	92	510	112
6F	InLand Bays	6.9	1.20	281	43	465	86

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime		Commercial Fertilizer Applications				
		Type	Rate	N	P	K	B	Mn
6A	InLand Bays	None		120/0	0/0	0/0	0/0	0/0
6B	InLand Bays	None		150	30	100	2	0
6C	InLand Bays	None		150	30	100	2	0
6D	InLand Bays	None		150	30	100	2	0
6E	InLand Bays	None		150	30	100	2	0
6F	InLand Bays	None		120/0	0/0	0/0	0/0	0/0

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2011-2012 Planned Crop	2011-2012 Yield Goal	Previous Crop	Yield Goal Justification
1	InLand Bays	30.1	Sandy Loam	no	Wheat/Soybeans	100/40	Field Corn	Historical Farm Yields
2A	InLand Bays	27.6	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2B	InLand Bays	32.3	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2C	InLand Bays	32.4	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2D	InLand Bays	27.9	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2E	InLand Bays	33.1	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
3	InLand Bays	28.5	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields

Soil Test Results:

Laboratory: AgroLab
Results Report in: ppm/ac

Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
1	InLand Bays	6.0	1.20	199	59	251	79
2A	InLand Bays	5.2	1.10	429	61	356	29
2B	InLand Bays	5.4	1.40	339	99	505	68
2C	InLand Bays	5.4	1.20	248	88	352	49
2D	InLand Bays	5.6	1.30	217	88	312	46
2E	InLand Bays	5.2	1.40	440	91	409	41
3	InLand Bays	5.1	1.90	281	121	325	41

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime Type	Lime Rate	Commercial Fertilizer Applications N	P	K	B	Mn
1	InLand Bays	None		100/0	0/0	0/0	0/0	0/0
2A	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2B	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2C	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2D	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2E	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
3	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2010-2011 Planned Crop	2010-2011 Yield Goal	Previous Crop	Yield Goal Justification
4A	InLand Bays	30	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
4B	InLand Bays	22.3	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
4C	InLand Bays	29.6	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
5A	InLand Bays	28.7	Sandy Loam	no	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields
5B	InLand Bays	12.8	Sandy Loam	no	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields

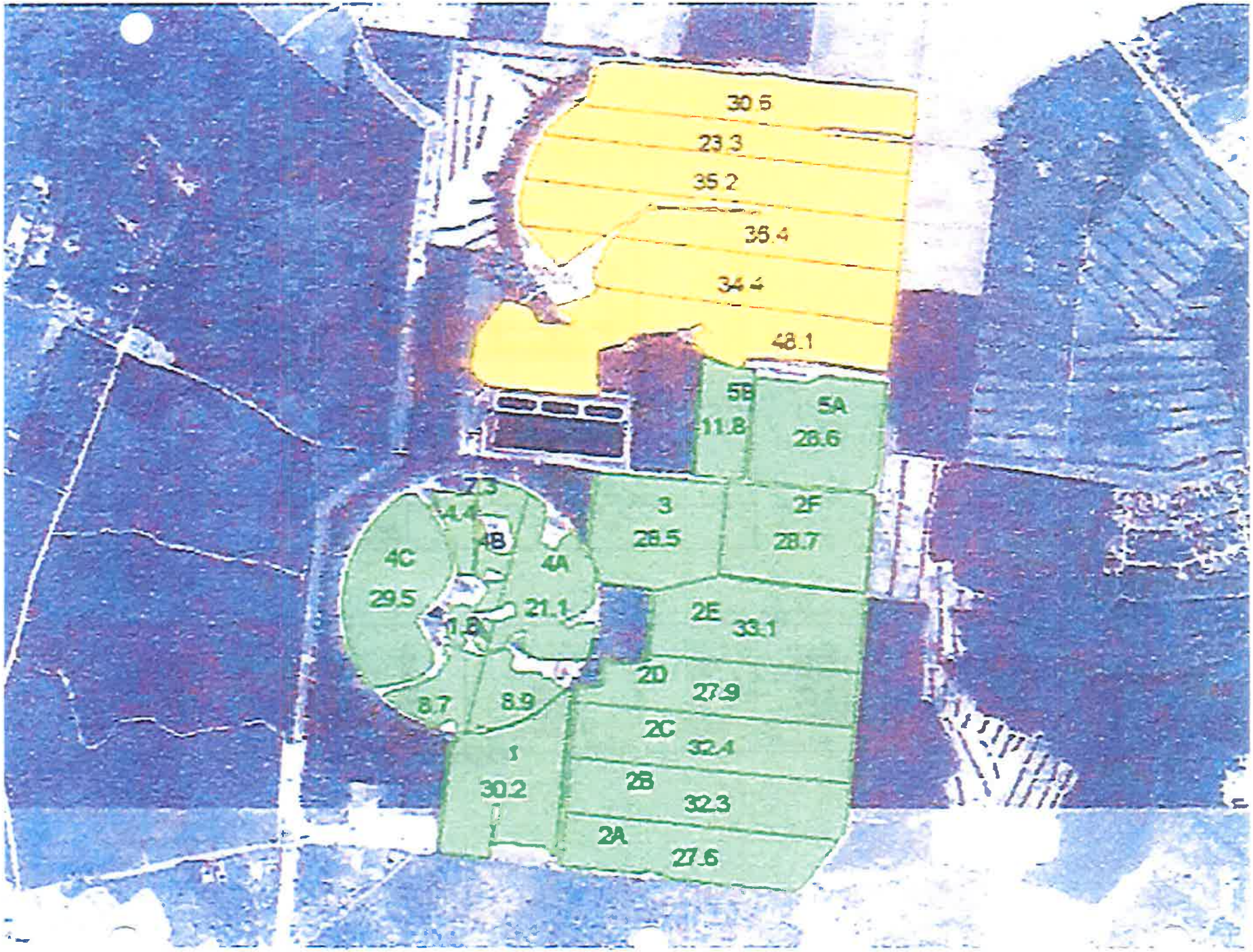
Soil Test Results:

Laboratory: AgroLab
Results Report in: ppm/ac

Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
4A	InLand Bays	6.4	1.60	183	61	504	81
4B	InLand Bays	6.2	2.00	152	55	586	99
4C	InLand Bays	6.0	1.40	119	41	291	78
5A	InLand Bays	6.0	1.40	473	91	708	40
5B	InLand Bays	4.4	2.60	70	56	153	57

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime Type	Lime Rate	Commercial Fertilizer Applications N	P	K	B	Mn
4A	InLand Bays	None		150	30	75	2	0
4B	InLand Bays	None		150	30	75	2	0
4C	InLand Bays	None		150	30	75	2	0
5A	InLand Bays	None		120/0	0/0	0/0	0/0	0/0
5B	InLand Bays	Hi Mag	2tn	120/0	0/0	0/0	0/0	0/0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23.3
35.2
35.4
34.4
48.1
5B
11.8
5A
28.6
3
28.5
2F
28.7
4C
29.5
4B
4A
21.1
2E
33.1
2D
27.9
8.7
8.9
2C
32.4
1
30.2
2B
32.3
2A
27.6

INLAND BAYS REGIONAL WASTEWATER FACILITY

LTS 5004-90-12

VEGETATIVE MANAGEMENT PLANS

2011-2015

FEBRUARY 2017

Inland Bays 7 YEAR CROP ROTATION

FARM BLOCKS	FIELDS	TOTAL TILLABLE ACRES	TOTAL WETTED ACRES	2014 SPRING	2014 FALL	2015 SPRING	2015 FALL	2015 SPRING	2016 FALL	2017 SPRING	2017 FALL	2018 SPRING	2019 FALL	2019 SPRING	2020 FALL	2020 SPRING	2021 FALL
A	NF	197.35	103.9	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY	CORN	WHEAT
	NB		52.09	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT
	SE		41.36	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY	CORN	WHEAT
B	SF	235.5	103.9	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY
	EHL		34.46	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY
	WHL		20.18	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY
	SHL		30.46	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY
	NHL		47.5	CORN	*BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOY BEAN	BARLEY	CORN	WHEAT	SOYBEAN	BARLY

Total	433.5	432.35

: Jamie Stafford [mailto:staffordfarms99@gmail.com]
Sent: Thursday, April 23, 2015 8:33 PM
To: Michael Winters
Subject: 2015 Inland Bay Vegetation Plan for Soybeans

2015 Inland Bay Vegetation Plan for Soybeans

Everything on the north side of the driveway will be put in soybeans. Gypsum was spread first of April. Potash will be spread at the rate of 100lbs. to the acre. Soybeans will be planted around the last week of May. We will be spraying Canopy and Round-up. Will come back a month after beans are planted to spray Round-up again.

From: Jamie Stafford [mailto:staffordfarms99@gmail.com]
Sent: Thursday, April 23, 2015 8:31 PM
To: Michael Winters
Subject: 2015 Inland Bay Vegetation Plan for Corn

2015 Inland Bay Vegetation Plan for Corn

All Fields on the south side of driveway will be planted in corn. The Gypsum was spread first of April. Manure will be spread at a 2 ton rate then chisel plowed in. The ground will be worked making it ready to plant. Planting around May 1st will be sprayed after planted. Chemicals will be 1 qt of Princep 1 qt of Atrazine and a oz of sharpen. A PSNT test will be taken when corn is knee high to see how much Nitrogen it needs. The weeds will be looked at, at this time to see if we need to spray Halex. Fungicide will be flown on at tassel time.

From: Michael Winters
Date:01/30/2015 2:45 PM (GMT-05:00)
To: Heather Sheridan
Subject: vegetative management plan

Hi Heather,

Met with J. Stafford today. We discussed the need for a Vegetative Management Plan, something I could submit to DNREC and have for county records. Gordy's proposed crop rotation plan seemed to be a good starting point. With the south side corn and the north soybeans. Manure would be used for the south side corn. A Nutrient plan would be submitted at planting time detailing the manure Lbs/acre per year ,for the upcoming 2 -3 years. Not proposed to be over 100 lbs /acre a year. This nutrient plan would be based on soil samples. He will work (till) the entire farm 18" and then deep till 24" to 36" the problem soils and ponded areas. He says he has a problem with Wheat as a cover. And claims the way he plants Barley has done well. Wants an opportunity to "show his work" in that area. I told him we would consider it. He wants to deposit the manure on a couple spots. Edge of East Hettie field off N. stop and away from buffer off Cannon Rd and South Hettie field off the edge of the W. dirt road but not in line of the end gun. No monitoring wells are close to either location. Mr. Stafford wants to start working the south field the 2nd or 3rd week of april. The north side a few weeks later.

Michael Winters

From: Jamie Stafford <staffordfarms99@gmail.com>
Sent: Thursday, April 23, 2015 8:33 PM
To: Michael Winters
Subject: 2015 Inland Bay Vegetation Plan for Soybeans

2015 Inland Bay Vegetation Plan for Soybeans

Everything on the north side of the driveway will be put in soybeans. Gypsum was spread first of April. Potash will be spread at the rate of 100lbs. to the acre. Soybeans will be planted around the last week of May. We will be spraying Canopy and Round-up. Will come back a month after beans are planted to spray Round-up again.

JAMIE STAFFORD 2015

FS SOYBEANS 2

APPLY	AMT/ACRE	METHOD
Spring		
0-0-60 (POTASH)	200 pounds	BROADCAST

THE ABOVE MATERIAL SHOULD BE APPLIED AT LEAST 30 DAYS PRIOR TO PLANTING.

6% MANGANESE - FOLIAR	0.5 gallons	FOLIAR SPRAY

MAKE THIS FOLIAR APPLICATION WHEN THE BEANS ARE 12" TO 18" HIGH AND LATE IN THE DAY WHEN TEMPERATURES ARE COOLER. ADDING A PINT PER ACRE OF 30% NITROGEN WILL ENHANCE UPTAKE. IF APPLYING WITH CHEMICALS CHECK WITH YOUR SUPPLIER FOR ADVICE ON COMPATABILITY.

UNITS: AVERAGE LBS/ACRE

K	Mn
120.00	0.32

HORNEY **Watershed: 0079**

	CROP	TRACT ID	ACRES	GOAL	LIME	COST/AC
70	SOYBEANS (FS)	0603019608	9	50 bu	None	$55.50

INLAND BAYS **Watershed: 35,36**

	CROP	TRACT ID	ACRES	GOAL	LIME	COST/AC
NORTH	SOYBEANS (FS)		105.7	50 bu	None	$55.50
NORTH BURTC	SOYBEANS (FS)		53.2	50 bu	None	$55.50
SOUTH BURTO	SOYBEANS (FS)		37	50 bu	None	$55.50
BURTON DRY	SOYBEANS (FS)		41.5	50 bu	None	$55.50

JAMIE STAFFORD

2015

Recommendation Summary

WOLFE NECK

Watershed: 37

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
5-C	CORN	CORN 3	15.5	150 bu	1 HI MAG	$112.74
7	CORN	CORN 4	37.3	150 bu	None	$81.49
8	CORN	CORN 4	16.9	150 bu	None	$81.49

INLAND BAYS

Watershed: 35,36

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
NORTH	SOYBEANS (FS)	FS SOYBEANS 2	105.7	50 bu	None	$55.50
SOUTH	CORN (IRR)	IRRIGATED CORN 4	105.3	230 bu	None	$110.99
NORTH BURTO	SOYBEANS (FS)	FS SOYBEANS 2	53.2	50 bu	None	$55.50
SOUTH BURTO	SOYBEANS (FS)	FS SOYBEANS 2	37	50 bu	None	$55.50
BURTON DRY	SOYBEANS (FS)	FS SOYBEANS 2	41.5	50 bu	None	$55.50
PLANT	SOYBEANS (FS)	FS SOYBEANS 1	17.5	50 bu	1 HI MAG	$100.00
HETTIE LINGO	CORN (IRR)	IRRIGATED CORN 4	210.1	230 bu	None	$110.99

WARREN

Watershed: 37

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
550	CORN	CORN 3	29	150 bu	None	$62.74
551	CORN	CORN 3	7.6	150 bu	1 HI MAG	$112.74
552	CORN (IRR)	IRRIGATED CORN 2	13.7	230 bu	None	$104.36
553	CORN (IRR)	IRRIGATED CORN 2	73.1	230 bu	None	$104.36

HOLLAND

Watershed: 37

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
560	WHEAT	WHEAT 2	73.7	85 bu	None	$113.68
560	SOYBEANS (DC)	NO FERTILIZER REQUIRED	73.7	40 bu	None	$0.00
561	WHEAT	WHEAT 2	54.9	85 bu	None	$113.68
561	SOYBEANS (DC)	NO FERTILIZER REQUIRED	54.9	40 bu	None	$0.00

CORKEL

Watershed: 23

	CROP	RECOMMENDATION	ACRES	GOAL	LIME	COST/AC
600	CORN	CORN 4	17.4	150 bu	1 HI MAG	$131.49
601	CORN	CORN 4	18.3	150 bu	1 HI MAG	$131.49
602	CORN	CORN 4	26.8	150 bu	1.5 HI MAG	$156.49

JAMIE STAFFORD

2015

IRRIGATED CORN 4

APPLY	Spring	AMT/ACRE	METHOD
GYPSUM		500 pounds	BROADCAST

THE ABOVE MATERIAL SHOULD BE APPLIED AT LEAST 30 DAYS PRIOR TO PLANTING.

21-0-0 (AMMONIUM SULFATE)	150 pounds	BROADCAST
0-0-60 (POTASH)	150 pounds	BROADCAST

THE ABOVE MATERIALS SHOULD BE BLENDED AND APPLIED AT THE RATE OF 300 LBS/ACRE JUST PRIOR TO PLANTING.

MANURE (AVG)	3 tons	48 HR INCORP

THE ABOVE MATERIAL SHOULD BE APPLIED JUST PRIOR TO PLANTING.

NITROGEN CREDIT	30 pounds

THE ABOVE CREDIT IS TO ACCOUNT FOR NITROGEN CONTRIBUTION VIA WASTEWATER APPLICATION DURING THE GROWING SEASON.

30% NITROGEN	21 gallons	SIDEDRESS

UTILIZING A PRE SIDEDRESS NITROGEN TEST (PSNT) WHEN CORN IS 8-12" TALL WILL HELP DETERMINE ACTUAL NITROGEN REQUIREMENTS. PLEASE CONTACT US REGARDING SAMPLING.

SPLITTING THIS APPLICATION WITH HALF BEING APPLIED AT V5 AND THE REMAINDER BEING APPLIED AT V12 WOULD BE BENEFICIAL.

UNITS: AVERAGE LBS/ACRE

N	P	K	S	Ca
238.78	201.66	290.70	116.00	105.00

INLAND BAYS **Watershed: 35,36**

	CROP	TRACT ID	ACRES	GOAL	LIME	COST/AC
SOUTH	CORN (IRR)		105.3	230 bu	None	$110.99
HETTIE LINGO	CORN (IRR)		210.1	230 bu	None	$110.99

03/19/2015

Soybeans 2015 Inland Bays

In the spring applied gypsum at 500lbs per acre. Chisel plowed around June 1st. Spread 60lbs of Potash June 5th. Worked the ground and planted the beans June 10th. Soybeans are going to need to be sprayed again but not at this time. When they do we would be spraying round-up.

AgroLab

Serving Agriculture and Soil Fertility Professionals

Account No. : 83

Manure Analysis Report

STAFFORD, JAMIE
6241 TODD RD
FEDERALSBURG MD 21632

Invoice No. : 1085602
Date Received : 03/27/2015
Date Reported : 03/30/2015

Lab No. : 3476

Results For : JAMIE STAFFORD
Sample ID : VINCES
POULTRY

	Analysis Dry Basis	Analysis As Is Basis	Lbs / Ton Dry Basis	Lbs / Ton As Is Basis	Lbs / Ton Available First Year
Organic N, % N	3.03	2.39	60.6	47.7	26.2
Ammonium, % N	0.330	0.2600	6.6	5.2	4.9
Nitrate, % N	0.002	0.0020	0.0	0.0	0.0
Total N (TKN), % N	3.36	2.65	67.2	52.9	31.2
Phosphorus, % P_2O_5	3.99	3.14	79.7	62.8	59.6
Potassium, % K_2O	3.70	2.91	74.0	58.3	55.4
Sulfur, % S	1.10	0.87	22.1	17.4	7.0
Calcium, % Ca	3.27	2.57	65.3	51.4	36.0
Magnesium, % Mg	0.80	0.63	16.0	12.6	8.8
Sodium, % Na	1.16	0.91	23.2	18.3	18.3
Sodium Adsorption Ratio (SAR)	14.87				
Zinc, ppm Zn	818.7	644.6	1.6	1.3	0.9
Iron, ppm Fe	922.6	726.4	1.8	1.5	1.0
Manganese, ppm Mn	619.9	488.0	1.2	1.0	0.7
Copper, ppm Cu	491.7	387.1	1.0	0.5	0.8
Aluminum, ppm Al	452.2	356.0	0.9	0.7	0.5
Boron, ppm B	42.0	33.1	0.1	0.1	0.1
pH	7.8				
Moisture, %	21.27				
Dry Matter (TS), %	78.73				

Note: The available first year Ammonium-N is calculated based on maximum availability, or incorporation within 24 hours. Advise a nutrient consultant for adjustments beyond 24 hr incorporation.

Reviewed By : W.R. Rohrer - AgroLab, Inc. 3/30/2015 Copy : 1

Bus: 302-566-6094
Fax: 888-412-0873
admin@agrolab.us
www.agrolab.us
101 Clukey Dr.
Harrington, DE 19952

Corn 2015 Inland Bays

March 15, 2015 Spread Gypsum 500lbs per acre. Around April 20th we spread 2 tons of chicken manure per acre then chisel plowed and worked it in. Planted & sprayed the corn May 5th. We then sprayed Atrazine and princep both at 1qt per acre. Around June 10th sprayed Halex GT 2qts per acre. June 5th a PSNT test was done by Keen Consultant. It came back as we needed to apply ? (see attachment) Lbs of nitrogen per acre.

Manure applied South Side only
No Manure applied at IBAYS 2016

Field Summary Report

'rower : BALDWIN
Farm : Inidbys

<1> (2011130172)	30.84	10.77	55,091	983.78	31.89	N/A	N/A	7/7/2014
Totals	**30.84**	**10.77**	**55,091**	**983.78**	**31.89**	**N/A**	**N/A**	**7/7/2014**
		Average			Average			

Field Summary Report

Grower :	**BALDWIN**
Farm :	**Inidbys**

Field:	North fields
Year:	2014
Operation:	Grain Harvest
Product:	Corn - CORN
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Date Logged
14/09/30-13:16:34 (116807)	28.81	18.34	164,555	2,839.7	98.57	9/30/2014
14/10/01-08:38:18 (116807)	0.00	N/A	N/A	N/A	N/A	10/1/2014
14/10/01-08:51:44 (116807)	58.31	17.78	356,634	6,196.4	106.26	10/1/2014
14/10/01-17:16:15 (116807)	5.647	19.57	24,419	415.03	73.50	10/1/2014
14/10/02-08:49:44 (116807)	57.98	19.56	228,940	3,892.0	67.13	10/2/2014
14/10/02-16:57:21 (116807)	1.227	17.37	5,448.3	95.14	77.56	10/2/2014
14/10/03-08:49:20 (116807)	74.04	16.84	398,221	6,998.6	94.52	10/3/2014
14/10/03-16:53:24 (116807)	19.04	16.88	121,290	2,130.5	111.88	10/3/2014
Totals	**245.06**	**17.95**	**1,299,509**	**22,567**	**92.09**	**9/30/2014 - 10/3/2014**
		Average			Average	

Field:	South fields
Year:	2014
Operation:	Grain Harvest
Product:	Corn - CORN
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Actual Weight (Wet) lb	Error %	Date Logged
14/09/19-06:49:33 (116807)	60.45	18.11	296,093	5,124.2	84.77	N/A	N/A	9/19/2014
14/09/22-18:16:08 (116807)	47.17	17.76	318,524	5,535.6	117.35	N/A	N/A	9/22/2014
14/09/23-15:26:11 (116807)	55.02	18.11	380,023	6,576.4	119.52	N/A	N/A	9/23/2014
14/09/24-13:13:19 (116807)	12.42	16.17	52,884	936.88	75.44	N/A	N/A	9/24/2014
14/09/27-09:32:34 (116807)	70.23	16.80	342,456	6,021.5	85.74	N/A	N/A	9/27/2014
14/09/29-14:55:03 (116807)	34.83	17.96	235,593	4,084.4	117.26	N/A	N/A	9/29/2014
14/09/30-12:21:44 (116807)	0.00	N/A	N/A	N/A	N/A	N/A	N/A	9/30/2014
14/09/30-12:23:55 (116807)	6.795	15.89	38,696	687.84	101.23	N/A	N/A	9/30/2014
CAL A (116807)	0.436	18.29	3,254.3	56.20	129.04	3,235.9	0.569 %	9/23/2014
CAL B (116807)	0.458	18.20	3,322.0	57.42	125.41	3,321.9	0.0024 %	9/23/2014
Totals	**287.81**	**17.58**	**1,670,847**	**29,081**	**101.04**			**9/19/2014 - 9/30/2014**
		Average			Average			

Field:	South fields
Year:	2014
Operation:	Grain Harvest
Product:	Rye - Annual - RYE
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Actual Weight (Wet) lb	Error %	Date Logged

Sayre Baldwin 2013 Fert Recs.

Inlandbays	250	Corn				
Starter						
	N	P	K	S	B	ZN
Starter Analysis	18	8	0	1.2	0.1	0.2
Lb plant food/acre	45	20	0	3	0.25	0.5
Starter Rate	250					

Strip Till						
	N	P	K	S	B	ZN
Broadcast Analysis	13	0	18	3	0	0
Lb plant food/acre	92.69	0	128	21.39	0	0
Broadcast Rate	713	Variable Rate Avg.				

Side Dress						
Irrigation	0	0	0	0	0	
	N	P	K	S	B	ZN
Broadcast Analysis	0	0	0	0	0	0
Lb plant food/acre	0	0	0	0	0	0
Broadcast Rate	0					
Dry land	NONE					

							Ac
Dry land Corn total	137.7	20	128	24.39	0.25	0.5	
Irrigated Corn Total	137.7	20	128	24.39	0.25	0.5	0

INLANDBYS	70	Rye				
1st Shot						
	N	P	K	S	B	ZN
Broadcast Analysis	9	0	12	4	0.1	0
Lb plant food/acre	45	0	60	20	0.5	0
Broadcast Rate	500					

INLANDBYS	70	Rye				
2nd Shot						
	N	P	K	S	B	ZN
Broadcast Analysis	26	0	0	2.4	0	0
Lb plant food/acre	59.8	0	0	5.52	0	0
Broadcast Rate	230	22gal/ac				

INLANDBYS		Limas				
Lima Fert						
	N	P	K	S	B	ZN
Starter Analysis	15	10	0		0.2	0.3
Lb plant food/acre	34.5	23	0	0	0.46	0.69
Broadcast Rate	230	22gal/ac				

INLANDBYS		Limas				
Lima Fert						
	N	P	K	S	B	ZN
Strip Till Analysis	8	0	20	2.4	0	0
Lb plant food/acre	44	0	110	13.2	0	0
Broadcast Rate	550					

Fertilizing Prescription (Liquid) 2013 - 1(CORN)

Target Rate(Liquid)
(gal(US)/ac)

- 70.00(86.11 ac)
- 67.50(89.74 ac)
- 65.00(91.87 ac)
- 62.50(88.32 ac)
- 60.00(84.49 ac)
- 57.50(87.23 ac)
- 55.00(86.70 ac)

As-Applied Summary

Dataset	Area ac	Total Amount gal(US)	Avg. Rate gal(US)/ac	Minimum Rate gal(US)/ac	Maximum Rate gal(US)/ac	Date Created
10:3/20/2013	613.18	38,350	62.54	55.00	70.00	3/20/2013
Totals	613.18	38,350	62.54 Average	55.00 Minimum	70.00 Maximum	3/20/2013

Operation Summary

Grower : Baldwin

Farm : Inldbys

Field : 1

Year : 2013

Operation : Fertilizing Prescription (Liquid)

Crop / Product : CORN

Op. Instance : Instance - 1

Area : 613.18 ac

Total Amount : 38,350 gal(US)

Avg. Rate : 62.54 gal(US)/ac

Minimum Rate : 55.00 gal(US)/ac

Maximum Rate : 70.00 gal(US)/ac

Count : 2896

Notes/Comments

Operator Signature and Date

Planting 2013 - North fields

Product - Name
- 210-44T2PRIB (46.41 ac)
- 212-865WTXRIB (17.56 ac)
- Dkc60-63 (6.04 ac)
- Dkc62-58 (78.73 ac)
- RL7497YHB (33.28 ac)

As-Applied Summary

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.NORTH_FI	0.408	13.24	32.46	5/4/2013	5/4/2013
R0:8209943.NORTH_FI	2.632	85.03	32.31	5/5/2013	5/5/2013
R0:8209943.NORTH_FI	4.032	130.15	32.28	5/4/2013	5/4/2013
R0:8209943.NORTH_FI	5.566	178.94	32.15	5/4/2013	5/4/2013
R0:8209943.NORTH_FI	8.124	264.14	32.52	5/4/2013	5/4/2013
R0:8209943.NORTH_FI	9.091	295.84	32.54	5/5/2013	5/5/2013
R0:8209943.NORTH_FI	16.56	536.69	32.41	5/5/2013	5/5/2013
Totals	182.02	5,697.8	31.30 Average	4/26/2013 Minimum	5/5/2013 Maximum

Operation Summary

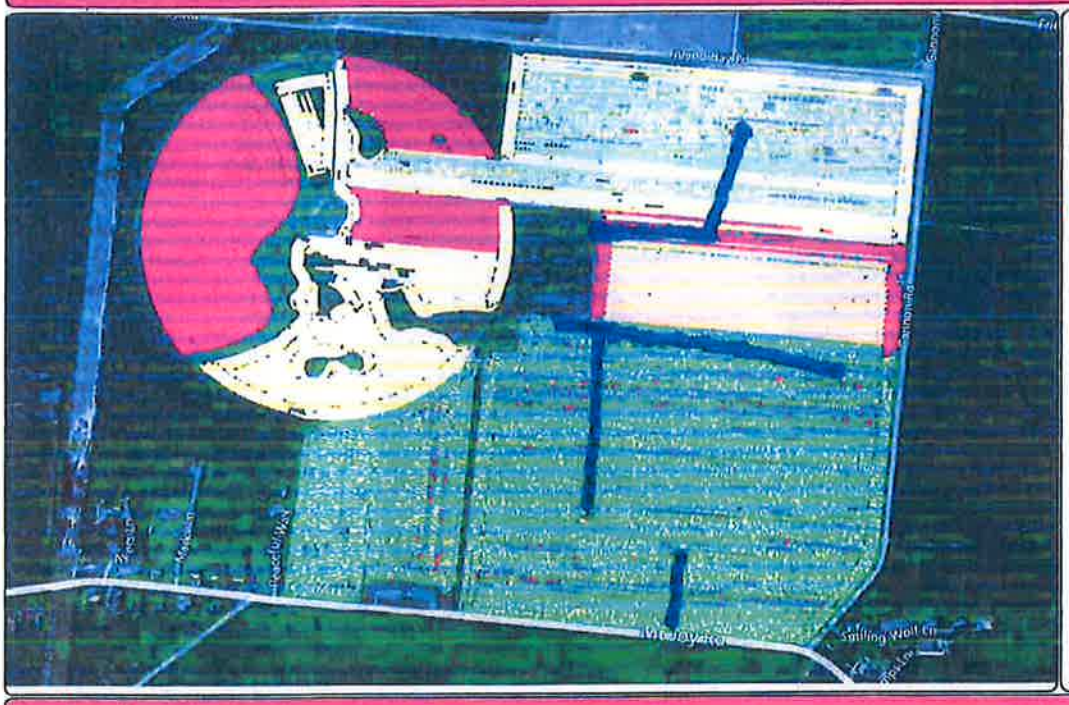
Grower : BALDWIN
Farm : Inldbys
Field : North fields
Year : 2013
Operation : Planting
Crop / Product : Multiple
Op. Instance : Planting - 1
Area : 182.02 ac

Est. Amount : 5,697.8 ksds
Avg. Rate : 31.30 ksds/ac
Start Date : 4/26/2013
End Date : 5/5/2013
Working Time : 15.92 hr
Avg. Productivity : 11.43 ac/hr
GPS Count : 58188

Notes/Comments

Operator Signature and Date

Planting 2013 - South fields



Product - Name	
6831RHXTRIB	(140.83 ac)
Dkc53-56	(42.73 ac)
Dkc60-63	(12.71 ac)
Dkc62-58	(43.27 ac)
RL6991HB	(22.03 ac)
RL7497YHB	(49.72 ac)

As-Applied Summary

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.SOUTH_FI	1.390	32.72	23.54	4/23/2013	4/23/2013
R0:8209943.SOUTH_FI	0.750	20.85	27.81	4/22/2013	4/22/2013
R0:8209943.SOUTH_FI	1.693	48.99	28.94	4/23/2013	4/23/2013
R0:8209943.SOUTH_FI	2.713	78.83	29.05	4/23/2013	4/23/2013
R0:8209943.SOUTH_FI	0.985	27.35	27.77	4/22/2013	4/22/2013
R0:8209943.SOUTH_FI	2.823	66.74	23.64	4/23/2013	4/23/2013
R0:8209943.SOUTH_FI	0.094	2.201	23.33	4/24/2013	4/24/2013
Totals	311.28	8,786.4	28.23 Average	4/22/2013 Minimum	5/7/2013 Maximum

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : South fields
Year : 2013
Operation : Planting
Crop / Product : Multiple
Op. Instance : Planting - 1
Area : 311.28 ac

Est. Amount : 8,786.4 ksds
Avg. Rate : 28.23 ksds/ac
Start Date : 4/22/2013
End Date : 5/7/2013
Working Time : 26.89 hr
Avg. Productivity : 11.58 ac/hr
GPS Count : 98268

Notes/Comments

Operator Signature and Date

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	285.85 ac	
Cover crop Amount	28584.76 lb	
Application Start Time	09/05/2012 7:49 AM	
Application End Time	11/10/2012 8:58 AM	
Soil Conditions		
Soil Temperature	78 ° F	
Soil Moisture Level	Optimal	
Soil Condition	Medium	
Crop Residue Level	Medium	
Tillage Type	Conventional	
Environmental		
Air Temperature	74 ° F	
Wind Speed	8 mph	
Wind Direction (From)	SW	
Sky Condition	Partly Cloudy	
Humidity	91 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

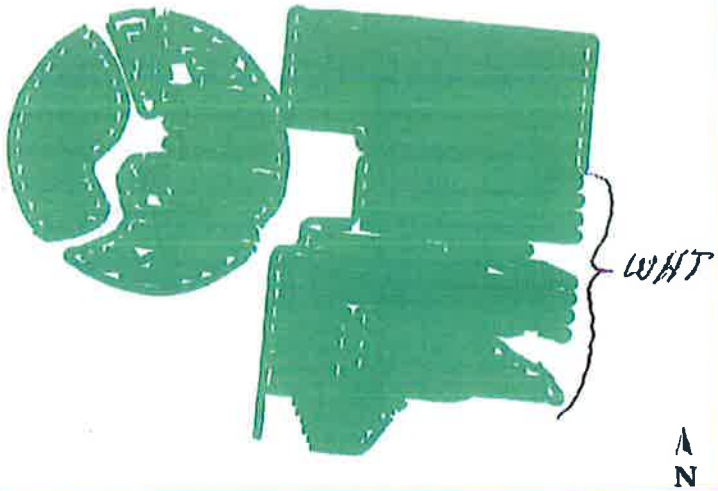
INTEGRA
APPLICATION REPORT

Grower	Field	
Baldwin 17882 potato lane,Bridgeville, De. 302 236 9879	Field: South fields County: Township: Range: Section:	Farm: Inland Bays Description:

Equipment Configuration	Application	Application Date/Time
Vehicle: GVM DD spreader Implement: GVM DD spreader	Timing: Post Harvest Placement: Surface Broadcast	Start Time: 09/05/2012 7:49 AM End Time: 11/10/2012 8:58 AM

Product: **Cover crop**
Applied Area: **285.85 ac**

Product Coverage



Crop	Restrictions	Target Pests
Crop: Rye + WHT Growth Stage: Germination	Crop Rotation Restrictions: No Restricted Entry Interval (REI): Not Observed	Cover crop Not Observed Not Observed Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
Cover crop	Dan		No	28584.76 lb	100.00 lb/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

Seeding 2012 - North fields(Cover crop)

Rate Applied(Mass)
(lb/ac)

- 102.58 - 472.93 (25.29 ac)
- 100.72 - 102.58 (38.12 ac)
- 99.87 - 100.72 (38.67 ac)
- 99.14 - 99.87 (38.41 ac)
- 98.24 - 99.14 (38.08 ac)
- 95.56 - 98.24 (37.20 ac)
- 0.00 - 95.56 (32.69 ac)

As-Applied Summary

BALDWIN | Inland Bays | North fields
R1 | Seeding | Cover crop | Seeding - 1

Dataset	Count	Area ac	Length ft
R1:	7328	248.46	144,305
Totals	7328	248.46	144,305

Operation Summary

Grower : BALDWIN
Farm : Inland Bays
Field : North fields
Year : 2012
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 248.46 ac

Est. Amount : 24,441 lb
Avg. Rate : 98.37 lb/ac
Start Date : 9/6/2012
End Date : 9/11/2012
Working Time : 2.036 hr
Avg. Productivity : 122.06 ac/hr
GPS Count : 7328

Notes/Comments

RYE SEED

Operator Signature and Date

Seeding 2012 - South side(Cover crop)

Rate Applied(Mass)
(lb/ac)

103.44 - 1,050.51	(17.81 ac)
100.96 - 103.44	(26.06 ac)
99.78 - 100.96	(27.06 ac)
98.68 - 99.78	(27.12 ac)
97.08 - 98.68	(26.36 ac)
91.30 - 97.08	(24.16 ac)
0.00 - 91.30	(20.95 ac)

As-Applied Summary

BALDWIN | Inldbys | South side
2012 | Seeding | Cover crop | Seeding - 2

Dataset	Count	Area ac	Length ft
R1:	5252	169.51	98,454
Totals	5252	169.51	98,454

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : South side
Year : 2012
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 2
Area : 169.51 ac

Est. Amount : 16,499 lb
Avg. Rate : 97.33 lb/ac
Start Date : 9/5/2012
End Date : 9/11/2012
Working Time : 1.459 hr
Avg. Productivity : 116.19 ac/hr
GPS Count : 5252

Notes/Comments

RYE SEED

Operator Signature and Date

Grain Harvest 2012 - North dry(SOYBEANS)

Estimated Volume (Dry)
(bu/ac)

- 30.81 - 230.69 (1.900 ac)
- 27.26 - 30.81 (2.060 ac)
- 24.60 - 27.26 (2.156 ac)
- 22.13 - 24.60 (2.177 ac)
- 19.28 - 22.13 (2.215 ac)
- 14.18 - 19.28 (2.315 ac)
- 5.14 - 14.18 (2.540 ac)

As-Applied Summary

BALDWIN | Inldbys | North dry
2012 | Grain Harvest | SOYBEANS | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	15.36	14.42	20,992	344.04	22.39	10/25/2012
Totals	15.36	14.42 Average	20,992	344.04	22.39 Average	10/25/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North dry

Year : 2012

Operation : Grain Harvest

Crop / Product : SOYBEANS

Area : 15.36 ac

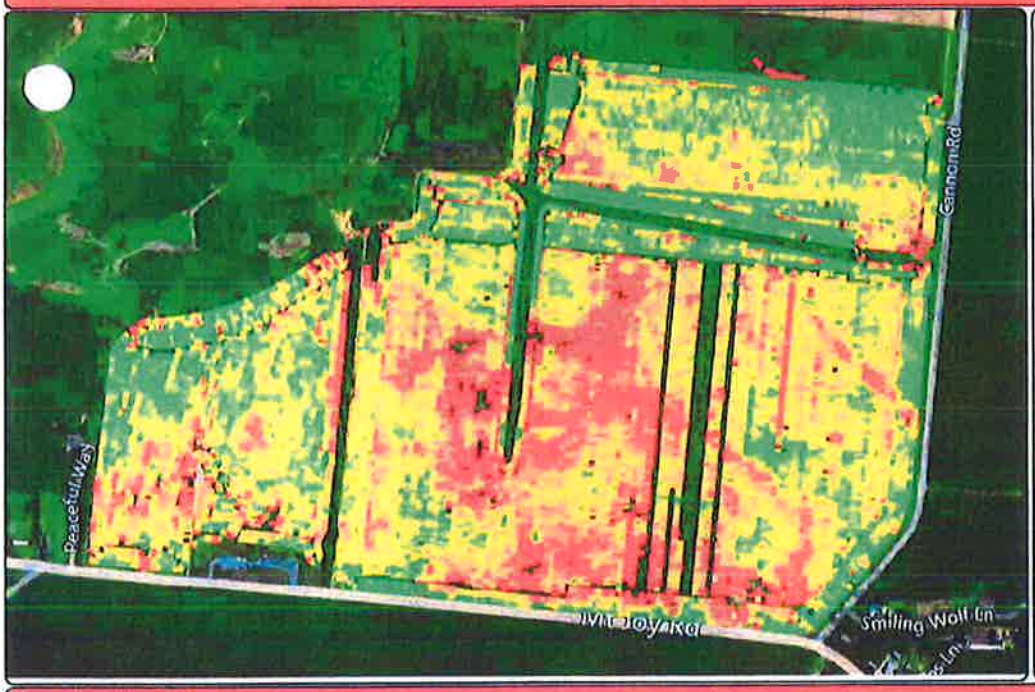
Avg. Yield : 22.39 bu/ac

Avg. Moisture : 14.42 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2012 - South side(SOYBEANS)



Estimated Volume (Dry)
(bu/ac)

- 31.57 - 225.64 (21.78 ac)
- 26.91 - 31.57 (22.39 ac)
- 23.44 - 26.91 (22.37 ac)
- 20.41 - 23.44 (22.17 ac)
- 17.22 - 20.41 (21.89 ac)
- 13.15 - 17.22 (21.88 ac)
- 5.00 - 13.15 (21.96 ac)

As-Applied Summary

BALDWIN | Inldbys | South side
2012 | Grain Harvest | SOYBEANS | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	108.27	15.19	150,240	2,438.6	22.52	9/27/2012
L0:<4>	46.17	16.09	64,822	1,043.9	22.61	10/25/2012
Totals	154.44	15.46 Average	215,062	3,482.5	22.55 Average	9/27/2012 - 10/25/20

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South side

Year : 2012

Operation : Grain Harvest

Crop / Product : SOYBEANS

Area : 154.44 ac

Avg. Yield : 22.55 bu/ac

Avg. Moisture : 15.46 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2012 - North (CORN)

Estimated Volume (Dry)
(bu/ac)

- 169.63 - 394.87 (25.81 ac)
- 156.12 - 169.63 (29.82 ac)
- 145.84 - 156.12 (31.63 ac)
- 135.17 - 145.84 (33.11 ac)
- 116.05 - 135.17 (34.23 ac)
- 63.85 - 116.05 (34.78 ac)
- 5.01 - 63.85 (36.30 ac)

As-Applied Summary

BALDWIN | Inldbys | North irg
2012 | Grain Harvest | CORN | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	225.67	20.35	1,660,570	27,891	123.59	8/21/2012
Totals	225.67	20.35 Average	1,660,570	27,891	123.59 Average	8/21/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North irg

Year : 2012

Operation : Grain Harvest

Crop / Product : CORN

Area : 225.67 ac

Avg. Yield : 123.59 bu/ac

Avg. Moisture : 20.35 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2012 - South side(CORN)

Estimated Volume (Dry)
(bu/ac)

- 175.97 - 396.61 (17.77 ac)
- 160.36 - 175.97 (20.48 ac)
- 145.55 - 160.36 (21.79 ac)
- 128.45 - 145.55 (22.95 ac)
- 111.53 - 128.45 (23.94 ac)
- 87.12 - 111.53 (24.23 ac)
- 5.02 - 87.12 (23.86 ac)

As-Applied Summary

BALDWIN | Inldbys | South side
2012 | Grain Harvest | CORN | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	155.03	21.95	1,213,769	20,034	129.23	8/22/2012
Totals	155.03	21.95 Average	1,213,769	20,034	129.23 Average	8/22/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South side

Year : 2012

Operation : Grain Harvest

Crop / Product : CORN

Area : 155.03 ac

Avg. Yield : 129.23 bu/ac

Avg. Moisture : 21.95 %

Notes/Comments

Operator Signature and Date

ALLEN CHORMAN & SON, INC.
A COMPLETE AERIAL APPLICATION SERVICE

Allen Chorman & Son, Inc. ~ Billing

Allen Chorman & Son, Inc.
30475 E Mill Rn
Milton, Delaware 19968

#4510
10/13/12

Bill To
Sayre Baldwin, Inc. *17882 Potatoe Lane* *Bridgeville, Delaware 19933*

Date	Invoice #
10/3/2012	*35281*

App Date	Type of App	Crop	Infestation	Applicator
8/28/2012	*AERIAL*	*Soy Beans*	*Fungicide*	*BT*

Wind & Humidity	*SW5 - M*		Time & Temperature	*10:00 am - 81 dgrs*

EPA Number	Description	Acres Treated	Price per Acre	Amount
18	*2.5 oz. Steward*		*0.00*	*0.00*
05905-50074	*8 oz. Penetrator Plus*		*0.00*	*0.00*
CC	*Chemicals furnished by customer*		*0.00*	*0.00*
AF	*Application Fee* *Inland Bays*	*170*	*10.50*	*1,785.00*

Please Remit to:30475 E MILL RN, MILTON, DE 19968
This is our new address as of June 2003.

Total *$1,785.00*

30475 E MILL RN • MILTON, DE 19968 • 302-684-2770/Fax 302-684-2766
Greenwood 302-349-5055

ALLEN CHORMAN & SON, INC.

A COMPLETE AERIAL APPLICATION SERVICE

Allen Chorman & Son, Inc. ~ Billing

Allen Chorman & Son, Inc.
30475 E Mill Rn
Milton, Delaware 19968

Bill To
Sayre Baldwin, Inc. *17882 Potatoe Lane* *Bridgeville, Delaware 19933*

Date	Invoice #
8/24/2012	*35013*

App Date	Type of App	Crop	Infestation	Applicator
7/25/2012	*AERIAL*	*Soy Beans*	*Disease*	*BT*

Wind & Humidity	*S3 - H*	Time & Temperature	*8:00 am - 75 dgrs*

EPA Number	Description	Acres Treated	Price per Acre	Amount
279-3313	*6.4 oz. Brigade 2 EC*		*0.00*	*0.00*
HA	*3.5 oz. Hyper-Active*		*0.00*	*0.00*
CC	*Chemicals furnished by customer*		*0.00*	*0.00*
AF	*Application Fee* *Inland Bays*	*170*	*10.00*	*1,700.00*

Please Remit to:30475 E MILL RN, MILTON, DE 19968
This is our new address as of June 2003.

Total *$1,700.00*

30475 E MILL RN • MILTON, DE 19968 • 302-684-2770/Fax 302-684-2766
Greenwood 302-349-5055

ALLEN CHORMAN & SON, INC.
A COMPLETE AERIAL APPLICATION SERVICE

Allen Chorman & Son, Inc. ~ Billing

Allen Chorman & Son, Inc.
30475 E Mill Rn
Milton, Delaware 19968

Bill To
Sayre Baldwin, Inc. *17882 Potatoe Lane* *Bridgeville, Delaware 19933*

Date	Invoice #
8/24/2012	*34986*

App Date	Type of App	Crop	Infestation	Applicator
6/26/2012	*AERIAL*	*Corn*	*Fungicide*	*BT*

Wind & Humidity	*SW3 - L*		Time & Temperature	*8:00 am - 80 dgrs*

EPA Number	Description	Acres Treated	Price per Acre	Amount
7969-00186	*9 oz. Headline*		*0.00*	*0.00*
100-1112-5905	*3.92 oz. Lambda-T*		*0.00*	*0.00*
CC	*Chemicals furnished by customer*		*0.00*	*0.00*
AF	*Application Fee* *Inland Bays*	*400*	*10.00*	*4,000.00*

Please Remit to:30475 E MILL RN, MILTON, DE 19968
This is our new address as of June 2003.

Total *$4,000.00*

30475 E MILL RN • MILTON, DE 19968 • 302-684-2770/Fax 302-684-2766
Greenwood 302-349-5055

Chorman Spraying, LLC

30475 East Mill Run
Milton, Delaware 19968
302-684-2770 ~ Milton ~ 302-684-2766 Fax
302-349-5055 ~ Greenwood ~ 302-349-4469 Fax

	Invoice #
4/9/2012	2243

Bill To

Sayre Baldwin, Inc.
Dan Baldwin
17882 Potatoe Lane
Bridgeville, Delaware 19933

Rep	App. Date	Type of App.	Crop	Infestation
JAC	3/7/2012	Aerial		Weeds

Acres Treat...	EPA Number	Description	Price Per Acre	Amount
250	Chemical	1 qt. Round Up	0.00	0.00
	CC	Chemicals Furnished By Customer	0.00	0.00
250	AF	Application Fee	10.50	2,625.00
		DE Waste Water Ground		
		3:00 pm - 50 dgrs - L/V - H		

#41/18/12

#41132

Please Remit To:Chorman Spraying, LLC, 30475 E Mill Rn., Milton, Delaware 19968

Total $2,625.00

A Complete Agricultural Aerial Application & Aerial Surveillance Survey Service

ALLEN CHORMAN & SON, INC.
A COMPLETE AERIAL APPLICATION SERVICE

Allen Chorman & Son, Inc. ~ Billing

Allen Chorman & Son, Inc.
30475 E Mill Rn
Milton, Delaware 19968

Bill To
Sayre Baldwin, Inc. *17882 Potatoe Lane* *Bridgeville, Delaware 19933*

Date	Invoice #
6/17/2012	*34627*

#4553
8/10/12

App Date	Type of App	Crop	Infestation	Applicator
6/2/2012	*AERIAL*	*Corn*	*Weeds*	*BT*

Wind & Humidity	*NW5 - L*		Time & Temperature	*7:30 pm - 78 dgrs*

EPA Number	Description	Acres Treated	Price per Acre	Amount
524-00539	*32 oz. Round-Up Original Max*		*0.00*	*0.00*
Chemical	*5 oz. Hellfire Chemicals*		*0.00*	*0.00*
CC	*Chemicals furnished by customer*		*0.00*	*0.00*
AF	*Application Fee* *Inland Bays*	*425*	*10.50*	*4,462.50*

Please Remit to:30475 E MILL RN, MILTON, DE 19968
This is our new address as of June 2003.

Total *$4,462.50*

30475 E. MILL RN • MILTON, DE 19968 • 302-684-2770/Fax 302-684-2766
Greenwood 302-349-5055

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	67.56 ac	
12 crn premerge Amount	1031.46 gal	
Application Start Time	04/14/2012 7:12 AM	
Application End Time	04/14/2012 7:49 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA
APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	South fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

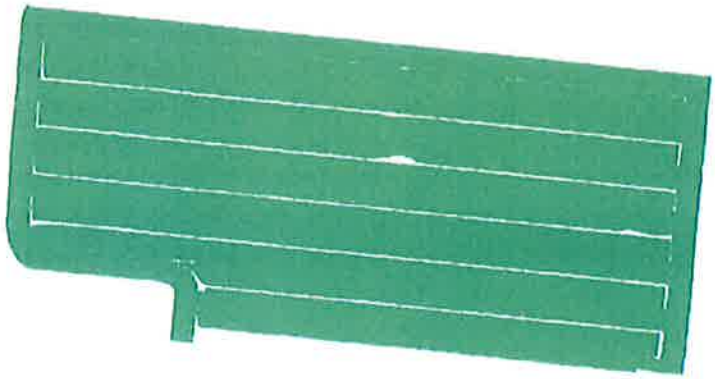
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	04/14/2012 7:12 AM
End Time:	04/14/2012 7:49 AM

Product: 12 crn premerge
Applied Area: 67.56 ac

Product Coverage



N

Crop

Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Nutrients	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12 crn premerge	Dan		No	1031.46 gal	15.27 gal/ac
Lexar	Syngenta	100-1201	Yes	206.29 qt	3.05 qt/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	176.21 ac	
12 soybn burndwn Amount	2792.71 gal	
Application Start Time	04/03/2012 6:51 AM	
Application End Time	04/03/2012 9:05 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA
APPLICATION REPORT

Grower
Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field
Field:	South dry	Farm:	Inland Bays
County:	Sussex	Description:	
Township:	Millsboro		
Range:			
Section:			

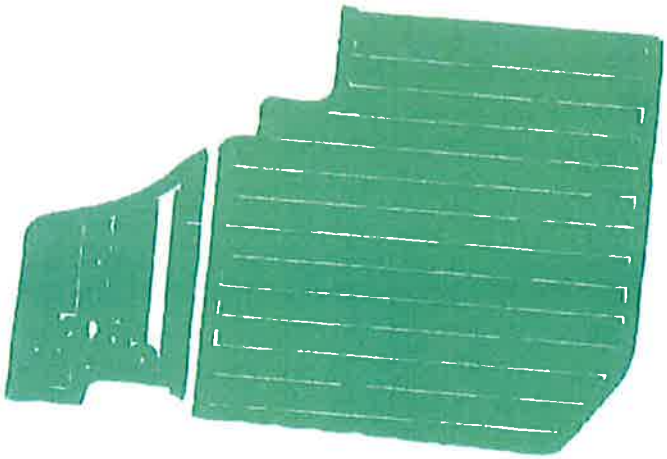
Equipment Configuration
Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time
Start Time:	04/03/2012 6:51 AM
End Time:	04/03/2012 9:05 AM

Product: 12 soybn burndwn
Applied Area: 176.21 ac

Product Coverage



N

Crop
Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions
Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests
Nutrients	Not Observed

Product Summary
Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12 soybn burndwn	Dan		No	2792.71 gal	15.85 gal/ac
Roundup PowerMax	Monsanto	524-549	No	4095.97 fl oz	23.24 fl oz/ac
OPTILL	BASF	7969-280	No	372.36 oz	2.11 oz/ac
Request	Helena		No	186.18 pt	1.06 pt/ac
dyne-Amic	Helena	Dyne-Amic	No	186.18 pt	1.06 pt/ac

Operator/Supervisor Information
				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	173.82 ac	
12sbpostherbb Amount	2688.42 gal	
Application Start Time	06/07/2012 10:30 AM	
Application End Time	06/07/2012 2:09 PM	
Soil Conditions		
Soil Temperature	75 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	None	
Tillage Type	Conventional	
Environmental		
Air Temperature	74 ° F	
Wind Speed	6 mph	
Wind Direction (From)	W	
Sky Condition	Sunny	
Humidity	62 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	South fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

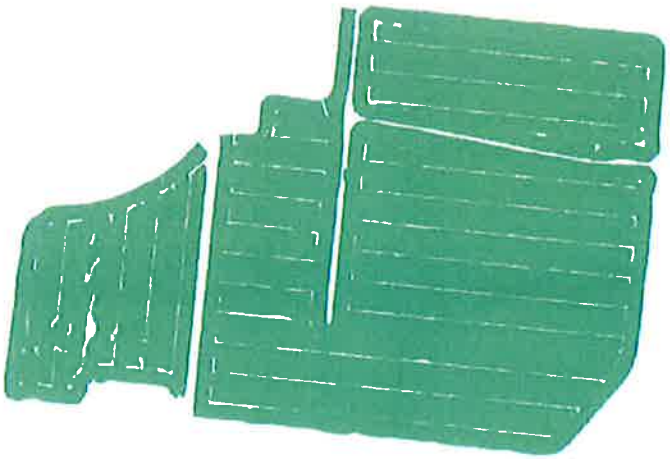
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	06/07/2012 10:30 AM
End Time:	06/07/2012 2:09 PM

Product: 12sbpostherbb
Applied Area: 173.82 ac

Product Coverage



N

Crop

Crop:	Soybeans
Growth Stage:	V2 - Second Node

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Pigweed	Morning glor
	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12sbpostherbb	Dan		No	2688.42 gal	15.47 gal/ac
Roundup PowerMax	Monsanto	524-549	No	3943.02 fl oz	22.68 fl oz/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	254.12 ac	
12 crn premerge Amount	3834.94 gal	
Application Start Time	04/14/2012 7:54 AM	
Application End Time	04/18/2012 9:09 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	North fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

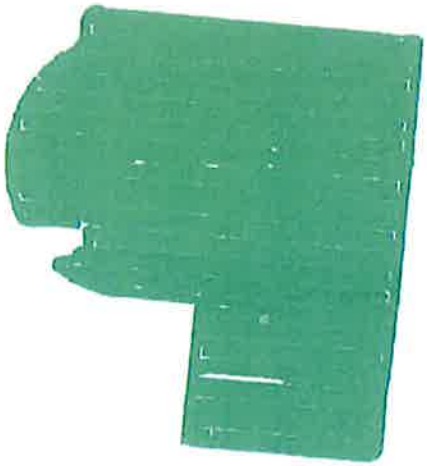
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	04/14/2012 7:54 AM
End Time:	04/18/2012 9:09 AM

Product: 12 crn premerge
Applied Area: 254.12 ac

Product Coverage



N

Crop

Crop:	Wheat
Growth Stage:	Stem Elongation.

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Nutrients	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12 crn premerge	Dan		No	3834.94 gal	15.09 gal/ac
Lexar	Syngenta	100-1201	Yes	766.99 qt	3.02 qt/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	17.73 ac	
12sbpostherbb Amount	263.62 gal	
Application Start Time	06/07/2012 11:37 AM	
Application End Time	06/07/2012 2:28 PM	
Soil Conditions		
Soil Temperature	75 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	None	
Tillage Type	Conventional	
Environmental		
Air Temperature	74 ° F	
Wind Speed	6 mph	
Wind Direction (From)	W	
Sky Condition	Sunny	
Humidity	62 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	North fields	Farm:	Inland Bays
County:		Description:	
Township:			
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

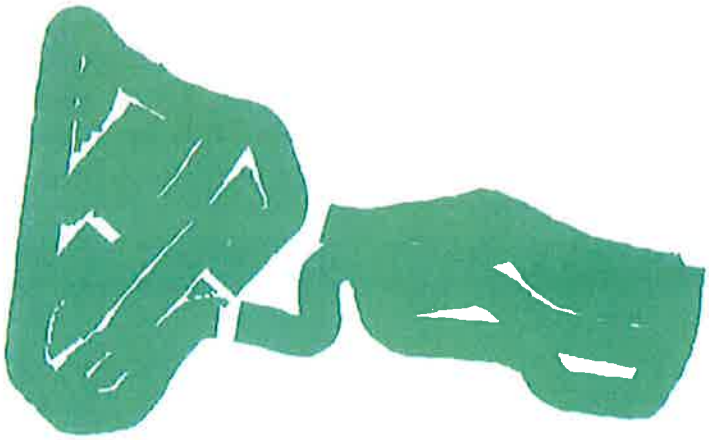
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	06/07/2012 11:37 AM
End Time:	06/07/2012 2:28 PM

Product: 12sbpostherbb
Applied Area: 17.73 ac

Product Coverage



N

Crop

Crop:	Soybeans
Growth Stage:	V2 - Second Node

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Pigweed	Morning glor
	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12sbpostherbb	Dan		No	263.62 gal	14.87 gal/ac
Roundup PowerMax	Monsanto	524-549	No	386.65 fl oz	21.81 fl oz/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	28.39 ac	
Corn burn down Amount	449.03 gal	
Application Start Time	04/01/2012 11:25 AM	
Application End Time	04/01/2012 12:09 PM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA
APPLICATION REPORT

Grower

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field

Field:	South dry	Farm:	Inland Bays
County:	Sussex	Description:	
Township:	Millsboro		
Range:			
Section:			

Equipment Configuration

Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application

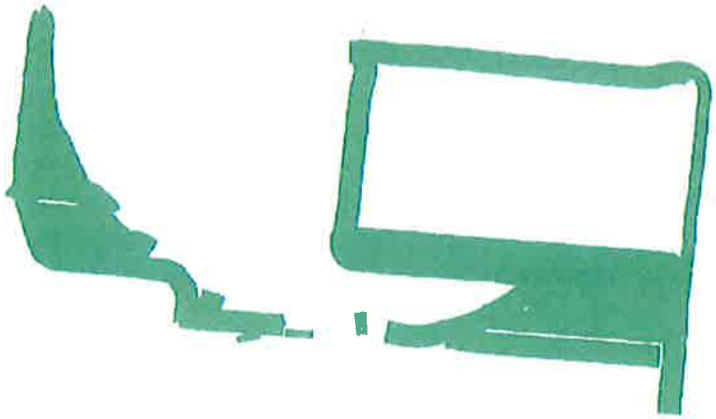
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time

Start Time:	04/01/2012 11:25 AM
End Time:	04/01/2012 12:09 PM

Product: **Corn burn down**
Applied Area: **28.39 ac**

Product Coverage



N

Crop

Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions

Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests

Nutrients	Not Observed

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
Corn burn down	Dan		No	449.03 gal	15.82 gal/ac
Hel-fire	Helena		No	374.19 fl oz	13.18 fl oz/ac
Roundup PowerMax	Monsanto	524-549	No	658.58 fl oz	23.20 fl oz/ac

Operator/Supervisor Information

				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	92.98 ac	
Corn burn down Amount	1466.25 gal	
Application Start Time	04/01/2012 9:26 AM	
Application End Time	04/01/2012 11:22 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA
APPLICATION REPORT

Grower
Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field
Field:	North dry	Farm:	Inland Bays
County:	Sussex	Description:	
Township:	Millsboro		
Range:			
Section:			

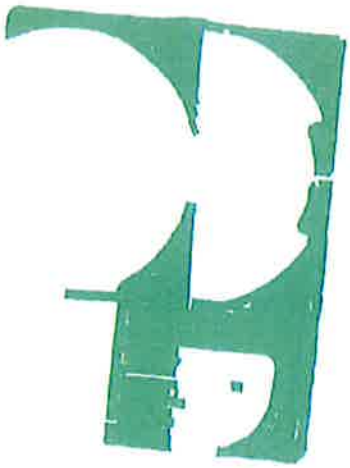
Equipment Configuration
Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time
Start Time:	04/01/2012 9:26 AM
End Time:	04/01/2012 11:22 AM

Product: **Corn burn down**
Applied Area: **92.98 ac**

Product Coverage



N

Crop
Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions
Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests
Nutrients	Not Observed

Product Summary
Name	Manufacturer	EPA #	RUP	Amount	Average Rate
Corn burn down	Dan		No	1466.25 gal	15.77 gal/ac
Hel-fire	Helena		No	1221.87 fl oz	13.14 fl oz/ac
Roundup PowerMax	Monsanto	524-549	No	2150.49 fl oz	23.13 fl oz/ac

Operator/Supervisor Information
				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

REGION SUMMARY		
Item	**Region 1**	**Region 2**
Region Name	<1>	
Operator Name	Dan	
Application Details		
Area	9.24 ac	
12 soybn burndwn Amount	116.98 gal	
Application Start Time	04/03/2012 9:18 AM	
Application End Time	04/03/2012 9:23 AM	
Soil Conditions		
Soil Temperature	52 ° F	
Soil Moisture Level	Dry	
Soil Condition	Fine	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	71 ° F	
Wind Speed	2 mph	
Wind Direction (From)	E	
Sky Condition	Sunny	
Humidity	52 %	
Additional Information		
Memo		

Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

INTEGRA
APPLICATION REPORT

Grower
Baldwin
17882 potato lane,Bridgeville, De.
302 236 9879

Field
Field:	North dry	Farm:	Inland Bays
County:	Sussex	Description:	
Township:	Millsboro		
Range:			
Section:			

Equipment Configuration
Vehicle:	GVM Prowler
Implement:	GVM spray tank90
Boom Height:	18 in

Application
Timing:	Post Emerge
Placement:	Surface Broadcast
Nozzle PN:	11004
Boom Pressure:	60 PSI

Application Date/Time
Start Time:	04/03/2012 9:18 AM
End Time:	04/03/2012 9:23 AM

Product: 12 soybn burndwn
Applied Area: 9.24 ac

Product Coverage

N

Crop
Crop:	Wheat
Growth Stage:	Stem Elongation

Restrictions
Crop Rotation Restrictions:	No
Restricted Entry Interval (REI):	12 hours

Target Pests
Nutrients	Not Observed

Product Summary
Name	Manufacturer	EPA #	RUP	Amount	Average Rate
12 soybn burndwn	Dan		No	116.98 gal	12.66 gal/ac
Roundup PowerMax	Monsanto	524-549	No	171.57 fl oz	18.57 fl oz/ac
OPTILL	BASF	7969-280	No	15.60 oz	1.69 oz/ac
Request	Helena		No	7.80 pt	0.84 pt/ac
dyne-Amic	Helena	Dyne-Amic	No	7.80 pt	0.84 pt/ac

Operator/Supervisor Information
				Signature
Operator:	Dan	License:	Pest4-3095,Nutr 0508	
Operator:		License:		
Supervisor:		License:		

Soybean Planting 2012 - SOUTH(Ag4130)

Product - Name

Ag4130 (136.85 ac)

As-Applied Summary

BALDWIN | Inldbys | SOUTH

2012 | Soybean | Farm Planting | Ag4130 | Planting 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.SOUTH\20	0.659	120.52	182.91	5/13/2012	5/13/2012
R0:8209943.SOUTH\20	1.509	266.86	176.86	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	0.721	130.36	180.75	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	7.526	1,376.3	182.88	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	0.406	74.10	182.51	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	0.687	125.33	182.36	5/14/2012	5/14/2012
R0:8209943.SOUTH\20	0.750	136.86	182.42	5/14/2012	5/14/2012
Totals	136.85	24,933	182.19 Average	5/13/2012 Minimum	5/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : SOUTH

Year : 2012

Area : 136.85 ac

Est. Amount : 24,933 ksds

Avg. Rate : 182.19 ksds/ac

Start Date : 5/13/2012

End Date : 5/17/2012

Working Time : 11.82 hr

Avg. Productivity : 11.58 ac/hr

GPS Count : 44321

Notes/Comments

Operator Signature and Date

Soybean Planting 2012 - TOWER(Ag4130)

Product - Name
Ag4130(29.96 ac)

As-Applied Summary

BALDWIN | Inldbys | TOWER
2012 | Soybean > Corn Planting | Ag4130 | Planter > 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.TOWER\20	0.943	317.62	336.86	5/12/2012	5/12/2012
R0:8209943.TOWER\20	0.091	32.49	356.47	5/12/2012	5/12/2012
R0:8209943.TOWER\20	0.918	175.49	191.19	5/12/2012	5/12/2012
R0:8209943.TOWER\20	28.01	5,086.9	181.60	5/12/2012	5/12/2012
Totals	29.96	5,612.5	187.31 Average	5/12/2012 Minimum	5/12/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : TOWER

Year : 2012

Area : 29.96 ac

Est. Amount : 5,612.5 ksds

Avg. Rate : 187.31 ksds/ac

Start Date : 5/12/2012

End Date : 5/12/2012

Working Time : 2.581 hr

Avg. Productivity : 11.61 ac/hr

GPS Count : 9679

Notes/Comments

Operator Signature and Date

Soybean Planting 2012 - BACK(Ag4130)

Product - Name
Ag4130(15.70 ac)

As-Applied Summary

BALDWIN | Inldbys | BACK
2012 | Soybean + Corn Planting | Ag4130 | Planting - 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.BACK\2012	15.70	2,846.1	181.25	5/12/2012	5/12/2012
Totals	15.70	2,846.1	181.25 Average	5/12/2012 Minimum	5/12/2012 Maximum

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : BACK
Year : 2012
Area : 15.70 ac
Est. Amount : 2,846.1 ksds

Avg. Rate : 181.25 ksds/ac
Start Date : 5/12/2012
End Date : 5/12/2012
Working Time : 1.227 hr
Avg. Productivity : 12.80 ac/hr
GPS Count : 4601

Notes/Comments

Operator Signature and Date

Fertilizing (Liquid) 2012 - South irg

Product - Name
- 10-0-12 (31.76 ac)
- 13 0 18 (102.36 ac)

As-Applied Summary

BALDWIN | Inldbys | South irg
2012 | Fertilizing (Liquid) | Multiple Products - Other | Fertilizer #1

Dataset	Area ac	Avg Rate gal(US)/ac	Est. Volume gal(US)	Start Date	End Date
R0:<1>	31.76	92.75	2,945.6	4/9/2012	4/9/2012
R0:<1>	102.36	63.89	6,540.0	4/9/2012	4/11/2012
Totals	134.12	70.72 Average	9,485.6	4/9/2012 Minimum	4/11/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South irg

Year : 2012

Area : 134.12 ac

Est. Amount : 9,485.6 gal(US)

Avg. Rate : 70.72 gal(US)/ac

Start Date : 4/9/2012

End Date : 4/11/2012

Working Time : 9.466 hr

Avg. Productivity : 14.17 ac/hr

GPS Count : 34076

Notes/Comments

Operator Signature and Date

Corn Planting 2012 - South side

Product - Name
- 207-13vt3p (43.52 ac)
- Dk52-61 (32.98 ac)
- Dk57-50 (10.81 ac)
- DKC49-94 (71.91 ac)

As-Applied Summary

BALDWIN | Inldbys | South side
2012 | Soybean - Corn Planting | Multiple Products - Corn | Planting - 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.South_sid	8.179	271.24	33.16	4/9/2012	4/9/2012
R0:8209943.South_sid	0.082	1.641	20.11	4/9/2012	4/9/2012
R0:8209943.South_sid	0.781	25.78	33.01	4/9/2012	4/9/2012
R0:8209943.South_sid	0.030	0.862	28.71	4/9/2012	4/9/2012
R0:8209943.South_sid	9.607	321.31	33.44	4/9/2012	4/9/2012
R0:8209943.South_sid	2.997	100.03	33.38	4/9/2012	4/9/2012
R0:8209943.South_sid	3.706	123.98	33.46	4/9/2012	4/9/2012
Totals	159.23	5,212.4	32.74 Average	4/9/2012 Minimum	4/12/2012 Maximum

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : South side
Year : 2012
Area : 159.23 ac
Est. Amount : 5,212.4 ksds

Avg. Rate : 32.74 ksds/ac
Start Date : 4/9/2012
End Date : 4/12/2012
Working Time : 12.76 hr
GPS Count : 47832

Notes/Comments

Operator Signature and Date

Fertilizing (Liquid) 2012 - North irg

Product - Name
13 0 18(184.267 ac)
15 0 8 (6.014 ac)

As-Applied Summary

BALDWIN | Inldbys | North irg
2012 | Fertilizing (Liquid) | Multiple Products - Other | Fertilizing - 1

Dataset	Area ac	Avg Rate gal(US)/ac	Est. Volume gal(US)	Start Date	End Date
R0:<1>	184.27	63.56	11,711	4/11/2012	4/16/2012
R0:<1>	6.014	75.22	452.32	4/17/2012	4/17/2012
Totals	190.28	63.92 Average	12,163	4/11/2012 Minimum	4/17/2012 Maximum

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : North irg
Year : 2012
Area : 190.28 ac
Est. Amount : 12,163 gal(US)

Avg. Rate : 63.92 gal(US)/ac
Start Date : 4/11/2012
End Date : 4/17/2012
Working Time : 13.50 hr
Avg. Productivity : 14.10 ac/hr
GPS Count : 48586

Notes/Comments

Operator Signature and Date

Corn Planting 2012 - North side

Product - Name
- Dk53-45 (50.33 ac)
- Dk57-50 (110.29 ac)
- Dk58-83 (35.64 ac)
- FS4861VT3 (43.32 ac)

As-Applied Summary

BALDWIN | Inldbys | North side

2012 | Soybean - Corn Planting | Multiple Products - Corn | Planting - 1

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.North_side	20.89	699.16	33.46	4/16/2012	4/16/2012
R0:8209943.North_side	2.459	67.31	27.37	4/16/2012	4/16/2012
R0:8209943.North_side	20.47	672.27	32.84	4/17/2012	4/17/2012
R0:8209943.North_side	6.510	213.04	32.73	4/17/2012	4/17/2012
R0:8209943.North_side	59.45	1,857.9	31.25	4/12/2012	4/12/2012
R0:8209943.North_side	16.00	509.81	31.86	4/13/2012	4/13/2012
R0:8209943.North_side	2.394	77.02	32.17	4/13/2012	4/13/2012
Totals	239.58	7,755.8	32.37 Average	4/12/2012 Minimum	4/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North side

Year : 2012

Area : 239.58 ac

Est. Amount : 7,755.8 ksds

Avg. Rate : 32.37 ksds/ac

Start Date : 4/12/2012

End Date : 4/17/2012

Working Time : 19.02 hr

GPS Count : 71332

Notes/Comments

Operator Signature and Date

Spectrum Analytic
1087 Jamison Road NW
Washington Court House, OH 43160-8748
www.spectrumanalytic.com

Report To:
WILLARD AGRI-SERVICE
11523 LYNCH ROAD
WORTON, MD 21678

Prepared For:
DAN BALDWIN/INLDBYS 39845

Sampled 12-22-2011
Tested 12-23-2011

Sample Number	Lab Number	pH Soil pH	pH Buffer pH	Organic Matter %	P-Fit Fertility Index Value	lbs/A - Rating Potassium K	Magnesium Mg	Calcium Ca	CEC	Base Saturation K %	Mg %	Ca %	ppm - Rating Sulfur S	Boron B	Zinc Zn	Iron Fe	Index - Rating Copper Cu	Manganese Mn
DRY N	F00773	5.9	7.1	0.3	174 X	143 M	104 L	557 M	2.0	9.1	21.6	69.3	7 L	0.2 L	6.6 G			
DRY S	F00774	5.9	7.0	0.9	266 X	114 M	114 M	567 M	2.0	7.2	23.4	69.5	8 L	0.2 L	7.6 G			
NEW PIVOT S	F00775	5.6	6.9	1.4	280 X	139 M	99 L	693 M	3.5	5.1	11.7	49.2	12 M	0.2 L	10.2 G			
TOWER	F00776	5.7	7.1	0.5	211 X	91 L	93 L	405 M	1.5	7.7	25.6	66.7	7 L	0.2 L	6.6 G			
IRG S EAST	F00777	6.4	7.2	0.6	240 X	60 L	143 M	528 M	2.0	3.9	29.8	66.3	4 L	0.2 L	5.0 G			
IRG S WEST	F00778	6.5	7.2	1.4	202 X	119 M	143 M	624 M	3.0	5.2	20.1	52.8	9 L	0.3 L	6.2 G			
IRG N EAST	F00779	6.7	7.2	1.0	268 X	123 M	208 M	921 G	4.1	3.9	21.3	56.8	8 L	0.4 L	7.1 G			
IRG N WEST	F00780	6.7	7.3	0.9	360 X	139 M	204 M	1008 G	4.3	4.1	19.6	58.2	8 L	0.4 L	9.6 G			
MIDDLE N PIVOT	F00781	5.6	7.0	0.7	448 X	124 M	72 L	620 M	2.0	7.9	15.0	77.1	11 M	0.2 L	8.2 G			
IRG N FRT	F00782	6.7	7.3	0.5	366 X	113 M	151 M	980 G	3.9	3.7	16.0	62.3	6 L	0.3 L	9.6 G			

Sample Number	Year	Acres	Previous Crop	Nitrogen Credit	Crop to be Grown	Tillage Method	Yield Goal
DRY N	2012	10	Idle	0	Soybeans, MD	Other	40 bu
DRY S	2012	194	Corn, MD	0	Soybeans, MD	Other	40 bu
NEW PIVOT S	2012	60	Corn, MD	0	Corn, MD	Other	200 bu
TOWER	2012	29.2	Corn, MD	0	Soybeans, MD	Other	40 bu
IRG S EAST	2012	40	Corn, MD	0	Corn, MD	Other	280 bu
IRG S WEST	2012	60	Corn, MD	0	Corn, MD	Other	280 bu
IRG N EAST	2012	49.3	Corn, MD	0	Corn, MD	Other	280 bu
IRG N WEST	2012	49.7	Corn, MD	0	Corn, MD	Other	280 bu
MIDDLE N PIVOT	2012	80	Soybeans, MD	15	Corn, MD	Other	280 bu
IRG N FRT	2012	57.2	Corn, MD	0	Corn, MD	Other	280 bu

Sample Number	Year	$CaCO_3$ Lime Tons	Recommendations N	P_2O_5	K_2O	Manure Type and Analysis % N/P2O5/K2O	Amt To Apply	Remainder N	P_2O_5	K_2O	Nutrient recommendations expressed in broadcast rates of lbs/A except Mg	S	B	Cu	Fe Foliar	Mn Row	Zn
DRY N	2012	0.6 D	0	0	102						19	14	0.50				2
DRY S	2012	0.6 D	0	0	111	Poultry - 2.914/2.52/2.94	0.00 ton/A	0	0	111	18	13	0.50				6
NEW PIVOT S	2012	1.0 D	200	0	213						36	24	0.50				5
TOWER	2012	0.7 D	0	0	118	Poultry - 2.914/2.52/2.94	0.00 ton/A	0	0	118	21	14	0.50				4
IRG S EAST	2012	0.2 D	250	0	277						21	30	0.50				9
IRG S WEST	2012	0.0	250	0	259						43	26	0.50				9
IRG N EAST	2012	0.0	250	0	258						24	27	0.50				8
IRG N WEST	2012	0.0	250	0	253						25	27	0.50				5
MIDDLE N PIVOT	2012	0.7 D	250	0	258						41	25	0.50				7
IRG N FRT	2012	0.0	250	0	261						40	29	0.50				5

Analyzed by Spectrum Analytic Inc.
www.spectrumanalytic.com

HID:9450-0809-5090-0010

SAYRE BALDWIN INC.

17882 POTATO LANE

BRIDGEVILLE, DE.

2013 VEGETATIVE PLAN FOR INLAND BAYS

ALL FIELDS

All of cover crop will be chemically burned down in the spring. All fields will be Grid sampled(2 ½ acre grids). Nutrients will be applied (some variable rate) based on these samples And plant uptake. A nutrient management plan will be generated by WILLARD agri-service based on the Above.

.Pre-anerge weed control will consist of Harness Xtra and roundup at labled rates

Seeding 2012 - North fields(Cover crop)

Rate Applied(Mass)
(lb/ac)

- 102.58 - 472.93 (25.29 ac)
- 100.72 - 102.58 (38.12 ac)
- 99.87 - 100.72 (38.67 ac)
- 99.14 - 99.87 (38.41 ac)
- 98.24 - 99.14 (38.08 ac)
- 95.56 - 98.24 (37.20 ac)
- 0.00 - 95.56 (32.69 ac)

As-Applied Summary

Dataset	Count	Area ac	Length ft
R1:	7328	248.46	144,305
Totals	7328	248.46	144,305

Operation Summary

Grower : BALDWIN
Farm : Inland Bays
Field : North fields
Year : 2012
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 248.46 ac

Est. Amount : 24,441 lb
Avg. Rate : 98.37 lb/ac
Start Date : 9/6/2012
End Date : 9/11/2012
Working Time : 2.036 hr
Avg. Productivity : 122.06 ac/hr
GPS Count : 7328

Notes/Comments

RYE SEED

Operator Signature and Date

Seeding 2012 - South side(Cover crop)

Rate Applied(Mass)
(lb/ac)

103.44 - 1,050.51	(17.81 ac)
100.96 - 103.44	(26.06 ac)
99.78 - 100.96	(27.06 ac)
98.68 - 99.78	(27.12 ac)
97.08 - 98.68	(26.36 ac)
91.30 - 97.08	(24.16 ac)
0.00 - 91.30	(20.95 ac)

As-Applied Summary

Dataset	Count	Area ac	Length ft
R1:	5252	169.51	98,454
Totals	5252	169.51	98,454

Operation Summary

Grower : BALDWIN
Farm : Inldbys
Field : South side
Year : 2012
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 2
Area : 169.51 ac

Est. Amount : 16,499 lb
Avg. Rate : 97.33 lb/ac
Start Date : 9/5/2012
End Date : 9/11/2012
Working Time : 1.459 hr
Avg. Productivity : 116.19 ac/hr
GPS Count : 5252

Notes/Comments

RYE SEED

Operator Signature and Date

Grain Harvest 2012 - North (CORN)

Estimated Volume (Dry)
(bu/ac)

- 169.63 - 394.87 (25.81 ac)
- 156.12 - 169.63 (29.82 ac)
- 145.84 - 156.12 (31.63 ac)
- 135.17 - 145.84 (33.11 ac)
- 116.05 - 135.17 (34.23 ac)
- 63.85 - 116.05 (34.78 ac)
- 5.01 - 63.85 (36.30 ac)

As-Applied Summary

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	225.67	20.35	1,660,570	27,891	123.59	8/21/2012
Totals	225.67	20.35 Average	1,660,570	27,891	123.59 Average	8/21/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North irg

Year : 2012

Operation : Grain Harvest

Crop / Product : CORN

Area : 225.67 ac

Avg. Yield : 123.59 bu/ac

Avg. Moisture : 20.35 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2012 - South side(CORN)

Estimated Volume (Dry)
(bu/ac)

- 175.97 - 396.61 (17.77 ac)
- 160.36 - 175.97 (20.48 ac)
- 145.55 - 160.36 (21.79 ac)
- 128.45 - 145.55 (22.95 ac)
- 111.53 - 128.45 (23.94 ac)
- 87.12 - 111.53 (24.23 ac)
- 5.02 - 87.12 (23.86 ac)

As-Applied Summary

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:<1>	155.03	21.95	1,213,769	20,034	129.23	8/22/2012
Totals	155.03	21.95 Average	1,213,769	20,034	129.23 Average	8/22/2012

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South side

Year : 2012

Operation : Grain Harvest

Crop / Product : CORN

Area : 155.03 ac

Avg. Yield : 129.23 bu/ac

Avg. Moisture : 21.95 %

Notes/Comments

Operator Signature and Date

Fertilizing (Liquid) 2012 - North irg

Product - Name
- 13 0 18(184.267 ac)
- 15 0 8 (6.014 ac)

As-Applied Summary

Dataset	Area ac	Avg Rate gal(US)/ac	Est. Volume gal(US)	Start Date	End Date
R0:<1>	184.27	63.56	11,711	4/11/2012	4/16/2012
R0:<1>	6.014	75.22	452.32	4/17/2012	4/17/2012
Totals	190.28	63.92 Average	12,163	4/11/2012 Minimum	4/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North irg

Year : 2012

Area : 190.28 ac

Est. Amount : 12,163 gal(US)

Avg. Rate : 63.92 gal(US)/ac

Start Date : 4/11/2012

End Date : 4/17/2012

Working Time : 13.50 hr

Avg. Productivity : 14.10 ac/hr

GPS Count : 48586

Notes/Comments

Operator Signature and Date

Fertilizing (Liquid) 2012 - South irg

Product - Name
- 10-0-12(31.76 ac)
- 13 0 18(102.36 ac)

As-Applied Summary

Dataset	Area ac	Avg Rate gal(US)/ac	Est. Volume gal(US)	Start Date	End Date
R0:<1>	31.76	92.75	2,945.6	4/9/2012	4/9/2012
R0:<1>	102.36	63.89	6,540.0	4/9/2012	4/11/2012
Totals	134.12	70.72 Average	9,485.6	4/9/2012 Minimum	4/11/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : South irg

Year : 2012

Area : 134.12 ac

Est. Amount : 9,485.6 gal(US)

Avg. Rate : 70.72 gal(US)/ac

Start Date : 4/9/2012

End Date : 4/11/2012

Working Time : 9.466 hr

Avg. Productivity : 14.17 ac/hr

GPS Count : 34076

Notes/Comments

Operator Signature and Date

Corn Planting 2012 - North side

Product - Name
- Dk53-45 (50.33 ac)
- Dk57-50 (110.29 ac)
- Dk58-83 (35.64 ac)
- FS4861VT3 (43.32 ac)

As-Applied Summary

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.North_side	20.89	699.16	33.46	4/16/2012	4/16/2012
R0:8209943.North_side	2.459	67.31	27.37	4/16/2012	4/16/2012
R0:8209943.North_side	20.47	672.27	32.84	4/17/2012	4/17/2012
R0:8209943.North_side	6.510	213.04	32.73	4/17/2012	4/17/2012
R0:8209943.North_side	59.45	1,857.9	31.25	4/12/2012	4/12/2012
R0:8209943.North_side	16.00	509.81	31.85	4/13/2012	4/13/2012
R0:8209943.North_side	2.394	77.02	32.17	4/13/2012	4/13/2012
Totals	239.58	7,755.8	32.37 Average	4/12/2012 Minimum	4/17/2012 Maximum

Operation Summary

Grower : BALDWIN

Farm : Inldbys

Field : North side

Year : 2012

Area : 239.58 ac

Est. Amount : 7,755.8 ksds

Avg. Rate : 32.37 ksds/ac

Start Date : 4/12/2012

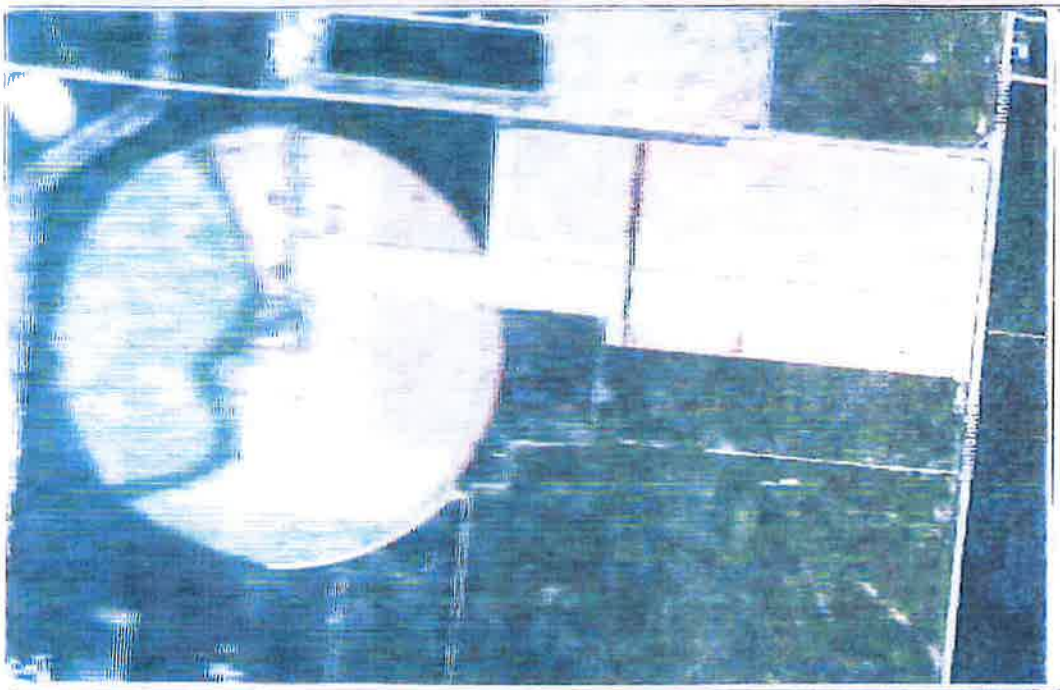
End Date : 4/17/2012

Working Time : 19.02 hr

GPS Count : 71332

Notes/Comments

Operator Signature and Date



Product - Name
207-13vt3p (43.52 ac)
Dk52-61 (32.98 ac)
Dk57-50 (10.81 ac)
DKC49-94 (71.91 ac)

Dataset	Area ac	Est. Amount ksds	Avg. Rate ksds/ac	Start Date	End Date
R0:8209943.South_sid	8.179	271.24	33.16	4/9/2012	4/9/2012
R0:8209943.South_sid	0.082	1.641	20.11	4/9/2012	4/9/2012
R0:8209943.South_sid	0.781	25.78	33.01	4/9/2012	4/9/2012
R0:8209943.South_sid	0.030	0.862	28.71	4/9/2012	4/9/2012
R0:8209943.South_sid	9.607	321.31	33.44	4/9/2012	4/9/2012
R0:8209943.South_sid	2.997	100.03	33.38	4/9/2012	4/9/2012
R0:8209943.South_sid	3.706	123.98	33.46	4/9/2012	4/9/2012
Totals	159.23	5,212.4	32.74 Average	4/9/2012 Minimum	4/12/2012 Maximum

Operation Summary

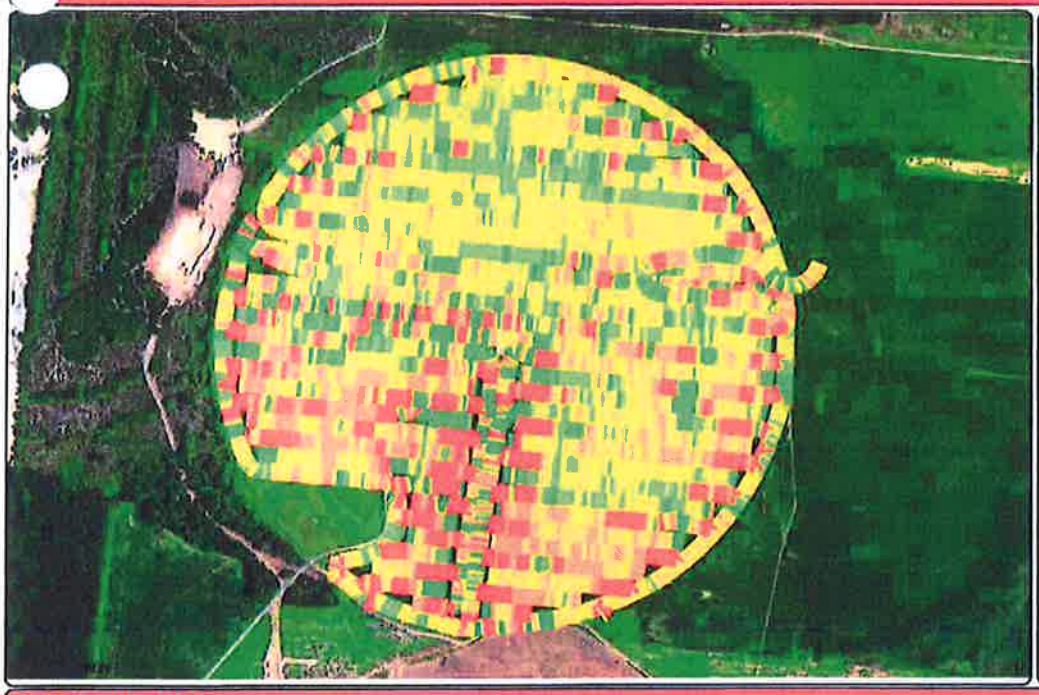
Grower : BALDWIN
Farm : Inldbys
Field : South side
Year : 2012
Area : 159.23 ac
Est. Amount : 5,212.4 ksds

Avg. Rate : 32.74 ksds/ac
Start Date : 4/9/2012
End Date : 4/12/2012
Working Time : 12.76 hr
GPS Count : 47832

Notes/Comments

Operator Signature and Date

Seeding 2011 - North irrg bck(Cover crop)



Rate Applied(Mass)
(lb/ac)

- 153.54 - 1,176.82 (11.23 ac)
- 150.74 - 153.54 (15.05 ac)
- 149.37 - 150.74 (15.53 ac)
- 148.05 - 149.37 (15.41 ac)
- 146.24 - 148.05 (15.80 ac)
- 140.56 - 146.24 (15.62 ac)
- 0.00 - 140.56 (14.24 ac)

As-Applied Summary

BALDWIN | Inland Bays app | North irrg bck
2011 | Seeding | Cover crop | Seeding - 1

Dataset	Count	Area ac	Length ft
R1:	4226	102.88	64,022
Totals	4226	102.88	64,022

Operation Summary

Grower : BALDWIN
Farm : Inland Bays app
Field : North irrg bck
Year : 2011
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 102.88 ac

Est. Amount : 15,054 lb
Avg. Rate : 146.32 lb/ac
Start Date : 9/11/2011
End Date : 9/12/2011
Working Time : 1.174 hr
Avg. Productivity : 87.64 ac/hr
GPS Count : 4226

Notes/Comments

Operator Signature and Date

Seeding 2011 - North irrg frt(Cover crop)

Rate Applied(Mass)
(lb/ac)

- 152.66 - 190.57(6.640 ac)
- 150.85 - 152.66(6.761 ac)
- 149.49 - 150.85(6.763 ac)
- 148.04 - 149.49(7.408 ac)
- 146.27 - 148.04(7.047 ac)
- 140.15 - 146.27(6.961 ac)
- 0.94 - 140.15(6.012 ac)

As-Applied Summary

BALDWIN | Inland Bays app | North irrg frt
2011 | Seeding | Cover crop | Seeding - 1

Dataset	Count	Area ac	Length ft
R1:	577	13.60	8,461.9
R2:	1188	33.99	21,154
Totals	1765	47.59	29,616

Operation Summary

Grower : BALDWIN
Farm : Inland Bays app
Field : North irrg frt
Year : 2011
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 47.59 ac

Est. Amount : 6,900.2 lb
Avg. Rate : 144.98 lb/ac
Start Date : 9/11/2011
End Date : 9/11/2011
Working Time : 0.490 hr
Avg. Productivity : 97.07 ac/hr
GPS Count : 1765

Notes/Comments

Operator Signature and Date

Seeding 2011 - South irrg(Cover crop)

Rate Applied(Mass)
(lb/ac)

- 154.31 - 2,666.18 (10.30 ac)
- 150.92 - 154.31 (13.64 ac)
- 149.24 - 150.92 (13.99 ac)
- 147.46 - 149.24 (14.23 ac)
- 144.91 - 147.46 (14.34 ac)
- 139.11 - 144.91 (13.89 ac)
- 0.00 - 139.11 (11.90 ac)

As-Applied Summary

BALDWIN | Inland Bays app | South irrg
2011 | Seeding | Cover crop | Seeding - 1

Dataset	Count	Area ac	Length ft
R1:	3768	92.27	57,422
Totals	3768	92.27	57,422

Operation Summary

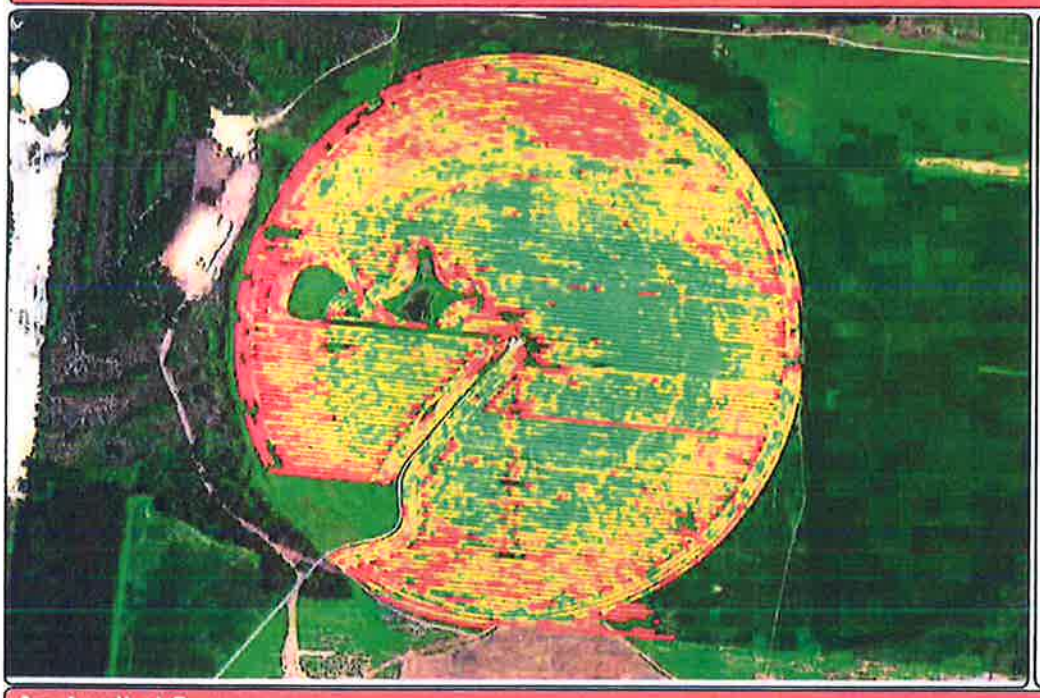
Grower : BALDWIN
Farm : Inland Bays app
Field : South irrg
Year : 2011
Operation : Seeding
Crop / Product : Cover crop
Op. Instance : Seeding - 1
Area : 92.27 ac

Est. Amount : 13,473 lb
Avg. Rate : 146.01 lb/ac
Start Date : 9/12/2011
End Date : 9/12/2011
Working Time : 1.047 hr
Avg. Productivity : 88.16 ac/hr
GPS Count : 3768

Notes/Comments

Operator Signature and Date

Grain Harvest 2011 - IRRG N BK 39845(CORN)



Estimated Volume (Dry)
(bu/ac)

- 228.03 - 395.59 (12.87 ac)
- 209.16 - 228.03 (13.17 ac)
- 193.90 - 209.16 (13.24 ac)
- 176.57 - 193.90 (13.47 ac)
- 153.02 - 176.57 (13.71 ac)
- 111.23 - 153.02 (14.16 ac)
- 9.96 - 111.23 (15.18 ac)

As-Applied Summary

BALDWIN | INLDBYS 39845 | IRRG N BK 39845
2011 | Grain Harvest | CORN | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
LO:lbirgnbk39845.sl	95.79	22.79	1,010,283	16,428	171.50	9/25/2011
Totals	95.79	22.79 Average	1,010,283	16,428	171.50 Average	9/25/2011

Operation Summary

Grower : BALDWIN

Farm : INLDBYS 39845

Field : IRRG N BK 39845

Year : 2011

Operation : Grain Harvest

Crop / Product : CORN

Op. Instance : Harvest - 1

Area : 95.79 ac

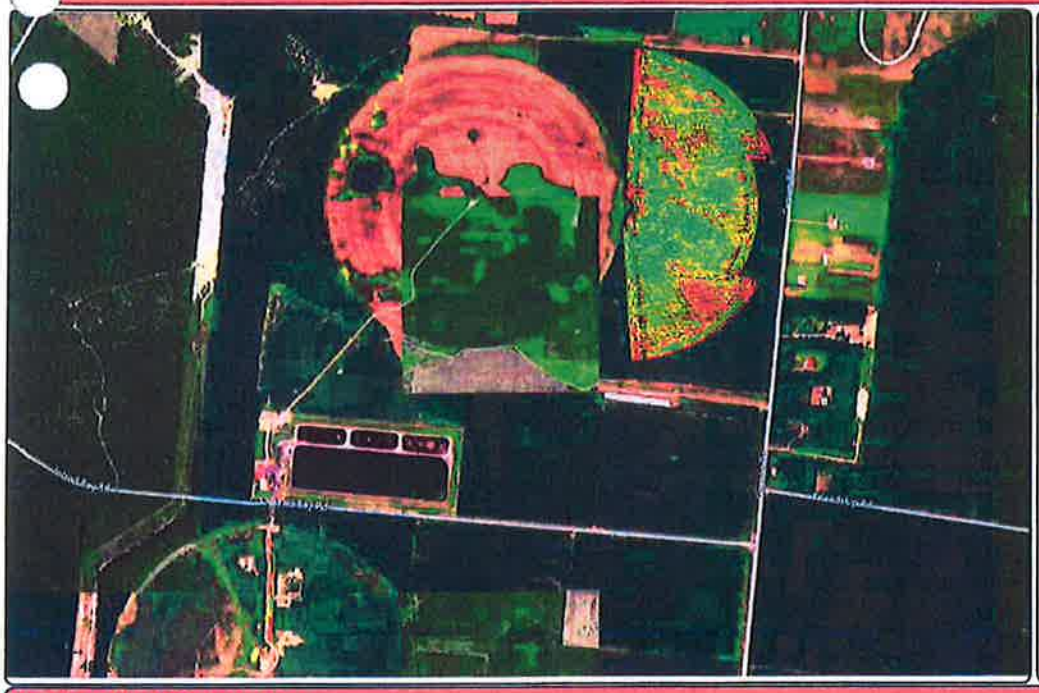
Avg. Yield : 171.50 bu/ac

Avg. Moisture : 22.79 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2011 - IRRG N FRT 39845(CORN)



Estimated Volume (Dry)
(bu/ac)

- 182.76 - 352.76 (6.529 ac)
- 161.23 - 182.76 (6.934 ac)
- 143.90 - 161.23 (7.080 ac)
- 125.72 - 143.90 (7.179 ac)
- 106.70 - 125.72 (7.264 ac)
- 80.32 - 106.70 (7.322 ac)
- 9.98 - 80.32 (7.254 ac)

As-Applied Summary

BALDWIN / INLDBYS 39845 / IRRG N FRT 39845
Grain Harvest / CORN / Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:lbirgnfrt39845.el	49.56	23.37	403,184	6,504.8	131.25	9/25/2011
Totals	49.56	23.37 Average	403,184	6,504.8	131.25 Average	9/25/2011

Operation Summary

Grower : BALDWIN

Farm : INLDBYS 39845

Field : IRRG N FRT 39845

Year : 2011

Operation : Grain Harvest

Crop / Product : CORN

Op. Instance : Harvest - 1

Area : 49.56 ac

Avg. Yield : 131.25 bu/ac

Avg. Moisture : 23.37 %

Notes/Comments

Operator Signature and Date

Grain Harvest 2011 - IRRG S 39845(CORN)

Estimated Volume (Dry)
(bu/ac)

- 219.03 - 397.47 (10.29 ac)
- 203.90 - 219.03 (11.07 ac)
- 189.39 - 203.90 (11.35 ac)
- 171.23 - 189.39 (11.60 ac)
- 145.57 - 171.23 (11.92 ac)
- 100.13 - 145.57 (12.21 ac)
- 9.95 - 100.13 (12.75 ac)

As-Applied Summary

BALDWIN | INLDBYS 39845 | IRRG S 39845
2011 | Grain Harvest | CORN | Harvest - 1

Dataset	Area ac	Average Moisture %	Est. Weight (Wet) lb	Est. Volume (Dry) bu	Avg. Yield (Dry) bu/ac	Date Logged
L0:lbirgs39845.shp	81.19	21.50	804,750	13,290	163.69	9/25/2011
Totals	81.19	21.50 Average	804,750	13,290	163.69 Average	9/25/2011

Operation Summary

Grower : BALDWIN

Farm : INLDBYS 39845

Field : IRRG S 39845

Year : 2011

Operation : Grain Harvest

Crop / Product : CORN

Op. Instance : Harvest - 1

Area : 81.19 ac

Avg. Yield : 163.69 bu/ac

Avg. Moisture : 21.50 %

Notes/Comments

Operator Signature and Date

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2010-2011 Planned Crop	2010-2011 Yield Goal	Previous Crop	Yield Goal Justification
6A	InLand Bays	48.1	Sandy Loam	No	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields
6B	InLand Bays	34.4	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6C	InLand Bays	36.4	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6D	InLand Bays	35.2	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6E	InLand Bays	23.3	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6F	InLand Bays	30.6	Sandy Loam	No	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields

Soil Test Results:

Laboratory: AgroLab
Results Report In: ppm/ac

Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
6A	InLand Bays	5.8	1.40	98	53	319	50
6B	InLand Bays	6.4	1.50	273	91	582	93
6C	InLand Bays	6.4	1.30	280	60	470	67
6D	InLand Bays	6.5	1.30	409	91	740	81
6E	InLand Bays	6.8	1.50	351	92	510	112
6F	InLand Bays	6.9	1.20	281	43	465	86

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime Type	Lime Rate	Commercial Fertilizer Applications N	P	K	B	Mn
6A	InLand Bays	None		120/0	0/0	0/0	0/0	0/0
6B	InLand Bays	None		150	30	100	2	0
6C	InLand Bays	None		150	30	100	2	0
6D	InLand Bays	None		150	30	100	2	0
6E	InLand Bays	None		150	30	100	2	0
6F	InLand Bays	None		120/0	0/0	0/0	0/0	0/0

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2011-2012 Planned Crop	2011-2012 Yield Goal	Previous Crop	Yield Goal Justification
1	InLand Bays	30.1	Sandy Loam	no	Wheat/Soybeans	100/40	Field Corn	Historical Farm Yields
2A	InLand Bays	27.6	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2B	InLand Bays	32.3	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2C	InLand Bays	32.4	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2D	InLand Bays	27.9	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2E	InLand Bays	33.1	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
3	InLand Bays	28.5	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields

Soil Test Results:

Laboratory: AgroLab
Results Report in: ppm/ac

Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
1	InLand Bays	6.0	1.20	199	59	251	79
2A	InLand Bays	5.2	1.10	429	61	358	29
2B	InLand Bays	5.4	1.40	339	99	505	68
2C	InLand Bays	5.4	1.20	248	88	352	49
2D	InLand Bays	5.6	1.30	217	88	312	46
2E	InLand Bays	5.2	1.40	440	91	409	41
3	InLand Bays	5.1	1.90	281	121	325	41

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime Type	Lime Rate	Commercial Fertilizer Applications N	P	K	B	Mn
1	InLand Bays	None		100/0	0/0	0/0	0/0	0/0
2A	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2B	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2C	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2D	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2E	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
3	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2010-2011 Planned Crop	2010-2011 Yield Goal	Previous Crop	Yield Goal Justification
4A	InLand Bays	30	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
4B	InLand Bays	22.3	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
4C	InLand Bays	29.6	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
5A	InLand Bays	28.7	Sandy Loam	no	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields
5B	InLand Bays	12.8	Sandy Loam	no	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields

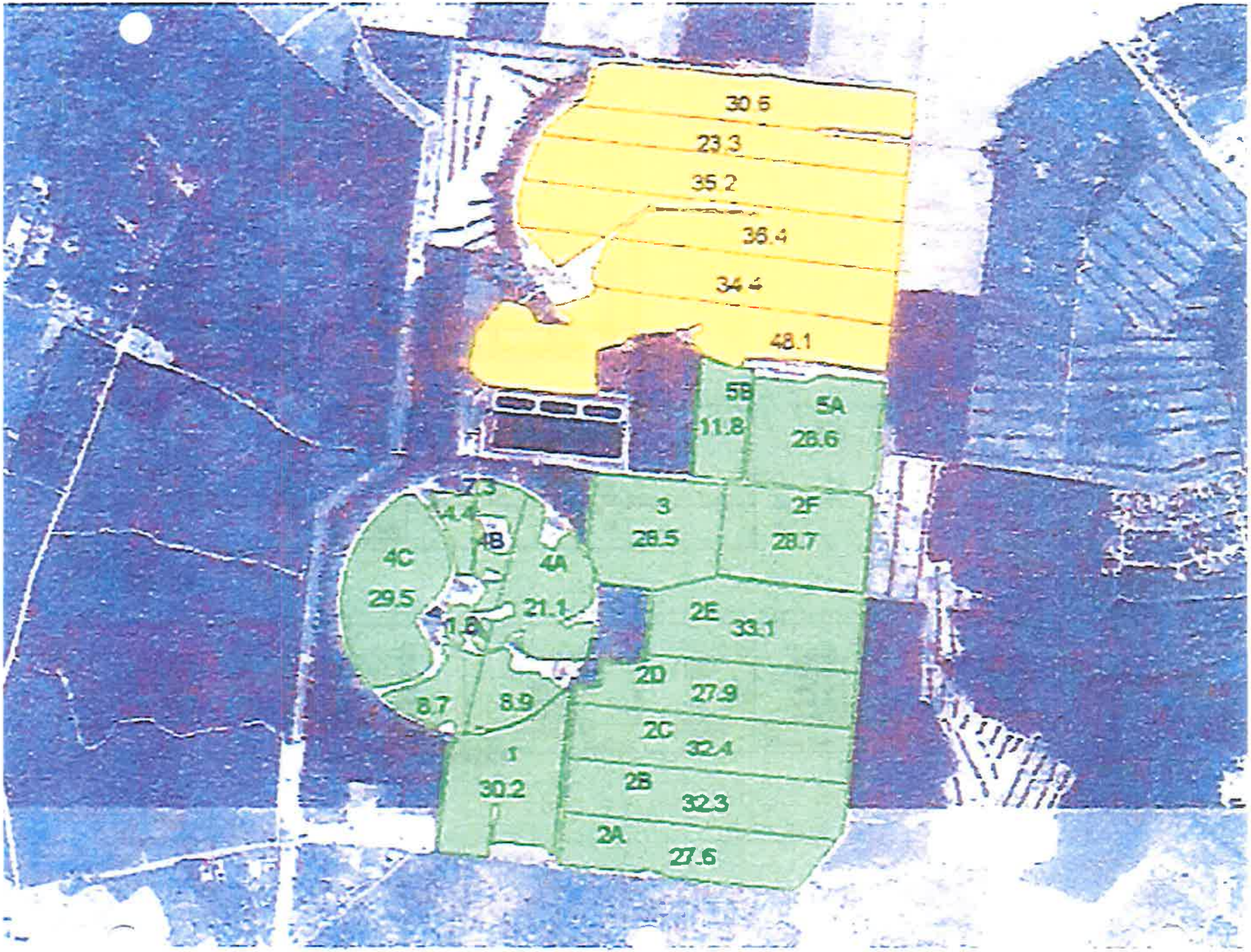
Soil Test Results:

Laboratory: AgroLab
Results Report in: ppm/ac

Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
4A	InLand Bays	6.4	1.60	183	61	504	81
4B	InLand Bays	6.2	2.00	152	55	586	99
4C	InLand Bays	6.0	1.40	119	41	291	78
5A	InLand Bays	6.0	1.40	473	91	708	40
5B	InLand Bays	4.4	2.60	70	56	153	57

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime Type	Lime Rate	Commercial Fertilizer Applications N	P	K	B	Mn
4A	InLand Bays	None		150	30	75	2	0
4B	InLand Bays	None		150	30	75	2	0
4C	InLand Bays	None		150	30	75	2	0
5A	InLand Bays	None		120/0	0/0	0/0	0/0	0/0
5B	InLand Bays	Hi Mag	2tn	120/0	0/0	0/0	0/0	0/0


30.6
23.3
35.2
36.4
34.4
48.1
5B
11.8
5A
26.6
3
28.5
2F
28.7
2E
33.1
2D
27.9
2C
32.4
2B
32.3
2A
27.6
1
30.2
8.7
8.9
4C
29.5
4B
4A
21.1

SCADA Operations

From: de@occinc.com
Sent: Monday, February 13, 2017 10:49 AM
To: mutickets
Subject: EMERGENCY 170440277

NOTICE OF INTENT TO EXCAVATE EMERGENCY
Ticket No: 170440277
Transmit Date: 02/13/17 Time: 10:48 AM Op: webusr
Release Date: 02/13/17 Time: 10:44 AM Op: webusr
Response Due By: 02/13/17 Time: 10:45 AM

State : DE County: SUSSEX
Place : SELBYVILLE
Subdivision:
Place: SELBYVILLE
Address: 30148 Street: CANDLEBERRY DR
Nearest Intersecting Street: WATERLEAF WAY

Type of Work: REPAIR CATV SERVICE
Extent of Work: LOCATE/MARK:LOCATE FROM POWER METER ON HOUSE/BLDG TO THE
: CLOSEST COMCAST PED/POLE WITH CONNECTING TAP WITHIN 300 FT TO THE PEDASTAL
: LOCATED AT 30148 CANDLEBERRY DR. TO INCLUDE ALL MAINS, SERVICES, ROADS, AND
: DRIVEWAYS. PLEASE ALSO MARK ALL SERVICE LINES FOR RESIDENTS/BUSINESSES ALONG
: WORK PATH. PLEASE MARK WITH FLAGS AND PAINT DUE TO WEATHER. DECISIVE.
: JAY
: CLICK HERE TO SEE THE TICKET MAPPING FOR SCED01:
: http://de.itic.occinc.com/VPA8-8UJ-2DT-2NW
Comments: RDR

Company : SAINT ELMO
Contact Name : ASHLEY ABBOTT Fax:
Contact Phone: (240)215-1045 Ext:
Caller Address: 9416 DOCTOR PERRY RD
IJAMSVILLE, MD 21754
Email Address: DCI-WESTERNMDLOCATES@DECISIVEINC.NET
Job Site Contact: BRUCE Job Site Phone: (240)286-7529
Work Being Done For: COMCAST

Caller Lat : Lon: Zone:
Ex. Coord NW Lat: 38.4600000 Lon:-75.1300000 SE Lat: 38.4566667 Lon:-75.1233333
Permit#: Contract Job#:
Explosives: N
ARTW34 DECO26 DPML12 DPSA16 SE02 TIDE02 UNCA29
VSUSS

Send To: SCED01 Seq No: 0041 Map Ref:

AgroLab

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Account No. : 23

QUINN, SCOTT
FARMSITE TECHNOLOGIES
114 WILTON ROAD
CHESTERTOWN MD 21620

SoilAnalysis Report

Invoice No. : 106985
Date Received : 09/23/2010
Date Reported : 09/24/2010

Results For : INLAND BAYS
Location : SAYRE BALDWIN

Sample ID / Lab No.	Soil pH 1:1	SMP Buffer pH	Soluble Salts 1:1 mmho/cm	Al ppm	Organic Matter %	NO3-N ppm	U of D P Sat Ratio	Mehlich 3 Phosphorus ppm P / FIV	K ppm	Ca ppm	Mg ppm	Na ppm	SO4-S ppm	Zn ppm	Fe ppm	Mn ppm	Cu ppm	B ppm	Cl ppm	C.E.C. meq / 100g	% Base Saturation H	K	Ca	Mg	Na
1								ICAP																	
658	6.0	7.0			1.2		45	199	59	251	79									2.5	16	6	51	27	0
2A								ICAP																	
659	5.2	6.8			1.1		86	429	61	358	29									4.5	52	3	39	5	0
2B								ICAP																	
660	5.4	6.8			1.4		63	339	99	505	68									5.4	39	5	46	10	0
2C								ICAP																	
661	5.4	6.7			1.2		58	248	88	352	49									5.7	58	4	31	7	0
2D								ICAP																	
662	5.6	6.7			1.3		55	217	88	312	46									5.2	56	4	30	7	0
2E								ICAP																	
663	5.2	6.5			1.4		92	440	91	409	41									7.4	65	3	27	5	0
3								ICAP																	
664	5.1	6.4			1.9		52	281	121	325	41									7.9	71	4	21	4	0
4A								ICAP																	
665	6.4	6.8			1.5		43	183	61	504	81									5.2	36	3	48	13	0
4B								ICAP																	
666	6.2	6.7			2.0		37	152	55	586	99									7.3	47	2	40	11	0
4C								ICAP																	
667	6.0	6.7			1.4		48	119	41	291	78									5.0	56	2	29	13	0
5A								ICAP																	
668	6.0	6.8			1.4		116	473	91	708	40									6.6	38	4	53	5	0
5B								ICAP																	
669	4.4	5.8			2.6		18	70	56	153	57									13.0	89	1	6	4	0
6A								ICAP																	
670	5.8	6.7			1.4		29	98	53	319	50									4.9	57	3	32	8	0

Reviewed By: W.R. Rohrer

Copy : 1 **9/24/2010**

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Fax: 888-412-0873

web site
www.agrolab.us

1009 Mattlind Way
Milford, DE 19963

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Account No. : 23

SoilAnalysis Report

QUINN, SCOTT
FARMSITE TECHNOLOGIES
114 WILTON ROAD
CHESTERTOWN MD 21620

Invoice No. : 1069852
Date Received : 09/23/2010
Date Reported : 09/24/2010

Results For : INLAND BAYS
Location : SAYRE BALDWIN

Sample ID / Lab No.	Soil pH 1:1	SMP Buffer pH	Soluble Salts 1:1 mmho/cm	Al ppm	Organic Matter %	NO3-N ppm	U of D P Sat Ratio	Mehlich 3 Phosphorus ppm P / F/V	K ppm	Ca ppm	Mg ppm	Na ppm	SO4-S ppm	Zn ppm	Fe ppm	Mn ppm	Cu ppm	B ppm	Cl ppm	C.E.C. meq / 100g	% Base Saturation H	K	Ca	Mg	Na
6C								ICAP																	
672	6.4	7.0			1.3		77	280	60	470	67									3.4	9	5	69	17	0
6D								ICAP																	
673	6.5	7.0			1.3		104	409	91	740	81									4.9	6	5	75	14	0
6E								ICAP																	
674	6.8	7.0			1.5		84	351	92	510	112									3.7	0	6	69	25	0
6F								ICAP																	
675	6.9	6.9			1.2		84	281	43	455	86									3.6	14	3	63	20	0

Bus: 302-265-2734
Fax: 888-412-0[illegible]73

web site
www.agro[illegible]us

1009 Mattlind Way
Milford, [illegible] 19963

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Account No. : 23

SoilAnalysis Report

QUINN, SCOTT
FARMSITE TECHNOLOGIES
114 WILTON ROAD
CHESTERTOWN MD 21620

Invoice No. : 1069852
Date Received : 09/23/2010
Date Reported : 09/24/2010

Results For : INLAND BAYS
Location : SAYRE BALDWIN

Sample ID / Lab No.	Soil pH 1:1	SMP Buffer pH	Soluble Salts 1:1 mmho/cm	Al ppm	Organic Matter %	NO3-N ppm	U of D P Sat Ratio	Mehlich 3 Phosphorus ppm P / FIV ICAP	K ppm	Ca ppm	Mg ppm	Na ppm	SO4-S ppm	Zn ppm	Fe ppm	Mn ppm	Cu ppm	B ppm	Cl ppm	C.E.C. meq / 100g	% Base Saturation H	K	Ca	Mg	Na
6B 671	6.4	6.9			1.5		68	273	91	582	93									5.2	25	4	56	15	0

Bus: 302-265-2734
Fax: 888-412-0873

web site
www.agrolab.us

1009 Mattlind Way
Milford, DE 19963

SAYRE BALDWIN INC.

17882 POTATO LANE

BRIDGEVILLE, DE.

2012 VEGETATIVE PLAN FOR INLAND BAYS

ALL IRRIGATED FIELDS

All of cover crop will be chemically burned down in the spring and strip-till planted in corn.

75 lbs potash will be stripbanded in spring along with a starter fertilizer containing 30lbs .

Nitrogen and 20lbs. Phosphorus

Pre-emergent weed control will consist of Harness Xtra at labeled rates.

Round-up and foliar nutrients (tissue samples) if needed.

Soil samples and recommendations are enclosed

Crop many be switched to soybeans depending on weather an/or market conditions,In this

Case , cover crop will be chemically burned down and strip-till planted. Potash will be broadcasted

According soil test recommendations. Round-up will be used at recommended rate post-

emergent

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2010-2011 Planned Crop	2010-2011 Yield Goal	Previous Crop	Yield Goal Justification
6A	InLand Bays	48.1	Sandy Loam	No	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields
6B	InLand Bays	34.4	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6C	InLand Bays	36.4	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6D	InLand Bays	35.2	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6E	InLand Bays	23.3	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
6F	InLand Bays	30.6	Sandy Loam	No	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields

Soil Test Results:

Laboratory: AgroLab
Results Report In: ppm/ac

Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
6A	InLand Bays	5.8	1.40	98	53	319	50
6B	InLand Bays	6.4	1.50	273	91	582	93
6C	InLand Bays	6.4	1.30	280	60	470	67
6D	InLand Bays	6.5	1.30	409	91	740	81
6E	InLand Bays	6.8	1.50	351	92	510	112
6F	InLand Bays	6.9	1.20	281	43	465	86

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime Type	Lime Rate	Commercial Fertilizer Applications N	P	K	B	Mn
6A	InLand Bays	None		120/0	0/0	0/0	0/0	0/0
6B	InLand Bays	None		150	30	100	2	0
6C	InLand Bays	None		150	30	100	2	0
6D	InLand Bays	None		150	30	100	2	0
6E	InLand Bays	None		150	30	100	2	0
6F	InLand Bays	None		120/0	0/0	0/0	0/0	0/0

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2010-2011 Planned Crop	2010-2011 Yield Goal	Previous Crop	Yield Goal Justification
4A	InLand Bays	30	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
4B	InLand Bays	22.3	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
4C	InLand Bays	29.6	Sandy Loam	Yes	Field Corn	150	Field Corn	Historical Farm Yields
5A	InLand Bays	28.7	Sandy Loam	no	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields
5B	InLand Bays	12.8	Sandy Loam	no	Barley/Soybeans	120/0	Field Corn	Historical Farm Yields

Soil Test Results:

Laboratory: AgroLab
Results Report in: ppm/ac

Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
4A	InLand Bays	6.4	1.60	183	61	504	81
4B	InLand Bays	6.2	2.00	152	55	586	99
4C	InLand Bays	6.0	1.40	119	41	291	78
5A	InLand Bays	6.0	1.40	473	91	708	40
5B	InLand Bays	4.4	2.60	70	56	153	57

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime Type	Lime Rate	Commercial Fertilizer Applications N	P	K	B	Mn
4A	InLand Bays	None		150	30	75	2	0
4B	InLand Bays	None		150	30	75	2	0
4C	InLand Bays	None		150	30	75	2	0
5A	InLand Bays	None		120/0	0/0	0/0	0/0	0/0
5B	InLand Bays	Hi Mag	2tn	120/0	0/0	0/0	0/0	0/0

Sayre Baldwin Inc.
17882 Potato Lane
Bridgeville DE 19963

Inland Bays

Field Identification, Acres, and Crop Rotation Information:

Field ID	Tract	Acres	Soil Type	Irrigation	2011-2012 Planned Crop	2011-2012 Yield Goal	Previous Crop	Yield Goal Justification
1	InLand Bays	30.1	Sandy Loam	no	Wheat/Soybeans	100/40	Field Corn	Historical Farm Yields
2A	InLand Bays	27.8	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2B	InLand Bays	32.3	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2C	InLand Bays	32.4	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2D	InLand Bays	27.9	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
2E	InLand Bays	33.1	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields
3	InLand Bays	28.5	Sandy Loam	no	Barley/Soybeans	120/50	Field Corn	Historical Farm Yields

Soil Test Results:

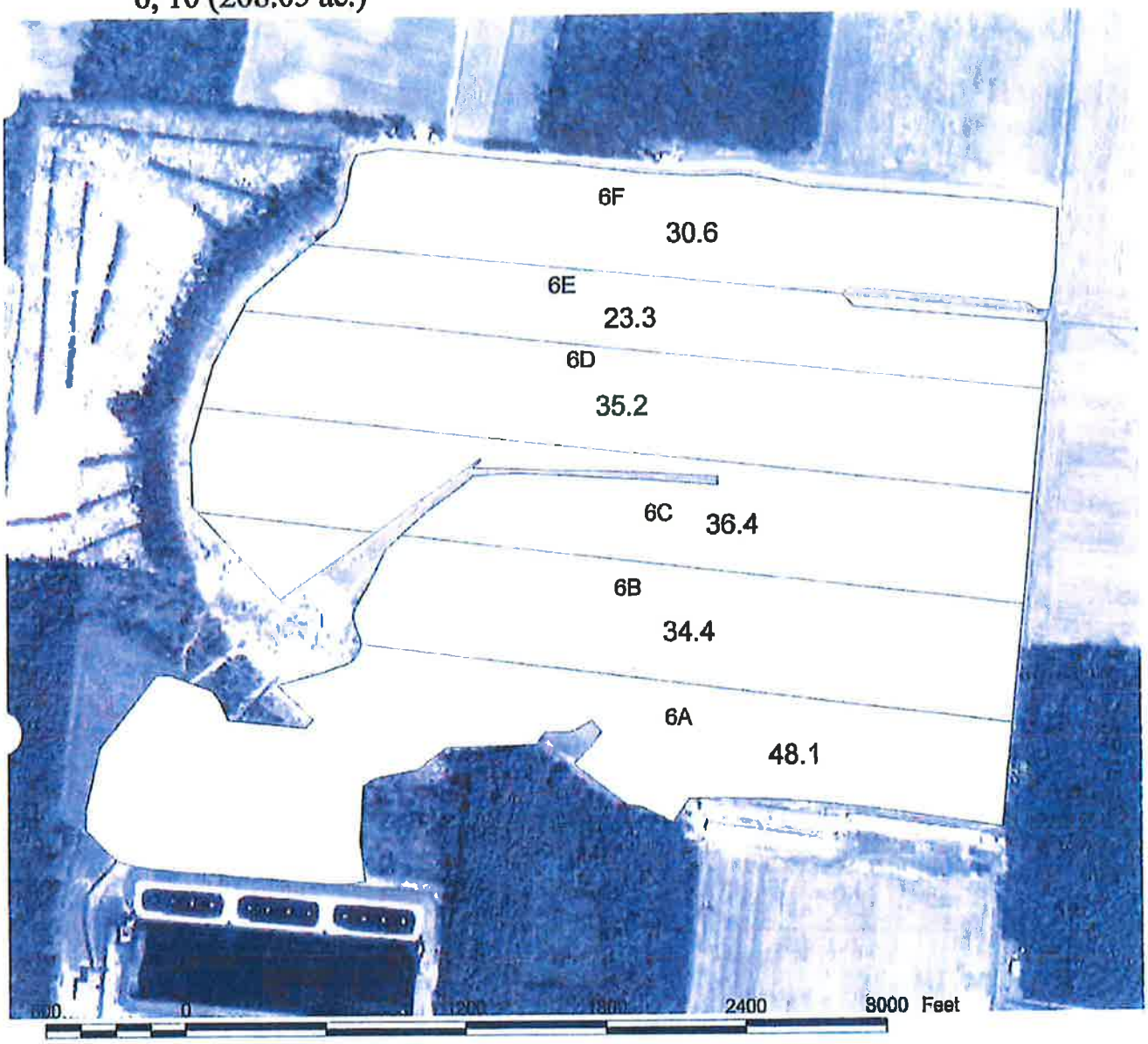
Laboratory: AgroLab
Results Report In: ppm/ac

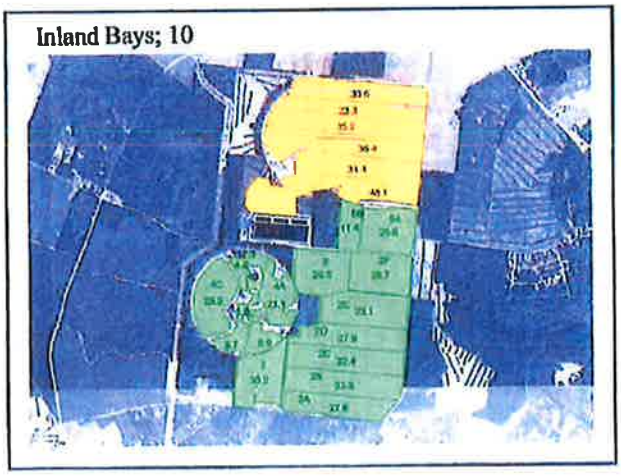
Field ID	Tract	Soil pH	Organic Matter	P	K	Ca	Mg
				lb./acre			
1	InLand Bays	6.0	1.20	199	59	251	79
2A	InLand Bays	5.2	1.10	429	61	358	29
2B	InLand Bays	5.4	1.40	339	99	505	68
2C	InLand Bays	5.4	1.20	248	88	352	49
2D	InLand Bays	5.6	1.30	217	88	312	46
2E	InLand Bays	5.2	1.40	440	91	409	41
3	InLand Bays	5.1	1.90	281	121	325	41

NUTRIENT RECOMMENDATIONS

Field ID	Tract	Lime Type	Lime Rate	Commercial Fertilizer Applications N	P	K	B	Mn
1	InLand Bays	None		100/0	0/0	0/0	0/0	0/0
2A	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2B	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2C	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2D	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
2E	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0
3	InLand Bays	Hi-Mag	1tn	120/0	0/0	0/0	0/0	0/0

6; 10 (208.05 ac.)





Date: Sep 28, 2010
Field Name: 6; 10
Location: Sussex Co., Delaware, U.S.
Farm Name: Inland Bays
Client Name: Sayre Baldwin Inc
Total Acres: 208.05
Field Boundary Start Location:
Latitude: 38.64007730
Longitude: -75.22915804

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Account No. : 23

QUINN, SCOTT
FARMSITE TECHNOLOGIES
114 WILTON ROAD
CHESTERTOWN MD 21620

SoilAnalysis Report

Invoice No. : 1069852
Date Received : 09/23/2010
Date Reported : 09/24/2010

Results For : INLAND BAYS
Location : SAYRE BALDWIN

Sample ID / Lab No.	Soil pH 1:1	SMP Buffer pH	Soluble Salts 1:1 mmho/cm	Al ppm	Organic Matter %	NO3-N ppm	U of D P Sat Ratio	Mehlich 3 Phosphorus ppm P / FIV	K ppm	Ca ppm	Mg ppm	Na ppm	SO4-S ppm	Zn ppm	Fe ppm	Mn ppm	Cu ppm	B ppm	Cl ppm	C.E.C. meq / 100g	% Base Saturation H	K	Ca	Mg	Na
6C								ICAP																	
672	6.4	7.0			1.3		77	280	60	470	67									3.4	9	5	69	17	0
6D								ICAP																	
673	6.5	7.0			1.3		104	409	91	740	81									4.9	6	5	75	14	0
6E								ICAP																	
674	6.8	7.0			1.5		84	351	92	510	112									3.7	0	6	69	25	0
6F								ICAP																	
675	6.9	6.9			1.2		84	281	43	465	86									3.6	14	3	63	20	0

Reviewed By: W.R. Rohrer

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Account No. : 23

Soil Analysis Report

QUINN, SCOTT
FARMSITE TECHNOLOGIES
114 WILTON ROAD
CHESTERTOWN MD 21620

Invoice No. : 1069852
Date Received : 09/23/2010
Date Reported : 09/24/2010

Results For : INLAND BAYS
Location : SAYRE BALDWIN

Sample ID / Lab No.	Soil pH 1:1	SMP Buffer pH	Soluble Salts 1:1 mmho/cm	Al ppm	Organic Matter %	NO3-N ppm	U of D P Sat Ratio	Mehlich 3 Phosphorus ppm P / FIV ICAP	K ppm	Ca ppm	Mg ppm	Na ppm	SO4-S ppm	Zn ppm	Fe ppm	Mn ppm	Cu ppm	B ppm	Cl ppm	C.E.C. meq / 100g	% Base Saturation H	K	Ca	Mg	Na
6B																									
671	6.4	6.9			1.5		68	273	91	582	93									5.2	25	4	56	15	0

Reviewed By: W.R. Rohrer

Copy : 1 **9/24/2010**

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Milford, DE 19963

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Soil Analysis Report

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Invoice No. : 1069852
Date Received : 09/23/2010
Date Reported : 09/24/2010

Results For : INLAND BAYS
Location : SAYRE BALDWIN

Sample ID / Lab No.	Soil pH 1:1	SMP Buffer pH	Soluble Salts 1:1 mmho/cm	Al ppm	Organic Matter %	NO3-N ppm	U of D P Sat Ratio	Mehlich 3 Phosphorus ppm P / FIV	K ppm	Ca ppm	Mg ppm	Na ppm	SO4-S ppm	Zn ppm	Fe ppm	Mn ppm	Cu ppm	B ppm	Cl ppm	C.E.C. meq / 100g	% Base Saturation H	K	Ca	Mg	Na
1								ICAP																	
658	6.0	7.0			1.2		45	199	59	251	79									2.5	16	6	51	27	0
2A								ICAP																	
659	5.2	6.8			1.1		86	429	61	358	29									4.6	52	3	39	5	0
2B								ICAP																	
660	5.4	6.8			1.4		63	339	99	505	68									5.4	39	5	46	10	0
2C								ICAP																	
661	5.4	6.7			1.2		56	248	88	352	49									5.7	58	4	31	7	0
2D								ICAP																	
662	5.6	6.7			1.3		55	217	88	312	46									5.2	58	4	30	7	0
2E								ICAP																	
663	5.2	6.5			1.4		92	440	91	409	41									7.4	65	3	27	5	0
3								ICAP																	
664	5.1	6.4			1.9		52	281	121	325	41									7.9	71	4	21	4	0
4A								ICAP																	
665	6.4	6.8			1.6		43	183	61	504	81									5.2	36	3	48	13	0
4B								ICAP																	
666	6.2	6.7			2.0		37	152	55	586	99									7.3	47	2	40	11	0
4C								ICAP																	
667	6.0	6.7			1.4		48	119	41	291	78									5.0	56	2	29	13	0
5A								ICAP																	
668	6.0	6.8			1.4		118	473	91	708	40									6.6	38	4	53	5	0
5B								ICAP																	
669	[illegible]	5.8			2.6		18	70	56	153	57									13.0	89	1	6	4	0
6A								ICAP																	
670	5.8	6.7			1.4		29	98	53	319	50									4.9	57	3	32	8	0

Reviewed By: W.R. Rohrer

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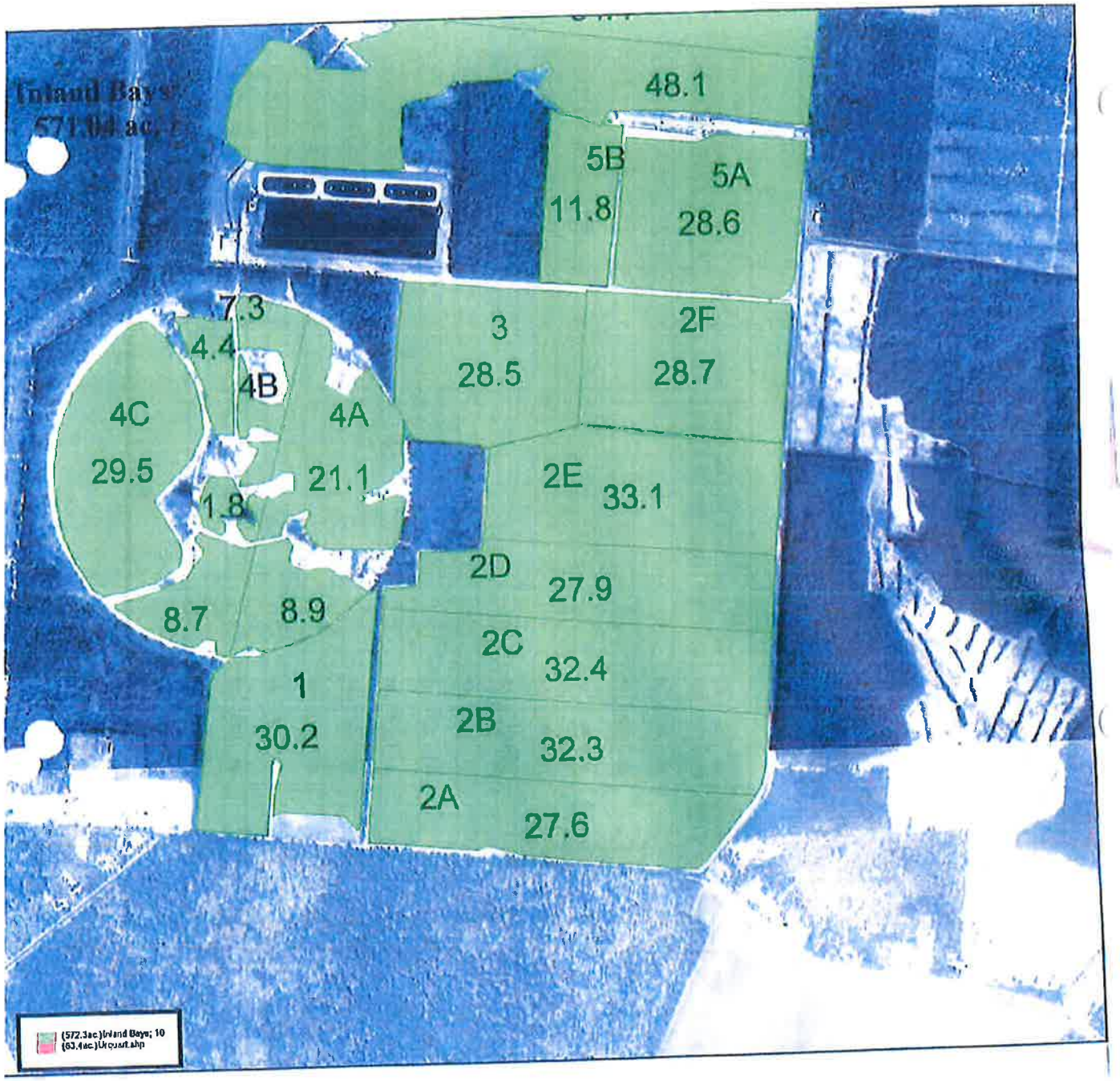


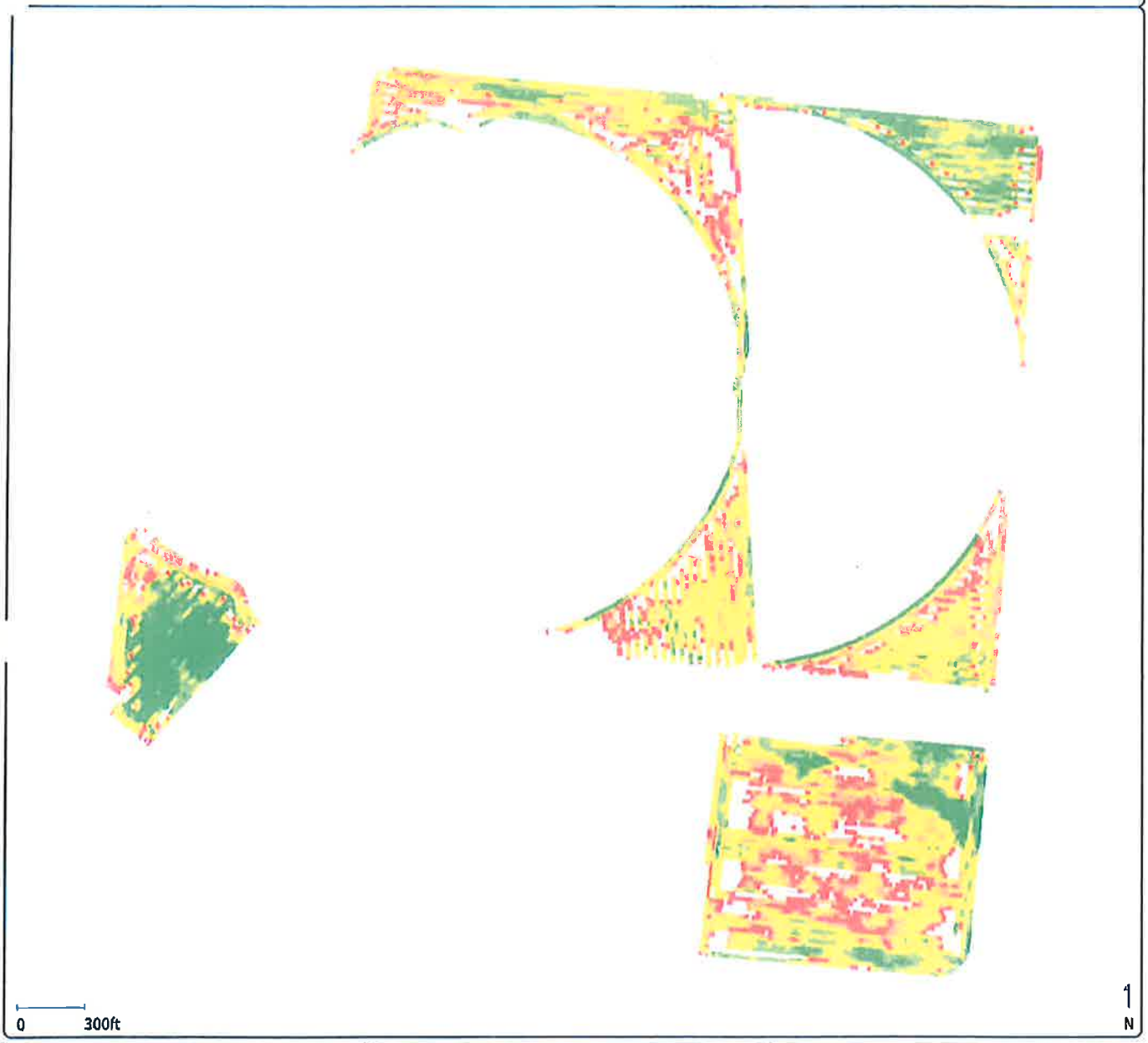
0.5 0 0.5 Miles

Sayre Baldwin Inc
Sussex Co.

N
W E
S

Date: Sep 28, 2010
Farm Name: Inland Bays
Client Name: Sayre Baldwin Inc
Number of Fields: 6
Total Acres: 571.04

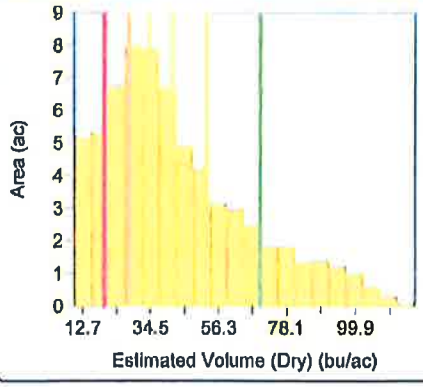
Grain Harvest 2010 - DRY N 39845(CORN)



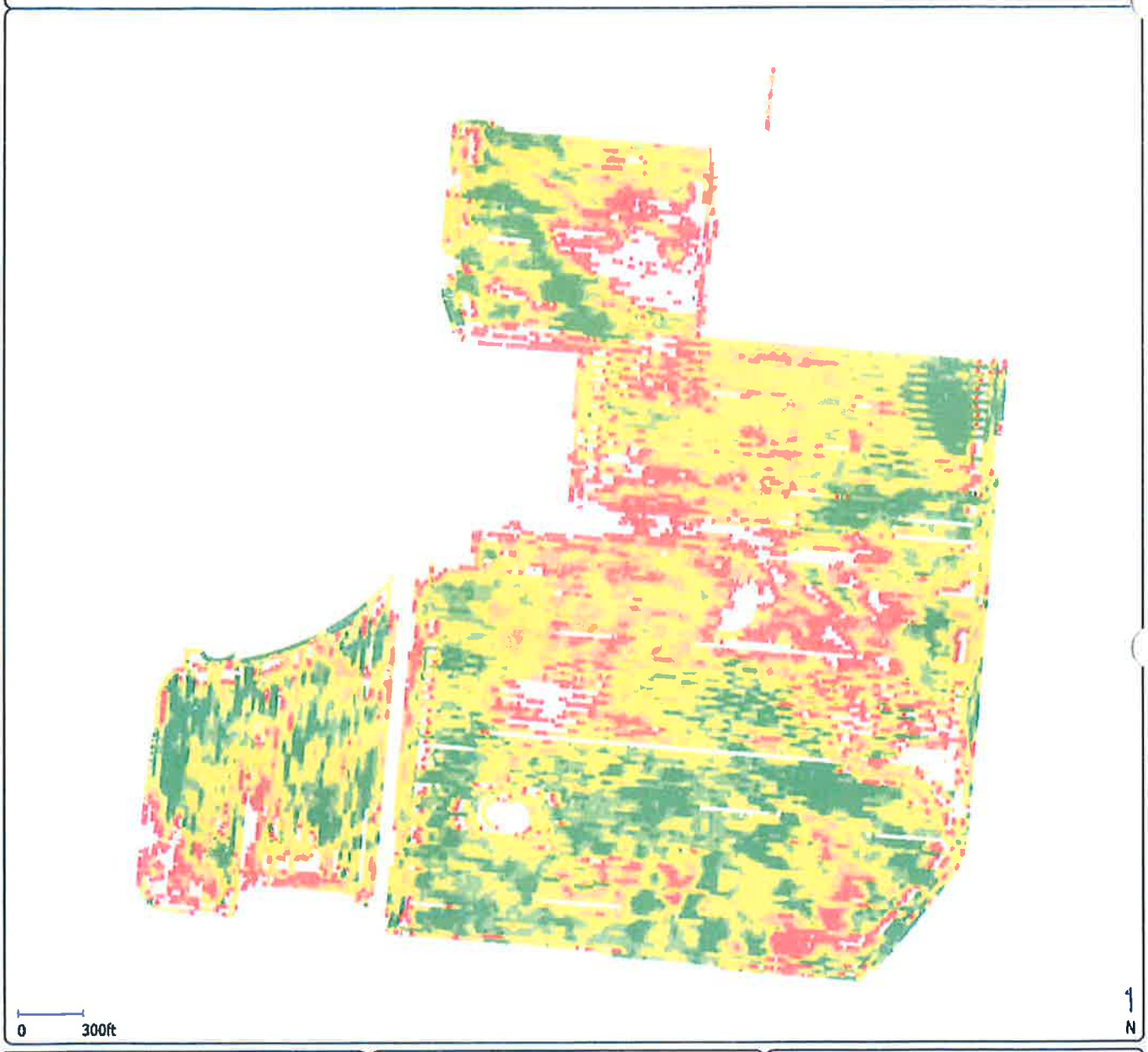
Grower : BALDWIN
Farm : INLDBYS 39845
Field : DRY N 39845
Year : 2010
Operation : Grain Harvest
Crop / Product : CORN
Instance : Harvest - 1
Area : 66.83 ac
Avg. Yield : 39.20 bu/ac
Avg. Moisture : 19.16 %

Estimated Volume (Dry)
(bu/ac)

69.91 - 399.20	(9.570 ac)
52.67 - 69.91	(9.164 ac)
41.64 - 52.67	(9.537 ac)
34.24 - 41.64	(9.514 ac)
27.92 - 34.24	(9.659 ac)
19.98 - 27.92	(9.732 ac)
10.01 - 19.98	(9.657 ac)



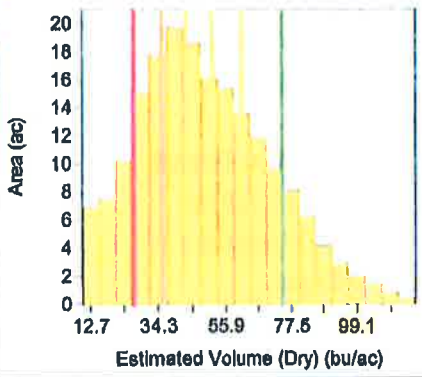
Grain Harvest 2010 - DRY S 39845(CORN)



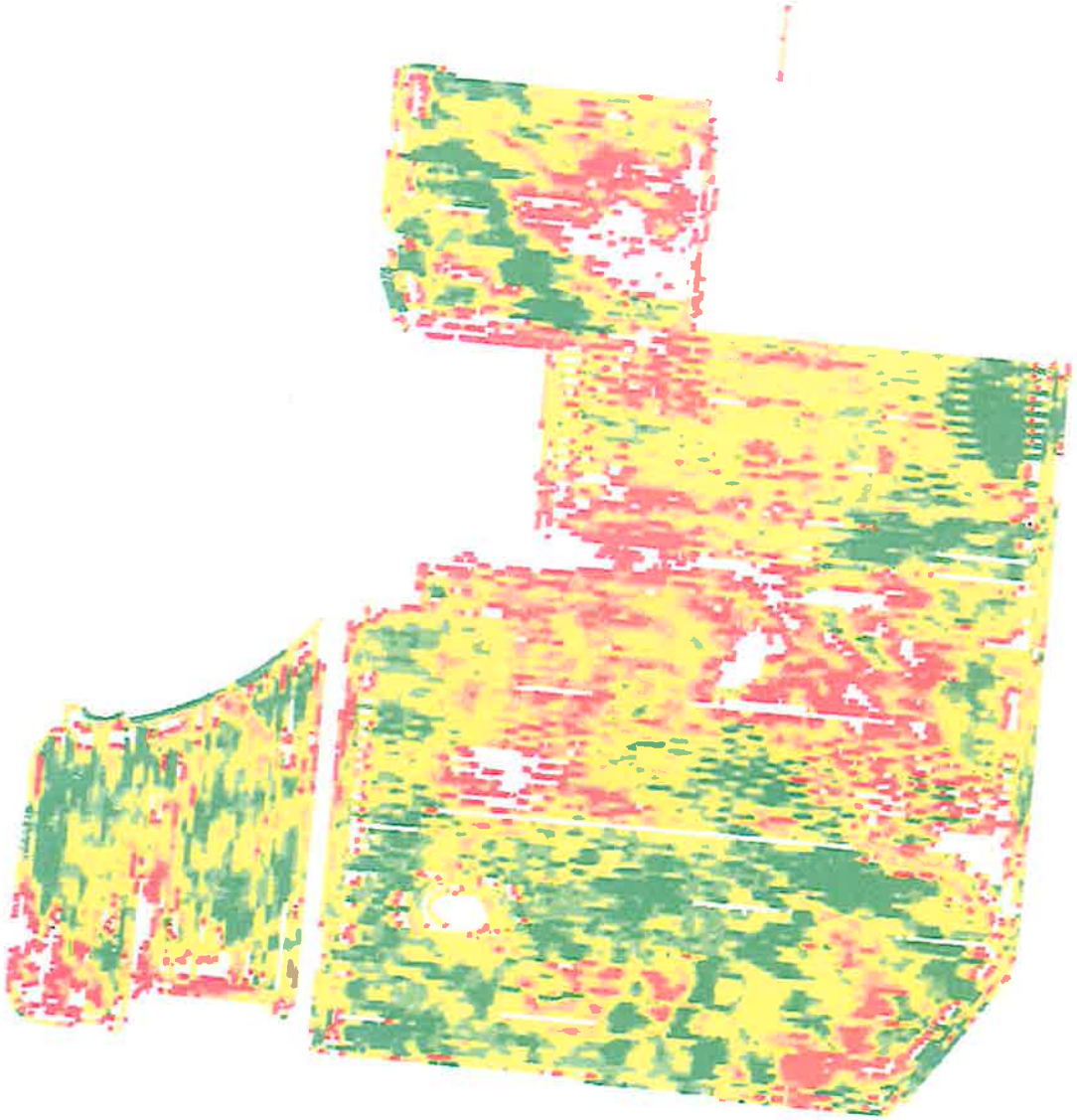
Grower : BALDWIN
Farm : INLDBYS 39845
Field : DRY S 39845
Year : 2010
Operation : Grain Harvest
Crop / Product : CORN
Instance : Harvest - 1
Area : 188.56 ac
Avg. Yield : 46.73 bu/ac
Avg. Moisture : 18.24 %

Estimated Volume (Dry)
(bu/ac)

74.56 - 392.82	(26.98 ac)
61.25 - 74.56	(27.61 ac)
51.53 - 61.25	(27.15 ac)
43.24 - 51.53	(26.82 ac)
35.71 - 43.24	(26.75 ac)
26.97 - 35.71	(27.08 ac)
10.00 - 26.97	(26.16 ac)



Grain Harvest 2010 - DRY S 39845(CORN)



Grower : BALDWIN
Farm : INLDBYS 39845
Field : DRY S 39845
Year : 2010
Operation : Grain Harvest
Crop / Product : CORN
Op. Instance : Harvest - 1
Area : 188.56 ac
Avg. Yield : 46.73 bu/ac
Avg. Moisture : 18.24 %

Estimated Volume (Dry)
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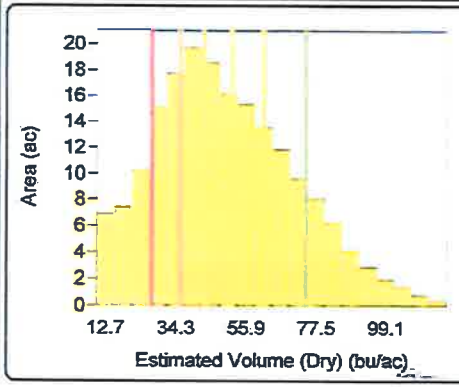
43.24 - 51.53	(26.82 ac)
35.71 - 43.24	(26.75 ac)
26.97 - 35.71	(27.08 ac)
10.00 - 26.97	(26.16 ac)



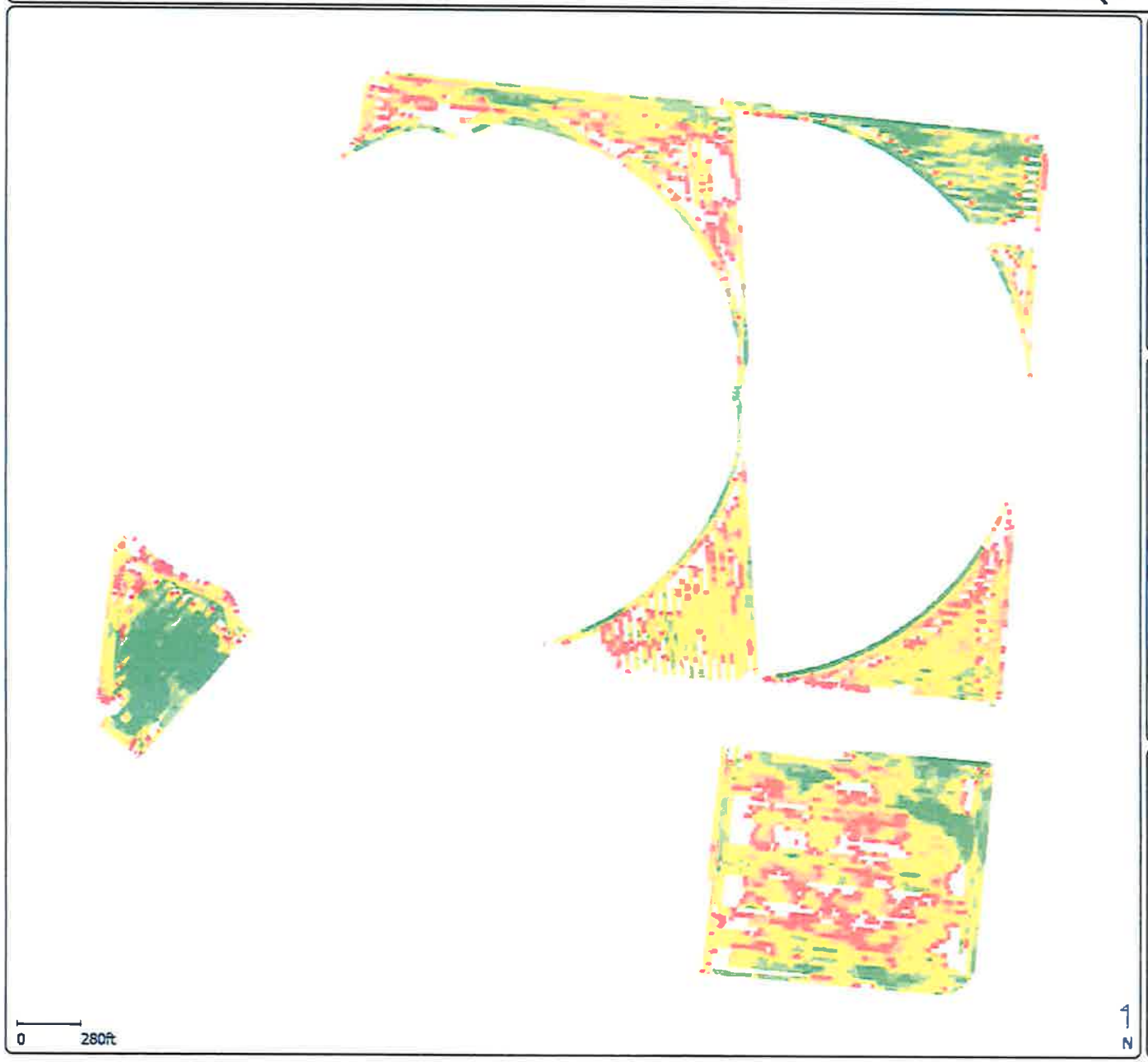
Field Sum' ary Report

Grower :	**BALDWIN**
Farm :	**INLDBYS 39845**

Field:	DRY S 39845
Year:	2010
Operation:	Grain Harvest
Product:	Corn - CORN
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Actual Weight (Wet) lb	Error %	Date Logged
10/08/27-11:10:12	145.77	19.20	400,820	6,844.1	46.95	N/A	N/A	8/27/2010
10/08/30-17:56:14	32.39	17.07	77,971	1,366.4	42.19	N/A	N/A	8/30/2010
10/08/31-16:02:48	30.13	14.83	85,206	1,521.5	50.50	N/A	N/A	8/31/2010
Totals	**208.28**	**18.24** Average	**563,997**	**9,732.1**	**46.73** Average			**8/27/2010 - 8/31/2010**

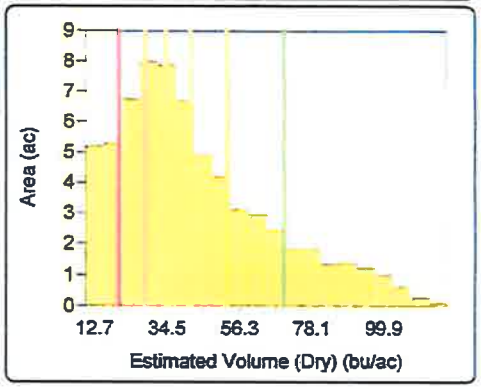
Grain Harvest 2010 - DRY N 39845(CORN)



Grower : BALDWIN
Farm : INLDBYS 39845
Field : DRY N 39845
Year : 2010
Operation : Grain Harvest
Crop / Product : CORN
Op. Instance : Harvest - 1
Area : 66.83 ac
Avg. Yield : 39.20 bu/ac
Avg. Moisture : 19.16 %

Estimated Volume (Dry)
(bu/ac)

69.91 - 399.20	(9.570 ac)
52.67 - 69.91	(9.164 ac)
41.64 - 52.67	(9.537 ac)
34.24 - 41.64	(9.514 ac)
27.92 - 34.24	(9.659 ac)
19.98 - 27.92	(9.732 ac)
10.01 - 19.98	(9.657 ac)

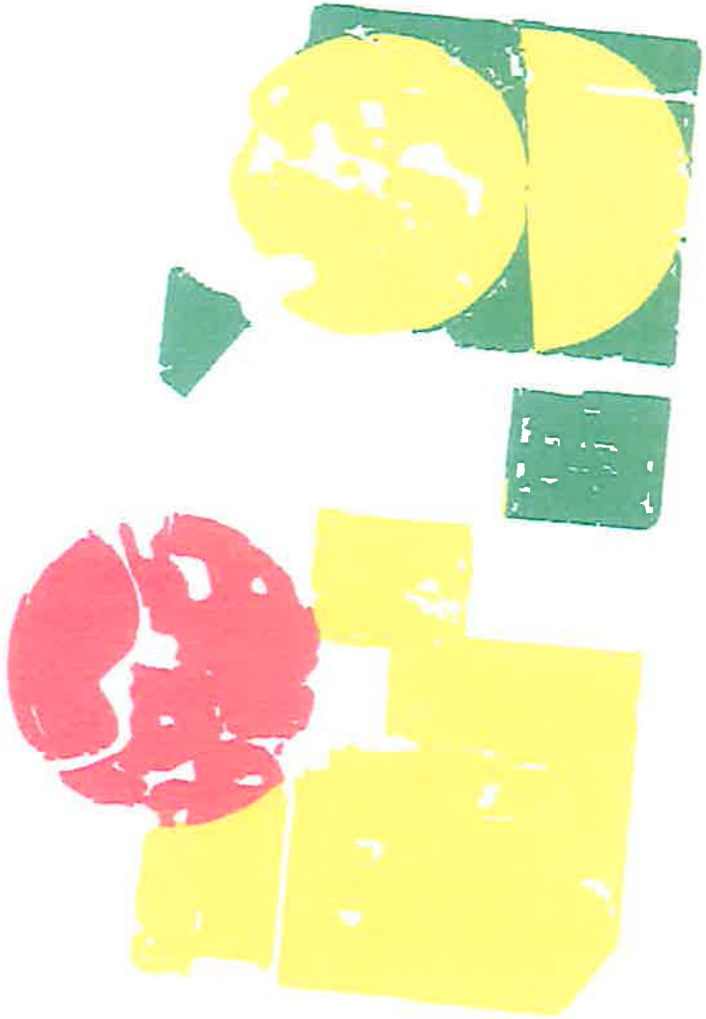


Field Summary Report

Grower :	**BALDWIN**
Farm :	**INLDBYS 39845**

Field:	DRY N 39845
Year:	2010
Operation:	Grain Harvest
Product:	Corn - CORN
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Actual Weight (Wet) lb	Error %	Date Logged
10/07/02-11:22:35	10.47	24.70	23,809	378.88	36.19	N/A	N/A	7/2/2010
10/08/26-11:04:35	13.35	24.01	30,701	493.02	36.94	30,700	0.0019 %	8/26/2010
10/08/31-09:59:17	1.760	15.19	4,198.1	74.97	42.59	N/A	N/A	8/31/2010
10/08/31-10:16:08	53.59	17.00	122,931	2,156.3	40.23	N/A	N/A	8/31/2010
Totals	**79.17**	**19.16** Average	**181,639**	**3,103.2**	**39.20** Average			**7/2/2010 - 8/31/2010**



Field - Name

DRY N 39845	(78.6 ac)
DRY S 39845	(205.3 ac)
IRRG N FRT 39845	(140.8 ac)
IRRG S 39845	(89.8 ac)

Waters Agricultural Laboratories, Inc.
257 Newton Highway P.O. Box 382
Camilla, GA 31730
(229) 336-7216 FAX (229) 336-7967

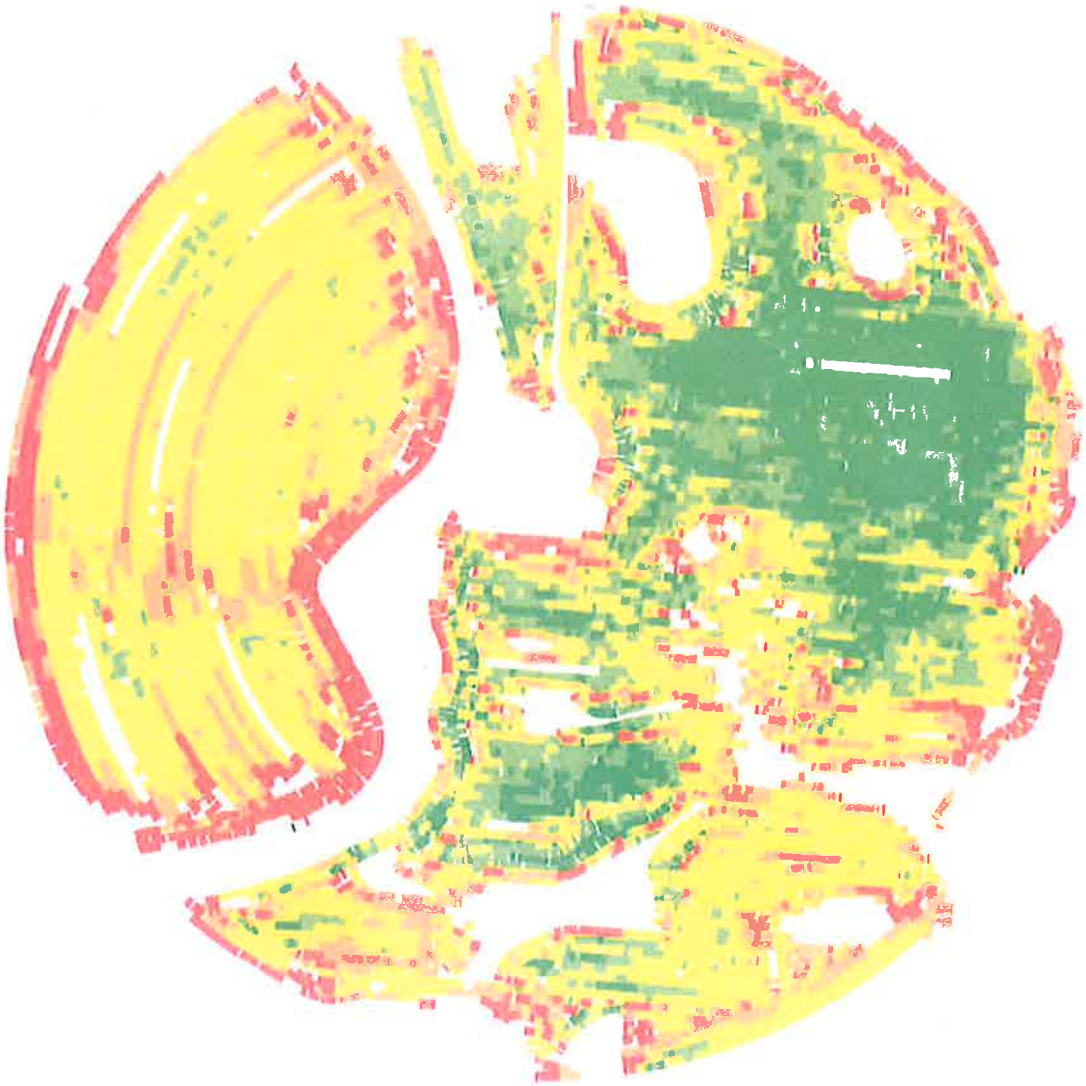
Lab Results - Table View with Averages

Acct No:

Grower / Crop / Yield	Lab Number / Field ID / Sample ID	P	K	Mg	Ca	S	B	Zn	Mn	Fe	Cu	Water pH	Buffer pH	OM	CEC
		lbs. per Acre													
SAYRE BALDWIN NO CROP 6/28/2010	862291FC INLAND BO NEW FIEL	7	53	51	550		0.32		14			4.4	7.45	2.66	6.05
Group- INLAND BOYS NE NO CROP	Average Results	7	53	51	550		0.3		14			4.4	7.46	2.66	6.1

New Field
South side
of Lemon

Grain Harvest 2010 - IRRG S 39845(CORN)



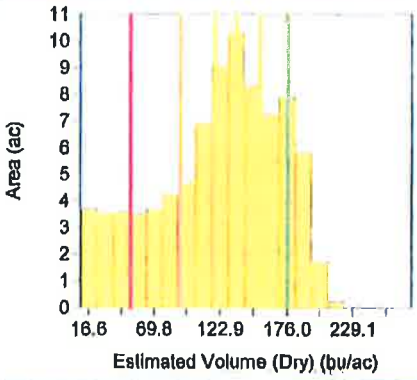
0 180ft

N

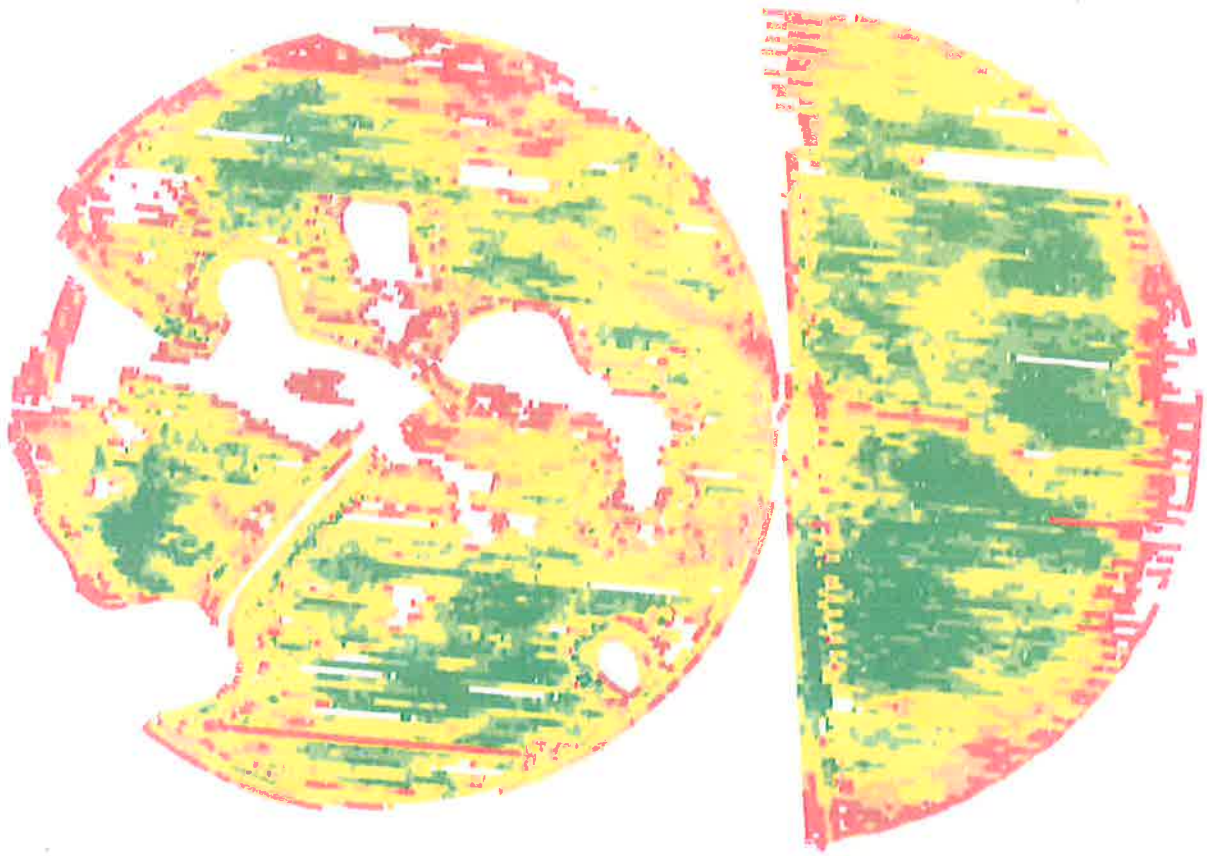
Grower : BALDWIN
Farm : INLDBYS 39845
Field : IRRG S 39845
Year : 2010
Operation : Grain Harvest
Crop / Product : CORN
Instance : Harvest - 1
Area : 84.47 ac
Avg. Yield : 118.99 bu/ac
Avg. Moisture : 18.24 %

Estimated Volume (Dry)
(bu/ac)

176.27 - 381.06	(11.62 ac)
155.28 - 176.27	(11.77 ac)
136.74 - 155.28	(12.48 ac)
119.12 - 136.74	(13.04 ac)
91.47 - 119.12	(12.79 ac)
50.99 - 91.47	(11.61 ac)
10.01 - 50.99	(11.16 ac)



Grain Harvest 2010 - IRRG N FRT 39845(CORN)



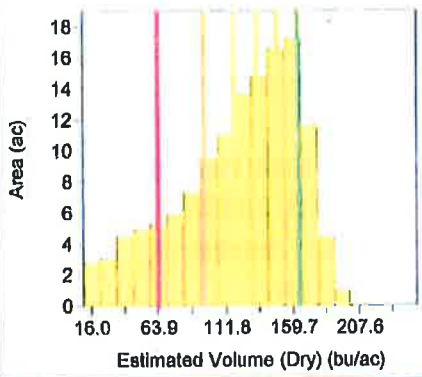
0 240ft

N

Grower : BALDWIN
Farm : INLDBYS 39845
Field : IRRG N FRT 39845
Year : 2010
Operation : Grain Harvest
Crop / Product : CORN
Instance : Harvest - 1
Area : 133.15 ac
Avg. Yield : 118.88 bu/ac
Avg. Moisture : 19.52 %

Estimated Volume (Dry)
(bu/ac)

163.48 - 397.89	(20.11 ac)
149.06 - 163.48	(20.35 ac)
134.13 - 149.06	(19.87 ac)
117.82 - 134.13	(18.77 ac)
96.89 - 117.82	(18.34 ac)
64.62 - 96.89	(17.60 ac)
10.02 - 64.62	(18.11 ac)



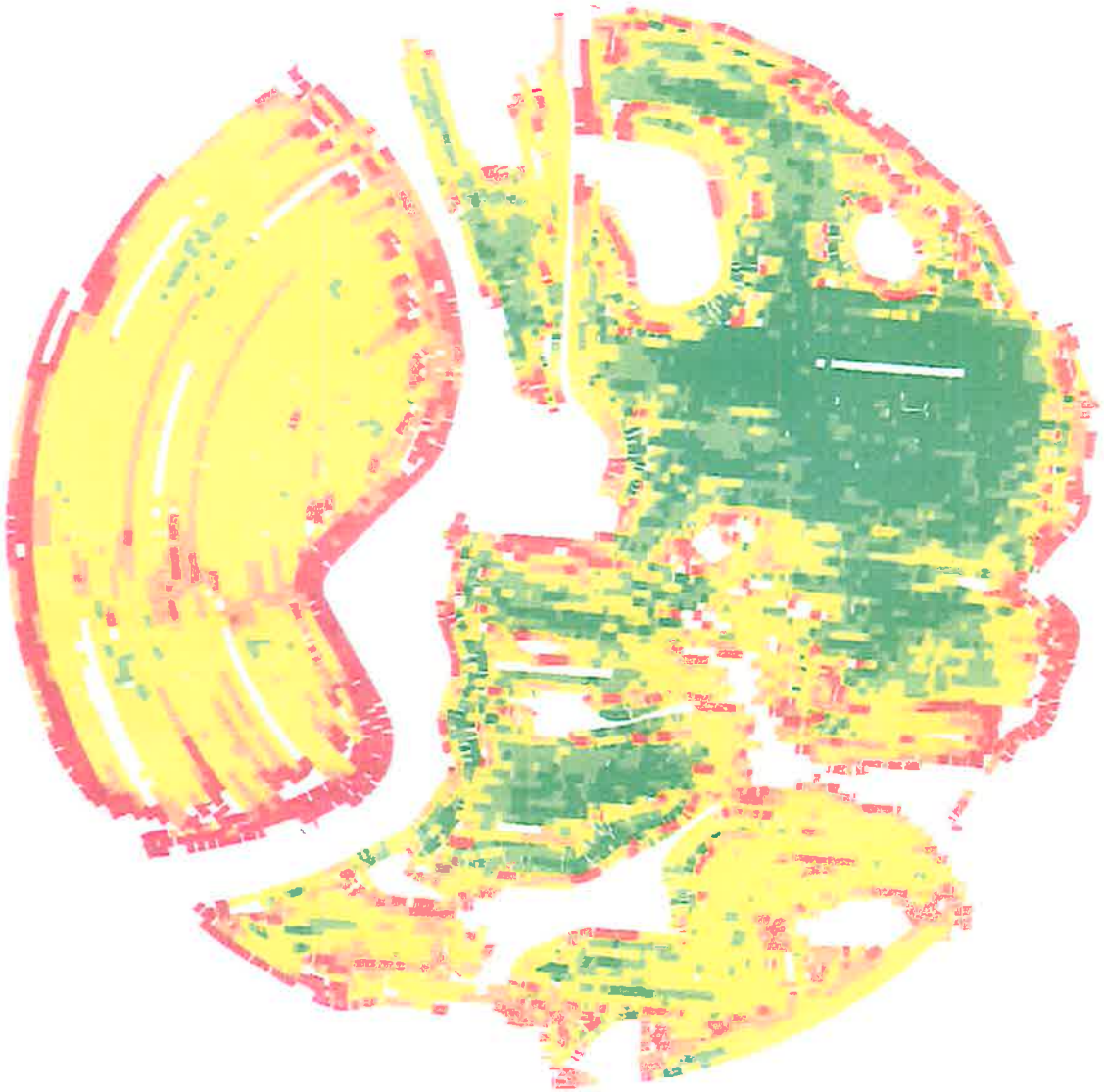
Field Summary Report

Grower :	**BALDWIN**
Farm :	**INLDBYS 39845**

Field:	IRRG S 39845
Year:	2010
Operation:	Grain Harvest
Product:	Corn - CORN
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Actual Weight (Wet) lb	Error %	Date Logged
10/09/01-08:30:12	87.93	18.20	606,626	10,487	119.27	N/A	N/A	9/1/2010
10/09/02-11:23:22	1.814	20.14	11,358	191.69	105.67	N/A	N/A	9/2/2010
Totals	**89.74**	**18.24** Average	**617,984**	**10,678**	**118.99** Average			**9/1/2010 - 9/2/2010**

Grain Harvest 2010 - IRRG S 39845(CORN)



Grower : BALDWIN
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Field : IRRG S 39845
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Crop / Product : CORN
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Area : 84.47 ac
Avg. Yield : 118.99 bu/ac
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176.27 - 381.06	(11.62 ac)
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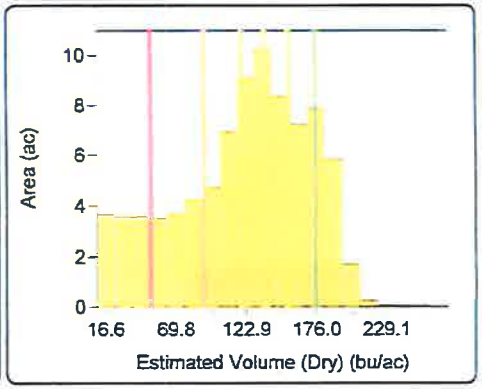


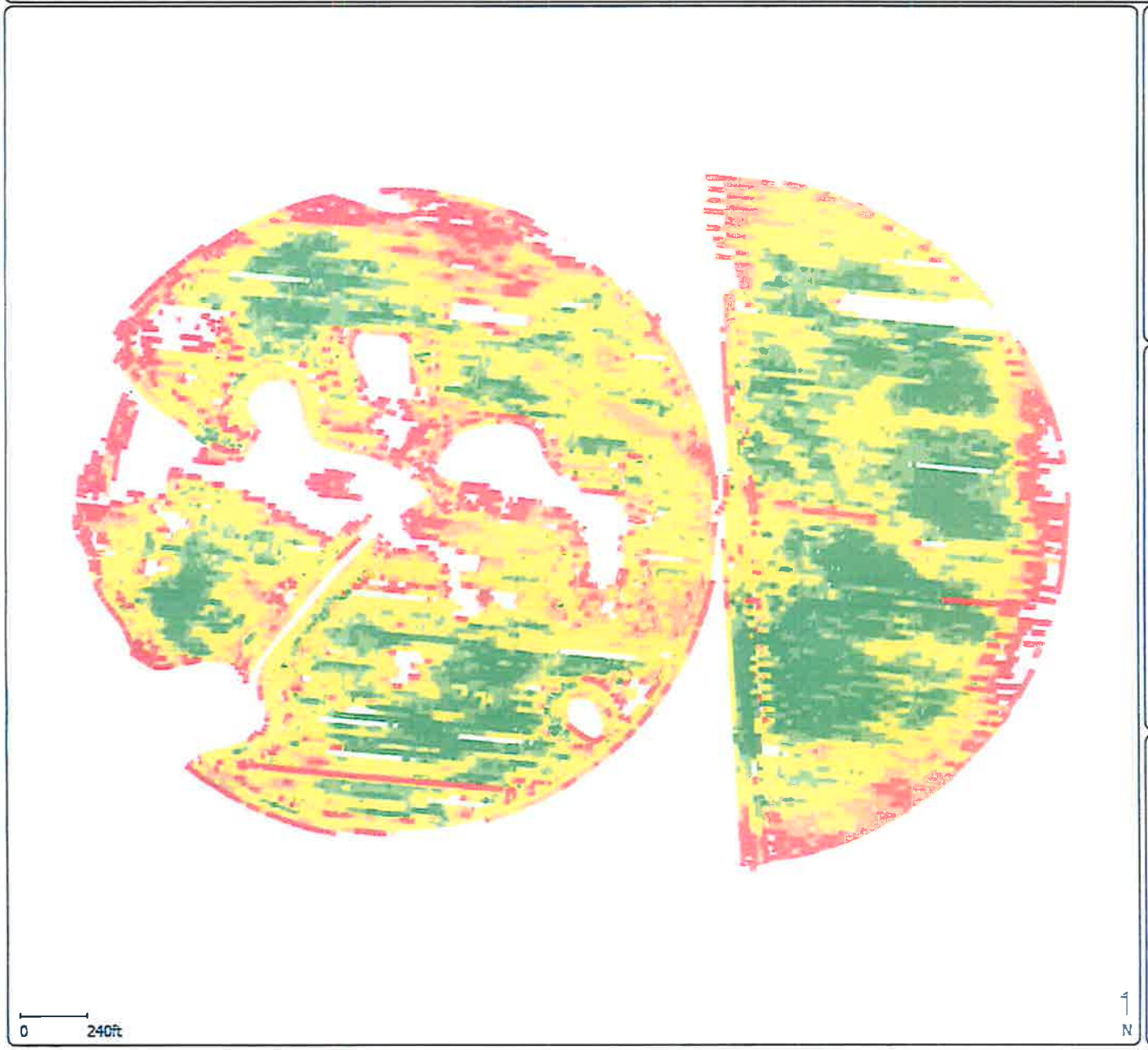
Field Summary Report

Grower :	**BALDWIN**
Farm :	**INLDBYS 39845**

Field:	IRRG N FRT 39845
Year:	2010
Operation:	Grain Harvest
Product:	Corn - CORN
Operational Instance:	Harvest - 1

Dataset	Area ac	Average Moisture %	Estimated Weight (Wet) lb	Estimated Volume (Dry) bu	Average Yield (Dry) bu/ac	Actual Weight (Wet) lb	Error %	Date Logged
10/07/31-07:48:08	90.14	19.34	617,992	10,534	116.85	N/A	N/A	7/31/2010
10/09/07-09:11:33	50.87	19.83	367,673	6,229.3	122.46	N/A	N/A	9/7/2010
Totals	**141.01**	**19.52** Average	**985,665**	**16,763**	**118.88** Average			**7/31/2010 - 9/7/2010**

Grain Harvest 2010 - IRI .G N FRT 39845(CORN)



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Year : 2010
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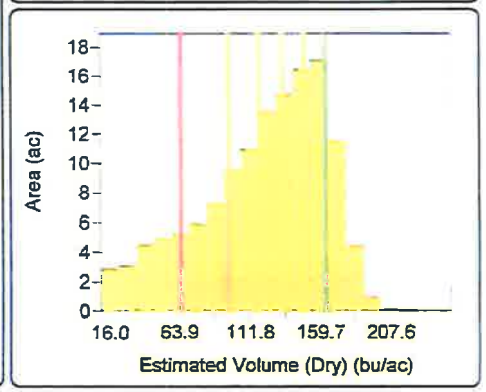


SAYRE BALDWIN INC.

17882 POTATO LANE

BRIDGEVILLE, DE.

2011 VEGETATIVE PLAN FOR INLAND BAYS

ALL IRRIGATED FIELDS

All of cover crop will be chemically burned down in the spring and strip-till planted in corn.

75 lbs potash will be stripbanded in spring along with a starter fertilizer containing 30lbs .

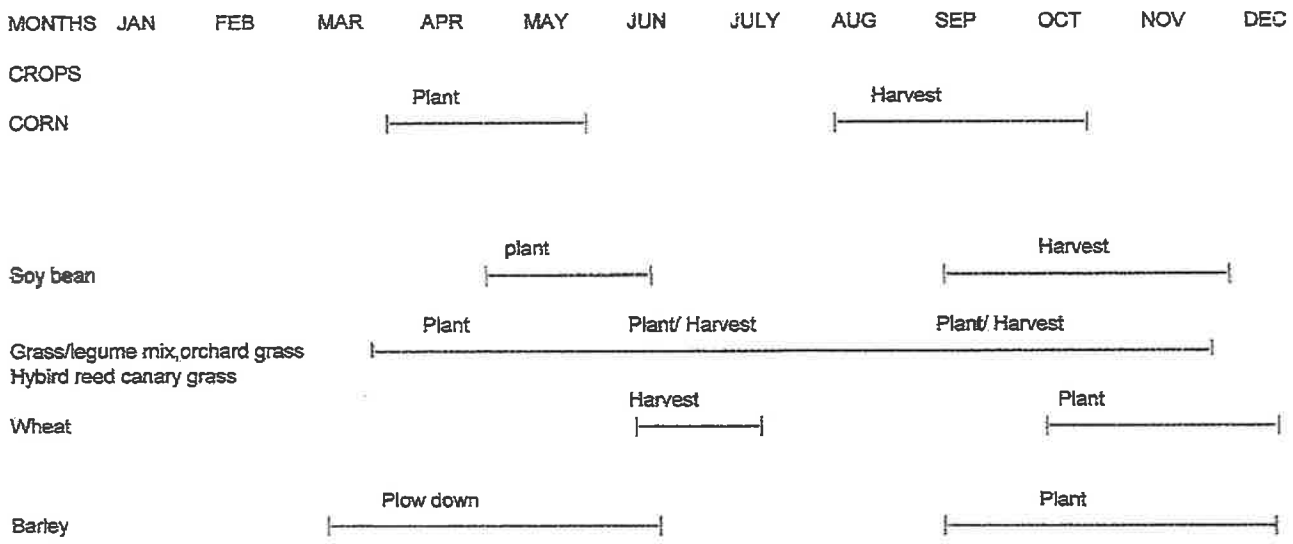
Nitrogen and 20lbs. Phosphorus

Pre-emergent weed control will consist of 2-4-D and Harness Xtra at labeled rates.

Round-up and foliar nutrients (tissue samples) if needed.

Soil samples and recommendations are encosed

Crop many be switched to soybeans depending on weather an/or market conditions,in this Case , cover crop will be chemically burned down and strip-till planted. Potash will be broadcasted According soil test recommendations. Round-up will be used at recommended rate post-emergent



CROP MANAGEMENT

Nitrogen Uptake Rate (Lbs/Ac)

Month	Barley	Wheat	Corn	Early Soybean	Soybean
January	-	-	-	-	-
February	-	-	-	-	-
March	8	10	-	-	-
April	-	23	10	10	-
May	-	14	35	17	-
June	-		50	33	25
July	-		70	50	50
August	-		25	29	37
September	-	-	10	11	26
October	7	7	-	-	15
November	8	10	-	-	-
December	2	8	-	-	-
Total	25	72	200	150	153

Note: Future nitrogen balance calculations may warrant adjusting these projected uptake values and increasing the nitrogen loadings to improve crop yields.

INLAND BAYS REGIONAL WASTEWATER FACILITY

LTS 5004-90-12

PERMIT RENEWAL

WATER, NITROGEN AND PHOSPHORUS BALANCES

SECTION 4

MAY 2017

Facility: Inland Bays RWF
Field: North Burton
DESIGN VALUES

	Design Criteria			
1	Treatment Capacity	777.45	million gal/year	
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day	
3	Disposal Capacity	963.6	million gal/year	
4	Disposal Average Daily Flow	2,640,000	gal/day	
5	Number of Units	N/A		
6	Soil Perc Rate	N/A	inches/hr	
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr	From Spray Irrigation Permit No. LTS 5004-90-12
8	Total Storage Volume	71	million gallons	
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres	
10	Total Spray Acreage	429.5	acres	
	Spray Acreage This Field	52	acres	
11	Crop Type(s)	Corn		

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	39,060,000	31,640,000	36,270,000	44,100,000	53,630,000	53,400,000	62,000,000	56,730,000	47,400,000	42,160,000	37,200,000	37,820,000	541,410,000
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	7.83	6.76	8.02	8.60	8.45	8.42	9.40	9.21	9.09	8.85	9.09	7.13	100.9
		gal/mo	7,826,369	6,756,816	8,016,634	8,595,502	8,454,109	8,422,025	9,397,805	9,213,147	9,094,650	8,854,821	9,094,650	7,129,301	100,855,830
18		gal/acre	150,507	129,939	154,166	165,298	162,579	161,962	180,727	177,176	174,897	170,285	174,897	137,102	1,939,535
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	15	14	17	18	17	18	19	19	19	18	19	14	205
21	Spray hydraulic application rate	in/mo	5.54	4.79	5.68	6.09	5.99	5.96	6.66	6.52	6.44	6.27	6.44	5.05	71.4
22	Spray hydraulic application rate	in/week	1.39	1.20	1.42	1.52	1.50	1.49	1.66	1.63	1.61	1.57	1.61	1.26	17.9
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
26	Total nitrogen in spray effluent	lb/acre-mo	12.6	10.8	12.9	13.8	13.6	13.5	15.1	14.8	14.6	14.2	14.6	11.4	161.8
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	12.9	11.2	13.3	14.2	14.0	13.9	15.5	15.3	15.0	14.6	15.0	11.8	166.8
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1	1	1	1	1	1	1	1	1	1	1	1	
35	Total ammonia application	lb/acre-mo	1.26	1.08	1.29	1.38	1.36	1.35	1.51	1.48	1.46	1.42	1.46	1.14	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				6.9	11.7	22.8	34.5	20.0	7.6				103.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 27)	lb/acre-mo	1.9	1.6	1.9	2.1	2.0	2.0	2.3	2.2	2.2	2.1	2.2	1.7	24.3
42	Ammonia Volitilization (5% of line 36)	lb/acre-mo	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8
43	Total nitrogen consumed	lb/acre-mo	1.9	1.7	2.0	9.0	13.8	24.9	36.8	22.3	9.9	2.2	2.3	1.8	129
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 32 minus line 44)	lb/acre-mo	11.0	9.5	11.3	5.2	0.1	-10.9	-21.3	-7.0	5.2	12.4	12.7	10.0	38.2
47	Total nitrogen in percolate	lb/mo	571.5	494.2	587.0	267.9	7.0	-568.9	-1107.9	-364.6	268.9	646.1	662.5	521.9	1,986
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 22)	in/mo	5.54	4.79	5.68	6.09	5.99	5.96	6.66	6.52	6.44	6.27	6.44	5.05	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	8.84	7.99	9.78	9.29	9.39	9.56	10.56	11.82	10.04	9.77	9.54	8.65	
53	Thornwaite Potential Evapotranspiration Exhibit II	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 53 minus line 54)	in/mo	8.74	7.89	9.08	7.49	6.09	4.76	5.06	6.92	6.44	7.87	8.64	8.45	
55	Percolate volume	gal/mo	12,344,795	11,134,040	12,817,461	10,572,313	8,595,310	6,727,616	7,138,593	9,777,950	9,094,650	11,114,034	12,201,068	11,930,128	123,447,958
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 48)	lb/mo	572	494	587	268	7	-569	-1,108	-365	269	646	662	522	1985.6
59	Percolate volume (line 56)	gal/mo	12,344,795	11,134,040	12,817,461	10,572,313	8,595,310	6,727,616	7,138,593	9,777,950	9,094,650	11,114,034	12,201,068	11,930,128	123447958.4
60	Total nitrogen concentration in percolate	lb/MG	46.3	44.4	45.8	25.3	0.8	-84.6	-155.2	-37.3	29.6	58.1	54.3	43.7	16.1
61	**Nitrogen concentration in percolate**	**mg/L**	**5.6**	**5.3**	**5.5**	**3.0**	**0.1**	**0.0**	**0.0**	**0.0**	**3.5**	**7.0**	**6.5**	**5.2**	**1.9**

Facility: Inland Bays RWF
Field: South Burton
DESIGN VALUES

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate		inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	41.9	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	39,060,000	31,640,000	36,270,000	44,100,000	53,630,000	53,400,000	62,000,000	56,730,000	47,400,000	42,160,000	37,200,000	37,820,000	541,410,000
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	4.7	4.1	4.8	5.2	5.1	5.1	5.6	5.5	5.5	5.3	5.5	4.3	60.5
		gal/mo	4,696,823	4,054,954	4,811,006	5,158,401	5,073,547	5,054,293	5,639,886	5,529,067	5,457,954	5,314,026	5,457,954	4,278,493	60,526,404
18		gal/acre	112,096	96,777	114,821	123,112	121,087	120,628	134,603	131,959	130,261	126,826	130,261	102,112	1,444,544
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	15	14	17	18	17	18	19	19	19	18	19	14	205
21	Spray hydraulic application rate	in/mo	4.13	3.56	4.23	4.53	4.46	4.44	4.96	4.86	4.80	4.67	4.80	3.76	53.2
22	Spray hydraulic application rate	in/week	1.03	0.89	1.06	1.13	1.11	1.11	1.24	1.21	1.20	1.17	1.20	0.94	13.3
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
26	Total nitrogen in spray effluent	lb/acre-mo	9.3	8.1	9.6	10.3	10.1	10.1	11.2	11.0	10.9	10.6	10.9	8.5	120.5
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	9.7	8.4	10.0	10.6	10.5	10.5	11.7	11.6	11.3	11.0	11.2	8.9	125.5
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1	1	1	1	1	1	1	1	1	1	1	1	
35	Total ammonia application	lb/acre-mo	0.93	0.81	0.96	1.03	1.01	1.01	1.12	1.10	1.09	1.06	1.09	0.85	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				6.9	11.7	22.8	34.5	20.0	7.6				103.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	1.4	1.2	1.4	1.5	1.5	1.5	1.7	1.7	1.6	1.6	1.6	1.3	18.1
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.6
43	Total nitrogen consumed	lb/acre-mo	1.4	1.3	1.5	8.5	13.3	24.3	36.2	21.7	9.3	1.6	1.7	1.3	122
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	8.3	7.2	8.6	2.1	-2.8	-13.9	-24.6	-10.1	2.0	9.3	9.5	7.6	3.3
47	Total nitrogen in percolate	lb/mo	346.8	301.1	358.7	89.7	-117.7	-580.7	-1029.4	-423.4	83.8	391.2	399.5	318.7	138
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	4.13	3.56	4.23	4.53	4.46	4.44	4.96	4.86	4.80	4.67	4.80	3.76	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	7.43	6.76	8.33	7.73	7.86	8.04	8.86	10.16	8.40	8.17	7.90	7.36	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	7.33	6.66	7.63	5.93	4.56	3.24	3.36	5.26	4.80	6.27	7.00	7.16	
55	Percolate volume	gal/mo	8,337,631	7,581,987	8,679,365	6,751,255	5,187,323	3,688,990	3,819,482	5,984,168	5,457,954	7,134,430	7,961,010	8,146,851	78,730,445
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	347	301	359	90	-118	-581	-1,029	-423	84	391	399	319	138.3
59	Percolate volume (line 55)	gal/mo	8,337,631	7,581,987	8,679,365	6,751,255	5,187,323	3,688,990	3,819,482	5,984,168	5,457,954	7,134,430	7,961,010	8,146,851	78730445.2
60	Total nitrogen concentration in percolate	lb/MG	41.6	39.7	41.3	13.3	-22.7	-157.4	-269.5	-70.8	15.4	54.8	50.2	39.1	1.8
61	**Nitrogen concentration in percolate**	**mg/L**	**5.0**	**4.8**	**5.0**	**1.6**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**6.6**	**6.0**	**4.7**	**0.2**

Facility: Inland Bays RWF
Field: Northfield
DESIGN VALUES

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate		inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	39,060,000	31,640,000	36,270,000	44,100,000	53,630,000	53,400,000	62,000,000	56,730,000	47,400,000	42,160,000	37,200,000	37,820,000	541,410,000
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	19.4	16.7	19.8	21.3	20.9	20.8	23.2	22.8	22.5	21.9	22.5	17.6	249.4
		gal/mo	19,353,514	16,708,658	19,824,013	21,255,473	20,905,827	20,826,488	23,239,456	22,782,821	22,489,796	21,896,732	22,489,796	17,629,761	249,402,337
18		gal/acre	187,898	162,220	192,466	206,364	202,969	202,199	225,626	221,192	218,348	212,590	218,348	171,163	2,421,382
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	15	14	17	18	17	18	19	19	19	18	19	14	205
21	Spray hydraulic application rate	in/mo	6.92	5.97	7.09	7.60	7.47	7.45	8.31	8.15	8.04	7.83	8.04	6.30	89.2
22	Spray hydraulic application rate	in/week	1.73	1.49	1.77	1.90	1.87	1.86	2.08	2.04	2.01	1.96	2.01	1.58	22.3
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
26	Total nitrogen in spray effluent	lb/acre-mo	15.7	13.5	16.1	17.2	16.9	16.9	18.8	18.4	18.2	17.7	18.2	14.3	201.9
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	16.0	13.9	16.5	17.6	17.3	17.3	19.3	19.1	18.6	18.1	18.6	14.7	206.9
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1	1	1	1	1	1	1	1	1	1	1	1	
35	Total ammonia application	lb/acre-mo	1.57	1.35	1.61	1.72	1.69	1.69	1.88	1.84	1.82	1.77	1.82	1.43	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				6.9	11.7	22.8	34.5	20.0	7.6				103.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	2.4	2.0	2.4	2.6	2.5	2.5	2.8	2.8	2.7	2.7	2.7	2.1	30.3
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
43	Total nitrogen consumed	lb/acre-mo	2.4	2.1	2.5	9.6	14.4	25.4	37.4	22.9	10.4	2.7	2.8	2.2	135
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	13.6	11.8	14.0	8.0	3.0	-8.1	-18.2	-3.8	8.2	15.4	15.7	12.5	72.1
47	Total nitrogen in percolate	lb/mo	1402.7	1215.1	1445.3	824.9	305.1	-835.3	-1869.9	-393.1	845.5	1584.3	1621.4	1284.8	7,431
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	6.92	5.97	7.09	7.60	7.47	7.45	8.31	8.15	8.04	7.83	8.04	6.30	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	10.22	9.17	11.19	10.80	10.87	11.05	12.21	13.45	11.64	11.33	11.14	9.90	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	10.12	9.07	10.49	9.00	7.57	6.25	6.71	8.55	8.04	9.43	10.24	9.70	
55	Percolate volume	gal/mo	28,303,473	25,378,931	29,333,344	25,171,079	21,185,514	17,470,254	18,764,477	23,901,566	22,489,796	26,371,711	28,642,893	27,139,092	294,152,129
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	1,403	1,215	1,445	825	305	-835	-1,870	-393	845	1,584	1,621	1,285	7430.6
59	Percolate volume (line 55)	gal/mo	28,303,473	25,378,931	29,333,344	25,171,079	21,185,514	17,470,254	18,764,477	23,901,566	22,489,796	26,371,711	28,642,893	27,139,092	294152129.1
60	Total nitrogen concentration in percolate	lb/MG	49.6	47.9	49.3	32.8	14.4	-47.8	-99.7	-16.4	37.6	60.1	56.6	47.3	25.3
61	**Nitrogen concentration in percolate**	**mg/L**	**5.9**	**5.7**	**5.9**	**3.9**	**1.7**	**0.0**	**0.0**	**0.0**	**4.5**	**7.2**	**6.8**	**5.7**	**3.0**

Facility: Inland Bays RWF
Field: Southfield
DESIGN VALUES

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate		inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	39,060,000	31,640,000	36,270,000	44,100,000	53,630,000	53,400,000	62,000,000	56,730,000	47,400,000	42,160,000	37,200,000	37,820,000	541,410,000
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	19.4	16.7	19.8	21.3	20.9	20.8	23.2	22.8	22.5	21.9	22.5	17.6	249.4
		gal/mo	19,353,514	16,708,658	19,824,013	21,255,473	20,905,827	20,826,488	23,239,456	22,782,821	22,489,796	21,896,732	22,489,796	17,629,761	249,402,337
18		gal/acre	187,898	162,220	192,466	206,364	202,969	202,199	225,626	221,192	218,348	212,590	218,348	171,163	2,421,382
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	15	14	17	18	17	18	19	19	19	18	19	14	205
21	Spray hydraulic application rate	in/mo	6.92	5.97	7.09	7.60	7.47	7.45	8.31	8.15	8.04	7.83	8.04	6.30	89.2
22	Spray hydraulic application rate	in/week	1.73	1.49	1.77	1.90	1.87	1.86	2.08	2.04	2.01	1.96	2.01	1.58	22.3
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
26	Total nitrogen in spray effluent	lb/acre-mo	15.7	13.5	16.1	17.2	16.9	16.9	18.8	18.4	18.2	17.7	18.2	14.3	201.9
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	16.0	13.9	16.5	17.6	17.3	17.3	19.3	19.1	18.6	18.1	18.6	14.7	206.9
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1	1	1	1	1	1	1	1	1	1	1	1	
35	Total ammonia application	lb/acre-mo	1.57	1.35	1.61	1.72	1.69	1.69	1.88	1.84	1.82	1.77	1.82	1.43	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.2	18.1	25.9	36.2	12.9	5.2				103.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	2.4	2.0	2.4	2.6	2.5	2.5	2.8	2.8	2.7	2.7	2.7	2.1	30.3
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
43	Total nitrogen consumed	lb/acre-mo	2.4	2.1	2.5	7.8	20.7	28.5	39.1	15.8	8.0	2.7	2.8	2.2	135
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	13.6	11.8	14.0	9.7	-3.4	-11.2	-19.9	3.3	10.6	15.4	15.7	12.5	72.1
47	Total nitrogen in percolate	lb/mo	1402.7	1215.1	1445.3	1002.5	-352.3	-1155.1	-2047.6	335.3	1094.2	1584.3	1621.4	1284.8	7,431
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	6.92	5.97	7.09	7.60	7.47	7.45	8.31	8.15	8.04	7.83	8.04	6.30	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	10.22	9.17	11.19	10.80	10.87	11.05	12.21	13.45	11.64	11.33	11.14	9.90	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	10.12	9.07	10.49	9.00	7.57	6.25	6.71	8.55	8.04	9.43	10.24	9.70	
55	Percolate volume	gal/mo	28,303,473	25,378,931	29,333,344	25,171,079	21,185,514	17,470,254	18,764,477	23,901,566	22,489,796	26,371,711	28,642,893	27,139,092	294,152,129
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	1,403	1,215	1,445	1,003	-352	-1,155	-2,048	335	1,094	1,584	1,621	1,285	7430.6
59	Percolate volume (line 55)	gal/mo	28,303,473	25,378,931	29,333,344	25,171,079	21,185,514	17,470,254	18,764,477	23,901,566	22,489,796	26,371,711	28,642,893	27,139,092	294152129.1
60	Total nitrogen concentration in percolate	lb/MG	49.6	47.9	49.3	39.8	-16.6	-66.1	-109.1	14.0	48.7	60.1	56.6	47.3	25.3
61	**Nitrogen concentration in percolate**	**mg/L**	**5.9**	**5.7**	**5.9**	**4.8**	**0.0**	**0.0**	**0.0**	**1.7**	**5.8**	**7.2**	**6.8**	**5.7**	**3.0**

Facility: Inland Bays RWF

Field: North Hettie Lingo

DESIGN VALUES

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate		inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	47.5	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	39,060,000	31,640,000	36,270,000	44,100,000	53,630,000	53,400,000	62,000,000	56,730,000	47,400,000	42,160,000	37,200,000	37,820,000	541,410,000
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.9	3.6	3.5	3.5	4.3	4.6	5.7	4.8	4.1	4.2	4.2	4.3	49.8
		gal/mo	2,870,549	3,620,833	3,479,500	3,518,584	4,299,416	4,633,535	5,712,038	4,796,068	4,117,320	4,234,787	4,189,822	4,302,543	49,774,996
18		gal/acre	60,433	76,228	73,253	74,075	90,514	97,548	120,253	100,970	86,680	89,153	88,207	90,580	1,047,895
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	15	14	17	18	17	18	19	19	19	18	19	14	205
21	Spray hydraulic application rate	in/mo	2.23	2.81	2.70	2.73	3.33	3.59	4.43	3.72	3.19	3.28	3.25	3.34	38.6
22	Spray hydraulic application rate	in/week	0.56	0.70	0.67	0.68	0.83	0.90	1.11	0.93	0.80	0.82	0.81	0.83	9.6
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
26	Total nitrogen in spray effluent	lb/acre-mo	5.0	6.4	6.1	6.2	7.5	8.1	10.0	8.4	7.2	7.4	7.4	7.6	87.4
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	5.4	6.7	6.6	6.5	7.9	8.5	10.5	9.0	7.6	7.8	7.7	8.0	92.4
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1	1	1	1	1	1	1	1	1	1	1	1	
35	Total ammonia application	lb/acre-mo	0.50	0.64	0.61	0.62	0.75	0.81	1.00	0.84	0.72	0.74	0.74	0.76	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.2	18.1	25.9	36.2	12.9	5.2				103.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.8	1.0	0.9	0.9	1.1	1.2	1.5	1.3	1.1	1.1	1.1	1.1	13.1
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4
43	Total nitrogen consumed	lb/acre-mo	0.8	1.0	0.9	6.1	19.3	27.1	37.8	14.2	6.3	1.2	1.1	1.2	117
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	4.6	5.7	5.6	0.4	-11.3	-18.6	-27.3	-5.2	1.3	6.7	6.6	6.8	-24.7
47	Total nitrogen in percolate	lb/mo	220.2	272.5	267.4	19.5	-538.9	-883.0	-1297.0	-247.8	63.9	317.4	312.1	322.7	(1,171)
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	2.23	2.81	2.70	2.73	3.33	3.59	4.43	3.72	3.19	3.28	3.25	3.34	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	5.53	6.01	6.80	5.93	6.73	7.19	8.33	9.02	6.79	6.78	6.35	6.94	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	5.43	5.91	6.10	4.13	3.43	2.39	2.83	4.12	3.19	4.88	5.45	6.74	
55	Percolate volume	gal/mo	6,997,957	7,619,260	7,864,871	5,324,325	4,428,398	3,085,757	3,648,334	5,311,994	4,117,320	6,298,491	7,027,415	8,687,914	70,412,036
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	220	273	267	20	-539	-883	-1,297	-248	64	317	312	323	-1171.0
59	Percolate volume (line 55)	gal/mo	6,997,957	7,619,260	7,864,871	5,324,325	4,428,398	3,085,757	3,648,334	5,311,994	4,117,320	6,298,491	7,027,415	8,687,914	70412036.4
60	Total nitrogen concentration in percolate	lb/MG	31.5	35.8	34.0	3.7	-121.7	-286.2	-355.5	-46.6	15.5	50.4	44.4	37.1	-16.6
61	**Nitrogen concentration in percolate**	**mg/L**	**3.8**	**4.3**	**4.1**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**1.9**	**6.0**	**5.3**	**4.5**	**-2.0**

Facility: Inland Bays RWF

Field: East Hettie Lingo

DESIGN VALUES

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate		inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	34.46	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	39,060,000	31,640,000	36,270,000	44,100,000	53,630,000	53,400,000	62,000,000	56,730,000	47,400,000	42,160,000	37,200,000	37,820,000	541,410,000
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.1	2.6	2.5	2.6	3.1	3.4	4.1	3.5	3.0	3.1	3.0	3.1	36.1
		gal/mo	2,082,508	2,626,819	2,524,286	2,552,640	3,119,113	3,361,508	4,143,933	3,479,421	2,987,007	3,072,226	3,039,605	3,121,382	36,110,450
18		gal/acre	60,433	76,228	73,253	74,075	90,514	97,548	120,253	100,970	86,680	89,153	88,207	90,580	1,047,895
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	15	14	17	18	17	18	19	19	19	18	19	14	205
21	Spray hydraulic application rate	in/mo	2.23	2.81	2.70	2.73	3.33	3.59	4.43	3.72	3.19	3.28	3.25	3.34	38.6
22	Spray hydraulic application rate	in/week	0.56	0.70	0.67	0.68	0.83	0.90	1.11	0.93	0.80	0.82	0.81	0.83	9.6
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
26	Total nitrogen in spray effluent	lb/acre-mo	5.0	6.4	6.1	6.2	7.5	8.1	10.0	8.4	7.2	7.4	7.4	7.6	87.4
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	5.4	6.7	6.6	6.5	7.9	8.5	10.5	9.0	7.6	7.8	7.7	8.0	92.4
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1	1	1	1	1	1	1	1	1	1	1	1	
35	Total ammonia application	lb/acre-mo	0.50	0.64	0.61	0.62	0.75	0.81	1.00	0.84	0.72	0.74	0.74	0.76	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.2	18.1	25.9	36.2	12.9	5.2				103.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.8	1.0	0.9	0.9	1.1	1.2	1.5	1.3	1.1	1.1	1.1	1.1	13.1
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4
43	Total nitrogen consumed	lb/acre-mo	0.8	1.0	0.9	6.1	19.3	27.1	37.8	14.2	6.3	1.2	1.1	1.2	117
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	4.6	5.7	5.6	0.4	-11.3	-18.6	-27.3	-5.2	1.3	6.7	6.6	6.8	-24.7
47	Total nitrogen in percolate	lb/mo	159.7	197.7	194.0	14.1	-391.0	-640.6	-940.9	-179.8	46.3	230.3	226.4	234.1	(849)
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.69	2.81	2.70	2.73	3.33	3.59	4.43	3.72	3.19	3.28	3.25	3.34	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.99	6.01	6.80	5.93	6.73	7.19	8.33	9.02	6.79	6.78	6.35	6.94	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.89	5.91	6.10	4.13	3.43	2.39	2.83	4.12	3.19	4.88	5.45	6.74	
55	Percolate volume	gal/mo	3,638,326	5,527,573	5,705,757	3,862,658	3,212,686	2,238,636	2,646,770	3,853,712	2,987,007	4,569,389	5,098,204	6,302,853	49,643,571
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	160	198	194	14	-391	-641	-941	-180	46	230	226	234	-849.5
59	Percolate volume (line 55)	gal/mo	3,638,326	5,527,573	5,705,757	3,862,658	3,212,686	2,238,636	2,646,770	3,853,712	2,987,007	4,569,389	5,098,204	6,302,853	49643571.5
60	Total nitrogen concentration in percolate	lb/MG	43.9	35.8	34.0	3.7	-121.7	-286.2	-355.5	-46.6	15.5	50.4	44.4	37.1	-17.1
61	**Nitrogen concentration in percolate**	**mg/L**	**5.3**	**4.3**	**4.1**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**1.9**	**6.0**	**5.3**	**4.5**	**-2.1**

Facility: Inland Bays RWF

Field: West Hettie Lingo

DESIGN VALUES

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate		inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	20.16	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	39,060,000	31,640,000	36,270,000	44,100,000	53,630,000	53,400,000	62,000,000	56,730,000	47,400,000	42,160,000	37,200,000	37,820,000	541,410,000
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.4	3.1	3.0	3.0	3.6	3.9	4.8	4.1	3.5	3.6	3.6	3.7	42.3
		gal/mo	2,436,643	3,073,516	2,953,546	2,986,722	3,649,526	3,933,140	4,848,618	4,071,105	3,494,955	3,594,665	3,556,497	3,652,180	42,251,113
18		gal/acre	120,865	152,456	146,505	148,151	181,028	195,096	240,507	201,940	173,361	178,307	176,414	181,160	2,095,789
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	15	14	17	18	17	18	19	19	19	18	19	14	205
21	Spray hydraulic application rate	in/mo	4.45	5.61	5.40	5.46	6.67	7.18	8.86	7.44	6.38	6.57	6.50	6.67	77.2
22	Spray hydraulic application rate	in/week	1.11	1.40	1.35	1.36	1.67	1.80	2.21	1.86	1.60	1.64	1.62	1.67	19.3
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
26	Total nitrogen in spray effluent	lb/acre-mo	10.1	12.7	12.2	12.4	15.1	16.3	20.1	16.8	14.5	14.9	14.7	15.1	174.8
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.6	0.3	0.4	0.4	0.1	0.6	0.4	0.3	0.4	0.6	0.4	0.5	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	10.7	13.0	12.7	12.7	15.2	16.9	20.4	17.1	14.9	15.5	15.1	15.6	179.8
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1	1	1	1	1	1	1	1	1	1	1	1	
35	Total ammonia application	lb/acre-mo	1.01	1.27	1.22	1.24	1.51	1.63	2.01	1.68	1.45	1.49	1.47	1.51	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.2	18.1	25.9	36.2	12.9	5.2				103.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	1.5	1.9	1.8	1.9	2.3	2.4	3.0	2.5	2.2	2.2	2.2	2.3	26.2
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.9
43	Total nitrogen consumed	lb/acre-mo	1.6	2.0	1.9	7.1	20.5	28.4	39.3	15.5	7.4	2.3	2.3	2.3	131
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	9.1	11.1	10.8	5.6	-5.3	-11.5	-18.9	1.5	7.5	13.2	12.8	13.2	49.2
47	Total nitrogen in percolate	lb/mo	184.3	222.8	217.2	113.8	-106.1	-231.9	-381.3	31.2	150.7	265.5	258.7	267.1	992
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	4.45	5.61	5.40	5.46	6.67	7.18	8.86	7.44	6.38	6.57	6.50	6.67	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	10.15	8.41	9.50	8.91	7.52	12.88	12.16	9.74	10.33	12.07	10.15	11.07	
53	Thornwaite Potential Evapotranspiration Exhibit II	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	10.05	8.31	8.80	7.11	4.22	8.08	6.66	4.84	6.73	10.17	9.25	10.87	
55	Percolate volume	gal/mo	5,502,221	4,551,562	4,814,790	3,889,973	2,308,335	4,425,822	3,644,284	2,647,800	3,686,553	5,565,394	5,061,915	5,951,363	52,050,014
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	184	223	217	114	-106	-232	-381	31	151	265	259	267	991.8
59	Percolate volume (line 55)	gal/mo	5,502,221	4,551,562	4,814,790	3,889,973	2,308,335	4,425,822	3,644,284	2,647,800	3,686,553	5,565,394	5,061,915	5,951,363	52050013.8
60	Total nitrogen concentration in percolate	lb/MG	33.5	48.9	45.1	29.2	-46.0	-52.4	-104.6	11.8	40.9	47.7	51.1	44.9	19.1
61	**Nitrogen concentration in percolate**	**mg/L**	**4.0**	**5.9**	**5.4**	**3.5**	**0.0**	**0.0**	**0.0**	**1.4**	**4.9**	**5.7**	**6.1**	**5.4**	**2.3**

Facility: Inland Bays RWF

Field: South Hettie Lingo

DESIGN VALUES

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	30.48	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	39,060,000	31,640,000	36,270,000	44,100,000	53,630,000	53,400,000	62,000,000	56,730,000	47,400,000	42,160,000	37,200,000	37,820,000	541,410,000
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	3.7	4.6	4.5	4.5	5.5	5.9	7.3	6.2	5.3	5.4	5.4	5.5	63.9
		gal/mo	3,683,972	4,646,863	4,465,481	4,515,640	5,517,735	5,946,533	7,330,649	6,155,122	5,284,039	5,434,792	5,377,085	5,521,748	63,879,658
18		gal/acre	120,865	152,456	146,505	148,151	181,028	195,096	240,507	201,940	173,361	178,307	176,414	181,160	2,095,789
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	196
21	Spray hydraulic application rate	in/mo	4.45	5.61	5.40	5.46	6.67	7.18	8.86	7.44	6.38	6.57	6.50	6.67	77.2
22	Spray hydraulic application rate	in/week	1.11	1.40	1.35	1.36	1.67	1.80	2.21	1.86	1.60	1.64	1.62	1.67	19.3
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
26	Total nitrogen in spray effluent	lb/acre-mo	10.1	12.7	12.2	12.4	15.1	16.3	20.1	16.8	14.5	14.9	14.7	15.1	174.8
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	10.5	13.1	12.7	12.7	15.5	16.7	20.5	17.4	14.9	15.3	15.1	15.5	179.8
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1	1	1	1	1	1	1	1	1	1	1	1	
35	Total ammonia application	lb/acre-mo	1.01	1.27	1.22	1.24	1.51	1.63	2.01	1.68	1.45	1.49	1.47	1.51	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.2	18.1	25.9	36.2	12.9	5.2				103.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	1.5	1.9	1.8	1.9	2.3	2.4	3.0	2.5	2.2	2.2	2.2	2.3	26.2
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.9
43	Total nitrogen consumed	lb/acre-mo	1.6	2.0	1.9	7.1	20.5	28.4	39.3	15.5	7.4	2.3	2.3	2.3	131
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	8.9	11.1	10.8	5.6	-5.0	-11.7	-18.8	1.9	7.5	13.0	12.8	13.2	49.2
47	Total nitrogen in percolate	lb/mo	271.1	338.6	329.0	171.6	-151.4	-357.1	-574.0	57.9	227.2	395.2	389.7	401.7	1,500
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	4.45	5.61	5.40	5.46	6.67	7.18	8.86	7.44	6.38	6.57	6.50	6.67	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	7.75	8.81	9.50	8.66	10.07	10.78	12.76	12.74	9.98	10.07	9.60	10.27	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	7.65	8.71	8.80	6.86	6.77	5.98	7.26	7.84	6.38	8.17	8.70	10.07	
55	Percolate volume	gal/mo	6,332,465	7,212,590	7,279,504	5,674,355	5,600,501	4,953,348	6,006,403	6,486,184	5,284,039	6,759,038	7,197,923	8,335,771	77,122,121
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	271	339	329	172	-151	-357	-574	58	227	395	390	402	1499.5
59	Percolate volume (line 55)	gal/mo	6,332,465	7,212,590	7,279,504	5,674,355	5,600,501	4,953,348	6,006,403	6,486,184	5,284,039	6,759,038	7,197,923	8,335,771	77122121.2
60	Total nitrogen concentration in percolate	lb/MG	42.8	46.9	45.2	30.2	-27.0	-72.1	-95.6	8.9	43.0	58.5	54.1	48.2	19.4
61	**Nitrogen concentration in percolate**	**mg/L**	**5.1**	**5.6**	**5.4**	**3.6**	**0.0**	**0.0**	**0.0**	**1.1**	**5.2**	**7.0**	**6.5**	**5.8**	**2.3**

Inland Bays 2017 Permit Renewal

5/12/2017

PROJECT DATA

Storage Volume		71	MG
DESIGN DAILY AVERAGE WASTEWATER FLOW	Summer	2,130,000	GPD
	Winter	1,400,000	
TOTAL DISPOSAL FIELD AREA		429.5	ACRES
MAXIMUM ALLOWED INFILTRATION RATE		0.3	IN/HR
		7.2	IN/DAY
		50.4	IN/WK
STORAGE POND SURFACE AREA		765,380	SF

Disposal Rate Information

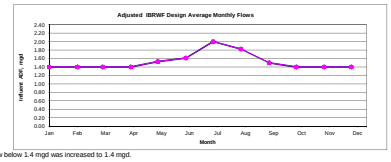
PARCEL	STATUS	SPRAY AREA (AC)	RATE (IN/WK)	Effluent Disposal Capacity (mgd)
South Field	Existing	100	1.86	0.72
North Field	Existing	103	1.86	0.74
North Burton Field	Existing	52	1.5	0.30
South Burton Field	Existing	41.9	1	0.16
East Hettie-Lingo	Existing	34.46	1	0.13
West Hettie-Lingo	Existing	20.16	2	0.16
North Hettie-Lingo	Existing	47.5	1	0.18
South Hettie-Lingo	Existing	30.48	2	0.24
Total IBRWF	-	429.5	-	2.64

1.77

Seasonally Adjusted Design Influent Flows

Month	Influent (mgd) (1)
JANUARY	1.26
FEBRUARY	1.13
MARCH	1.17
APRIL	1.47
MAY	1.73
JUNE	1.78
JULY	2.00
AUGUST	1.83
SEPTEMBER	1.58
OCTOBER	1.36
NOVEMBER	1.24
DECEMBER	1.22

Notes: 1. Influent flow calculated using observed trends. See "Influent Flow Data" worksheet for data set. Any flow below 1.4 mgd was increased to 1.4 mgd.



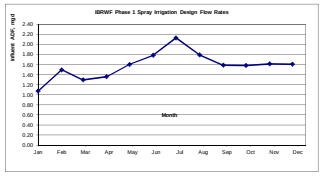
Influent Flow Determination

Month	ly Average Current Influent ADF	Design ADF, mgd
Jan	0.53	1.40
Feb	0.56	1.40
Mar	0.54	1.40
Apr	0.58	1.40
May	0.66	1.53
Jun	0.70	1.61
Jul	0.87	2.00
Aug	0.79	1.82
Sep	0.65	1.50
Oct	0.61	1.40
Nov	0.55	1.40
Dec	0.53	1.40

Seasonally Adjusted Design Spray Application

Date	Actual Average Days Sprayed	Potential Spray Days	% Absolute Utilization (1)	% Relative Utilization (2)	Design Spray Application Rate (mgd) (3)
January	11	20.3	55%	50%	1.07
February	15	19.5	77%	70%	1.49
March	15	22.2	67%	61%	1.30
April	15	21.5	70%	64%	1.36
May	18	21.3	83%	75%	1.60
June	20	21.3	92%	84%	1.79
July	23	21.2	110%	100%	2.13
August	20	22.2	92%	84%	1.79
September	17	20.3	82%	74%	1.59
October	17	21.2	81%	74%	1.58
November	16	19.5	83%	76%	1.61
December	17	20.8	83%	75%	1.60
Annual Total	**204**	**251.3**	**82%**	**N/A**	**N/A**

Notes:
1. % Absolute Utilization is calculated by the actual days sprayed divided by the potential spray days. See "Days Sprayed Data" for complete data set.
2. % Relative Utilization is calculated by dividing the utilization of the month by the max month utilization (July). Spray rates are calculated based on max month capabilities.
3. Phase 1 Spray Application Rate calculated by multiplying % Relative Utilization by 2.13 mgd max month ADF.



DESIGN ZONE APPLICATION RATE SUMMARY

MONTH	NUMBER OF DAYS PER MONTH	South Field		North Field		North Burton Field		South Burton Field		East Hettie-Lingo		West Hettie-Lingo		Nouth Hettie-Lingo		Sorth Hettie-Lingo		TOTAL
		Rate (in/wk)	(GAL/MO)	Rate (in/wk)	(GAL/MO)	Rate (in/wk)	(GAL/MO)	Rate (in/wk)	(GAL/MO)	Rate (in/wk)	(GAL/MO)	Rate (in/wk)	(GAL/MO)	Rate (in/wk)	(GAL/MO)	Rate (in/wk)	(GAL/MO)	(GAL)
JANUARY	31	0.93	11,240,467	0.93	11,577,681	0.75	4,713,744	0.50	2,532,127	0.50	2,082,508	1.01	2,436,643	0.50	2,870,549	1.01	3,683,972	41,137,690
FEBRUARY	28	1.31	14,178,421	1.31	14,603,774	1.05	5,946,790	0.70	3,193,956	0.70	2,626,819	1.40	3,073,516	0.70	3,620,833	1.40	4,646,863	51,889,974
MARCH	31	1.13	13,624,991	1.13	14,033,741	0.91	5,713,706	0.61	3,069,286	0.61	2,524,286	1.22	2,953,546	0.61	3,479,500	1.22	4,465,481	49,864,537
APRIL	30	1.18	13,778,034	1.18	14,191,375	0.95	5,777,885	0.64	3,103,761	0.64	2,552,640	1.27	2,986,722	0.64	3,518,584	1.27	4,515,640	50,424,642
MAY	31	1.40	16,835,610	1.40	17,340,678	1.13	7,060,094	0.75	3,792,538	0.75	3,119,113	1.51	3,649,526	0.75	4,299,416	1.51	5,517,735	61,614,711
JUNE	30	1.56	18,143,949	1.56	18,688,267	1.26	7,608,753	0.84	4,087,266	0.84	3,361,508	1.68	3,933,140	0.84	4,633,535	1.68	5,946,533	66,402,950
JULY	31	1.86	22,367,138	1.86	23,038,152	1.50	9,379,767	1.00	5,038,619	1.00	4,143,933	2.00	4,848,618	1.00	5,712,038	2.00	7,330,649	81,858,914
AUGUST	31	1.56	18,780,393	1.56	19,343,805	1.26	7,875,649	0.84	4,230,637	0.84	3,479,421	1.68	4,071,105	0.84	4,796,068	1.68	6,155,122	68,732,199
SEPTEMBER	30	1.39	16,122,559	1.39	16,606,235	1.12	6,761,073	0.74	3,631,910	0.74	2,987,007	1.49	3,494,955	0.74	4,117,320	1.49	5,284,039	59,005,098
OCTOBER	31	1.38	16,582,533	1.38	17,080,009	1.11	6,953,966	0.74	3,735,528	0.74	3,072,226	1.48	3,594,665	0.74	4,234,787	1.48	5,434,792	60,688,505
NOVEMBER	30	1.41	16,406,459	1.41	16,898,653	1.14	6,880,128	0.76	3,695,864	0.76	3,039,605	1.52	3,556,497	0.76	4,189,822	1.52	5,377,085	60,044,112
DECEMBER	31	1.40	16,847,854	1.40	17,353,289	1.13	7,065,229	0.75	3,795,296	0.75	3,121,382	1.51	3,652,180	0.75	4,302,543	1.51	5,521,748	61,659,521
TOTAL			194,908,407		200,755,659		81,735,783		43,906,786		36,110,450		42,251,113		49,774,996		63,879,658	713,322,853

POND VOLUME CALCULATIONS

MONTH	NUMBER OF DAYS PER MONTH	AVERAGE PRECIPITATION[1]	EVAPORATION	NET CHANGE IN POND VOLUME
		(IN)	(IN)	(GAL/MO)
JANUARY	31	3.7	0.1	1,707,971
FEBRUARY	28	2.8	0.1	1,278,593
MARCH	31	3.3	0.7	1,245,197
APRIL	30	3.3	1.8	691,776
MAY	31	1.8	3.3	-701,318
JUNE	30	5.3	4.8	229,002
JULY	31	6.3	5.5	367,357
AUGUST	31	7.6	4.9	1,278,593
SEPTEMBER	30	3.2	3.6	-176,522
OCTOBER	31	5.7	1.9	1,793,847
NOVEMBER	30	3.1	0.9	1,030,508
DECEMBER	31	3.4	0.2	1,526,678

[1] Monthly average for 2011-2015

DESIGN REQUIRED STORAGE CALCULATIONS

MONTH	MONTHLY WASTEWATER DISCHARGE	POTENTIAL APPLICATION	CHANGE IN VOLUME	REQUIRED STORAGE
	(GAL/MO)	(GAL/MO)	(GAL)	(GAL)
JANUARY	39,170,353	41,137,690	-259,366	0
FEBRUARY	31,751,622	51,889,974	-19,859,758	0
MARCH	36,128,266	49,864,537	-12,491,074	0
APRIL	44,115,038	50,424,642	-5,617,828	0
MAY	53,778,409	61,614,711	-8,537,619	0
JUNE	53,506,561	66,402,950	-12,667,388	0
JULY	62,000,000	81,858,914	-19,491,557	0
AUGUST	56,785,530	68,732,199	-10,668,076	0
SEPTEMBER	47,505,642	59,005,098	-11,675,978	0
OCTOBER	42,230,497	60,688,505	-16,664,162	0
NOVEMBER	37,301,996	60,044,112	-21,711,609	0
DECEMBER	37,924,783	61,659,521	-22,208,060	0

ELIMINATION OF MAX STORAGE

	POTENTIAL APPLICATION	CHANGE IN VOLUME	REQUIRED STORAGE
	(GAL/MO)	(GAL)	(GAL)
54	41,137,690	-259,366	-
49.5	51,889,974	40,856,607	40,856,607
60.3	49,864,537	-12,491,074	28,365,533
64.8	50,424,642	-5,617,828	22,747,705
61.2	61,614,711	-8,537,619	14,210,086
63	66,402,950	-12,667,388	1,542,698
67.5	81,858,914	-19,491,557	-
69.3	68,732,199	-10,668,076	-
67.5	59,005,098	-11,675,978	-
63.6	60,688,505	-16,664,162	-
67.2	60,044,112	-21,711,609	-
50.4	61,659,521	-22,208,060	-

TOTAL SEASONALLY ADJUSTED EFFLUENT MGD 1.95

Actual Average Water Balance 2011-2015

Month	Volume from Treatment (MG)	Volume from Precipitation/Evaporation (MG)	Effuent Volume Discharge (MG)	Change in Storage Volume (MG)	Storage Volume (MG)
January	16.11	1.71	11.95	5.87	5.87
February	15.46	1.28	14.06	2.68	8.55
March	17.21	1.25	18.67	(0.22)	8.34
April	17.43	0.69	16.45	1.67	10.00
May	20.61	-0.70	23.07	(3.17)	6.83
June	21.15	0.23	26.53	(5.15)	1.68
July	27.99	0.37	37.98	(9.62)	0.00
August	24.62	1.28	28.43	(2.55)	0.00
September	19.50	-0.18	21.30	(1.98)	0.00
October	18.87	1.79	21.19	(0.53)	0.00
November	16.51	1.03	21.71	(4.17)	0.00
December	16.77	1.53	20.63	(2.33)	0.00

Facility: Inland Bays RWF
Field: North Burton
Date: 2015

	Design Criteria			
1	Treatment Capacity	777.45	million gal/year	
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day	
3	Disposal Capacity	963.6	million gal/year	
4	Disposal Average Daily Flow	2,640,000	gal/day	
5	Number of Units	N/A		
6	Soil Perc Rate	N/A	inches/hr	
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr	From Spray Irrigation Permit No. LTS 5004-90-12
8	Total Storage Volume	71	million gallons	
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres	
10	Total Spray Acreage	429.5	acres	
	Spray Acreage This Field	52	acres	
11	Crop Type(s)	Soybeans		

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,945,029	18,908,105	20,280,562	18,761,295	23,218,724	22,991,488	27,466,764	26,059,894	22,469,670	23,709,798	19,159,025	18,969,064	260,939,418
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	1.66	1.60	2.85	4.31	5.41	1.55	5.50	4.92	4.08	2.19	2.73	2.67	39.5
		gal/mo	1,656,000	1,601,000	2,850,000	4,305,000	5,414,000	1,545,000	5,499,000	4,924,000	4,075,000	2,192,000	2,729,000	2,668,000	39,458,000
18		gal/acre	31,846	30,788	54,808	82,788	104,115	29,712	105,750	94,692	78,365	42,154	52,481	51,308	758,808
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	9	11	21	19	23	21	25	24	21	17	15	16	222
21	Spray hydraulic application rate	in/mo	1.17	1.13	2.02	3.05	3.83	1.09	3.89	3.49	2.89	1.55	1.93	1.89	27.9
22	Spray hydraulic application rate	in/week	0.29	0.28	0.50	0.76	0.96	0.27	0.97	0.87	0.72	0.39	0.48	0.47	7.0
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	4.11	3.06	3.79	9.1	20.945	7.5425	3.1125	4.8725	2.2375	3.485	2.62	4.4925	
26	Total nitrogen in spray effluent	lb/acre-mo	1.1	0.8	1.7	6.3	18.2	1.9	2.7	3.8	1.5	1.2	1.1	1.9	42.3
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.5	0.3	0.4	0.4	0.3	0.5	0.5	0.4	0.5	0.5	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	4.3	7.3	14.1	21.3	12.4	4.7	-	-	-	64.0
31	Total nitrogen applied	lb/acre-mo	1.6	1.1	2.1	11.0	25.8	16.4	24.6	16.6	6.6	1.7	1.5	2.3	111.3
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.89	0	0.215	4.7575	9.905	3.6425	1.245	0.635	0.2175	1.575	1.26	0.9625	
35	Total ammonia application	lb/acre-mo	0.24	0.00	0.10	3.28	8.60	0.90	1.10	0.50	0.14	0.55	0.55	0.41	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				8.5	14.5	28.2	42.7	24.7	9.4				128.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 27)	lb/acre-mo	0.2	0.1	0.3	0.9	2.7	0.3	0.4	0.6	0.2	0.2	0.2	0.3	6.3
42	Ammonia Volitilization (5% of line 36)	lb/acre-mo	0.0	0.0	0.0	0.2	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.8
43	Total nitrogen consumed	lb/acre-mo	0.2	0.1	0.3	9.6	17.7	28.5	43.1	25.3	9.6	0.2	0.2	0.3	135
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 32 minus line 44)	lb/acre-mo	1.4	0.9	1.9	1.4	8.1	-12.1	-18.6	-8.7	-3.0	1.5	1.3	2.0	-23.9
47	Total nitrogen in percolate	lb/mo	71.9	48.6	97.9	70.3	420.9	-627.9	-965.5	-454.2	-155.7	77.6	69.0	106.1	(1,241)
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 22)	in/mo	1.17	1.13	2.02	3.05	3.83	1.09	3.89	3.49	2.89	1.55	1.93	1.89	
51	Climatoligical Normal Precipitation	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	6.87	3.93	6.12	6.50	4.68	6.79	7.19	5.79	6.84	7.05	5.58	6.29	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 53 minus line 54)	in/mo	6.77	3.83	5.42	4.70	1.38	1.99	1.69	0.89	3.24	5.15	4.68	6.09	
55	Percolate volume	gal/mo	9,563,245	5,413,422	7,650,827	6,634,813	1,954,580	2,815,807	2,392,582	1,252,779	4,569,203	7,275,229	6,612,022	8,598,434	64,732,943
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 48)	lb/mo	72	49	98	70	421	-628	-965	-454	-156	78	69	106	-1241.0
59	Percolate volume (line 56)	gal/mo	9,563,245	5,413,422	7,650,827	6,634,813	1,954,580	2,815,807	2,392,582	1,252,779	4,569,203	7,275,229	6,612,022	8,598,434	64732943.2
60	Total nitrogen concentration in percolate	lb/MG	7.5	9.0	12.8	10.6	215.3	-223.0	-403.5	-362.6	-34.1	10.7	10.4	12.3	-19.2
61	**Nitrogen concentration in percolate**	**mg/L**	**0.9**	**1.1**	**1.5**	**1.3**	**25.8**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**	**1.3**	**1.5**	**-2.3**

Facility: Inland Bays RWF
Field: South Burton
Date: 2015

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	41.9	acres
11	Crop Type(s)	Soybean	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,945,029	18,908,105	20,280,562	18,761,295	23,218,724	22,991,488	27,466,764	26,059,894	22,469,670	23,709,798	19,159,025	18,969,064	260,939,418
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.816	1.491	3.666	2.33	2.969	1.382	2.597	2.93	2.655	0.663	1.794	1.316	24.6
		gal/mo	816000	1491000	3666000	2330000	2969000	1382000	2597000	2930000	2655000	663000	1794000	1316000	24,609,000
18		gal/acre	19,475	35,585	87,494	55,609	70,859	32,983	61,981	69,928	63,365	15,823	42,816	31,408	587,327
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	10	17	19	13	15	22	21	23	13	9	22	19	203
21	Spray hydraulic application rate	in/mo	0.72	1.31	3.22	2.05	2.61	1.21	2.28	2.58	2.33	0.58	1.58	1.16	21.6
22	Spray hydraulic application rate	in/week	0.18	0.33	0.81	0.51	0.65	0.30	0.57	0.64	0.58	0.15	0.39	0.29	5.4
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	4.11	3.06	3.79	9.1	20.945	7.5425	3.1125	4.8725	2.2375	3.485	2.62	4.4925	
26	Total nitrogen in spray effluent	lb/acre-mo	0.7	0.9	2.8	4.2	12.4	2.1	1.6	2.8	1.2	0.5	0.9	1.2	31.2
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.6	0.3	0.4	0.4	0.1	0.6	0.4	0.3	0.4	0.6	0.4	0.5	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	4.3	7.3	14.1	21.3	12.4	4.7	-	-	-	64.0
31	Total nitrogen applied	lb/acre-mo	1.3	1.2	3.2	8.9	19.7	16.8	23.3	15.5	6.3	1.1	1.3	1.7	100.2
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.89	0	0.215	4.7575	9.905	3.6425	1.245	0.635	0.2175	1.575	1.26	0.9625	
35	Total ammonia application	lb/acre-mo	0.14	0.00	0.16	2.21	5.85	1.00	0.64	0.37	0.11	0.21	0.45	0.25	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				8.5	14.5	28.2	42.7	24.7	9.4				128.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.1	0.1	0.4	0.6	1.9	0.3	0.2	0.4	0.2	0.1	0.1	0.2	4.7
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6
43	Total nitrogen consumed	lb/acre-mo	0.1	0.1	0.4	9.3	16.7	28.5	42.9	25.2	9.6	0.1	0.2	0.2	133
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.2	1.1	2.8	-0.4	3.1	-11.7	-19.6	-9.7	-3.3	1.0	1.2	1.5	-33.0
47	Total nitrogen in percolate	lb/mo	49.6	45.2	117.0	-17.3	128.6	-492.0	-822.8	-407.5	-136.7	41.2	49.1	61.6	(1,384)
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.72	1.31	3.22	2.05	2.61	1.21	2.28	2.58	2.33	0.58	1.58	1.16	
51	Climatoligical Normal Precipitation	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	6.42	4.11	7.32	5.50	3.46	6.91	5.58	4.88	6.28	6.08	5.23	5.56	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	6.32	4.01	6.62	3.70	0.16	2.11	0.08	-0.02	2.68	4.18	4.33	5.36	
55	Percolate volume	gal/mo	7,187,415	4,562,932	7,534,359	4,207,292	181,506	2,405,977	93,944	(28,157)	3,053,213	4,758,909	4,922,820	6,094,561	44,974,772
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	50	45	117	-17	129	-492	-823	-407	-137	41	49	62	-1384.1
59	Percolate volume (line 55)	gal/mo	7,187,415	4,562,932	7,534,359	4,207,292	181,506	2,405,977	93,944	-	3,053,213	4,758,909	4,922,820	6,094,561	45002928.3
60	Total nitrogen concentration in percolate	lb/MG	6.9	9.9	15.5	-4.1	708.3	-204.5	-8758.2	14471.5	-44.8	8.6	10.0	10.1	-30.8
61	**Nitrogen concentration in percolate**	**mg/L**	**0.8**	**1.2**	**1.9**	**0.0**	**84.9**	**0.0**	**0.0**	**-**	**0.0**	**1.0**	**1.2**	**1.2**	**-3.7**

Facility: Inland Bays RWF
Field: Northfield
Date: 2015

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Soybean	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,945,029	18,908,105	20,280,562	18,761,295	23,218,724	22,991,488	27,466,764	26,059,894	22,469,670	23,709,798	19,159,025	18,969,064	260,939,418
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	3.153	3.224	9.106	5.124	7.04	1.638	9.399	9.361	7.954	4.108	3.787	2.923	66.8
		gal/mo	3,153,000	3,224,000	9,106,000	5,124,000	7,040,000	1,638,000	9,399,000	9,361,000	7,954,000	4,108,000	3,787,000	2,923,000	66,817,000
18		gal/acre	30,612	31,301	88,408	49,748	68,350	15,903	91,252	90,883	77,223	39,883	36,767	28,379	648,709
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	9	11	21	19	23	21	25	24	21	17	15	16	222
21	Spray hydraulic application rate	in/mo	1.13	1.15	3.26	1.83	2.52	0.59	3.36	3.35	2.84	1.47	1.35	1.05	23.9
22	Spray hydraulic application rate	in/week	0.28	0.29	0.81	0.46	0.63	0.15	0.84	0.84	0.71	0.37	0.34	0.26	6.0
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	4.11	3.06	3.79	9.1	20.945	7.5425	3.1125	4.8725	2.2375	3.485	2.62	4.4925	
26	Total nitrogen in spray effluent	lb/acre-mo	1.0	0.8	2.8	3.8	11.9	1.0	2.4	3.7	1.4	1.2	0.8	1.1	31.9
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.6	0.3	0.4	0.4	0.1	0.6	0.4	0.3	0.4	0.6	0.4	0.5	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	4.3	7.3	14.1	21.3	12.4	4.7	-	-	-	64.0
31	Total nitrogen applied	lb/acre-mo	1.7	1.1	3.2	8.4	19.3	15.7	24.1	16.3	6.6	1.8	1.2	1.5	100.9
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.89	0	0.215	4.7575	9.905	3.6425	1.245	0.635	0.2175	1.575	1.26	0.9625	
35	Total ammonia application	lb/acre-mo	0.23	0.00	0.16	1.97	5.65	0.48	0.95	0.48	0.14	0.52	0.39	0.23	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				8.5	14.5	28.2	42.7	24.7	9.4				128.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.2	0.1	0.4	0.6	1.8	0.2	0.4	0.6	0.2	0.2	0.1	0.2	4.8
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
43	Total nitrogen consumed	lb/acre-mo	0.2	0.1	0.4	9.2	16.6	28.3	43.1	25.3	9.6	0.2	0.1	0.2	133
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.5	1.0	2.8	-0.8	2.7	-12.6	-19.0	-9.0	-3.0	1.6	1.1	1.4	-32.5
47	Total nitrogen in percolate	lb/mo	154.9	101.5	290.0	-80.2	278.7	-1300.9	-1957.6	-927.7	-313.5	160.8	109.5	141.5	-3343.0
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	1.13	1.15	3.26	1.83	2.52	0.59	3.36	3.35	2.84	1.47	1.35	1.05	
51	Climatoligical Normal Precipitation	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	6.83	3.95	7.36	5.28	3.37	6.29	6.66	5.65	6.79	6.97	5.00	5.45	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	6.73	3.85	6.66	3.48	0.07	1.49	1.16	0.75	3.19	5.07	4.10	5.25	
55	Percolate volume	gal/mo	18,815,427	10,775,527	18,615,331	9,738,822	187,688	4,155,176	3,245,904	2,089,159	8,932,902	14,176,703	11,478,371	14,669,820	116,880,830
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	155	101	290	-80	279	-1,301	-1,958	-928	-313	161	109	142	-3343.0
59	Percolate volume (line 55)	gal/mo	18,815,427	10,775,527	18,615,331	9,738,822	187,688	4,155,176	3,245,904	2,089,159	8,932,902	14,176,703	11,478,371	14,669,820	116880829.8
60	Total nitrogen concentration in percolate	lb/MG	8.2	9.4	15.6	-8.2	1484.9	-313.1	-603.1	-444.0	-35.1	11.3	9.5	9.6	-28.6
61	**Nitrogen concentration in percolate**	**mg/L**	**1.0**	**1.1**	**1.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.4**	**1.1**	**1.2**	**-3.4**

Facility: Inland Bays RWF
Field: Southfield
Date: 2015

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,945,029	18,908,105	20,280,562	18,761,295	23,218,724	22,991,488	27,466,764	26,059,894	22,469,670	23,709,798	19,159,025	18,969,064	260,939,418
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.214	3.407	8.543	6.347	4.234	7.298	8.329	9.115	7.653	4.228	3.615	2.681	67.7
		gal/mo	2,214,000	3,407,000	8,543,000	6,347,000	4,234,000	7,298,000	8,329,000	9,115,000	7,653,000	4,228,000	3,615,000	2,681,000	67,664,000
18		gal/acre	21,495	33,078	82,942	61,621	41,107	70,854	80,864	88,495	74,301	41,049	35,097	26,029	656,932
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	9	11	21	19	23	21	25	24	21	17	15	16	222
21	Spray hydraulic application rate	in/mo	0.79	1.22	3.05	2.27	1.51	2.61	2.98	3.26	2.74	1.51	1.29	0.96	24.2
22	Spray hydraulic application rate	in/week	0.20	0.30	0.76	0.57	0.38	0.65	0.74	0.81	0.68	0.38	0.32	0.24	6.0
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	4.11	3.06	3.79	9.1	20.945	7.5425	3.1125	4.8725	2.2375	3.485	2.62	4.4925	
26	Total nitrogen in spray effluent	lb/acre-mo	0.7	0.8	2.6	4.7	7.2	4.5	2.1	3.6	1.4	1.2	0.8	1.0	30.5
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	53	18	-	-	-	-	-	-	-	70.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	47	16	-	-	-	-	-	-	-	62.4
29	Total nitrogen due to precipitation	lb/acre-mo	0.6	0.3	0.4	0.4	0.1	0.6	0.4	0.3	0.4	0.6	0.4	0.5	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.4	1.2	3.1	104.4	40.4	5.1	2.5	3.8	1.8	1.8	1.2	1.5	167.9
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.89	0	0.215	4.7575	9.905	3.6425	1.245	0.635	0.2175	1.575	1.26	0.9625	
35	Total ammonia application	lb/acre-mo	0.16	0.00	0.15	2.44	3.40	2.15	0.84	0.47	0.13	0.54	0.37	0.21	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.6	19.6	28.0	39.2	14.0	5.6				112.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.1	0.1	0.4	0.7	1.1	0.7	0.3	0.5	0.2	0.2	0.1	0.1	4.6
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5
43	Total nitrogen consumed	lb/acre-mo	0.1	0.1	0.4	6.4	20.8	28.8	39.6	14.6	5.8	0.2	0.1	0.2	117
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.2	1.0	2.7	97.9	19.5	-23.7	-37.1	-10.7	-4.0	1.6	1.0	1.3	50.8
47	Total nitrogen in percolate	lb/mo	127.9	105.5	275.0	10086.8	2011.3	-2440.6	-3821.0	-1103.7	-411.6	163.7	106.4	133.9	5,234
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.79	1.22	3.05	2.27	1.51	2.61	2.98	3.26	2.74	1.51	1.29	0.96	
51	Climatoligical Normal Precipitation	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	6.49	4.02	7.15	5.72	2.36	8.31	6.28	5.56	6.69	7.01	4.94	5.36	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	6.39	3.92	6.45	3.92	-0.94	3.51	0.78	0.66	3.09	5.11	4.04	5.16	
55	Percolate volume	gal/mo	17,876,427	10,958,527	18,052,331	10,961,822	(2,618,312)	9,815,176	2,175,904	1,843,159	8,631,902	14,296,703	11,306,371	14,427,820	117,727,830
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	128	105	275	10,087	2,011	-2,441	-3,821	-1,104	-412	164	106	134	5233.5
59	Percolate volume (line 55)	gal/mo	17,876,427	10,958,527	18,052,331	10,961,822	-	9,815,176	2,175,904	1,843,159	8,631,902	14,296,703	11,306,371	14,427,820	120346141.7
60	Total nitrogen concentration in percolate	lb/MG	7.2	9.6	15.2	920.2	-768.1	-248.7	-1756.0	-598.8	-47.7	11.4	9.4	9.3	44.5
61	**Nitrogen concentration in percolate**	**mg/L**	**0.9**	**1.2**	**1.8**	**110.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.4**	**1.1**	**1.1**	**5.3**

Facility: Inland Bays RWF
Field: North Hettie Lingo
Date: 2015

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	47.5	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,945,029	18,908,105	20,280,562	18,761,295	23,218,724	22,991,488	27,466,764	26,059,894	22,469,670	23,709,798	19,159,025	18,969,064	260,939,418
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	1.557	1.556	3.303	0.568	1.644	2.995	3.826	3.335	3.056	2.327	1.996	1.517	27.7
		gal/mo	1,557,000	1,556,000	3,303,000	568,000	1,644,000	2,995,000	3,826,000	3,335,000	3,056,000	2,327,000	1,996,000	1,517,000	27,680,000
18		gal/acre	32,779	32,758	69,537	11,958	34,611	63,053	80,547	70,211	64,337	48,989	42,021	31,937	582,737
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	9	11	21	19	23	21	25	24	21	17	15	16	222
21	Spray hydraulic application rate	in/mo	1.21	1.21	2.56	0.44	1.27	2.32	2.97	2.59	2.37	1.80	1.55	1.18	21.5
22	Spray hydraulic application rate	in/week	0.30	0.30	0.64	0.11	0.32	0.58	0.74	0.65	0.59	0.45	0.39	0.29	5.4
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	4.11	3.06	3.79	9.1	20.945	7.5425	3.1125	4.8725	2.2375	3.485	2.62	4.4925	
26	Total nitrogen in spray effluent	lb/acre-mo	1.1	0.8	2.2	0.9	6.0	4.0	2.1	2.9	1.2	1.4	0.9	1.2	24.8
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	53	18	-	-	-	-	-	-	-	70.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	47	16	-	-	-	-	-	-	-	62.4
29	Total nitrogen due to precipitation	lb/acre-mo	0.6	0.3	0.4	0.4	0.1	0.6	0.4	0.3	0.4	0.6	0.4	0.5	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.7	1.1	2.6	100.6	39.2	4.6	2.5	3.1	1.6	2.0	1.3	1.7	162.2
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.89	0	0.215	4.7575	9.905	3.6425	1.245	0.635	0.2175	1.575	1.26	0.9625	
35	Total ammonia application	lb/acre-mo	0.24	0.00	0.12	0.47	2.86	1.92	0.84	0.37	0.12	0.64	0.44	0.26	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.6	19.6	28.0	39.2	14.0	5.6				112.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.2	0.1	0.3	0.1	0.9	0.6	0.3	0.4	0.2	0.2	0.1	0.2	3.7
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4
43	Total nitrogen consumed	lb/acre-mo	0.2	0.1	0.3	5.8	20.6	28.7	39.6	14.4	5.8	0.2	0.2	0.2	116
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.6	1.0	2.3	94.8	18.6	-24.1	-37.1	-11.3	-4.2	1.8	1.2	1.5	46.0
47	Total nitrogen in percolate	lb/mo	74.4	48.3	109.8	4504.2	883.0	-1144.8	-1762.4	-538.7	-197.3	84.5	55.0	70.6	2,187
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	1.21	1.21	2.56	0.44	1.27	2.32	2.97	2.59	2.37	1.80	1.55	1.18	
51	Climatoligical Normal Precipitation	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	6.91	4.01	6.66	3.89	2.12	8.02	6.27	4.89	6.32	7.30	5.20	5.58	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	6.81	3.91	5.96	2.09	-1.18	3.22	0.77	-0.01	2.72	5.40	4.30	5.38	
55	Percolate volume	gal/mo	8,779,964	5,038,501	7,688,371	2,696,195	(1,516,047)	4,155,834	988,407	(18,519)	3,507,435	6,970,334	5,542,991	6,934,223	50,767,689
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	74	48	110	4,504	883	-1,145	-1,762	-539	-197	85	55	71	2186.5
59	Percolate volume (line 55)	gal/mo	8,779,964	5,038,501	7,688,371	2,696,195	-	4,155,834	988,407	-	3,507,435	6,970,334	5,542,991	6,934,223	52302254.3
60	Total nitrogen concentration in percolate	lb/MG	8.5	9.6	14.3	1670.6	-582.4	-275.5	-1783.1	29091.0	-56.2	12.1	9.9	10.2	43.1
61	**Nitrogen concentration in percolate**	**mg/L**	**1.0**	**1.1**	**1.7**	**200.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.5**	**1.2**	**1.2**	**5.2**

Facility: Inland Bays RWF
Field: East Hettie Lingo
Date: 2015

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	34.46	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,945,029	18,908,105	20,280,562	18,761,295	23,218,724	22,991,488	27,466,764	26,059,894	22,469,670	23,709,798	19,159,025	18,969,064	260,939,418
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.644	0.481	1.314	0.284	2.072	3.529	4.158	3.719	2.288	2.079	1.803	2.43	24.8
		gal/mo	644,000	481,000	1,314,000	284,000	2,072,000	3,529,000	4,158,000	3,719,000	2,288,000	2,079,000	1,803,000	2,430,000	24,801,000
18		gal/acre	18,688	13,958	38,131	8,241	60,128	102,409	120,662	107,922	66,396	60,331	52,322	70,517	719,704
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	9	11	21	19	23	21	25	24	21	17	15	16	222
21	Spray hydraulic application rate	in/mo	0.69	0.51	1.40	0.30	2.21	3.77	4.44	3.97	2.45	2.22	1.93	2.60	26.5
22	Spray hydraulic application rate	in/week	0.17	0.13	0.35	0.08	0.55	0.94	1.11	0.99	0.61	0.56	0.48	0.65	6.6
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	4.1	3.1	3.8	9.1	20.9	7.5	3.1	4.9	2.2	3.5	2.6	4.5	
26	Total nitrogen in spray effluent	lb/acre-mo	0.6	0.4	1.2	0.6	10.5	6.4	3.1	4.4	1.2	1.8	1.1	2.6	34.1
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	53	18	-	-	-	-	-	-	-	70.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	47	16	-	-	-	-	-	-	-	62.4
29	Total nitrogen due to precipitation	lb/acre-mo	0.6	0.3	0.4	0.4	0.1	0.6	0.4	0.3	0.4	0.6	0.4	0.5	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.3	0.7	1.7	100.3	43.7	7.1	3.5	4.6	1.7	2.4	1.5	3.1	171.5
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.89	0	0.215	4.7575	9.905	3.6425	1.245	0.635	0.2175	1.575	1.26	0.9625	
35	Total ammonia application	lb/acre-mo	0.14	0.00	0.07	0.33	4.97	3.11	1.25	0.57	0.12	0.79	0.55	0.57	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.6	19.6	28.0	39.2	14.0	5.6				112.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.1	0.1	0.2	0.1	1.6	1.0	0.5	0.7	0.2	0.3	0.2	0.4	5.1
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.6
43	Total nitrogen consumed	lb/acre-mo	0.1	0.1	0.2	5.7	21.4	29.1	39.7	14.7	5.8	0.3	0.2	0.4	118
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.2	0.6	1.5	94.6	22.3	-22.1	-36.2	-10.0	-4.1	2.1	1.3	2.7	53.7
47	Total nitrogen in percolate	lb/mo	40.0	21.0	50.6	3259.7	767.5	-760.1	-1248.8	-346.3	-142.0	70.7	46.3	93.0	1,852
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.69	0.51	1.40	0.30	2.21	3.77	4.44	3.97	2.45	2.22	1.93	2.60	
51	Climatoligical Normal Precipitation	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	6.39	3.31	5.50	3.75	3.06	9.47	7.74	6.27	6.40	7.72	5.58	7.00	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	6.29	3.21	4.80	1.95	-0.24	4.67	2.24	1.37	2.80	5.82	4.68	6.80	
55	Percolate volume	gal/mo	5,884,070	3,007,462	4,495,471	1,827,949	(220,531)	4,371,154	2,099,401	1,286,110	2,615,504	5,447,617	4,376,249	6,360,053	41,550,510
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	40	21	51	3,260	768	-760	-1,249	-346	-142	71	46	93	1851.7
59	Percolate volume (line 55)	gal/mo	5,884,070	3,007,462	4,495,471	1,827,949	-	4,371,154	2,099,401	1,286,110	2,615,504	5,447,617	4,376,249	6,360,053	41771041.2
60	Total nitrogen concentration in percolate	lb/MG	6.8	7.0	11.3	1783.2	-3480.3	-173.9	-594.8	-269.3	-54.3	13.0	10.6	14.6	44.6
61	**Nitrogen concentration in percolate**	**mg/L**	**0.8**	**0.8**	**1.4**	**213.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.6**	**1.3**	**1.8**	**5.3**

Facility: Inland Bays RWF
Field: West Hettie Lingo
Date: 2015

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	20.16	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	248,263,465
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.446	0.787	0.768	0	1.641	2.052	3.492	3.41	2.642	1.596	1.589	1.853	20.3
		gal/mo	446,000	787,000	768,000	-	1,641,000	2,052,000	3,492,000	3,410,000	2,642,000	1,596,000	1,589,000	1,853,000	20,276,000
18		gal/acre	22,123	39,038	38,095	-	81,399	101,786	173,214	169,147	131,052	79,167	78,819	91,915	1,005,754
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	196
21	Spray hydraulic application rate	in/mo	0.81	1.44	1.40	-	3.00	3.75	6.38	6.23	4.83	2.92	2.90	3.38	37.0
22	Spray hydraulic application rate	in/week	0.20	0.36	0.35	-	0.75	0.94	1.59	1.56	1.21	0.73	0.73	0.85	9.3
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	4.1	3.1	3.8	9.1	20.9	7.5	3.1	4.9	2.2	3.5	2.6	4.5	
26	Total nitrogen in spray effluent	lb/acre-mo	0.8	1.0	1.2	0.0	14.2	6.4	4.5	6.9	2.4	2.3	1.7	3.4	44.9
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	53	18	-	-	-	-	-	-	-	70.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	47	16	-	-	-	-	-	-	-	62.4
29	Total nitrogen due to precipitation	lb/acre-mo	0.6	0.3	0.4	0.4	0.1	0.6	0.4	0.3	0.4	0.6	0.4	0.5	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.4	1.3	1.7	99.7	47.4	7.0	4.9	7.1	2.9	2.9	2.1	3.9	182.3
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.89	0.00	0.22	4.76	9.91	3.64	1.25	0.64	0.22	1.58	1.26	0.96	
35	Total ammonia application	lb/acre-mo	0.16	0.00	0.07	0.00	6.72	3.09	1.80	0.90	0.24	1.04	0.83	0.74	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.6	19.6	28.0	39.2	14.0	5.6				112.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.1	0.1	0.2	0.0	2.1	1.0	0.7	1.0	0.4	0.3	0.3	0.5	6.7
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.8
43	Total nitrogen consumed	lb/acre-mo	0.1	0.1	0.2	5.6	22.1	29.1	40.0	15.1	6.0	0.4	0.3	0.6	120
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.3	1.2	1.5	94.1	25.3	-22.1	-35.1	-8.0	-3.1	2.5	1.8	3.4	62.8
47	Total nitrogen in percolate	lb/mo	25.4	23.2	29.6	1896.6	510.9	-445.3	-707.8	-160.3	-62.5	50.5	36.7	68.0	1,265
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.81	1.44	1.40	0.00	3.00	3.75	6.38	6.23	4.83	2.92	2.90	3.38	
51	Climatoligical Normal Precipitation	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	6.51	4.24	5.50	3.45	3.85	9.45	9.68	8.53	8.78	8.42	6.55	7.78	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	6.41	4.14	4.80	1.65	0.55	4.65	4.18	3.63	5.18	6.52	5.65	7.58	
55	Percolate volume	gal/mo	3,511,578	2,265,047	2,629,244	903,251	299,810	2,544,682	2,287,666	1,986,696	2,833,599	3,566,729	3,094,418	4,152,183	30,074,901
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	25	23	30	1,897	511	-445	-708	-160	-63	51	37	68	1265.1
59	Percolate volume (line 55)	gal/mo	3,511,578	2,265,047	2,629,244	903,251	299,810	2,544,682	2,287,666	1,986,696	2,833,599	3,566,729	3,094,418	4,152,183	30074901.1
60	Total nitrogen concentration in percolate	lb/MG	7.2	10.3	11.3	2099.8	1704.1	-175.0	-309.4	-80.7	-22.1	14.2	11.9	16.4	42.1
61	**Nitrogen concentration in percolate**	**mg/L**	**0.9**	**1.2**	**1.4**	**251.8**	**204.3**	**0.0**	**0.0**	**0.0**	**0.0**	**1.7**	**1.4**	**2.0**	**5.0**

Facility: Inland Bays RWF
Field: South Hettie Lingo
Date: 2015

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	30.48	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	248,263,465
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.742	1.301	2.23	1.071	2.016	2.943	3.607	4.059	3.371	2.112	1.834	2.233	27.5
		gal/mo	742,000	1,301,000	2,230,000	1,071,000	2,016,000	2,943,000	3,607,000	4,059,000	3,371,000	2,112,000	1,834,000	2,233,000	27,519,000
18		gal/acre	24,344	42,684	73,163	35,138	66,142	96,555	118,340	133,169	110,597	69,291	60,171	73,261	902,854
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	196
21	Spray hydraulic application rate	in/mo	0.90	1.57	2.69	1.29	2.44	3.56	4.36	4.90	4.07	2.55	2.22	2.70	33.2
22	Spray hydraulic application rate	in/week	0.22	0.39	0.67	0.32	0.61	0.89	1.09	1.23	1.02	0.64	0.55	0.67	8.3
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	4.11	3.06	3.79	9.1	20.94	7.5425	3.1125	4.8725	2.2375	3.485	2.62	4.49	
26	Total nitrogen in spray effluent	lb/acre-mo	0.8	1.1	2.3	2.7	11.6	6.1	3.1	5.4	2.1	2.0	1.3	2.7	41.1
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	53	18	-	-	-	-	-	-	-	70.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	47	16	-	-	-	-	-	-	-	62.4
29	Total nitrogen due to precipitation	lb/acre-mo	0.6	0.3	0.4	0.4	0.1	0.6	0.4	0.3	0.4	0.6	0.4	0.5	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.5	1.4	2.8	102.3	44.7	6.7	3.4	5.7	2.5	2.6	1.7	3.2	178.5
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.89	0	0.215	4.7575	9.905	3.6425	1.245	0.635	0.2175	1.575	1.26	0.9625	
35	Total ammonia application	lb/acre-mo	0.18	0.00	0.13	1.39	5.46	2.93	1.23	0.71	0.20	0.91	0.63	0.59	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.6	19.6	28.0	39.2	14.0	5.6				112.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.1	0.2	0.3	0.4	1.7	0.9	0.5	0.8	0.3	0.3	0.2	0.4	6.2
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.7
43	Total nitrogen consumed	lb/acre-mo	0.1	0.2	0.4	6.1	21.6	29.1	39.7	14.8	5.9	0.3	0.2	0.4	119
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.3	1.2	2.4	96.3	23.1	-22.4	-36.3	-9.2	-3.4	2.3	1.5	2.8	59.7
47	Total nitrogen in percolate	lb/mo	40.4	37.6	73.4	2934.4	705.3	-681.5	-1106.1	-279.9	-104.4	69.1	45.3	84.9	1,818
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.90	1.57	2.69	1.29	2.44	3.56	4.36	4.90	4.07	2.55	2.22	2.70	
51	Climatoligical Normal Precipitation	in/mo	5.70	2.80	4.10	3.45	0.85	5.70	3.30	2.30	3.95	5.50	3.65	4.40	
52	Total Hydraulic Loading	in/mo	6.60	4.37	6.79	4.74	3.29	9.26	7.66	7.20	8.02	8.05	5.87	7.10	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	6.50	4.27	6.09	2.94	-0.01	4.46	2.16	2.30	4.42	6.15	4.97	6.90	
55	Percolate volume	gal/mo	5,376,862	3,535,666	5,044,023	2,436,629	(11,752)	3,687,889	1,786,161	1,907,100	3,660,679	5,091,554	4,110,048	5,709,146	42,334,005
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	40	38	73	2,934	705	-682	-1,106	-280	-104	69	45	85	1818.3
59	Percolate volume (line 55)	gal/mo	5,376,862	3,535,666	5,044,023	2,436,629	-	3,687,889	1,786,161	1,907,100	3,660,679	5,091,554	4,110,048	5,709,146	42345757.3
60	Total nitrogen concentration in percolate	lb/MG	7.5	10.6	14.5	1204.3	-60010.5	-184.8	-619.3	-146.8	-28.5	13.6	11.0	14.9	43.0
61	**Nitrogen concentration in percolate**	**mg/L**	**0.9**	**1.3**	**1.7**	**144.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.6**	**1.3**	**1.8**	**5.2**

Facility: Inland Bays RWF
OVERALL WATER BALANCE
Date: 2015

	STORAGE	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
62															
63	Volume Generated (line 14)	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	248,263,465
64	Volume Irrigated (all Line 17's)	gal/mo	11,228,000	13,848,000	31,780,000	20,029,000	27,030,000	23,382,000	40,907,000	40,853,000	33,694,000	19,305,000	19,147,000	17,621,000	298,824,000
65	Volume added from Precipitation to system on all treatment and storage lagoons (calculated using line 9 and the 5-Year Return Period Monthly Precipitation (Exhibit K-K)")	gal/mo	2,858,841	1,404,343	2,056,359	1,730,351	426,318	2,858,841	1,655,119	1,153,567	1,981,127	2,758,531	1,830,661	2,206,825	22,920,885
66	Volume lost due to Evaporation from system from all treatment and storage lagoons (calculated using line 9)	gal/mo	50,155	50,155	351,086	902,792	1,655,119	2,407,445	2,758,531	2,457,600	1,805,584	952,947	451,396	100,310	13,943,120
67	Volume Stored	gal/mo	6,657,532	4,127,918	(10,471,419)	(842,486)	(7,291,310)	(191,432)	(8,350,983)	(16,898,914)	(13,167,433)	1,811,169	(123,047)	3,157,635	(41,582,771)
68	Cumulative Volume Stored	gal/mo		10,785,450	314,031	(528,455)	(7,819,765)	(8,011,197)	(16,362,181)	(33,261,094)	(46,428,528)	(44,617,359)	(44,740,405)	(41,582,771)	

Facility: Inland Bays RWF
Field: South Hettie Lingo
Date: 2014

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	30.48	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.73	0.79	1.77	1.30	2.20	2.22	2.25	2.74	1.52	2.82	1.67	1.18	21.2
		gal/mo	732,000	787,000	1,771,000	1,300,000	2,196,000	2,221,000	2,248,000	2,738,000	1,521,000	2,824,000	1,674,000	1,183,000	21,195,000
18		gal/acre	24,016	25,820	58,104	42,651	72,047	72,867	73,753	89,829	49,902	92,651	54,921	38,812	695,374
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	196
21	Spray hydraulic application rate	in/mo	0.88	0.95	2.14	1.57	2.65	2.68	2.72	3.31	1.84	3.41	2.02	1.43	25.6
22	Spray hydraulic application rate	in/week	0.22	0.24	0.53	0.39	0.66	0.67	0.68	0.83	0.46	0.85	0.51	0.36	6.4
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	13.81	16.17	15.92	6.75	3.05	3.62	3.78	3.08	2.73	2.67	3.44	4.38	
26	Total nitrogen in spray effluent	lb/acre-mo	2.8	3.5	7.7	2.4	1.8	2.2	2.3	2.3	1.1	2.1	1.6	1.4	31.2
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	115	38	-	-	-	-	-	-	-	153.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	3.1	3.8	8.2	117.5	40.5	2.6	2.8	2.9	1.5	2.5	1.9	1.8	189.2
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.09	3.10	4.45	0.48	1.11	1.10	1.92	2.26	
35	Total ammonia application	lb/acre-mo	0.14	0.22	0.72	0.19	1.25	1.88	2.74	0.36	0.46	0.85	0.88	0.73	10.4
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.5	12.2	17.4	24.4	8.7	3.5				69.7
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.4	0.5	1.2	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	4.7
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.5
43	Total nitrogen consumed	lb/acre-mo	0.4	0.5	1.2	3.9	12.5	17.8	24.9	9.1	3.7	0.4	0.3	0.2	75
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	2.7	3.3	7.0	113.7	27.9	-15.2	-22.1	-6.2	-2.1	2.1	1.6	1.6	114.3
47	Total nitrogen in percolate	lb/mo	82.9	101.0	213.0	3464.4	851.5	-464.5	-673.9	-187.9	-65.0	64.3	50.3	48.1	3,484
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.88	0.95	2.14	1.57	2.65	2.68	2.72	3.31	1.84	3.41	2.02	1.43	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	4.18	4.15	6.24	4.77	6.05	6.28	6.62	8.61	5.44	6.91	5.12	5.03	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	4.08	4.05	5.54	2.97	2.75	1.48	1.12	3.71	1.84	5.01	4.22	4.83	
55	Percolate volume	gal/mo	3,380,493	3,352,727	4,585,023	2,458,715	2,278,765	1,227,815	923,754	3,069,062	1,521,000	4,148,246	3,494,839	3,997,023	34,437,463
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	83	101	213	3,464	851	-464	-674	-188	-65	64	50	48	3,484
59	Percolate volume (line 55)	gal/mo	3,380,493	3,352,727	4,585,023	2,458,715	2,278,765	1,227,815	923,754	3,069,062	1,521,000	4,148,246	3,494,839	3,997,023	34,437,463
60	Total nitrogen concentration in percolate	lb/MG	24.5	30.1	46.5	1409.0	373.7	-378.3	-729.5	-61.2	-42.7	15.5	14.4	12.0	101.2
61	**Nitrogen concentration in percolate**	**mg/L**	**2.9**	**3.6**	**5.6**	**168.9**	**44.8**	**0.0**	**0.0**	**0.0**	**0.0**	**1.9**	**1.7**	**1.4**	**12.1**

Facility: Inland Bays RWF
Field: West Hettie Lingo
Date: 2014

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	20.16	acres
11	Crop Type(s)	Corn	#

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.159	0	0	0	1.686	1.549	1.501	1.989	1.052	1.476	0.817	0.336	10.6
		gal/mo	159,000	-	-	-	1,686,000	1,549,000	1,501,000	1,989,000	1,052,000	1,476,000	817,000	336,000	10,565,000
18		gal/acre	7,887	-	-	-	83,631	76,835	74,454	98,661	52,183	73,214	40,526	16,667	524,058
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	196
21	Spray hydraulic application rate	in/mo	0.29	-	-	-	3.08	2.83	2.74	3.63	1.92	2.70	1.49	0.61	19.3
22	Spray hydraulic application rate	in/week	0.07	-	-	-	0.77	0.71	0.69	0.91	0.48	0.67	0.37	0.15	4.8
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	13.81	16.17	15.92	6.75	3.05	3.62	3.78	3.08	2.73	2.67	3.44	4.38	
26	Total nitrogen in spray effluent	lb/acre-mo	0.9	0.0	0.0	0.0	2.1	2.3	2.3	2.5	1.2	1.6	1.2	0.6	14.8
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	115	38	-	-	-	-	-	-	-	153.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.3	0.4	0.5	115.1	40.8	2.7	2.8	3.1	1.6	2.0	1.5	1.0	172.8
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
35	Total ammonia application	lb/acre-mo	0.05	0.00	0.00	0.00	1.45	1.99	2.76	0.40	0.48	0.67	0.65	0.31	8.8
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.5	12.2	17.4	24.4	8.7	3.5				69.7
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.1	0.0	0.0	0.0	0.3	0.3	0.4	0.4	0.2	0.2	0.2	0.1	2.2
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4
43	Total nitrogen consumed	lb/acre-mo	0.1	0.0	0.0	3.5	12.6	17.9	24.9	9.1	3.7	0.3	0.2	0.1	72
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.1	0.4	0.5	111.6	28.2	-15.1	-22.1	-6.0	-2.1	1.8	1.3	0.9	100.5
47	Total nitrogen in percolate	lb/mo	23.1	7.4	9.4	2250.5	568.0	-305.3	-445.4	-120.4	-42.1	35.3	26.4	18.4	2,025
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.29	0.00	0.00	0.00	3.08	2.83	2.74	3.63	1.92	2.70	1.49	0.61	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.59	3.20	4.10	3.20	6.48	6.43	6.64	8.93	5.52	6.20	4.59	4.21	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.49	3.10	3.40	1.40	3.18	1.63	1.14	4.03	1.92	4.30	3.69	4.01	
55	Percolate volume	gal/mo	1,910,759	1,697,016	1,861,244	766,394	1,740,742	892,090	625,121	2,207,970	1,052,000	2,351,879	2,021,334	2,197,244	19,323,794
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	23	7	9	2,250	568	-305	-445	-120	-42	35	26	18	2,025
59	Percolate volume (line 55)	gal/mo	1,910,759	1,697,016	1,861,244	766,394	1,740,742	892,090	625,121	2,207,970	1,052,000	2,351,879	2,021,334	2,197,244	19,323,794
60	Total nitrogen concentration in percolate	lb/MG	12.1	4.3	5.1	2936.4	326.3	-342.2	-712.5	-54.5	-40.0	15.0	13.1	8.4	104.8
61	**Nitrogen concentration in percolate**	**mg/L**	**1.5**	**0.5**	**0.6**	**352.1**	**39.1**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**1.6**	**1.0**	**12.6**

Facility: Inland Bays RWF
Field: East Hettie Lingo
Date: 2014

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	34.46	acres
11	Crop Type(s)	Corn	#

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.34	0.287	0.815	0.171	3.434	1.899	3.332	1.789	1.694	2.878	1.335	1.583	19.6
		gal/mo	340,000	287,000	815,000	171,000	3,434,000	1,899,000	3,332,000	1,789,000	1,694,000	2,878,000	1,335,000	1,583,000	19,557,000
18		gal/acre	9,867	8,328	23,651	4,962	99,652	55,107	96,692	51,915	49,158	83,517	38,741	45,937	567,528
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	7	13	17	21	21	23	21	20	17	22	12	17	211
21	Spray hydraulic application rate	in/mo	0.36	0.31	0.87	0.18	3.67	2.03	3.56	1.91	1.81	3.08	1.43	1.69	20.9
22	Spray hydraulic application rate	in/week	0.09	0.08	0.22	0.05	0.92	0.51	0.89	0.48	0.45	0.77	0.36	0.42	5.2
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	13.81	16.17	15.92	6.75	3.05	3.62	3.78	3.08	2.73	2.67	3.44	4.38	
26	Total nitrogen in spray effluent	lb/acre-mo	1.1	1.1	3.1	0.3	2.5	1.7	3.0	1.3	1.1	1.9	1.1	1.7	20.0
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	115	38	-	-	-	-	-	-	-	153.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.5	1.5	3.6	115.4	41.2	2.1	3.5	1.9	1.5	2.3	1.5	2.1	178.0
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1.84	1.8375	0.2075	1.215	0.61	0.9675	1.0025	0.38	0.425	0.97	1.355	1.485	
35	Total ammonia application	lb/acre-mo	0.15	0.13	0.04	0.05	0.51	0.44	0.81	0.16	0.17	0.68	0.44	0.57	4.2
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.5	12.2	17.4	24.4	8.7	3.5				69.7
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.2	0.2	0.5	0.0	0.4	0.2	0.5	0.2	0.2	0.3	0.2	0.3	3.0
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
43	Total nitrogen consumed	lb/acre-mo	0.2	0.2	0.5	3.5	12.6	17.7	24.9	8.9	3.7	0.3	0.2	0.3	73
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.3	1.3	3.1	111.9	28.6	-15.6	-21.4	-7.0	-2.1	1.9	1.3	1.8	105.1
47	Total nitrogen in percolate	lb/mo	46.0	45.3	108.0	3854.9	984.5	-538.3	-737.4	-240.6	-73.4	67.1	44.0	62.3	3,622
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.36	0.31	0.87	0.18	3.67	2.03	3.56	1.91	1.81	3.08	1.43	1.69	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.66	3.51	4.97	3.38	7.07	5.63	7.46	7.21	5.41	6.58	4.53	5.29	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.56	3.41	4.27	1.58	3.77	0.83	1.96	2.31	1.81	4.68	3.63	5.09	
55	Percolate volume	gal/mo	3,334,326	3,187,753	3,996,471	1,481,018	3,527,573	776,128	1,834,837	2,163,291	1,694,000	4,375,163	3,393,599	4,764,471	34,528,629
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	46	45	108	3,855	985	-538	-737	-241	-73	67	44	62	3,622
59	Percolate volume (line 55)	gal/mo	3,334,326	3,187,753	3,996,471	1,481,018	3,527,573	776,128	1,834,837	2,163,291	1,694,000	4,375,163	3,393,599	4,764,471	34,528,629
60	Total nitrogen concentration in percolate	lb/MG	13.8	14.2	27.0	2602.9	279.1	-693.6	-401.9	-111.2	-43.4	15.3	13.0	13.1	104.9
61	**Nitrogen concentration in percolate**	**mg/L**	**1.7**	**1.7**	**3.2**	**312.1**	**33.5**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**1.6**	**1.6**	**12.6**

Facility: Inland Bays RWF
Field: Southfield
Date: 2014

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	#

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	1.383	7.669	7.781	5.296	9.887	6.938	8.93	5.898	1.597	7.14	3.057	5.084	70.7
		gal/mo	1383000	7669000	7781000	5296000	9887000	6938000	8930000	5898000	1597000	7140000	3057000	5084000	70,660,000
18		gal/acre	13,427	74,456	75,544	51,417	95,990	67,359	86,699	57,262	15,505	69,320	29,680	49,359	686,019
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	7	13	17	21	21	23	21	20	17	22	12	17	211
21	Spray hydraulic application rate	in/mo	0.49	2.74	2.78	1.89	3.54	2.48	3.19	2.11	0.57	2.55	1.09	1.82	25.3
22	Spray hydraulic application rate	in/week	0.12	0.69	0.70	0.47	0.88	0.62	0.80	0.53	0.14	0.64	0.27	0.45	6.3
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	13.81	16.17	15.92	6.75	3.05	3.62	3.78	3.08	2.73	2.67	3.44	4.38	
26	Total nitrogen in spray effluent	lb/acre-mo	1.5	10.0	10.0	2.9	2.4	2.0	2.7	1.5	0.4	1.5	0.9	1.8	37.7
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	115	38	-	-	-	-	-	-	-	153.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.9	10.4	10.5	118.0	41.1	2.4	3.2	2.1	0.8	1.9	1.2	2.2	195.7
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1.84	1.8375	0.2075	1.215	0.61	0.9675	1.0025	0.38	0.425	0.97	1.355	1.485	
35	Total ammonia application	lb/acre-mo	0.21	1.14	0.13	0.52	0.49	0.54	0.72	0.18	0.05	0.56	0.34	0.61	5.5
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.5	12.2	17.4	24.4	8.7	3.5				69.7
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.2	1.5	1.5	0.4	0.4	0.3	0.4	0.2	0.1	0.2	0.1	0.3	5.7
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
43	Total nitrogen consumed	lb/acre-mo	0.2	1.6	1.5	3.9	12.6	17.8	24.8	8.9	3.5	0.3	0.1	0.3	76
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.7	8.8	9.0	114.1	28.5	-15.3	-21.7	-6.9	-2.8	1.7	1.1	1.9	120.1
47	Total nitrogen in percolate	lb/mo	173.1	910.8	925.7	11748.7	2934.6	-1577.2	-2231.3	-707.2	-286.0	173.4	109.3	197.0	12,371
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.49	2.74	2.78	1.89	3.54	2.48	3.19	2.11	0.57	2.55	1.09	1.82	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.79	5.94	6.88	5.09	6.94	6.08	7.09	7.41	4.17	6.05	4.19	5.42	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.69	5.84	6.18	3.29	3.64	1.28	1.59	2.51	0.57	4.15	3.29	5.22	
55	Percolate volume	gal/mo	10,332,958	16,339,272	17,290,331	9,211,607	10,166,686	3,581,766	4,455,021	7,016,745	1,597,000	11,614,979	9,210,096	14,593,331	115,409,792
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	173	911	926	11,749	2,935	-1,577	-2,231	-707	-286	173	109	197	12,371
59	Percolate volume (line 55)	gal/mo	10,332,958	16,339,272	17,290,331	9,211,607	10,166,686	3,581,766	4,455,021	7,016,745	1,597,000	11,614,979	9,210,096	14,593,331	115,409,792
60	Total nitrogen concentration in percolate	lb/MG	16.8	55.7	53.5	1275.4	288.7	-440.3	-500.8	-100.8	-179.1	14.9	11.9	13.5	107.2
61	**Nitrogen concentration in percolate**	**mg/L**	**2.0**	**6.7**	**6.4**	**152.9**	**34.6**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**1.4**	**1.6**	**12.9**

Facility: Inland Bays RWF
Field: North Hettie Lingo
Date: 2014

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	47.5	acres
11	Crop Type(s)	Corn	#

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.599	2.305	2.476	1.176	2.208	2.77	2.519	2.906	2.043	2.392	1.544	1.822	24.8
		gal/mo	599000	2305000	2476000	1176000	2208000	2770000	2519000	2906000	2043000	2392000	1544000	1822000	24,760,000
18		gal/acre	12,611	48,526	52,126	24,758	46,484	58,316	53,032	61,179	43,011	50,358	32,505	38,358	521,263
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	7	13	17	21	21	23	21	20	17	22	12	17	211
21	Spray hydraulic application rate	in/mo	0.46	1.79	1.92	0.91	1.71	2.15	1.95	2.25	1.58	1.85	1.20	1.41	19.2
22	Spray hydraulic application rate	in/week	0.12	0.45	0.48	0.23	0.43	0.54	0.49	0.56	0.40	0.46	0.30	0.35	4.8
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	13.81	16.17	15.92	6.75	3.05	3.62	3.78	3.08	2.73	2.67	3.44	4.38	
26	Total nitrogen in spray effluent	lb/acre-mo	1.5	6.5	6.9	1.4	1.2	1.8	1.7	1.6	1.0	1.1	0.9	1.4	26.9
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	115	38	-	-	-	-	-	-	-	153.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.8	6.9	7.4	116.5	39.8	2.2	2.1	2.2	1.4	1.5	1.3	1.8	184.9
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1.84	1.8375	0.2075	1.215	0.61	0.9675	1.0025	0.38	0.425	0.97	1.355	1.485	
35	Total ammonia application	lb/acre-mo	0.19	0.74	0.09	0.25	0.24	0.47	0.44	0.19	0.15	0.41	0.37	0.48	4.0
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.5	12.2	17.4	24.4	8.7	3.5				69.7
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.2	1.0	1.0	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.1	0.2	4.0
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
43	Total nitrogen consumed	lb/acre-mo	0.2	1.0	1.0	3.7	12.4	17.7	24.7	9.0	3.6	0.2	0.2	0.2	74
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.6	5.9	6.3	112.8	27.4	-15.5	-22.6	-6.8	-2.2	1.3	1.1	1.6	111.0
47	Total nitrogen in percolate	lb/mo	76.1	279.8	301.5	5358.1	1303.1	-738.2	-1071.2	-322.1	-106.8	63.3	53.6	75.0	5,272
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.46	1.79	1.92	0.91	1.71	2.15	1.95	2.25	1.58	1.85	1.20	1.41	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.76	4.99	6.02	4.11	5.11	5.75	5.85	7.55	5.18	5.35	4.30	5.01	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.66	4.89	5.32	2.31	1.81	0.95	0.35	2.65	1.58	3.45	3.40	4.81	
55	Percolate volume	gal/mo	4,726,408	6,303,427	6,861,371	2,981,741	2,336,982	1,222,222	455,296	3,421,926	2,043,000	4,455,704	4,381,593	6,207,371	45,397,040
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	76	280	301	5,358	1,303	-738	-1,071	-322	-107	63	54	75	5,272
59	Percolate volume (line 55)	gal/mo	4,726,408	6,303,427	6,861,371	2,981,741	2,336,982	1,222,222	455,296	3,421,926	2,043,000	4,455,704	4,381,593	6,207,371	45,397,040
60	Total nitrogen concentration in percolate	lb/MG	16.1	44.4	43.9	1797.0	557.6	-604.0	-2352.7	-94.1	-52.3	14.2	12.2	12.1	116.1
61	**Nitrogen concentration in percolate**	**mg/L**	**1.9**	**5.3**	**5.3**	**215.5**	**66.9**	**0.0**	**0.0**	**0.0**	**0.0**	**1.7**	**1.5**	**1.4**	**13.9**

Facility: Inland Bays RWF
Field: Northfield
Date: 2014

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	#

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.296	6.665	4.819	7.868	4.792	11.62	12.361	7.84	5.525	5.385	4.657	4.685	78.5
		gal/mo	2296000	6665000	4819000	7868000	4792000	11620000	12361000	7840000	5525000	5385000	4657000	4685000	78,513,000
18		gal/acre	22,291	64,709	46,786	76,388	46,524	112,816	120,010	76,117	53,641	52,282	45,214	45,485	762,262
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	7	13	17	21	21	23	21	20	17	22	12	17	211
21	Spray hydraulic application rate	in/mo	0.82	2.38	1.72	2.81	1.71	4.15	4.42	2.80	1.98	1.93	1.67	1.68	28.1
22	Spray hydraulic application rate	in/week	0.21	0.60	0.43	0.70	0.43	1.04	1.10	0.70	0.49	0.48	0.42	0.42	7.0
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	13.81	16.17	15.92	6.75	3.05	3.62	3.78	3.08	2.73	2.67	3.44	4.38	
26	Total nitrogen in spray effluent	lb/acre-mo	2.6	8.7	6.2	4.3	1.2	3.4	3.8	2.0	1.2	1.2	1.3	1.7	37.5
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	115	38	-	-	-	-	-	-	-	153.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	2.9	9.1	6.7	119.4	39.8	3.8	4.2	2.6	1.6	1.6	1.7	2.1	195.5
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1.84	1.8375	0.2075	1.215	0.61	0.9675	1.0025	0.38	0.425	0.97	1.355	1.485	
35	Total ammonia application	lb/acre-mo	0.34	0.99	0.08	0.77	0.24	0.91	1.00	0.24	0.19	0.42	0.51	0.56	6.3
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.2	11.1	15.9	22.2	7.9	3.2				63.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.4	1.3	0.9	0.6	0.2	0.5	0.6	0.3	0.2	0.2	0.2	0.2	5.6
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3
43	Total nitrogen consumed	lb/acre-mo	0.4	1.4	0.9	3.9	11.3	16.4	22.8	8.2	3.4	0.2	0.2	0.3	69
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	2.5	7.7	5.7	115.6	28.5	-12.6	-18.6	-5.7	-1.7	1.4	1.4	1.8	126.0
47	Total nitrogen in percolate	lb/mo	261.8	796.5	591.6	11902.4	2937.5	-1299.3	-1917.3	-585.3	-178.8	140.9	147.4	184.9	12,982
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.82	2.38	1.72	2.81	1.71	4.15	4.42	2.80	1.98	1.93	1.67	1.68	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	4.12	5.58	5.82	6.01	5.11	7.75	8.32	8.10	5.58	5.43	4.77	5.28	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	4.02	5.48	5.12	4.21	1.81	2.95	2.82	3.20	1.98	3.53	3.87	5.08	
55	Percolate volume	gal/mo	11,245,958	15,335,272	14,328,331	11,783,607	5,071,686	8,263,766	7,886,021	8,958,745	5,525,000	9,859,979	10,810,096	14,194,331	123,262,792
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	262	797	592	11,902	2,938	-1,299	-1,917	-585	-179	141	147	185	12,982
59	Percolate volume (line 55)	gal/mo	11,245,958	15,335,272	14,328,331	11,783,607	5,071,686	8,263,766	7,886,021	8,958,745	5,525,000	9,859,979	10,810,096	14,194,331	123,262,792
60	Total nitrogen concentration in percolate	lb/MG	23.3	51.9	41.3	1010.1	579.2	-157.2	-243.1	-65.3	-32.4	14.3	13.6	13.0	105.3
61	**Nitrogen concentration in percolate**	**mg/L**	**2.8**	**6.2**	**5.0**	**121.1**	**69.4**	**0.0**	**0.0**	**0.0**	**0.0**	**1.7**	**1.6**	**1.6**	**12.6**

Facility: Inland Bays RWF
Field: South Burton
Date: 2014

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	41.9	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0.56	1.845	0.889	2.43	0.846	3.11	1.929	2.302	1.498	1.928	1.451	1.779	20.6
		gal/mo	560000	1845000	889000	2430000	846000	3110000	1929000	2302000	1498000	1928000	1451000	1779000	20,567,000
18		gal/acre	13,365	44,033	21,217	57,995	20,191	74,224	46,038	54,940	35,752	46,014	34,630	42,458	490,859
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	7	13	17	21	21	23	21	20	17	22	12	17	211
21	Spray hydraulic application rate	in/mo	0.49	1.62	0.78	2.14	0.74	2.73	1.70	2.02	1.32	1.69	1.28	1.56	18.1
22	Spray hydraulic application rate	in/week	0.12	0.41	0.20	0.53	0.19	0.68	0.42	0.51	0.33	0.42	0.32	0.39	4.5
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	13.81	16.17	15.92	6.75	3.05	3.62	3.78	3.08	2.73	2.67	3.44	4.38	
26	Total nitrogen in spray effluent	lb/acre-mo	1.5	5.9	2.8	3.3	0.5	2.2	1.5	1.4	0.8	1.0	1.0	1.6	23.6
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	0	0	0	115	38	0	0	0	0	0	0	0	153.0
28	Total nitrogen applied as biosolids	lb/acre-mo	0	0	0	0	0	0	0	0	0	0	0	0	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	1.9	6.3	3.3	118.4	39.2	2.7	1.9	2.0	1.2	1.4	1.3	2.0	181.6
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	1.84	1.8375	0.2075	1.215	0.61	0.9675	1.0025	0.38	0.425	0.97	1.355	1.485	
35	Total ammonia application	lb/acre-mo	0.21	0.67	0.04	0.59	0.10	0.60	0.38	0.17	0.13	0.37	0.39	0.53	4.2
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.2	11.1	15.9	22.2	7.9	3.2				63.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.2	0.9	0.4	0.5	0.1	0.3	0.2	0.2	0.1	0.2	0.1	0.2	3.5
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
43	Total nitrogen consumed	lb/acre-mo	0.2	0.9	0.4	3.7	11.2	16.2	22.5	8.2	3.3	0.2	0.2	0.3	67
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	1.7	5.4	2.9	114.7	28.0	-13.6	-20.6	-6.1	-2.1	1.3	1.2	1.7	114.3
47	Total nitrogen in percolate	lb/mo	70.2	225.4	119.9	4805.3	1171.4	-569.4	-861.7	-257.3	-87.1	52.5	49.4	71.4	4,790
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.49	1.62	0.78	2.14	0.74	2.73	1.70	2.02	1.32	1.69	1.28	1.56	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.79	4.82	4.88	5.34	4.14	6.33	5.60	7.32	4.92	5.19	4.38	5.16	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.69	4.72	4.18	3.54	0.84	1.53	0.10	2.42	1.32	3.29	3.48	4.96	
55	Percolate volume	gal/mo	4,200,808	5,372,033	4,757,359	4,022,854	959,775	1,744,697	108,596	2,757,101	1,498,000	3,748,404	3,954,056	5,647,359	38,771,042
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	70	225	120	4,805	1,171	-569	-862	-257	-87	52	49	71	4,790
59	Percolate volume (line 55)	gal/mo	4,200,808	5,372,033	4,757,359	4,022,854	959,775	1,744,697	108,596	2,757,101	1,498,000	3,748,404	3,954,056	5,647,359	38,771,042
60	Total nitrogen concentration in percolate	lb/MG	16.7	42.0	25.2	1194.5	1220.5	-326.4	-7934.8	-93.3	-58.1	14.0	12.5	12.6	123.5
61	**Nitrogen concentration in percolate**	**mg/L**	**2.0**	**5.0**	**3.0**	**143.2**	**146.3**	**0.0**	**0.0**	**0.0**	**0.0**	**1.7**	**1.5**	**1.5**	**14.8**

Facility: Inland Bays RWF
Field: North Burton
Date: 2014

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	52	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	1.228	3.226	3.51	5.233	2.132	6.195	5.814	4.369	2.592	2.473	2.424	3.394	42.6
18		gal/mo	1228000	3226000	3510000	5233000	2132000	6195000	5814000	4369000	2592000	2473000	2424000	3394000	42,590,000
19		gal/acre	23,615	62,038	67,500	100,635	41,000	119,135	111,808	84,019	49,846	47,558	46,615	65,269	819,038
20	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
21	Spray days per month	days/mo	7	13	17	21	21	23	21	20	17	22	12	17	211
22	Spray hydraulic application rate	in/mo	0.87	2.28	2.49	3.71	1.51	4.39	4.12	3.09	1.84	1.75	1.72	2.40	30.2
23	Spray hydraulic application rate	in/week	0.22	0.57	0.62	0.93	0.38	1.10	1.03	0.77	0.46	0.44	0.43	0.60	7.5
24															
25	**Total Nitrogen Application**														
26	Total nitrogen in spray effluent	mg/L	13.81	16.17	15.92	6.75	3.05	3.62	3.78	3.08	2.73	2.67	3.44	4.38	
27	Total nitrogen in spray effluent	lb/acre-mo	2.7	8.4	9.0	5.7	1.0	3.6	3.5	2.2	1.1	1.1	1.3	2.4	42.0
28	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	115	38	-	-	-	-	-	-	-	153.0
29	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
30	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
31	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
32	Total nitrogen applied	lb/acre-mo	3.1	8.7	9.4	120.8	39.7	4.0	4.0	2.8	1.5	1.5	1.7	2.8	200.0
33															
34	**Ammonia Application**														
35	Ammonia in spray effluent	mg/L	1.84	1.8375	0.2075	1.215	0.61	0.9675	1.0025	0.38	0.425	0.97	1.355	1.485	
36	Total ammonia application	lb/acre-mo	0.36	0.95	0.12	1.02	0.21	0.96	0.93	0.27	0.18	0.38	0.53	0.81	6.7
37															
38	**Nitrogen Utilization**														
39	Plant nitrogen uptake														
40	Summer Crop	lb/acre-mo				3.2	11.1	15.9	22.2	7.9	3.2				63.5
41	Winter Cover Crop	lb/acre-mo													0.0
42	Denitrification (15% of line 26)	lb/acre-mo	0.4	1.3	1.3	0.8	0.2	0.5	0.5	0.3	0.2	0.2	0.2	0.4	6.3
43	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
44	Total nitrogen consumed	lb/acre-mo	0.4	1.3	1.4	4.1	11.3	16.5	22.8	8.3	3.4	0.2	0.2	0.4	70
45															
46	**Percolate Nitrogen Content**														
47	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	2.7	7.4	8.1	116.7	28.4	-12.5	-18.8	-5.5	-1.8	1.3	1.5	2.4	129.8
48	Total nitrogen in percolate	lb/mo	138.9	386.3	420.2	6068.6	1476.9	-647.7	-979.2	-286.6	-94.0	66.6	76.1	124.7	6,751
49															
50	**Percolate Volume**														
51	Spray Hydraulic Application (line 21)	in/mo	0.87	2.28	2.49	3.71	1.51	4.39	4.12	3.09	1.84	1.75	1.72	2.40	
52	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
53	Total Hydraulic Loading	in/mo	4.17	5.48	6.59	6.91	4.91	7.99	8.02	8.39	5.44	5.25	4.82	6.00	
54	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
55	Percolate (line 52 minus line 53)	in/mo	4.07	5.38	5.89	5.11	1.61	3.19	2.52	3.49	1.84	3.35	3.92	5.80	
56	Percolate volume	gal/mo	5,746,426	7,603,225	8,310,827	7,209,811	2,273,201	4,500,590	3,554,787	4,933,803	2,592,000	4,732,213	5,530,418	8,194,827	65,182,128
57															
58	**Percolate Nitrogen Concentration**														
59	Total nitrogen in percolate (line 47)	lb/mo	139	386	420	6,069	1,477	-648	-979	-287	-94	67	76	125	6,751
60	Percolate volume (line 55)	gal/mo	5,746,426	7,603,225	8,310,827	7,209,811	2,273,201	4,500,590	3,554,787	4,933,803	2,592,000	4,732,213	5,530,418	8,194,827	65,182,128
61	Total nitrogen concentration in percolate	lb/MG	24.2	50.8	50.6	841.7	649.7	-143.9	-275.5	-58.1	-36.3	14.1	13.8	15.2	103.6
62	**Nitrogen concentration in percolate**	**mg/L**	**2.9**	**6.1**	**6.1**	**100.9**	**77.9**	**0.0**	**0.0**	**0.0**	**0.0**	**1.7**	**1.7**	**1.8**	**12.4**

Facility: Inland Bays RWF
OVERALL WATER BALANCE
Date: 2014

	STORAGE	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
62															
63	Volume Generated (line 14)	gal/mo	18,459,024	17,080,744	18,209,314	19,074,423	22,240,866	23,294,655	28,749,897	27,360,341	21,888,226	19,051,316	17,328,505	18,127,208	250,864,519
64	Volume Irrigated (all Line 17's)	gal/mo	6,069,001	19,558,003	18,551,004	18,241,005	25,049,002	30,107,006	32,820,006	25,462,004	14,930,003	24,023,002	14,535,002	16,472,003	245,817,043
65	Volume added from Precipitation to system on all treatment and storage lagoons (calculated using line 9 and the 5-Year Return Period Monthly Precipitation (Exhibit K-K)")	gal/mo	1,655,119	1,604,963	2,056,359	1,604,963	1,705,274	1,805,584	1,956,049	2,658,221	1,805,584	1,755,429	1,554,808	1,805,584	21,967,938
66	Volume lost due to Evaporation from system from all treatment and storage lagoons (calculated using line 9)	gal/mo	50,155	50,155	351,086	902,792	1,655,119	2,407,445	2,758,531	2,457,600	1,805,584	952,947	451,396	100,310	13,943,120
67	Volume Stored	gal/mo	13,994,986	(922,451)	1,363,584	1,535,589	(2,757,981)	(7,414,212)	(4,872,591)	2,098,957	6,958,223	(4,169,205)	3,896,915	3,360,478	13,072,294
68	Cumulative Volume Stored	gal/mo		13,072,535	14,436,120	15,971,709	13,213,728	5,799,515	926,925	3,025,882	9,984,105	5,814,901	9,711,815	13,072,294	

Facility: Inland Bays RWF
Field: Southfield
Date: 2013

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	5.952	4.11	7.108	7.91	4.532	6.196	15.297	9.622	7.707	7.086	7.05	4.722	
		gal/mo	5952000	4110000	7108000	7910000	4532000	6196000	15297000	9622000	7707000	7086000	7050000	4722000	
18		gal/acre	57,786	39,903	69,010	76,796	44,000	60,155	148,515	93,417	74,825	68,796	68,447	45,845	
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	
21	Spray hydraulic application rate	in/mo	2.13	1.47	2.54	2.83	1.62	2.22	5.47	3.44	2.76	2.53	2.52	1.69	
22	Spray hydraulic application rate	in/week	0.53	0.37	0.64	0.71	0.41	0.55	1.37	0.86	0.69	0.63	0.63	0.42	
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	8.59	10.28	12.61	9.41	5.53	4.48	5.3	1.94	3.89	5.11	5.45	9.5	
26	Total nitrogen in spray effluent	lb/acre-mo	4.1	3.4	7.3	6.0	2.0	2.2	6.6	1.5	2.4	2.9	3.1	3.6	45.3
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	103	34	-	-	-	-	-	-	-	137.7
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	4.5	3.8	7.7	109.7	36.8	2.7	7.0	2.1	2.8	3.3	3.5	4.0	188.0
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
35	Total ammonia application	lb/acre-mo	0.34	0.34	0.86	0.35	0.77	1.56	5.51	0.38	0.69	0.63	1.10	0.87	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.3	11.6	16.6	23.3	8.3	3.3				66.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.6	0.5	1.1	0.9	0.3	0.3	1.0	0.2	0.4	0.4	0.5	0.5	6.8
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.1	0.0	0.7
43	Total nitrogen consumed	lb/acre-mo	0.6	0.5	1.1	4.2	12.0	17.0	24.5	8.6	3.7	0.5	0.5	0.6	74
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	3.9	3.3	6.6	105.4	24.9	-14.4	-17.5	-6.4	-0.9	2.9	2.9	3.5	114.0
47	Total nitrogen in percolate	lb/mo	399.5	335.4	679.2	10858.4	2560.8	-1481.3	-1805.1	-663.5	-91.2	294.6	303.2	355.9	11,746
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	2.13	1.47	2.54	2.83	1.62	2.22	5.47	3.44	2.76	2.53	2.52	1.69	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	5.43	4.67	6.64	6.03	5.02	5.82	9.37	8.74	6.36	6.03	5.62	5.29	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	5.33	4.57	5.94	4.23	1.72	1.02	3.87	3.84	2.76	4.13	4.72	5.09	
55	Percolate volume	gal/mo	14,901,958	12,780,272	16,617,331	11,825,607	4,811,686	2,839,766	10,822,021	10,740,745	7,707,000	11,560,979	13,203,096	14,231,331	132,041,792
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	399	335	679	10,858	2,561	-1,481	-1,805	-663	-91	295	303	356	
59	Percolate volume (line 55)	gal/mo	14,901,958	12,780,272	16,617,331	11,825,607	4,811,686	2,839,766	10,822,021	10,740,745	7,707,000	11,560,979	13,203,096	14,231,331	132,041,792
60	Total nitrogen concentration in percolate	lb/MG	26.8	26.2	40.9	918.2	532.2	-521.6	-166.8	-61.8	-11.8	25.5	23.0	25.0	89.0
61	**Nitrogen concentration in percolate**	**mg/L**	**3.2**	**3.1**	**4.9**	**110.1**	**63.8**	**0.0**	**0.0**	**0.0**	**0.0**	**3.1**	**2.8**	**3.0**	**10.7**

Facility: Inland Bays RWF
Field: North Hettie Lingo
Date: 2013

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	47.5	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.12	2.162	3.201	2.727	1.471	2.436	6.307	4.61	3.184	1.403	1.957	1.948	
		gal/mo	2120000	2162000	3201000	2727000	1471000	2436000	6307000	4610000	3184000	1403000	1957000	1948000	
18		gal/acre	44,632	45,516	67,389	57,411	30,968	51,284	132,779	97,053	67,032	29,537	41,200	41,011	
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	
21	Spray hydraulic application rate	in/mo	1.64	1.68	2.48	2.11	1.14	1.89	4.89	3.57	2.47	1.09	1.52	1.51	
22	Spray hydraulic application rate	in/week	0.41	0.42	0.62	0.53	0.29	0.47	1.22	0.89	0.62	0.27	0.38	0.38	
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	8.59	10.28	12.61	9.41	5.53	4.48	5.3	1.94	3.89	5.11	5.45	9.5	
26	Total nitrogen in spray effluent	lb/acre-mo	3.2	3.9	7.1	4.5	1.4	1.9	5.9	1.6	2.2	1.3	1.9	3.2	38.0
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	103	34	-	-	-	-	-	-	-	137.7
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	3.6	4.3	7.6	108.1	36.2	2.3	6.3	2.2	2.6	1.7	2.2	3.7	180.7
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
35	Total ammonia application	lb/acre-mo	0.26	0.38	0.84	0.26	0.54	1.33	4.93	0.39	0.62	0.27	0.66	0.77	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.3	11.6	16.6	23.3	8.3	3.3				66.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.5	0.6	1.1	0.7	0.2	0.3	0.9	0.2	0.3	0.2	0.3	0.5	5.7
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.6
43	Total nitrogen consumed	lb/acre-mo	0.5	0.6	1.1	4.0	11.9	17.0	24.4	8.6	3.7	0.2	0.3	0.5	73
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	3.1	3.7	6.5	104.1	24.4	-14.7	-18.1	-6.4	-1.1	1.5	1.9	3.1	108.0
47	Total nitrogen in percolate	lb/mo	146.4	174.0	306.4	4946.3	1157.2	-696.0	-859.1	-303.6	-52.1	69.2	90.8	148.9	5,128
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	1.64	1.68	2.48	2.11	1.14	1.89	4.89	3.57	2.47	1.09	1.52	1.51	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	4.94	4.88	6.58	5.31	4.54	5.49	8.79	8.87	6.07	4.59	4.62	5.11	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	4.84	4.78	5.88	3.51	1.24	0.69	3.29	3.97	2.47	2.69	3.72	4.91	
55	Percolate volume	gal/mo	6,247,408	6,160,427	7,586,371	4,532,741	1,599,982	888,222	4,243,296	5,125,926	3,184,000	3,466,704	4,794,593	6,333,371	54,163,040
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	146	174	306	4,946	1,157	-696	-859	-304	-52	69	91	149	
59	Percolate volume (line 55)	gal/mo	6,247,408	6,160,427	7,586,371	4,532,741	1,599,982	888,222	4,243,296	5,125,926	3,184,000	3,466,704	4,794,593	6,333,371	54,163,040
60	Total nitrogen concentration in percolate	lb/MG	23.4	28.2	40.4	1091.2	723.3	-783.5	-202.5	-59.2	-16.4	19.9	18.9	23.5	94.7
61	**Nitrogen concentration in percolate**	**mg/L**	**2.8**	**3.4**	**4.8**	**130.8**	**86.7**	**0.0**	**0.0**	**0.0**	**0.0**	**2.4**	**2.3**	**2.8**	**11.4**

Facility: Inland Bays RWF
Field: East Hettie Lingo
Date: 2013

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	34.46	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0	0	0.472	0.894	1.435	1.149	0.917	0	0	0.756	0.984	1.143	
		gal/mo	-	-	472,000	894,000	1,435,000	1,149,000	917,000	-	-	756,000	984,000	1,143,000	
18		gal/acre	-	-	13,697	25,943	41,642	33,343	26,611	-	-	21,938	28,555	33,169	
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	
21	Spray hydraulic application rate	in/mo	-	-	0.50	0.96	1.53	1.23	0.98	-	-	0.81	1.05	1.22	
22	Spray hydraulic application rate	in/week	-	-	0.13	0.24	0.38	0.31	0.24	-	-	0.20	0.26	0.31	
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	8.59	10.28	12.61	9.41	5.53	4.48	5.3	1.94	3.89	5.11	5.45	9.5	
26	Total nitrogen in spray effluent	lb/acre-mo	0.0	0.0	1.4	2.0	1.9	1.2	1.2	0.0	0.0	0.9	1.3	2.6	12.7
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	103	34	-	-	-	-	-	-	-	137.7
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	0.4	0.4	1.9	105.7	36.7	1.7	1.6	0.6	0.4	1.3	1.7	3.0	155.4
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
35	Total ammonia application	lb/acre-mo	0.00	0.00	0.17	0.12	0.72	0.86	0.99	0.00	0.00	0.20	0.46	0.63	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.3	11.6	16.6	23.3	8.3	3.3				66.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.0	0.0	0.1	0.2	0.4	1.9
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
43	Total nitrogen consumed	lb/acre-mo	0.0	0.0	0.2	3.6	12.0	16.9	23.5	8.3	3.3	0.2	0.2	0.4	69
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	0.4	0.4	1.7	102.0	24.8	-15.2	-21.9	-7.7	-2.9	1.2	1.4	2.6	86.8
47	Total nitrogen in percolate	lb/mo	13.0	12.6	58.0	3516.3	853.6	-523.7	-754.0	-265.6	-100.4	40.8	49.4	90.1	2,990
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.00	0.00	0.50	0.96	1.53	1.23	0.98	0.00	0.00	0.81	1.05	1.22	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.30	3.20	4.60	4.16	4.93	4.83	4.88	5.30	3.60	4.31	4.15	4.82	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.20	3.10	3.90	2.36	1.63	0.03	-0.62	0.40	0.00	2.41	3.25	4.62	
55	Percolate volume	gal/mo	2,994,326	2,900,753	3,653,471	2,204,018	1,528,573	26,128	(580,163)	374,291	-	2,253,163	3,042,599	4,324,471	22,721,629
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	13	13	58	3,516	854	-524	-754	-266	-100	41	49	90	
59	Percolate volume (line 55)	gal/mo	2,994,326	2,900,753	3,653,471	2,204,018	1,528,573	26,128	-	374,291	-	2,253,163	3,042,599	4,324,471	22,721,629
60	Total nitrogen concentration in percolate	lb/MG	4.3	4.3	15.9	1595.4	558.5	-20045.0	0.0	-709.6	0.0	18.1	16.2	20.8	131.6
61	**Nitrogen concentration in percolate**	**mg/L**	**0.5**	**0.5**	**1.9**	**191.3**	**67.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.2**	**1.9**	**2.5**	**15.8**

Facility: Inland Bays RWF
Field: West Hettie Lingo
Date: 2013

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	20.16	acres
11	Crop Type(s)	Corn	#

12	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0	0	1.134	1.151	2.036	0.715	1.322	0	0	0.393	0.368	0.572	
		gal/mo	-	-	1,134,000	1,151,000	2,036,000	715,000	1,322,000	-	-	393,000	368,000	572,000	7691000
18		gal/acre	-	-	56,250	57,093	100,992	35,466	65,575	-	-	19,494	18,254	28,373	381498
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	196
21	Spray hydraulic application rate	in/mo	-	-	2.07	2.10	3.72	1.31	2.41	-	-	0.72	0.67	1.04	14
22	Spray hydraulic application rate	in/week	-	-	0.52	0.53	0.93	0.33	0.60	-	-	0.18	0.17	0.26	4
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	8.59	10.28	12.61	9.41	5.53	4.48	5.3	1.94	3.89	5.11	5.45	9.5	
26	Total nitrogen in spray effluent	lb/acre-mo	0.0	0.0	5.9	4.5	4.7	1.3	2.9	0.0	0.0	0.8	0.8	2.2	23.2
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	103	34	-	-	-	-	-	-	-	137.7
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	0.4	0.4	6.4	108.1	39.5	1.7	3.3	0.6	0.4	1.2	1.2	2.7	165.9
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
35	Total ammonia application	lb/acre-mo	0.00	0.00	0.70	0.26	1.76	0.92	2.43	0.00	0.00	0.18	0.29	0.54	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.3	11.6	16.6	23.3	8.3	3.3				66.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.0	0.0	0.9	0.7	0.7	0.2	0.4	0.0	0.0	0.1	0.1	0.3	3.5
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4
43	Total nitrogen consumed	lb/acre-mo	0.0	0.0	0.9	4.0	12.4	16.9	23.8	8.3	3.3	0.1	0.1	0.4	70
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	0.4	0.4	5.5	104.1	27.0	-15.1	-20.5	-7.7	-2.9	1.1	1.0	2.3	95.6
47	Total nitrogen in percolate	lb/mo	7.6	7.4	110.1	2098.9	545.3	-305.1	-413.0	-155.4	-58.7	22.1	21.1	46.3	1,926
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.00	0.00	2.07	2.10	3.72	1.31	2.41	0.00	0.00	0.72	0.67	1.04	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.30	3.20	6.17	5.30	7.12	4.91	6.31	5.30	3.60	4.22	3.77	4.64	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.20	3.10	5.47	3.50	3.82	0.11	0.81	0.40	0.00	2.32	2.87	4.44	
55	Percolate volume	gal/mo	1,751,759	1,697,016	2,995,244	1,917,394	2,090,742	58,090	446,121	218,970	-	1,268,879	1,572,334	2,433,244	16,449,794
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	8	7	110	2,099	545	-305	-413	-155	-59	22	21	46	
59	Percolate volume (line 55)	gal/mo	1,751,759	1,697,016	2,995,244	1,917,394	2,090,742	58,090	446,121	218,970	-	1,268,879	1,572,334	2,433,244	16,449,794
60	Total nitrogen concentration in percolate	lb/MG	4.3	4.3	36.8	1094.7	260.8	-5252.0	-925.8	-709.6	0.0	17.4	13.4	19.0	117.1
61	**Nitrogen concentration in percolate**	**mg/L**	**0.5**	**0.5**	**4.4**	**131.3**	**31.3**	**0.0**	**0.0**	**0.0**	**0.0**	**2.1**	**1.6**	**2.3**	**14.0**

Facility: Inland Bays RWF
Field: South Hettie Lingo
Date: 2013

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	30.48	acres
11	Crop Type(s)	Corn	#

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0	0	1.465	1.085	1.712	1.515	2.259	0	0	1.543	1.111	1.571	
		gal/mo	-	-	1,465,000	1,085,000	1,712,000	1,515,000	2,259,000	-	-	1,543,000	1,111,000	1,571,000	
18		gal/acre	-	-	48,064	35,597	56,168	49,705	74,114	-	-	50,623	36,450	51,542	
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	
21	Spray hydraulic application rate	in/mo	-	-	1.77	1.31	2.07	1.83	2.73	-	-	1.86	1.34	1.90	
22	Spray hydraulic application rate	in/week	-	-	0.44	0.33	0.52	0.46	0.68	-	-	0.47	0.34	0.47	
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	8.59	10.28	12.61	9.41	5.53	4.48	5.3	1.94	3.89	5.11	5.45	9.5	
26	Total nitrogen in spray effluent	lb/acre-mo	0.0	0.0	5.1	2.8	2.6	1.9	3.3	0.0	0.0	2.2	1.7	4.1	23.5
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	103	34	-	-	-	-	-	-	-	137.7
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	0.4	0.4	5.5	106.4	37.4	2.3	3.7	0.6	0.4	2.6	2.0	4.5	166.2
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
35	Total ammonia application	lb/acre-mo	0.00	0.00	0.60	0.16	0.98	1.29	2.75	0.00	0.00	0.46	0.58	0.97	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				3.3	11.6	16.6	23.3	8.3	3.3				66.5
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.0	0.0	0.8	0.4	0.4	0.3	0.5	0.0	0.0	0.3	0.2	0.6	3.5
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4
43	Total nitrogen consumed	lb/acre-mo	0.0	0.0	0.8	3.8	12.1	17.0	23.9	8.3	3.3	0.3	0.3	0.7	70
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	0.4	0.4	4.7	102.7	25.3	-14.7	-20.2	-7.7	-2.9	2.2	1.7	3.8	95.8
47	Total nitrogen in percolate	lb/mo	11.5	11.1	144.3	3129.7	772.0	-448.0	-615.2	-234.9	-88.8	67.4	52.8	116.8	2,919
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.00	0.00	1.77	1.31	2.07	1.83	2.73	0.00	0.00	1.86	1.34	1.90	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.30	3.20	5.87	4.51	5.47	5.43	6.63	5.30	3.60	5.36	4.44	5.50	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.20	3.10	5.17	2.71	2.17	0.63	1.13	0.40	0.00	3.46	3.54	5.30	
55	Percolate volume	gal/mo	2,648,493	2,565,727	4,279,023	2,243,715	1,794,765	521,815	934,754	331,062	-	2,867,246	2,931,839	4,385,023	25,503,463
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	11	11	144	3,130	772	-448	-615	-235	-89	67	53	117	
59	Percolate volume (line 55)	gal/mo	2,648,493	2,565,727	4,279,023	2,243,715	1,794,765	521,815	934,754	331,062	-	2,867,246	2,931,839	4,385,023	25,503,463
60	Total nitrogen concentration in percolate	lb/MG	4.3	4.3	33.7	1394.9	430.2	-858.6	-658.1	-709.6	0.0	23.5	18.0	26.6	114.4
61	**Nitrogen concentration in percolate**	**mg/L**	**0.5**	**0.5**	**4.0**	**167.3**	**51.6**	**0.0**	**0.0**	**0.0**	**0.0**	**2.8**	**2.2**	**3.2**	**13.7**

Facility: Inland Bays RWF
OVERALL WATER BALANCE
Date: 2013

	STORAGE	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
62															
63	Volume Generated (line 14)	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	248,263,465
64	Volume Irrigated (all Line 17's)	gal/mo	15,781,003	10,189,002	17,197,005	19,632,004	16,082,003	18,772,004	45,973,008	31,093,003	21,177,003	19,442,003	21,715,003	16,621,003	253,674,042
65	Volume added from Precipitation to system on all treatment and storage lagoons (calculated using line 9 and the 5-Year Return Period Monthly Precipitation (Exhibit K-K)")	gal/mo	1,655,119	1,604,963	2,056,359	1,604,963	1,705,274	1,805,584	1,956,049	2,658,221	1,805,584	1,755,429	1,554,808	1,805,584	21,967,938
66	Volume lost due to Evaporation from system from all treatment and storage lagoons (calculated using line 9)	gal/mo	50,155	50,155	351,086	902,792	1,655,119	2,407,445	2,758,531	2,457,600	1,805,584	952,947	451,396	100,310	13,943,120
67	Volume Stored	gal/mo	900,807	7,987,536	4,111,576	(570,877)	4,935,642	3,365,307	(13,116,061)	(5,634,264)	(825,979)	671,064	(2,966,902)	3,756,391	2,614,240
68	Cumulative Volume Stored	gal/mo		8,888,343	12,999,919	12,429,042	17,364,684	20,729,991	7,613,931	1,979,667	1,153,688	1,824,752	(1,142,151)	2,614,240	

Facility: Inland Bays RWF
Field: Northfield
Date: 2013

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	5.96	2.24	3.34	3.60	3.39	5.21	16.79	13.76	10.29	6.52	8.42	5.34	
		gal/mo	5,962,000	2,238,000	3,335,000	3,598,000	3,391,000	5,213,000	16,789,000	13,758,000	10,286,000	6,523,000	8,424,000	5,339,000	
18		gal/acre	57,883	21,728	32,379	34,932	32,922	50,612	163,000	133,573	99,864	63,330	81,786	51,835	
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	
21	Spray hydraulic application rate	in/mo	2.13	0.80	1.19	1.29	1.21	1.86	6.00	4.92	3.68	2.33	3.01	1.91	
22	Spray hydraulic application rate	in/week	0.53	0.20	0.30	0.32	0.30	0.47	1.50	1.23	0.92	0.58	0.75	0.48	
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	8.59	10.28	12.61	9.41	5.53	4.48	5.3	1.94	3.89	5.11	5.45	9.5	
26	Total nitrogen in spray effluent	lb/acre-mo	4.1	1.9	3.4	2.7	1.5	1.9	7.2	2.2	3.2	2.7	3.7	4.1	38.7
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	103	34	-	-	-	-	-	-	-	137.7
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	4.5	2.2	3.9	106.4	36.3	2.3	7.7	2.8	3.7	3.1	4.1	4.5	181.4
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
35	Total ammonia application	lb/acre-mo	0.34	0.18	0.40	0.16	0.57	1.31	6.05	0.54	0.92	0.58	1.31	0.98	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				2.4	8.4	12.0	16.8	6.0	2.4				48.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.6	0.3	0.5	0.4	0.2	0.3	1.1	0.3	0.5	0.4	0.6	0.6	5.8
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.1	0.0	0.7
43	Total nitrogen consumed	lb/acre-mo	0.6	0.3	0.5	2.8	8.7	12.3	18.2	6.4	2.9	0.4	0.6	0.7	54
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	3.9	1.9	3.3	103.6	27.7	-10.0	-10.5	-3.6	0.7	2.7	3.4	3.9	126.9
47	Total nitrogen in percolate	lb/mo	400.1	199.8	344.3	10667.0	2850.5	-1034.9	-1084.9	-369.2	74.0	274.5	355.2	396.8	13,073
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	2.13	0.80	1.19	1.29	1.21	1.86	6.00	4.92	3.68	2.33	3.01	1.91	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	5.43	4.00	5.29	4.49	4.61	5.46	9.90	10.22	7.28	5.83	6.11	5.51	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	5.33	3.90	4.59	2.69	1.31	0.66	4.40	5.32	3.68	3.93	5.21	5.31	
55	Percolate volume	gal/mo	14,911,958	10,908,272	12,844,331	7,513,607	3,670,686	1,856,766	12,314,021	14,876,745	10,286,000	10,997,979	14,577,096	14,848,331	129,605,792
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	400	200	344	10,667	2,851	-1,035	-1,085	-369	74	274	355	397	
59	Percolate volume (line 55)	gal/mo	14,911,958	10,908,272	12,844,331	7,513,607	3,670,686	1,856,766	12,314,021	14,876,745	10,286,000	10,997,979	14,577,096	14,848,331	129,605,792
60	Total nitrogen concentration in percolate	lb/MG	26.8	18.3	26.8	1419.7	776.6	-557.3	-88.1	-24.8	7.2	25.0	24.4	26.7	100.9
61	**Nitrogen concentration in percolate**	**mg/L**	**3.2**	**2.2**	**3.2**	**170.2**	**93.1**	**0.0**	**0.0**	**0.0**	**0.9**	**3.0**	**2.9**	**3.2**	**12.1**

Facility: Inland Bays RWF
Field: South Burton
Date: 2013

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	41.9	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	1.747	1.679	0.482	2.267	1.505	1.548	3.082	3.103	0	1.738	1.821	1.326	
		gal/mo	1747000	1679000	482000	2267000	1505000	1548000	3082000	3103000	0	1738000	1821000	1326000	
18		gal/acre	41,695	40,072	11,504	54,105	35,919	36,945	73,556	74,057	-	41,480	43,461	31,647	
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	
20	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	
21	Spray hydraulic application rate	in/mo	1.54	1.48	0.42	1.99	1.32	1.36	2.71	2.73	-	1.53	1.60	1.17	
22	Spray hydraulic application rate	in/week	0.38	0.37	0.11	0.50	0.33	0.34	0.68	0.68	-	0.38	0.40	0.29	
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	8.59	10.28	12.61	9.41	5.53	4.48	5.3	1.94	3.89	5.11	5.45	9.5	
26	Total nitrogen in spray effluent	lb/acre-mo	3.0	3.4	1.2	4.2	1.7	1.4	3.3	1.2	0.0	1.8	2.0	2.5	25.6
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	103	34	-	-	-	-	-	-	-	137.7
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	5	5	5	5	5	-	-	-	-	-	25.0
31	Total nitrogen applied	lb/acre-mo	3.4	3.8	6.7	112.9	41.5	6.8	8.7	1.8	0.4	2.2	2.3	2.9	193.3
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
35	Total ammonia application	lb/acre-mo	0.25	0.34	0.14	0.24	0.62	0.96	2.73	0.30	0.00	0.38	0.70	0.60	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				2.4	8.4	12.0	16.8	6.0	2.4				48.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.4	0.5	0.2	0.6	0.2	0.2	0.5	0.2	0.0	0.3	0.3	0.4	3.8
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4
43	Total nitrogen consumed	lb/acre-mo	0.5	0.5	0.2	3.0	8.7	12.3	17.4	6.2	2.4	0.3	0.3	0.4	52
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	2.9	3.3	6.5	109.8	32.8	-5.5	-8.7	-4.4	-2.0	1.9	2.0	2.5	141.1
47	Total nitrogen in percolate	lb/mo	121.6	137.0	271.9	4602.2	1373.9	-228.9	-365.7	-184.0	-83.3	78.9	83.7	105.3	5,913
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	1.54	1.48	0.42	1.99	1.32	1.36	2.71	2.73	0.00	1.53	1.60	1.17	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	4.84	4.68	4.52	5.19	4.72	4.96	6.61	8.03	3.60	5.03	4.70	4.77	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	4.74	4.58	3.82	3.39	1.42	0.16	1.11	3.13	0.00	3.13	3.80	4.57	
55	Percolate volume	gal/mo	5,387,808	5,206,033	4,350,359	3,859,854	1,618,775	182,697	1,261,596	3,558,101	-	3,558,404	4,324,056	5,194,359	38,502,042
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	122	137	272	4,602	1,374	-229	-366	-184	-83	79	84	105	
59	Percolate volume (line 55)	gal/mo	5,387,808	5,206,033	4,350,359	3,859,854	1,618,775	182,697	1,261,596	3,558,101	-	3,558,404	4,324,056	5,194,359	38,502,042
60	Total nitrogen concentration in percolate	lb/MG	22.6	26.3	62.5	1192.3	848.7	-1253.0	-289.9	-51.7	0.0	22.2	19.4	20.3	153.6
61	**Nitrogen concentration in percolate**	**mg/L**	**2.7**	**3.2**	**7.5**	**143.0**	**101.8**	**0.0**	**0.0**	**0.0**	**0.0**	**2.7**	**2.3**	**2.4**	**18.4**

Facility: Inland Bays RWF
Field: North Burton
Date: 2013

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	963.6	million gal/year
4	Disposal Average Daily Flow	2,640,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	429.5	acres
	Spray Acreage This Field	52	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,076,846	16,621,730	19,603,307	18,358,955	20,967,490	22,739,172	33,659,429	25,258,119	20,351,024	19,310,585	17,644,688	18,672,120	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.731	2.209	4.512	3.657	2.906	3.536	7.848	3.284	3.024	3.038	2.757	2.536	
18		gal/mo	2731000	2209000	4512000	3657000	2906000	3536000	7848000	3284000	3024000	3038000	2757000	2536000	
19		gal/acre	52,519	42,481	86,769	70,327	55,885	68,000	150,923	63,154	58,154	58,423	53,019	48,769	
20	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	
21	Spray days per month	days/mo	11	11	16	16	10	12	29	24	21	19	14	13	
22	Spray hydraulic application rate	in/mo	1.93	1.56	3.20	2.59	2.06	2.50	5.56	2.33	2.14	2.15	1.95	1.80	
23	Spray hydraulic application rate	in/week	0.48	0.39	0.80	0.65	0.51	0.63	1.39	0.58	0.54	0.54	0.49	0.45	
24															
25	**Total Nitrogen Application**														
26	Total nitrogen in spray effluent	mg/L	8.59	10.28	12.61	9.41	5.53	4.48	5.3	1.94	3.89	5.11	5.45	9.5	
27	Total nitrogen in spray effluent	lb/acre-mo	3.8	3.6	9.1	5.5	2.6	2.5	6.7	1.0	1.9	2.5	2.4	3.9	45.5
28	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	103	34	-	-	-	-	-	-	-	137.7
29	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
30	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
31	Total nitrogen due to fixation	lb/acre-mo	-	-	5	5	5	5	5	-	-	-	-	-	25.0
32	Total nitrogen applied	lb/acre-mo	4.1	4.0	14.6	114.2	42.4	8.0	12.1	1.6	2.3	2.9	2.8	4.3	213.2
33															
34	**Ammonia Application**														
35	Ammonia in spray effluent	mg/L	0.71	1.01	1.49	0.54	2.085	3.1	4.4475	0.4825	1.11	1.1	1.9225	2.2625	
36	Total ammonia application	lb/acre-mo	0.31	0.36	1.08	0.32	0.97	1.76	5.60	0.25	0.54	0.54	0.85	0.92	
37															
38	**Nitrogen Utilization**														
39	Plant nitrogen uptake														
40	Summer Crop	lb/acre-mo				2.4	8.4	12.0	16.8	6.0	2.4				48.0
41	Winter Cover Crop	lb/acre-mo													0.0
42	Denitrification (15% of line 26)	lb/acre-mo	0.6	0.5	1.4	0.8	0.4	0.4	1.0	0.2	0.3	0.4	0.4	0.6	6.8
43	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.1	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.7
44	Total nitrogen consumed	lb/acre-mo	0.6	0.6	1.4	3.2	8.8	12.5	18.1	6.2	2.7	0.4	0.4	0.6	56
45															
46	**Percolate Nitrogen Content**														
47	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	3.6	3.4	13.2	110.9	33.6	-4.5	-6.0	-4.5	-0.4	2.5	2.4	3.6	157.7
48	Total nitrogen in percolate	lb/mo	185.1	179.0	684.9	5767.6	1744.9	-234.9	-310.1	-236.0	-21.4	129.4	122.7	189.8	8,201
49															
50	**Percolate Volume**														
51	Spray Hydraulic Application (line 21)	in/mo	1.93	1.56	3.20	2.59	2.06	2.50	5.56	2.33	2.14	2.15	1.95	1.80	
52	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
53	Total Hydraulic Loading	in/mo	5.23	4.76	7.30	5.79	5.46	6.10	9.46	7.63	5.74	5.65	5.05	5.40	
54	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
55	Percolate (line 52 minus line 53)	in/mo	5.13	4.66	6.60	3.99	2.16	1.30	3.96	2.73	2.14	3.75	4.15	5.20	
56	Percolate volume	gal/mo	7,249,426	6,586,225	9,312,827	5,633,811	3,047,201	1,841,590	5,588,787	3,848,803	3,024,000	5,297,213	5,863,418	7,336,827	64,630,128
57															
58	**Percolate Nitrogen Concentration**														
59	Total nitrogen in percolate (line 47)	lb/mo	185	179	685	5,768	1,745	-235	-310	-236	-21	129	123	190	8,201
60	Percolate volume (line 55)	gal/mo	7,249,426	6,586,225	9,312,827	5,633,811	3,047,201	1,841,590	5,588,787	3,848,803	3,024,000	5,297,213	5,863,418	7,336,827	64,630,128
61	Total nitrogen concentration in percolate	lb/MG	25.5	27.2	73.5	1023.8	572.6	-127.6	-55.5	-61.3	-7.1	24.4	20.9	25.9	126.9
62	**Nitrogen concentration in percolate**	**mg/L**	**3.1**	**3.3**	**8.8**	**122.8**	**68.7**	**0.0**	**0.0**	**0.0**	**0.0**	**2.9**	**2.5**	**3.1**	**15.2**

Facility: Inland Bays RWF
Field: Southfield
Date: 2012

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	770.15	million gal/year
4	Disposal Average Daily Flow	2,110,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	344.4	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	13,149,649	11,998,858	13,877,341	15,353,555	17,219,219	17,681,524	21,130,865	21,874,949	16,409,006	16,005,799	15,237,180	13,429,783	193,367,728
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	6.023	7.628	0	2.02	7.905	9.395	10.116	4.291	2.685	7.083	6.707	9.508	73.4
		gal/mo	6023000	7628000	0	2020000	7905000	9395000	10116000	4291000	2685000	7083000	6707000	9508000	73,361,000
18		gal/acre	58,476	74,058	-	19,612	76,748	91,214	98,214	41,660	26,068	68,767	65,117	92,311	712,243
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	19	23	1	6	19	20	20	11	11	19	18	17	184
21	Spray hydraulic application rate	in/mo	2.15	2.73	-	0.72	2.83	3.36	3.62	1.53	0.96	2.53	2.40	3.40	26.2
22	Spray hydraulic application rate	in/week	0.54	0.68	-	0.18	0.71	0.84	0.90	0.38	0.24	0.63	0.60	0.85	6.6
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	28.4	34.05	44.1	51.52	47.45	17.85	9.9	18.74	19	22.3	10.65	11.815	
26	Total nitrogen in spray effluent	lb/acre-mo	13.9	21.0	0.0	8.4	30.4	13.6	8.1	6.5	4.1	12.8	5.8	9.1	133.7
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	70	23	-	-	-	-	-	-	-	93.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	14.2	21.4	0.5	78.5	54.0	14.0	8.6	7.1	4.5	13.2	6.1	9.5	231.7
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	17.5	23.2	38	11.25	8.26	4.285	3.7	2.56	6.415	1.355	1.99	2.015	
35	Total ammonia application	lb/acre-mo	8.53	14.33	0.00	1.84	5.29	3.26	3.03	0.89	1.39	0.78	1.08	1.55	42.0
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.5	19.4	27.7	38.8	13.9	5.5				110.8
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	2.1	3.2	0.0	1.3	4.6	2.0	1.2	1.0	0.6	1.9	0.9	1.4	20.1
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.4	0.7	0.0	0.1	0.3	0.2	0.2	0.0	0.1	0.0	0.1	0.1	2.1
43	Total nitrogen consumed	lb/acre-mo	2.5	3.9	0.0	6.9	24.2	29.9	40.1	14.9	6.2	2.0	0.9	1.4	133
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	11.7	17.5	0.5	71.6	29.8	-15.9	-31.6	-7.8	-1.7	11.2	5.2	8.1	98.7
47	Total nitrogen in percolate	lb/mo	1207.4	1805.1	48.2	7379.5	3069.4	-1638.7	-3254.1	-798.8	-173.8	1156.9	537.2	830.7	10,169
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	2.15	2.73	0.00	0.72	2.83	3.36	3.62	1.53	0.96	2.53	2.40	3.40	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	5.45	5.93	4.10	3.92	6.23	6.96	7.52	6.83	4.56	6.03	5.50	7.00	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	5.35	5.83	3.40	2.12	2.93	2.16	2.02	1.93	0.96	4.13	4.60	6.80	
55	Percolate volume	gal/mo	14,972,958	16,298,272	9,509,331	5,935,607	8,184,686	6,038,766	5,641,021	5,409,745	2,685,000	11,557,979	12,860,096	19,017,331	118,110,792
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	1,207	1,805	48	7,380	3,069	-1,639	-3,254	-799	-174	1,157	537	831	10169.0
59	Percolate volume (line 55)	gal/mo	14,972,958	16,298,272	9,509,331	5,935,607	8,184,686	6,038,766	5,641,021	5,409,745	2,685,000	11,557,979	12,860,096	19,017,331	118110792.0
60	Total nitrogen concentration in percolate	lb/MG	80.6	110.8	5.1	1243.3	375.0	-271.4	-576.9	-147.7	-64.7	100.1	41.8	43.7	86.1
61	**Nitrogen concentration in percolate**	**mg/L**	**9.7**	**13.3**	**0.6**	**149.1**	**45.0**	**0.0**	**0.0**	**0.0**	**0.0**	**12.0**	**5.0**	**5.2**	**10.3**

Facility: Inland Bays RWF
Field: North Hettie Lingo
Date: 2012

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	770.15	million gal/year
4	Disposal Average Daily Flow	2,110,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	344.4	acres
	Spray Acreage This Field	47.5	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	13,149,649	11,998,858	13,877,341	15,353,555	17,219,219	17,681,524	21,130,865	21,874,949	16,409,006	16,005,799	15,237,180	13,429,783	193,367,728
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0	0	0	0	0	0	3.787	2.457	2.804	4.432	4.638	2.99	21.1
		gal/mo	0	0	0	0	0	0	3787000	2457000	2804000	4432000	4638000	2990000	21,108,000
18		gal/acre	-	-	-	-	-	-	79,726	51,726	59,032	93,305	97,642	62,947	444,379
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	19	23	1	6	19	20	20	11	11	19	18	17	184
21	Spray hydraulic application rate	in/mo	-	-	-	-	-	-	2.94	1.90	2.17	3.44	3.60	2.32	16.4
22	Spray hydraulic application rate	in/week	-	-	-	-	-	-	0.73	0.48	0.54	0.86	0.90	0.58	4.1
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	28.4	34.05	44.1	51.52	47.45	17.85	9.9	18.74	19	22.3	10.65	11.815	
26	Total nitrogen in spray effluent	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	6.6	8.1	9.4	17.4	8.7	6.2	56.2
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	0.0	0.0	0.0	70	23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.0
28	Total nitrogen applied as biosolids	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	0.4	0.4	0.5	70.1	23.6	0.4	7.0	8.7	9.8	17.8	9.0	6.6	154.2
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	17.5	23.2	38	11.25	8.26	4.285	3.7	2.56	6.415	1.355	1.99	2.015	
35	Total ammonia application	lb/acre-mo	0.00	0.00	0.00	0.00	0.00	0.00	2.46	1.10	3.16	1.05	1.62	1.06	10.5
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.2	18.4	26.2	36.7	13.1	5.2				104.9
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.2	1.4	2.6	1.3	0.9	8.4
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.5
43	Total nitrogen consumed	lb/acre-mo	0.0	0.0	0.0	5.2	18.4	26.2	37.8	14.4	6.8	2.7	1.4	1.0	114
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	0.4	0.4	0.5	64.9	5.3	-25.8	-30.8	-5.7	3.0	15.1	7.6	5.6	40.4
47	Total nitrogen in percolate	lb/mo	17.9	17.4	22.2	3081.3	250.8	-1226.2	-1462.9	-270.3	140.6	717.1	363.1	267.4	1,918
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.00	0.00	0.00	0.00	0.00	0.00	2.94	1.90	2.17	3.44	3.60	2.32	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	6.84	7.20	5.77	6.94	6.70	5.92	
53	Thornwaite Potential Evapotranspiration (Exhibit J-J)	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.20	3.10	3.40	1.40	0.10	-1.20	1.34	2.30	2.17	5.04	5.80	5.72	
55	Percolate volume	gal/mo	4,127,408	3,998,427	4,385,371	1,805,741	128,982	(1,547,778)	1,723,296	2,972,926	2,804,000	6,495,704	7,475,593	7,375,371	41,745,040
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	18	17	22	3,081	251	-1,226	-1,463	-270	141	717	363	267	1918.5
59	Percolate volume (line 55)	gal/mo	4,127,408	3,998,427	4,385,371	1,805,741	128,982	-	1,723,296	2,972,926	2,804,000	6,495,704	7,475,593	7,375,371	43292818.0
60	Total nitrogen concentration in percolate	lb/MG	4.3	4.3	5.1	1706.4	1944.7	792.2	-848.9	-90.9	50.1	110.4	48.6	36.3	46.0
61	**Nitrogen concentration in percolate**	**mg/L**	**0.5**	**0.5**	**0.6**	**204.6**	**233.2**	**95.0**	**0.0**	**0.0**	**6.0**	**13.2**	**5.8**	**4.3**	**5.5**

Facility: Inland Bays RWF
OVERALL WATER BALANCE
Date: 2012

	STORAGE	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
62															
63	Volume Generated (line 14)	gal/mo	13,149,649	11,998,858	13,877,341	15,353,555	17,219,219	17,681,524	21,130,865	21,874,949	16,409,006	16,005,799	15,237,180	13,429,783	193,367,728
64	Volume Irrigated (all Line 17's)	gal/mo	13,378,000	19,954,000	610,000	3,865,000	19,719,000	25,704,000	31,368,000	15,662,000	15,808,000	29,055,000	26,051,000	26,411,000	227,585,000
65	Volume added from Precipitation to system on all treatment and storage lagoons (calculated using line 9 and the 5-Year Return Period Monthly Precipitation (Exhibit K-K)")	gal/mo	1,655,119	1,604,963	2,056,359	1,604,963	1,705,274	1,805,584	1,956,049	2,658,221	1,805,584	1,755,429	1,554,808	1,805,584	21,967,938
66	Volume lost due to Evaporation from system from all treatment and storage lagoons (calculated using line 9)	gal/mo	50,155	50,155	351,086	902,792	1,655,119	2,407,445	2,758,531	2,457,600	1,805,584	952,947	451,396	100,310	13,943,120
67	Volume Stored	gal/mo	1,376,612	(6,400,334)	14,972,615	12,190,727	(2,449,626)	(8,624,337)	(11,039,617)	6,413,569	601,006	(12,246,719)	(9,710,408)	(11,275,943)	(26,192,455)
68	Cumulative Volume Stored	gal/mo		(5,023,721)	9,948,894	22,139,620	19,689,994	11,065,657	26,040	6,439,610	7,040,616	(5,206,104)	(14,916,511)	(26,192,455)	

Facility: Inland Bays RWF
Field: Northfield
Date: 2012

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	770.15	million gal/year
4	Disposal Average Daily Flow	2,110,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	344.4	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	13,149,649	11,998,858	13,877,341	15,353,555	17,219,219	17,681,524	21,130,865	21,874,949	16,409,006	16,005,799	15,237,180	13,429,783	193,367,728
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	7.36	12.33	0.61	1.85	8.47	11.65	8.86	4.16	6.02	9.79	7.47	6.91	85.5
		gal/mo	7,355,000	12,326,000	610,000	1,845,000	8,472,000	11,645,000	8,859,000	4,160,000	6,016,000	9,787,000	7,472,000	6,907,000	85,454,000
18		gal/acre	71,408	119,670	5,922	17,913	82,252	113,058	86,010	40,388	58,408	95,019	72,544	67,058	829,650
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	19	23	1	6	19	20	20	11	11	19	18	17	184
21	Spray hydraulic application rate	in/mo	2.63	4.41	0.22	0.66	3.03	4.16	3.17	1.49	2.15	3.50	2.67	2.47	30.6
22	Spray hydraulic application rate	in/week	0.66	1.10	0.05	0.16	0.76	1.04	0.79	0.37	0.54	0.87	0.67	0.62	7.6
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	28.4	34.05	44.1	51.52	47.45	17.85	9.9	18.74	19	22.3	10.65	11.815	
26	Total nitrogen in spray effluent	lb/acre-mo	16.9	34.0	2.2	7.7	32.5	16.8	7.1	6.3	9.3	17.7	6.4	6.6	163.5
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	70	23	-	-	-	-	-	-	-	93.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	17.3	34.3	2.6	77.8	56.2	17.2	7.5	6.9	9.7	18.1	6.8	7.0	261.5
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	17.5	23.2	38	11.25	8.26	4.285	3.7	2.56	6.415	1.355	1.99	2.015	
35	Total ammonia application	lb/acre-mo	10.42	23.15	1.88	1.68	5.67	4.04	2.65	0.86	3.12	1.07	1.20	1.13	56.9
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.4	19.0	27.1	37.9	13.5	5.4				108.3
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	2.5	5.1	0.3	1.2	4.9	2.5	1.1	0.9	1.4	2.7	1.0	1.0	24.5
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.5	1.2	0.1	0.1	0.3	0.2	0.1	0.0	0.2	0.1	0.1	0.1	2.8
43	Total nitrogen consumed	lb/acre-mo	3.1	6.3	0.4	6.7	24.1	29.8	39.1	14.5	7.0	2.7	1.0	1.0	136
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	14.2	28.1	2.2	71.2	32.1	-12.6	-31.6	-7.6	2.7	15.4	5.8	6.0	125.9
47	Total nitrogen in percolate	lb/mo	1465.9	2893.6	229.2	7329.3	3303.2	-1293.7	-3250.3	-783.8	278.8	1582.8	594.4	615.0	12,964
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	2.63	4.41	0.22	0.66	3.03	4.16	3.17	1.49	2.15	3.50	2.67	2.47	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	5.93	7.61	4.32	3.86	6.43	7.76	7.07	6.79	5.75	7.00	5.77	6.07	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	5.83	7.51	3.62	2.06	3.13	2.96	1.57	1.89	2.15	5.10	4.87	5.87	
55	Percolate volume	gal/mo	16,304,958	20,996,272	10,119,331	5,760,607	8,751,686	8,288,766	4,384,021	5,278,745	6,016,000	14,261,979	13,625,096	16,416,331	130,203,792
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	1,466	2,894	229	7,329	3,303	-1,294	-3,250	-784	279	1,583	594	615	12964.5
59	Percolate volume (line 55)	gal/mo	16,304,958	20,996,272	10,119,331	5,760,607	8,751,686	8,288,766	4,384,021	5,278,745	6,016,000	14,261,979	13,625,096	16,416,331	130203792.0
60	Total nitrogen concentration in percolate	lb/MG	89.9	137.8	22.7	1272.3	377.4	-156.1	-741.4	-148.5	46.3	111.0	43.6	37.5	99.6
61	**Nitrogen concentration in percolate**	**mg/L**	**10.8**	**16.5**	**2.7**	**152.6**	**45.3**	**0.0**	**0.0**	**0.0**	**5.6**	**13.3**	**5.2**	**4.5**	**11.9**

Facility: Inland Bays RWF
Field: Southfield
Date: 2012

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	770.15	million gal/year
4	Disposal Average Daily Flow	2,110,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	344.4	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	13,149,649	11,998,858	13,877,341	15,353,555	17,219,219	17,681,524	21,130,865	21,874,949	16,409,006	16,005,799	15,237,180	13,429,783	193,367,728
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	6.023	7.628	0	2.02	7.905	9.395	10.116	4.291	2.685	7.083	6.707	9.508	73.4
		gal/mo	6023000	7628000	0	2020000	7905000	9395000	10116000	4291000	2685000	7083000	6707000	9508000	73,361,000
18		gal/acre	58,476	74,058	-	19,612	76,748	91,214	98,214	41,660	26,068	68,767	65,117	92,311	712,243
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	19	23	1	6	19	20	20	11	11	19	18	17	184
21	Spray hydraulic application rate	in/mo	2.15	2.73	-	0.72	2.83	3.36	3.62	1.53	0.96	2.53	2.40	3.40	26.2
22	Spray hydraulic application rate	in/week	0.54	0.68	-	0.18	0.71	0.84	0.90	0.38	0.24	0.63	0.60	0.85	6.6
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	28.4	34.05	44.1	51.52	47.45	17.85	9.9	18.74	19	22.3	10.65	11.815	
26	Total nitrogen in spray effluent	lb/acre-mo	13.9	21.0	0.0	8.4	30.4	13.6	8.1	6.5	4.1	12.8	5.8	9.1	133.7
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	70	23	-	-	-	-	-	-	-	93.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	14.2	21.4	0.5	78.5	54.0	14.0	8.6	7.1	4.5	13.2	6.1	9.5	231.7
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	17.5	23.2	38	11.25	8.26	4.285	3.7	2.56	6.415	1.355	1.99	2.015	
35	Total ammonia application	lb/acre-mo	8.53	14.33	0.00	1.84	5.29	3.26	3.03	0.89	1.39	0.78	1.08	1.55	42.0
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.5	19.4	27.7	38.8	13.9	5.5				110.8
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	2.1	3.2	0.0	1.3	4.6	2.0	1.2	1.0	0.6	1.9	0.9	1.4	20.1
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.4	0.7	0.0	0.1	0.3	0.2	0.2	0.0	0.1	0.0	0.1	0.1	2.1
43	Total nitrogen consumed	lb/acre-mo	2.5	3.9	0.0	6.9	24.2	29.9	40.1	14.9	6.2	2.0	0.9	1.4	133
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	11.7	17.5	0.5	71.6	29.8	-15.9	-31.6	-7.8	-1.7	11.2	5.2	8.1	98.7
47	Total nitrogen in percolate	lb/mo	1207.4	1805.1	48.2	7379.5	3069.4	-1638.7	-3254.1	-798.8	-173.8	1156.9	537.2	830.7	10,169
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	2.15	2.73	0.00	0.72	2.83	3.36	3.62	1.53	0.96	2.53	2.40	3.40	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	5.45	5.93	4.10	3.92	6.23	6.96	7.52	6.83	4.56	6.03	5.50	7.00	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	5.35	5.83	3.40	2.12	2.93	2.16	2.02	1.93	0.96	4.13	4.60	6.80	
55	Percolate volume	gal/mo	14,972,958	16,298,272	9,509,331	5,935,607	8,184,686	6,038,766	5,641,021	5,409,745	2,685,000	11,557,979	12,860,096	19,017,331	118,110,792
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	1,207	1,805	48	7,380	3,069	-1,639	-3,254	-799	-174	1,157	537	831	10169.0
59	Percolate volume (line 55)	gal/mo	14,972,958	16,298,272	9,509,331	5,935,607	8,184,686	6,038,766	5,641,021	5,409,745	2,685,000	11,557,979	12,860,096	19,017,331	118110792.0
60	Total nitrogen concentration in percolate	lb/MG	80.6	110.8	5.1	1243.3	375.0	-271.4	-576.9	-147.7	-64.7	100.1	41.8	43.7	86.1
61	**Nitrogen concentration in percolate**	**mg/L**	**9.7**	**13.3**	**0.6**	**149.1**	**45.0**	**0.0**	**0.0**	**0.0**	**0.0**	**12.0**	**5.0**	**5.2**	**10.3**

Facility: Inland Bays RWF
Field: South Burton
Date: 2012

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	770.15	million gal/year
4	Disposal Average Daily Flow	2,110,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	344.4	acres
	Spray Acreage This Field	41.9	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	13,149,649	11,998,858	13,877,341	15,353,555	17,219,219	17,681,524	21,130,865	21,874,949	16,409,006	16,005,799	15,237,180	13,429,783	193,367,728
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0	0	0	0	0	0	2.995	2.05	1.56	3.159	3.044	3.18	16.0
		gal/mo	0	0	0	0	0	0	2995000	2050000	1560000	3159000	3044000	3180000	15,988,000
18		gal/acre	-	-	-	-	-	-	71,480	48,926	37,232	75,394	72,649	75,895	381,575
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
20	Spray days per month	days/mo	19	23	1	6	19	20	20	11	11	19	18	17	184
21	Spray hydraulic application rate	in/mo	-	-	-	-	-	-	2.63	1.80	1.37	2.78	2.68	2.79	14.1
22	Spray hydraulic application rate	in/week	-	-	-	-	-	-	0.66	0.45	0.34	0.69	0.67	0.70	3.5
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	28.4	34.05	44.1	51.52	47.45	17.85	9.9	18.74	19	22.3	10.65	11.815	
26	Total nitrogen in spray effluent	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	5.9	7.6	5.9	14.0	6.5	7.5	47.4
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	70	23	-	-	-	-	-	-	-	93.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	0.4	0.4	0.5	70.1	23.6	0.4	6.3	8.3	6.3	14.4	6.8	7.9	145.4
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	17.5	23.2	38	11.25	8.26	4.285	3.7	2.56	6.415	1.355	1.99	2.015	
35	Total ammonia application	lb/acre-mo	0.00	0.00	0.00	0.00	0.00	0.00	2.21	1.04	1.99	0.85	1.21	1.28	8.6
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.2	18.2	26.1	36.5	13.0	5.2				104.2
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.1	0.9	2.1	1.0	1.1	7.1
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.4
43	Total nitrogen consumed	lb/acre-mo	0.0	0.0	0.0	5.2	18.2	26.1	37.5	14.2	6.2	2.1	1.0	1.2	112
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	0.4	0.4	0.5	64.9	5.4	-25.6	-31.1	-6.0	0.1	12.3	5.8	6.7	104.2
47	Total nitrogen in percolate	lb/mo	15.8	15.3	19.6	2719.5	226.4	-1074.3	-1303.9	-250.2	4.9	514.3	242.1	280.9	4,366
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.00	0.00	0.00	0.00	0.00	0.00	2.63	1.80	1.37	2.78	2.68	2.79	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	6.53	7.10	4.97	6.28	5.78	6.39	
53	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.20	3.10	3.40	1.40	0.10	-1.20	1.03	2.20	1.37	4.38	4.88	6.19	
55	Percolate volume	gal/mo	3,640,808	3,527,033	3,868,359	1,592,854	113,775	(1,365,303)	1,174,596	2,505,101	1,560,000	4,979,404	5,547,056	7,048,359	34,192,042
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	16	15	20	2,720	226	-1,074	-1,304	-250	5	514	242	281	1410.5
59	Percolate volume (line 55)	gal/mo	3,640,808	3,527,033	3,868,359	1,592,854	113,775	-	1,174,596	2,505,101	1,560,000	4,979,404	5,547,056	7,048,359	35557344.7
60	Total nitrogen concentration in percolate	lb/MG	4.3	4.3	5.1	1707.3	1989.8	786.8	-1110.1	-99.9	3.1	103.3	43.6	39.9	127.7
61	**Nitrogen concentration in percolate**	**mg/L**	**0.5**	**0.5**	**0.6**	**204.7**	**238.6**	**94.3**	**0.0**	**0.0**	**0.4**	**12.4**	**5.2**	**4.8**	**15.3**

Facility: Inland Bays RWF
Field: North Burton
Date: 2012

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	770.15	million gal/year
4	Disposal Average Daily Flow	2,110,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	344.4	acres
	Spray Acreage This Field	52	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	13,149,649	11,998,858	13,877,341	15,353,555	17,219,219	17,681,524	21,130,865	21,874,949	16,409,006	16,005,799	15,237,180	13,429,783	193,367,728
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	0	0	0	0	3.342	4.664	5.611	2.704	2.743	4.594	4.19	3.826	31.7
18		gal/mo	0	0	0	0	3342000	4664000	5611000	2704000	2743000	4594000	4190000	3826000	31,674,000
19		gal/acre	-	-	-	-	64,269	89,692	107,904	52,000	52,750	88,346	80,577	73,577	609,115
20	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
21	Spray days per month	days/mo	19	23	1	6	19	20	20	11	11	19	18	17	184
22	Spray hydraulic application rate	in/mo	-	-	-	-	2.37	3.30	3.97	1.92	1.94	3.25	2.97	2.71	22.4
23	Spray hydraulic application rate	in/week	-	-	-	-	0.59	0.83	0.99	0.48	0.49	0.81	0.74	0.68	5.6
24															
25	**Total Nitrogen Application**														
26	Total nitrogen in spray effluent	mg/L	28.4	34.05	44.1	51.52	47.45	17.85	9.9	18.74	19	22.3	10.65	11.815	
27	Total nitrogen in spray effluent	lb/acre-mo	0.0	0.0	0.0	0.0	25.4	13.4	8.9	8.1	8.4	16.4	7.2	7.3	95.0
28	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	70	23	-	-	-	-	-	-	-	93.0
29	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
30	Total nitrogen due to precipitation	lb/acre-mo	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	5.0
31	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
32	Total nitrogen applied	lb/acre-mo	0.4	0.4	0.5	70.1	49.1	13.8	9.4	8.7	8.8	16.8	7.5	7.7	193.0
33															
34	**Ammonia Application**														
35	Ammonia in spray effluent	mg/L	17.5	23.2	38	11.25	8.26	4.285	3.7	2.56	6.415	1.355	1.99	2.015	
36	Total ammonia application	lb/acre-mo	0.00	0.00	0.00	0.00	4.43	3.21	3.33	1.11	2.82	1.00	1.34	1.24	18.5
37															
38	**Nitrogen Utilization**														
39	Plant nitrogen uptake														
40	Summer Crop	lb/acre-mo				5.4	19.0	27.1	37.9	13.5	5.4				108.3
41	Winter Cover Crop	lb/acre-mo													0.0
42	Denitrification (15% of line 26)	lb/acre-mo	0.0	0.0	0.0	0.0	3.8	2.0	1.3	1.2	1.3	2.5	1.1	1.1	14.3
43	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.9
44	Total nitrogen consumed	lb/acre-mo	0.0	0.0	0.0	5.4	23.0	29.2	39.4	14.8	6.8	2.5	1.1	1.1	123
45															
46	**Percolate Nitrogen Content**														
47	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	0.4	0.4	0.5	64.7	26.1	-15.5	-30.1	-6.1	2.0	14.3	6.4	6.5	69.5
48	Total nitrogen in percolate	lb/mo	19.6	19.0	24.3	3364.4	1356.3	-804.7	-1562.8	-316.2	101.9	744.4	331.3	338.6	3,616
49															
50	**Percolate Volume**														
51	Spray Hydraulic Application (line 21)	in/mo	0.00	0.00	0.00	0.00	2.37	3.30	3.97	1.92	1.94	3.25	2.97	2.71	
52	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
53	Total Hydraulic Loading	in/mo	3.30	3.20	4.10	3.20	5.77	6.90	7.87	7.22	5.54	6.75	6.07	6.31	
54	Thornwaite Potential Evapotranspiration	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
55	Percolate (line 52 minus line 53)	in/mo	3.20	3.10	3.40	1.40	2.47	2.10	2.37	2.32	1.94	4.85	5.17	6.11	
56	Percolate volume	gal/mo	4,518,426	4,377,225	4,800,827	1,976,811	3,483,201	2,969,590	3,351,787	3,268,803	2,743,000	6,853,213	7,296,418	8,626,827	54,266,128
57															
58	**Percolate Nitrogen Concentration**														
59	Total nitrogen in percolate (line 47)	lb/mo	20	19	24	3,364	1,356	-805	-1,563	-316	102	744	331	339	3616.2
60	Percolate volume (line 55)	gal/mo	4,518,426	4,377,225	4,800,827	1,976,811	3,483,201	2,969,590	3,351,787	3,268,803	2,743,000	6,853,213	7,296,418	8,626,827	54266128.0
61	Total nitrogen concentration in percolate	lb/MG	4.3	4.3	5.1	1701.9	389.4	-271.0	-466.3	-96.7	37.2	108.6	45.4	39.3	66.6
62	**Nitrogen concentration in percolate**	**mg/L**	**0.5**	**0.5**	**0.6**	**204.1**	**46.7**	**0.0**	**0.0**	**0.0**	**4.5**	**13.0**	**5.4**	**4.7**	**8.0**

Facility: Inland Bays RWF
OVERALL WATER BALANCE
Date: 2011

	STORAGE	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
62															
63	Volume Generated (line 14)	gal/mo	15,416,628	14,762,454	11,676,569	15,830,310	19,022,910	18,911,216	23,264,311	21,904,078	16,849,880	15,802,548	13,155,385	12,742,221	199,338,510
64	Volume Irrigated (all Line 17's)	gal/mo	9,318,800	13,305,900	17,212,500	11,084,800	21,364,900	23,496,600	25,169,800	21,509,600	15,292,100	8,611,900	21,917,000	20,095,000	208,378,900
65	Volume added from Precipitation to system on all treatment and storage lagoons (calculated using line 9 and the 5-Year Return Period Monthly Precipitation (Exhibit K-K)")	gal/mo	1,655,119	1,604,963	2,056,359	1,604,963	1,705,274	1,805,584	1,956,049	2,658,221	1,805,584	1,755,429	1,554,808	1,805,584	21,967,938
66	Volume lost due to Evaporation from system from all treatment and storage lagoons (calculated using line 9)	gal/mo	50,155	50,155	351,086	902,792	1,655,119	2,407,445	2,758,531	2,457,600	1,805,584	952,947	451,396	100,310	13,943,120
67	Volume Stored	gal/mo	7,702,791	3,011,362	(3,830,657)	5,447,682	(2,291,835)	(5,187,245)	(2,707,971)	595,098	1,557,780	7,993,130	(7,658,203)	(5,647,505)	(1,015,573)
68	Cumulative Volume Stored	gal/mo		10,714,154	6,883,497	12,331,178	10,039,343	4,852,098	2,144,127	2,739,226	4,297,006	12,290,135	4,631,933	(1,015,573)	

Facility: Inland Bays RWF
Field: Northfield
Date: 2011

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	646.05	million gal/year
4	Disposal Average Daily Flow	1,770,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	344.4	acres
	Spray Acreage This Field	106	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
12															
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,416,628	14,762,454	11,676,569	15,830,310	19,022,910	18,911,216	23,264,311	21,904,078	16,849,880	15,802,548	13,155,385	12,742,221	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.20	6.51	6.97	0.98	9.02	9.95	9.98	7.02	5.17	3.04	9.59	11.03	
		gal/mo	2,199,000	6,506,000	6,968,000	979,000	9,024,000	9,952,000	9,975,000	7,023,000	5,170,000	3,042,000	9,590,000	11,033,000	
18		gal/acre	20,745	61,377	65,736	9,236	85,132	93,887	94,104	66,255	48,774	28,698	90,472	104,085	
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	
20	Spray days per month	days/mo	10	17	19	13	15	22	21	23	13	9	22	23	
21	Spray hydraulic application rate	in/mo	0.76	2.26	2.42	0.34	3.14	3.46	3.47	2.44	1.80	1.06	3.33	3.83	
22	Spray hydraulic application rate	in/week	0.19	0.57	0.61	0.09	0.78	0.86	0.87	0.61	0.45	0.26	0.83	0.96	
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	43.08	49.4	51	45.45	44	42.85	42.5	31.54	15.92	15.475	7.945	18.235	
26	Total nitrogen in spray effluent	lb/acre-mo	7.5	25.3	28.0	3.5	31.2	33.6	33.4	17.4	6.5	3.7	6.0	15.8	211.8
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	23	8	-	-	-	-	-	-	-	30.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	4.5	4.4	5.6	4.4	4.7	4.9	5.3	7.3	4.9	4.8	4.2	4.9	60.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	12.0	29.7	33.6	30.4	43.4	38.5	38.7	24.7	11.4	8.5	10.2	20.8	301.8
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	19.95	23.95	25.7	25.85	29.1	28.3	26.55	18	8.565	3.045	1.82	9.54	
35	Total ammonia application	lb/acre-mo	3.45	12.26	14.09	1.99	20.66	22.16	20.84	9.95	3.48	0.73	1.37	8.28	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.9	20.7	29.6	41.4	14.8	5.9				118.3
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	1.1	3.8	4.2	0.5	4.7	5.0	5.0	2.6	1.0	0.6	0.9	2.4	31.8
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.2	0.6	0.7	0.1	1.0	1.1	1.0	0.5	0.2	0.0	0.1	0.4	6.0
43	Total nitrogen consumed	lb/acre-mo	1.3	4.4	4.9	6.5	26.4	35.7	47.5	17.9	7.1	0.6	1.0	2.8	156
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	10.7	25.3	28.7	23.8	17.0	2.8	-8.8	6.8	4.3	7.9	9.3	18.0	145.8
47	Total nitrogen in percolate	lb/mo	1132.4	2678.1	3039.9	2527.5	1799.5	293.4	-927.8	719.7	460.8	838.1	983.0	1905.1	15,450
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	0.76	2.26	2.42	0.34	3.14	3.46	3.47	2.44	1.80	1.06	3.33	3.83	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	4.06	5.46	6.52	3.54	6.54	7.06	7.37	7.74	5.40	4.56	6.43	7.43	
53	Thornwaite Potential Evapotranspiration (Exhibit J-J)	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	3.96	5.36	5.82	1.74	3.24	2.26	1.87	2.84	1.80	2.66	5.53	7.23	
55	Percolate volume	gal/mo	11,409,637	15,428,804	16,754,302	5,008,654	9,311,832	6,498,011	5,369,682	8,174,330	5,170,000	7,647,318	15,922,313	20,819,302	127,514,184
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	1,132	2,678	3,040	2,528	1,799	293	-928	720	461	838	983	1,905	15449.5
59	Percolate volume (line 55)	gal/mo	11,409,637	15,428,804	16,754,302	5,008,654	9,311,832	6,498,011	5,369,682	8,174,330	5,170,000	7,647,318	15,922,313	20,819,302	127514184.0
60	Total nitrogen concentration in percolate	lb/MG	99.3	173.6	181.4	504.6	193.2	45.2	-172.8	88.0	89.1	109.6	61.7	91.5	121.2
61	**Nitrogen concentration in percolate**	**mg/L**	**11.9**	**20.8**	**21.8**	**60.5**	**23.2**	**5.4**	**0.0**	**10.6**	**10.7**	**13.1**	**7.4**	**11.0**	**14.5**

Facility: Inland Bays RWF
Field: Southfield
Date: 2011

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	646.05	million gal/year
4	Disposal Average Daily Flow	2,110,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	344.4	acres
	Spray Acreage This Field	103	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,416,628	14,762,454	11,676,569	15,830,310	19,022,910	18,911,216	23,264,311	21,904,078	16,849,880	15,802,548	13,155,385	12,742,221	199338510.0
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	4.2239	5.6237	6.7908	4.679	7.6052	10.715	10.5953	10.277	6.791	4.902	12.327	9.062	93.6
		gal/mo	4223900	5623700	6790800	4679000	7605200	10715000	10595300	10277000	6791000	4902000	12327000	9062000	93591900.0
18		gal/acre	41,009	54,599	65,930	45,427	73,837	104,029	102,867	99,777	65,932	47,592	119,680	87,981	908659.2
19	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365.0
20	Spray days per month	days/mo	10	17	19	13	15	22	21	23	13	9	22	23	207.0
21	Spray hydraulic application rate	in/mo	1.51	2.01	2.43	1.67	2.72	3.83	3.79	3.67	2.43	1.75	4.41	3.24	33.5
22	Spray hydraulic application rate	in/week	0.38	0.50	0.61	0.42	0.68	0.96	0.95	0.92	0.61	0.44	1.10	0.81	8.4
23															
24	**Total Nitrogen Application**														
25	Total nitrogen in spray effluent	mg/L	43.08	49.4	51	45.45	44	42.85	42.5	31.54	15.92	15.475	7.945	18.235	
26	Total nitrogen in spray effluent	lb/acre-mo	14.7	22.5	28.0	17.2	27.1	37.2	36.5	26.2	8.8	6.1	7.9	13.4	245.7
27	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	23	8	-	-	-	-	-	-	-	30.0
28	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
29	Total nitrogen due to precipitation	lb/acre-mo	4.5	4.4	5.6	4.4	4.7	4.9	5.3	7.3	4.9	4.8	4.2	4.9	60.0
30	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
31	Total nitrogen applied	lb/acre-mo	19.3	26.9	33.7	44.1	39.3	42.1	41.8	33.5	13.7	10.9	12.2	18.3	335.7
32															
33	**Ammonia Application**														
34	Ammonia in spray effluent	mg/L	17.5	23.2	38	11.25	8.26	4.285	3.7	2.56	6.415	1.355	1.99	2.015	
35	Total ammonia application	lb/acre-mo	5.99	10.56	20.89	4.26	5.09	3.72	3.17	2.13	3.53	0.54	1.99	1.48	
36															
37	**Nitrogen Utilization**														
38	Plant nitrogen uptake														
39	Summer Crop	lb/acre-mo				5.7	19.8	28.3	39.6	14.1	5.7				113.0
40	Winter Cover Crop	lb/acre-mo													0.0
41	Denitrification (15% of line 26)	lb/acre-mo	2.2	3.4	4.2	2.6	4.1	5.6	5.5	3.9	1.3	0.9	1.2	2.0	36.9
42	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.3	0.5	1.0	0.2	0.3	0.2	0.2	0.1	0.2	0.0	0.1	0.1	3.2
43	Total nitrogen consumed	lb/acre-mo	2.5	3.9	5.3	8.4	24.1	34.0	45.2	18.2	7.1	0.9	1.3	2.1	153
44															
45	**Percolate Nitrogen Content**														
46	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	16.7	23.0	28.4	35.7	15.2	8.1	-3.4	15.3	6.5	10.0	10.9	16.2	182.7
47	Total nitrogen in percolate	lb/mo	1724.7	2366.5	2926.0	3672.7	1561.4	833.9	-347.5	1579.8	674.2	1028.8	1121.5	1671.8	18,814
48															
49	**Percolate Volume**														
50	Spray Hydraulic Application (line 21)	in/mo	1.51	2.01	2.43	1.67	2.72	3.83	3.79	3.67	2.43	1.75	4.41	3.24	
51	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
52	Total Hydraulic Loading	in/mo	4.81	5.21	6.53	4.87	6.12	7.43	7.69	8.97	6.03	5.25	7.51	6.84	
53	Thornwaite Potential Evapotranspiration Exhibit JJ	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
54	Percolate (line 52 minus line 53)	in/mo	4.71	5.11	5.83	3.07	2.82	2.63	2.19	4.07	2.43	3.35	6.61	6.64	
55	Percolate volume	gal/mo	13,173,858	14,293,972	16,300,131	8,594,607	7,884,886	7,358,766	6,120,321	11,395,745	6,791,000	9,376,979	18,480,096	18,571,331	138,341,692
56															
57	**Percolate Nitrogen Concentration**														
58	Total nitrogen in percolate (line 47)	lb/mo	1,725	2,367	2,926	3,673	1,561	834	-348	1,580	674	1,029	1,121	1,672	18813.7
59	Percolate volume (line 55)	gal/mo	13,173,858	14,293,972	16,300,131	8,594,607	7,884,886	7,358,766	6,120,321	11,395,745	6,791,000	9,376,979	18,480,096	18,571,331	138341692.0
60	Total nitrogen concentration in percolate	lb/MG	130.9	165.6	179.5	427.3	198.0	113.3	-56.8	138.6	99.3	109.7	60.7	90.0	136.0
61	**Nitrogen concentration in percolate**	**mg/L**	**15.7**	**19.9**	**21.5**	**51.2**	**23.7**	**13.6**	**0.0**	**16.6**	**11.9**	**13.2**	**7.3**	**10.8**	**16.3**

Facility: Inland Bays RWF
Field: North Burton
Date: 2011

	Design Criteria		
1	Treatment Capacity	777.45	million gal/year
2	Treatment Capacity Average Daily Flow	2,130,000	gal/day
3	Disposal Capacity	646.05	million gal/year
4	Disposal Average Daily Flow	1,770,000	gal/day
5	Number of Units	N/A	
6	Soil Perc Rate	N/A	inches/hr
7	Maximum Allowed Infiltration Rate from Water Balance Calcs	0.25	inches/hr
8	Total Storage Volume	71	million gallons
9	Treatment Lagoon and Storage Surface Acreage	18.5	acres
10	Total Spray Acreage	266	acres
	Spray Acreage This Field	60	acres
11	Crop Type(s)	Corn	

	Parameter	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	SUM
13	**Treatment Capacity**														
14	Influent Flow, Total	gal/mo	15,416,628	14,762,454	11,676,569	15,830,310	19,022,910	18,911,216	23,264,311	21,904,078	16,849,880	15,802,548	13,155,385	12,742,221	
15															
16	**Hydraulic Spray Application**														
17	Effluent Flow, This Field	million gal/mo	2.8959	1.1762	3.4537	5.4268	4.7357	2.8296	4.5995	4.2096	3.3311	0.6679	0	0	
18		gal/mo	2895900	1176200	3453700	5426800	4735700	2829600	4599500	4209600	3331100	667900	0	0	33326000
19		gal/acre	48,265	19,603	57,562	90,447	78,928	47,160	76,658	70,160	55,518	11,132	-	-	555433
20	Calendar days per month	days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
21	Spray days per month	days/mo	10	17	19	13	15	22	21	23	13	9	22	23	207
22	Spray hydraulic application rate	in/mo	1.78	0.72	2.12	3.33	2.91	1.74	2.82	2.58	2.04	0.41	-	-	20
23	Spray hydraulic application rate	in/week	0.44	0.18	0.53	0.83	0.73	0.43	0.71	0.65	0.51	0.10	-	-	5
24															
25	**Total Nitrogen Application**														
26	Total nitrogen in spray effluent	mg/L	43.08	49.4	51	45.45	44	42.85	42.5	31.54	15.92	15.475	7.945	18.235	
27	Total nitrogen in spray effluent	lb/acre-mo	17.3	8.1	24.5	34.3	29.0	16.9	27.2	18.5	7.4	1.4	0.0	0.0	184.4
28	Total nitrogen applied as commercial fertilizer	lb/acre-mo	-	-	-	23	8	-	-	-	-	-	-	-	30.0
29	Total nitrogen applied as biosolids	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
30	Total nitrogen due to precipitation	lb/acre-mo	4.5	4.4	5.6	4.4	4.7	4.9	5.3	7.3	4.9	4.8	4.2	4.9	60.0
31	Total nitrogen due to fixation	lb/acre-mo	-	-	-	-	-	-	-	-	-	-	-	-	0.0
32	Total nitrogen applied	lb/acre-mo	21.9	12.5	30.1	61.2	41.1	21.8	32.5	25.7	12.3	6.2	4.2	4.9	274.4
33															
34	**Ammonia Application**														
35	Ammonia in spray effluent	mg/L	19.95	23.95	25.7	25.85	29.1	28.3	26.55	18	8.565	3.045	1.82	9.54	
36	Total ammonia application	lb/acre-mo	8.03	3.92	12.34	19.50	19.16	11.13	16.97	10.53	3.97	0.28	0.00	0.00	
37															
38	**Nitrogen Utilization**														
39	Plant nitrogen uptake														
40	Summer Crop	lb/acre-mo				4.5	15.8	22.6	31.6	11.3	4.5				90.4
41	Winter Cover Crop	lb/acre-mo													0.0
42	Denitrification (15% of line 26)	lb/acre-mo	2.6	1.2	3.7	5.1	4.3	2.5	4.1	2.8	1.1	0.2	0.0	0.0	27.7
43	Ammonia Volitilization (5% of line 35)	lb/acre-mo	0.4	0.2	0.6	1.0	1.0	0.6	0.8	0.5	0.2	0.0	0.0	0.0	5.3
44	Total nitrogen consumed	lb/acre-mo	3.0	1.4	4.3	10.6	21.1	25.7	36.6	14.6	5.8	0.2	0.0	0.0	123
45															
46	**Percolate Nitrogen Content**														
47	Total nitrogen in percolate (line 31 minus line 43)	lb/acre-mo	18.9	11.1	25.8	50.5	20.0	-3.9	-4.1	11.1	6.5	6.0	4.2	4.9	151.1
48	Total nitrogen in percolate	lb/mo	1131.5	663.2	1548.6	3031.8	1199.9	-234.0	-243.0	667.2	388.7	360.1	254.8	295.9	9,065
49															
50	**Percolate Volume**														
51	Spray Hydraulic Application (line 21)	in/mo	1.78	0.72	2.12	3.33	2.91	1.74	2.82	2.58	2.04	0.41	0.00	0.00	
52	Climatoligical Normal Precipitation Exhibit KK	in/mo	3.30	3.20	4.10	3.20	3.40	3.60	3.90	5.30	3.60	3.50	3.10	3.60	
53	Total Hydraulic Loading	in/mo	5.08	3.92	6.22	6.53	6.31	5.34	6.72	7.88	5.64	3.91	3.10	3.60	
54	Thornwaite Potential Evapotranspiration (Exhibit J-J)	in/mo	0.10	0.10	0.70	1.80	3.30	4.80	5.50	4.90	3.60	1.90	0.90	0.20	
55	Percolate (line 52 minus line 53)	in/mo	4.98	3.82	5.52	4.73	3.01	0.54	1.22	2.98	2.04	2.01	2.20	3.40	
56	Percolate volume	gal/mo	8,109,468	6,226,844	8,993,116	7,707,736	4,898,624	874,512	1,992,716	4,861,296	3,331,100	3,274,684	3,584,328	5,539,416	59,393,840
57															
58	**Percolate Nitrogen Concentration**														
59	Total nitrogen in percolate (line 47)	lb/mo	1,132	663	1,549	3,032	1,200	-234	-243	667	389	360	255	296	9064.8
60	Percolate volume (line 55)	gal/mo	8,109,468	6,226,844	8,993,116	7,707,736	4,898,624	874,512	1,992,716	4,861,296	3,331,100	3,274,684	3,584,328	5,539,416	59393840.0
61	Total nitrogen concentration in percolate	lb/MG	139.5	106.5	172.2	393.3	245.0	-267.5	-122.0	137.3	116.7	110.0	71.1	53.4	152.6
62	**Nitrogen concentration in percolate**	**mg/L**	**16.7**	**12.8**	**20.6**	**47.2**	**29.4**	**0.0**	**0.0**	**16.5**	**14.0**	**13.2**	**8.5**	**6.4**	**18.3**

INLAND BAYS FACILITY PHOSPHORUS LOADING 2014			
SYSTEMS	ACRES IRR.	FLOW MG	PHOS. LBS/AC
North Field	103.00	78.50	33.60
South Field	103.00	70.60	30.50
North Burton	52.00	42.50	36.00
South Burton	41.90	20.50	21.50
North Hettie L	47.50	24.70	23.10
South Hettie L	30.48	21.10	30.80
East Hettie L	34.46	19.50	25.50
West hettie L	20.16	10.50	23.30

INLAND BAYS FACILITY PHOSPHORUS LOADING 2015			
SYSTEMS	ACRES IRR.	FLOW MG	PHOS. LBS/AC
North Field	103.00	66.80	25.90
South Field	103.00	67.60	26.10
North Burton	52.00	39.40	30.20
South Burton	41.90	24.60	23.50
North Hettie L	47.50	27.60	22.50
South Hettie L	30.48	27.50	35.10
East Hettie L	34.46	24.80	28.00
West hettie L	20.16	20.20	39.00

INLAND BAYS FACILITY PHOSPHORUS LOADING 2011			
SYSTEMS	ACRES IRR.	FLOW MG	PHOS. LBS/AC
North Field	103.00	81.40	33.00
South Field	103.00	93.50	34.90
North Burton	52.00	33.30	23.20

INLAND BAYS FACILITY PHOSPHORUS LOADING 2012			
SYSTEMS	ACRES IRR.	FLOW MG	PHOS. LBS/AC
North Field	103.00	85.40	33.40
South Field	103.00	73.30	29.20
North Burton	52.00	31.60	24.10
South Burton	41.90	15.90	15.00
North Hettie L	47.50	21.10	56.20

INLAND BAYS FACILITY PHOSPHORUS LOADING 2013			
SYSTEMS	ACRES IRR.	FLOW MG	PHOS. LBS/AC
North Field	103.00	84.80	33.60
South Field	103.00	87.20	34.50
North Burton	52.00	42.00	32.60
South Burton	41.90	20.20	19.30
North Hettie L	47.50	33.50	28.30
South Hettie L	30.48	12.20	16.00
East Hettie L	34.46	7.70	8.90
West hettie L	20.16	7.70	14.80

INLAND BAYS REGIONAL WASTEWATER FACILITY PHOSPHORUS BALANCE

NORTH FIELD

Phosphorus Balance Calculation for a Rotation 2015

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans	37.3	bu/ac	25.96	0.84	31	-5
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)		bu/ac		0.44	0	0
Other**				0.00	0	0
Total for Rotation			25.96		31	-5

SOUTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation 2015

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans	37.3	bu/ac	23.51	0.84	31	-8
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)		bu/ac		0.44	0	0
Other**				0.00	0	0
Total for Rotation			23.51		31	-8

SOUTH FIELD

Phosphorus Balance Calculation for a Rotation 2015

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	162.9	bu/ac	26.13	0.44	72	-46
Other**				0.00	0	0
Total for Rotation			26.13		72	-46

NORTH HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2015

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	162.9	bu/ac	22.55	0.44	72	-49
Other**				0.00	0	0
Total for Rotation			22.55		72	-49

NORTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation 2015

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans	37.5	bu/ac	30.27	0.84	32	-1
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)		bu/ac		0.44	0	0
Other**				0.00	0	0
Total for Rotation			30.27		32	-1

SOUTH HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2015

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	162.9	bu/ac	35.13	0.44	72	-37
Other**				0.00	0	0
Total for Rotation			35.13		72	-37

EAST HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2015

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	162.9	bu/ac	28.06	0.44	72	-44
Other**				0.00	0	0
Total for Rotation			28.06		72	-44

WEST HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2015

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	162.9	bu/ac	39.04	0.44	72	-33
Other**				0.00	0	0
Total for Rotation			39.04		72	-33

INLAND BAYS REGIONAL WASTEWATER FACILITY PHOSPHORUS BALANCE

NORTH FIELD

Phosphorus Balance Calculation for a Rotation 2014)

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	92.09	bu/ac	33.67	0.44	41	-7
Other**				0.00	0	0
Total for Rotation			33.67		41	-7

SOUTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation 2014

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	92.09	bu/ac	21.54	0.44	41	-19
Other**				0.00	0	0
Total for Rotation			21.54		41	-19

SOUTH FIELD

Phosphorus Balance Calculation for a Rotation 2014

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	101.04	bu/ac	30.57	0.44	44	-14
Other**				0.00	0	0
Total for Rotation			30.57		44	-14

NORTH HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2014

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	101.04	bu/ac	23.18	0.44	44	-21
Other**				0.00	0	0
Total for Rotation			23.18		44	-21

NORTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation 2014

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	92.09	bu/ac	36.03	0.44	41	-4
Other**				0.00	0	0
Total for Rotation			36.03		41	-4

SOUTH HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2014

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	101.04	bu/ac	30.85	0.44	44	-14
Other**				0.00	0	0
Total for Rotation			30.85		44	-14

EAST HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2014

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				——— (lb P_2O_5/ac) ———		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	101.04	bu/ac	25.59	0.44	44	-19
Other**				0.00	0	0
Total for Rotation			25.59		44	-19

WEST HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2014

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	101.04	bu/ac	23.36	0.44	44	-21
Other**				0.00	0	0
Total for Rotation			23.36		44	-21

INLAND BAYS REGIONAL WASTEWATER FACILITY PHOSPHORUS BALANCE

NORTH FIELD

Phosphorus Balance Calculation for a Rotation 2013

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	70.02	bu/ac	33.68	0.44	31	3
Other**				0.00	0	0
Total for Rotation			33.68		31	3

SOUTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation 2013

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	70.02	bu/ac	19.35	0.44	31	-11
Other**				0.00	0	0
Total for Rotation			19.35		31	-11

SOUTH FIELD

Phosphorus Balance Calculation for a Rotation 2013

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	96.37	bu/ac	34.56	0.44	42	-8
Other**				0.00	0	0
Total for Rotation			34.56		42	-8

NORTH HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2013

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	96.37	bu/ac	28.32	0.44	42	-14
Other**				0.00	0	0
Total for Rotation			28.32		42	-14

NORTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation 2013

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	70.02	bu/ac	32.68	0.44	31	2
Other**				0.00	0	0
Total for Rotation			32.68		31	2

SOUTH HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2013

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	96.37	bu/ac	16.01	0.44	42	-26
Other**				0.00	0	0
Total for Rotation			16.01		42	-26

EAST HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2013

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	96.37	bu/ac	8.1	0.44	42	-34
Other**				0.00	0	0
Total for Rotation			8.1		42	-34

WEST HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2013

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	96.37	bu/ac	14.87	0.44	42	-28
Other**				0.00	0	0
Total for Rotation			14.87		42	-28

INLAND BAYS REGIONAL WASTEWATER FACILITY PHOSPHORUS BALANCE

NORTH FIELD

Phosphorus Balance Calculation for a Rotation 2012

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	157.1	bu/ac	33.41	0.44	69	-36
Other**				0.00	0	0
Total for Rotation			33.41		69	-36

SOUTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation 2012

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	151	bu/ac	15.04	0.44	66	-51
Other**				0.00	0	0
Total for Rotation			15.04		66	-51

SOUTH FIELD

Phosphorus Balance Calculation for a Rotation 2012

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	160.6	bu/ac	29.2	0.44	71	-41
Other**				0.00	0	0
Total for Rotation			29.2		71	-41

NORTH HETTIE FIELD

Phosphorus Balance Calculation for a Rotation 2012

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	152.58	bu/ac	17.46	0.44	67	-50
Other**				0.00	0	0
Total for Rotation			17.46		67	-50

NORTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation 2012

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	157.1	bu/ac	24.12	0.44	69	-45
Other**				0.00	0	0
Total for Rotation			24.12		69	-45

INLAND BAYS REGIONAL WASTEWATER FACILITY

NORTH FIELD

Phosphorus Balance Calculation for a Rotation 2011

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	171.5	bu/ac	33.08	0.44	75	-42
Other**				0.00	0	0
Total for Rotation			33.08		75	-42

SOUTH FIELD

Phosphorus Balance Calculation for a Rotation 2011

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	163.69	bu/ac	34.92	0.44	72	-37
Other**				0.00	0	0
Total for Rotation			34.92		72	-37

NORTH BURTON FIELD

Phosphorus Balance Calculation for a Rotation

Crop	Typical Yield	Yield Units	P Applied	P Removed* per unit	P Removed* per acre	Annual Balance
				---------- (lb P_2O_5/ac) ----------		
HR Spring wheat		bu/ac		0.59	0	0
Winter wheat		bu/ac		0.51	0	0
Barley		bu/ac		0.42	0	0
Oats		bu/ac		0.26	0	0
Canola		bu/ac		1.04	0	0
Soybeans		bu/ac		0.84	0	0
Peas		bu/ac		0.69	0	0
Flax		bu/ac		0.65	0	0
Corn (grain)	131.25	bu/ac	23.28	0.44	58	-34
Other**				0.00	0	0
Total for Rotation			23.28		58	-34

INLAND BAYS REGIONAL WASTEWATER FACILITY

LTS 5004-90-12

PERMIT RENEWAL

SOILS REPORT

SECTION 5

MAY 2017

accent énvironmental, LLC

RESOURCE MAPPING · SOIL & PROPERTY INVESTIGATIONS · WASTEWATER & STORMWATER · WETLANDS · NUTRIENT MANAGEMENT

April 25, 2017

Ms. Heather Sheridan
Director of Environmental Services
Sussex County Engineering Department
33711 South Coastal Lane
Frankford, DE 19945

RE: Soils Report, as part of 5-Year Compliance Monitoring Report; Inland Bays Regional Wastewater Facility; Sussex County, DE, TM: 234-22.00 parcels 11.00, 11.01, 12.00, 16.00 and 19.00, Inland Bay Road, Millsboro, DE

Ms. Sheridan,

Accent Environmental, LLC was contracted to complete a Compliance Monitoring Report as specified in section 6.5.4.3.1.1 of the Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems (i.e. the regulations) for the Inland Bays Regional Wastewater Facility (IBRWF) in Millsboro, DE.

The IBRWF began operations in 1992 and has eight spray fields covering ~432 acres with application rates ranging from 1 to 2 inches per week. The facility is permitted for spraying 2,650,000 gallons per day.

6.5.4.3.1.1.1
Soils investigation is not required in the spray disposal area per Delaware Department of Natural Resources and Environmental Control (DNREC).

6.5.4.3.1.1.2
There were no new wells, stormwater ponds or other filling/cutting activities that would impact the operation of the spray facility or impact wastewater application to the field. The location of existing monitoring and observation wells are denoted on the enclosed map.

PO BOX 788
MILLSBORO, DE 19966
PHONE: 1-302-352-1700
FAX: 1-302-371-0091

www.aedelmarva.com

6.5.4.3.1.1.3

There are several small areas of somewhat poorly to poorly drained soils located in the North Field and South Field. The areas occasionally display ponding and were investigated and reviewed in 2009; ponding was attributed to subsurface soil compaction and/or restrictive clay horizons located deeper than six feet. Recommendations for mitigating/renovating those areas may include: 1) Limiting wastewater applications during wet periods, 2) Deep plowing (i.e. 36 inches) with a subsoil ripper type plow in areas of soil compaction, 3) Installing vertical drains that can move soil water beneath restrictive clay layers, or 4) Installing horizontal drains that can move soil water to swale(s) that further drain to an outfall. If necessary, limiting wastewater applications and deep plowing should initially be attempted to minimize design and installation costs.

6.5.4.3.1.1.4

Soils investigation is not required in the active disposal area per DNREC.

6.5.4.3.1.1.5

Conclusions: There currently do not appear to be significant limitations for wastewater application across the disposal fields. There are small areas in the North Field and South Field that have poorly to somewhat poorly drained areas that occasionally display ponding. If necessary, spray applications may need to be reduced in the poorly drained area to avoid additional ponding or runoff. Deep plowing (i.e. 36 inches) with a subsoil ripper type plow is an additional management practice that may mitigate occasional ponding. More complex mitigation practices may include design and installation of vertical drainage, or, horizontal drainage system(s). Overall, the site does not show signs of stress or failure.

The limiting soil constituent at the site is phosphorus. Phosphorus index levels at the site are excessive. Phosphorus fertilizer should not be applied in future cropping systems. All additional nutrient inputs and liming applications should be based on soil test results and laboratory recommendations.

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Heavy metal concentrations were well below the DNREC cumulative loading limits as specified in Exhibit HH in the regulations. The sodium adsorption ratios for the collected samples were well within normal soil levels (i.e. 3.5 to 6.4) and do not pose a limiting condition for wastewater application on the field.

6.5.4.3.1.1.6

There are no recommendations for future monitoring, system upgrades or improvements. The IBRWF is planning a future expansion of the spray facility to the west of the current spray fields.

6.5.4.3.1.1.7

6.5.4.3.1.1.7.1

There are no significant trends related to soil constituents based on the most recent (2015) soil sampling results. Organic matter levels ranged from 1.1 to 1.7 percent and pH levels ranged from 6.1 to 6.4. However, phosphorus levels were identified as excessive and phosphorous is the major limiting soil constituent. Future phosphorus applications are not needed.

Cadmium, copper, lead, nickel and zinc were well below the DNREC cumulative loading limits as specified in Exhibit HH in the regulations. The sodium adsorption ratios for the collected samples were well within normal soil levels (i.e. 3.5 to 6.4) and do not pose a limiting condition for wastewater application on the field.

6.5.4.3.1.1.7.2

The limiting soil constituent is phosphorus. Phosphorus levels were identified as excessive. This is a common limiting soil constituent on Delaware soils. Future fertilization schedules should not include P applications since levels are already high. Currently, there do not appear to be conditions or constituents that would limit or reduce the life of the disposal field. Estimated life-years remaining on the spray fields were estimated based on 2015 soil samples and Exhibit HH in the regulations and are presented in Appendix A.

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PHONE: 1-302-352-1700
FAX: 1-302-371-0091

6.5.4.3.1.1.7.3

Soil pH levels are normal for the mid-Atlantic region. Fertilizer application rates are based on regular soil test results from the fields and yield estimates are based on historical yields. Phosphorus applications should be avoided since those soil test levels tended to be excessive. There are no significant concerns related to soil fertility and nutrient management.

6.5.4.3.1.1.7.4

The current cropping rotation is soybean-barley-corn-wheat. The current cropping sequence is appropriate and common for the mid-Atlantic region.

6.5.4.3.1.1.7.5

Soil renovation or maintenance is not necessary at this time. The cropping system is appropriate and commonly used in the mid-Atlantic region. There are some small areas that are somewhat poorly to poorly drained and occasionally display ponding during wet periods. If possible, spray applications may need to be reduced in the poorly drained areas to avoid ponding or runoff. In addition, deep plowing the areas may help mitigate ponding. The site does not show signs of stress or failure.

Feel free to contact me if you need additional information or have any questions concerning this report.

Sincerely,
for Accent Environmental, LLC

William J. Gangloff, PhD

DE Class D Evaluator #4455
ARCPACS CPSS #24747
ARCPACS CPAg #24747

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Table 1. Average values for select soil parameters at the IBRWF from 2015 soils samples

Field ID	P	UDP-FIV*	Rating	Cd	Cu	Pb	Ni	Zn	pH	CEC	SAR	OM
	lb/acre					mg/kg				meq/100g		%
North	402	201	Excessive	nd	2.96	6.69	1.58	20.61	6.1	4.5	6.4	1.7
South	264	132	Excessive	nd	3.45	6.36	1.75	15.72	6.2	3.8	5.2	1.2
N Burton	526	263	Excessive	nd	3.53	6.71	nd	25.56	6.4	4.4	4.9	1.1
S Burton	654	327	Excessive	nd	4.73	9.91	nd	28.16	6.3	5.2	3.5	1.3
N Hettie-Lingo	440	220	Excessive	nd	7.28	6.51	nd	19.92	6.4	5.3	3.6	1.7
W&E Hettie-Lingo	504	252	Excessive	nd	9.41	6.33	1.53	27.63	6.3	4.0	3.5	1.3

* University of Delaware phosphorus fertility index value.

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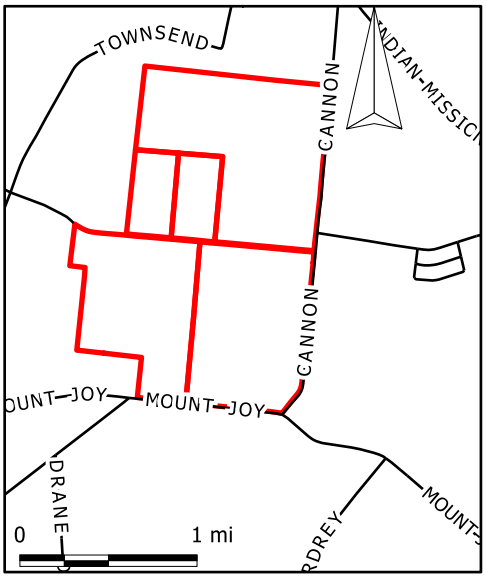
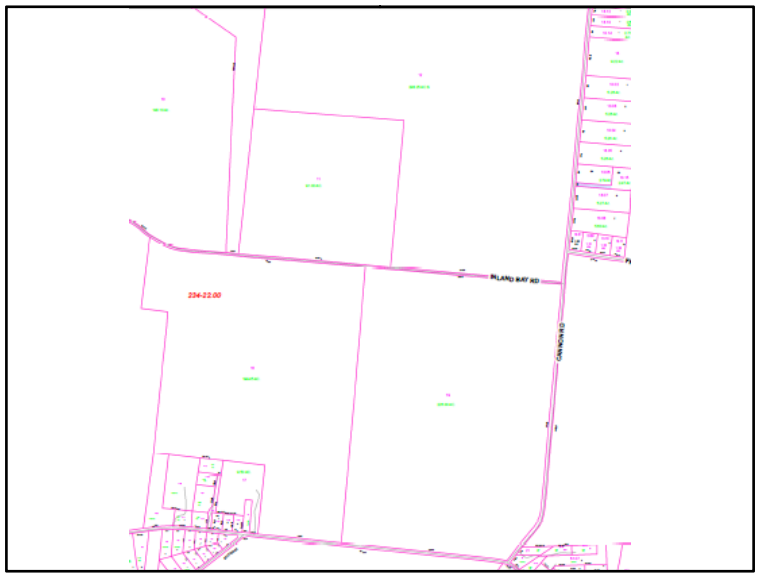
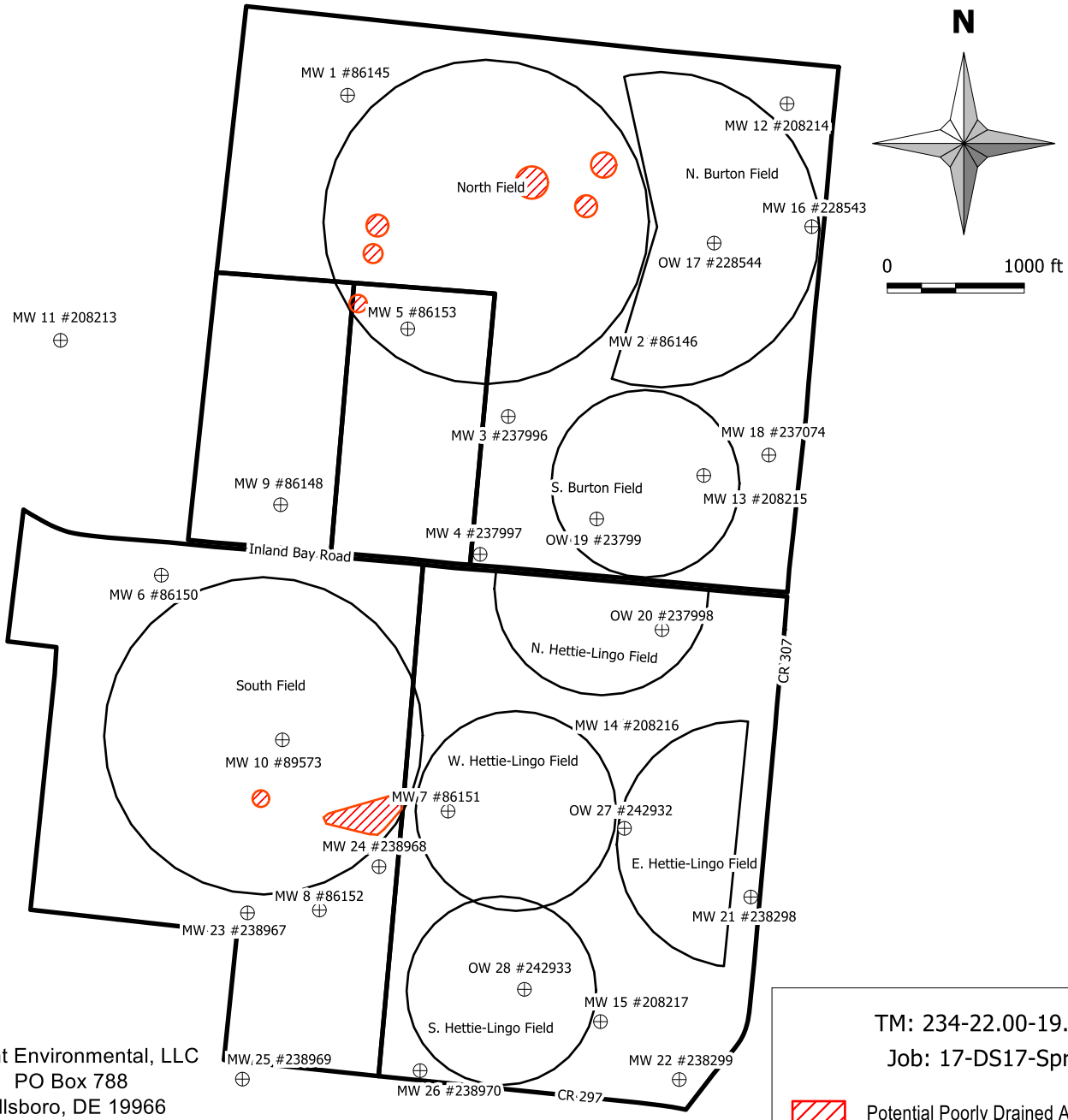
FAX: 1-302-371-0091







Accent Environmental, LLC
PO Box 788
Millsboro, DE 19966
1-302-352-1700
www.aedelmarva.com

TM: 234-22.00-19.00
Job: 17-DS17-Spray

Potential Poorly Drained Area
Well

Appendix A

Appendix A. Estimated application years remaining for IBRWF based on 2015 soil samples.

Field ID	Constituent	Soil Test	Limit	Remaining	Field Size	Total Applied	Total Applied	Remaining
		lb/ac	lb/ac	lb/ac	ac	lb/year	lb/acre	years
North	Pb	13.38	500	486.6	103	15.6	0.151	3213
	Zn	41.22	250	208.8	103	21	0.204	1024
	Cu	5.92	125	119.1	103	23.5	0.228	522
	Ni	3.16	125	121.8	103	47.5	0.461	264
	Cd	0	4.4	4.4	103	5.2	0.050	87
South	Pb	12.72	500	487.3	103	19.6	0.190	2561
	Zn	31.44	250	218.6	103	21.5	0.209	1047
	Cu	6.9	125	118.1	103	23	0.223	529
	Ni	3.5	125	121.5	103	63	0.612	199
	Cd	0	4.4	4.4	103	7.2	0.070	63
N Burton	Pb	13.42	500	486.6	52	0.36	0.007	70284
	Zn	51.12	250	198.9	52	7.7	0.148	1343
	Cu	7.06	125	117.9	52	2.7	0.052	2271
	Ni	0	125	125.0	52	1.5	0.029	4333
	Cd	0	4.4	4.4	52	0.2	0.004	1144
S Burton	Pb	19.82	1000	980.2	42	0.25	0.006	164670
	Zn	56.32	500	443.7	42	4.8	0.114	3882
	Cu	9.46	250	240.5	42	1.3	0.031	7771
	Ni	0	250	250.0	42	1	0.024	10500
	Cd	0	8.9	8.9	42	0.1	0.002	3738
N Hettie-Lingo	Pb	13.02	1000	987.0	47.5	0.32	0.007	146505
	Zn	39.84	500	460.2	47.5	6	0.126	3643
	Cu	14.56	250	235.4	47.5	1.7	0.036	6578
	Ni	0	250	250.0	47.5	1.3	0.027	9135
	Cd	0	8.9	8.9	47.5	0.1	0.002	4228
W&E Hettie-Lingo	Pb	12.66	500	487.3	54.5	0.2	0.004	132800
	Zn	55.26	250	194.7	54.5	3.45	0.063	3076
	Cu	18.82	125	106.2	54.5	0.58	0.011	9977
	Ni	3.06	125	121.9	54.5	0.9	0.017	7384
	Cd	0	4.4	4.4	54.5	0.85	0.016	282

The Soil Science Society of America
Soils Certification Board

has conferred upon

William J. Gangloff, PhD

the designation of

Certified Professional Soil Scientist

By successfully fulfilling the requirements, passing a rigorous examination,
subscribing to the Certified Professional Soil Scientist
Code of Ethics and committing to ongoing professional development.

Certification effective from
01/01/2016 to 12/31/2017

Certification Number:
24747

CPSS
Certified Professional
Soil Scientist

SSSA President

Soils Certification Board Chair

DELAWARE
DIVISION OF WATER RESOURCES

State of Delaware

Department of Natural Resources
and Environmental Control
Division of Water Resources
89 Kings Highway,
Dover, Delaware 19901

LICENSE # 4455

This certifies that:

Gangloff, PhD, William J

has been duly licensed as a:

Class D (Site Evaluator) **1/1/2017** **12/31/2017**

In the State of Delaware in accordance with the Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems.

Department of Natural Resources and Environmental Control

The license may be revoked or suspended if the license holder violates any of the lawful rules or regulations of the board, any condition of this license, or the provisions of the act under which license is issued.

State of Delaware, DNREC
89 Kings Highway, Dover, DE 19901
(302) 739-9948

Delaware On-Site Wastewater Treatment and Disposal Systems

WILLIAM J GANGLOFF
Lic. # **4455**

☐ A ☐ B ☐ C ☑ D ☐ E ☐ F ☐ H ☐ I

VALID THROUGH DECEMBER 31, 2017

SOILS ANALYSIS

lb/A

46110-20

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location INLAND BAYS	NORTH A	NORTH B	NORTH C	NORTH D	NORTH E
Sample Identification					
Lab Number	0708-1	0709-1	0710-1	0711-1	0712-1
Total Exchange Capacity (ME/100 g)	5.24	3.94	4.99	4.58	3.37
pH Buffer (SMP/Sikora)	7.4	7.4	7.4	7.4	7.3
pH H_2O (1:1)	6.0	6.1	5.9	6.0	6.0
Organic Matter (humus) %	1.39	1.37	1.29	1.75	2.16
Estimated Nitrogen Release lb/A	48	47	46	55	63
ANIONS: SOLUBLE SULFUR* ppm	17	15	15	16	14
PHOSPHORUS: MEHLICH III lb/A P as P_2O_5	1406	1136	1186	1205	366
PHOSPHORUS: MEHLICH III ppm of P	307	248	259	263	80
PHOSPHORUS: BRAY II lb/A P as P_2O_5					
PHOSPHORUS: BRAY II ppm of P					
PHOSPHORUS: OLSEN lb/A P as P_2O_5					
PHOSPHORUS: OLSEN ppm of P					
EXCHANGEABLE CATIONS: CALCIUM* lb/A	1068	746	1038	966	642
CALCIUM* ppm	534	373	519	483	321
MAGNESIUM* lb/A	160	132	126	120	118
MAGNESIUM* ppm	80	66	63	60	59
POTASSIUM* lb/A	140	112	118	130	112
POTASSIUM* ppm	70	56	59	65	56
SODIUM* lb/A	302	296	250	258	202
SODIUM* ppm	151	148	125	129	101
BASE SATURATION PERCENT					
Calcium %	50.95	47.34	52.00	52.73	47.63
Magnesium %	12.72	13.96	10.52	10.92	14.59
Potassium %	3.43	3.64	3.03	3.64	4.26
Sodium %	12.53	16.33	10.89	12.25	13.03
Other Bases %	5.40	5.20	5.60	5.40	5.40
Hydrogen %	15.00	13.50	18.00	15.00	15.00
EXTRACTABLE MINORS					
Boron* (ppm)	0.45	0.49	0.53	0.44	0.54
Iron* (ppm)	164	163	172	147	162
Manganese* (ppm)	20	18	21	19	6
Copper* (ppm)	1.39	1.07	1.03	1.25	0.77
Zinc* (ppm)	8.75	6.19	6.30	9.09	3.38
Aluminum* (ppm)	692	621	694	626	667
OTHER TESTS: Soluble Salts (mmhos/cm)					
Chlorides (ppm)					
SAR	7.23	8.59	6.51	5.65	5.31

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-20

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location		INLAND BAYS	NORTH F	NORTH G			
Sample Identification							
Lab Number			0713-1	0714-1			
Total Exchange Capacity (ME/100 g)			4.47	4.75			
pH	Buffer (SMP/Sikora)		7.3	7.5			
	H_2O (1:1)		6.0	6.8			
Organic Matter (humus) %			1.96	1.71			
Estimated Nitrogen Release		lb/A	59	54			
ANIONS	SOLUBLE SULFUR*	ppm	15	16			
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	737	426			
		ppm of P	161	93			
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	864	1098			
		ppm	432	549			
	MAGNESIUM*	lb/A	154	216			
		ppm	77	108			
	POTASSIUM*	lb/A	140	132			
		ppm	70	66			
	SODIUM*	lb/A	266	266			
		ppm	133	133			
BASE SATURATION PERCENT							
Calcium		%	48.32	57.79			
Magnesium		%	14.35	18.95			
Potassium		%	4.02	3.56			
Sodium		%	12.94	12.17			
Other Bases		%	5.40	4.60			
Hydrogen		%	15.00	3.00			
EXTRACTABLE MINORS							
Boron* (ppm)			0.49	0.61			
Iron* (ppm)			191	218			
Manganese* (ppm)			10	6			
Copper* (ppm)			1.51	1.13			
Zinc* (ppm)			5.91	2.64			
Aluminum* (ppm)			582	573			
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	SAR		6.41	5.36			

* Mehlich III Extractable

lb/A

46110-20

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location INLAND BAYS			SOUTH A	SOUTH B	SOUTH C	SOUTH D	SOUTH E
Sample Identification							
Lab Number			0715-1	0716-1	0717-1	0718-1	0719-1
Total Exchange Capacity (ME/100 g)			3.92	4.04	4.74	3.75	3.38
pH	Buffer (SMP/Sikora)		7.4	7.4	7.5	7.4	7.5
	H_2O (1:1)		6.0	6.1	6.2	6.2	6.3
Organic Matter (humus) %			2.05	1.43	1.67	1.25	1.18
Estimated Nitrogen Release		lb/A	61	49	53	45	44
ANIONS	SOLUBLE SULFUR*	ppm	15	15	13	14	15
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	426	472	582	834	824
		ppm of P	93	103	127	182	180
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	766	846	1098	778	696
		ppm	383	423	549	389	348
	MAGNESIUM*	lb/A	142	130	134	140	144
		ppm	71	65	67	70	72
	POTASSIUM*	lb/A	140	156	140	122	90
		ppm	70	78	70	61	45
	SODIUM*	lb/A	198	198	204	194	184
		ppm	99	99	102	97	92
BASE SATURATION PERCENT							
Calcium	%		48.85	52.35	57.91	51.87	51.48
Magnesium	%		15.09	13.41	11.78	15.56	17.75
Potassium	%		4.58	4.95	3.79	4.17	3.41
Sodium	%		10.98	10.65	9.36	11.25	11.83
Other Bases	%		5.40	5.20	5.20	5.20	5.10
Hydrogen	%		15.00	13.50	12.00	12.00	10.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.51	0.51	0.54	0.56	0.39
Iron* (ppm)			152	145	202	206	124
Manganese* (ppm)			16	18	11	16	12
Copper* (ppm)			1.42	1.42	1.24	1.52	1.11
Zinc* (ppm)			4.69	4.96	5.31	7.02	5.60
Aluminum* (ppm)			841	852	801	724	577
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	SAR		4.83	5.43	5.82	4.86	5.00

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-20

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location		INLAND BAYS	SOUTH F				
Sample Identification							
Lab Number			0720-1				
Total Exchange Capacity (ME/100 g)			3.01				
pH	Buffer (SMP/Sikora)		7.5				
	H_2O (1:1)		6.5				
Organic Matter (humus) %			1.16				
Estimated Nitrogen Release		lb/A	43				
ANIONS	SOLUBLE SULFUR*	ppm	9				
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	499				
		ppm of P	109				
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	684				
		ppm	342				
	MAGNESIUM*	lb/A	130				
		ppm	65				
	POTASSIUM*	lb/A	62				
		ppm	31				
	SODIUM*	lb/A	142				
		ppm	71				
BASE SATURATION PERCENT							
	Calcium	%	56.81				
	Magnesium	%	18.00				
	Potassium	%	2.64				
	Sodium	%	10.26				
	Other Bases	%	4.90				
	Hydrogen	%	7.50				
EXTRACTABLE MINORS							
	Boron* (ppm)		0.50				
	Iron* (ppm)		118				
	Manganese* (ppm)		7				
	Copper* (ppm)		0.78				
	Zinc* (ppm)		4.61				
	Aluminum* (ppm)		479				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	SAR		5.58				

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-20

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location	INLAND BAYS	NORTH	NORTH	NORTH C		
Sample Identification		BURTON A	BURTON B	BURTON C		
Lab Number		0721-1	0722-1	0723-1		
Total Exchange Capacity (ME/100 g)		3.67	4.90	4.68		
pH	Buffer (SMP/Sikora)	7.3	7.4	7.4		
	H_2O (1:1)	6.3	6.2	6.6		
Organic Matter (humus) %		1.24	0.97	1.23		
Estimated Nitrogen Release	lb/A	45	39	45		
ANIONS	SOLUBLE SULFUR* ppm	13	15	13		
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	884	1347	1392		
	ppm of P	193	294	304		
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	820	1126	1170		
	ppm	410	563	585		
	MAGNESIUM* lb/A	136	142	172		
	ppm	68	71	86		
	POTASSIUM* lb/A	114	132	128		
	ppm	57	66	64		
	SODIUM* lb/A	154	220	170		
	ppm	77	110	85		
BASE SATURATION PERCENT						
Calcium	%	55.86	57.45	62.50		
Magnesium	%	15.44	12.07	15.31		
Potassium	%	3.98	3.45	3.51		
Sodium	%	9.12	9.76	7.90		
Other Bases	%	5.10	5.20	4.80		
Hydrogen	%	10.50	12.00	6.00		
EXTRACTABLE MINORS						
Boron* (ppm)		0.44	0.35	0.60		
Iron* (ppm)		190	179	173		
Manganese* (ppm)		9	17	20		
Copper* (ppm)		1.42	1.96	1.60		
Zinc* (ppm)		6.30	10.89	9.75		
Aluminum* (ppm)		563	612	624		
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					
	SAR	4.49	5.69	4.51		

* Mehlich III Extractable

lb/A

46110-20

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location INLAND BAYS			SOUTH	SOUTH	SOUTH	BURTON	PLANT
Sample Identification			BURTON A	BURTON B	BURTON C	DRY	
Lab Number			0724-1	0725-1	0726-1	0727-1	0728-1
Total Exchange Capacity (ME/100 g)			5.33	5.01	5.38	4.87	3.06
pH	Buffer (SMP/Sikora)		7.4	7.3	7.3	7.3	7.4
	H_2O (1:1)		6.4	6.3	6.3	6.1	6.0
Organic Matter (humus) %			1.27	1.33	1.28	1.21	1.05
Estimated Nitrogen Release		lb/A	45	47	46	44	41
ANIONS	SOLUBLE SULFUR*	ppm	11	14	11	13	10
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1576	1502	1420	1269	234
		ppm of P	344	328	310	277	51
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1308	1194	1396	1210	600
		ppm	654	597	698	605	300
	MAGNESIUM*	lb/A	196	176	142	148	150
		ppm	98	88	71	74	75
	POTASSIUM*	lb/A	146	140	158	160	158
		ppm	73	70	79	80	79
	SODIUM*	lb/A	142	154	118	52	48
		ppm	71	77	59	26	24
BASE SATURATION PERCENT							
Calcium		%	61.35	59.58	64.87	62.11	49.02
Magnesium		%	15.32	14.64	11.00	12.66	20.42
Potassium		%	3.51	3.58	3.77	4.21	6.62
Sodium		%	5.79	6.68	4.77	2.32	3.41
Other Bases		%	5.00	5.10	5.10	5.20	5.40
Hydrogen		%	9.00	10.50	10.50	13.50	15.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.47	0.41	0.53	0.39	0.29
Iron* (ppm)			235	250	289	197	81
Manganese* (ppm)			14	12	13	14	31
Copper* (ppm)			2.69	1.69	1.97	1.95	1.69
Zinc* (ppm)			11.69	9.20	15.57	9.42	3.35
Aluminum* (ppm)			624	653	669	700	772
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	SAR		3.68	3.83	2.90		

* Mehlich III Extractable

lb/A

46110-20

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location INLAND BAYS			HL-A	HL-B	HL-C	HL-D	HL-E
Sample Identification							
Lab Number			0729-1	0730-1	0731-1	0732-1	0733-1
Total Exchange Capacity (ME/100 g)			5.11	3.87	4.28	3.73	3.50
pH	Buffer (SMP/Sikora)		7.3	7.3	7.5	7.5	7.4
	H_2O (1:1)		6.4	6.1	6.4	6.7	6.1
Organic Matter (humus) %			1.33	1.22	1.26	1.05	1.14
Estimated Nitrogen Release		lb/A	47	44	45	41	43
ANIONS	SOLUBLE SULFUR*	ppm	18	17	15	13	14
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1846	1489	1058	1159	1035
		ppm of P	403	325	231	253	226
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1304	894	1006	894	766
		ppm	652	447	503	447	383
	MAGNESIUM*	lb/A	188	126	160	156	126
		ppm	94	63	80	78	63
	POTASSIUM*	lb/A	128	102	126	92	72
		ppm	64	51	63	46	36
	SODIUM*	lb/A	88	118	156	176	144
		ppm	44	59	78	88	72
BASE SATURATION PERCENT							
Calcium		%	63.80	57.75	58.76	59.92	54.71
Magnesium		%	15.33	13.57	15.58	17.43	15.00
Potassium		%	3.21	3.38	3.77	3.16	2.64
Sodium		%	3.74	6.63	7.92	10.26	8.94
Other Bases		%	5.00	5.20	5.00	4.70	5.20
Hydrogen		%	9.00	13.50	9.00	4.50	13.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.49	0.46	0.43	0.41	0.35
Iron* (ppm)			216	198	177	185	187
Manganese* (ppm)			19	25	23	17	12
Copper* (ppm)			5.95	5.45	5.46	5.86	6.05
Zinc* (ppm)			22.46	11.38	11.39	13.45	13.75
Aluminum* (ppm)			843	932	841	814	700
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	SAR		1.46	2.36	4.08	4.50	3.86

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-20

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location INLAND BAYS			HL-F	HL-G	HL-H	HL-I	HL-J
Sample Identification							
Lab Number			0734-1	0735-1	0736-1	0737-1	0738-1
Total Exchange Capacity (ME/100 g)			3.61	3.87	3.71	3.97	4.24
pH	Buffer (SMP/Sikora)		7.4	7.5	7.4	7.3	7.2
	H_2O (1:1)		6.3	6.4	6.4	6.0	5.9
Organic Matter (humus) %			1.04	1.10	1.15	1.67	1.80
Estimated Nitrogen Release		lb/A	41	42	43	53	56
ANIONS	SOLUBLE SULFUR*	ppm	14	14	17	15	18
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1095	1021	1145	948	774
		ppm of P	239	223	250	207	169
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	822	882	802	834	944
		ppm	411	441	401	417	472
	MAGNESIUM*	lb/A	116	136	154	150	140
		ppm	58	68	77	75	70
	POTASSIUM*	lb/A	94	106	106	152	148
		ppm	47	53	53	76	74
	SODIUM*	lb/A	180	194	186	116	50
		ppm	90	97	93	58	25
BASE SATURATION PERCENT							
Calcium		%	56.93	56.98	54.04	52.52	55.66
Magnesium		%	13.39	14.64	17.30	15.74	13.76
Potassium		%	3.34	3.51	3.66	4.91	4.48
Sodium		%	10.84	10.90	10.90	6.35	2.56
Other Bases		%	5.10	5.00	5.00	5.40	5.60
Hydrogen		%	10.50	9.00	9.00	15.00	18.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.46	0.47	0.49	0.47	0.34
Iron* (ppm)			212	197	221	185	102
Manganese* (ppm)			10	8	6	12	31
Copper* (ppm)			5.23	5.54	4.32	3.26	3.03
Zinc* (ppm)			13.25	12.01	9.31	8.09	4.79
Aluminum* (ppm)			693	678	683	792	1179
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	SAR		4.58	5.70	4.76	2.82	0.66

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-20

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/06/2015

Sample Location	INLAND BAYS	HL-K	HL-L	HL-M		
Sample Identification						
Lab Number		0739-1	0740-1	0741-1		
Total Exchange Capacity (ME/100 g)		3.79	4.60	7.39		
pH	Buffer (SMP/Sikora)	7.5	7.3	7.4		
	H_2O (1:1)	6.5	6.2	6.6		
Organic Matter (humus) %		1.36	1.90	1.98		
Estimated Nitrogen Release	lb/A	47	58	60		
ANIONS	SOLUBLE SULFUR* ppm	13	15	17		
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	1118	728	1177		
	ppm of P	244	159	257		
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	854	986	2014		
	ppm	427	493	1007		
	MAGNESIUM* lb/A	168	204	222		
	ppm	84	102	111		
	POTASSIUM* lb/A	134	112	160		
	ppm	67	56	80		
	SODIUM* lb/A	146	160	198		
	ppm	73	80	99		
BASE SATURATION PERCENT						
Calcium	%	56.33	53.59	68.13		
Magnesium	%	18.47	18.48	12.52		
Potassium	%	4.53	3.12	2.78		
Sodium	%	8.37	7.56	5.82		
Other Bases	%	4.90	5.20	4.80		
Hydrogen	%	7.50	12.00	6.00		
EXTRACTABLE MINORS						
Boron* (ppm)		0.53	0.49	0.56		
Iron* (ppm)		193	208	211		
Manganese* (ppm)		11	10	15		
Copper* (ppm)		4.76	3.51	2.83		
Zinc* (ppm)		7.50	4.94	9.34		
Aluminum* (ppm)		673	666	653		
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					
	SAR	3.71	3.77	3.20		

* Mehlich III Extractable

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105016
Location: INLAND BAYS
Description: NORTH A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4990 mg/kg	0.499001
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	3.253493 mg/kg	0.998003
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.526946 mg/kg	4.990019
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9980 mg/kg	0.998003
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	25.11976 mg/kg	2.994011

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105017
Location: INLAND BAYS
Description: NORTH B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4901 mg/kg	0.490196
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	2.882352 mg/kg	0.980392
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	5.950980 mg/kg	4.90196
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9803 mg/kg	0.980392
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	21.15686 mg/kg	2.941176

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105018
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	NORTH C
Date Collected:		Sub Description:	
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4911 mg/kg	0.491159
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	2.642436 mg/kg	0.982318
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	5.913555 mg/kg	4.911591
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9823 mg/kg	0.982318
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	20.38310 mg/kg	2.946954

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105019
Location: INLAND BAYS
Description: NORTH D
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4911 mg/kg	0.491159
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	2.986247 mg/kg	0.982318
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.306483 mg/kg	4.911591
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9823 mg/kg	0.982318
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	26.10019 mg/kg	2.946954

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105020
Location: INLAND BAYS
Description: NORTH E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4990 mg/kg	0.499001
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	2.185628 mg/kg	0.998003
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.816367 mg/kg	4.990019
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	1.197604 mg/kg	0.998003
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	16.87624 mg/kg	2.994011

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105021
Location: INLAND BAYS
Description: NORTH F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4921 mg/kg	0.492125
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	4.084645 mg/kg	0.984251
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	8.622047 mg/kg	4.921259
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9842 mg/kg	0.984251
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	21.20078 mg/kg	2.952755

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105022
Location: INLAND BAYS
Description: NORTH G
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4960 mg/kg	0.496031
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	2.658730 mg/kg	0.992063
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	< 4.9603 mg/kg	4.960317
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	1.964285 mg/kg	0.992063
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	13.44246 mg/kg	2.97619

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105023
Location: INLAND BAYS
Description: SOUTH A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.5 mg/kg	0.5
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	4.76 mg/kg	1
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.52 mg/kg	5
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	2.14 mg/kg	1
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	21.8 mg/kg	3

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105024
Location: INLAND BAYS
Description: SOUTH B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4960 mg/kg	0.496031
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	4.563492 mg/kg	0.992063
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.537698 mg/kg	4.960317
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	1.904761 mg/kg	0.992063
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	22.32142 mg/kg	2.97619

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105025
Location: INLAND BAYS
Description: SOUTH C
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4930 mg/kg	0.493096
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	4.003944 mg/kg	0.986193
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.873767 mg/kg	4.930966
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	1.213017 mg/kg	0.986193
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	23.20512 mg/kg	2.958579

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105026
Location: INLAND BAYS
Description: SOUTH D
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4950 mg/kg	0.495049
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	3.366336 mg/kg	0.990099
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	5.514851 mg/kg	4.950495
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9900 mg/kg	0.990099
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	19.38613 mg/kg	2.970297

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.
Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105027
Location: INLAND BAYS
Description: SOUTH E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4911 mg/kg	0.491159
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	2.239685 mg/kg	0.982318
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	< 4.9115 mg/kg	4.911591
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9823 mg/kg	0.982318
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	12.08251 mg/kg	2.946954

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105028
Location: INLAND BAYS
Description: SOUTH F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4970 mg/kg	0.497017
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	1.769383 mg/kg	0.994035
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	< 4.9701 mg/kg	4.970178
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9940 mg/kg	0.994035
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	11.94831 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105029
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	NORTH
Date Collected:		Sub Description:	BURTON A
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4950 mg/kg	0.495049
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	3.217821 mg/kg	0.990099
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.475247 mg/kg	4.950495
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9900 mg/kg	0.990099
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	22.39603 mg/kg	2.970297

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105030
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	NORTH
Date Collected:		Sub Description:	BURTON B
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4930 mg/kg	0.493096
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	3.846153 mg/kg	0.986193
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.794871 mg/kg	4.930966
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9861 mg/kg	0.986193
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	28.54043 mg/kg	2.958579

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105031
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	NORTH
Date Collected:		Sub Description:	BURTON C
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4940 mg/kg	0.494071
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	3.498023 mg/kg	0.988142
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.847826 mg/kg	4.940711
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9881 mg/kg	0.988142
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	25.73122 mg/kg	2.964426

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105032
Location: INLAND BAYS
Description: SOUTH
Sub Description: BURTON A

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4970 mg/kg	0.497017
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	5.506958 mg/kg	0.994035
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	7.206759 mg/kg	4.970178
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9940 mg/kg	0.994035
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	26.03379 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Brookside Laboratories, Inc.
Analytical Report

Client Number:	46110	Lab Number:	SE1105033
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	SOUTH
Date Collected:		Sub Description:	BURTON B
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4901 mg/kg	0.490196
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	3.647058 mg/kg	0.980392
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	9.480392 mg/kg	4.90196
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9803 mg/kg	0.980392
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	23.68627 mg/kg	2.941176

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105034
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	SOUTH
Date Collected:		Sub Description:	BURTON C
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4970 mg/kg	0.497017
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	5.039761 mg/kg	0.994035
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	13.04174 mg/kg	4.970178
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9940 mg/kg	0.994035
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	34.76143 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105035
Location: INLAND BAYS
Description: HL-A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4970 mg/kg	0.497017
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	11.06361 mg/kg	0.994035
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.998011 mg/kg	4.970178
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	0.994035 mg/kg	0.994035
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	37.36580 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105036
Location: INLAND BAYS
Description: HL-B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4940 mg/kg	0.494071
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	9.752964 mg/kg	0.988142
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.818181 mg/kg	4.940711
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9881 mg/kg	0.988142
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	28.27075 mg/kg	2.964426

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105037
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	HL-C
Date Collected:		Sub Description:	
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4940 mg/kg	0.494071
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	10.58300 mg/kg	0.988142
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	7.480237 mg/kg	4.940711
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	1.422924 mg/kg	0.988142
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	31.83794 mg/kg	2.964426

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105038
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	HL-D
Date Collected:		Sub Description:	
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4990 mg/kg	0.499001
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	10.59880 mg/kg	0.998003
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	5.818363 mg/kg	4.990019
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9980 mg/kg	0.998003
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	29.19161 mg/kg	2.994011

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105039
Location: INLAND BAYS
Description: HL-E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.5 mg/kg	0.5
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	10.85 mg/kg	1
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	5.35 mg/kg	5
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 1 mg/kg	1
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	27.17 mg/kg	3

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105040
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	HL-F
Date Collected:		Sub Description:	
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4970 mg/kg	0.497017
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	8.667992 mg/kg	0.994035
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	4.970178 mg/kg	4.970178
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9940 mg/kg	0.994035
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	27.08747 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105041
Location: INLAND BAYS
Description: HL-G
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4950 mg/kg	0.495049
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	8.722772 mg/kg	0.990099
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	5.217821 mg/kg	4.950495
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9900 mg/kg	0.990099
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	23.95049 mg/kg	2.970297

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105042
Location: INLAND BAYS
Description: HL-H
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.5 mg/kg	0.5
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	7.62 mg/kg	1
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	5.18 mg/kg	5
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 1 mg/kg	1
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	20.94 mg/kg	3

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105043
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	HL-I
Date Collected:		Sub Description:	
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4960 mg/kg	0.496031
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	7.013888 mg/kg	0.992063
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	7.410714 mg/kg	4.960317
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9920 mg/kg	0.992063
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	22.87698 mg/kg	2.97619

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105044
Location: INLAND BAYS
Description: HL-J
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4970 mg/kg	0.497017
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	9.194830 mg/kg	0.994035
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	8.031809 mg/kg	4.970178
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	2.166998 mg/kg	0.994035
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	27.64413 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1105045
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	HL-K
Date Collected:		Sub Description:	
Date Received:	11/05/2015		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4921 mg/kg	0.492125
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	10.15748 mg/kg	0.984251
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.377952 mg/kg	4.921259
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9842 mg/kg	0.984251
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	22.97244 mg/kg	2.952755

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105046
Location: INLAND BAYS
Description: HL-L
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4970 mg/kg	0.497017
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	6.351888 mg/kg	0.994035
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.719681 mg/kg	4.970178
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9940 mg/kg	0.994035
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	16.33200 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.
Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/05/2015

Lab Number: SE1105047
Location: INLAND BAYS
Description: HL-M
Sub Description:

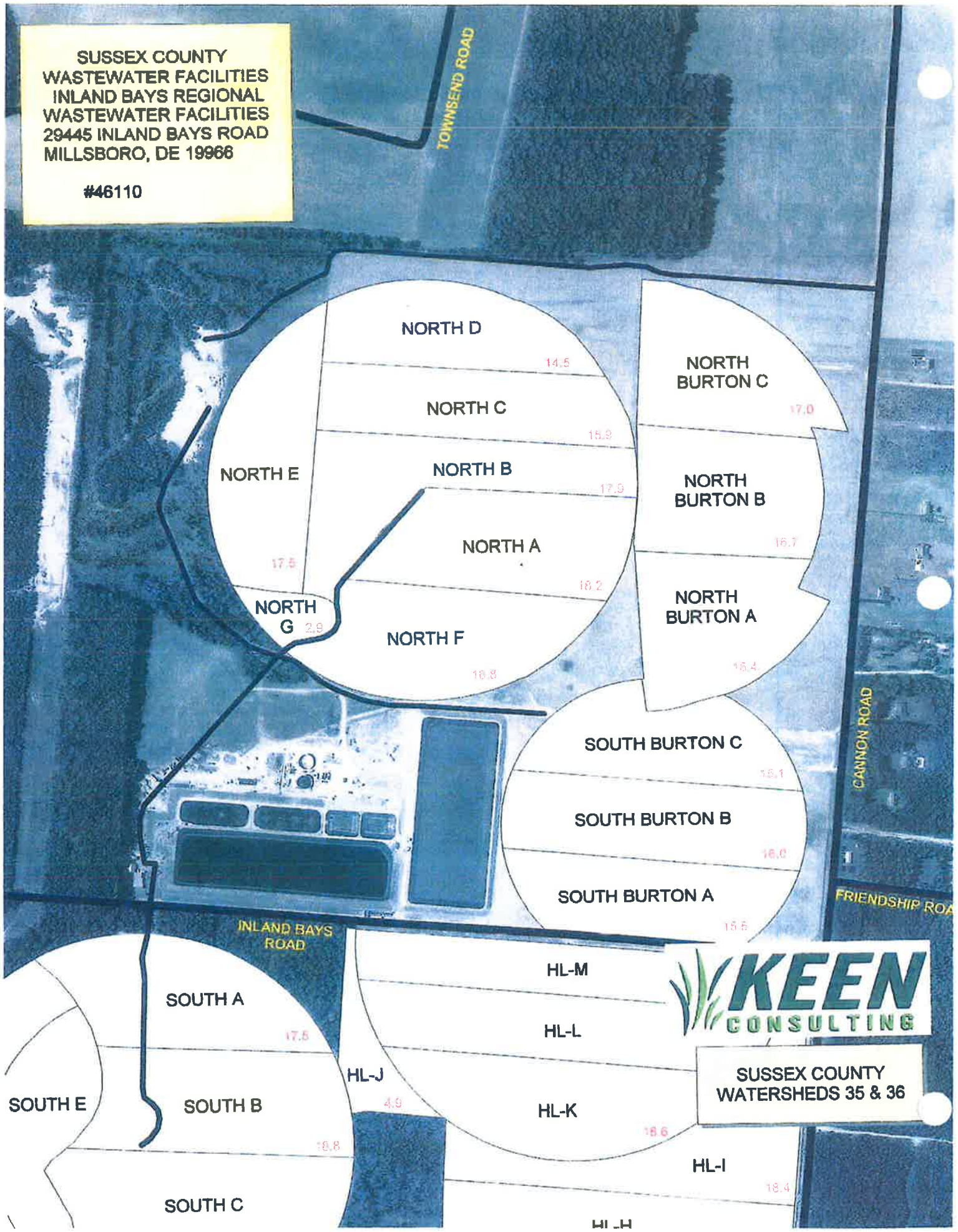
Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010C	Nov-10	Nov-12	JMO	< 0.4980 mg/kg	0.498007
IB120	COPPER	3050B	6010C	Nov-10	Nov-12	JMO	5.338645 mg/kg	0.996015
IB140	LEAD	3050B	6010C	Nov-10	Nov-12	JMO	6.444223 mg/kg	4.980079
IB190	NICKEL	3050B	6010C	Nov-10	Nov-12	JMO	< 0.9960 mg/kg	0.996015
IB300	ZINC	3050B	6010C	Nov-10	Nov-12	JMO	20.46812 mg/kg	2.988047

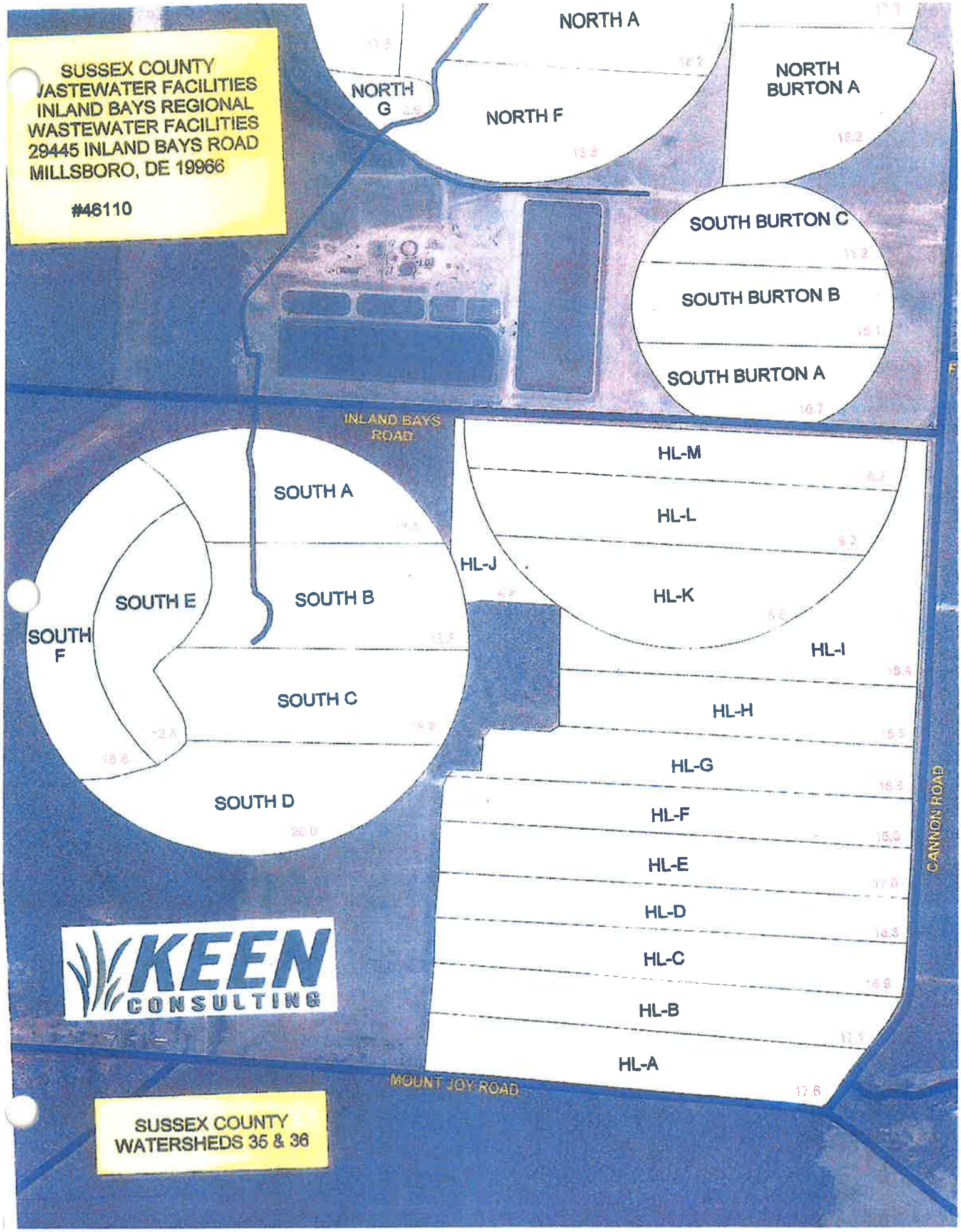
Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
TOWNSEND ROAD
NORTH D
14.5
NORTH C
15.9
NORTH E
NORTH B
17.9
NORTH A
17.5
18.2
NORTH G
2.9
NORTH F
18.8
NORTH BURTON C
17.0
NORTH BURTON B
16.7
NORTH BURTON A
16.4
SOUTH BURTON C
16.1
SOUTH BURTON B
16.0
SOUTH BURTON A
15.5
CANNON ROAD
FRIENDSHIP ROA
INLAND BAYS ROAD
SOUTH A
17.5
SOUTH E
SOUTH B
18.8
SOUTH C
HL-J
4.9
HL-M
HL-L
HL-K
18.6
HL-I
18.4
HL-H
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
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#46110
NORTH A
NORTH G
NORTH F
NORTH BURTON A
SOUTH BURTON C
SOUTH BURTON B
SOUTH BURTON A
INLAND BAYS ROAD
SOUTH A
SOUTH E
SOUTH B
SOUTH F
SOUTH C
SOUTH D
HL-M
HL-L
HL-J
HL-K
HL-I
HL-H
HL-G
HL-F
HL-E
HL-D
HL-C
HL-B
HL-A
CANNON ROAD
MOUNT JOY ROAD
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101005
Location: INLAND BAYS
Description: HL-A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5503 mg/kg	1.550387
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3875 mg/kg	0.387596
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	4.356589 mg/kg	0.775193
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	10.19379 mg/kg	0.775193
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	8.472868 mg/kg	3.875968
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0387 mg/kg	0.03876
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.8759 mg/kg	3.875968
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	2.589147 mg/kg	0.775193
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.3255 mg/kg	2.325581
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	29.03100 mg/kg	2.325581

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-16

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location		INLAND BAYS	HL-K	HL-L	HL-M		
Sample Identification							
Lab Number			0856-1	0857-1	0858-1		
Total Exchange Capacity (ME/100 g)			3.16	4.77	4.68		
pH	Buffer (SMP/Sikora)		7.3	6.5	7.2		
	H_2O (1:1)		6.2	5.8	6.5		
Organic Matter (humus) %			1.29	2.21	1.56		
Estimated Nitrogen Release		lb/A	46	64	51		
ANIONS	SOLUBLE SULFUR*	ppm	11	11	10		
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	953	756	911		
		ppm of P	208	165	199		
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	694	954	1316		
		ppm	347	477	658		
	MAGNESIUM*	lb/A	134	172	120		
		ppm	67	86	60		
	POTASSIUM*	lb/A	102	142	108		
		ppm	51	71	54		
	SODIUM*	lb/A	88	96	78		
		ppm	44	48	39		
BASE SATURATION PERCENT							
Calcium	%		54.91	50.00	70.30		
Magnesium	%		17.67	15.02	10.68		
Potassium	%		4.14	3.82	2.96		
Sodium	%		6.05	4.38	3.62		
Other Bases	%		5.20	5.80	4.90		
Hydrogen	%		12.00	21.00	7.50		
EXTRACTABLE MINORS							
Boron* (ppm)			< 0.20	0.23	0.22		
Iron* (ppm)			188	227	249		
Manganese* (ppm)			10	18	12		
Copper* (ppm)			3.30	2.71	1.66		
Zinc* (ppm)			5.54	6.21	4.32		
Aluminum* (ppm)			760	809	700		
Nitrogen (%)			0.07	0.07	0.06		
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	Total P (ppm)		333	307	390		

* Mehlich III Extractable

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101006
Location: INLAND BAYS
Description: HL-B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	1.643192 mg/kg	1.564945
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3912 mg/kg	0.391236
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	5.093896 mg/kg	0.782472
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	11.20500 mg/kg	0.782472
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	6.697965 mg/kg	3.912363
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0391 mg/kg	0.039124
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.9123 mg/kg	3.912363
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	3.341158 mg/kg	0.782472
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.3474 mg/kg	2.347417
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	32.45696 mg/kg	2.347417

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101007
Location: INLAND BAYS
Description: HL-C
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.4992 mg/kg	1.49925
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3748 mg/kg	0.374812
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	4.940029 mg/kg	0.749625
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	9.122938 mg/kg	0.749625
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	5.779610 mg/kg	3.748125
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0374 mg/kg	0.037481
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.7481 mg/kg	3.748125
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	3.178410 mg/kg	0.749625
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.2488 mg/kg	2.248875
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	25.81709 mg/kg	2.248875

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101008
Location: INLAND BAYS
Description: HL-D
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5197 mg/kg	1.519756
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3799 mg/kg	0.379939
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	5.227963 mg/kg	0.759878
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	11.59574 mg/kg	0.759878
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	5.721884 mg/kg	3.799392
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0379 mg/kg	0.037994
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.7993 mg/kg	3.799392
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	3.100303 mg/kg	0.759878
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.2796 mg/kg	2.279635
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	26.61854 mg/kg	2.279635

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101009
Location: INLAND BAYS
Description: HL-E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5174 mg/kg	1.51745
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3793 mg/kg	0.379362
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	4.264036 mg/kg	0.758725
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	8.998482 mg/kg	0.758725
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	4.385432 mg/kg	3.793626
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0379 mg/kg	0.037936
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.7936 mg/kg	3.793626
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	2.169954 mg/kg	0.758725
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.2761 mg/kg	2.276176
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	23.01972 mg/kg	2.276176

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

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Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101010
Location: INLAND BAYS
Description: HL-F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5625 mg/kg	1.5625
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3906 mg/kg	0.390625
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	3.921875 mg/kg	0.78125
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	10.05468 mg/kg	0.78125
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	4.828125 mg/kg	3.90625
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0390 mg/kg	0.039063
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.9062 mg/kg	3.90625
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	2.007812 mg/kg	0.78125
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.3437 mg/kg	2.34375
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	24.25781 mg/kg	2.34375

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101011
Location: INLAND BAYS
Description: HL-G
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5552 mg/kg	1.555209
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3888 mg/kg	0.388802
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	3.926905 mg/kg	0.777604
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	7.566096 mg/kg	0.777604
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	4.852255 mg/kg	3.888024
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0388 mg/kg	0.03888
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.8880 mg/kg	3.888024
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	1.858475 mg/kg	0.777604
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.3328 mg/kg	2.332814
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	21.12752 mg/kg	2.332814

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101012
Location: INLAND BAYS
Description: HL-H
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5455 mg/kg	1.545595
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3863 mg/kg	0.386398
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	3.825347 mg/kg	0.772797
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	7.256568 mg/kg	0.772797
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	4.876352 mg/kg	3.863987
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0386 mg/kg	0.03864
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.8639 mg/kg	3.863987
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	1.723338 mg/kg	0.772797
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.3183 mg/kg	2.318392
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	19.94590 mg/kg	2.318392

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101013
Location: INLAND BAYS
Description: HL-I
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.4947 mg/kg	1.494768
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3736 mg/kg	0.373692
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	3.385650 mg/kg	0.747384
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	4.843049 mg/kg	0.747384
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	5.306427 mg/kg	3.73692
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0373 mg/kg	0.037369
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.7369 mg/kg	3.73692
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	1.659192 mg/kg	0.747384
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.2421 mg/kg	2.242152
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	17.15994 mg/kg	2.242152

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101014
Location: INLAND BAYS
Description: HL-J
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	3.472222 mg/kg	1.543209
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3858 mg/kg	0.385802
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	6.543209 mg/kg	0.771604
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	7.731481 mg/kg	0.771604
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	8.333333 mg/kg	3.858024
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0385 mg/kg	0.03858
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.8580 mg/kg	3.858024
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	4.228395 mg/kg	0.771604
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.3148 mg/kg	2.314814
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	23.46450 mg/kg	2.314814

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

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Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101015
Location: INLAND BAYS
Description: HL-K
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5105 mg/kg	1.510574
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3776 mg/kg	0.377643
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	3.836857 mg/kg	0.755287
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	6.548338 mg/kg	0.755287
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	4.841389 mg/kg	3.776435
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0377 mg/kg	0.037764
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.7764 mg/kg	3.776435
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	1.963746 mg/kg	0.755287
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.2658 mg/kg	2.265861
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	17.62084 mg/kg	2.265861

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

200 White Mountain Drive
New Bremen, OH 45869
Phone: (419) 977-2766
Fax: (419) 977-2767

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101016
Location: INLAND BAYS
Description: HL-L
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5337 mg/kg	1.533742
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3834 mg/kg	0.383435
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	4.440184 mg/kg	0.766871
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	6.556748 mg/kg	0.766871
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	6.702453 mg/kg	3.834355
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0383 mg/kg	0.038344
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.8343 mg/kg	3.834355
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	2.338957 mg/kg	0.766871
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.3006 mg/kg	2.300613
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	21.02760 mg/kg	2.300613

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

200 White Mountain Drive
New Bremen, OH 45869
Phone: (419) 977-2766
Fax: (419) 977-2767

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 11/01/2013

Lab Number: SE1101017
Location: INLAND BAYS
Description: HL-M
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Nov-11	Nov-14	JMO	< 1.5243 mg/kg	1.52439
IB060	CADMIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 0.3810 mg/kg	0.381097
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Nov-11	Nov-14	JMO	4.359756 mg/kg	0.762195
IB120	COPPER	3050B	6010B	Nov-11	Nov-14	JMO	4.413109 mg/kg	0.762195
IB140	LEAD	3050B	6010B	Nov-11	Nov-14	JMO	5.655487 mg/kg	3.810975
IB170	MERCURY	7471A	7471A		Nov-14	JMO	< 0.0381 mg/kg	0.03811
IB180	MOLYBDENUM	3050B	6010B	Nov-11	Nov-14	JMO	< 3.8109 mg/kg	3.810975
IB190	NICKEL	3050B	6010B	Nov-11	Nov-14	JMO	2.202743 mg/kg	0.762195
IB210	SELENIUM	3050B	6010B	Nov-11	Nov-14	JMO	< 2.2865 mg/kg	2.286585
IB300	ZINC	3050B	6010B	Nov-11	Nov-14	JMO	17.31707 mg/kg	2.286585

Approval:

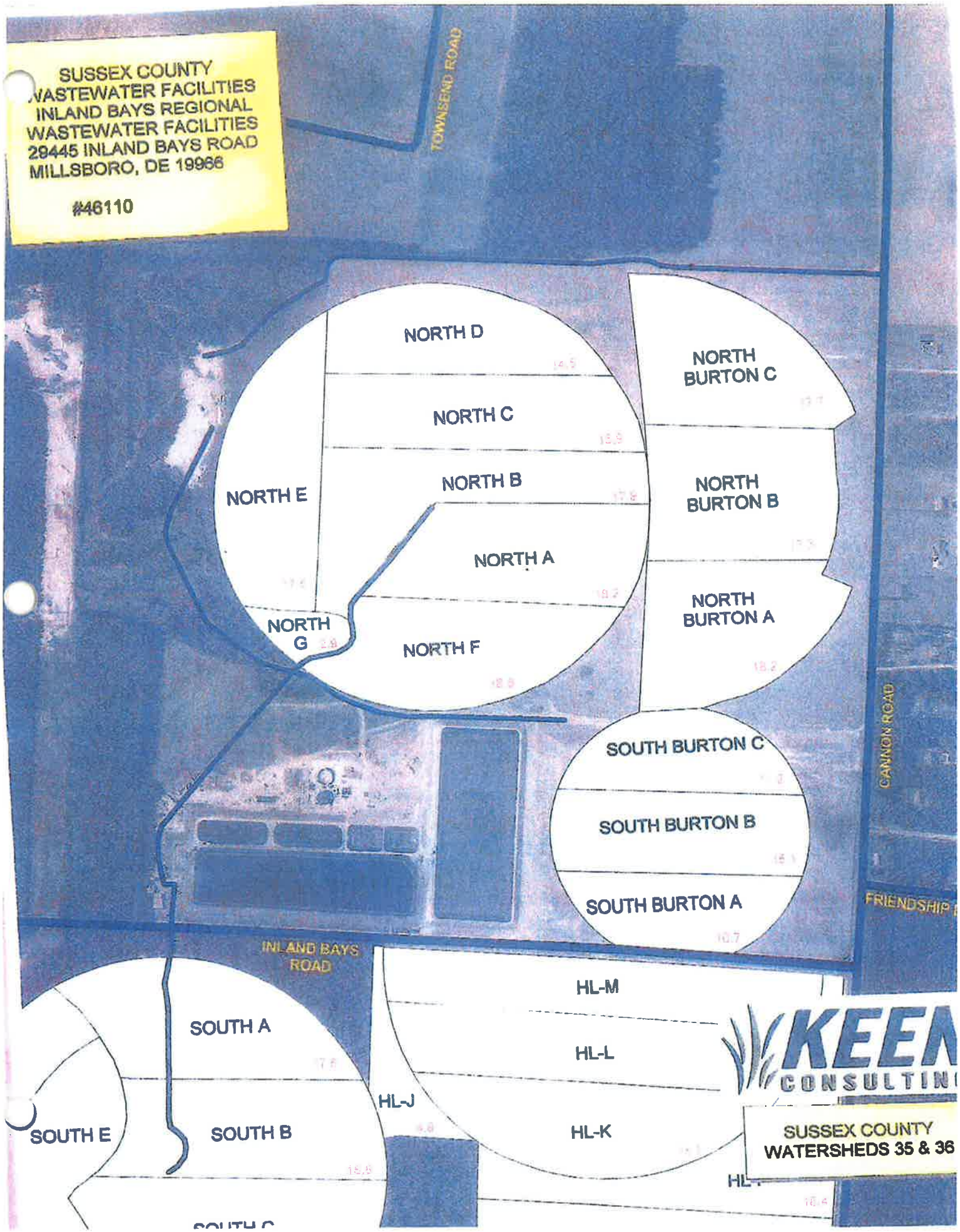
Kari L. Long

Kari Long
Environmental Services Coordinator

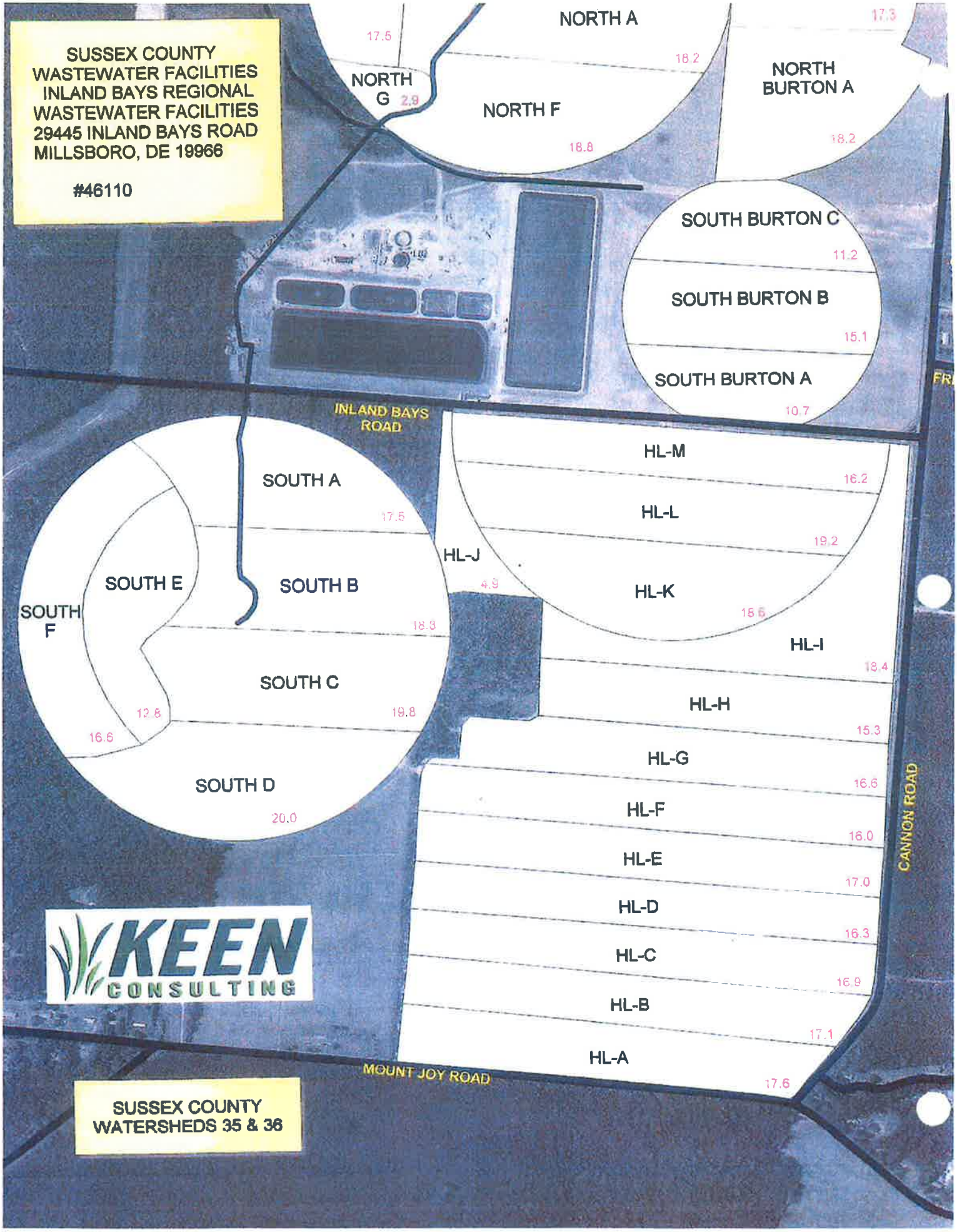
Comments:

SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966

#46110



SUSSEX COUNTY
WATERSHEDS 35 & 36


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
NORTH A
17.5
18.2
17.3
NORTH G
2.9
NORTH F
18.8
NORTH BURTON A
18.2
SOUTH BURTON C
11.2
SOUTH BURTON B
15.1
SOUTH BURTON A
10.7
INLAND BAYS ROAD
SOUTH A
17.5
SOUTH E
SOUTH B
SOUTH F
18.9
SOUTH C
12.8
19.8
16.6
SOUTH D
20.0
HL-J
4.9
HL-M
16.2
HL-L
19.2
HL-K
18.6
HL-I
18.4
HL-H
15.3
HL-G
16.6
HL-F
16.0
HL-E
17.0
HL-D
16.3
HL-C
16.9
HL-B
17.1
HL-A
17.6
CANNON ROAD
MOUNT JOY ROAD
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location INLAND BAYS	NORTH A	NORTH B	NORTH C	NORTH D	NORTH E
Sample Identification					
Lab Number	1321-1	1322-1	1323-1	1324-1	1325-1
Total Exchange Capacity (ME/100 g)	4.87	4.29	4.18	4.85	3.32
pH Buffer (SMP/Sikora)	7.5	7.5	7.5	7.5	7.5
pH H_2O (1:1)	6.6	6.7	6.7	6.8	6.4
Organic Matter (humus) %	1.68	1.21	1.29	1.20	1.53
Estimated Nitrogen Release lb/A	54	44	46	44	51
ANIONS: SOLUBLE SULFUR* ppm	11	11	11	11	11
PHOSPHORUS: MEHLICH III lb/A P as P_2O_5	1612	1566	1360	1594	426
PHOSPHORUS: MEHLICH III ppm of P	352	342	297	348	93
PHOSPHORUS: BRAY II lb/A P as P_2O_5					
PHOSPHORUS: BRAY II ppm of P					
PHOSPHORUS: OLSEN lb/A P as P_2O_5					
PHOSPHORUS: OLSEN ppm of P					
EXCHANGEABLE CATIONS: CALCIUM* lb/A	1242	1112	1052	1302	742
CALCIUM* ppm	621	556	526	651	371
MAGNESIUM* lb/A	178	156	168	190	140
MAGNESIUM* ppm	89	78	84	95	70
POTASSIUM* lb/A	148	124	118	114	128
POTASSIUM* ppm	74	62	59	57	64
SODIUM* lb/A	142	142	146	132	116
SODIUM* ppm	71	71	73	66	58
BASE SATURATION PERCENT					
Calcium %	63.76	64.80	62.92	67.11	55.87
Magnesium %	15.23	15.15	16.75	16.32	17.57
Potassium %	3.90	3.71	3.62	3.01	4.94
Sodium %	6.34	7.20	7.59	5.92	7.60
Other Bases %	4.80	4.70	4.70	4.60	5.00
Hydrogen %	6.00	4.50	4.50	3.00	9.00
EXTRACTABLE MINORS					
Boron* (ppm)	0.58	0.52	0.52	0.47	0.47
Iron* (ppm)	205	185	195	163	208
Manganese* (ppm)	23	23	22	20	8
Copper* (ppm)	1.82	1.26	1.42	1.56	0.91
Zinc* (ppm)	8.68	8.45	6.70	11.55	3.76
Aluminum* (ppm)	786	736	743	700	751
SAR	2.88	3.95	3.26	3.02	3.26
OTHER TESTS: Soluble Salts (mmhos/cm)					
OTHER TESTS: Chlorides (ppm)					

* Mehlich III Extractable

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location	INLAND BAYS	NORTH F	NORTH G	NORTH	PLANT
Sample Identification				DRY	
Lab Number		1326-1	1327-1	1328-1	1329-1
Total Exchange Capacity (ME/100 g)		4.53	4.91	7.81	3.25
pH	Buffer (SMP/Sikora)	7.6	NA	7.4	7.5
	H_2O (1:1)	6.7	7.1	6.2	6.0
Organic Matter (humus) %		1.52	1.46	1.29	1.17
Estimated Nitrogen Release	lb/A	50	49	46	43
ANIONS	SOLUBLE SULFUR* ppm	9	10	13	11
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	614	380	2739	302
	ppm of P	134	83	598	66
	BRAY II lb/A P as P_2O_5				
	ppm of P				
	OLSEN lb/A P as P_2O_5				
	ppm of P				
EXCHANGEABLE CATIONS	CALCIUM* lb/A	1106	1290	2190	694
	ppm	553	645	1095	347
	MAGNESIUM* lb/A	214	240	160	146
	ppm	107	120	80	73
	POTASSIUM* lb/A	138	138	146	106
	ppm	69	69	73	53
	SODIUM* lb/A	130	138	64	50
	ppm	65	69	32	25
BASE SATURATION PERCENT					
Calcium	%	61.04	65.68	70.10	53.38
Magnesium	%	19.68	20.37	8.54	18.72
Potassium	%	3.91	3.60	2.40	4.18
Sodium	%	6.24	6.11	1.78	3.34
Other Bases	%	4.70	4.30	5.20	5.40
Hydrogen	%	4.50	0.00	12.00	15.00
EXTRACTABLE MINORS					
Boron* (ppm)		0.49	0.58	0.44	0.26
Iron* (ppm)		203	240	251	104
Manganese* (ppm)		12	9	22	36
Copper* (ppm)		1.34	1.34	2.32	1.94
Zinc* (ppm)		4.97	2.80	24.22	3.84
Aluminum* (ppm)		714	663	937	765
SAR		2.80	2.44		
OTHER TESTS	Soluble Salts (mmhos/cm)				
	Chlorides (ppm)				

* Mehlich III Extractable

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location INLAND BAYS			SOUTH A	SOUTH B	SOUTH C	SOUTH D	SOUTH E
Sample Identification							
Lab Number			1330-1	1331-1	1332-1	1333-1	1334-1
Total Exchange Capacity (ME/100 g)			3.91	4.41	3.11	3.69	3.21
pH	Buffer (SMP/Sikora)		7.5	7.5	7.4	7.6	7.5
	H_2O (1:1)		6.4	6.4	6.6	6.6	6.8
Organic Matter (humus) %			1.52	1.85	1.57	1.35	1.29
Estimated Nitrogen Release		lb/A	50	57	51	47	46
ANIONS	SOLUBLE SULFUR*	ppm	11	11	11	9	8
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	334	531	472	788	673
		ppm of P	73	116	103	172	147
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	920	994	708	864	774
		ppm	460	497	354	432	387
	MAGNESIUM*	lb/A	156	180	136	172	162
		ppm	78	90	68	86	81
	POTASSIUM*	lb/A	136	182	134	124	92
		ppm	68	91	67	62	46
	SODIUM*	lb/A	110	148	122	118	108
		ppm	55	74	61	59	54
BASE SATURATION PERCENT							
Calcium		%	58.82	56.35	56.91	58.54	60.28
Magnesium		%	16.62	17.01	18.22	19.42	21.03
Potassium		%	4.46	5.29	5.52	4.31	3.67
Sodium		%	6.12	7.30	8.53	6.95	7.31
Other Bases		%	5.00	5.00	4.80	4.80	4.60
Hydrogen		%	9.00	9.00	6.00	6.00	3.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.50	0.56	0.49	0.43	0.39
Iron* (ppm)			177	216	218	234	139
Manganese* (ppm)			17	25	15	18	11
Copper* (ppm)			1.57	1.66	1.22	1.35	0.90
Zinc* (ppm)			3.24	4.86	4.44	6.24	4.79
Aluminum* (ppm)			925	986	772	764	580
SAR			2.42	3.41	3.97	3.17	3.32
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location	INLAND BAYS	SOUTH F				
Sample Identification						
Lab Number		1335-1				
Total Exchange Capacity (ME/100 g)		3.40				
pH	Buffer (SMP/Sikora)	7.6				
	H_2O (1:1)	6.5				
Organic Matter (humus) %		1.24				
Estimated Nitrogen Release	lb/A	45				
ANIONS	SOLUBLE SULFUR* ppm	8				
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	522				
	ppm of P	114				
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	788				
	ppm	394				
	MAGNESIUM* lb/A	164				
	ppm	82				
	POTASSIUM* lb/A	84				
	ppm	42				
	SODIUM* lb/A	98				
	ppm	49				
BASE SATURATION PERCENT						
Calcium	%	57.94				
Magnesium	%	20.10				
Potassium	%	3.17				
Sodium	%	6.27				
Other Bases	%	4.90				
Hydrogen	%	7.50				
EXTRACTABLE MINORS						
Boron* (ppm)		0.36				
Iron* (ppm)		125				
Manganese* (ppm)		9				
Copper* (ppm)		1.02				
Zinc* (ppm)		5.10				
Aluminum* (ppm)		522				
SAR		2.88				
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location	INLAND BAYS	NORTH	NORTH	NORTH		
Sample Identification		BURTON A	BURTON B	BURTON C		
Lab Number		1336-1	1337-1	1338-1		
Total Exchange Capacity (ME/100 g)		3.84	4.41	3.81		
pH	Buffer (SMP/Sikora)	7.4	7.5	7.5		
	H_2O (1:1)	6.5	6.8	6.7		
Organic Matter (humus) %		1.26	1.15	1.31		
Estimated Nitrogen Release	lb/A	45	43	46		
ANIONS	SOLUBLE SULFUR* ppm	10	11	10		
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	769	1401	1255		
	ppm of P	168	306	274		
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	936	1176	986		
	ppm	468	588	493		
	MAGNESIUM* lb/A	156	172	152		
	ppm	78	86	76		
	POTASSIUM* lb/A	96	108	96		
	ppm	48	54	48		
	SODIUM* lb/A	114	128	108		
	ppm	57	64	54		
BASE SATURATION PERCENT						
Calcium	%	60.94	66.67	64.70		
Magnesium	%	16.93	16.25	16.62		
Potassium	%	3.21	3.14	3.23		
Sodium	%	6.45	6.31	6.16		
Other Bases	%	4.90	4.60	4.70		
Hydrogen	%	7.50	3.00	4.50		
EXTRACTABLE MINORS						
Boron* (ppm)		0.43	0.40	0.39		
Iron* (ppm)		259	173	172		
Manganese* (ppm)		8	16	16		
Copper* (ppm)		1.56	2.03	1.73		
Zinc* (ppm)		6.47	10.13	9.13		
Aluminum* (ppm)		599	629	629		
SAR		3.11	2.66	2.59		
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location	INLAND BAYS		SOUTH	SOUTH	SOUTH	BURTON
Sample Identification			BURTON A	BURTON B	BURTON C	DRY
Lab Number			1339-1	1340-1	1341-1	1342-1
Total Exchange Capacity (ME/100 g)			5.55	4.53	5.63	4.67
pH	Buffer (SMP/Sikora)		7.5	7.4	7.5	7.5
	H_2O (1:1)		6.7	6.4	6.8	6.2
Organic Matter (humus) %			1.32	1.40	1.19	1.27
Estimated Nitrogen Release		lb/A	46	48	44	45
ANIONS	SOLUBLE SULFUR*	ppm	13	10	11	12
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1594	1438	1543	1021
		ppm of P	348	314	337	223
	BRAY II	lb/A P as P_2O_5				
		ppm of P				
	OLSEN	lb/A P as P_2O_5				
		ppm of P				
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1552	1132	1666	1170
		ppm	776	566	833	585
	MAGNESIUM*	lb/A	186	168	148	150
		ppm	93	84	74	75
	POTASSIUM*	lb/A	130	130	168	144
		ppm	65	65	84	72
	SODIUM*	lb/A	102	92	94	60
		ppm	51	46	47	30
BASE SATURATION PERCENT						
Calcium		%	69.91	62.47	73.98	62.63
Magnesium		%	13.96	15.45	10.95	13.38
Potassium		%	3.00	3.68	3.83	3.95
Sodium		%	4.00	4.42	3.63	2.79
Other Bases		%	4.70	5.00	4.60	5.20
Hydrogen		%	4.50	9.00	3.00	12.00
EXTRACTABLE MINORS						
Boron* (ppm)			0.33	0.40	0.53	0.37
Iron* (ppm)			242	253	297	252
Manganese* (ppm)			13	16	10	11
Copper* (ppm)			1.67	1.53	2.19	1.98
Zinc* (ppm)			8.83	8.30	24.86	10.54
Aluminum* (ppm)			698	713	675	714
SAR			1.45	1.83	1.56	
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location INLAND BAYS	HL-A	HL-B	HL-C	HL-D	HL-E
Sample Identification					
Lab Number	1343-1	1344-1	1345-1	1346-1	1347-1
Total Exchange Capacity (ME/100 g)	4.66	4.67	4.05	4.21	3.29
pH Buffer (SMP/Sikora)	7.5	7.5	7.5	7.5	7.5
pH H_2O (1:1)	6.6	6.3	6.6	6.7	6.4
Organic Matter (humus) %	1.25	1.38	1.34	1.44	1.21
Estimated Nitrogen Release lb/A	45	48	47	49	44
ANIONS: SOLUBLE SULFUR* ppm	13	13	12	12	11
PHOSPHORUS: MEHLICH III lb/A P as P_2O_5	1722	1731	1292	1154	1269
MEHLICH III ppm of P	376	378	282	252	277
BRAY II lb/A P as P_2O_5					
BRAY II ppm of P					
OLSEN lb/A P as P_2O_5					
OLSEN ppm of P					
EXCHANGEABLE CATIONS: CALCIUM* lb/A	1200	1130	1012	1034	770
CALCIUM* ppm	600	565	506	517	385
MAGNESIUM* lb/A	202	194	192	216	150
MAGNESIUM* ppm	101	97	96	108	75
POTASSIUM* lb/A	120	108	94	102	84
POTASSIUM* ppm	60	54	47	51	42
SODIUM* lb/A	74	78	76	96	78
SODIUM* ppm	37	39	38	48	39
BASE SATURATION PERCENT					
Calcium %	64.38	60.49	62.47	61.40	58.51
Magnesium %	18.06	17.31	19.75	21.38	19.00
Potassium %	3.30	2.96	2.98	3.11	3.27
Sodium %	3.45	3.63	4.08	4.96	5.15
Other Bases %	4.80	5.10	4.80	4.70	5.00
Hydrogen %	6.00	10.50	6.00	4.50	9.00
EXTRACTABLE MINORS					
Boron* (ppm)	0.37	0.37	0.35	0.36	0.32
Iron* (ppm)	207	196	179	168	243
Manganese* (ppm)	15	20	19	16	20
Copper* (ppm)	6.18	5.49	7.02	6.37	6.52
Zinc* (ppm)	15.60	13.21	12.45	12.70	12.34
Aluminum* (ppm)	846	905	829	839	833
SAR	1.40	1.01	1.21	1.70	1.70
OTHER TESTS: Soluble Salts (mmhos/cm)					
Chlorides (ppm)					

* Mehlich III Extractable

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location INLAND BAYS	HL-F	HL-G	HL-H	HL-I	HL-J
Sample Identification					
Lab Number	1348-1	1349-1	1350-1	1351-1	1352-1
Total Exchange Capacity (ME/100 g)	3.74	3.67	5.41	3.85	4.16
pH Buffer (SMP/Sikora)	7.4	7.5	7.4	7.4	7.4
pH H_2O (1:1)	6.4	6.6	6.4	6.1	6.2
Organic Matter (humus) %	1.32	1.36	1.53	1.80	1.78
Estimated Nitrogen Release lb/A	46	47	51	56	56
ANIONS: SOLUBLE SULFUR* ppm	12	9	12	11	12
PHOSPHORUS: MEHLICH III lb/A P as P_2O_5	1186	994	1663	769	710
PHOSPHORUS: MEHLICH III ppm of P	259	217	363	168	155
PHOSPHORUS: BRAY II lb/A P as P_2O_5					
PHOSPHORUS: BRAY II ppm of P					
PHOSPHORUS: OLSEN lb/A P as P_2O_5					
PHOSPHORUS: OLSEN ppm of P					
EXCHANGEABLE CATIONS: CALCIUM* lb/A	912	906	1372	888	924
CALCIUM* ppm	456	453	686	444	462
MAGNESIUM* lb/A	152	160	206	160	202
MAGNESIUM* ppm	76	80	103	80	101
POTASSIUM* lb/A	86	98	118	94	152
POTASSIUM* ppm	43	49	59	47	76
SODIUM* lb/A	88	98	96	56	44
SODIUM* ppm	44	49	48	28	22
BASE SATURATION PERCENT					
Calcium %	60.96	61.72	63.40	57.66	55.53
Magnesium %	16.93	18.17	15.87	17.32	20.23
Potassium %	2.95	3.42	2.80	3.13	4.68
Sodium %	5.12	5.80	3.86	3.16	2.30
Other Bases %	5.00	4.80	5.00	5.20	5.20
Hydrogen %	9.00	6.00	9.00	13.50	12.00
EXTRACTABLE MINORS					
Boron* (ppm)	0.37	0.38	0.41	0.36	0.37
Iron* (ppm)	207	236	250	193	104
Manganese* (ppm)	11	10	14	8	31
Copper* (ppm)	6.99	4.47	5.84	4.22	2.79
Zinc* (ppm)	12.95	10.01	15.53	6.72	4.69
Aluminum* (ppm)	835	707	775	739	1118
SAR	2.02	2.33	1.92	0.68	0.32
OTHER TESTS: Soluble Salts (mmhos/cm)					
OTHER TESTS: Chlorides (ppm)					

* Mehlich III Extractable

lb/A

46110-18

BROOKSIDE LABORATORIES, INC.

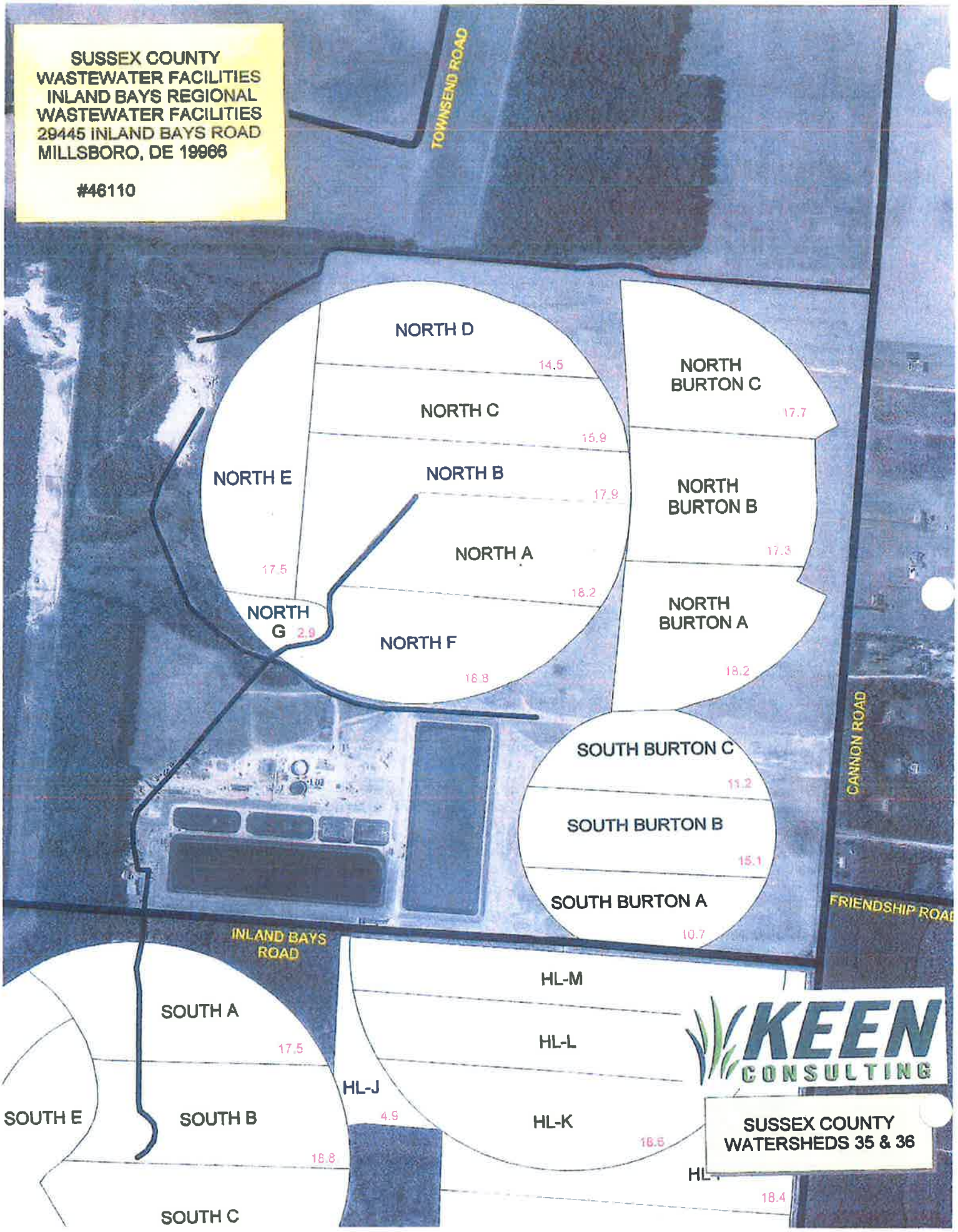
SOIL AUDIT AND INVENTORY REPORT

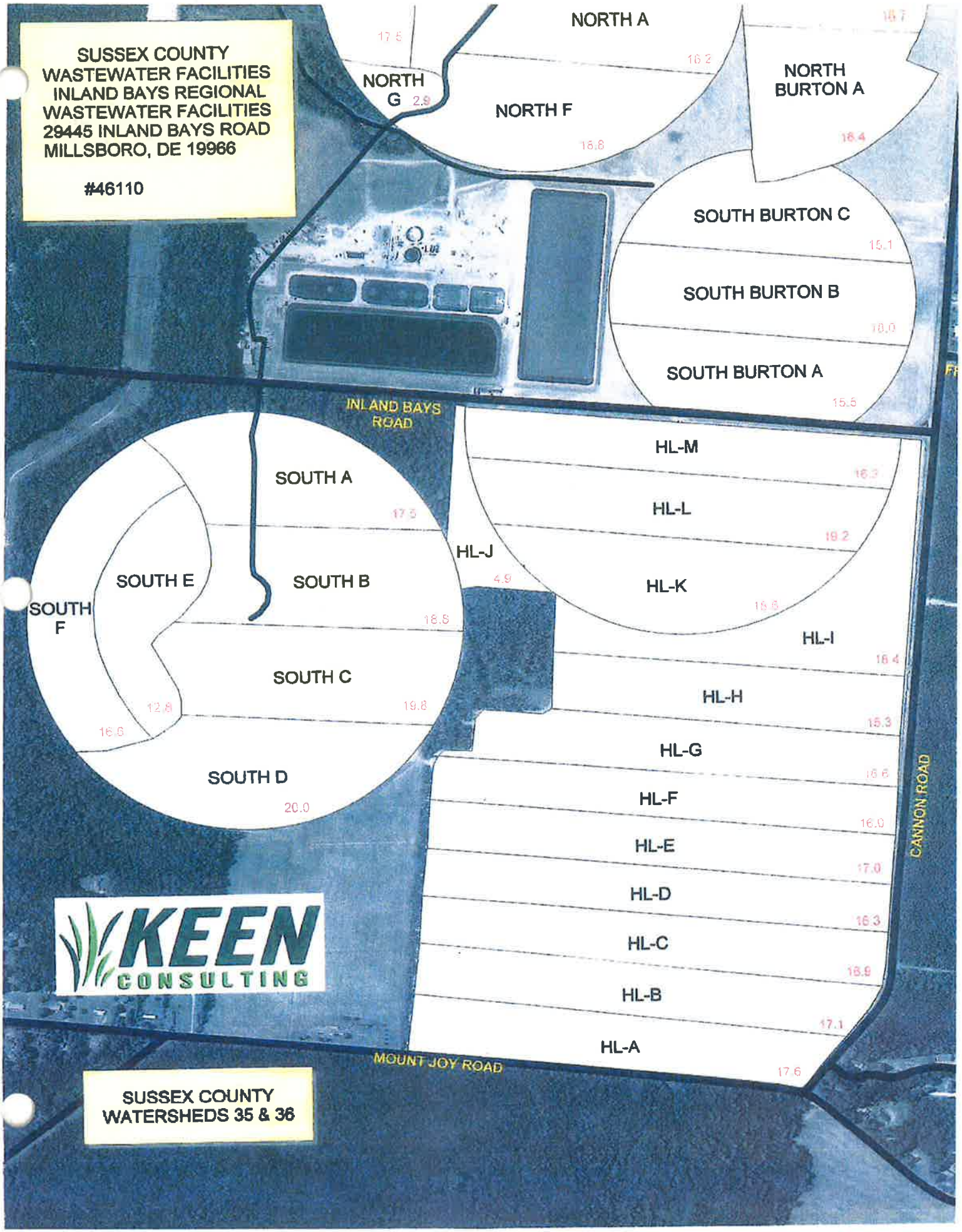
Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/19/2014

Sample Location	INLAND BAYS	HL-K	HL-L	HL-M		
Sample Identification						
Lab Number		1353-1	1354-1	1355-1		
Total Exchange Capacity (ME/100 g)		3.96	5.12	7.11		
pH	Buffer (SMP/Sikora)	7.5	7.4	7.4		
	H_2O (1:1)	6.4	6.4	6.4		
Organic Matter (humus) %		1.49	2.01	2.42		
Estimated Nitrogen Release	lb/A	50	60	68		
ANIONS	SOLUBLE SULFUR* ppm	9	11	10		
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	994	893	1008		
	ppm of P	217	195	220		
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	912	1250	1922		
	ppm	456	625	961		
	MAGNESIUM* lb/A	186	206	232		
	ppm	93	103	116		
	POTASSIUM* lb/A	106	144	108		
	ppm	53	72	54		
	SODIUM* lb/A	100	108	96		
	ppm	50	54	48		
BASE SATURATION PERCENT						
Calcium	%	57.58	61.04	67.58		
Magnesium	%	19.57	16.76	13.60		
Potassium	%	3.43	3.61	1.95		
Sodium	%	5.49	4.59	2.94		
Other Bases	%	5.00	5.00	5.00		
Hydrogen	%	9.00	9.00	9.00		
EXTRACTABLE MINORS						
Boron* (ppm)		0.34	0.37	0.43		
Iron* (ppm)		237	258	255		
Manganese* (ppm)		9	15	14		
Copper* (ppm)		3.36	2.93	2.32		
Zinc* (ppm)		6.17	6.22	6.81		
Aluminum* (ppm)		677	738	669		
SAR		1.78	1.56	1.17		
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
TOWNSEND ROAD
NORTH D
14.5
NORTH C
15.9
NORTH E
NORTH B
17.9
NORTH A
17.5
18.2
NORTH G
2.9
NORTH F
18.8
NORTH BURTON C
17.7
NORTH BURTON B
17.3
NORTH BURTON A
18.2
SOUTH BURTON C
11.2
SOUTH BURTON B
15.1
SOUTH BURTON A
10.7
CANNON ROAD
FRIENDSHIP ROAD
INLAND BAYS ROAD
HL-M
HL-L
HL-J
4.9
HL-K
18.6
HL-I
18.4
SOUTH A
17.5
SOUTH E
SOUTH B
18.8
SOUTH C
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
NORTH A
NORTH G
NORTH F
NORTH BURTON A
SOUTH BURTON C
SOUTH BURTON B
SOUTH BURTON A
INLAND BAYS ROAD
SOUTH A
SOUTH E
SOUTH B
SOUTH F
SOUTH C
SOUTH D
HL-J
HL-M
HL-L
HL-K
HL-I
HL-H
HL-G
HL-F
HL-E
HL-D
HL-C
HL-B
HL-A
CANNON ROAD
MOUNT JOY ROAD
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36

lb/A

46110-16

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location INLAND BAYS			HL-F	HL-G	HL-H	HL-I	HL-J
Sample Identification							
Lab Number			0851-1	0852-1	0853-1	0854-1	0855-1
Total Exchange Capacity (ME/100 g)			4.32	2.95	3.69	3.38	3.15
pH	Buffer (SMP/Sikora)		7.2	7.3	7.1	7.3	6.9
	H_2O (1:1)		5.9	6.3	5.9	6.1	5.4
Organic Matter (humus) %			0.80	0.82	0.74	1.06	1.36
Estimated Nitrogen Release		lb/A	32	33	30	41	47
ANIONS	SOLUBLE SULFUR*	ppm	10	9	10	10	14
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1008	811	1040	669	719
		ppm of P	220	177	227	146	157
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1010	674	774	768	468
		ppm	505	337	387	384	234
	MAGNESIUM*	lb/A	132	128	154	138	118
		ppm	66	64	77	69	59
	POTASSIUM*	lb/A	68	104	92	88	114
		ppm	34	52	46	44	57
	SODIUM*	lb/A	62	62	58	66	44
		ppm	31	31	29	33	22
BASE SATURATION PERCENT							
Calcium		%	58.45	57.12	52.44	56.80	37.14
Magnesium		%	12.73	18.08	17.39	17.01	15.61
Potassium		%	2.02	4.52	3.20	3.34	4.64
Sodium		%	3.12	4.57	3.42	4.24	3.04
Other Bases		%	5.60	5.10	5.60	5.20	6.60
Hydrogen		%	18.00	10.50	18.00	13.50	33.00
EXTRACTABLE MINORS							
Boron* (ppm)			< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Iron* (ppm)			199	216	215	179	116
Manganese* (ppm)			12	10	10	10	28
Copper* (ppm)			5.94	4.02	3.88	2.90	2.35
Zinc* (ppm)			10.42	7.98	7.95	6.99	3.28
Aluminum* (ppm)			787	733	757	755	1206
Nitrogen (%)			0.06	0.06	< 0.05	< 0.05	0.08
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	Total P (ppm)		346	280	332	242	406

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-16

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location INLAND BAYS			HL-A	HL-B	HL-C	HL-D	HL-E
Sample Identification							
Lab Number			0846-1	0847-1	0848-1	0849-1	0850-1
Total Exchange Capacity (ME/100 g)			5.37	4.50	4.16	3.98	3.78
pH	Buffer (SMP/Sikora)		7.3	7.0	7.3	7.1	7.2
	H_2O (1:1)		6.2	6.0	6.3	6.0	6.3
Organic Matter (humus) %			1.18	1.29	1.35	1.31	1.20
Estimated Nitrogen Release		lb/A	44	46	47	46	44
ANIONS	SOLUBLE SULFUR*	ppm	11	11	12	11	10
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1708	1543	1191	1021	1150
		ppm of P	373	337	260	223	251
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1370	1030	992	872	892
		ppm	685	515	496	436	446
	MAGNESIUM*	lb/A	188	180	180	178	172
		ppm	94	90	90	89	86
	POTASSIUM*	lb/A	92	88	106	82	84
		ppm	46	44	53	41	42
	SODIUM*	lb/A	56	66	66	64	62
		ppm	28	33	33	32	31
BASE SATURATION PERCENT							
Calcium		%	63.78	57.22	59.62	54.77	58.99
Magnesium		%	14.59	16.67	18.03	18.63	18.96
Potassium		%	2.20	2.51	3.27	2.64	2.85
Sodium		%	2.27	3.19	3.45	3.50	3.57
Other Bases		%	5.20	5.40	5.10	5.40	5.10
Hydrogen		%	12.00	15.00	10.50	15.00	10.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.80	0.64	0.54	0.47	0.38
Iron* (ppm)			188	187	192	171	221
Manganese* (ppm)			18	26	27	22	23
Copper* (ppm)			5.94	5.57	5.42	6.84	5.92
Zinc* (ppm)			13.85	13.20	10.80	10.00	11.15
Aluminum* (ppm)			996	937	991	968	953
Nitrogen (%)			0.06	0.07	0.07	0.07	0.06
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	Total P (ppm)		493	527	429	395	408

* Mehlich III Extractable

lb/A

46110-16

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location		INLAND BAYS	SOUTH	SOUTH	SOUTH		
Sample Identification			BURTON A	BURTON B	BURTON C		
Lab Number			0875-1	0876-1	0877-1		
Total Exchange Capacity (ME/100 g)			5.78	4.16	4.18		
pH	Buffer (SMP/Sikora)		7.0	7.1	7.2		
	H_2O (1:1)		6.2	5.9	6.1		
Organic Matter (humus) %			1.42	3.63	5.13		
Estimated Nitrogen Release		lb/A	48	86	101		
ANIONS	SOLUBLE SULFUR*	ppm	10	10	10		
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1969	1420	1227		
		ppm of P	430	310	268		
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1522	926	1024		
		ppm	761	463	512		
	MAGNESIUM*	lb/A	146	124	110		
		ppm	73	62	55		
	POTASSIUM*	lb/A	154	134	158		
		ppm	77	67	79		
	SODIUM*	lb/A	80	82	82		
		ppm	40	41	41		
BASE SATURATION PERCENT							
Calcium		%	65.83	55.65	61.24		
Magnesium		%	10.52	12.42	10.96		
Potassium		%	3.42	4.13	4.85		
Sodium		%	3.01	4.29	4.26		
Other Bases		%	5.20	5.60	5.20		
Hydrogen		%	12.00	18.00	13.50		
EXTRACTABLE MINORS							
Boron* (ppm)			0.21	< 0.20	< 0.20		
Iron* (ppm)			214	292	280		
Manganese* (ppm)			20	18	10		
Copper* (ppm)			1.56	1.42	1.41		
Zinc* (ppm)			10.74	6.68	7.88		
Aluminum* (ppm)			725	759	686		
SAR			1.32	1.60	1.74		
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-16

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location	INLAND BAYS	NORTH	NORTH	NORTH		
Sample Identification		BURTON A	BURTON B	BURTON C		
Lab Number		0872-1	0873-1	0874-1		
Total Exchange Capacity (ME/100 g)		3.64	4.07	4.21		
pH	Buffer (SMP/Sikora)	7.1	7.2	7.3		
	H_2O (1:1)	6.4	6.3	6.6		
Organic Matter (humus) %		1.66	1.22	1.43		
Estimated Nitrogen Release	lb/A	53	44	49		
ANIONS	SOLUBLE SULFUR* ppm	9	9	9		
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	834	1154	1296		
	ppm of P	182	252	283		
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	868	976	1094		
	ppm	434	488	547		
	MAGNESIUM* lb/A	144	148	150		
	ppm	72	74	75		
	POTASSIUM* lb/A	110	108	144		
	ppm	55	54	72		
	SODIUM* lb/A	102	112	98		
	ppm	51	56	49		
BASE SATURATION PERCENT						
Calcium	%	59.62	59.95	64.96		
Magnesium	%	16.48	15.15	14.85		
Potassium	%	3.87	3.40	4.39		
Sodium	%	6.09	5.98	5.06		
Other Bases	%	5.00	5.10	4.80		
Hydrogen	%	9.00	10.50	6.00		
EXTRACTABLE MINORS						
Boron* (ppm)		0.22	0.28	0.28		
Iron* (ppm)		258	159	197		
Manganese* (ppm)		14	17	23		
Copper* (ppm)		1.43	1.39	1.58		
Zinc* (ppm)		5.41	7.95	7.50		
Aluminum* (ppm)		703	628	725		
SAR		3.08	2.48	2.14		
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

46110-16

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location		INLAND BAYS	SOUTH F				
Sample Identification							
Lab Number			0871-1				
Total Exchange Capacity (ME/100 g)			3.40				
pH	Buffer (SMP/Sikora)		7.0				
	H_2O (1:1)		6.0				
Organic Matter (humus) %			1.14				
Estimated Nitrogen Release		lb/A	43				
ANIONS	SOLUBLE SULFUR*	ppm	8				
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	527				
		ppm of P	115				
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	670				
		ppm	335				
	MAGNESIUM*	lb/A	152				
		ppm	76				
	POTASSIUM*	lb/A	94				
		ppm	47				
	SODIUM*	lb/A	126				
		ppm	63				
BASE SATURATION PERCENT							
Calcium	%		49.26				
Magnesium	%		18.63				
Potassium	%		3.54				
Sodium	%		8.06				
Other Bases	%		5.40				
Hydrogen	%		15.00				
EXTRACTABLE MINORS							
Boron* (ppm)			0.25				
Iron* (ppm)			123				
Manganese* (ppm)			11				
Copper* (ppm)			0.71				
Zinc* (ppm)			5.16				
Aluminum* (ppm)			652				
SAR			3.00				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-16

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location INLAND BAYS		SOUTH A	SOUTH B	SOUTH C	SOUTH D	SOUTH E
Sample Identification						
Lab Number		0866-1	0867-1	0868-1	0869-1	0870-1
Total Exchange Capacity (ME/100 g)		3.60	3.98	3.30	3.42	3.28
pH	Buffer (SMP/Sikora)	7.3	7.1	7.3	7.2	7.3
	H_2O (1:1)	6.3	5.9	6.3	6.1	6.3
Organic Matter (humus) %		2.01	2.01	2.23	1.63	1.33
Estimated Nitrogen Release	lb/A	60	60	65	53	47
ANIONS: SOLUBLE SULFUR*	ppm	10	12	10	9	9
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	394	389	366	646	701
	ppm of P	86	85	80	141	153
BRAY II	lb/A P as P_2O_5					
	ppm of P					
OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	808	756	698	708	694
	ppm	404	378	349	354	347
MAGNESIUM*	lb/A	142	152	136	152	146
	ppm	71	76	68	76	73
POTASSIUM*	lb/A	148	184	146	114	108
	ppm	74	92	73	57	54
SODIUM*	lb/A	110	128	132	106	132
	ppm	55	64	66	53	66
BASE SATURATION PERCENT						
Calcium	%	56.11	47.49	52.88	51.75	52.90
Magnesium	%	16.44	15.91	17.17	18.52	18.55
Potassium	%	5.27	5.93	5.67	4.27	4.22
Sodium	%	6.64	6.99	8.70	6.74	8.75
Other Bases	%	5.10	5.60	5.10	5.20	5.10
Hydrogen	%	10.50	18.00	10.50	13.50	10.50
EXTRACTABLE MINORS						
Boron* (ppm)		0.36	0.33	0.32	0.31	0.28
Iron* (ppm)		193	164	227	205	136
Manganese* (ppm)		20	22	17	20	11
Copper* (ppm)		1.28	1.11	1.01	1.22	0.57
Zinc* (ppm)		3.00	3.17	3.01	4.18	3.52
Aluminum* (ppm)		910	957	842	759	653
SAR		2.48	3.17	4.07	2.64	3.72
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-16

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location		INLAND BAYS	NORTH F	NORTH G			
Sample Identification							
Lab Number			0864-1	0865-1			
Total Exchange Capacity (ME/100 g)			3.78	4.45			
pH	Buffer (SMP/Sikora)		7.3	7.3			
	H_2O (1:1)		6.3	6.7			
Organic Matter (humus) %			1.19	1.10			
Estimated Nitrogen Release		lb/A	44	42			
ANIONS	SOLUBLE SULFUR*	ppm	9	14			
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	481	234			
		ppm of P	105	51			
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	848	1120			
		ppm	424	560			
	MAGNESIUM*	lb/A	154	196			
		ppm	77	98			
	POTASSIUM*	lb/A	140	94			
		ppm	70	47			
	SODIUM*	lb/A	114	138			
		ppm	57	69			
BASE SATURATION PERCENT							
	Calcium	%	56.08	62.92			
	Magnesium	%	16.98	18.35			
	Potassium	%	4.75	2.71			
	Sodium	%	6.56	6.74			
	Other Bases	%	5.10	4.70			
	Hydrogen	%	10.50	4.50			
EXTRACTABLE MINORS							
	Boron* (ppm)		0.24	0.40			
	Iron* (ppm)		155	252			
	Manganese* (ppm)		14	6			
	Copper* (ppm)		0.89	1.04			
	Zinc* (ppm)		3.06	1.96			
	Aluminum* (ppm)		654	538			
	SAR		2.74	2.71			
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-16

BROOKSIDE LABORATORIES, INC.

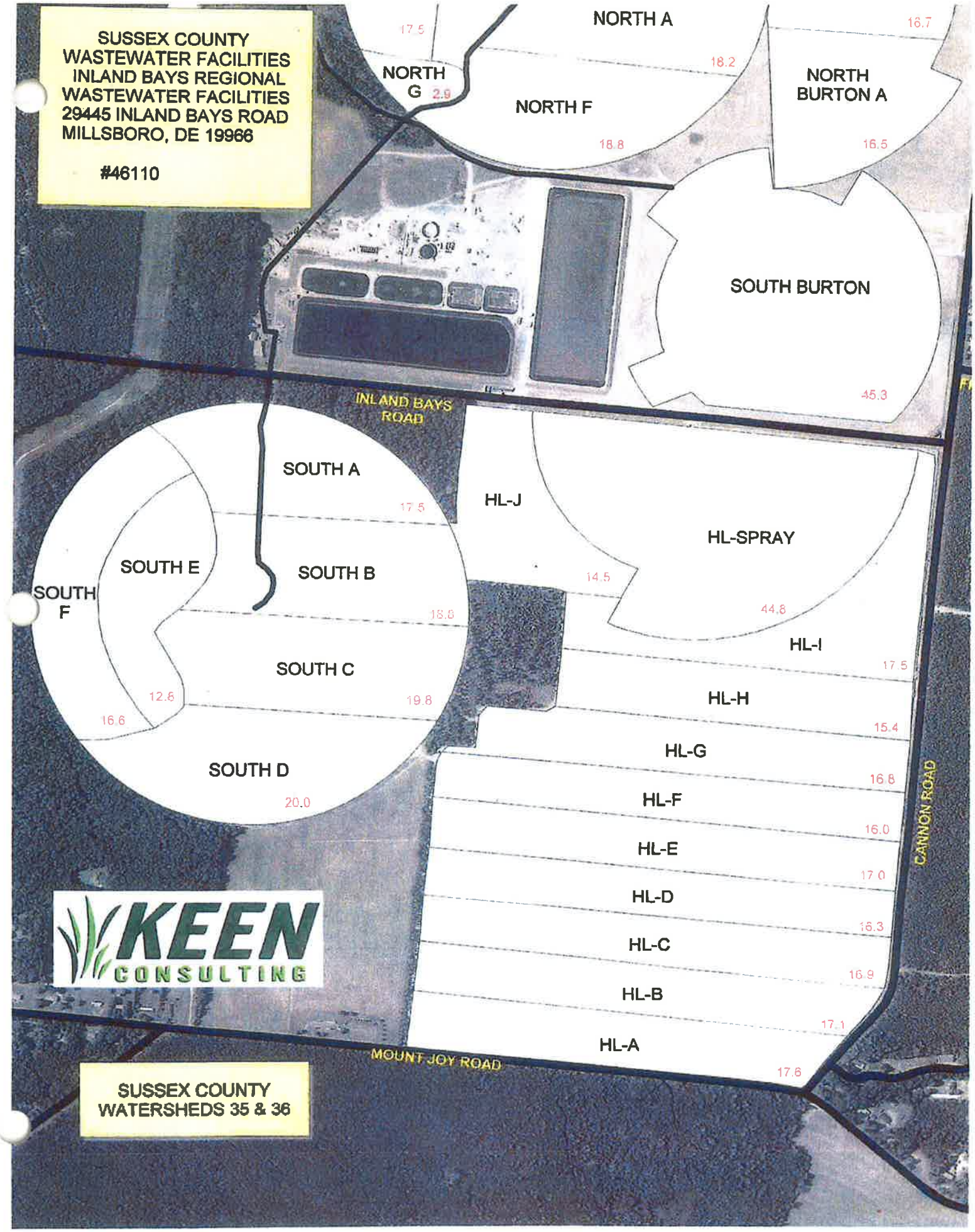
SOIL AUDIT AND INVENTORY REPORT

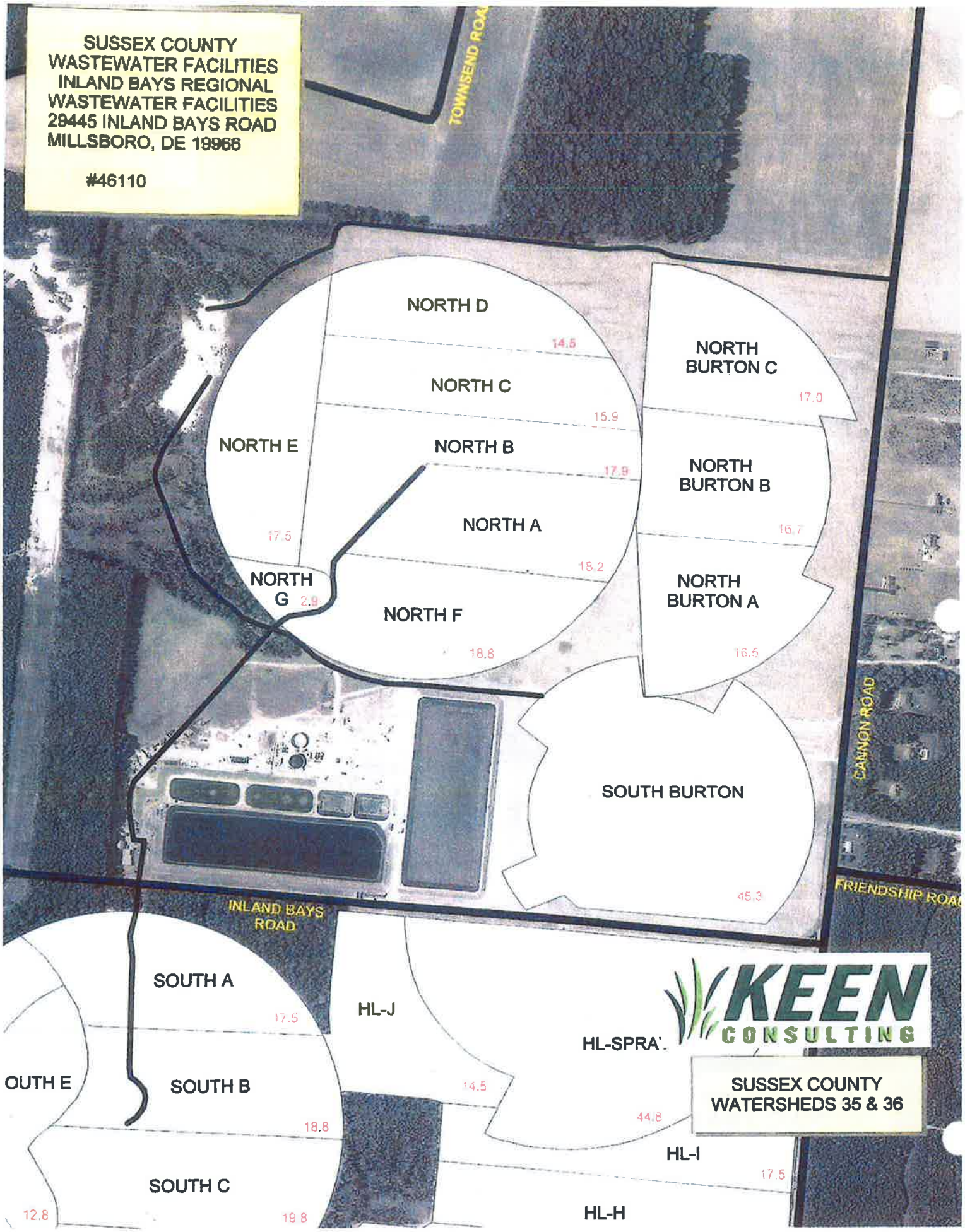
Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 11/05/2013

Sample Location INLAND BAYS			NORTH A	NORTH B	NORTH C	NORTH D	NORTH E
Sample Identification							
Lab Number			0859-1	0860-1	0861-1	0862-1	0863-1
Total Exchange Capacity (ME/100 g)			4.55	3.93	4.07	4.37	3.99
pH		Buffer (SMP/Sikora)	7.2	7.3	7.2	7.3	7.1
		H_2O (1:1)	6.0	6.6	6.1	6.3	6.0
Organic Matter (humus) %			1.28	1.18	0.72	0.83	1.06
Estimated Nitrogen Release		lb/A	46	44	29	33	41
ANIONS	SOLUBLE SULFUR*	ppm	12	10	11	10	12
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1553	1131	1205	1260	307
		ppm of P	339	247	263	275	67
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	978	958	880	1032	800
		ppm	489	479	440	516	400
	MAGNESIUM*	lb/A	152	152	148	156	164
		ppm	76	76	74	78	82
	POTASSIUM*	lb/A	174	158	138	124	164
		ppm	87	79	69	62	82
	SODIUM*	lb/A	146	126	146	138	130
		ppm	73	63	73	69	65
BASE SATURATION PERCENT							
Calcium		%	53.74	60.94	54.05	59.04	50.13
Magnesium		%	13.92	16.12	15.15	14.87	17.13
Potassium		%	4.90	5.15	4.35	3.64	5.27
Sodium		%	6.98	6.97	7.80	6.86	7.08
Other Bases		%	5.40	4.80	5.20	5.10	5.40
Hydrogen		%	15.00	6.00	13.50	10.50	15.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.34	0.30	0.24	0.28	0.33
Iron* (ppm)			190	177	169	152	212
Manganese* (ppm)			21	20	24	23	8
Copper* (ppm)			1.41	1.01	1.10	1.18	0.75
Zinc* (ppm)			6.58	4.70	4.69	7.08	2.82
Aluminum* (ppm)			823	690	763	709	830
SAR			3.56	3.18	4.19	3.34	3.13
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
NORTH A
17.5
16.7
18.2
NORTH G
2.9
NORTH F
NORTH BURTON A
18.8
16.5
SOUTH BURTON
45.3
INLAND BAYS ROAD
SOUTH A
17.5
HL-J
HL-SPRAY
SOUTH E
SOUTH B
SOUTH F
14.5
44.8
18.8
HL-I
SOUTH C
17.5
12.8
19.8
HL-H
16.6
15.4
HL-G
SOUTH D
16.8
20.0
HL-F
16.0
HL-E
17.0
HL-D
16.3
HL-C
16.9
HL-B
17.1
HL-A
MOUNT JOY ROAD
17.6
CANNON ROAD
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
TOWNSEND ROAD
NORTH D
14.5
NORTH C
15.9
NORTH E
NORTH B
17.9
NORTH A
17.5
18.2
NORTH G
2.9
NORTH F
18.8
NORTH BURTON C
17.0
NORTH BURTON B
16.7
NORTH BURTON A
16.5
SOUTH BURTON
45.3
CANNON ROAD
FRIENDSHIP ROAD
INLAND BAYS ROAD
SOUTH A
17.5
HL-J
HL-SPRAY
14.5
44.8
OUTH E
SOUTH B
18.8
HL-I
17.5
SOUTH C
12.8
19.8
HL-H
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207077
Location: HETTIE LINGO
Description: HL-J
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0257 mg/kg	4.025764
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4154 mg/kg	2.415458
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	6.103059 mg/kg	2.415458
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	10.90982 mg/kg	1.610305
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0515 mg/kg	8.051529
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0402 mg/kg	0.040258
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0515 mg/kg	8.051529
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0257 mg/kg	4.025764
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.090 mg/kg	14.09017
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	25.70853 mg/kg	2.415458

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.
Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207076
Location: HETTIE LINGO
Description: HL-I
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 3.9808 mg/kg	3.980891
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.3885 mg/kg	2.388535
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.251592 mg/kg	2.388535
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	16.01114 mg/kg	1.592356
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 7.9617 mg/kg	7.961783
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0398 mg/kg	0.039809
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 7.9617 mg/kg	7.961783
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 3.9808 mg/kg	3.980891
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 13.933 mg/kg	13.93312
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	26.91878 mg/kg	2.388535

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207075
Location: HETTIE LINGO
Description: HL-H
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0257 mg/kg	4.025764
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4154 mg/kg	2.415458
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	3.969404 mg/kg	2.415458
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	9.202898 mg/kg	1.610305
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0515 mg/kg	8.051529
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0402 mg/kg	0.040258
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0515 mg/kg	8.051529
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0257 mg/kg	4.025764
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.090 mg/kg	14.09017
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	18.73590 mg/kg	2.415458

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207074
Location: HETTIE LINGO
Description: HL-G
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0128 mg/kg	4.012841
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4077 mg/kg	2.407704
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.125200 mg/kg	2.407704
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	9.261637 mg/kg	1.605136
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0256 mg/kg	8.025682
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0401 mg/kg	0.040128
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0256 mg/kg	8.025682
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0128 mg/kg	4.012841
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.044 mg/kg	14.04494
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	21.38041 mg/kg	2.407704

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207073
Location: HETTIE LINGO
Description: HL-F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.1322 mg/kg	4.132231
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4793 mg/kg	2.479338
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.256198 mg/kg	2.479338
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	14.14049 mg/kg	1.652892
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.2644 mg/kg	8.264462
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0413 mg/kg	0.041322
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.2644 mg/kg	8.264462
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.1322 mg/kg	4.132231
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.462 mg/kg	14.46280
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	26.92561 mg/kg	2.479338

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207072
Location: HETTIE LINGO
Description: HL-E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6382 mg/kg	4.638218
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7829 mg/kg	2.782931
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.387755 mg/kg	2.782931
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	13.91465 mg/kg	1.855287
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.2764 mg/kg	9.276437
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0463 mg/kg	0.046373
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 9.2764 mg/kg	9.276437
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6382 mg/kg	4.638218
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 16.233 mg/kg	16.23376
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	23.50649 mg/kg	2.782931

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207071
Location: HETTIE LINGO
Description: HL-D
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.7348 mg/kg	4.734848
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8409 mg/kg	2.840909
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	6.571969 mg/kg	2.840909
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	12.33901 mg/kg	1.893939
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.4696 mg/kg	9.469696
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0473 mg/kg	0.047349
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 9.4696 mg/kg	9.469696
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.7348 mg/kg	4.734848
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 16.571 mg/kg	16.57196
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	29.49810 mg/kg	2.840909

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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New Knoxville, OH 45871
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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207070
Location: HETTIE LINGO
Description: HL-C
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.5126 mg/kg	4.512635
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7075 mg/kg	2.707581
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.422382 mg/kg	2.707581
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	12.38267 mg/kg	1.805054
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.0252 mg/kg	9.02527
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0451 mg/kg	0.045126
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 9.0252 mg/kg	9.02527
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.5126 mg/kg	4.512635
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 15.794 mg/kg	15.79422
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	24.61191 mg/kg	2.707581

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207069
Location: HETTIE LINGO
Description: HL-B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 3.6549 mg/kg	3.65497
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.1929 mg/kg	2.192982
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.868421 mg/kg	2.192982
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	13.47222 mg/kg	1.461988
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 7.3099 mg/kg	7.309941
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0365 mg/kg	0.03655
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 7.3099 mg/kg	7.309941
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 3.6549 mg/kg	3.65497
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 12.792 mg/kg	12.79239
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	25.30701 mg/kg	2.192982

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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New Knoxville, OH 45871
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Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207068
Location: HETTIE LINGO
Description: HL-A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.1736 mg/kg	4.173622
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.5041 mg/kg	2.504173
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.808013 mg/kg	2.504173
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	9.732888 mg/kg	1.669449
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.3472 mg/kg	8.347245
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0417 mg/kg	0.041736
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.3472 mg/kg	8.347245
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.1736 mg/kg	4.173622
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.607 mg/kg	14.60767
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	27.79632 mg/kg	2.504173

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

BROOKSIDE LABORATORIES, INC.

46110-12

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location HETTIE LINGO			HL-F	HL-G	HL-H	HL-I	HL-J
Sample Identification							
Lab Number			0710-1	0711-1	0712-1	0713-1	0714-1
Total Exchange Capacity (ME/100 g)			4.13	4.09	3.73	6.13	4.14
pH	Buffer (SMP/Sikora)		7.2	7.1	7.0	6.9	7.0
	H_2O (1:1)		6.0	6.0	5.6	5.5	5.4
Organic Matter (humus) %			1.42	1.34	1.44	1.52	1.80
Estimated Nitrogen Release		lb/A	48	47	49	50	56
ANIONS	SOLUBLE SULFUR*	ppm	14	12	14	16	17
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1076	962	1282	1869	1113
		ppm of P	235	210	280	408	243
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	976	972	708	1292	740
		ppm	488	486	354	646	370
	MAGNESIUM*	lb/A	138	134	108	90	88
		ppm	69	67	54	45	44
	POTASSIUM*	lb/A	118	122	130	148	142
		ppm	59	61	65	74	71
	SODIUM*	lb/A	54	50	48	48	48
		ppm	27	25	24	24	24
BASE SATURATION PERCENT							
Calcium		%	59.08	59.41	47.45	52.69	44.69
Magnesium		%	13.92	13.65	12.06	6.12	8.86
Potassium		%	3.66	3.82	4.47	3.10	4.40
Sodium		%	2.84	2.66	2.80	1.70	2.52
Other Bases		%	5.40	5.40	6.20	6.40	6.60
Hydrogen		%	15.00	15.00	27.00	30.00	33.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.46	0.38	0.41	0.35	0.34
Iron* (ppm)			221	225	239	262	162
Manganese* (ppm)			11	10	10	10	32
Copper* (ppm)			6.01	4.13	5.13	8.26	4.23
Zinc* (ppm)			12.66	10.28	11.66	16.78	8.31
Aluminum* (ppm)			910	862	908	1148	1340
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-12

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location HETTIE LINGO			HL-A	HL-B	HL-C	HL-D	HL-E
Sample Identification							
Lab Number			0705-1	0706-1	0707-1	0708-1	0709-1
Total Exchange Capacity (ME/100 g)			5.22	4.49	3.73	4.57	3.16
pH	Buffer (SMP/Sikora)		7.1	7.1	7.1	7.1	7.1
	H_2O (1:1)		5.8	5.8	5.8	5.8	5.8
Organic Matter (humus) %			1.35	1.30	1.09	1.34	1.26
Estimated Nitrogen Release		lb/A	47	46	42	47	45
ANIONS	SOLUBLE SULFUR*	ppm	14	15	13	14	12
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	2176	1598	1191	1104	1136
		ppm of P	475	349	260	241	248
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1238	820	820	1012	664
		ppm	619	410	410	506	332
	MAGNESIUM*	lb/A	100	102	98	128	102
		ppm	50	51	49	64	51
	POTASSIUM*	lb/A	156	134	122	140	104
		ppm	78	67	61	70	52
	SODIUM*	lb/A	50	294	52	48	44
		ppm	25	147	26	24	22
BASE SATURATION PERCENT							
Calcium		%	59.29	45.66	54.96	55.36	52.53
Magnesium		%	7.98	9.47	10.95	11.67	13.45
Potassium		%	3.83	3.83	4.19	3.93	4.22
Sodium		%	2.08	14.23	3.03	2.28	3.03
Other Bases		%	5.80	5.80	5.80	5.80	5.80
Hydrogen		%	21.00	21.00	21.00	21.00	21.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.36	0.37	0.28	0.34	0.39
Iron* (ppm)			232	226	190	201	215
Manganese* (ppm)			22	27	20	22	15
Copper* (ppm)			4.08	6.17	5.39	6.48	6.28
Zinc* (ppm)			17.06	10.39	12.42	15.94	11.81
Aluminum* (ppm)			1064	1104	942	1020	886
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

BROOKSIDE LABORATORIES, INC.

** SOIL ANALYSIS REPORT **

Sussex County Wastewater Facilities
P.O. Box 589
Georgetown, DE 19947

File Number: 46110
Date Received: 12/23/2011
Date Reported: 12/27/2011

Submitted By: Keen Consulting, Inc.

SAMPLE LOCATION: INLAND BAYS

NBR	FIELD	DESCRIPTION	SAR
839	NORTH A		4.01
840	NORTH B		3.69
841	NORTH C		4.30
842	NORTH D		3.85
843	NORTH E		3.98
844	NORTH F		3.89
845	NORTH G		3.25
846	SOUTH A		5.19
847	SOUTH B		4.88
848	SOUTH C		5.93
849	SOUTH D		5.02
850	SOUTH E		5.34
851	SOUTH F		5.14
852	NORTH	BURTON A	2.46
853	NORTH	BURTON B	2.41
854	NORTH	BURTON C	2.44

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1207067
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	NORTH
Date Collected:		Sub Description:	BURTON C
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7726 mg/kg	2.772643
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.759704 mg/kg	1.848428
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.2421 mg/kg	9.242144
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6210 mg/kg	4.621072
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	23.25323 mg/kg	2.772643

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207066
Location: INLAND BAYS
Description: NORTH
Sub Description: BURTON B

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4509 mg/kg	2.45098
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.942810 mg/kg	1.633986
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.1699 mg/kg	8.169934
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0849 mg/kg	4.084967
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	23.11274 mg/kg	2.45098

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207065
Location: INLAND BAYS
Description: NORTH
Sub Description: BURTON A

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 1.9710 mg/kg	1.97109
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	5.006570 mg/kg	1.31406
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 6.5703 mg/kg	6.570302
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 3.2851 mg/kg	3.285151
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	25.44678 mg/kg	1.97109

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location	INLAND BAYS		NORTH	NORTH	NORTH		
Sample Identification			BURTON A	BURTON B	BURTON C		
Lab Number			0702-1	0703-1	0704-1		
Total Exchange Capacity (ME/100 g)			4.77	5.44	5.00		
pH	Buffer (SMP/Sikora)		7.2	7.3	7.3		
	H_2O (1:1)		6.4	6.5	6.5		
Organic Matter (humus) %			1.45	1.12	1.19		
Estimated Nitrogen Release		lb/A	49	42	44		
ANIONS	SOLUBLE SULFUR*	ppm	11	11	12		
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1081	1621	1548		
		ppm of P	236	354	338		
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1240	1448	1328		
		ppm	620	724	664		
	MAGNESIUM*	lb/A	134	168	144		
		ppm	67	84	72		
	POTASSIUM*	lb/A	158	162	182		
		ppm	79	81	91		
	SODIUM*	lb/A	110	108	106		
		ppm	55	54	53		
BASE SATURATION PERCENT							
Calcium		%	64.99	66.54	66.40		
Magnesium		%	11.71	12.87	12.00		
Potassium		%	4.25	3.82	4.67		
Sodium		%	5.01	4.32	4.61		
Other Bases		%	5.00	4.90	4.90		
Hydrogen		%	9.00	7.50	7.50		
EXTRACTABLE MINORS							
Boron* (ppm)			0.40	0.45	0.48		
Iron* (ppm)			194	167	171		
Manganese* (ppm)			12	16	17		
Copper* (ppm)			1.48	1.94	1.86		
Zinc* (ppm)			7.69	11.82	11.03		
Aluminum* (ppm)			696	741	793		
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207064
Location: INLAND BAYS
Description: SOUTH F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7272 mg/kg	2.727272
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	1.899999 mg/kg	1.818181
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.0909 mg/kg	9.090909
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.5454 mg/kg	4.545454
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	11.56363 mg/kg	2.727272

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1207063
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	SOUTH E
Date Collected:		Sub Description:	
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.1645 mg/kg	2.164502
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	2.034632 mg/kg	1.443001
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 7.2150 mg/kg	7.215007
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 3.6075 mg/kg	3.607503
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	10.72871 mg/kg	2.164502

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1207062
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	SOUTH D
Date Collected:		Sub Description:	
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.9126 mg/kg	2.912621
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.456310 mg/kg	1.941747
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.7087 mg/kg	9.708737
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.8543 mg/kg	4.854368
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	17.56310 mg/kg	2.912621

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207061
Location: INLAND BAYS
Description: SOUTH C
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8735 mg/kg	2.873563
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.530651 mg/kg	1.915708
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.5785 mg/kg	9.578543
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.7892 mg/kg	4.789272
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	18.10344 mg/kg	2.873563

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207060
Location: INLAND BAYS
Description: SOUTH B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7522 mg/kg	2.752293
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	6.146788 mg/kg	1.834862
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.1743 mg/kg	9.174311
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.5871 mg/kg	4.587155
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	18.60550 mg/kg	2.752293

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207059
Location: INLAND BAYS
Description: SOUTH A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.9761 mg/kg	2.97619
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	5.436507 mg/kg	1.984126
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.9206 mg/kg	9.920634
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.9603 mg/kg	4.960317
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	17.24206 mg/kg	2.97619

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location		INLAND BAYS	SOUTH F				
Sample Identification							
Lab Number			0701-1				
Total Exchange Capacity (ME/100 g)			4.36				
pH	Buffer (SMP/Sikora)		7.2				
	H_2O (1:1)		6.2				
Organic Matter (humus) %			1.55				
Estimated Nitrogen Release		lb/A	51				
ANIONS	SOLUBLE SULFUR*	ppm	9				
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	637				
		ppm of P	139				
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1000				
		ppm	500				
	MAGNESIUM*	lb/A	162				
		ppm	81				
	POTASSIUM*	lb/A	116				
		ppm	58				
	SODIUM*	lb/A	132				
		ppm	66				
BASE SATURATION PERCENT							
Calcium	%		57.34				
Magnesium	%		15.48				
Potassium	%		3.41				
Sodium	%		6.58				
Other Bases	%		5.20				
Hydrogen	%		12.00				
EXTRACTABLE MINORS							
Boron* (ppm)			0.36				
Iron* (ppm)			144				
Manganese* (ppm)			8				
Copper* (ppm)			0.80				
Zinc* (ppm)			5.08				
Aluminum* (ppm)			694				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location INLAND BAYS			SOUTH A	SOUTH B	SOUTH C	SOUTH D	SOUTH E
Sample Identification							
Lab Number			0696-1	0697-1	0698-1	0699-1	0700-1
Total Exchange Capacity (ME/100 g)			4.05	7.01	4.71	5.05	3.13
pH	Buffer (SMP/Sikora)		7.2	7.2	7.3	7.3	7.3
	H_2O (1:1)		6.5	6.4	6.6	6.4	6.5
Organic Matter (humus) %			1.67	1.86	1.57	1.28	1.12
Estimated Nitrogen Release		lb/A	53	57	51	46	42
ANIONS	SOLUBLE SULFUR*	ppm	12	15	15	12	9
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	316	417	618	856	614
		ppm of P	69	91	135	187	134
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	882	1814	1110	1268	692
		ppm	441	907	555	634	346
	MAGNESIUM*	lb/A	164	186	184	158	142
		ppm	82	93	92	79	71
	POTASSIUM*	lb/A	224	234	172	146	110
		ppm	112	117	86	73	55
	SODIUM*	lb/A	170	194	204	152	130
		ppm	85	97	102	76	65
BASE SATURATION PERCENT							
Calcium	%		54.44	64.69	58.92	62.77	55.27
Magnesium	%		16.87	11.06	16.28	13.04	18.90
Potassium	%		7.09	4.28	4.68	3.71	4.51
Sodium	%		9.13	6.02	9.42	6.54	9.03
Other Bases	%		4.90	5.00	4.80	5.00	4.90
Hydrogen	%		7.50	9.00	6.00	9.00	7.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.55	0.52	0.71	0.52	0.48
Iron* (ppm)			165	172	239	248	143
Manganese* (ppm)			29	22	17	15	11
Copper* (ppm)			1.50	1.49	1.52	1.51	0.80
Zinc* (ppm)			3.82	4.16	5.63	5.97	3.80
Aluminum* (ppm)			1093	1277	922	934	586
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207058
Location: INLAND BAYS
Description: NORTH G
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7881 mg/kg	2.788104
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.758364 mg/kg	1.858736
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.2936 mg/kg	9.29368
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6468 mg/kg	4.64684
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	14.66542 mg/kg	2.788104

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1207057
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	NORTH F
Date Collected:		Sub Description:	
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8142 mg/kg	2.814258
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	6.951219 mg/kg	1.876172
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	10.26266 mg/kg	9.380863
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6904 mg/kg	4.690431
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	19.73733 mg/kg	2.814258

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207056
Location: INLAND BAYS
Description: NORTH E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8957 mg/kg	2.895752
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	3.214285 mg/kg	1.930501
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.6525 mg/kg	9.652509
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.8262 mg/kg	4.826254
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	16.16795 mg/kg	2.895752

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207055
Location: INLAND BAYS
Description: NORTH D
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.9821 mg/kg	2.982107
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	3.727634 mg/kg	1.988071
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.9403 mg/kg	9.940357
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.9701 mg/kg	4.970178
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	20.49701 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207054
Location: INLAND BAYS
Description: NORTH C
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.9880 mg/kg	2.988047
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.362549 mg/kg	1.992031
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.9601 mg/kg	9.960159
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.9800 mg/kg	4.980079
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	23.17729 mg/kg	2.988047

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207053
Location: INLAND BAYS
Description: NORTH B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8142 mg/kg	2.814258
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.033771 mg/kg	1.876172
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.3808 mg/kg	9.380863
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6904 mg/kg	4.690431
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	20.75984 mg/kg	2.814258

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207052
Location: INLAND BAYS
Description: NORTH A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8195 mg/kg	2.819548
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	5.093984 mg/kg	1.879699
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.3984 mg/kg	9.398496
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6992 mg/kg	4.699248
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	26.81390 mg/kg	2.819548

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location		INLAND BAYS	NORTH F	NORTH G			
Sample Identification							
Lab Number			0694-1	0695-1			
Total Exchange Capacity (ME/100 g)			5.00	5.23			
pH	Buffer (SMP/Sikora)		7.3	7.5			
	H_2O (1:1)		6.7	7.0			
Organic Matter (humus) %			1.82	1.61			
Estimated Nitrogen Release		lb/A	56	52			
ANIONS	SOLUBLE SULFUR*	ppm	10	11			
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	600	330			
		ppm of P	131	72			
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1224	1364			
		ppm	612	682			
	MAGNESIUM*	lb/A	232	238			
		ppm	116	119			
	POTASSIUM*	lb/A	166	208			
		ppm	83	104			
	SODIUM*	lb/A	138	152			
		ppm	69	76			
BASE SATURATION PERCENT							
Calcium		%	61.20	65.20			
Magnesium		%	19.33	18.96			
Potassium		%	4.26	5.10			
Sodium		%	6.00	6.32			
Other Bases		%	4.70	4.40			
Hydrogen		%	4.50	0.00			
EXTRACTABLE MINORS							
Boron* (ppm)			0.62	0.76			
Iron* (ppm)			190	232			
Manganese* (ppm)			11	8			
Copper* (ppm)			1.42	1.33			
Zinc* (ppm)			5.04	3.39			
Aluminum* (ppm)			754	667			
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

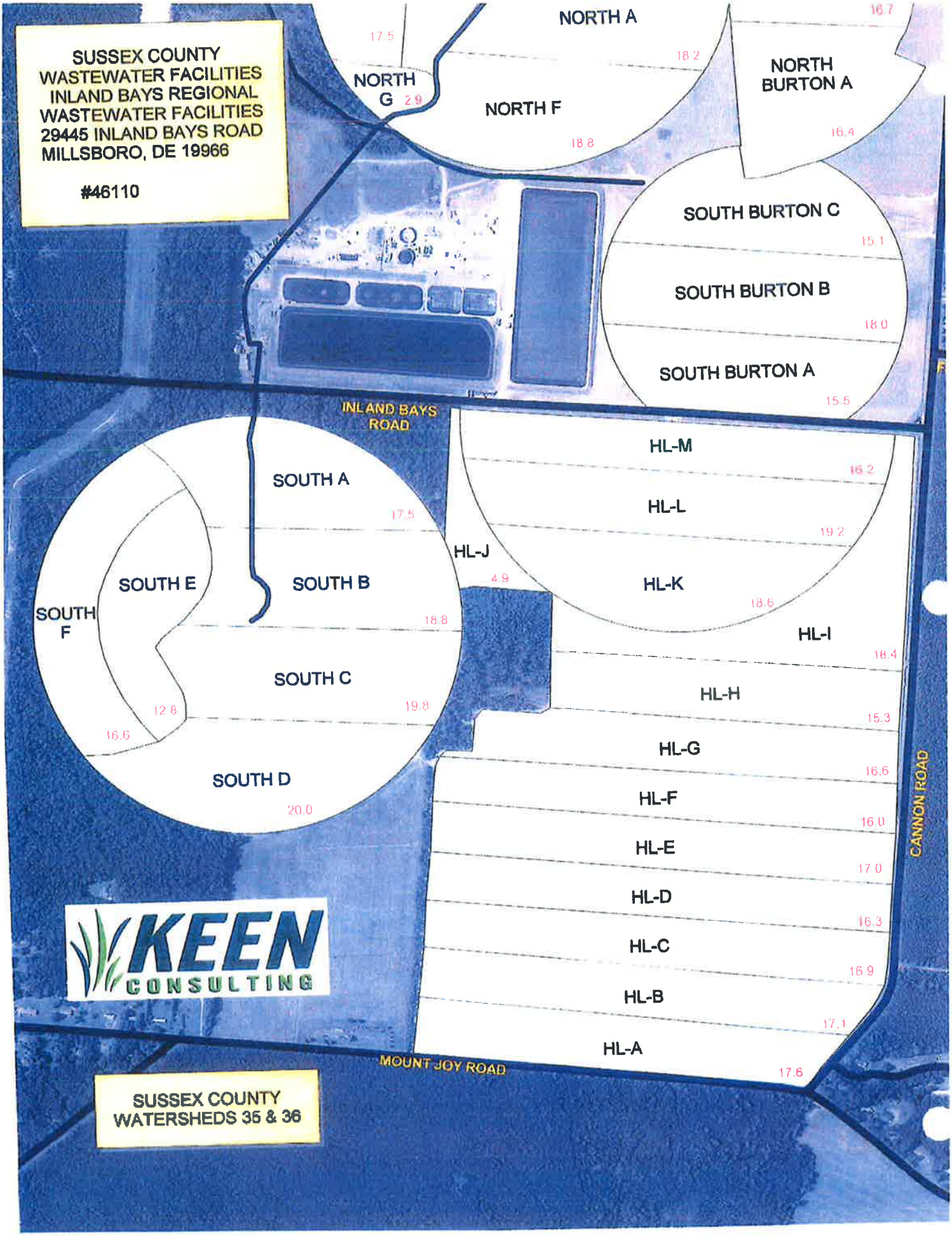
SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location INLAND BAYS			NORTH A	NORTH B	NORTH C	NORTH D	NORTH E
Sample Identification							
Lab Number			0689-1	0690-1	0691-1	0692-1	0693-1
Total Exchange Capacity (ME/100 g)			5.62	5.20	5.47	5.65	6.03
pH	Buffer (SMP/Sikora)		7.2	7.3	7.3	7.4	7.3
	H_2O (1:1)		6.5	6.6	6.7	6.7	6.5
Organic Matter (humus) %			1.49	1.32	1.29	1.24	1.68
Estimated Nitrogen Release		lb/A	50	46	46	45	54
ANIONS	SOLUBLE SULFUR*	ppm	13	13	11	11	15
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1974	1521	1466	1566	421
		ppm of P	431	332	320	342	92
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1360	1290	1410	1462	1566
		ppm	680	645	705	731	783
	MAGNESIUM*	lb/A	214	198	218	224	178
		ppm	107	99	109	112	89
	POTASSIUM*	lb/A	232	174	160	182	186
		ppm	116	87	80	91	93
	SODIUM*	lb/A	154	168	152	144	178
		ppm	77	84	76	72	89
BASE SATURATION PERCENT							
Calcium		%	60.50	62.02	64.44	64.69	64.93
Magnesium		%	15.87	15.87	16.61	16.52	12.30
Potassium		%	5.29	4.29	3.75	4.13	3.95
Sodium		%	5.96	7.02	6.04	5.54	6.42
Other Bases		%	4.90	4.80	4.70	4.70	4.90
Hydrogen		%	7.50	6.00	4.50	4.50	7.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.53	0.58	0.65	0.59	0.57
Iron* (ppm)			185	183	177	164	217
Manganese* (ppm)			21	21	27	23	9
Copper* (ppm)			1.71	1.35	1.40	1.60	1.10
Zinc* (ppm)			9.80	7.03	6.68	10.46	3.89
Aluminum* (ppm)			973	859	886	790	938
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
NORTH A
17.5
18.2
16.7
NORTH G
2.9
NORTH F
18.8
NORTH BURTON A
16.4
SOUTH BURTON C
15.1
SOUTH BURTON B
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SOUTH BURTON A
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INLAND BAYS ROAD
SOUTH A
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SOUTH B
SOUTH F
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HL-J
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HL-D
16.3
HL-C
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HL-A
17.6
CANNON ROAD
MOUNT JOY ROAD
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS		HL-K	HL-L	HL-M		
Sample Identification						
Lab Number		0407-1	0408-1	0409-1		
Total Exchange Capacity (ME/100 g)		5.31	5.57	6.02		
pH	Buffer (SMP/Sikora)	7.1	7.1	6.9		
	H_2O (1:1)	6.0	5.5	5.8		
Organic Matter (humus) %		1.79	2.38	2.32		
Estimated Nitrogen Release	lb/A	56	68	66		
ANIONS: SOLUBLE SULFUR*	ppm	15	17	15		
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	902	714	792		
	ppm of P	197	156	173		
PHOSPHORUS: BRAY II	lb/A P as P_2O_5					
	ppm of P					
PHOSPHORUS: OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	1136	914	1274		
	ppm	568	457	637		
MAGNESIUM*	lb/A	206	176	186		
	ppm	103	88	93		
POTASSIUM*	lb/A	166	194	150		
	ppm	83	97	75		
SODIUM*	lb/A	144	128	118		
	ppm	72	64	59		
BASE SATURATION PERCENT						
Calcium	%	53.48	41.02	52.91		
Magnesium	%	16.16	13.17	12.87		
Potassium	%	4.01	4.47	3.19		
Sodium	%	5.90	5.00	4.26		
Other Bases	%	5.40	6.40	5.80		
Hydrogen	%	15.00	30.00	21.00		
EXTRACTABLE MINORS						
Boron* (ppm)		0.36	0.37	0.39		
Iron* (ppm)		242	250	269		
Manganese* (ppm)		11	13	12		
Copper* (ppm)		2.37	2.32	2.54		
Zinc* (ppm)		6.97	6.35	7.33		
Aluminum* (ppm)		912	896	846		
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS		HL-F	HL-G	HL-H	HL-I	HL-J
Sample Identification						
Lab Number		0402-1	0403-1	0404-1	0405-1	0406-1
Total Exchange Capacity (ME/100 g)		4.65	4.89	5.39	5.53	4.52
pH	Buffer (SMP/Sikora)	7.5	7.2	7.4	7.0	7.3
	H_2O (1:1)	6.1	6.2	5.9	5.8	5.6
Organic Matter (humus) %		1.36	1.32	1.51	2.29	1.53
Estimated Nitrogen Release	lb/A	47	46	50	66	51
ANIONS: SOLUBLE SULFUR*	ppm	13	15	15	15	19
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	1191	1195	1470	1273	1223
	ppm of P	260	261	321	278	267
BRAY II	lb/A P as P_2O_5					
	ppm of P					
OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	1036	1094	1104	1166	736
	ppm	518	547	552	583	368
MAGNESIUM*	lb/A	214	230	230	172	184
	ppm	107	115	115	86	92
POTASSIUM*	lb/A	120	150	144	190	178
	ppm	60	75	72	95	89
SODIUM*	lb/A	68	74	100	80	84
	ppm	34	37	50	40	42
BASE SATURATION PERCENT						
Calcium	%	55.70	55.93	51.21	52.71	40.71
Magnesium	%	19.18	19.60	17.78	12.96	16.96
Potassium	%	3.31	3.93	3.43	4.40	5.05
Sodium	%	3.18	3.29	4.03	3.14	4.04
Other Bases	%	5.20	5.20	5.60	5.80	6.20
Hydrogen	%	13.50	12.00	18.00	21.00	27.00
EXTRACTABLE MINORS						
Boron* (ppm)		0.34	0.35	0.37	0.30	0.28
Iron* (ppm)		231	296	300	244	158
Manganese* (ppm)		12	10	11	20	24
Copper* (ppm)		5.73	7.66	5.43	5.67	3.85
Zinc* (ppm)		13.10	14.76	14.91	11.00	4.62
Aluminum* (ppm)		840	906	947	1022	1386
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS		HL-A	HL-B	HL-C	HL-D	HL-E
Sample Identification						
Lab Number		0397-1	0398-1	0399-1	0400-1	0401-1
Total Exchange Capacity (ME/100 g)		4.24	6.07	4.56	5.27	4.44
pH	Buffer (SMP/Sikora)	7.3	7.4	7.3	7.5	7.3
	H_2O (1:1)	6.0	5.9	6.3	6.0	6.2
Organic Matter (humus) %		1.24	1.47	1.59	1.52	1.36
Estimated Nitrogen Release	lb/A	45	49	52	50	47
ANIONS: SOLUBLE SULFUR*	ppm	14	15	15	15	15
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	1626	1562	1030	1406	1246
	ppm of P	355	341	225	307	272
BRAY II	lb/A P as P_2O_5					
	ppm of P					
OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	932	1362	1054	1154	980
	ppm	466	681	527	577	490
MAGNESIUM*	lb/A	166	200	202	228	212
	ppm	83	100	101	114	106
POTASSIUM*	lb/A	154	164	164	160	138
	ppm	77	82	82	80	69
SODIUM*	lb/A	70	88	74	70	78
	ppm	35	44	37	35	39
BASE SATURATION PERCENT						
Calcium	%	54.95	56.10	57.79	54.74	55.18
Magnesium	%	16.31	13.73	18.46	18.03	19.89
Potassium	%	4.66	3.46	4.61	3.89	3.98
Sodium	%	3.59	3.15	3.53	2.89	3.82
Other Bases	%	5.40	5.60	5.10	5.40	5.20
Hydrogen	%	15.00	18.00	10.50	15.00	12.00
EXTRACTABLE MINORS						
Boron* (ppm)		0.28	0.31	0.32	0.35	0.30
Iron* (ppm)		211	201	159	227	218
Manganese* (ppm)		21	28	22	19	14
Copper* (ppm)		5.51	5.13	6.66	8.10	7.90
Zinc* (ppm)		13.67	14.00	12.11	18.06	17.71
Aluminum* (ppm)		917	1059	997	1005	901
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable

P.O. Box 456, 308 S. Main St.
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Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204069
Location: INLAND BAYS
Description: HL-M
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7037 mg/kg	3.703703
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.2222 mg/kg	2.222222
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	6.985185 mg/kg	2.222222
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	5.148148 mg/kg	1.481481
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.4074 mg/kg	7.407407
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0370 mg/kg	0.037037
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.4074 mg/kg	7.407407
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7037 mg/kg	3.703703
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 12.962 mg/kg	12.96296
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	19.46666 mg/kg	2.222222

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204068
Location: INLAND BAYS
Description: HL-L
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9308 mg/kg	3.930817
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.3584 mg/kg	2.35849
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	4.056603 mg/kg	2.35849
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	3.907232 mg/kg	1.572327
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.8616 mg/kg	7.861635
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0393 mg/kg	0.039308
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.8616 mg/kg	7.861635
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9308 mg/kg	3.930817
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.757 mg/kg	13.75786
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	15.21226 mg/kg	2.35849

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204067
Location: INLAND BAYS
Description: HL-K
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9556 mg/kg	3.955696
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.3734 mg/kg	2.373417
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	3.710443 mg/kg	2.373417
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	4.011075 mg/kg	1.582278
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.9113 mg/kg	7.911392
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0395 mg/kg	0.039557
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.9113 mg/kg	7.911392
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9556 mg/kg	3.955696
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.844 mg/kg	13.84493
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	17.27848 mg/kg	2.373417

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204066
Location: INLAND BAYS
Description: HL-J
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7313 mg/kg	3.731343
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.2388 mg/kg	2.238805
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	6.305970 mg/kg	2.238805
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	6.970149 mg/kg	1.492537
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.4626 mg/kg	7.462686
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0373 mg/kg	0.037313
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.4626 mg/kg	7.462686
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7313 mg/kg	3.731343
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.059 mg/kg	13.05970
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	19.50746 mg/kg	2.238805

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204065
Location: INLAND BAYS
Description: HL-I
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.8759 mg/kg	3.875968
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.3255 mg/kg	2.325581
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	5.232558 mg/kg	2.325581
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	8.968992 mg/kg	1.550387
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	14.82945 mg/kg	7.751937
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0387 mg/kg	0.03876
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.7519 mg/kg	7.751937
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.8759 mg/kg	3.875968
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.565 mg/kg	13.56589
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	22.77519 mg/kg	2.325581

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204064
Location: INLAND BAYS
Description: HL-H
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.6982 mg/kg	3.698224
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.2189 mg/kg	2.218934
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	4.238165 mg/kg	2.218934
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	8.934911 mg/kg	1.479289
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.3964 mg/kg	7.396449
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0369 mg/kg	0.036982
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.3964 mg/kg	7.396449
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.6982 mg/kg	3.698224
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 12.943 mg/kg	12.94378
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	27.76627 mg/kg	2.218934

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204063
Location: INLAND BAYS
Description: HL-G
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9556 mg/kg	3.955696
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.3734 mg/kg	2.373417
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	3.971518 mg/kg	2.373417
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	9.572784 mg/kg	1.582278
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.9113 mg/kg	7.911392
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0395 mg/kg	0.039557
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.9113 mg/kg	7.911392
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9556 mg/kg	3.955696
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.844 mg/kg	13.84493
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	24.31962 mg/kg	2.373417

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204062
Location: INLAND BAYS
Description: HL-F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.8819 mg/kg	3.881987
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.3291 mg/kg	2.329192
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	4.627329 mg/kg	2.329192
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	8.672360 mg/kg	1.552795
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.7639 mg/kg	7.763975
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0388 mg/kg	0.03882
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.7639 mg/kg	7.763975
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.8819 mg/kg	3.881987
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.586 mg/kg	13.58695
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	25.32608 mg/kg	2.329192

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204061
Location: INLAND BAYS
Description: HL-E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7313 mg/kg	3.731343
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.2388 mg/kg	2.238805
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	3.597014 mg/kg	2.238805
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	10.05223 mg/kg	1.492537
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.4626 mg/kg	7.462686
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0373 mg/kg	0.037313
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.4626 mg/kg	7.462686
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7313 mg/kg	3.731343
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.059 mg/kg	13.05970
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	26.44029 mg/kg	2.238805

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204060
Location: INLAND BAYS
Description: HL-D
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7936 mg/kg	3.793626
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.2761 mg/kg	2.276176
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	4.461304 mg/kg	2.276176
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	10.88770 mg/kg	1.51745
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.5872 mg/kg	7.587253
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0379 mg/kg	0.037936
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.5872 mg/kg	7.587253
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7936 mg/kg	3.793626
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.277 mg/kg	13.27769
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	29.01365 mg/kg	2.276176

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204059
Location: INLAND BAYS
Description: HL-C
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9370 mg/kg	3.937007
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.3622 mg/kg	2.362204
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	5.102362 mg/kg	2.362204
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	11.17322 mg/kg	1.574803
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.8740 mg/kg	7.874015
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0393 mg/kg	0.03937
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.8740 mg/kg	7.874015
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9370 mg/kg	3.937007
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.779 mg/kg	13.77952
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	30.10236 mg/kg	2.362204

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204058
Location: INLAND BAYS
Description: HL-B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7821 mg/kg	3.782148
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.2692 mg/kg	2.269288
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	4.924357 mg/kg	2.269288
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	9.863842 mg/kg	1.512859
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.5642 mg/kg	7.564296
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0378 mg/kg	0.037822
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.5642 mg/kg	7.564296
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.7821 mg/kg	3.782148
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.237 mg/kg	13.23751
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	34.54614 mg/kg	2.269288

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204057
Location: INLAND BAYS
Description: HL-A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9062 mg/kg	3.90625
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.3437 mg/kg	2.34375
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	6.398437 mg/kg	2.34375
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	10.46093 mg/kg	1.5625
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 7.8125 mg/kg	7.8125
IB170	MERCURY	7471A	7471A		Dec-13	JMO	< 0.0390 mg/kg	0.039063
IB180	MOLYBDENUM	3050B	6010B	Dec-11	Dec-13	JMO	< 7.8125 mg/kg	7.8125
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 3.9062 mg/kg	3.90625
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 13.671 mg/kg	13.67187
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	30.53906 mg/kg	2.34375

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location	INLAND BAYS	SOUTH	SOUTH	SOUTH		
Sample Identification		BURTON A	BURTON B	BURTON C		
Lab Number		0394-1	0395-1	0396-1		
Total Exchange Capacity (ME/100 g)		5.75	5.06	6.23		
pH	Buffer (SMP/Sikora)	7.3	7.1	7.7		
	H_2O (1:1)	5.7	5.9	6.4		
Organic Matter (humus) %		1.53	1.53	1.55		
Estimated Nitrogen Release	lb/A	51	51	51		
ANIONS	SOLUBLE SULFUR* ppm	13	15	13		
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	1571	1452	1154		
	ppm of P	343	317	252		
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	1194	1124	1616		
	ppm	597	562	808		
	MAGNESIUM* lb/A	140	146	182		
	ppm	70	73	91		
	POTASSIUM* lb/A	140	160	230		
	ppm	70	80	115		
	SODIUM* lb/A	126	112	120		
	ppm	63	56	60		
BASE SATURATION PERCENT						
Calcium	%	51.91	55.53	64.85		
Magnesium	%	10.14	12.02	12.17		
Potassium	%	3.12	4.05	4.73		
Sodium	%	4.76	4.81	4.19		
Other Bases	%	6.00	5.60	5.00		
Hydrogen	%	24.00	18.00	9.00		
EXTRACTABLE MINORS						
Boron* (ppm)		0.29	0.32	0.51		
Iron* (ppm)		253	258	297		
Manganese* (ppm)		16	15	10		
Copper* (ppm)		1.41	1.28	1.88		
Zinc* (ppm)		9.20	7.80	18.26		
Aluminum* (ppm)		811	792	743		
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204056
Location: INLAND BAYS
Description: SOUTH
Sub Description: BURTON C

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 4.6904 mg/kg	4.690431
IB040	BARIUM	3050B	6010B	Dec-11	Dec-13	JMO	22.66416 mg/kg	1.876172
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.8142 mg/kg	2.814258
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	4.634146 mg/kg	2.814258
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	3.846153 mg/kg	1.876172
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 9.3808 mg/kg	9.380863
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 4.6904 mg/kg	4.690431
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 16.416 mg/kg	16.41651
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	34.24014 mg/kg	2.814258

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204055
Location: INLAND BAYS
Description: SOUTH
Sub Description: BURTON B

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 4.9603 mg/kg	4.960317
IB040	BARIUM	3050B	6010B	Dec-11	Dec-13	JMO	24.09722 mg/kg	1.984126
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.9761 mg/kg	2.97619
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	4.255952 mg/kg	2.97619
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	2.966269 mg/kg	1.984126
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 9.9206 mg/kg	9.920634
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 4.9603 mg/kg	4.960317
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 17.361 mg/kg	17.36111
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	20.59523 mg/kg	2.97619

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/04/2012

Lab Number: SE1204054
Location: INLAND BAYS
Description: SOUTH
Sub Description: BURTON A

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-11	Dec-13	JMO	< 4.6904 mg/kg	4.690431
IB040	BARIUM	3050B	6010B	Dec-11	Dec-13	JMO	22.68292 mg/kg	1.876172
IB060	CADMIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 2.8142 mg/kg	2.814258
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-11	Dec-13	JMO	3.911819 mg/kg	2.814258
IB120	COPPER	3050B	6010B	Dec-11	Dec-13	JMO	3.433395 mg/kg	1.876172
IB140	LEAD	3050B	6010B	Dec-11	Dec-13	JMO	< 9.3808 mg/kg	9.380863
IB190	NICKEL	3050B	6010B	Dec-11	Dec-13	JMO	< 4.6904 mg/kg	4.690431
IB210	SELENIUM	3050B	6010B	Dec-11	Dec-13	JMO	< 16.416 mg/kg	16.41651
IB300	ZINC	3050B	6010B	Dec-11	Dec-13	JMO	137.8986 mg/kg	2.814258

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

BROOKSIDE LABORATORIES, INC.

46110-14

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location		INLAND BAYS	SOUTH F				
Sample Identification							
Lab Number			0390-1				
Total Exchange Capacity (ME/100 g)			4.57				
pH		Buffer (SMP/Sikora)	7.6				
		H_2O (1:1)	6.4				
Organic Matter (humus) %			1.43				
Estimated Nitrogen Release		lb/A	49				
ANIONS	SOLUBLE SULFUR*	ppm	8				
	PHOSPHORUS MEHLICH III	lb/A P as P_2O_5	522				
		ppm of P	114				
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1008				
		ppm	504				
	MAGNESIUM*	lb/A	212				
		ppm	106				
	POTASSIUM*	lb/A	170				
		ppm	85				
	SODIUM*	lb/A	142				
		ppm	71				
BASE SATURATION PERCENT							
	Calcium	%	55.14				
	Magnesium	%	19.33				
	Potassium	%	4.77				
	Sodium	%	6.75				
	Other Bases	%	5.00				
	Hydrogen	%	9.00				
EXTRACTABLE MINORS							
	Boron* (ppm)		0.38				
	Iron* (ppm)		127				
	Manganese* (ppm)		12				
	Copper* (ppm)		0.76				
	Zinc* (ppm)		4.53				
	Aluminum* (ppm)		541				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

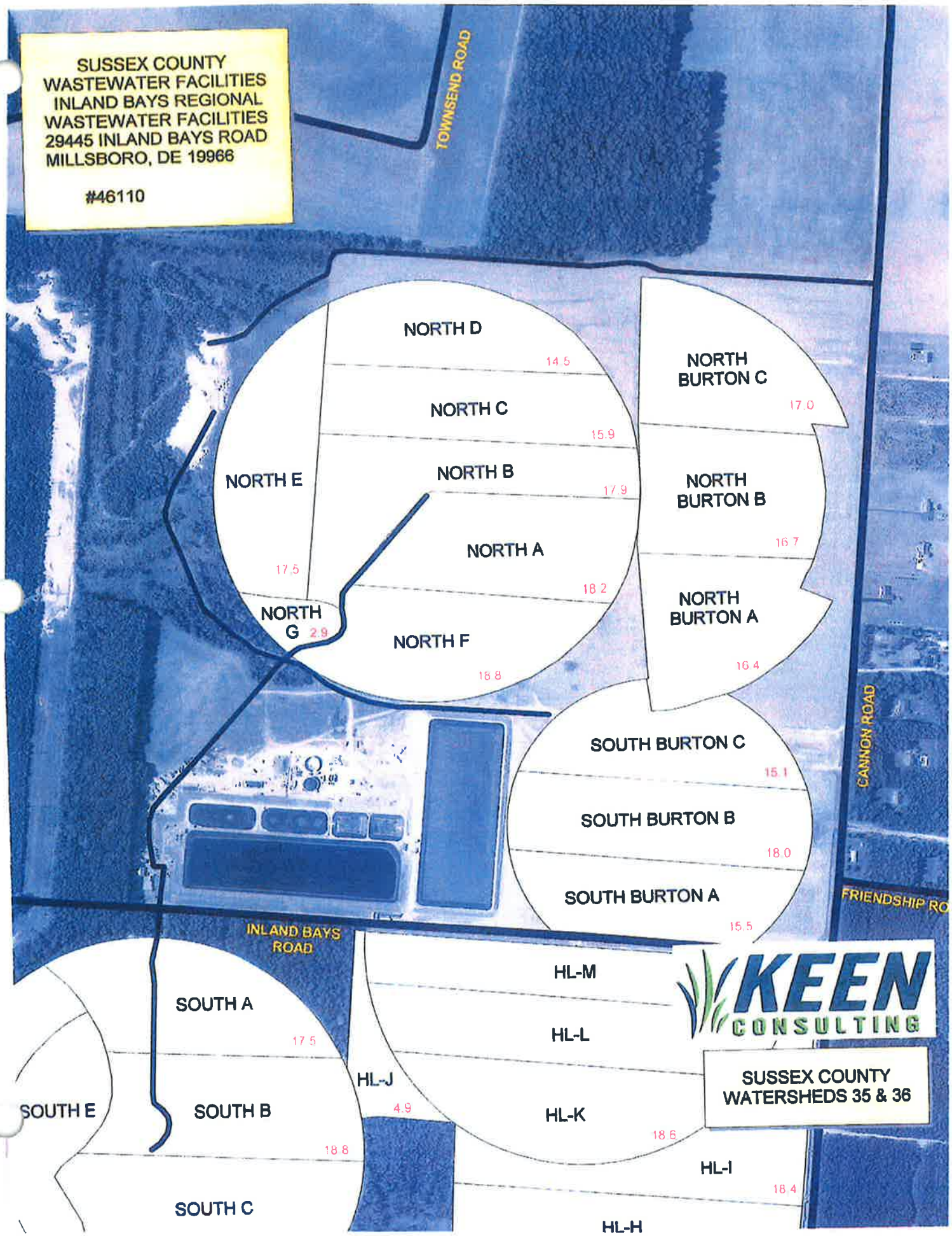
SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS		SOUTH A	SOUTH B	SOUTH C	SOUTH D	SOUTH E
Sample Identification						
Lab Number		0385-1	0386-1	0387-1	0388-1	0389-1
Total Exchange Capacity (ME/100 g)		4.64	3.67	3.86	3.88	3.37
pH	Buffer (SMP/Sikora)	7.3	7.6	7.4	7.6	7.5
	H_2O (1:1)	6.7	6.5	6.7	6.3	6.7
Organic Matter (humus) %		1.95	1.58	1.48	1.37	1.11
Estimated Nitrogen Release	lb/A	59	52	50	47	42
ANIONS: SOLUBLE SULFUR*	ppm	11	10	11	10	8
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	371	385	508	756	563
	ppm of P	81	84	111	165	123
BRAY II	lb/A P as P_2O_5					
	ppm of P					
OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	1084	800	892	842	770
	ppm	542	400	446	421	385
MAGNESIUM*	lb/A	216	160	172	158	174
	ppm	108	80	86	79	87
POTASSIUM*	lb/A	200	190	174	172	108
	ppm	100	95	87	86	54
SODIUM*	lb/A	160	140	156	134	124
	ppm	80	70	78	67	62
BASE SATURATION PERCENT						
Calcium	%	58.41	54.50	57.77	54.25	57.12
Magnesium	%	19.40	18.17	18.57	16.97	21.51
Potassium	%	5.53	6.64	5.78	5.68	4.11
Sodium	%	7.50	8.29	8.79	7.51	8.00
Other Bases	%	4.70	4.90	4.70	5.10	4.70
Hydrogen	%	4.50	7.50	4.50	10.50	4.50
EXTRACTABLE MINORS						
Boron* (ppm)		0.54	0.41	0.47	0.46	0.33
Iron* (ppm)		174	148	184	204	128
Manganese* (ppm)		17	20	14	14	12
Copper* (ppm)		1.32	1.09	1.07	1.25	0.60
Zinc* (ppm)		3.30	3.66	4.13	5.10	3.35
Aluminum* (ppm)		965	937	845	818	556
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
TOWNSEND ROAD
NORTH D
14.5
NORTH C
15.9
NORTH B
17.9
NORTH A
18.2
NORTH E
17.5
NORTH G
2.9
NORTH F
18.8
NORTH BURTON C
17.0
NORTH BURTON B
16.7
NORTH BURTON A
16.4
SOUTH BURTON C
15.1
SOUTH BURTON B
18.0
SOUTH BURTON A
15.5
CANNON ROAD
FRIENDSHIP RO
INLAND BAYS ROAD
HL-M
HL-L
HL-K
18.6
HL-J
4.9
HL-I
18.4
HL-H
SOUTH A
17.5
SOUTH B
18.8
SOUTH C
SOUTH E
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location		INLAND BAYS	NORTH	NORTH	NORTH		
Sample Identification			BURTON A	BURTON B	BURTON C		
Lab Number			0391-1	0392-1	0393-1		
Total Exchange Capacity (ME/100 g)			4.93	5.20	4.70		
pH	Buffer (SMP/Sikora)		7.4	7.7	7.4		
	H_2O (1:1)		6.5	6.8	6.7		
Organic Matter (humus) %			1.33	1.26	1.26		
Estimated Nitrogen Release		lb/A	47	45	45		
ANIONS	SOLUBLE SULFUR*	ppm	12	11	11		
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	792	1296	1260		
		ppm of P	173	283	275		
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1176	1346	1228		
		ppm	588	673	614		
	MAGNESIUM*	lb/A	202	200	168		
		ppm	101	100	84		
	POTASSIUM*	lb/A	182	210	176		
		ppm	91	105	88		
	SODIUM*	lb/A	138	154	126		
		ppm	69	77	63		
BASE SATURATION PERCENT							
Calcium		%	59.63	64.71	65.32		
Magnesium		%	17.07	16.03	14.89		
Potassium		%	4.73	5.18	4.80		
Sodium		%	6.09	6.44	5.83		
Other Bases		%	4.90	4.60	4.70		
Hydrogen		%	7.50	3.00	4.50		
EXTRACTABLE MINORS							
Boron* (ppm)			0.41	0.39	0.39		
Iron* (ppm)			206	148	170		
Manganese* (ppm)			10	14	17		
Copper* (ppm)			1.27	1.57	1.39		
Zinc* (ppm)			5.76	8.62	8.05		
Aluminum* (ppm)			680	640	687		
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location		INLAND BAYS	NORTH F	NORTH G			
Sample Identification							
Lab Number			0383-1	0384-1			
Total Exchange Capacity (ME/100 g)			3.48	5.02			
pH	Buffer (SMP/Sikora)		7.7	NA			
	H_2O (1:1)		7.0	7.1			
Organic Matter (humus) %			1.49	1.89			
Estimated Nitrogen Release		lb/A	50	58			
ANIONS	SOLUBLE SULFUR*	ppm	8	12			
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	508	348			
		ppm of P	111	76			
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	806	1264			
		ppm	403	632			
	MAGNESIUM*	lb/A	210	288			
		ppm	105	144			
	POTASSIUM*	lb/A	152	162			
		ppm	76	81			
	SODIUM*	lb/A	112	110			
		ppm	56	55			
BASE SATURATION PERCENT							
Calcium		%	57.90	62.95			
Magnesium		%	25.14	23.90			
Potassium		%	5.60	4.14			
Sodium		%	7.00	4.76			
Other Bases		%	4.40	4.30			
Hydrogen		%	0.00	0.00			
EXTRACTABLE MINORS							
Boron* (ppm)			0.42	0.59			
Iron* (ppm)			123	221			
Manganese* (ppm)			12	11			
Copper* (ppm)			0.76	0.90			
Zinc* (ppm)			3.42	2.47			
Aluminum* (ppm)			623	592			
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS			NORTH A	NORTH B	NORTH C	NORTH D	NORTH E
Sample Identification							
Lab Number			0378-1	0379-1	0380-1	0381-1	0382-1
Total Exchange Capacity (ME/100 g)			5.07	4.31	4.77	4.53	4.02
pH	Buffer (SMP/Sikora)		7.5	7.8	7.6	7.6	7.3
	H_2O (1:1)		6.7	6.8	6.7	6.6	6.3
Organic Matter (humus) %			1.31	1.24	1.30	1.31	1.82
Estimated Nitrogen Release		lb/A	46	45	46	46	56
ANIONS	SOLUBLE SULFUR*	ppm	11	11	11	11	11
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1543	1365	1232	1539	435
		ppm of P	337	298	269	336	95
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1236	1034	1148	1126	820
		ppm	618	517	574	563	410
	MAGNESIUM*	lb/A	226	198	220	176	192
		ppm	113	99	110	88	96
	POTASSIUM*	lb/A	194	190	148	178	190
		ppm	97	95	74	89	95
	SODIUM*	lb/A	148	150	162	122	138
		ppm	74	75	81	61	69
BASE SATURATION PERCENT							
Calcium	%		60.95	59.98	60.17	62.14	51.00
Magnesium	%		18.57	19.14	19.22	16.19	19.90
Potassium	%		4.91	5.65	3.98	5.04	6.06
Sodium	%		6.35	7.57	7.38	5.85	7.46
Other Bases	%		4.70	4.60	4.70	4.80	5.10
Hydrogen	%		4.50	3.00	4.50	6.00	10.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.53	0.52	0.55	0.45	0.48
Iron* (ppm)			157	189	142	186	177
Manganese* (ppm)			21	20	22	23	7
Copper* (ppm)			1.26	1.07	1.14	1.18	0.66
Zinc* (ppm)			7.87	5.64	6.29	9.19	3.11
Aluminum* (ppm)			743	738	690	707	794
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

BROOKSIDE LABORATORIES, INC.

** SOIL ANALYSIS REPORT **

Sussex County Wastewater Facilities
P.O. Box 589
Georgetown, DE 19947

File Number: 46110
Date Received: 12/28/2012
Date Reported: 12/31/2012

Submitted By: Keen Consulting, Inc.

SAMPLE LOCATION: INLAND BAYS

NBR	FIELD	DESCRIPTION	SAR
1488	NORTH A		5.75
1489	NORTH B		5.75
1490	NORTH C		5.34
1491	NORTH D		4.62
1492	NORTH E		5.02
1493	NORTH F		5.37
1494	NORTH G		3.56
1495	SOUTH A		5.50
1496	SOUTH B		6.92
1497	SOUTH C		5.70
1498	SOUTH D		6.41
1499	SOUTH E		4.93
1500	SOUTH F		6.74
1501	NORTH	BURTON A	4.17
1502	NORTH	BURTON B	8.41
1503	NORTH	BURTON C	5.11

lb/A

BROOKSIDE LABORATORIES, INC.

46110-14

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location	INLAND BAYS	HL-K	HL-L	HL-M		
Sample Identification						
Lab Number		0407-1	0408-1	0409-1		
Total Exchange Capacity (ME/100 g)		5.31	5.57	6.02		
pH	Buffer (SMP/Sikora)	7.1	7.1	6.9		
	H_2O (1:1)	6.0	5.5	5.8		
Organic Matter (humus) %		1.79	2.38	2.32		
Estimated Nitrogen Release	lb/A	56	68	66		
ANIONS	SOLUBLE SULFUR* ppm	15	17	15		
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	902	714	792		
	ppm of P	197	156	173		
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	1136	914	1274		
	ppm	568	457	637		
	MAGNESIUM* lb/A	206	176	186		
	ppm	103	88	93		
	POTASSIUM* lb/A	166	194	150		
	ppm	83	97	75		
	SODIUM* lb/A	144	128	118		
	ppm	72	64	59		
BASE SATURATION PERCENT						
Calcium	%	53.48	41.02	52.91		
Magnesium	%	16.16	13.17	12.87		
Potassium	%	4.01	4.47	3.19		
Sodium	%	5.90	5.00	4.26		
Other Bases	%	5.40	6.40	5.80		
Hydrogen	%	15.00	30.00	21.00		
EXTRACTABLE MINORS						
Boron* (ppm)		0.36	0.37	0.39		
Iron* (ppm)		242	250	269		
Manganese* (ppm)		11	13	12		
Copper* (ppm)		2.37	2.32	2.54		
Zinc* (ppm)		6.97	6.35	7.33		
Aluminum* (ppm)		912	896	846		
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-14

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS			HL-F	HL-G	HL-H	HL-I	HL-J
Sample Identification							
Lab Number			0402-1	0403-1	0404-1	0405-1	0406-1
Total Exchange Capacity (ME/100 g)			4.65	4.89	5.39	5.53	4.52
pH	Buffer (SMP/Sikora)		7.5	7.2	7.4	7.0	7.3
	H_2O (1:1)		6.1	6.2	5.9	5.8	5.6
Organic Matter (humus) %			1.36	1.32	1.51	2.29	1.53
Estimated Nitrogen Release		lb/A	47	46	50	66	51
ANIONS	SOLUBLE SULFUR*	ppm	13	15	15	15	19
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1191	1195	1470	1273	1223
		ppm of P	260	261	321	278	267
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1036	1094	1104	1166	736
		ppm	518	547	552	583	368
	MAGNESIUM*	lb/A	214	230	230	172	184
		ppm	107	115	115	86	92
	POTASSIUM*	lb/A	120	150	144	190	178
		ppm	60	75	72	95	89
	SODIUM*	lb/A	68	74	100	80	84
		ppm	34	37	50	40	42
BASE SATURATION PERCENT							
Calcium	%		55.70	55.93	51.21	52.71	40.71
Magnesium	%		19.18	19.60	17.78	12.96	16.96
Potassium	%		3.31	3.93	3.43	4.40	5.05
Sodium	%		3.18	3.29	4.03	3.14	4.04
Other Bases	%		5.20	5.20	5.60	5.80	6.20
Hydrogen	%		13.50	12.00	18.00	21.00	27.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.34	0.35	0.37	0.30	0.28
Iron* (ppm)			231	296	300	244	158
Manganese* (ppm)			12	10	11	20	24
Copper* (ppm)			5.73	7.66	5.43	5.67	3.85
Zinc* (ppm)			13.10	14.76	14.91	11.00	4.62
Aluminum* (ppm)			840	906	947	1022	1386
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS			HL-A	HL-B	HL-C	HL-D	HL-E
Sample Identification							
Lab Number			0397-1	0398-1	0399-1	0400-1	0401-1
Total Exchange Capacity (ME/100 g)			4.24	6.07	4.56	5.27	4.44
pH	Buffer (SMP/Sikora)		7.3	7.4	7.3	7.5	7.3
	H_2O (1:1)		6.0	5.9	6.3	6.0	6.2
Organic Matter (humus) %			1.24	1.47	1.59	1.52	1.36
Estimated Nitrogen Release		lb/A	45	49	52	50	47
ANIONS	SOLUBLE SULFUR*	ppm	14	15	15	15	15
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1626	1562	1030	1406	1246
		ppm of P	355	341	225	307	272
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	932	1362	1054	1154	980
		ppm	466	681	527	577	490
	MAGNESIUM*	lb/A	166	200	202	228	212
		ppm	83	100	101	114	106
	POTASSIUM*	lb/A	154	164	164	160	138
		ppm	77	82	82	80	69
	SODIUM*	lb/A	70	88	74	70	78
		ppm	35	44	37	35	39
BASE SATURATION PERCENT							
Calcium	%		54.95	56.10	57.79	54.74	55.18
Magnesium	%		16.31	13.73	18.46	18.03	19.89
Potassium	%		4.66	3.46	4.61	3.89	3.98
Sodium	%		3.59	3.15	3.53	2.89	3.82
Other Bases	%		5.40	5.60	5.10	5.40	5.20
Hydrogen	%		15.00	18.00	10.50	15.00	12.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.28	0.31	0.32	0.35	0.30
Iron* (ppm)			211	201	159	227	218
Manganese* (ppm)			21	28	22	19	14
Copper* (ppm)			5.51	5.13	6.66	8.10	7.90
Zinc* (ppm)			13.67	14.00	12.11	18.06	17.71
Aluminum* (ppm)			917	1059	997	1005	901
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location		INLAND BAYS	SOUTH	SOUTH	SOUTH		
Sample Identification			BURTON A	BURTON B	BURTON C		
Lab Number			0394-1	0395-1	0396-1		
Total Exchange Capacity (ME/100 g)			5.75	5.06	6.23		
pH	Buffer (SMP/Sikora)		7.3	7.1	7.7		
	H_2O (1:1)		5.7	5.9	6.4		
Organic Matter (humus) %			1.53	1.53	1.55		
Estimated Nitrogen Release		lb/A	51	51	51		
ANIONS	SOLUBLE SULFUR*	ppm	13	15	13		
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1571	1452	1154		
		ppm of P	343	317	252		
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1194	1124	1616		
		ppm	597	562	808		
	MAGNESIUM*	lb/A	140	146	182		
		ppm	70	73	91		
	POTASSIUM*	lb/A	140	160	230		
		ppm	70	80	115		
	SODIUM*	lb/A	126	112	120		
		ppm	63	56	60		
BASE SATURATION PERCENT							
Calcium		%	51.91	55.53	64.85		
Magnesium		%	10.14	12.02	12.17		
Potassium		%	3.12	4.05	4.73		
Sodium		%	4.76	4.81	4.19		
Other Bases		%	6.00	5.60	5.00		
Hydrogen		%	24.00	18.00	9.00		
EXTRACTABLE MINORS							
Boron* (ppm)			0.29	0.32	0.51		
Iron* (ppm)			253	258	297		
Manganese* (ppm)			16	15	10		
Copper* (ppm)			1.41	1.28	1.88		
Zinc* (ppm)			9.20	7.80	18.26		
Aluminum* (ppm)			811	792	743		
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-14

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location		INLAND BAYS	NORTH	NORTH	NORTH		
Sample Identification			BURTON A	BURTON B	BURTON C		
Lab Number			0391-1	0392-1	0393-1		
Total Exchange Capacity (ME/100 g)			4.93	5.20	4.70		
pH	Buffer (SMP/Sikora)		7.4	7.7	7.4		
	H_2O (1:1)		6.5	6.8	6.7		
Organic Matter (humus) %			1.33	1.26	1.26		
Estimated Nitrogen Release		lb/A	47	45	45		
ANIONS	SOLUBLE SULFUR*	ppm	12	11	11		
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	792	1296	1260		
		ppm of P	173	283	275		
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1176	1346	1228		
		ppm	588	673	614		
	MAGNESIUM*	lb/A	202	200	168		
		ppm	101	100	84		
	POTASSIUM*	lb/A	182	210	176		
		ppm	91	105	88		
	SODIUM*	lb/A	138	154	126		
		ppm	69	77	63		
BASE SATURATION PERCENT							
Calcium		%	59.63	64.71	65.32		
Magnesium		%	17.07	16.03	14.89		
Potassium		%	4.73	5.18	4.80		
Sodium		%	6.09	6.44	5.83		
Other Bases		%	4.90	4.60	4.70		
Hydrogen		%	7.50	3.00	4.50		
EXTRACTABLE MINORS							
Boron* (ppm)			0.41	0.39	0.39		
Iron* (ppm)			206	148	170		
Manganese* (ppm)			10	14	17		
Copper* (ppm)			1.27	1.57	1.39		
Zinc* (ppm)			5.76	8.62	8.05		
Aluminum* (ppm)			680	640	687		
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-14

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location		INLAND BAYS	SOUTH F				
Sample Identification							
Lab Number			0390-1				
Total Exchange Capacity (ME/100 g)			4.57				
pH	Buffer (SMP/Sikora)		7.6				
	H_2O (1:1)		6.4				
Organic Matter (humus) %			1.43				
Estimated Nitrogen Release		lb/A	49				
ANIONS	SOLUBLE SULFUR*	ppm	8				
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	522				
		ppm of P	114				
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1008				
		ppm	504				
	MAGNESIUM*	lb/A	212				
		ppm	106				
	POTASSIUM*	lb/A	170				
		ppm	85				
	SODIUM*	lb/A	142				
		ppm	71				
BASE SATURATION PERCENT							
Calcium	%		55.14				
Magnesium	%		19.33				
Potassium	%		4.77				
Sodium	%		6.75				
Other Bases	%		5.00				
Hydrogen	%		9.00				
EXTRACTABLE MINORS							
Boron* (ppm)			0.38				
Iron* (ppm)			127				
Manganese* (ppm)			12				
Copper* (ppm)			0.76				
Zinc* (ppm)			4.53				
Aluminum* (ppm)			541				
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-14

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS			SOUTH A	SOUTH B	SOUTH C	SOUTH D	SOUTH E
Sample Identification							
Lab Number			0385-1	0386-1	0387-1	0388-1	0389-1
Total Exchange Capacity (ME/100 g)			4.64	3.67	3.86	3.88	3.37
pH	Buffer (SMP/Sikora)		7.3	7.6	7.4	7.6	7.5
	H_2O (1:1)		6.7	6.5	6.7	6.3	6.7
Organic Matter (humus) %			1.95	1.58	1.48	1.37	1.11
Estimated Nitrogen Release		lb/A	59	52	50	47	42
ANIONS	SOLUBLE SULFUR*	ppm	11	10	11	10	8
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	371	385	508	756	563
		ppm of P	81	84	111	165	123
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1084	800	892	842	770
		ppm	542	400	446	421	385
	MAGNESIUM*	lb/A	216	160	172	158	174
		ppm	108	80	86	79	87
	POTASSIUM*	lb/A	200	190	174	172	108
		ppm	100	95	87	86	54
	SODIUM*	lb/A	160	140	156	134	124
		ppm	80	70	78	67	62
BASE SATURATION PERCENT							
Calcium		%	58.41	54.50	57.77	54.25	57.12
Magnesium		%	19.40	18.17	18.57	16.97	21.51
Potassium		%	5.53	6.64	5.78	5.68	4.11
Sodium		%	7.50	8.29	8.79	7.51	8.00
Other Bases		%	4.70	4.90	4.70	5.10	4.70
Hydrogen		%	4.50	7.50	4.50	10.50	4.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.54	0.41	0.47	0.46	0.33
Iron* (ppm)			174	148	184	204	128
Manganese* (ppm)			17	20	14	14	12
Copper* (ppm)			1.32	1.09	1.07	1.25	0.60
Zinc* (ppm)			3.30	3.66	4.13	5.10	3.35
Aluminum* (ppm)			965	937	845	818	556
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-14

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location	INLAND BAYS	NORTH F	NORTH G			
Sample Identification						
Lab Number		0383-1	0384-1			
Total Exchange Capacity (ME/100 g)		3.48	5.02			
pH	Buffer (SMP/Sikora)	7.7	NA			
	H_2O (1:1)	7.0	7.1			
Organic Matter (humus) %		1.49	1.89			
Estimated Nitrogen Release	lb/A	50	58			
ANIONS	SOLUBLE SULFUR* ppm	8	12			
PHOSPHORUS	MEHLICH III lb/A P as P_2O_5	508	348			
	ppm of P	111	76			
	BRAY II lb/A P as P_2O_5					
	ppm of P					
	OLSEN lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS	CALCIUM* lb/A	806	1264			
	ppm	403	632			
	MAGNESIUM* lb/A	210	288			
	ppm	105	144			
	POTASSIUM* lb/A	152	162			
	ppm	76	81			
	SODIUM* lb/A	112	110			
	ppm	56	55			
BASE SATURATION PERCENT						
Calcium	%	57.90	62.95			
Magnesium	%	25.14	23.90			
Potassium	%	5.60	4.14			
Sodium	%	7.00	4.76			
Other Bases	%	4.40	4.30			
Hydrogen	%	0.00	0.00			
EXTRACTABLE MINORS						
Boron* (ppm)		0.42	0.59			
Iron* (ppm)		123	221			
Manganese* (ppm)		12	11			
Copper* (ppm)		0.76	0.90			
Zinc* (ppm)		3.42	2.47			
Aluminum* (ppm)		623	592			
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					

* Mehlich III Extractable

lb/A

BROOKSIDE LABORATORIES, INC.

46110-14

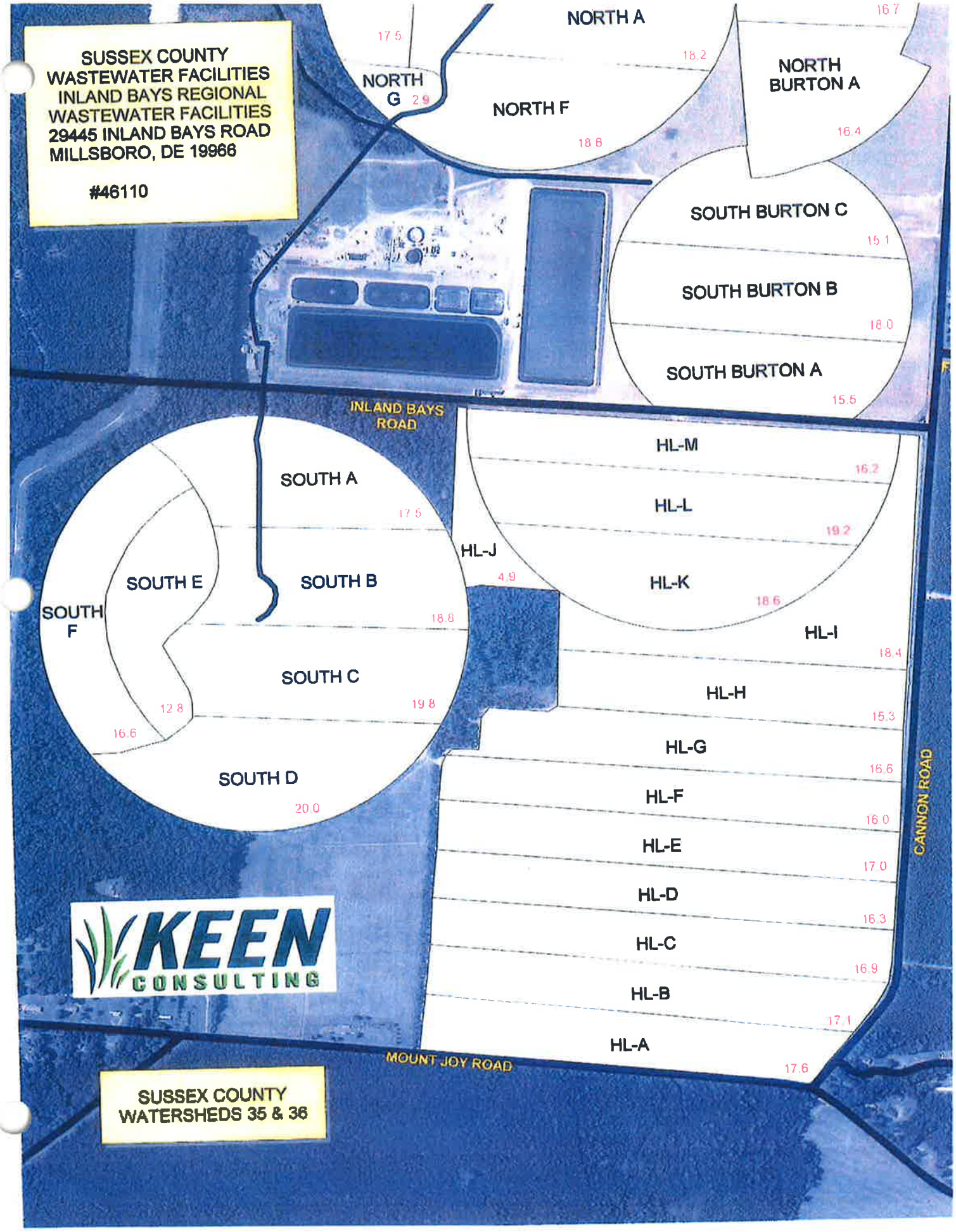
SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/06/2012

Sample Location INLAND BAYS		NORTH A	NORTH B	NORTH C	NORTH D	NORTH E
Sample Identification						
Lab Number		0378-1	0379-1	0380-1	0381-1	0382-1
Total Exchange Capacity (ME/100 g)		5.07	4.31	4.77	4.53	4.02
pH	Buffer (SMP/Sikora)	7.5	7.8	7.6	7.6	7.3
	H_2O (1:1)	6.7	6.8	6.7	6.6	6.3
Organic Matter (humus) %		1.31	1.24	1.30	1.31	1.82
Estimated Nitrogen Release	lb/A	46	45	46	46	56
ANIONS: SOLUBLE SULFUR*	ppm	11	11	11	11	11
PHOSPHORUS: MEHLICH III	lb/A P as P_2O_5	1543	1365	1232	1539	435
	ppm of P	337	298	269	336	95
PHOSPHORUS: BRAY II	lb/A P as P_2O_5					
	ppm of P					
PHOSPHORUS: OLSEN	lb/A P as P_2O_5					
	ppm of P					
EXCHANGEABLE CATIONS: CALCIUM*	lb/A	1236	1034	1148	1126	820
	ppm	618	517	574	563	410
MAGNESIUM*	lb/A	226	198	220	176	192
	ppm	113	99	110	88	96
POTASSIUM*	lb/A	194	190	148	178	190
	ppm	97	95	74	89	95
SODIUM*	lb/A	148	150	162	122	138
	ppm	74	75	81	61	69
BASE SATURATION PERCENT						
Calcium	%	60.95	59.98	60.17	62.14	51.00
Magnesium	%	18.57	19.14	19.22	16.19	19.90
Potassium	%	4.91	5.65	3.98	5.04	6.06
Sodium	%	6.35	7.57	7.38	5.85	7.46
Other Bases	%	4.70	4.60	4.70	4.80	5.10
Hydrogen	%	4.50	3.00	4.50	6.00	10.50
EXTRACTABLE MINORS						
Boron* (ppm)		0.53	0.52	0.55	0.45	0.48
Iron* (ppm)		157	189	142	186	177
Manganese* (ppm)		21	20	22	23	7
Copper* (ppm)		1.26	1.07	1.14	1.18	0.66
Zinc* (ppm)		7.87	5.64	6.29	9.19	3.11
Aluminum* (ppm)		743	738	690	707	794
OTHER TESTS: Soluble Salts (mmhos/cm)						
Chlorides (ppm)						

* Mehlich III Extractable


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
NORTH A
17.5
18.2
16.7
NORTH G
2.9
NORTH F
18.8
NORTH BURTON A
16.4
SOUTH BURTON C
15.1
SOUTH BURTON B
18.0
SOUTH BURTON A
15.5
INLAND BAYS ROAD
SOUTH A
17.5
SOUTH E
SOUTH B
SOUTH F
18.8
SOUTH C
19.8
12.8
16.6
SOUTH D
20.0
HL-J
4.9
HL-M
16.2
HL-L
19.2
HL-K
18.6
HL-I
18.4
HL-H
15.3
HL-G
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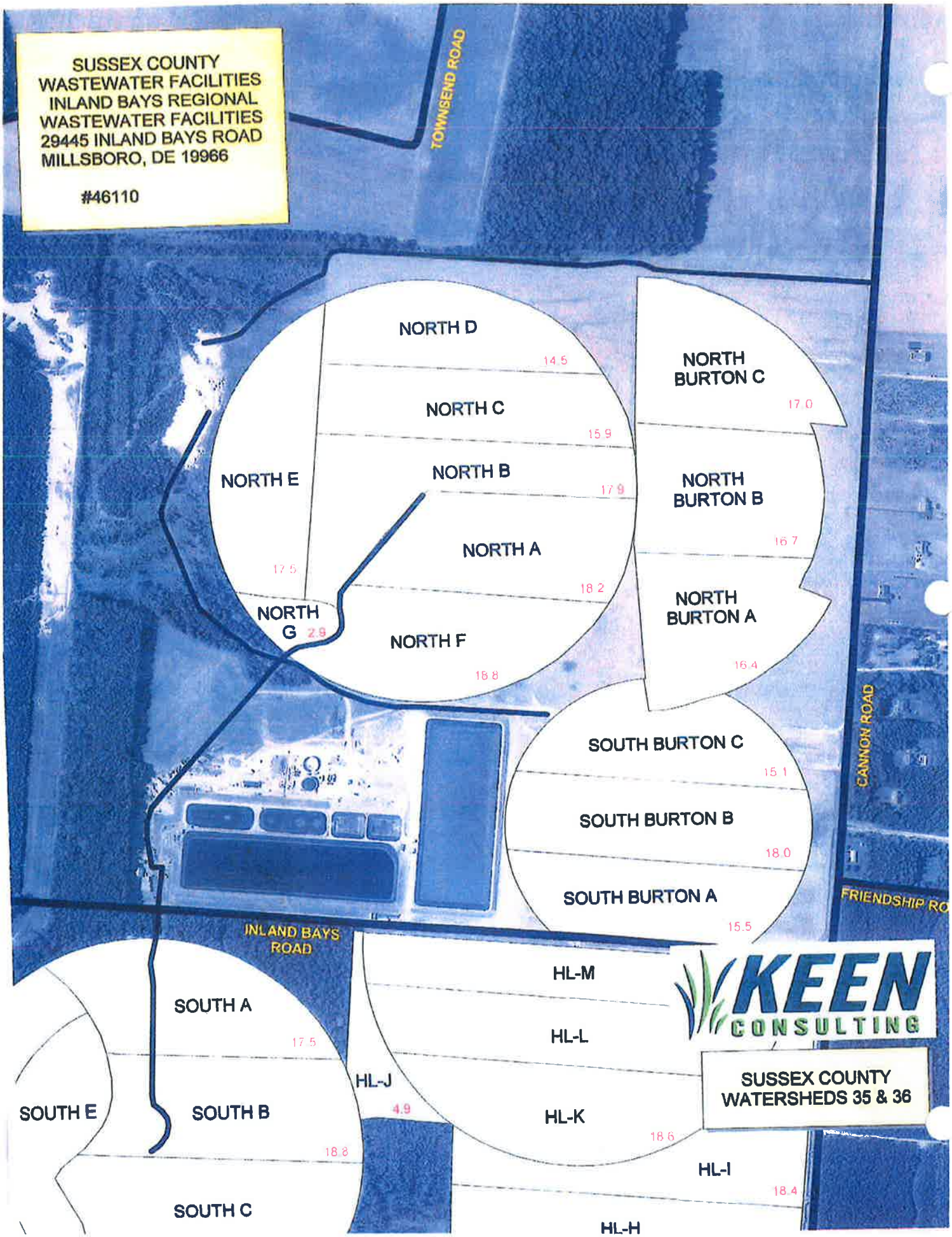
HL-F
16.0
HL-E
17.0
HL-D
16.3
HL-C
16.9
HL-B
17.1
HL-A
17.6
CANNON ROAD
MOUNT JOY ROAD
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
TOWNSEND ROAD
NORTH D
14.5
NORTH C
15.9
NORTH B
17.9
NORTH A
18.2
NORTH F
18.8
NORTH E
17.5
NORTH G
2.9
NORTH BURTON C
17.0
NORTH BURTON B
16.7
NORTH BURTON A
16.4
SOUTH BURTON C
15.1
SOUTH BURTON B
18.0
SOUTH BURTON A
15.5
CANNON ROAD
FRIENDSHIP RO
INLAND BAYS ROAD
SOUTH A
17.5
SOUTH E
SOUTH B
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SOUTH C
HL-J
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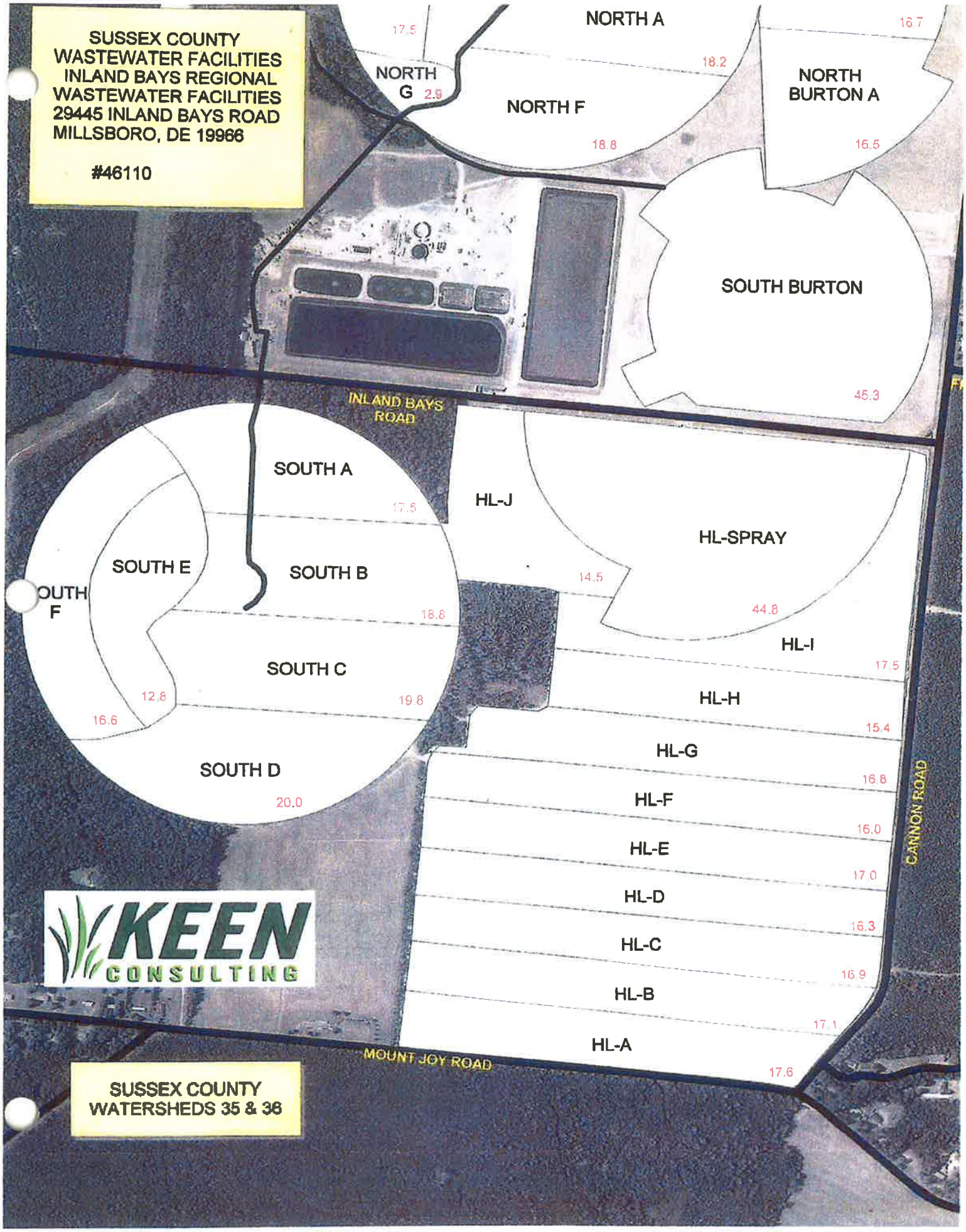
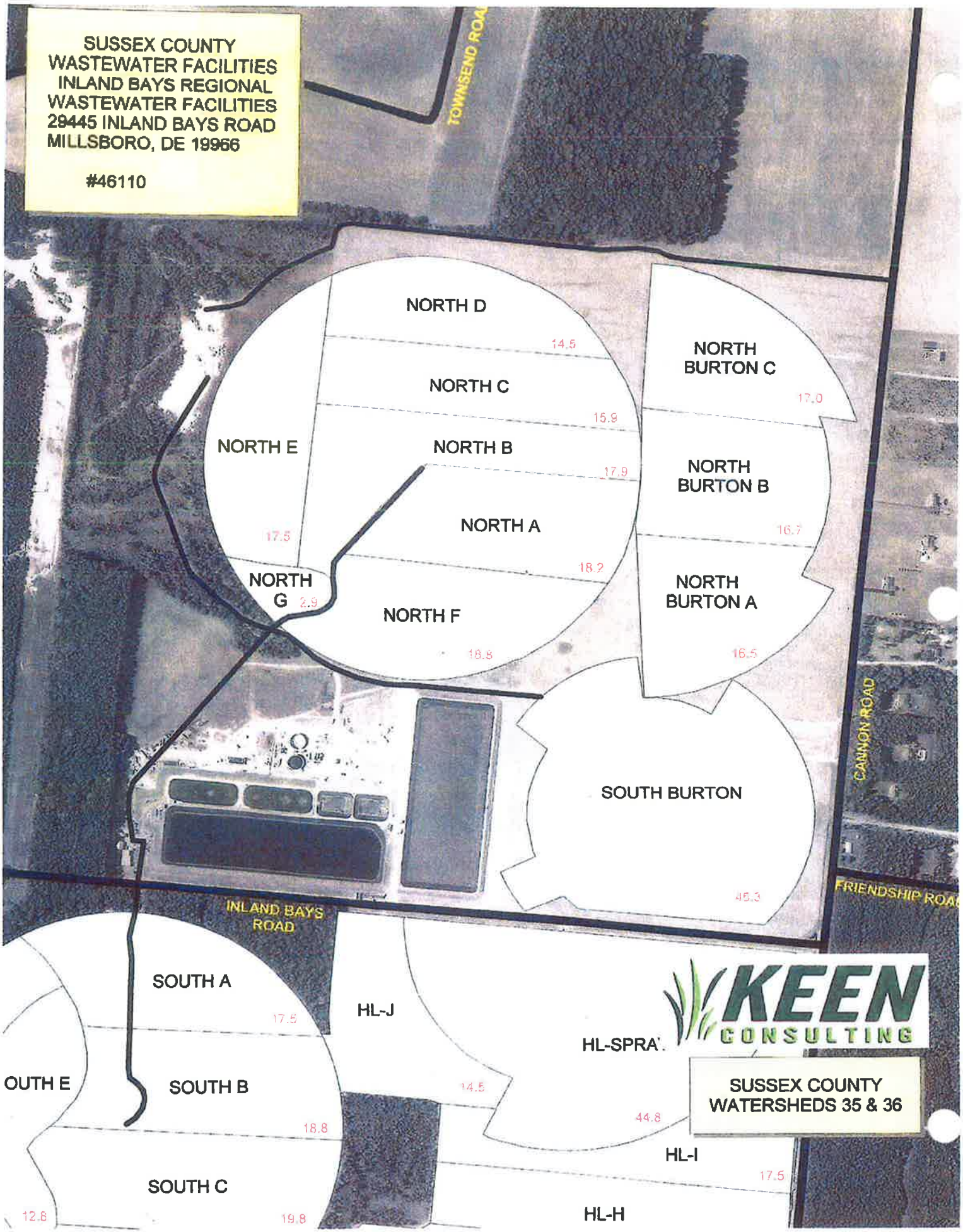
HL-I
18.4
HL-H
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
NORTH A
17.5
16.7
18.2
NORTH G
2.9
NORTH F
NORTH BURTON A
18.8
16.5
SOUTH BURTON
45.3
INLAND BAYS ROAD
SOUTH A
17.5
HL-J
HL-SPRAY
SOUTH E
SOUTH B
14.5
44.8
SOUTH F
18.8
HL-I
SOUTH C
17.5
12.8
19.8
HL-H
16.6
15.4
HL-G
SOUTH D
16.8
20.0
HL-F
16.0
HL-E
17.0
HL-D
16.3
HL-C
16.9
HL-B
17.1
HL-A
MOUNT JOY ROAD
17.6
CANNON ROAD
KEEN CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36


SUSSEX COUNTY
WASTEWATER FACILITIES
INLAND BAYS REGIONAL
WASTEWATER FACILITIES
29445 INLAND BAYS ROAD
MILLSBORO, DE 19966
#46110
TOWNSEND ROAD
NORTH D
14.5
NORTH C
15.9
NORTH E
NORTH B
17.9
NORTH A
17.5
18.2
NORTH G
2.9
NORTH F
18.8
NORTH BURTON C
17.0
NORTH BURTON B
16.7
NORTH BURTON A
16.5
SOUTH BURTON
45.3
CANNON ROAD
FRIENDSHIP ROAD
INLAND BAYS ROAD
SOUTH A
17.5
HL-J
HL-SPRA
OUTH E
SOUTH B
14.5
18.8
44.8
HL-I
17.5
SOUTH C
12.6
19.8
HL-H
KEEN
CONSULTING
SUSSEX COUNTY
WATERSHEDS 35 & 36

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.
Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207077
Location: HETTIE LINGO
Description: HL-J
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0257 mg/kg	4.025764
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4154 mg/kg	2.415458
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	6.103059 mg/kg	2.415458
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	10.90982 mg/kg	1.610305
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0515 mg/kg	8.051529
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0402 mg/kg	0.040258
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0515 mg/kg	8.051529
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0257 mg/kg	4.025764
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.090 mg/kg	14.09017
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	25.70853 mg/kg	2.415458

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207076
Location: HETTIE LINGO
Description: HL-I
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 3.9808 mg/kg	3.980891
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.3885 mg/kg	2.388535
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.251592 mg/kg	2.388535
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	16.01114 mg/kg	1.592356
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 7.9617 mg/kg	7.961783
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0398 mg/kg	0.039809
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 7.9617 mg/kg	7.961783
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 3.9808 mg/kg	3.980891
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 13.933 mg/kg	13.93312
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	26.91878 mg/kg	2.388535

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207075
Location: HETTIE LINGO
Description: HL-H
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0257 mg/kg	4.025764
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4154 mg/kg	2.415458
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	3.969404 mg/kg	2.415458
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	9.202898 mg/kg	1.610305
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0515 mg/kg	8.051529
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0402 mg/kg	0.040258
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0515 mg/kg	8.051529
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0257 mg/kg	4.025764
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.090 mg/kg	14.09017
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	18.73590 mg/kg	2.415458

Approval:

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Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207074
Location: HETTIE LINGO
Description: HL-G
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0128 mg/kg	4.012841
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4077 mg/kg	2.407704
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.125200 mg/kg	2.407704
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	9.261637 mg/kg	1.605136
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0256 mg/kg	8.025682
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0401 mg/kg	0.040128
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.0256 mg/kg	8.025682
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0128 mg/kg	4.012841
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.044 mg/kg	14.04494
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	21.38041 mg/kg	2.407704

Approval:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207073
Location: HETTIE LINGO
Description: HL-F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.1322 mg/kg	4.132231
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4793 mg/kg	2.479338
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.256198 mg/kg	2.479338
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	14.14049 mg/kg	1.652892
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.2644 mg/kg	8.264462
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0413 mg/kg	0.041322
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.2644 mg/kg	8.264462
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.1322 mg/kg	4.132231
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.462 mg/kg	14.46280
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	26.92561 mg/kg	2.479338

Approval:

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Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207072
Location: HETTIE LINGO
Description: HL-E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6382 mg/kg	4.638218
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7829 mg/kg	2.782931
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.387755 mg/kg	2.782931
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	13.91465 mg/kg	1.855287
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.2764 mg/kg	9.276437
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0463 mg/kg	0.046373
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 9.2764 mg/kg	9.276437
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6382 mg/kg	4.638218
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 16.233 mg/kg	16.23376
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	23.50649 mg/kg	2.782931

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207071
Location: HETTIE LINGO
Description: HL-D
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.7348 mg/kg	4.734848
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8409 mg/kg	2.840909
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	6.571969 mg/kg	2.840909
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	12.33901 mg/kg	1.893939
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.4696 mg/kg	9.469696
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0473 mg/kg	0.047349
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 9.4696 mg/kg	9.469696
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.7348 mg/kg	4.734848
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 16.571 mg/kg	16.57196
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	29.49810 mg/kg	2.840909

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207070
Location: HETTIE LINGO
Description: HL-C
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.5126 mg/kg	4.512635
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7075 mg/kg	2.707581
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.422382 mg/kg	2.707581
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	12.38267 mg/kg	1.805054
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.0252 mg/kg	9.02527
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0451 mg/kg	0.045126
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 9.0252 mg/kg	9.02527
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.5126 mg/kg	4.512635
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 15.794 mg/kg	15.79422
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	24.61191 mg/kg	2.707581

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207069
Location: HETTIE LINGO
Description: HL-B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 3.6549 mg/kg	3.65497
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.1929 mg/kg	2.192982
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.868421 mg/kg	2.192982
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	13.47222 mg/kg	1.461988
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 7.3099 mg/kg	7.309941
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0365 mg/kg	0.03655
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 7.3099 mg/kg	7.309941
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 3.6549 mg/kg	3.65497
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 12.792 mg/kg	12.79239
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	25.30701 mg/kg	2.192982

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207068
Location: HETTIE LINGO
Description: HL-A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB030	ARSENIC	3050B	6010B	Dec-12	Dec-14	JMO	< 4.1736 mg/kg	4.173622
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.5041 mg/kg	2.504173
IB090	CHROMIUM-TOTAL (Cr)	3050B	6010B	Dec-12	Dec-14	JMO	4.808013 mg/kg	2.504173
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	9.732888 mg/kg	1.669449
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.3472 mg/kg	8.347245
IB170	MERCURY	7471A	7471A		Dec-15	NAF	< 0.0417 mg/kg	0.041736
IB180	MOLYBDENUM	3050B	6010B	Dec-12	Dec-14	JMO	< 8.3472 mg/kg	8.347245
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.1736 mg/kg	4.173622
IB210	SELENIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 14.607 mg/kg	14.60767
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	27.79632 mg/kg	2.504173

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location HETTIE LINGO			HL-F	HL-G	HL-H	HL-I	HL-J
Sample Identification							
Lab Number			0710-1	0711-1	0712-1	0713-1	0714-1
Total Exchange Capacity (ME/100 g)			4.13	4.09	3.73	6.13	4.14
pH	Buffer (SMP/Sikora)		7.2	7.1	7.0	6.9	7.0
	H_2O (1:1)		6.0	6.0	5.6	5.5	5.4
Organic Matter (humus) %			1.42	1.34	1.44	1.52	1.80
Estimated Nitrogen Release		lb/A	48	47	49	50	56
ANIONS	SOLUBLE SULFUR*	ppm	14	12	14	16	17
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1076	962	1282	1869	1113
		ppm of P	235	210	280	408	243
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	976	972	708	1292	740
		ppm	488	486	354	646	370
	MAGNESIUM*	lb/A	138	134	108	90	88
		ppm	69	67	54	45	44
	POTASSIUM*	lb/A	118	122	130	148	142
		ppm	59	61	65	74	71
	SODIUM*	lb/A	54	50	48	48	48
		ppm	27	25	24	24	24
BASE SATURATION PERCENT							
Calcium		%	59.08	59.41	47.45	52.69	44.69
Magnesium		%	13.92	13.65	12.06	6.12	8.86
Potassium		%	3.66	3.82	4.47	3.10	4.40
Sodium		%	2.84	2.66	2.80	1.70	2.52
Other Bases		%	5.40	5.40	6.20	6.40	6.60
Hydrogen		%	15.00	15.00	27.00	30.00	33.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.46	0.38	0.41	0.35	0.34
Iron* (ppm)			221	225	239	262	162
Manganese* (ppm)			11	10	10	10	32
Copper* (ppm)			6.01	4.13	5.13	8.26	4.23
Zinc* (ppm)			12.66	10.28	11.66	16.78	8.31
Aluminum* (ppm)			910	862	908	1148	1340
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location HETTIE LINGO			HL-A	HL-B	HL-C	HL-D	HL-E
Sample Identification							
Lab Number			0705-1	0706-1	0707-1	0708-1	0709-1
Total Exchange Capacity (ME/100 g)			5.22	4.49	3.73	4.57	3.16
pH		Buffer (SMP/Sikora)	7.1	7.1	7.1	7.1	7.1
		H_2O (1:1)	5.8	5.8	5.8	5.8	5.8
Organic Matter (humus) %			1.35	1.30	1.09	1.34	1.26
Estimated Nitrogen Release		lb/A	47	46	42	47	45
ANIONS	SOLUBLE SULFUR*	ppm	14	15	13	14	12
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	2176	1598	1191	1104	1136
		ppm of P	475	349	260	241	248
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1238	820	820	1012	664
		ppm	619	410	410	506	332
	MAGNESIUM*	lb/A	100	102	98	128	102
		ppm	50	51	49	64	51
	POTASSIUM*	lb/A	156	134	122	140	104
		ppm	78	67	61	70	52
	SODIUM*	lb/A	50	294	52	48	44
		ppm	25	147	26	24	22
BASE SATURATION PERCENT							
Calcium		%	59.29	45.66	54.96	55.36	52.53
Magnesium		%	7.98	9.47	10.95	11.67	13.45
Potassium		%	3.83	3.83	4.19	3.93	4.22
Sodium		%	2.08	14.23	3.03	2.28	3.03
Other Bases		%	5.80	5.80	5.80	5.80	5.80
Hydrogen		%	21.00	21.00	21.00	21.00	21.00
EXTRACTABLE MINORS							
Boron* (ppm)			0.36	0.37	0.28	0.34	0.39
Iron* (ppm)			232	226	190	201	215
Manganese* (ppm)			22	27	20	22	15
Copper* (ppm)			4.08	6.17	5.39	6.48	6.28
Zinc* (ppm)			17.06	10.39	12.42	15.94	11.81
Aluminum* (ppm)			1064	1104	942	1020	886
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

BROOKSIDE LABORATORIES, INC.

** SOIL ANALYSIS REPORT **

Sussex County Wastewater Facilities
P.O. Box 589
Georgetown, DE 19947

File Number: 46110
Date Received: 12/23/2011
Date Reported: 12/27/2011

Submitted By: Keen Consulting, Inc.

SAMPLE LOCATION: INLAND BAYS

NBR	FIELD	DESCRIPTION	SAR
839	NORTH A		4.01
840	NORTH B		3.69
841	NORTH C		4.30
842	NORTH D		3.85
843	NORTH E		3.98
844	NORTH F		3.89
845	NORTH G		3.25
846	SOUTH A		5.19
847	SOUTH B		4.88
848	SOUTH C		5.93
849	SOUTH D		5.02
850	SOUTH E		5.34
851	SOUTH F		5.14
852	NORTH	BURTON A	2.46
853	NORTH	BURTON B	2.41
854	NORTH	BURTON C	2.44

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207067
Location: INLAND BAYS
Description: NORTH
Sub Description: BURTON C

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7726 mg/kg	2.772643
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.759704 mg/kg	1.848428
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.2421 mg/kg	9.242144
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6210 mg/kg	4.621072
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	23.25323 mg/kg	2.772643

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207066
Location: INLAND BAYS
Description: NORTH
Sub Description: BURTON B

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.4509 mg/kg	2.45098
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.942810 mg/kg	1.633986
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 8.1699 mg/kg	8.169934
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.0849 mg/kg	4.084967
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	23.11274 mg/kg	2.45098

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.
Analytical Report

Client Number:	46110	Lab Number:	SE1207065
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	NORTH
Date Collected:		Sub Description:	BURTON A
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 1.9710 mg/kg	1.97109
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	5.006570 mg/kg	1.31406
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 6.5703 mg/kg	6.570302
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 3.2851 mg/kg	3.285151
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	25.44678 mg/kg	1.97109

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location	INLAND BAYS		NORTH	NORTH	NORTH		
Sample Identification			BURTON A	BURTON B	BURTON C		
Lab Number			0702-1	0703-1	0704-1		
Total Exchange Capacity (ME/100 g)			4.77	5.44	5.00		
pH	Buffer (SMP/Sikora)		7.2	7.3	7.3		
	H_2O (1:1)		6.4	6.5	6.5		
Organic Matter (humus) %			1.45	1.12	1.19		
Estimated Nitrogen Release		lb/A	49	42	44		
ANIONS	SOLUBLE SULFUR*	ppm	11	11	12		
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1081	1621	1548		
		ppm of P	236	354	338		
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1240	1448	1328		
		ppm	620	724	664		
	MAGNESIUM*	lb/A	134	168	144		
		ppm	67	84	72		
	POTASSIUM*	lb/A	158	162	182		
		ppm	79	81	91		
	SODIUM*	lb/A	110	108	106		
		ppm	55	54	53		
BASE SATURATION PERCENT							
Calcium		%	64.99	66.54	66.40		
Magnesium		%	11.71	12.87	12.00		
Potassium		%	4.25	3.82	4.67		
Sodium		%	5.01	4.32	4.61		
Other Bases		%	5.00	4.90	4.90		
Hydrogen		%	9.00	7.50	7.50		
EXTRACTABLE MINORS							
Boron* (ppm)			0.40	0.45	0.48		
Iron* (ppm)			194	167	171		
Manganese* (ppm)			12	16	17		
Copper* (ppm)			1.48	1.94	1.86		
Zinc* (ppm)			7.69	11.82	11.03		
Aluminum* (ppm)			696	741	793		
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207064
Location: INLAND BAYS
Description: SOUTH F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7272 mg/kg	2.727272
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	1.899999 mg/kg	1.818181
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.0909 mg/kg	9.090909
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.5454 mg/kg	4.545454
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	11.56363 mg/kg	2.727272

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.
Analytical Report

Client Number:	46110	Lab Number:	SE1207063
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	SOUTH E
Date Collected:		Sub Description:	
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.1645 mg/kg	2.164502
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	2.034632 mg/kg	1.443001
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 7.2150 mg/kg	7.215007
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 3.6075 mg/kg	3.607503
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	10.72871 mg/kg	2.164502

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1207062
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	SOUTH D
Date Collected:		Sub Description:	
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.9126 mg/kg	2.912621
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.456310 mg/kg	1.941747
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.7087 mg/kg	9.708737
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.8543 mg/kg	4.854368
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	17.56310 mg/kg	2.912621

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1207061
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	SOUTH C
Date Collected:		Sub Description:	
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8735 mg/kg	2.873563
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.530651 mg/kg	1.915708
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.5785 mg/kg	9.578543
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.7892 mg/kg	4.789272
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	18.10344 mg/kg	2.873563

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207060
Location: INLAND BAYS
Description: SOUTH B
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7522 mg/kg	2.752293
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	6.146788 mg/kg	1.834862
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.1743 mg/kg	9.174311
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.5871 mg/kg	4.587155
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	18.60550 mg/kg	2.752293

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207059
Location: INLAND BAYS
Description: SOUTH A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.9761 mg/kg	2.97619
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	5.436507 mg/kg	1.984126
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.9206 mg/kg	9.920634
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.9603 mg/kg	4.960317
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	17.24206 mg/kg	2.97619

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location			INLAND BAYS	SOUTH F			
Sample Identification							
Lab Number				0701-1			
Total Exchange Capacity (ME/100 g)				4.36			
pH		Buffer (SMP/Sikora)		7.2			
		H_2O (1:1)		6.2			
Organic Matter (humus) %				1.55			
Estimated Nitrogen Release			lb/A	51			
ANIONS	SOLUBLE SULFUR*		ppm	9			
	PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	637			
			ppm of P	139			
		BRAY II	lb/A P as P_2O_5				
			ppm of P				
		OLSEN	lb/A P as P_2O_5				
			ppm of P				
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	1000			
			ppm	500			
	MAGNESIUM*		lb/A	162			
			ppm	81			
	POTASSIUM*		lb/A	116			
			ppm	58			
	SODIUM*		lb/A	132			
			ppm	66			
BASE SATURATION PERCENT							
Calcium			%	57.34			
Magnesium			%	15.48			
Potassium			%	3.41			
Sodium			%	6.58			
Other Bases			%	5.20			
Hydrogen			%	12.00			
EXTRACTABLE MINORS							
Boron* (ppm)				0.36			
Iron* (ppm)				144			
Manganese* (ppm)				8			
Copper* (ppm)				0.80			
Zinc* (ppm)				5.08			
Aluminum* (ppm)				694			
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location INLAND BAYS			SOUTH A	SOUTH B	SOUTH C	SOUTH D	SOUTH E
Sample Identification							
Lab Number			0696-1	0697-1	0698-1	0699-1	0700-1
Total Exchange Capacity (ME/100 g)			4.05	7.01	4.71	5.05	3.13
pH	Buffer (SMP/Sikora)		7.2	7.2	7.3	7.3	7.3
	H_2O (1:1)		6.5	6.4	6.6	6.4	6.5
Organic Matter (humus) %			1.67	1.86	1.57	1.28	1.12
Estimated Nitrogen Release		lb/A	53	57	51	46	42
ANIONS	SOLUBLE SULFUR*	ppm	12	15	15	12	9
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	316	417	618	856	614
		ppm of P	69	91	135	187	134
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	882	1814	1110	1268	692
		ppm	441	907	555	634	346
	MAGNESIUM*	lb/A	164	186	184	158	142
		ppm	82	93	92	79	71
	POTASSIUM*	lb/A	224	234	172	146	110
		ppm	112	117	86	73	55
	SODIUM*	lb/A	170	194	204	152	130
		ppm	85	97	102	76	65
BASE SATURATION PERCENT							
Calcium		%	54.44	64.69	58.92	62.77	55.27
Magnesium		%	16.87	11.06	16.28	13.04	18.90
Potassium		%	7.09	4.28	4.68	3.71	4.51
Sodium		%	9.13	6.02	9.42	6.54	9.03
Other Bases		%	4.90	5.00	4.80	5.00	4.90
Hydrogen		%	7.50	9.00	6.00	9.00	7.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.55	0.52	0.71	0.52	0.48
Iron* (ppm)			165	172	239	248	143
Manganese* (ppm)			29	22	17	15	11
Copper* (ppm)			1.50	1.49	1.52	1.51	0.80
Zinc* (ppm)			3.82	4.16	5.63	5.97	3.80
Aluminum* (ppm)			1093	1277	922	934	586
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

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Fax: (419) 753 2949

Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207058
Location: INLAND BAYS
Description: NORTH G
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.7881 mg/kg	2.788104
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.758364 mg/kg	1.858736
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.2936 mg/kg	9.29368
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6468 mg/kg	4.64684
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	14.66542 mg/kg	2.788104

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207057
Location: INLAND BAYS
Description: NORTH F
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8142 mg/kg	2.814258
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	6.951219 mg/kg	1.876172
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	10.26266 mg/kg	9.380863
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6904 mg/kg	4.690431
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	19.73733 mg/kg	2.814258

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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New Knoxville, OH 45871
Phone: (419) 753-2448
Fax: (419) 753 2949

Brookside Laboratories, Inc.
Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207056
Location: INLAND BAYS
Description: NORTH E
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8957 mg/kg	2.895752
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	3.214285 mg/kg	1.930501
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.6525 mg/kg	9.652509
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.8262 mg/kg	4.826254
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	16.16795 mg/kg	2.895752

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207055
Location: INLAND BAYS
Description: NORTH D
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.9821 mg/kg	2.982107
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	3.727634 mg/kg	1.988071
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.9403 mg/kg	9.940357
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.9701 mg/kg	4.970178
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	20.49701 mg/kg	2.982107

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207054
Location: INLAND BAYS
Description: NORTH C
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.9880 mg/kg	2.988047
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.362549 mg/kg	1.992031
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.9601 mg/kg	9.960159
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.9800 mg/kg	4.980079
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	23.17729 mg/kg	2.988047

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

P.O. Box 456, 308 S. Main St.
New Knoxville, OH 45871
Phone: (419) 753-2448
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Brookside Laboratories, Inc.

Analytical Report

Client Number:	46110	Lab Number:	SE1207053
Client Name:	Sussex County Wastewater Facilities	Location:	INLAND BAYS
Consultant Name:	Keen Consulting, Inc.	Description:	NORTH B
Date Collected:		Sub Description:	
Date Received:	12/7/2011		

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8142 mg/kg	2.814258
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	4.033771 mg/kg	1.876172
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.3808 mg/kg	9.380863
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6904 mg/kg	4.690431
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	20.75984 mg/kg	2.814258

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

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Brookside Laboratories, Inc.

Analytical Report

Client Number: 46110
Client Name: Sussex County Wastewater Facilities
Consultant Name: Keen Consulting, Inc.
Date Collected:
Date Received: 12/7/2011

Lab Number: SE1207052
Location: INLAND BAYS
Description: NORTH A
Sub Description:

Code	Procedure Name	Prep Method	Analysis Method	Completed Prep	Completed Anal	Analyst	Result	MDL
IB060	CADMIUM	3050B	6010B	Dec-12	Dec-14	JMO	< 2.8195 mg/kg	2.819548
IB120	COPPER	3050B	6010B	Dec-12	Dec-14	JMO	5.093984 mg/kg	1.879699
IB140	LEAD	3050B	6010B	Dec-12	Dec-14	JMO	< 9.3984 mg/kg	9.398496
IB190	NICKEL	3050B	6010B	Dec-12	Dec-14	JMO	< 4.6992 mg/kg	4.699248
IB300	ZINC	3050B	6010B	Dec-12	Dec-14	JMO	26.81390 mg/kg	2.819548

Approval:

Kari L. Long

Kari Long
Environmental Services Coordinator

Comments:

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location		INLAND BAYS	NORTH F	NORTH G			
Sample Identification							
Lab Number			0694-1	0695-1			
Total Exchange Capacity (ME/100 g)			5.00	5.23			
pH	Buffer (SMP/Sikora)		7.3	7.5			
	H_2O (1:1)		6.7	7.0			
Organic Matter (humus) %			1.82	1.61			
Estimated Nitrogen Release		lb/A	56	52			
ANIONS	SOLUBLE SULFUR*	ppm	10	11			
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	600	330			
		ppm of P	131	72			
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1224	1364			
		ppm	612	682			
	MAGNESIUM*	lb/A	232	238			
		ppm	116	119			
	POTASSIUM*	lb/A	166	208			
		ppm	83	104			
	SODIUM*	lb/A	138	152			
		ppm	69	76			
BASE SATURATION PERCENT							
Calcium		%	61.20	65.20			
Magnesium		%	19.33	18.96			
Potassium		%	4.26	5.10			
Sodium		%	6.00	6.32			
Other Bases		%	4.70	4.40			
Hydrogen		%	4.50	0.00			
EXTRACTABLE MINORS							
Boron* (ppm)			0.62	0.76			
Iron* (ppm)			190	232			
Manganese* (ppm)			11	8			
Copper* (ppm)			1.42	1.33			
Zinc* (ppm)			5.04	3.39			
Aluminum* (ppm)			754	667			
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

lb/A

46110-12

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Sussex County Wastewater City Georgetown State DE

Independent Consultant Keen Consulting, Inc. Date 12/08/2011

Sample Location INLAND BAYS			NORTH A	NORTH B	NORTH C	NORTH D	NORTH E
Sample Identification							
Lab Number			0689-1	0690-1	0691-1	0692-1	0693-1
Total Exchange Capacity (ME/100 g)			5.62	5.20	5.47	5.65	6.03
pH	Buffer (SMP/Sikora)		7.2	7.3	7.3	7.4	7.3
	H_2O (1:1)		6.5	6.6	6.7	6.7	6.5
Organic Matter (humus) %			1.49	1.32	1.29	1.24	1.68
Estimated Nitrogen Release		lb/A	50	46	46	45	54
ANIONS	SOLUBLE SULFUR*	ppm	13	13	11	11	15
PHOSPHORUS	MEHLICH III	lb/A P as P_2O_5	1974	1521	1466	1566	421
		ppm of P	431	332	320	342	92
	BRAY II	lb/A P as P_2O_5					
		ppm of P					
	OLSEN	lb/A P as P_2O_5					
		ppm of P					
EXCHANGEABLE CATIONS	CALCIUM*	lb/A	1360	1290	1410	1462	1566
		ppm	680	645	705	731	783
	MAGNESIUM*	lb/A	214	198	218	224	178
		ppm	107	99	109	112	89
	POTASSIUM*	lb/A	232	174	160	182	186
		ppm	116	87	80	91	93
	SODIUM*	lb/A	154	168	152	144	178
		ppm	77	84	76	72	89
BASE SATURATION PERCENT							
Calcium	%		60.50	62.02	64.44	64.69	64.93
Magnesium	%		15.87	15.87	16.61	16.52	12.30
Potassium	%		5.29	4.29	3.75	4.13	3.95
Sodium	%		5.96	7.02	6.04	5.54	6.42
Other Bases	%		4.90	4.80	4.70	4.70	4.90
Hydrogen	%		7.50	6.00	4.50	4.50	7.50
EXTRACTABLE MINORS							
Boron* (ppm)			0.53	0.58	0.65	0.59	0.57
Iron* (ppm)			185	183	177	164	217
Manganese* (ppm)			21	21	27	23	9
Copper* (ppm)			1.71	1.35	1.40	1.60	1.10
Zinc* (ppm)			9.80	7.03	6.68	10.46	3.89
Aluminum* (ppm)			973	859	886	790	938
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						

* Mehlich III Extractable

INLAND BAYS REGIONAL WASTEWATER FACILITY

LTS 5004-90-12

PERMIT RENEWAL

HYDROGEOLOGIC REPORT

SECTION 6

MAY 2017

Hydrogeologic Report for Compliance Monitoring at the Inland Bays Regional Wastewater Facilities in Sussex County, Delaware

January 30, 2017

Whitman, Requardt
& Associates, LLP
Baltimore, Maryland

Hydrogeologic Report
for
Compliance Monitoring
at the
Inland Bays Regional Wastewater Facilities
in Sussex County, Delaware

January 30, 2017

Prepared for:
Sussex County Engineering Department
2 The Circle
P.O. Box 589
Georgetown, Delaware 19947

Prepared by:
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Hydrogeologic Report
for
Compliance Monitoring
at
Inland Bays Regional Wastewater Facilities
in
Sussex County, Delaware

January 30, 2017

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1. Introduction

Whitman, Requardt & Associates, LLP (WRA) prepared this hydrogeologic report for compliance monitoring for the Sussex County, Delaware Engineering Department. This report assesses the conditions at the existing spray irrigation fields at the Inland Bays Regional Wastewater Facilities (IBRWF). The IBRWF is located approximately 10 miles southwest of Lewes, Delaware. The spray fields are located north and west of the intersection of Cannon Road and Mt. Joy Road. A site plan showing the existing spray fields and monitoring wells is in Appendix 1.

The IBRWF began operating in 1992. Currently the IBRWF sprays effluent under State permit LTS 5004-90-12. It has eight spray fields and is permitted for spraying 2,650,000 gallons per day on 432.5 acres. The permitted spray application rates vary by field from 1 to 2 inches per week. Effluent applications are limited to days when the conditions are suitable for spraying, e.g., when it is not raining or freezing. Corn and soybeans are grown on the spray fields.

The operating period assessed in this report is 2011 to 2015. The Sussex County Engineering Department provided the data that was compiled in this report, and WRA provides summaries in graphical and tabular form of this data. In addition, WRA provides assessment of the data and recommendations for further action by Sussex County.

A table of construction dimensions for the site monitoring wells is in Appendix 2. The data provided for the wells are the permit numbers, local well names, screen depth and diameter, elevation of the well casings, and northing and easting coordinates.

2. Geologic Setting

WR&A obtained geologic information from maps and reports published by the U.S. Geological Survey and the Delaware Geological Survey, which are listed in the References section. The project area is in the Fairmount 7.5-minute topographic quadrangle.

Sussex County, Delaware is located in the Atlantic Coastal Plain physiographic province, which has an eastward-thickening wedge of sand, silt and clay that rests on bedrock. According to Vroblesky and Fleck (1991) the top of the bedrock in the study area is approximately 6,500 feet below sea level. The oldest Coastal Plain sediments in eastern Sussex County are several thousand feet of sediments ranging in age from Cretaceous to Eocene.

In Miocene time, the area was submerged by a shallow sea. In this period the Chesapeake Group was deposited, which consists of the following from oldest to youngest: the Calvert Formation, the Choptank Formation, the St. Mary's Formation, the Manokin Formation, and the Bethany Formation. The Calvert Formation (consisting mostly of gray sandy silt) and the Choptank Formation (consisting of gray fine to coarse shelly sand) were deposited in predominantly marine environments. The St. Mary's Formation, the Manokin Formation, and the Bethany Formation were deposited by deltas. The St. Mary's Formation consists of bluish-gray fine sandy clay, with some interbeds of very fine to medium sand. The Manokin Formation consists of a lower unit of silty fine sand, which grades into an upper unit of gray fine to coarse sand. The Bethany Formation consists of gray clay or silt interbedded with fine to very coarse sand.

The sediments of the Columbia Group were deposited during the Pleistocene Epoch on top of the eroded surface of the Chesapeake Group. In the study area, the Columbia Group consists of the Beaverdam Formation, the Lynch Heights Formation, and Pleistocene dune deposits forming sandy ridges.

The Beaverdam Formation was deposited in a fluvial to estuarine environment in the late Pliocene Epoch. It is a heterogeneous unit ranging from very coarse sand with pebbles to silty clay. It has a white, silty matrix that distinguishes it from overlying deposits.

The surficial geologic formation in most of the spray field area is the Lynch Heights Formation, which is a thin, heterogeneous deposit ranging from reddish brown, pale yellow, and light gray silty, clayey, very coarse sand, to pale yellow, light gray gravelly sand. Its estimated thickness in the study area is 3 to 10 feet.

Several aquifers exist in the Coastal Plain deposits of eastern Sussex County, Delaware. The uppermost aquifer is the unconfined aquifer, which exists in the Columbia Group sediments. The unconfined aquifer receives recharge from precipitation, transmits water to the deeper aquifers, and maintains stream flow. The unconfined aquifer exists in the sandy parts of the Columbia Group. Fine-grained units in the Lynch Heights Formation and the Beaverdam Formation can function as semiconfining units in the unconfined aquifer, if they have sufficient thickness and areal extent. The regional base of the unconfined aquifer is the base of the Beaverdam Formation, at a depth of 120 feet.

The Bethany Formation contains sand units that form the confined Pocomoke Aquifer. The Manokin Formation contains the confined Manokin Aquifer, which is a water supply source in Sussex County. The contact of the Manokin Formation with the underlying St. Mary's Formation is the base of the fresh-water

aquifer system. The base of the Manokin Aquifer is 250 to 300 feet below sea level. The Choptank Formation, which is underneath the St. Mary's Formation, probably contains saline water.

3. Metered Flows

Graphs of metered flows for the influent are contained in Appendix 3. The average monthly influent varied from approximately 440,000 gallons to 1,100,000 gallons during 2011 to 2015. The months with the highest influent flows were either July or August each year. The daily peak influent varied from approximately 500,000 gallons to 2,100,000 gallons.

Graphs of metered flows for the effluent (the sprayed water) are contained in Appendix 4. The total monthly effluent flow varied from approximately 600,000 gallons to 54,000,000 gallons during 2011 to 2015. The highest monthly effluent flows were in July. The average daily effluent varied from approximately 610,000 gallons to 1,900,000 gallons. The highest daily effluent flows were in either July or August. Spraying occurred in the range of 1 to 29 days per month during 2011 to 2015.

4. Precipitation

Precipitation data for 2011 to 2015 is plotted in Appendix 5. Sussex County staff measured precipitation at the wastewater plant. The precipitation varied from 0.75 inch to 13 inches per month. The highest values occurred in June, July, or October.

WRA compared precipitation data to peak flows to qualitatively assess inflow and infiltration into the wastewater collection system. The peak daily precipitation varied from 0.4 inch to 8.1 inches. The highest peak daily precipitation was in August 2012, which was the month with the third-highest daily peak influent. The second-highest peak daily precipitation was in July 2013, which was the month with the highest daily peak influent. July 2013 was also the month that had the largest amount of effluent sprayed, and the most days sprayed per month. There is an apparent relationship between higher precipitation, and higher flows of influent and effluent.

5. Water Table

WRA assessed water level data from the IBRWF monitoring wells in order to analyze the conditions in the unconfined aquifer. Sussex County provided water level measurements on a quarterly basis from 2011 to 2015 in terms of feet below the land surface, which are tabulated in Appendix 6. WRA prepared hydrographs showing the depth to water, which are in Appendix 7.

WRA calculated the groundwater elevation associated with each water level measurement, using survey elevations and well casing heights that were provided by Sussex County. Appendix 8 contains tabulated groundwater elevations in feet above sea level. WRA prepared hydrographs of the groundwater elevation, which are in Appendix 9.

The highest (shallowest) water levels occurred in July 2013 in more than half the monitoring wells. The next most common time with the highest water level was the following month, August 2013. The lowest water levels were reported in July 2012 throughout the observation area (in 24 of 26 monitoring wells). The range in water level between the high and low conditions was approximately 7 to 13 feet during 2011 to 2015.

Maps showing the configuration of the high and low water table are presented in Appendix 10. In general, groundwater flows from areas of higher water table elevation to areas of lower water table elevation. Groundwater flow in the unconfined aquifer is generally to the east, northeast, or southeast.

Groundwater mounding is the rise in the water table in response to the percolation of effluent through the unsaturated zone. State guidelines require that the unsaturated zone underneath the spray fields be at least 2 feet thick.

In the relatively wet July (and/or August) 2013 period, water levels in monitoring wells rose inside the 2-ft. thick unsaturated zone buffer in most of the monitoring wells at the IBRWF. It rose into the buffer in MW2, MW16, and MW17 at the North Burton Field; in MW5 at the North Field; in MW7 at the West Hetti Lingo Field; in MW10 at the South Field; in MW13 and MW19 at the South Burton Field; in MW14 and MW20 at the North Hetti Lingo Field; and in MW27 at the East Hetti Lingo Field. Water levels also rose into the buffer outside of the spray areas, in wells MW1, MW4, MW8, MW9, MW23, MW24, and MW25. As noted earlier, July 2013 was the peak with respect to precipitation, influent, and effluent in the five-year reporting period at the IBRWF.

In addition to the aforementioned July-August 2013 wet period, water levels shallower than 2 feet were observed during most of 2013 (and parts of 2014 and/or 2015) in the following wells located outside the spray fields: MW9 near the wastewater plant facilities; MW21 which is downgradient of the spray fields (near Cannon Road); and MW25 which is also downgradient of the spray fields (near Mt. Joy Road).

6. Groundwater Mounding

WRA compared the actual groundwater mounding in the 2011 to 2015 reporting period with pre-development mounding estimates. Mounding estimates for the original North Field and South Field are not available from when those fields were developed (in 1992). WRA prepared hydrogeologic reports in 2006, 2010, and 2012 (listed in the References section) which included modeling of mounding at new spray fields in the land between the original spray fields and Cannon Road. Specifically, WRA had assessed mounding at the fields called North Burton, South Burton, North Hetti Lingo, South Hetti Lingo, West Hetti Lingo, and East Hetti Lingo.

The most recent WRA modeling (2012) predicted that the Hetti Lingo area spray fields were feasible from a hydraulic standpoint, with a predicted rise in the water table of up to approximately 2 feet, assuming 20 years of spraying at 1.6 inches/week. Direct comparison of the pre-development model output with the post-development water table is complicated by differences between the modeled and constructed field dimensions, spray rates, and duration of spraying. The overall prediction of hydraulic feasibility has been generally supported by the relative lack of encroachment of the water table underneath the IBRWF spray fields into the 2-ft. buffer during 2011 - 2015. An exception was the July-August 2013 relatively wet period described earlier in the report, which represented 2 out of 60 months (about 3% of the time).

Climatic factors also influence rise of the water surface into the vertical buffer. For example, during 2014 to 2015 the water levels in almost all of the IBRWF monitoring wells have generally become deeper, while the amount of effluent sprayed has slightly increased in the same period. The overall elevation change between the high and low water tables in the reporting period (7 to 13 feet) exceeds the model mounding estimates.

Ponding of effluent has intermittently occurred at the IBRWF in relatively small areas of the spray fields. The most likely causes of the ponding are soil compaction related to land use, and the presence of laterally discontinuous clayey layers in the shallow part of the unconfined aquifer. Sussex County has indicated that plowing is periodically implemented to address some of the ponding.

7. Water Quality

WRA assessed water quality data provided by Sussex County to analyze trends in the quality of the effluent and groundwater. A graph of the nitrogen concentration in the effluent is in Appendix 11. The

nitrogen concentration varied from 7.9 to 51.5 mg/l from 2011 to 2015. The overall trend is toward lower nitrogen concentrations. More than half of the concentrations reported for 2011 to 2012 exceeded 25 mg/l. The concentrations since July 2015 have been below 5 mg/l, and the December 2015 value was 3.9 mg/l.

Appendix 12 is a tabular summary of the groundwater quality data obtained by sampling the IBRWF monitoring wells on a quarterly basis during 2011 to 2015. Appendix 13 is a summary of the groundwater quality data by parameter. Appendix 14 contains graphs of the groundwater quality versus time. Maps of the maximum reported concentrations in groundwater samples are in Appendix 15.

The nitrate concentrations in the 2011-2015 quarterly groundwater monitoring ranged up to 5 milligrams per liter (mg/l) in samples from the monitoring wells located upgradient of the spray fields (MW1, MW6, and MW11). The nitrate concentrations in samples from the downgradient monitoring wells ranged up to a maximum of 109 mg/l. Some of the detected nitrate concentrations exceed the primary drinking water standard of 10 mg/l. The predevelopment nitrate concentrations in samples from MW1 through MW10 (from year 1992) ranged up to 14 mg/l. The general trend in most of the monitoring well data was that nitrate concentrations increased from 2011 into 2013, then decreased through 2015, possibly reflecting the 2013 effluent application peak.

The chloride concentrations in the 2011-2015 quarterly groundwater monitoring ranged up to 11 mg/l in samples from the upgradient monitoring wells. The chloride concentrations in samples from the downgradient monitoring wells ranged up to a maximum of 359 mg/l. Some of the detected chloride concentrations exceed the secondary drinking water standard of 250 mg/l. The predevelopment chloride concentrations in samples from MW1 through MW10 (from year 1992) ranged up to 30 mg/l. The general trend in the monitoring well data during 2011 to 2015 was that chloride concentrations were relatively steady to slightly increasing, which suggests that chloride is being added to the unconfined aquifer by the effluent applications.

The sodium concentrations in the 2011-2015 quarterly groundwater monitoring ranged up to 10 mg/l in samples from the upgradient monitoring wells. The sodium concentrations in samples from the downgradient monitoring wells ranged up to a maximum of 210 mg/l. Some of the detected sodium concentrations exceed the EPA drinking water guidance level of 20 mg/l, which is an advisory for individuals restricted to a total sodium intake of 500 milligrams per day, and which is not intended to be extrapolated to the entire population. The EPA recommends reducing sodium concentrations in drinking

water to between 30 and 60 mg/l based on aesthetic effects (i.e., taste). The predevelopment sodium concentrations in samples from MW1 through MW10 (from year 1992) ranged up to approximately 25 mg/l. The general trend in the monitoring well data during 2011 to 2015 for sodium was similar to the trend for chloride, i.e. relatively steady to slightly increasing.

The fecal coliform detections in the 2011-2015 quarterly groundwater monitoring ranged up to 150 coliforms per 100 millileters in samples from the upgradient monitoring wells. The fecal coliform detections in samples from the downgradient monitoring wells ranged up to a maximum of 228 coliforms per 100 millileters. Fecal coliforms only come from human and animal fecal waste, and the federal Maximum Contaminant Level Goal (MCLG) for fecal coliform in drinking water is zero.

The total dissolved solids (TDS) concentrations in the 2011-2015 quarterly groundwater monitoring ranged up to 444 mg/l in samples from the upgradient monitoring wells. The TDS concentrations in samples from the downgradient monitoring wells ranged up to a maximum of 778 mg/l. Some of the detected TDS concentrations exceed the secondary (aesthetic) drinking water standard of 500 mg/l. The predevelopment chloride concentrations in samples from MW1 through MW10 (from year 1992) ranged up to 175 mg/l. The general trend in the monitoring well data during 2011 to 2015 was that TDS concentrations were relatively steady to slightly increasing, similar to chloride and sodium.

Ammonia concentrations greater than 1 mg/l were detected in samples from monitoring wells MW5, MW7, MW9, and MW24 during 2011-2015. Comparison of the ammonia vs. time graph with the water level hydrographs for these wells suggests that elevated ammonia concentrations tend to correlate with periods of relatively shallower water table.

Phosphorus concentrations greater than 1 mg/l were detected in samples from monitoring wells MW5, MW7, MW9, and MW12 during 2011-2015. Three of the aforementioned wells were among the wells in which elevated ammonia was also detected. In general, elevated phosphorus concentrations in groundwater may indicate that the soil capacity to store phosphorus is limited, and/or groundwater is impacted by fertilizer and effluent disposal applications.

Comparison of the pre-development (1992) groundwater quality data with the 2011-2015 data indicates the spray fields are contributing nitrate, chloride, sodium, and other dissolved solids to the unconfined aquifer beneath the spray fields. Land uses other than spray irrigation, such as former poultry farming, fertilizer applications, and biosolids applications may have also impacted the concentrations in

the aquifer. Comparison of the concentrations from the upgradient and downgradient monitoring wells indicates that nitrate, chloride, sodium, and other dissolved solids in the unconfined aquifer are migrating toward offsite domestic wells potentially susceptible to groundwater contamination.

8. Conclusion

Whitman, Requardt & Associates, LLP assessed the conditions at the Inland Bays Regional Wastewater Facilities spray fields, based on monitoring data provided by Sussex County for the period 2011 to 2015. Maximum influent and effluent flows, which were in July or August, correlated with higher precipitation. The shallowest water levels in the unconfined aquifer occurred in July 2013, when encroachment of the water surface into the vertical buffer occurred at several monitoring points. Groundwater flow beneath the spray fields is generally to the east, northeast, or southeast toward offsite domestic wells. The nitrogen concentration in the sprayed effluent decreased significantly over the five-year period. The spray fields and probably predevelopment land uses continue to contribute nitrate, chloride, sodium, and other dissolved solids to the unconfined aquifer, based on the quarterly monitoring well results.

The Sussex County Engineering Department, with assistance from WRA is undertaking a spray irrigation expansion study to add 2,000,000 gallons per day of effluent disposal capacity, in areas located west of the wastewater plant. Preliminary plans are to spray the new fields with fixed heads in wooded areas. Monitoring wells have been constructed in the expansion areas, and Sussex County staff will obtain wet-season water level data starting in January 2017 to continue the spray irrigation expansion project.

9. References

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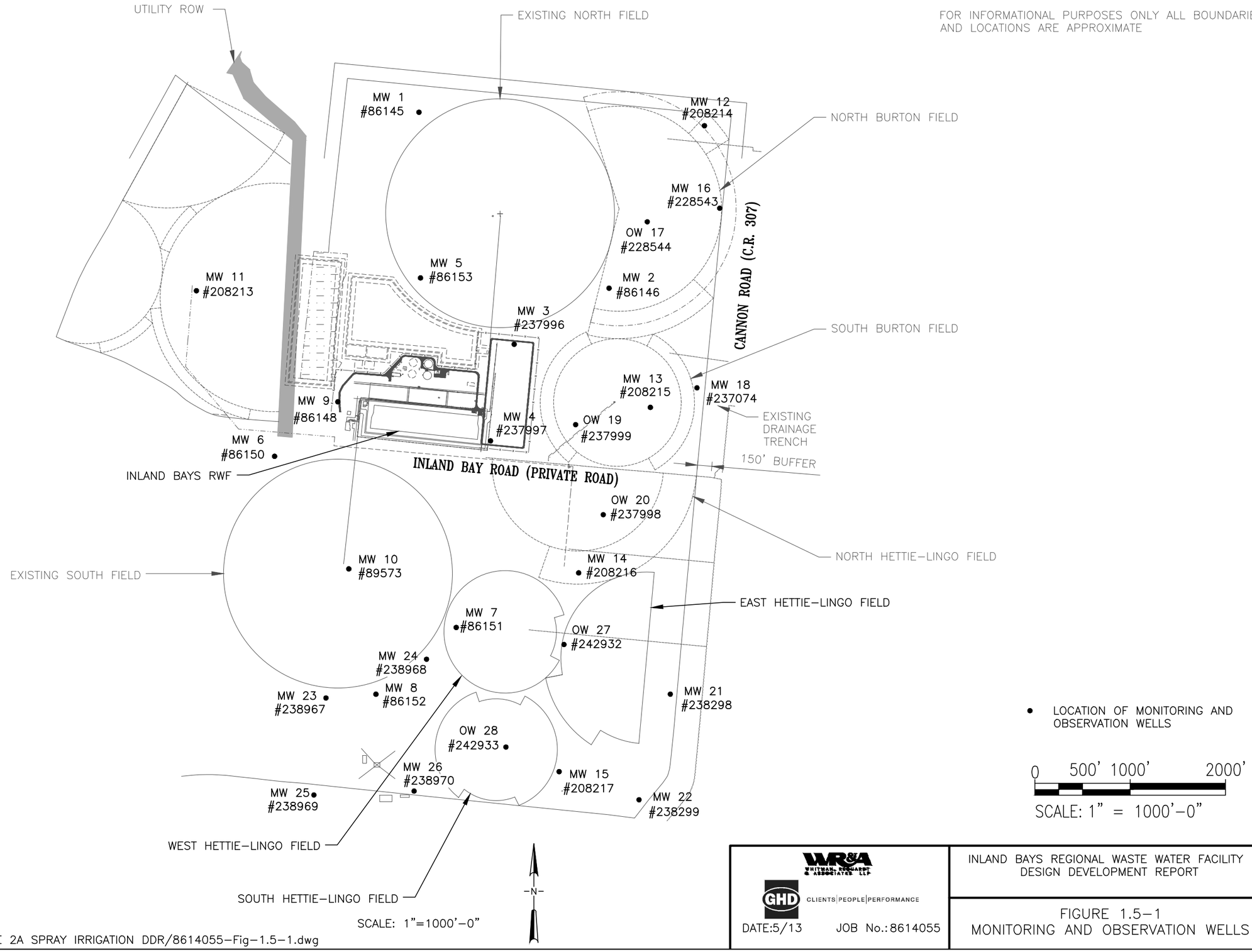
Appendix 1

Site Map

FOR INFORMATIONAL PURPOSES ONLY ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE



WR&A WHITMAN, REQUARDT & ASSOCIATES LLP

GHD CLIENTS|PEOPLE|PERFORMANCE

DATE:5/13 JOB No.:8614055

INLAND BAYS REGIONAL WASTE WATER FACILITY
DESIGN DEVELOPMENT REPORT

FIGURE 1.5-1
MONITORING AND OBSERVATION WELLS

G:/86/14055/WORDPROC/REPORTS/PHASE 2A SPRAY IRRIGATION DDR/8614055-Fig-1.5-1.dwg

Appendix 2

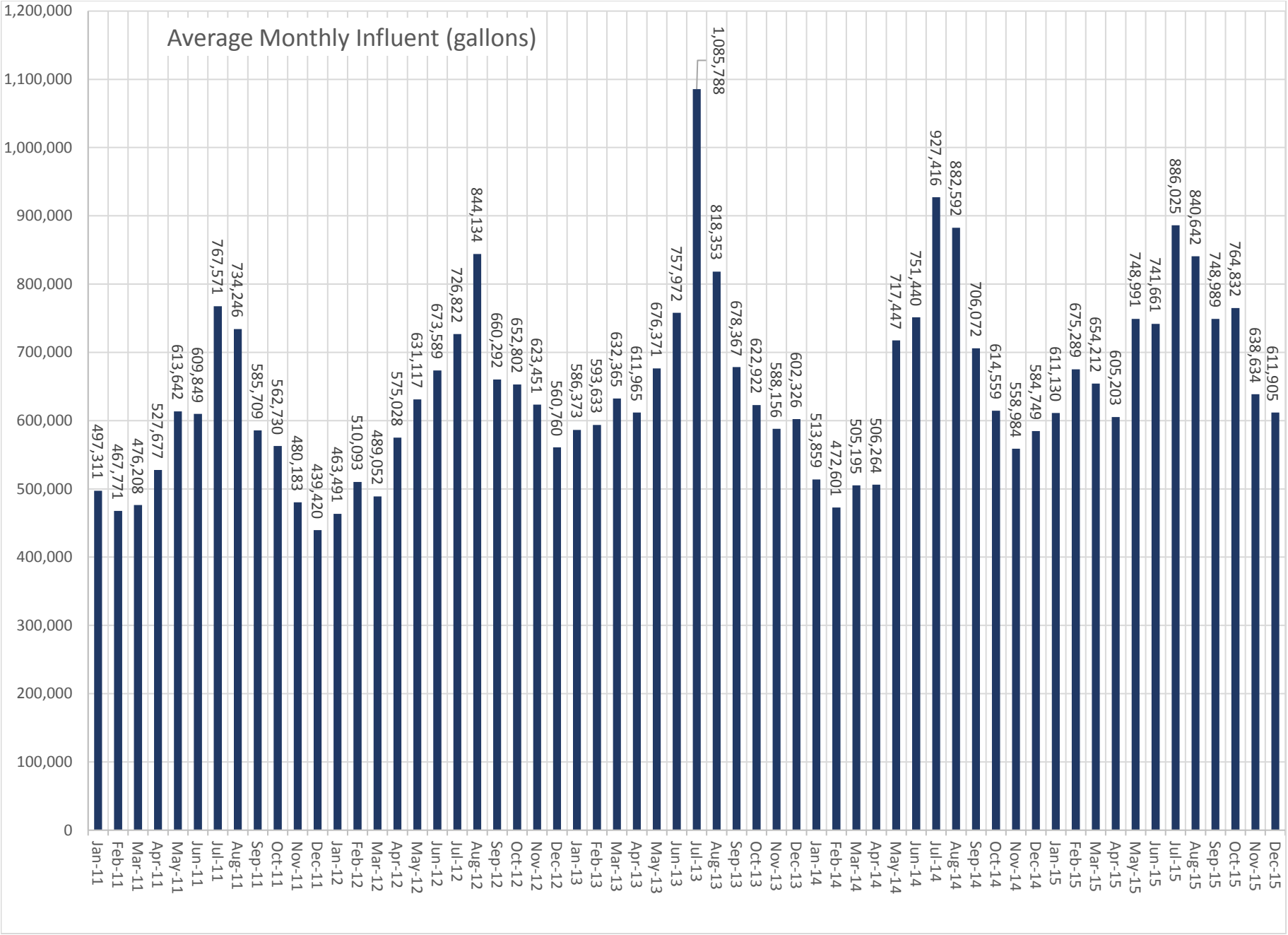
Monitoring Well Construction Table

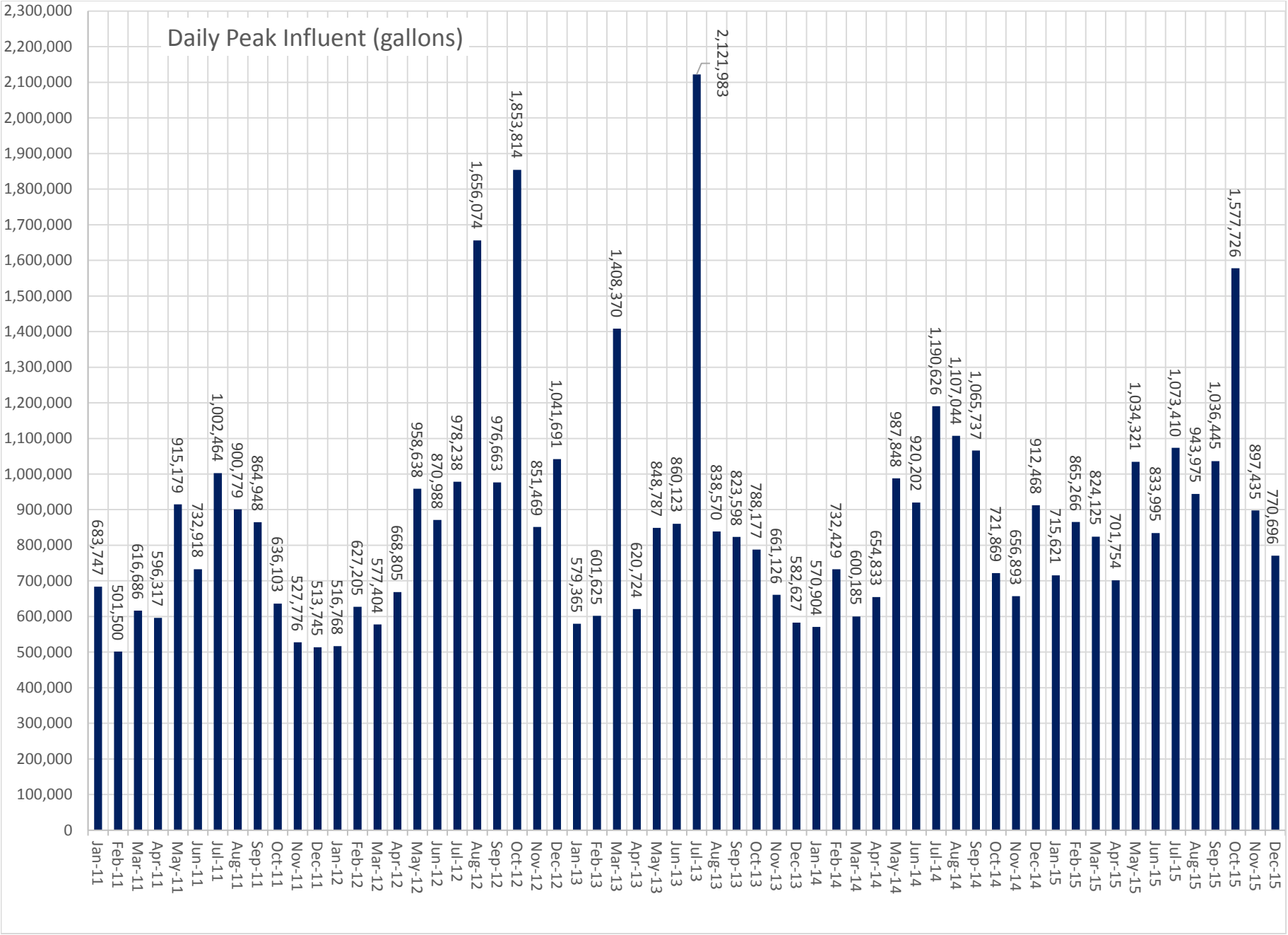
Monitoring Well Construction Data

Local Well No.	DNREC Permit No.	Year Drilled	Diameter Inner Casing (inches)	Well Depth (feet below land surface)	Screened Interval (feet below land surface)	Top of Casing Elevation (feet above sea level)	Ground Elevation (feet above sea level)	Inner Casing Height (feet above land surface)	GPS Coordinate Easting	GPS Coordinate Northing
MW 1	86145	1991	6	19.8	10-20	28.60	26.06	2.54	709525.427000	235100.241000
MW 2	86146	x	6	20.1	x	26.63	24.16	2.47	711521.1	233248.174
MW 3	237996	2012	2	25.1	x	28.40	26.53	1.87	710258.995000	231604.261000
MW 4	237997	2012	2	25.1	x	27.15	25.27	1.88	709674.611000	229394.390000
MW 5	86153	1991	6	21.2	10-20	29.83	26.50	3.33	709541.793	233355.238
MW 6	86150	1991	6	20.0	10-20	36.74	34.57	2.17	708004.246	231489.601
MW 7	86151	x	6	21.2	x	26.00	24.60	1.40	709921.496000	229694.819000
MW 8	86152	x	6	19.9	x	28.68	25.78	2.90	709072.456000	228988.559000
MW 9	86148	1991	6	19.7	11-21	28.12	26.81	1.31	708673.389	232053.633
MW 10	89573	x	4	20.0	x	27.76	26.84	0.92	708790.734	230307.043
MW 11	208213	2005	2	34.0	24-34	45.11	43.27	1.84	707185.442	233223.911
MW 12	208214	2005	2	16.0	6-16	27.00	25.03	1.97	712518.84	234956.658
MW 13	208215	2005	2	16.0	6-16	26.08	23.98	2.10	711953.448	231999.257
MW 14	208216	2005	2	14.0	4-14	26.14	23.92	2.22	711197.415000	230262.754000
MW 15	208217	2005	2	18.0	8-18	28.30	26.31	1.99	710984.728000	228186.079000
MW 16	228543	2009	2	28.0	10-25	23.70	21.86	1.84	712793.435	233871.699
OW 17	228544	2009	2	15.0	5-20	26.63	24.33	2.30	712321.142	233918.799
MW 18	237074	2012	2	25.1	x	25	22.93	2.07	712619.776000	232060.334000
OW 19	237999	2012	2	25.1	x	26.3	24.26	2.04	711452.893000	231908.132000
OW 20	237998	2012	2	25.1	x	26	24.03	1.97	711357.676000	230951.577000
MW 21	238298	2012	2	24.5	9.5-24.5	22.66	20.65	2.01	712362.184000	229373.774000
MW 22	238299	2012	2	28.5	13.5-28.5	25.85	24.00	1.85	711994.807000	227851.972000
MW 23	238967	2012	2	24	10-20	28.67	26.60	2.07	708618.750000	228988.076000
MW 24	238968	2012	2	24	10-20	27.6	25.35	2.25	709674.611000	229394.390000
MW 25	238969	2012	2	24	10-20	27.2	24.83	2.37	708492.053000	227970.022000
MW 26	238970	2012	2	24	9-19	29.45	27.20	2.25	709544.454000	228010.757000
OW 27	242932	2013	2	25	10-25	25.98	23.32	2.66	75.2245814	38.6300678
OW 28	242933	2013	2	25	10-25	27.51	25.79	1.72	75.2267224	38.6271167
MW 29	252815	2016	4	18	8-18	x	23	3.01	75.2315307	38.62697813

Appendix 3

Influent Flow Graphs


Average Monthly Influent (gallons)
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Jan-11 497,311
Feb-11 467,771
Mar-11 476,208
Apr-11 527,677
May-11 613,642
Jun-11 609,849
Jul-11 767,571
Aug-11 734,246
Sep-11 585,709
Oct-11 562,730
Nov-11 480,183
Dec-11 439,420
Jan-12 463,491
Feb-12 510,093
Mar-12 489,052
Apr-12 575,028
May-12 631,117
Jun-12 673,589
Jul-12 726,822
Aug-12 844,134
Sep-12 660,292
Oct-12 652,802
Nov-12 623,451
Dec-12 560,760
Jan-13 586,373
Feb-13 593,633
Mar-13 632,365
Apr-13 611,965
May-13 676,371
Jun-13 757,972
Jul-13 1,085,788
Aug-13 818,353
Sep-13 678,367
Oct-13 622,922
Nov-13 588,156
Dec-13 602,326
Jan-14 513,859
Feb-14 472,601
Mar-14 505,195
Apr-14 506,264
May-14 717,447
Jun-14 751,440
Jul-14 927,416
Aug-14 882,592
Sep-14 706,072
Oct-14 614,559
Nov-14 558,984
Dec-14 584,749
Jan-15 611,130
Feb-15 675,289
Mar-15 654,212
Apr-15 605,203
May-15 748,991
Jun-15 741,661
Jul-15 886,025
Aug-15 840,642
Sep-15 748,989
Oct-15 764,832
Nov-15 638,634
Dec-15 611,905


Daily Peak Influent (gallons)
2,300,000
2,200,000
2,100,000
2,000,000
1,900,000
1,800,000
1,700,000
1,600,000
1,500,000
1,400,000
1,300,000
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
683,747
501,500
616,686
596,317
915,179
732,918
1,002,464
900,779
864,948
636,103
527,776
513,745
516,768
627,205
577,404
668,805
958,638
870,988
978,238
1,656,074
976,663
1,853,814
851,469
1,041,691
579,365
601,625
1,408,370
620,724
848,787
860,123
2,121,983
838,570
823,598
788,177
661,126
582,627
570,904
732,429
600,185
654,833
987,848
920,202
1,190,626
1,107,044
1,065,737
721,869
656,893
912,468
715,621
865,266
824,125
701,754
1,034,321
833,995
1,073,410
943,975
1,036,445
1,577,726
897,435
770,696
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
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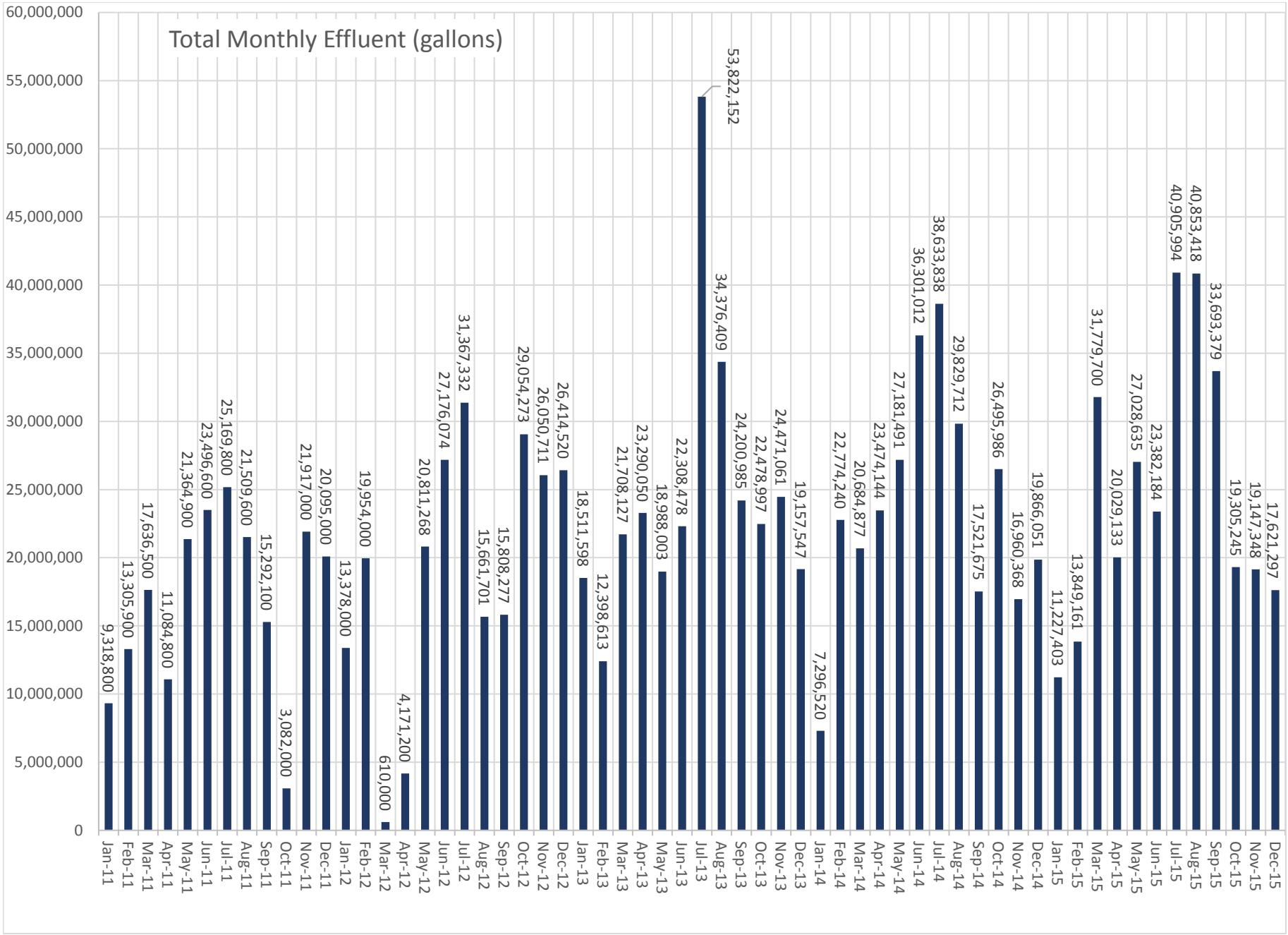
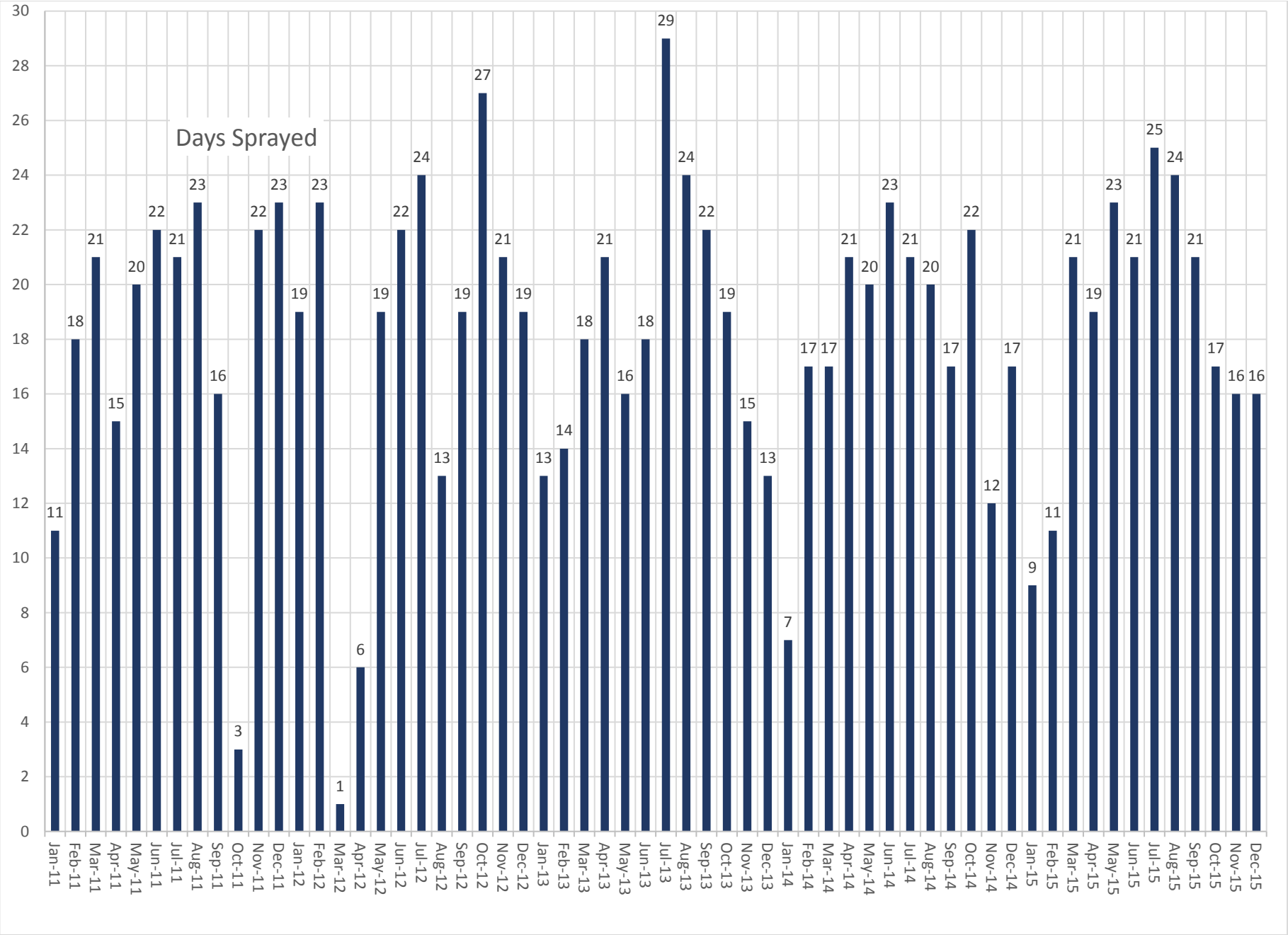
Sep-15
Oct-15
Nov-15
Dec-15

Appendix 4

Effluent Flow Graphs


Total Monthly Effluent (gallons)
60,000,000
55,000,000
50,000,000
45,000,000
40,000,000
35,000,000
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Jan-11 9,318,800
Feb-11 13,305,900
Mar-11 17,636,500
Apr-11 11,084,800
May-11 21,364,900
Jun-11 23,496,600
Jul-11 25,169,800
Aug-11 21,509,600
Sep-11 15,292,100
Oct-11 3,082,000
Nov-11 21,917,000
Dec-11 20,095,000
Jan-12 13,378,000
Feb-12 19,954,000
Mar-12 610,000
Apr-12 4,171,200
May-12 20,811,268
Jun-12 27,176,074
Jul-12 31,367,332
Aug-12 15,661,701
Sep-12 15,808,277
Oct-12 29,054,273
Nov-12 26,050,711
Dec-12 26,414,520
Jan-13 18,511,598
Feb-13 12,398,613
Mar-13 21,708,127
Apr-13 23,290,050
May-13 18,988,003
Jun-13 22,308,478
Jul-13 53,822,152
Aug-13 34,376,409
Sep-13 24,200,985
Oct-13 22,478,997
Nov-13 24,471,061
Dec-13 19,157,547
Jan-14 7,296,520
Feb-14 22,774,240
Mar-14 20,684,877
Apr-14 23,474,144
May-14 27,181,491
Jun-14 36,301,012
Jul-14 38,633,838
Aug-14 29,829,712
Sep-14 17,521,675
Oct-14 26,495,986
Nov-14 16,960,368
Dec-14 19,866,051
Jan-15 11,227,403
Feb-15 13,849,161
Mar-15 31,779,700
Apr-15 20,029,133
May-15 27,028,635
Jun-15 23,382,184
Jul-15 40,905,994
Aug-15 40,853,418
Sep-15 33,693,379
Oct-15 19,305,245
Nov-15 19,147,348
Dec-15 17,621,297

Average Daily Effluent (gallons)
2,000,000
1,900,000
1,800,000
1,700,000
1,600,000
1,500,000
1,400,000
1,300,000
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Jan-11 847,164
Feb-11 739,217
Mar-11 839,833
Apr-11 738,987
May-11 1,068,245
Jun-11 1,068,027
Jul-11 1,198,562
Aug-11 935,200
Sep-11 955,756
Oct-11 1,027,333
Nov-11 996,227
Dec-11 873,696
Jan-12 704,105
Feb-12 867,565
Mar-12 610,000
Apr-12 695,200
May-12 1,095,330
Jun-12 1,235,276
Jul-12 1,306,972
Aug-12 1,204,746
Sep-12 832,015
Oct-12 1,076,084
Nov-12 1,240,510
Dec-12 1,390,238
Jan-13 1,423,969
Feb-13 885,615
Mar-13 1,206,007
Apr-13 1,109,050
May-13 1,186,750
Jun-13 1,239,360
Jul-13 1,855,936
Aug-13 1,432,350
Sep-13 1,100,045
Oct-13 1,183,105
Nov-13 1,631,404
Dec-13 1,473,657
Jan-14 1,042,360
Feb-14 1,339,661
Mar-14 1,216,757
Apr-14 1,117,816
May-14 1,359,075
Jun-14 1,578,305
Jul-14 1,839,707
Aug-14 1,491,486
Sep-14 1,030,687
Oct-14 1,204,363
Nov-14 1,413,364
Dec-14 1,168,591
Jan-15 1,247,489
Feb-15 1,259,015
Mar-15 1,513,319
Apr-15 1,054,165
May-15 1,175,158
Jun-15 1,113,437
Jul-15 1,636,240
Aug-15 1,702,226
Sep-15 1,604,447
Oct-15 1,135,603
Nov-15 1,196,709
Dec-15 1,101,331


Days Sprayed
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
11
18
21
15
20
22
21
23
16
3
22
23
19
23
1
6
19
22
24
13
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Jan-11
Feb-11
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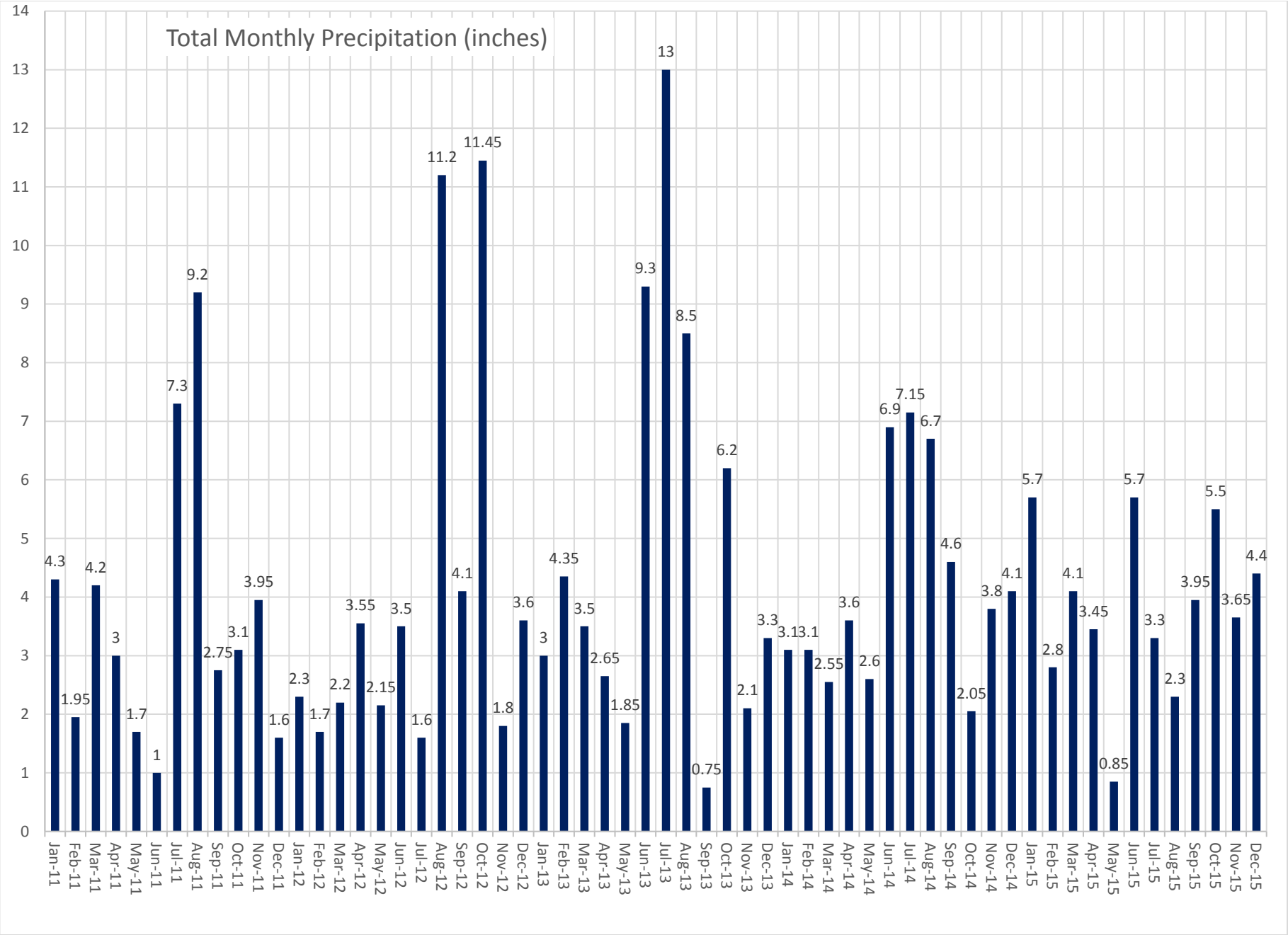
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15

Appendix 5

Precipitation Graphs


Total Monthly Precipitation (inches)
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1
2
3
4
5
6
7
8
9
10
11
12
13
14
4.3
1.95
4.2
3
1.7
1
7.3
9.2
2.75
3.1
3.95
1.6
2.3
1.7
2.2
3.55
2.15
3.5
1.6
11.2
4.1
11.45
1.8
3.6
3
4.35
3.5
2.65
1.85
9.3
13
8.5
0.75
6.2
2.1
3.3
3.1
3.1
2.55
3.6
2.6
6.9
7.15
6.7
4.6
2.05
3.8
4.1
5.7
2.8
4.1
3.45
0.85
5.7
3.3
2.3
3.95
5.5
3.65
4.4
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Jan-12
Feb-12
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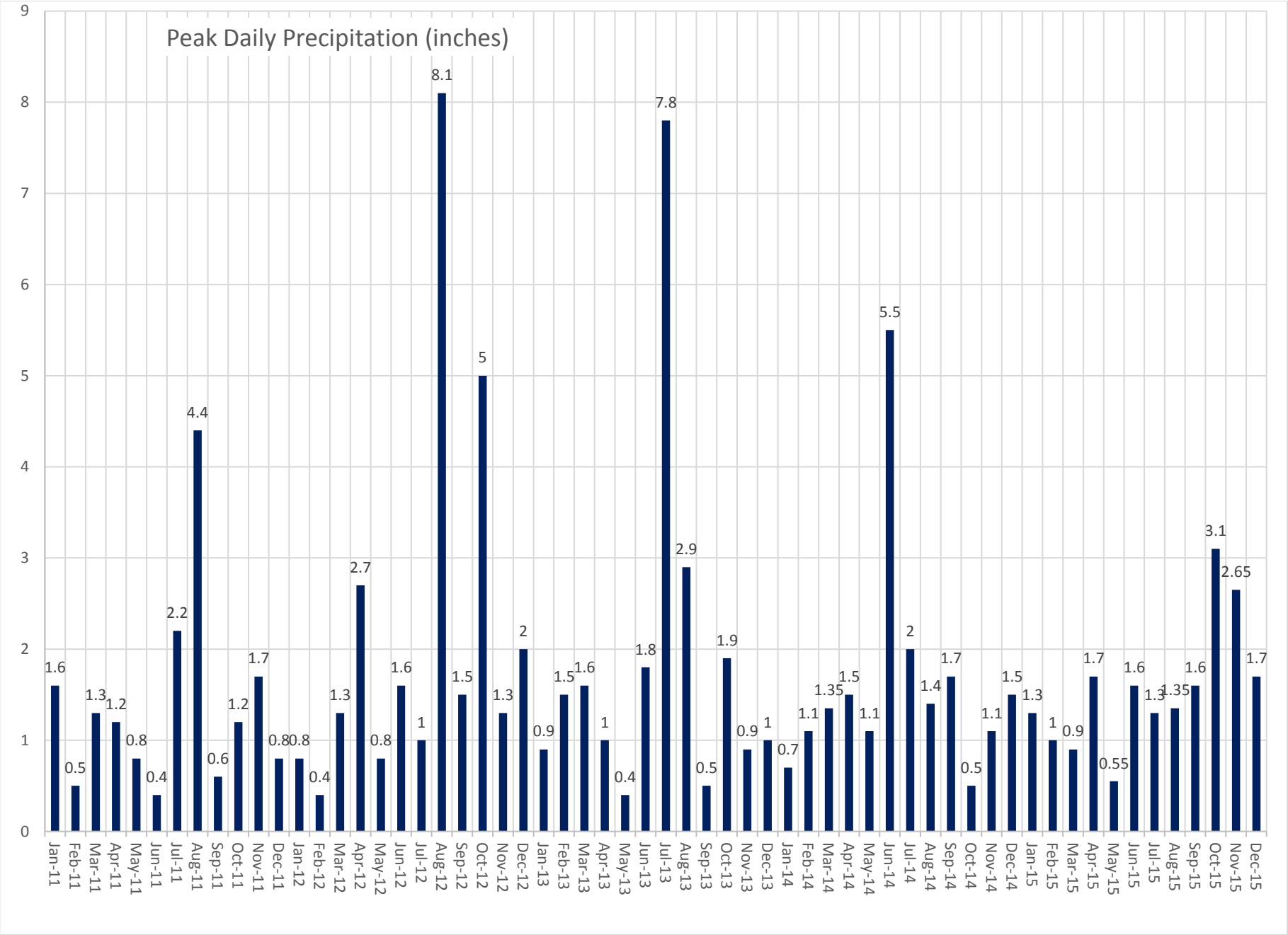
Sep-15
Oct-15
Nov-15
Dec-15


Peak Daily Precipitation (inches)
0
1
2
3
4
5
6
7
8
9
Jan-11 1.6
Feb-11 0.5
Mar-11 1.3
Apr-11 1.2
May-11 0.8
Jun-11 0.4
Jul-11 2.2
Aug-11 4.4
Sep-11 0.6
Oct-11 1.2
Nov-11 1.7
Dec-11 0.8
Jan-12 0.8
Feb-12 0.4
Mar-12 1.3
Apr-12 2.7
May-12 0.8
Jun-12 1.6
Jul-12 1
Aug-12 8.1
Sep-12 1.5
Oct-12 5
Nov-12 1.3
Dec-12 2
Jan-13 0.9
Feb-13 1.5
Mar-13 1.6
Apr-13 1
May-13 0.4
Jun-13 1.8
Jul-13 7.8
Aug-13 2.9
Sep-13 0.5
Oct-13 1.9
Nov-13 0.9
Dec-13 1
Jan-14 0.7
Feb-14 1.1
Mar-14 1.35
Apr-14 1.5
May-14 1.1
Jun-14 5.5
Jul-14 2
Aug-14 1.4
Sep-14 1.7
Oct-14 0.5
Nov-14 1.1
Dec-14 1.5
Jan-15 1.3
Feb-15 1
Mar-15 0.9
Apr-15 1.7
May-15 0.55
Jun-15 1.6
Jul-15 1.3
Aug-15 1.35
Sep-15 1.6
Oct-15 3.1
Nov-15 2.65
Dec-15 1.7

Appendix 6

Water Levels Table

Water Levels
in feet below land surface
from Sussex County

Well No.	Permit No.	1-Jan-11	1-Feb-11	1-Mar-11	1-Apr-11	1-May-11	1-Jun-11	1-Jul-11	1-Aug-11	1-Sep-11	1-Oct-11	1-Nov-11	1-Dec-11
MW1	86145	9.30	8.55	8.20	7.00	7.95	8.40	9.15	9.60	7.95	8.65	8.65	8.22
MW2	86146	9.65	8.61	8.45	7.75	8.37	8.80	9.50	9.80	8.25	9.00	9.11	8.70
MW3	237996												
MW4	237997												
MW5	86153	12.55	11.85	11.40	10.75	11.30	11.40	12.30	12.75	11.42	12.01	11.85	11.60
MW6	86150	18.00	17.50	17.00	16.50	16.65	16.65	18.00	18.37	17.15	17.65	17.72	17.40
MW7	86151	9.70	8.70	8.60	7.95	8.55	8.70	9.40	9.80	8.60	9.45	8.88	9.05
MW8	86152	10.80	10.15	9.80	9.02	9.60	9.80	10.70	11.10	9.91	10.65	10.60	10.30
MW9	86148	9.75	9.15	6.95	8.20	8.70	8.85	9.80	10.30	9.11	9.60	2.26	9.35
MW10	89573	9.80	9.20	8.80	8.05	8.70	8.80	10.45	10.15	8.86	10.35	9.60	9.20
MW11	208213	25.30	24.95	43.00	23.25	23.80	42.10	25.10	25.65	24.60	24.90	24.66	24.70
MW12	208214	10.95	10.00	9.85	9.12	9.20	9.90	10.92	11.25	9.55	10.30	10.41	10.00
MW13	208215	9.81	8.75	8.70	8.00	8.60	8.75	9.50	9.90	8.42	9.25	9.42	8.96
MW14	208216	9.86	9.00	8.82	8.10	8.65	8.80	9.45	10.00	8.60	9.50	9.61	9.15
MW15	208217	13.20	12.60	12.20	11.40	12.00	12.10	12.95	13.40	12.40	13.05	13.20	13.00
MW16	228543	6.92	5.90	5.80	5.10	5.75	5.90	6.90	7.20	5.55	6.30	6.43	6.00
OW17	228544	9.90	8.80	8.70	7.92	8.50	8.70	9.70	10.05	8.40	9.20	9.37	8.90
MW 18	237074										9.16	9.56	
OW 19	237999												
OW 20	237998												
MW 21	238298												
MW 22	238299												
MW 23	238967												
MW 24	238968												
MW25	238969												
MW26	238970												
OW27	242933												
OW28	242934												

Water Levels
in feet below land surface
from Sussex County

Well No.	Permit No.	1-Jan-12	1-Feb-12	1-Mar-12	1-Apr-12	1-May-12	1-Jun-12	1-Jul-12	1-Aug-12	1-Sep-12	1-Oct-12	1-Nov-12	1-Dec-12
MW1	86145	8.30	8.31	8.15	8.33	8.80	9.01	9.91	8.56	7.21	7.85	4.30	4.97
MW2	86146	8.87	8.81	8.64	8.87	9.21	9.37	10.33	8.41	6.49	7.63	3.87	4.65
MW3	237996		10.57	9.40	9.62	9.95	10.11	10.75	9.24	7.73	8.46	5.39	6.00
MW4	237997		9.35	7.77	7.99	8.32	8.47	9.14	7.45	5.75	6.74	4.40	5.26
MW5	86153	11.78	11.60	11.62	11.80	12.17	12.32	13.13	11.84	10.54	10.97	4.88	5.50
MW6	86150	17.45	17.40	17.20	17.27	17.74	18.06	18.64	17.56	16.47	16.76	12.71	13.34
MW7	86151	9.18	9.11	9.00	9.19	9.54	9.84	10.45	8.86	7.26	8.23	4.03	4.73
MW8	86152	10.40	10.41	10.20	10.30	10.68	11.00	11.65	11.2	10.75	9.53	5.55	6.12
MW9	86148	9.40	9.10	9.20	9.28	9.71	9.85	10.58	9.63	8.68	8.69	4.67	5.44
MW10	89573	9.38	9.35	9.20	9.35	9.77	10.06	10.71	9.3	7.89	8.66	5.64	6.13
MW11	208213	24.65	24.60	24.40	24.35	24.92	25.25	25.99	25.21	24.42	24.29	20.27	20.93
MW12	208214	10.15	10.10	9.90	10.10	10.50	10.70	11.54	9.77	7.97	9.15	6.08	6.82
MW13	208215	9.15	9.57	8.80	9.06	9.36	9.54	10.19	8.13	6.07	7.48	3.91	4.67
MW14	208216	9.35	9.03	9.04	9.25	9.57	9.86	10.35	8.43	6.51	7.82	3.87	4.69
MW15	208217	12.90	12.90	12.58	12.65	12.96	13.29	13.91	12.3	10.69	11.63	7.56	8.32
MW16	228543	6.60	6.15	5.90	6.12	6.51	6.68	7.49	5.54	3.58	5.01	2.93	3.68
OW17	228544	9.07	9.05	8.77	9.05	9.37	9.55	10.37	6.97	3.57	7.84	4.71	4.43
MW 18	237074	9.16	9.18	8.91	9.17	9.52	9.76	10.52	8.40	6.27	7.90	3.66	4.38
OW 19	237999					8.94	9.27	9.82	7.90	5.97	7.20	3.85	3.31
OW 20	237998					8.45	8.82	9.31	7.37	5.43	6.78	3.78	3.32
MW 21	238298				10.58	10.94	7.52	8.17	7.16	6.14	5.64	2.11	2.94
MW 22	238299				6.79	7.14	11.32	11.99	10.23	8.46	9.52	6.06	6.83
MW 23	238967						10.47	12.28	10.46	9.46	10.18	6.32	6.72
MW 24	238968						13.40	11.13	9.31	8.93	8.98	4.88	5.49
MW25	238969						10.90	11.56	9.80	8.11	9.49	5.45	6.00
MW26	238970						11.58	14.03	12.35	9.47	11.94	7.96	8.54
OW27	242933												
OW28	242934												

Water Levels
in feet below land surface
from Sussex County

Well No.	Permit No.	1-Jan-13	1-Feb-13	1-Mar-13	1-Apr-13	1-May-13	1-Jun-13	1-Jul-13	1-Aug-13	1-Sep-13	1-Oct-13	1-Nov-13	1-Dec-13
MW1	86145	4.01	3.57	2.30	3.85	4.24	3.71	1.13	1.82	3.44	3.12	4.80	4.29
MW2	86146	3.75	2.80	1.97	3.84	4.24	2.26	1.46	1.96	4.09	2.94	4.66	3.46
MW3	237996	4.91	3.85	3.28	4.66	5.18	3.28	2.38	2.51	4.69	3.98	5.64	4.6
MW4	237997	4.16	3.11	2.73	4.10	4.60	2.48	1.65	1.88	4.04	3.75	4.96	3.69
MW5	86153	4.37	3.68	2.78	4.25	4.70	3.25	0.98	1.12	3.83	3.68	5.18	3.99
MW6	86150	11.89	11.49	9.88	11.26	11.98	10.70	8.44	9.01	11.28	11.00	12.52	11.7
MW7	86151	3.45	2.34	1.53	2.79	3.26	1.29	0.23	0.00	2.24	1.89	3.62	2.14
MW8	86152	4.87	4.34	2.81	3.98	4.44	3.38	1.36	1.34	3.19	3.51	4.78	4.13
MW9	86148	2.37	1.20	1.20	0.23	4.07	0.25	1.33	1.37	3.43	3.22	4.66	0.87
MW10	89573	4.97	4.40	2.93	4.19	4.82	3.54	1.40	1.79	3.93	3.59	5.17	4.29
MW11	208213	19.66	19.10	17.72	18.99	19.61	19.03	15.96	16.9	19.18	18.98	20.28	19.75
MW12	208214	6.06	5.44	4.74	6.24	6.6	5.44	4.15	4.81	6.35	5.94	7.16	6.25
MW13	208215	3.79	2.82	2.17	3.83	4.1	2.37	1.59	2.18	3.94	3.41	4.33	3.49
MW14	208216	3.47	2.52	1.44	3.01	3.6	1.81	1.17	0.65	2.92	2.19	4.22	2.75
MW15	208217	6.82	6.14	4.85	6.33	6.7	5.20	3.82	3.69	6.57	5.56	7.32	6.02
MW16	228543	3.82	2.20	1.52	3.04	3.4	2.03	0.51	1.54	3.09	2.78	3.88	2.84
OW17	228544	4.69	3.91	3.57	4.81	5.1	3.68	1.68	3.01	4.18	4.41	5.63	4.52
MW 18	237074	3.46	2.59	1.86	3.55	5.31	2.88	2.67	3.15	4.60	4.1	5.35	4.03
OW 19	237999	3.73	2.58	2.51	3.69	4	2.55	0.80	2.00	2.81	3.23	4.47	3.43
OW 20	237998	3.50	2.42	2.31	3.37	3.75	2.30	0.66	1.80	2.80	2.64	4.17	3.40
MW 21	238298	1.51	0.78	0.0	1.15	1.82	0.32	0.00	0.00	1.54	0.80	2.23	0.88
MW 22	238299	5.35	4.77	3.72	4.96	5.39	4.36	2.79	2.72	4.71	4.34	5.86	6.87
MW 23	238967	5.66	5.18	3.54	4.66	5.21	4.30	1.7	2.04	3.86	3.18	5.75	4.56
MW 24	238968	4.27	3.52	2.26	3.49	3.9	2.36	0.93	0.97	2.82	2.66	4.23	3.30
MW25	238969	4.74	4.36	2.64	3.68	4.17	3.57	1.12	1.09	2.84	3.32	4.46	4.01
MW26	238970	7.19	6.80	5.08	3.20	6.7	5.97	3.62	4.54	5.47	5.59	7.06	6.43
OW27	242933					3.67	2.45	-0.03	1.36	2.41	2.65	4.23	3.09
OW28	242934					7.21	6.09	4.37	4.70	5.56	6.09	7.83	6.70

Water Levels
in feet below land surface
from Sussex County

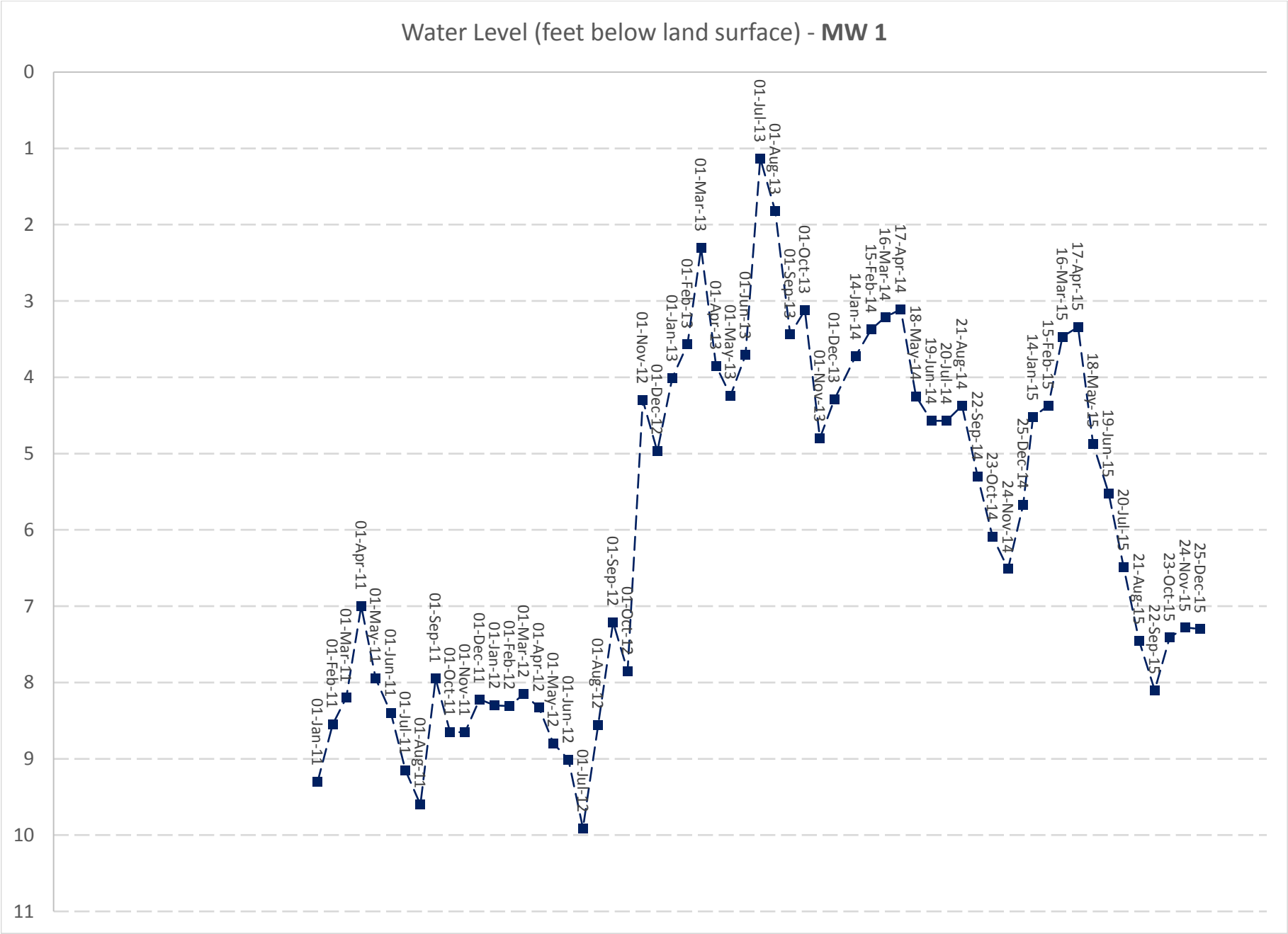
Well No.	Permit No.	14-Jan-14	15-Feb-14	16-Mar-14	17-Apr-14	18-May-14	19-Jun-14	20-Jul-14	21-Aug-14	22-Sep-14	23-Oct-14	24-Nov-14	25-Dec-14
MW1	86145	3.72	3.37	3.21	3.11	4.25	4.57	4.57	4.37	5.30	6.09	6.51	5.67
MW2	86146	3.94	2.96	3.50	3.22	4.22	4.45	3.63	4.10	5.39	5.90	6.28	4.99
MW3	237996	4.76	3.91	3.81	4.02	4.91	5.44	4.95	5.14	6.18	7.04	7.58	6.44
MW4	237997	4.2	3.34	3.77	3.49	4.47	4.90	4.61	4.43	5.68	6.26	6.88	5.53
MW5	86153	4.26	3.48	3.88	3.45	4.68	5.08	4.79	4.80	5.72	6.66	7.19	5.98
MW6	86150	11.34	10.80	10.62	10.48	11.76	12.40	12.2	12.30	13.62	14.22	14.85	13.88
MW7	86151	3.03	2.49	1.94	2.15	2.76	3.41	2.99	3.05	4.21	5.12	5.91	4.31
MW8	86152	4.09	3.45	3.28	3.21	4.14	4.76	4.38	4.66	5.51	6.65	6.96	6.64
MW9	86148	3.48	0.95	0.88	2.81	4.06	4.45	4.26	4.35	5.71	6.38	6.85	5.90
MW10	89573	4.36	3.81	3.49	3.49	4.46	8.12	4.72	4.99	6.79	6.93	8.49	6.71
MW11	208213	18.79	18.49	18.35	18.15	19.55	20.13	20.32	20.08	23.31	21.93	22.50	21.85
MW12	208214	6.39	5.72	5.84	5.87	6.76	6.99	6.65	6.79	7.59	8.17	8.54	7.47
MW13	208215	3.96	2.92	2.95	3.26	4.01	4.46	3.91	4.04	5.02	5.84	6.33	4.93
MW14	208216	3.43	2.32	2.85	2.73	3.29	3.93	3.3	3.59	4.42	5.30	6.04	4.97
MW15	208217	6.42	5.42	5.67	5.68	6.34	6.96	6.55	6.62	7.62	8.62	9.37	8.53
MW16	228543	3.13	2.38	2.53	2.64	3.43	3.72	3.24	3.40	4.32	4.94	5.35	4.18
OW17	228544	4.91	4.01	4.11	4.22	5.19	5.41	4.95	5.12	6.07	6.74	7.15	5.87
MW 18	237074	4.65	3.68	3.86	4.10	4.90	5.36	4.78	5.03	4.82	6.63	7.12	5.60
OW 19	237999	3.81	2.39	2.83	3.14	3.90	4.28	3.75	3.93	4.90	5.74	6.34	5.08
OW 20	237998	3.47	3.39	3.00	2.94	3.54	4.10	3.54	3.82	4.60	5.45	6.19	5.05
MW 21	238298	1.42	0.50	0.71	0.92	1.50	2.23	1.58	1.77	2.80	3.62	4.28	2.86
MW 22	238299	5.02	4.18	4.52	4.28	5.07	5.69	5.34	5.49	6.49	7.43	8.17	7.71
MW 23	238967	4.69	4.15	5.89	3.79	4.82	5.44	5.11	5.32	6.19	7.35	7.99	7.38
MW 24	238968	3.6	2.64	2.67	2.82	3.50	4.16	3.92	3.76	4.79	5.90	6.70	5.53
MW25	238969	3.74	3.26	3.00	2.85	3.90	4.51	4.20	4.51	5.26	6.46	7.11	6.68
MW26	238970	6.29	5.70	5.52	5.41	6.41	7.03	6.66	6.94	7.32	8.94	9.61	9.18
OW27	242933	3.63	2.65	3.07	2.95	3.45	4.01	3.48	3.59	4.59	5.56	6.36	5.36
OW28	242934	6.95	6.10	6.19	6.11	6.86	7.45	7.03	7.12	8.11	9.21	9.95	9.09

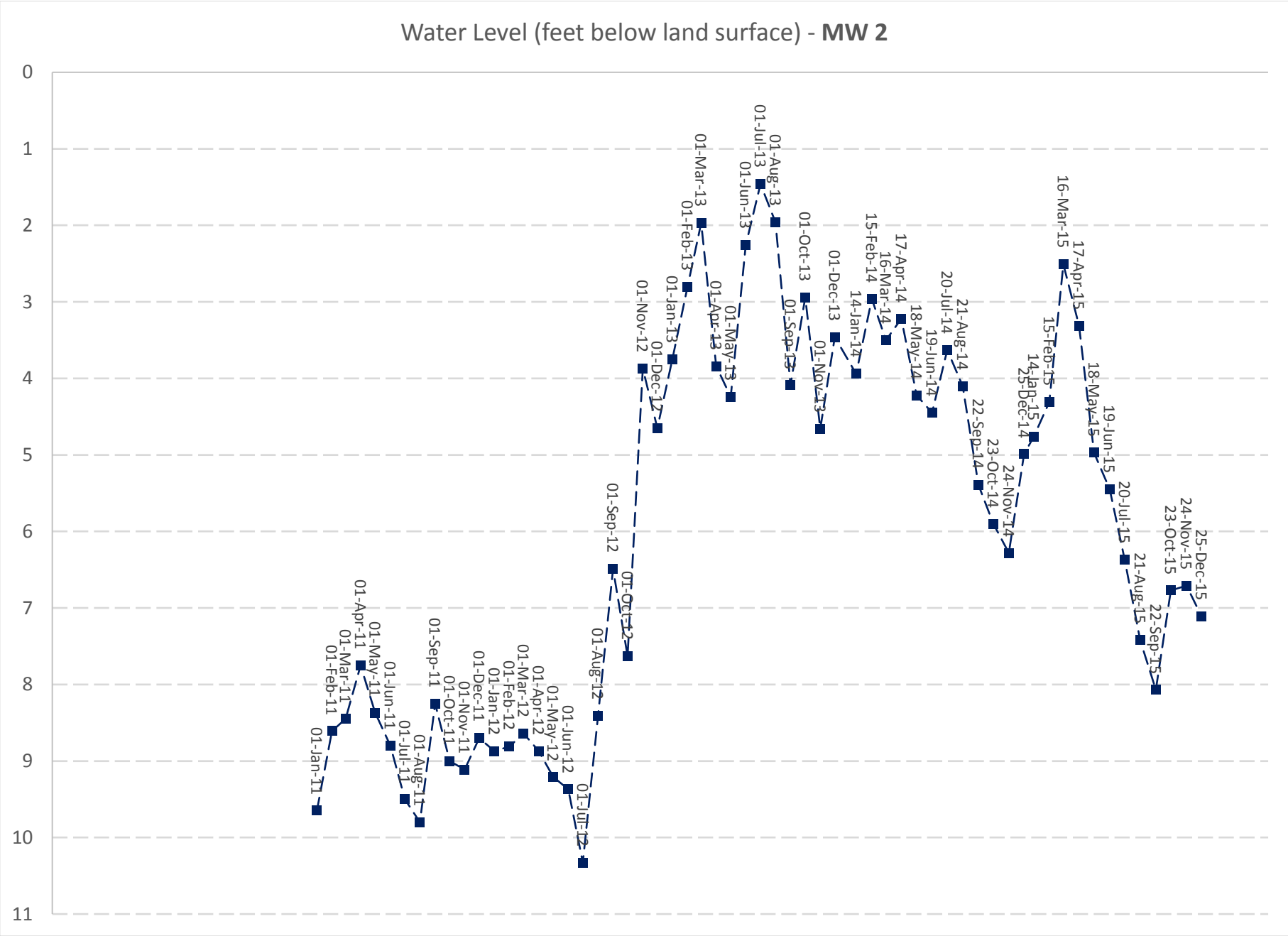
Water Levels
in feet below land surface
from Sussex County

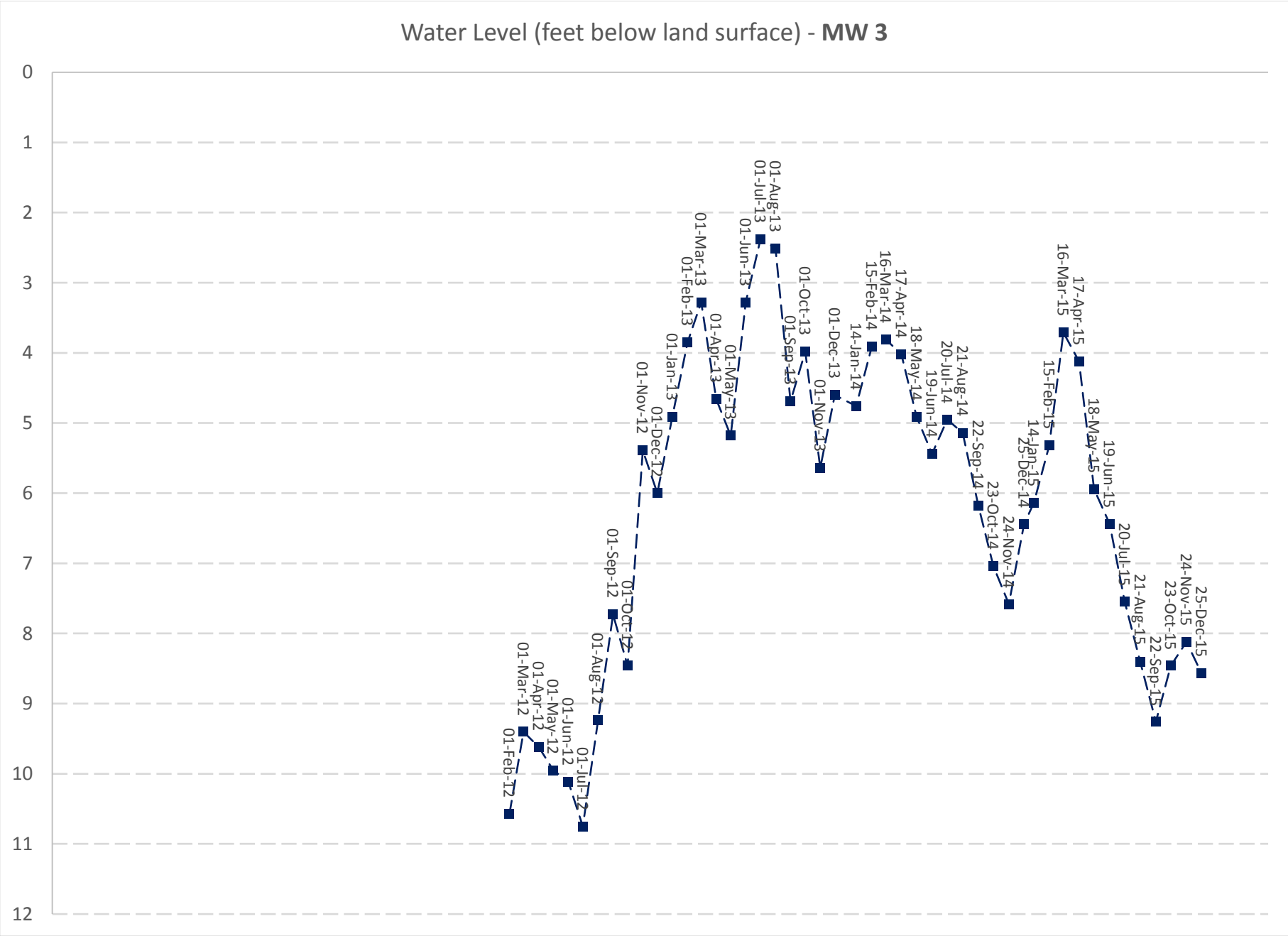
Well No.	Permit No.	14-Jan-15	15-Feb-15	16-Mar-15	17-Apr-15	18-May-15	19-Jun-15	20-Jul-15	21-Aug-15	22-Sep-15	23-Oct-15	24-Nov-15	25-Dec-15
MW1	86145	4.52	4.37	3.47	3.34	4.87	5.52	6.49	7.45	8.10	7.41	7.28	7.30
MW2	86146	4.76	4.31	2.51	3.31	4.97	5.45	6.37	7.42	8.07	6.77	6.71	7.11
MW3	237996	6.14	5.32	3.71	4.12	5.94	6.44	7.55	8.40	9.26	8.46	8.12	8.57
MW4	237997	5.26	4.69	2.91	3.57	5.26	5.79	6.99	7.86	8.70	7.57	7.35	7.73
MW5	86153	5.55	3.38	3.13	4.64	5.45	6.11	7.12	8.16	8.78	7.15	7.81	8.08
MW6	86150	13.8	13.01	10.94	10.7	12.82	13.5	14.87	15.68	16.29	15.97	15.9	15.97
MW7	86151	4.24	3.58	1.71	2.47	4.09	7.21	5.99	6.56	7.69	7.12	5.52	7.16
MW8	86152	6.22	5.28	4.94	3.65	6.41	5.56	7.32	8.33	9.08	8.08	7.98	8.58
MW9	86148	0.2	1.92	0.12	3.04	5.63	5.62	6.98	7.80	9.60	7.90	7.00	8.05
MW10	89573	6.34	5.34	3.99	3.69	5.64	6.25	8.44	9.21	9.44	8.65	8.42	8.84
MW11	208213	21.29	21.08	19.55	18.48	20.56	21.13	22.53	23.30	24.74	23.79	23.81	23.6
MW12	208214	7.14	6.85	5.76	5.94	7.31	7.74	8.54	9.41	10.00	8.96	8.95	9.04
MW13	208215	4.75	4.26	2.59	3.26	4.93	5.38	6.46	7.58	8.39	7.09	6.59	7.13
MW14	208216	4.53	3.89	2.17	2.93	4.39	4.29	6.17	7.97	7.81	6.63	6.07	6.91
MW15	208217	8.12	7.42	5.14	5.92	7.52	7.49	9.42	10.38	10.82	9.84	9.80	10.4
MW16	228543	3.8	3.38	2.07	2.63	4.07	4.54	5.39	6.15	7.13	5.78	5.72	6.94
OW17	228544	5.63	5.25	3.76	4.31	6.11	6.19	7.25	8.25	9.03	7.86	7.47	7.71
MW 18	237074	5.24	4.77	3.20	4.10	5.82	6.25	7.22	8.24	8.84	7.77	7.40	7.76
OW 19	237999	4.74	4.18	2.07	3.08	4.87	5.14	6.31	7.43	8.24	6.99	6.57	7.13
OW 20	237998	4.51	4.01	1.94	3.02	4.59	4.46	6.31	7.21	7.99	6.79	6.29	7.02
MW 21	238298	2.54	1.96	0.51	1.12	2.63	2.56	4.02	5.00	5.83	4.86	4.35	4.97
MW 22	238299	5.78	6.90	4.10	4.58	6.32	6.37	6.87	7.42	9.59	8.80	8.66	10.98
MW 23	238967	6.92	5.90	5.58	4.27	5.92	6.24	8.00	8.85	9.75	9.08	8.94	9.27
MW 24	238968	5.21	4.47	4.13	3.10	4.70	4.87	6.66	7.21	8.42	7.19	6.90	7.94
MW25	238969	6.16	5.04	4.88	3.47	4.95	5.29	7.09	7.89	8.76	8.21	8.20	8.37
MW26	238970	8.69	7.63	7.40	5.96	7.49	7.79	9.54	10.36	11.20	10.64	10.58	10.86
OW27	242933	4.98	4.20	2.13	3.17	4.57	4.50	6.35	6.93	7.99	6.91	6.35	7.23
OW28	242934	8.77	8.02	6.03	6.49	8.03	8.67	10.19	8.51	11.72	10.79	10.25	11.07

Appendix 7

Depth to Water Hydrographs


Water Level (feet below land surface) - **MW 1**
0
1
2
3
4
5
6
7
8
9
10
11
01-Jan-11
01-Feb-11
01-Mar-11
01-Apr-11
01-May-11
01-Jun-11
01-Jul-11
01-Aug-11
01-Sep-11
01-Oct-11
01-Nov-11
01-Dec-11
01-Jan-12
01-Feb-12
01-Mar-12
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 2**
0
1
2
3
4
5
6
7
8
9
10
11
01-Jan-11
01-Feb-11
01-Mar-11
01-Apr-11
01-May-11
01-Jun-11
01-Jul-11
01-Aug-11
01-Sep-11
01-Oct-11
01-Nov-11
01-Dec-11
01-Jan-12
01-Feb-12
01-Mar-12
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 3**
0
1
2
3
4
5
6
7
8
9
10
11
12
01-Feb-12
01-Mar-12
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
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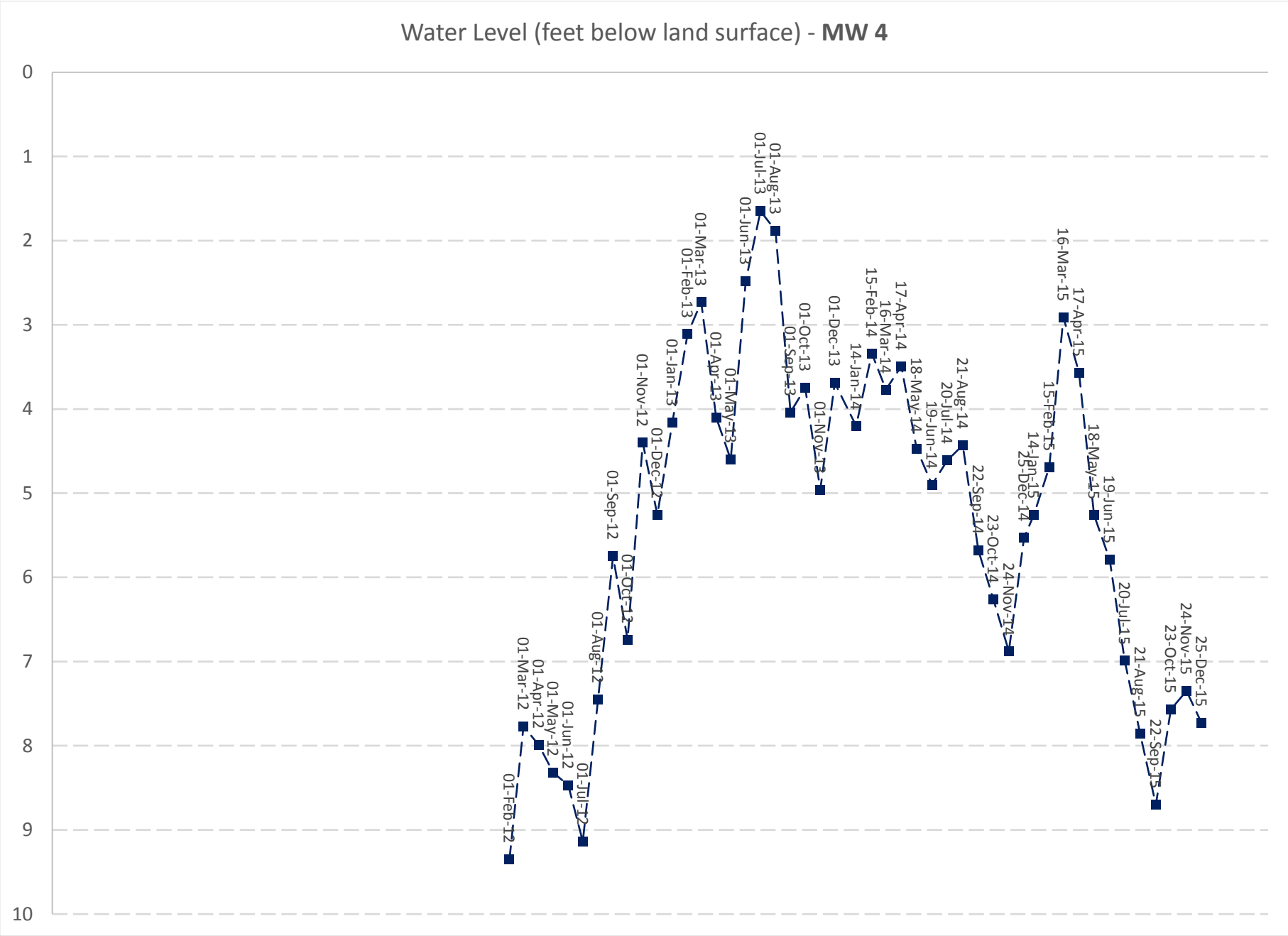
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 4**
0
1
2
3
4
5
6
7
8
9
10
01-Feb-12
01-Mar-12
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
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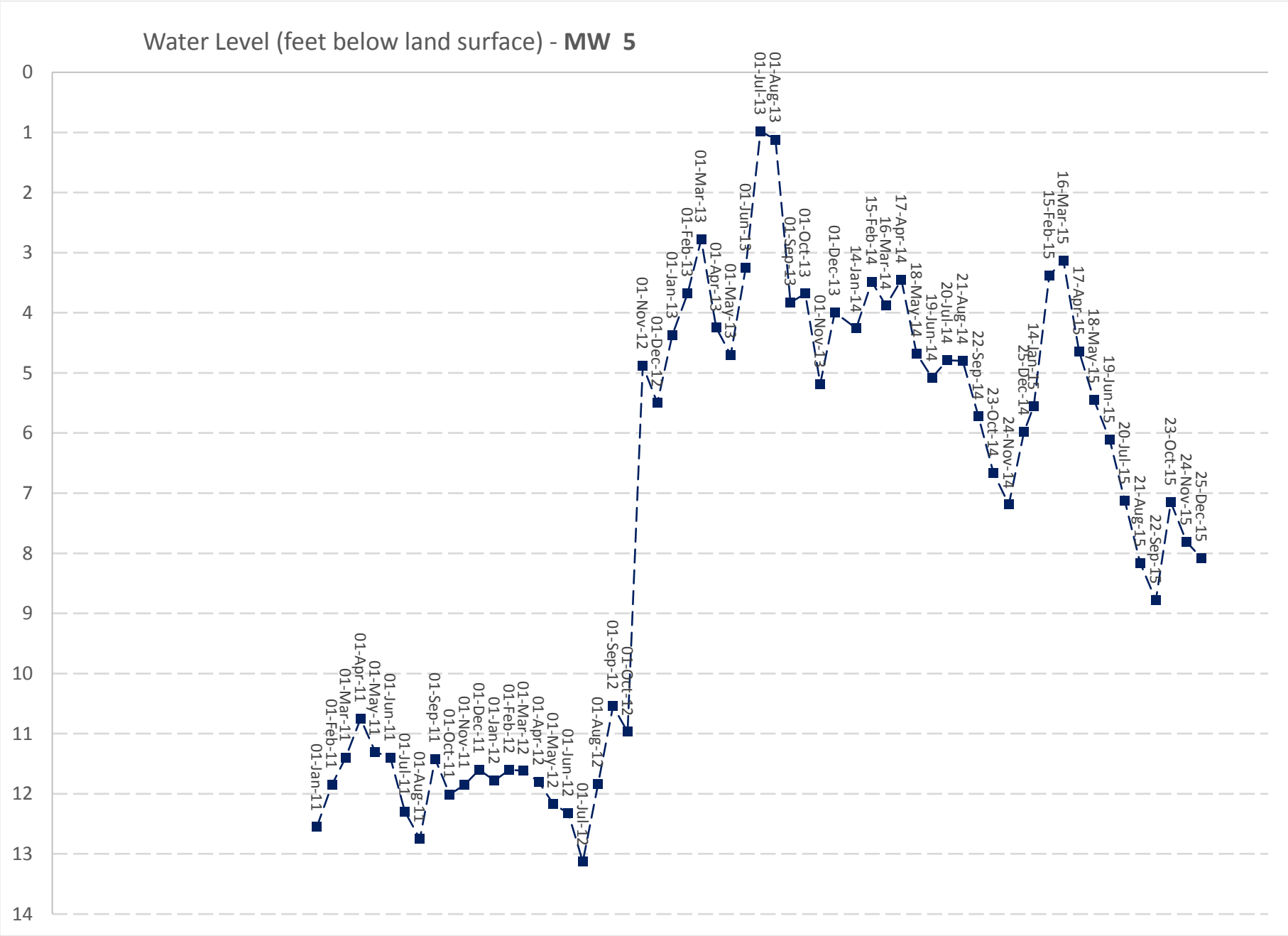
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - MW 5
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01-Jan-11
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01-Dec-11
01-Jan-12
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14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
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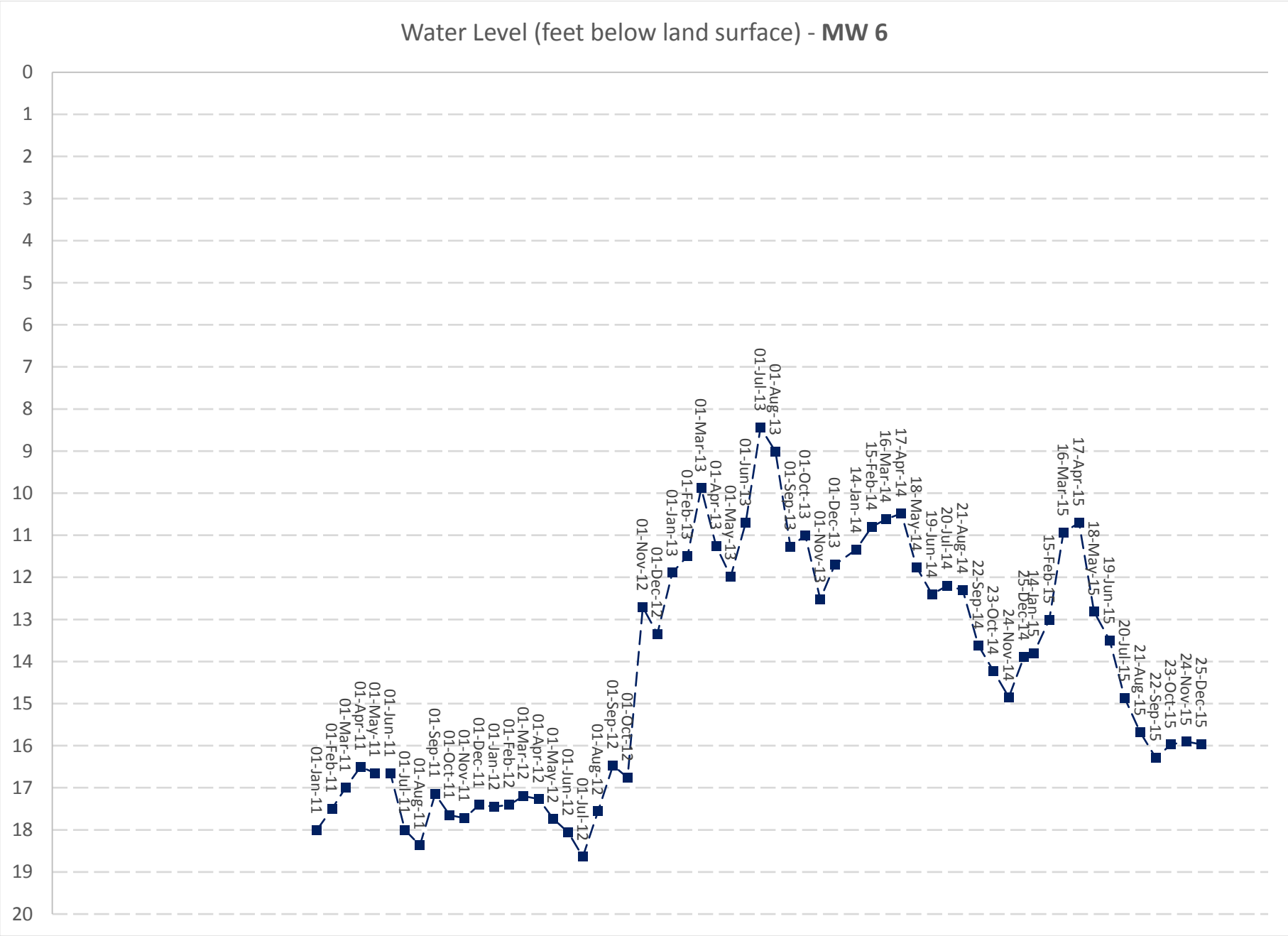
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 6**
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01-Jan-11
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01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
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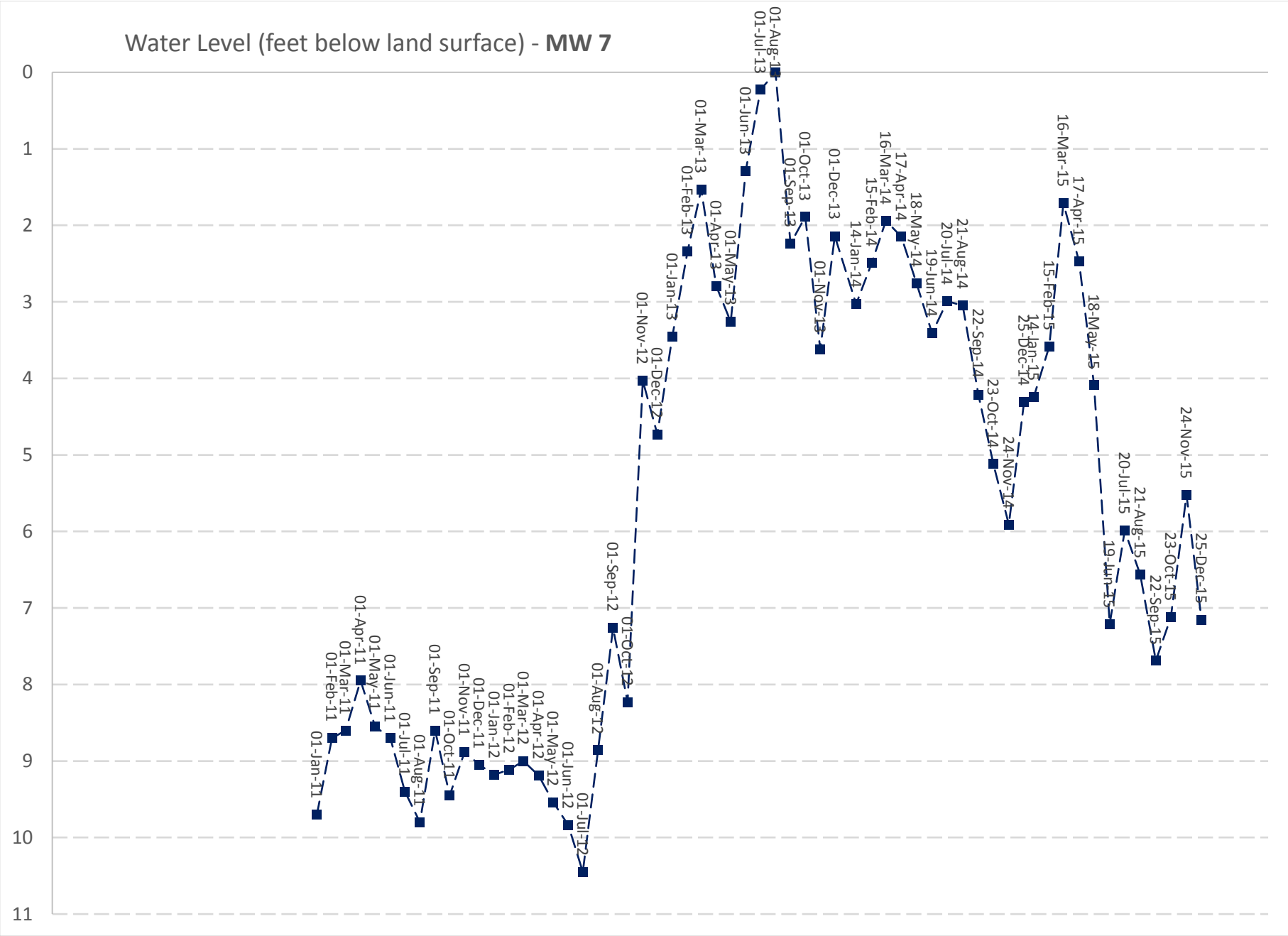
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 7**
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01-Jan-11
01-Feb-11
01-Mar-11
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01-Dec-11
01-Jan-12
01-Feb-12
01-Mar-12
01-Apr-12
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01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
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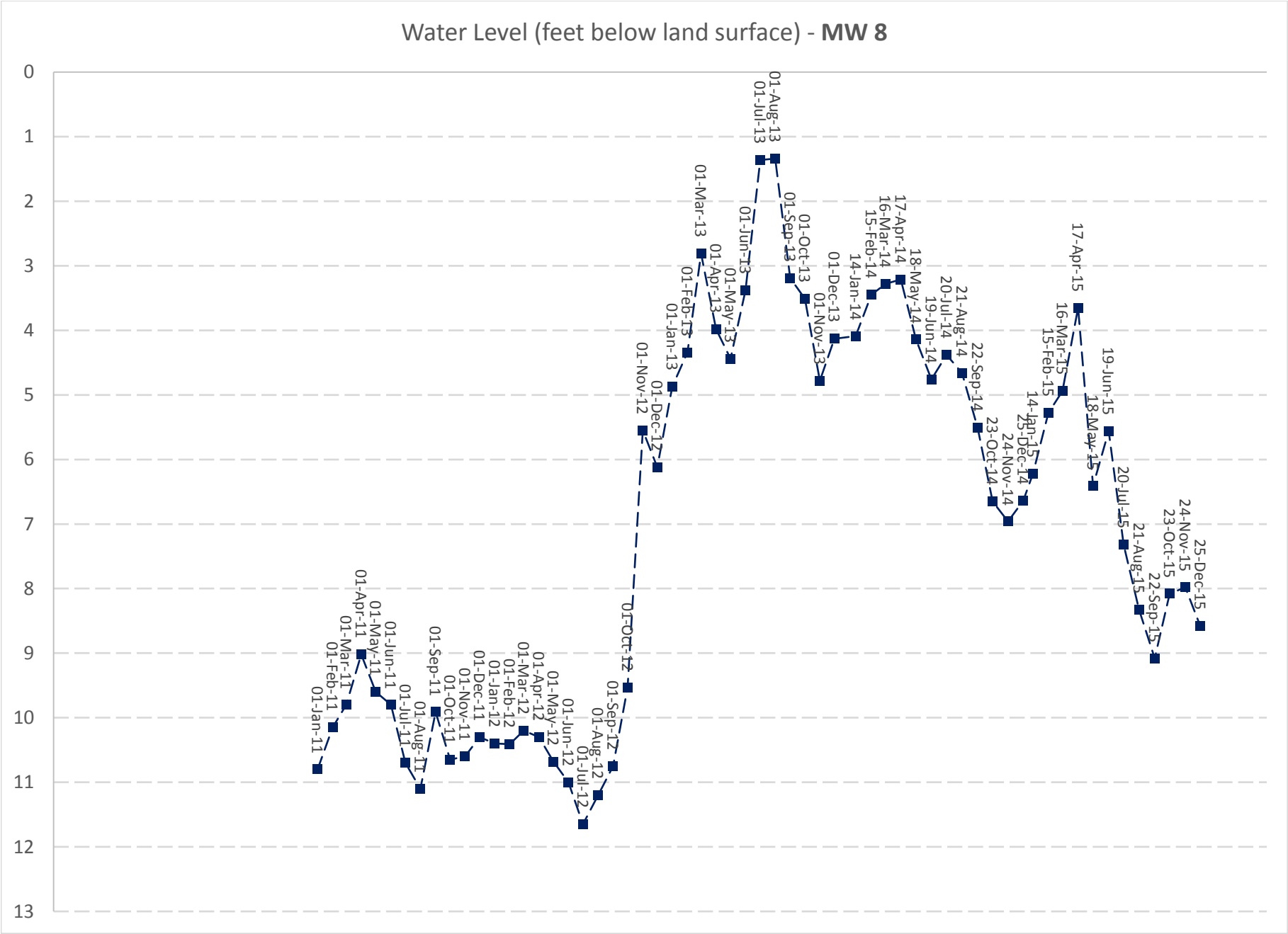
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 8**
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01-Jan-11
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01-Apr-12
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01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
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18-May-15
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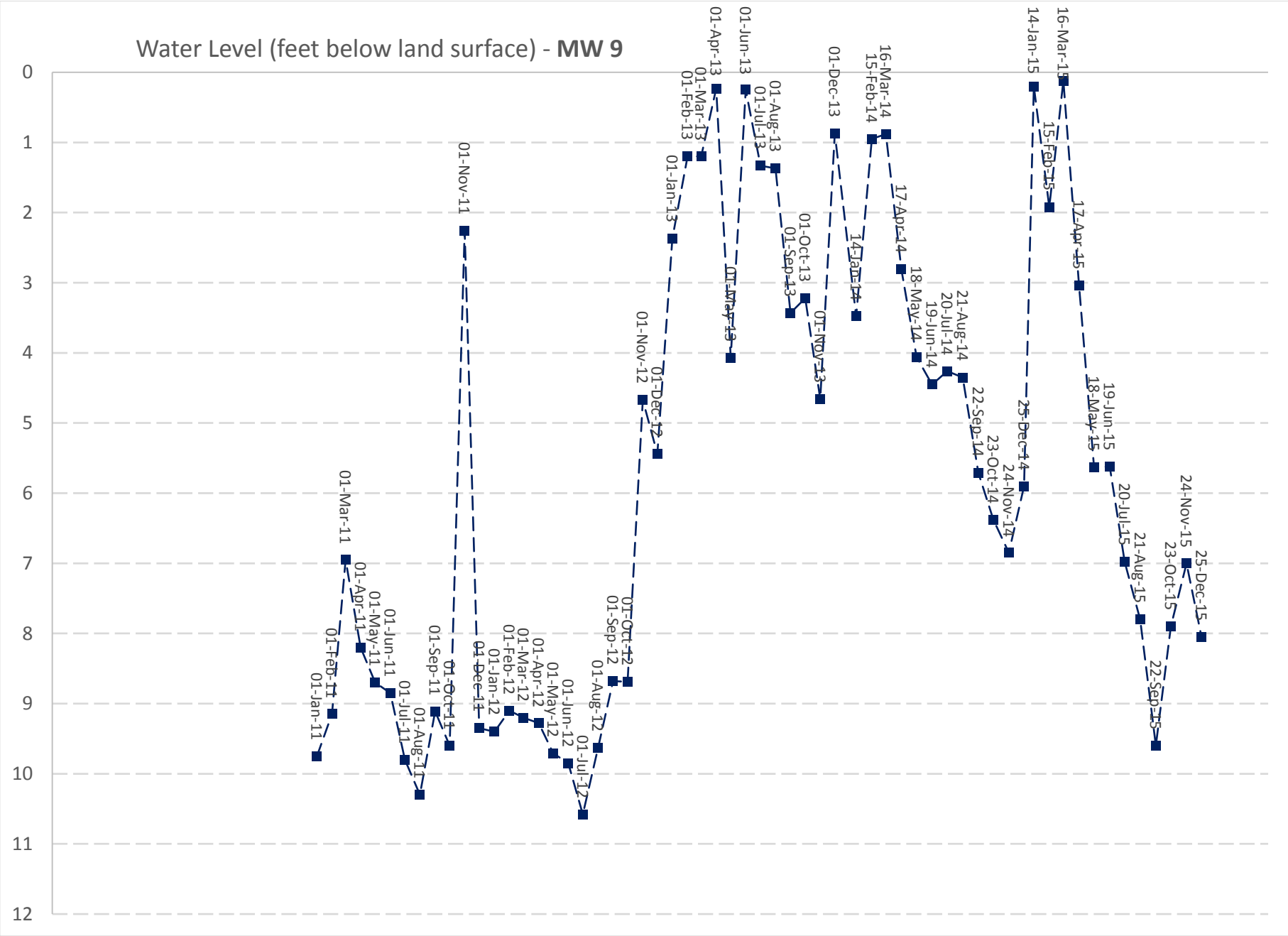
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - MW 9
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01-Jan-11
01-Feb-11
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01-Dec-11
01-Jan-12
01-Feb-12
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01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
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23-Oct-14
24-Nov-14
25-Dec-14
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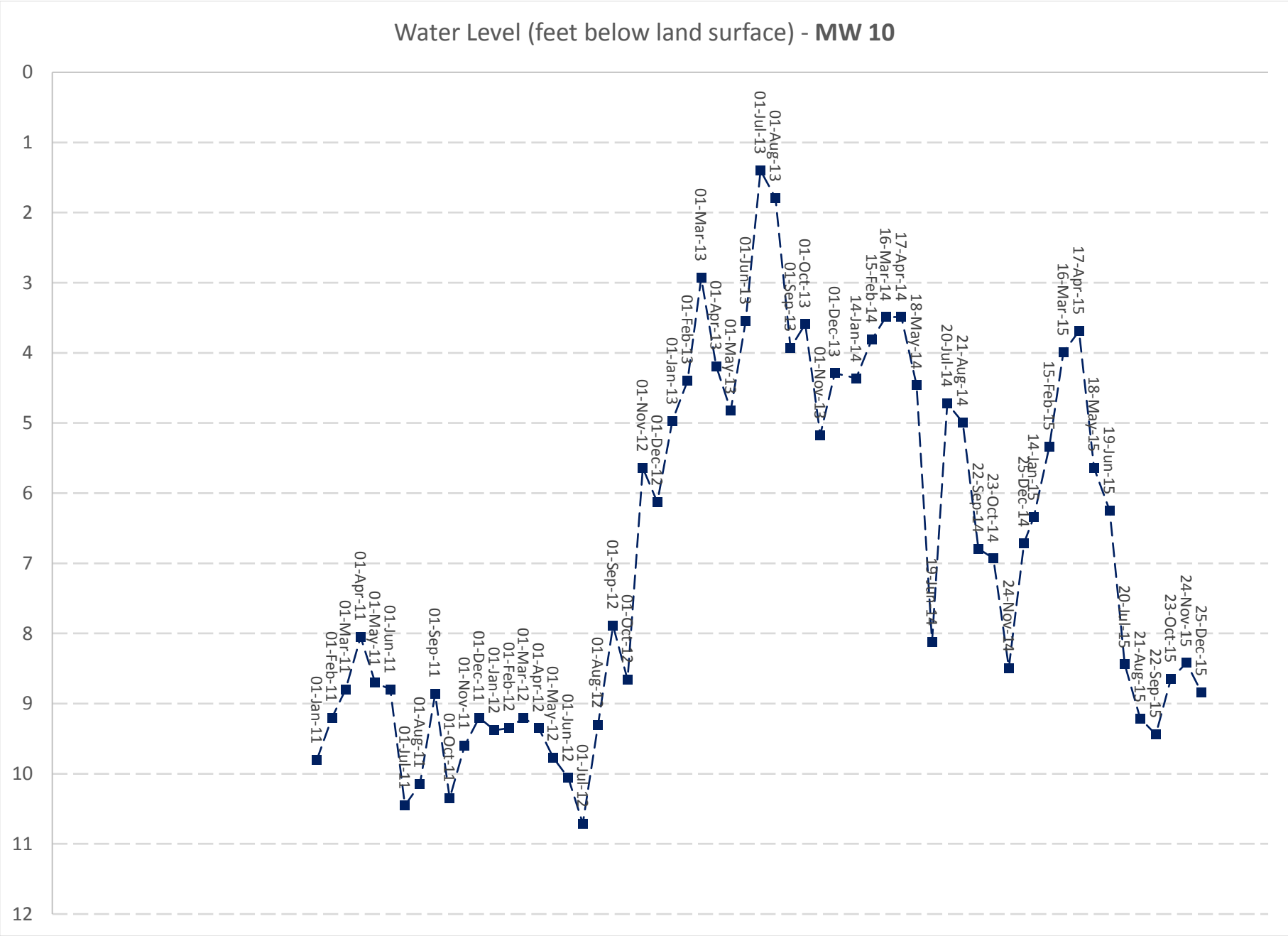
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 10**
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01-Jan-11
01-Feb-11
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01-Dec-11
01-Jan-12
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15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
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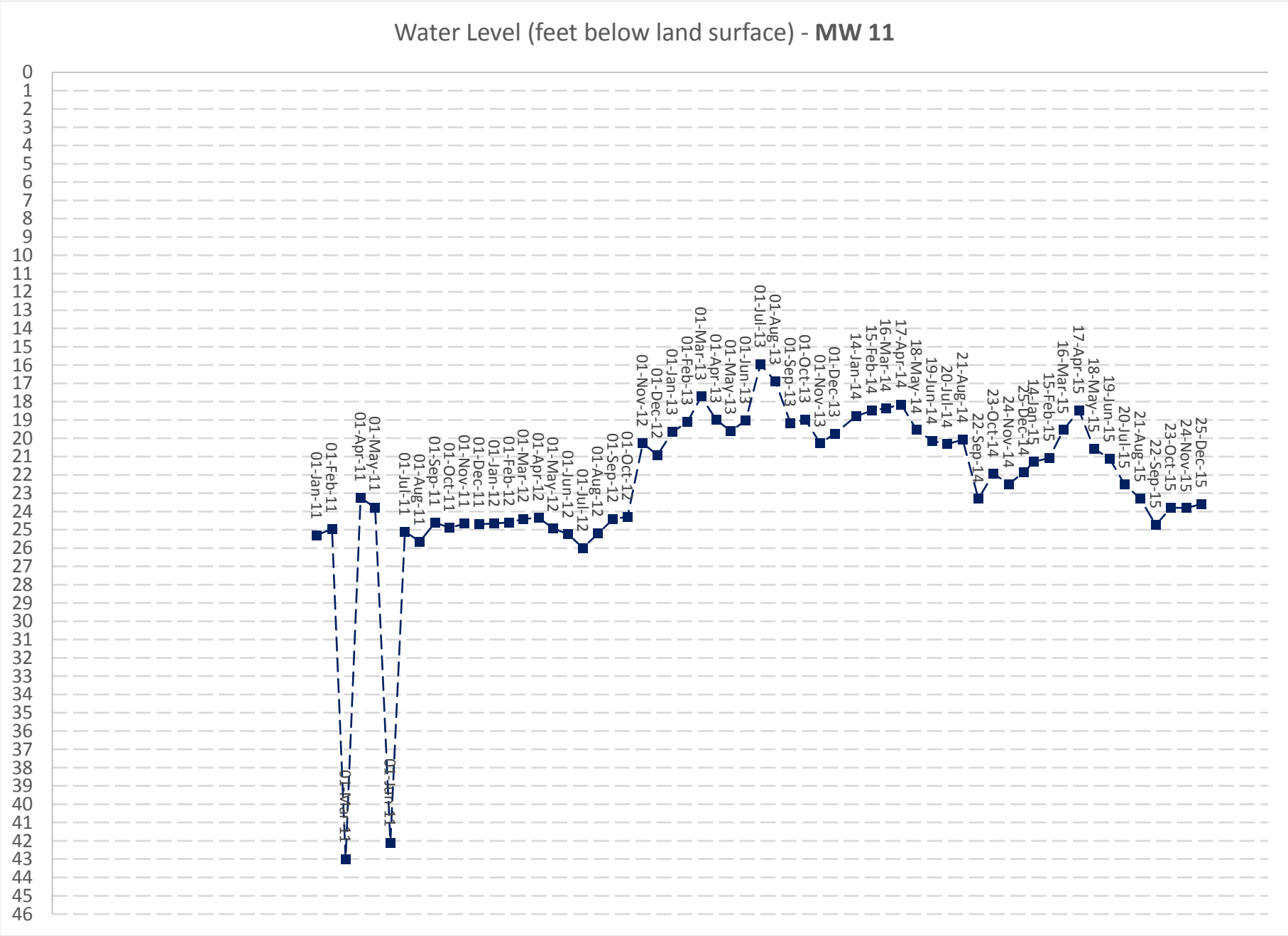
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - MW 11
25-Dec-15
24-Nov-15
23-Oct-15
22-Sep-15
21-Aug-15
20-Jul-15
19-Jun-15
18-May-15
17-Apr-15
16-Mar-15
15-Feb-15
14-Jan-15
25-Dec-14
24-Nov-14
23-Oct-14
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20-Jul-14
19-Jun-14
18-May-14
17-Apr-14
16-Mar-14
15-Feb-14
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01-Nov-13
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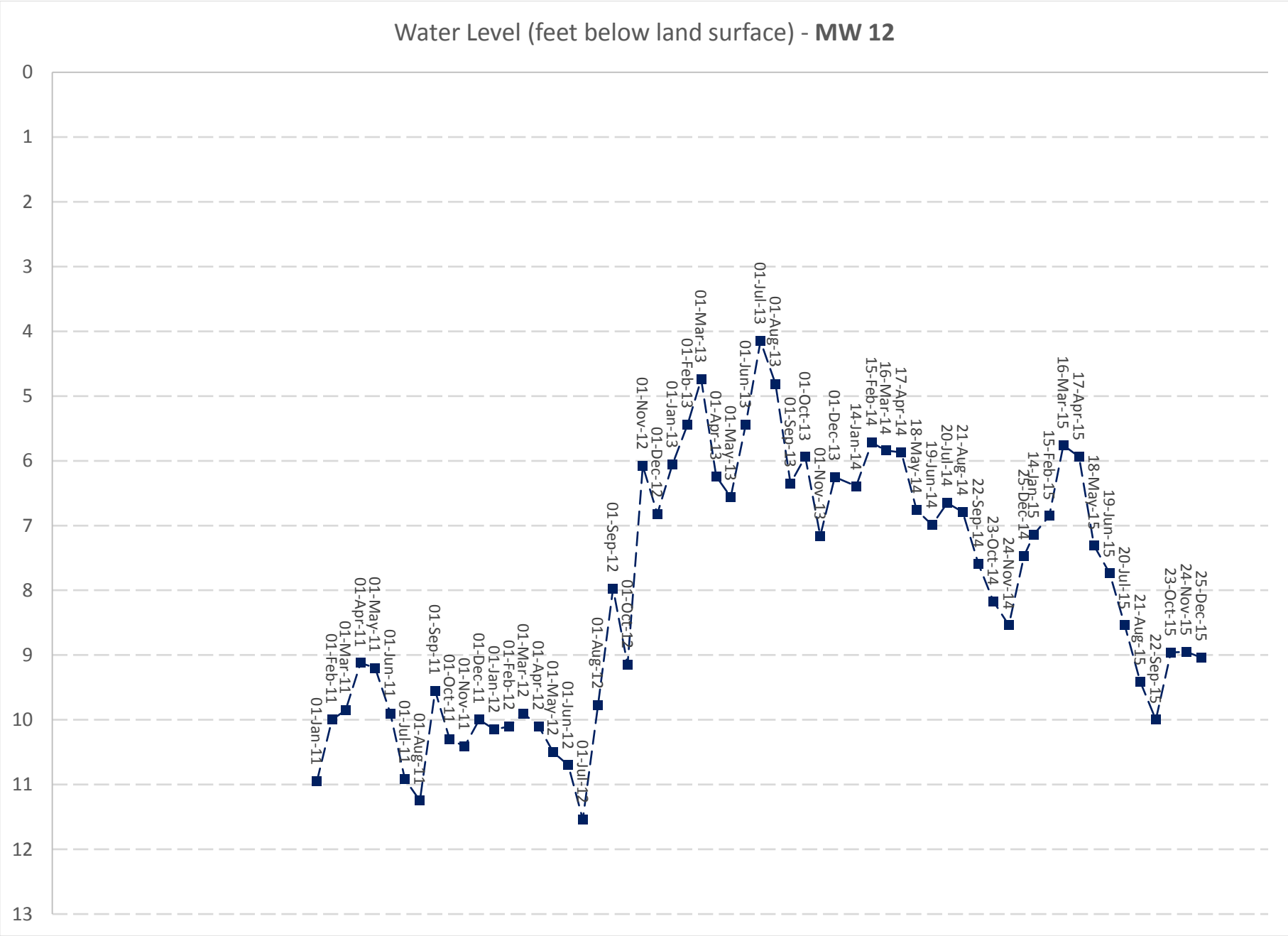
Water Level (feet below land surface) - **MW 12**
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01-Jan-11
01-Feb-11
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01-Nov-11
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01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
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18-May-15
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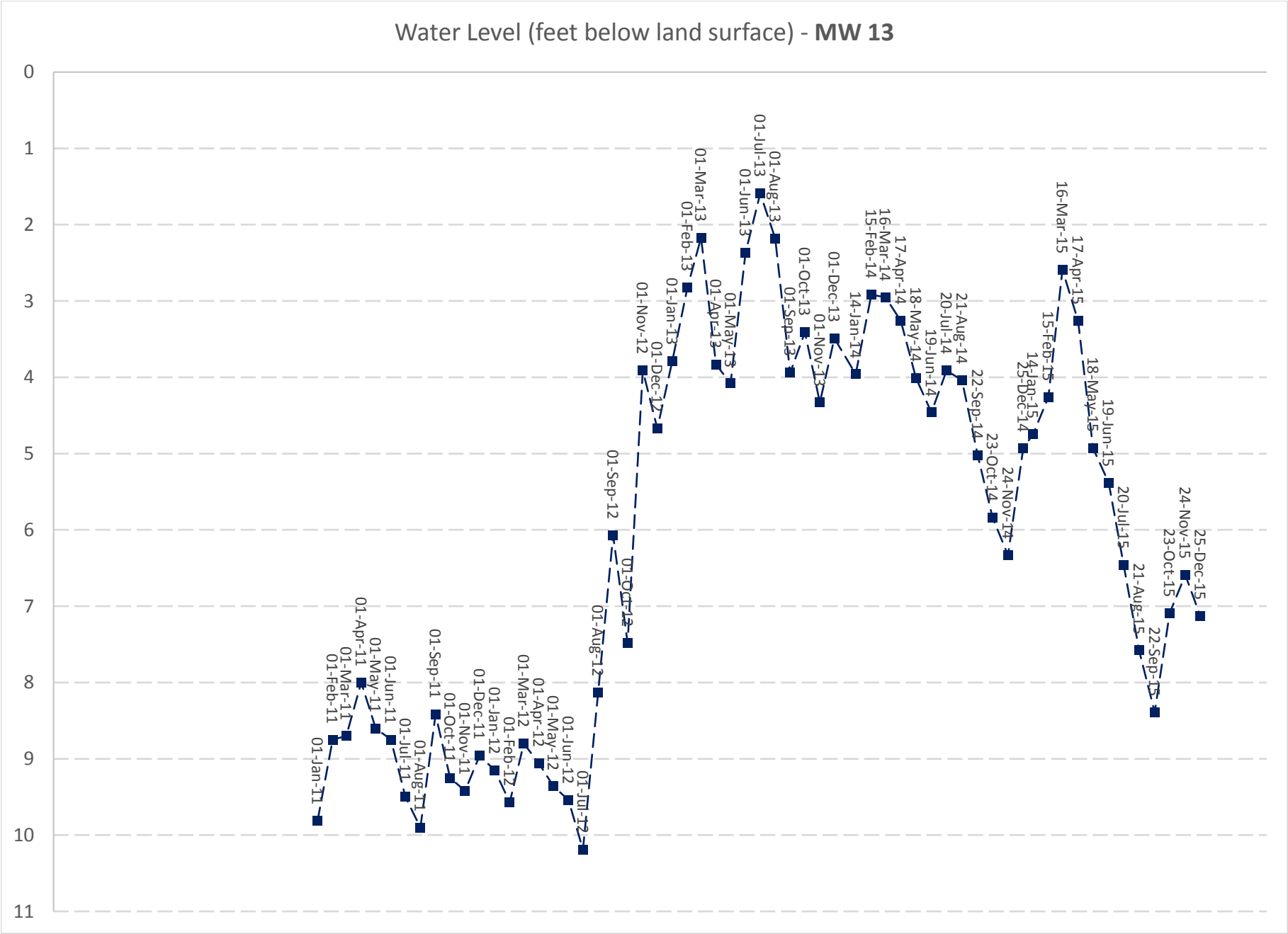
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 13**
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01-Jan-11
01-Feb-11
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17-Apr-14
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15-Feb-15
16-Mar-15
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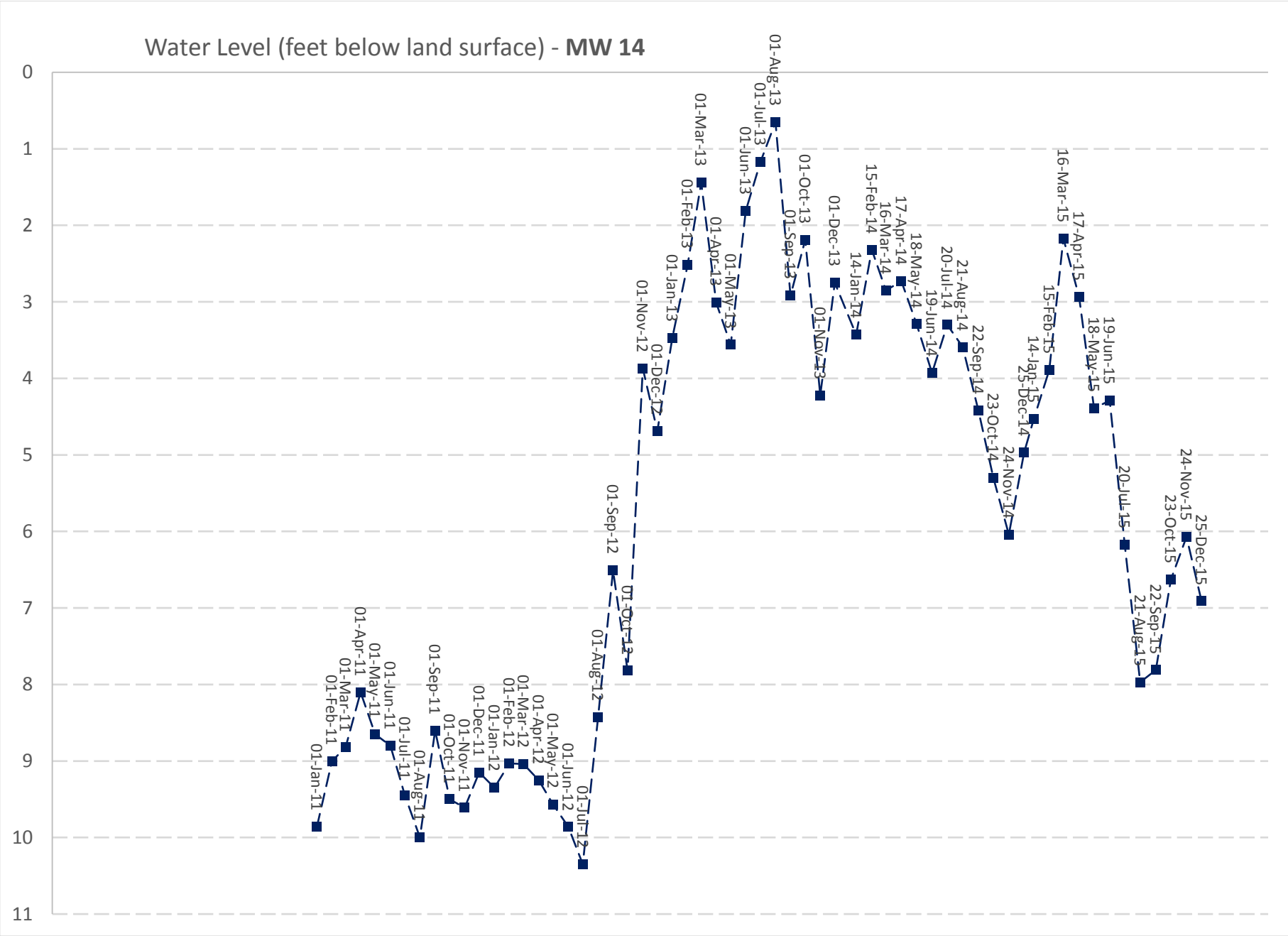
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - MW 14
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01-Jan-11
01-Feb-11
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01-Jan-12
01-Feb-12
01-Mar-12
01-Apr-12
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19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
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16-Mar-15
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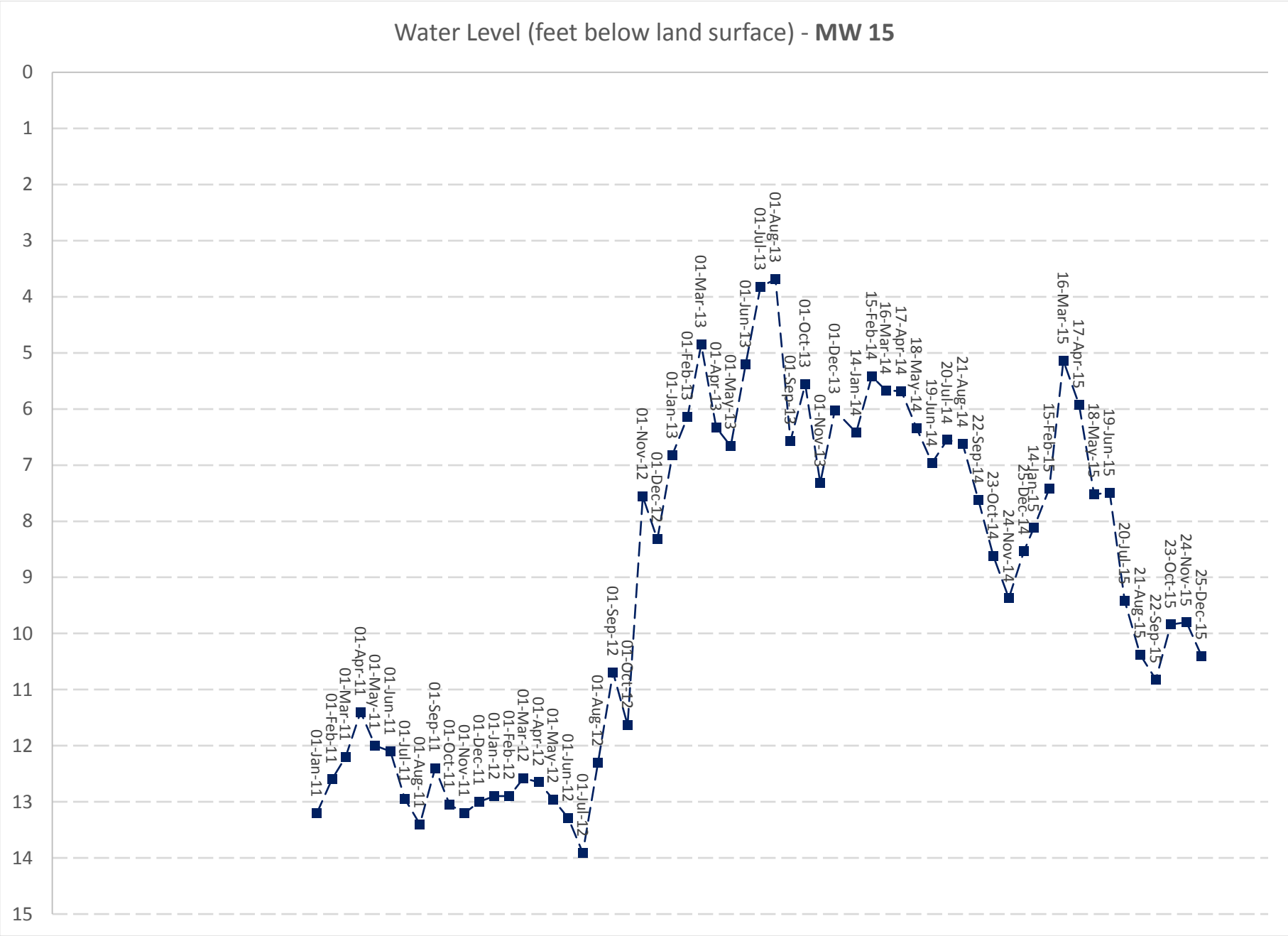
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 15**
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01-Jan-11
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01-Sep-11
01-Oct-11
01-Nov-11
01-Dec-11
01-Jan-12
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01-Mar-12
01-Apr-12
01-May-12
01-Jun-12
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18-May-14
19-Jun-14
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23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
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16-Mar-15
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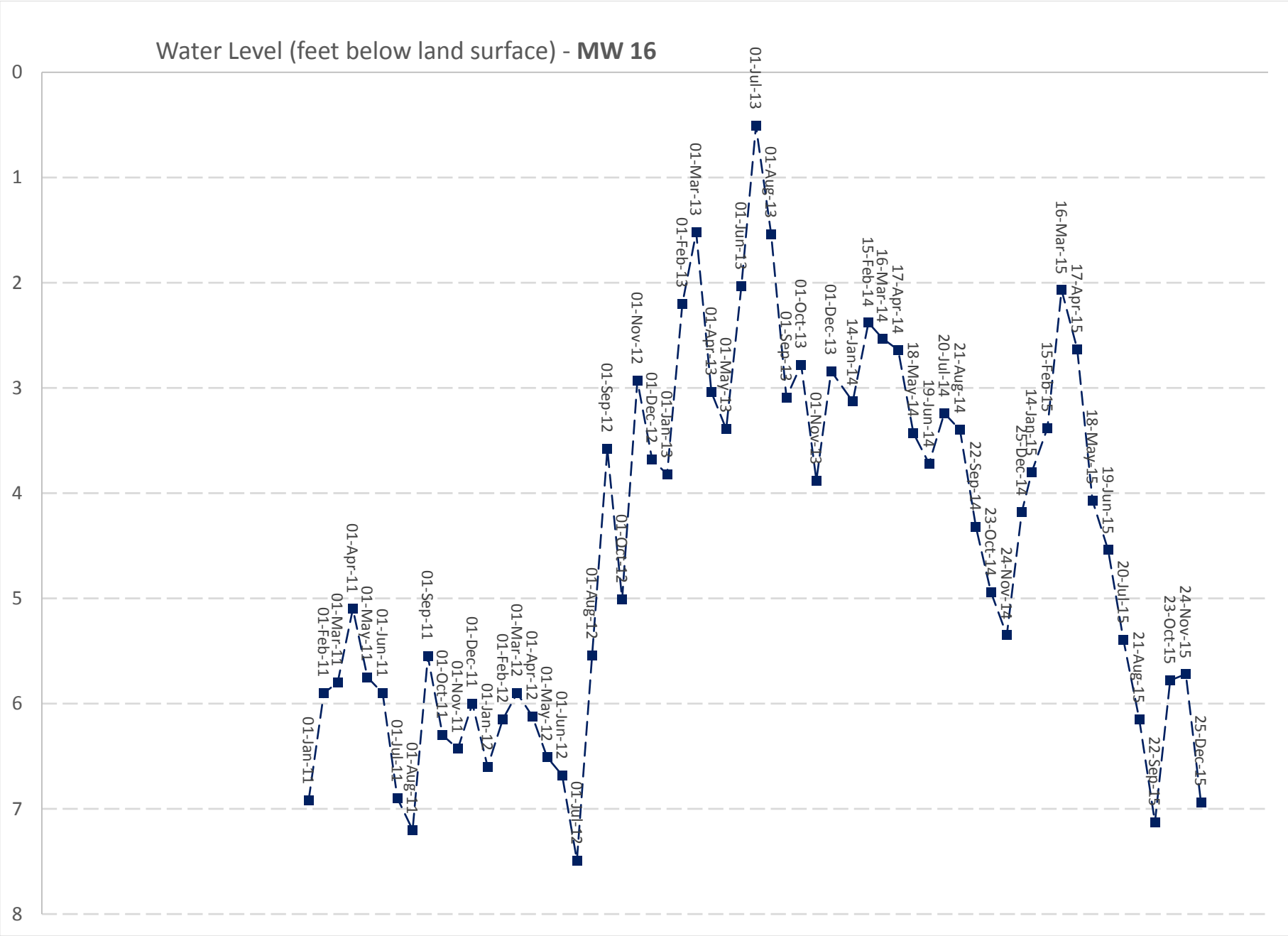
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 16**
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01-Jan-11
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01-Mar-11
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01-Aug-11
01-Sep-11
01-Oct-11
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01-Dec-11
01-Jan-12
01-Feb-12
01-Mar-12
01-Apr-12
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01-Jun-12
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01-Oct-12
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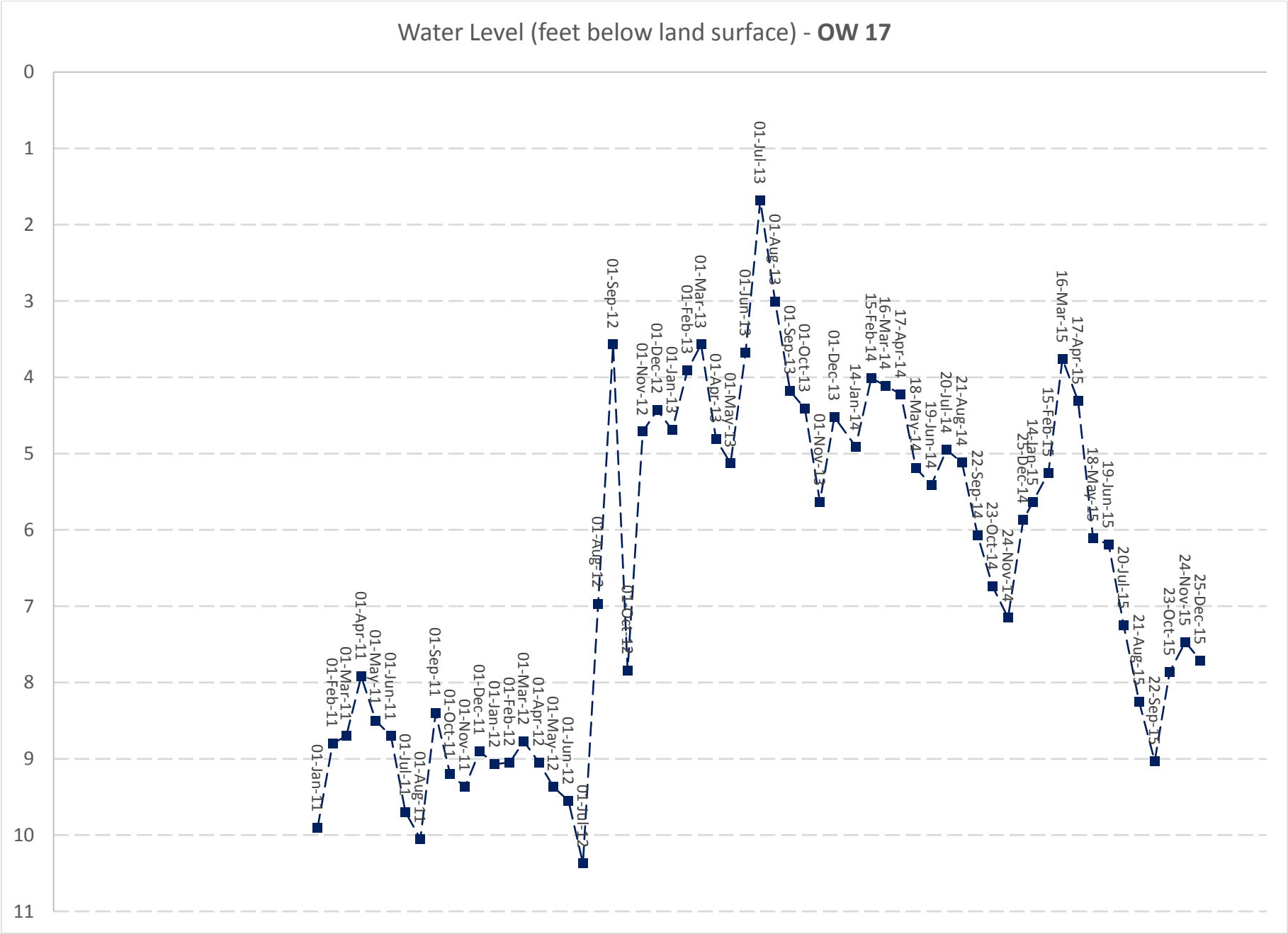
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **OW 17**
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01-Jan-11
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01-Jan-12
01-Feb-12
01-Mar-12
01-Apr-12
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23-Oct-14
24-Nov-14
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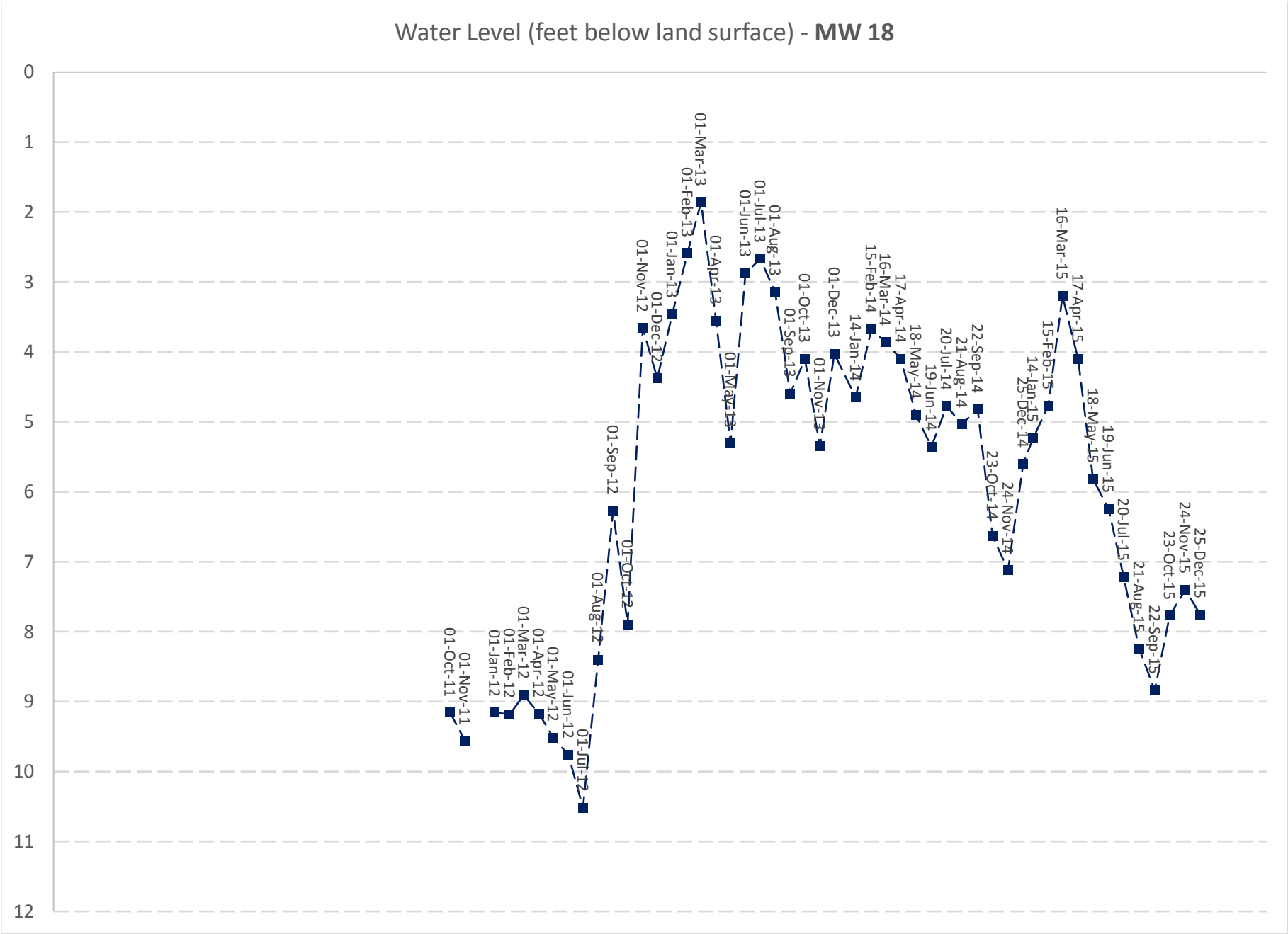
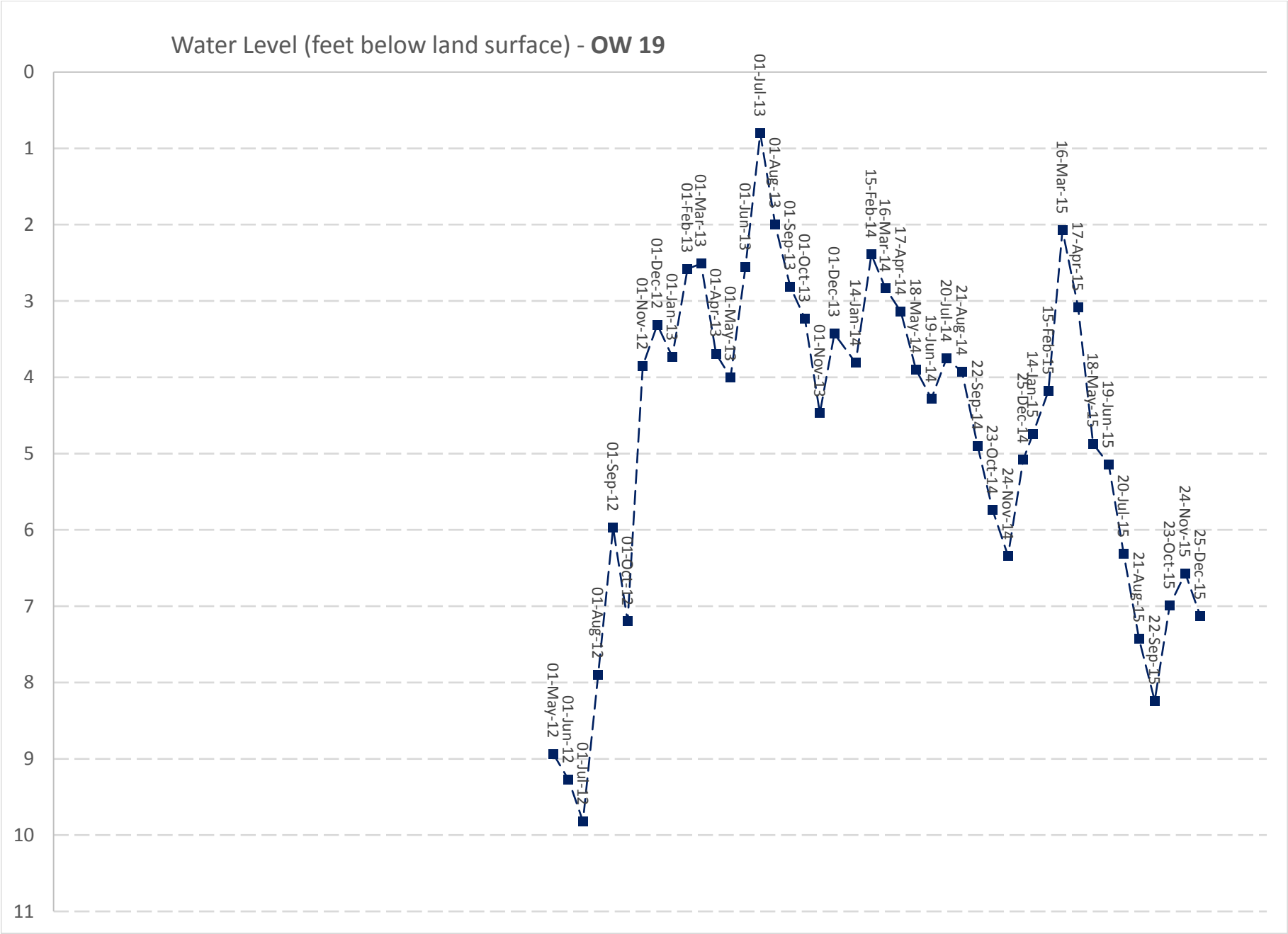
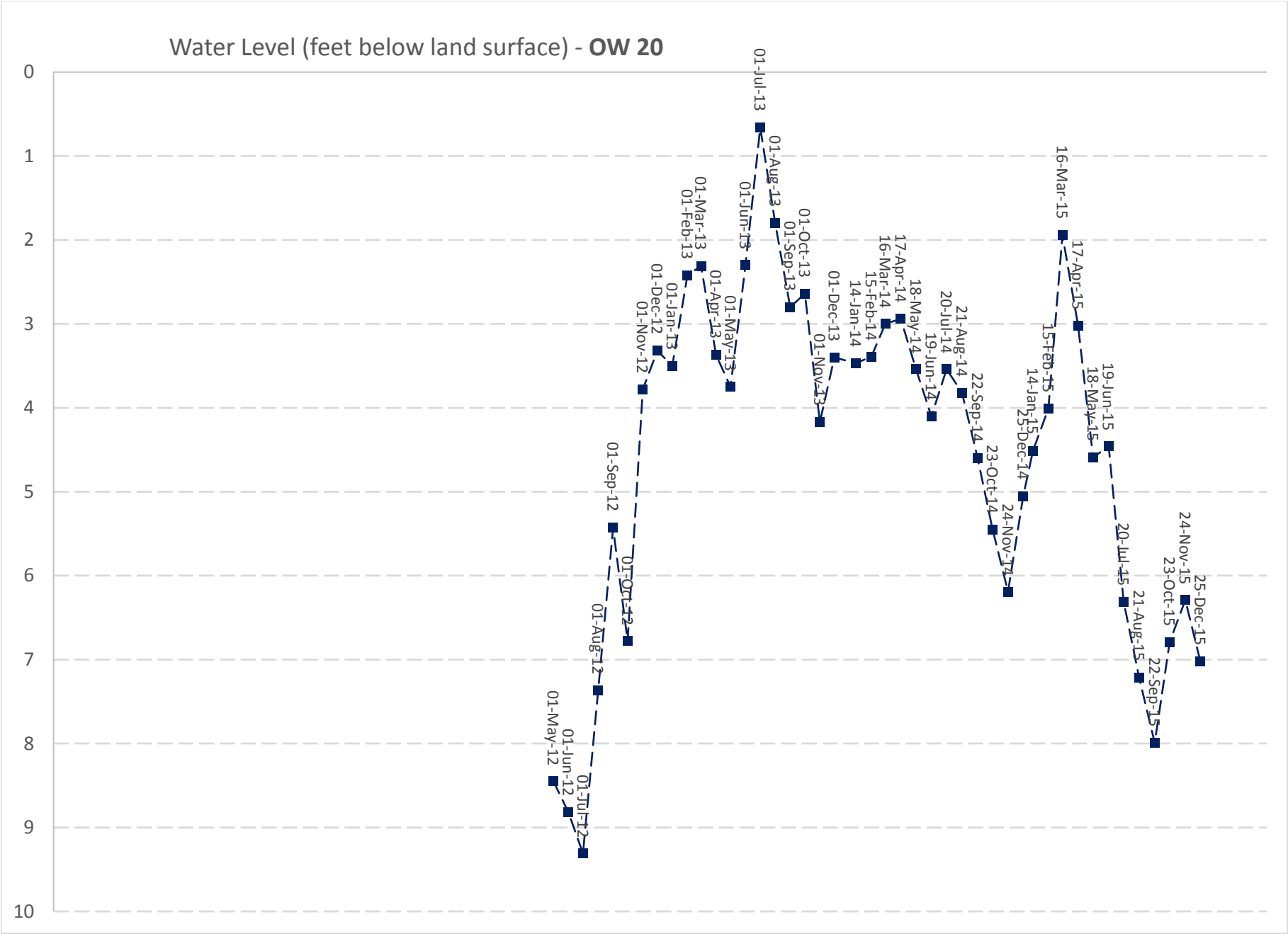
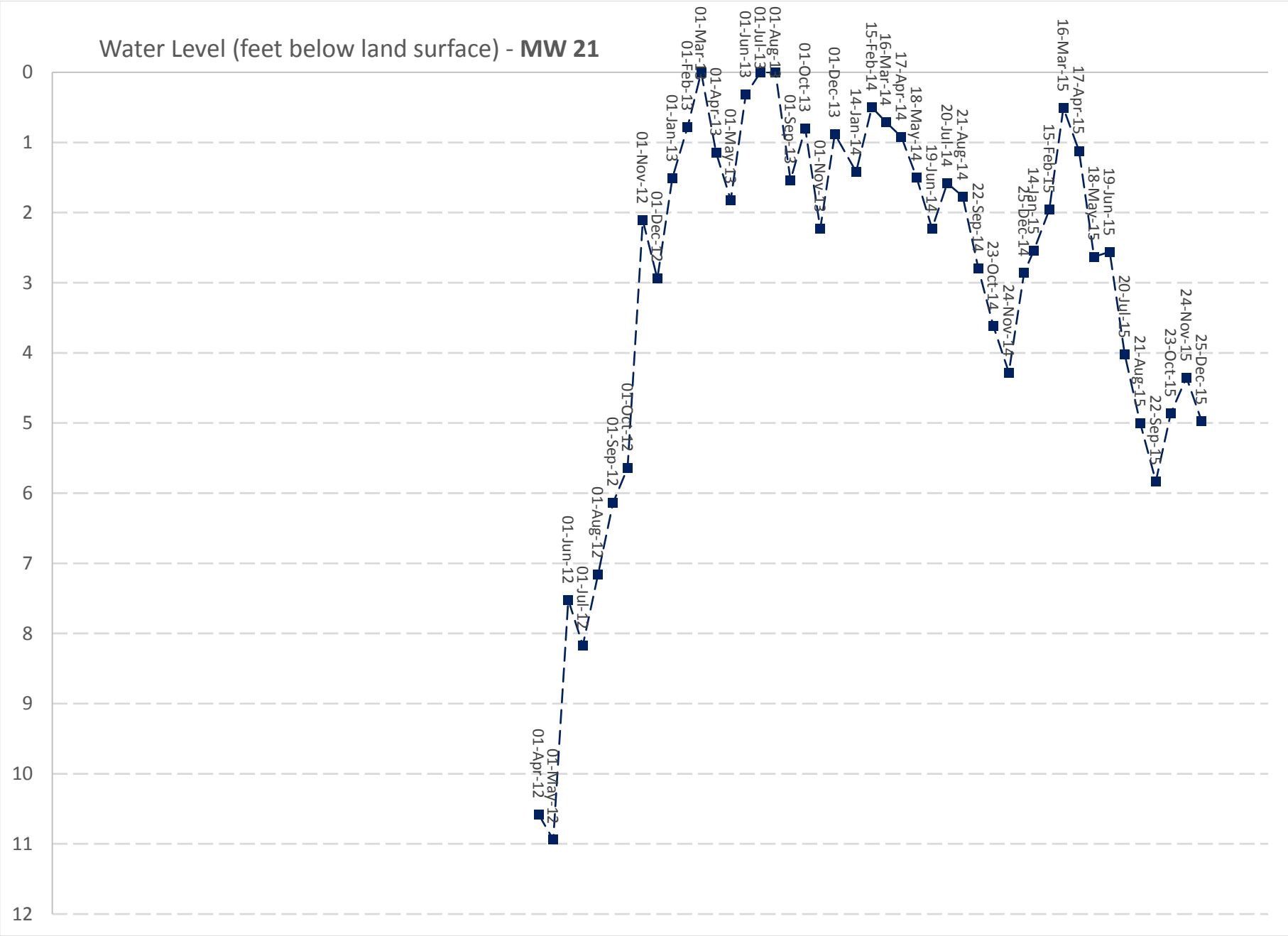
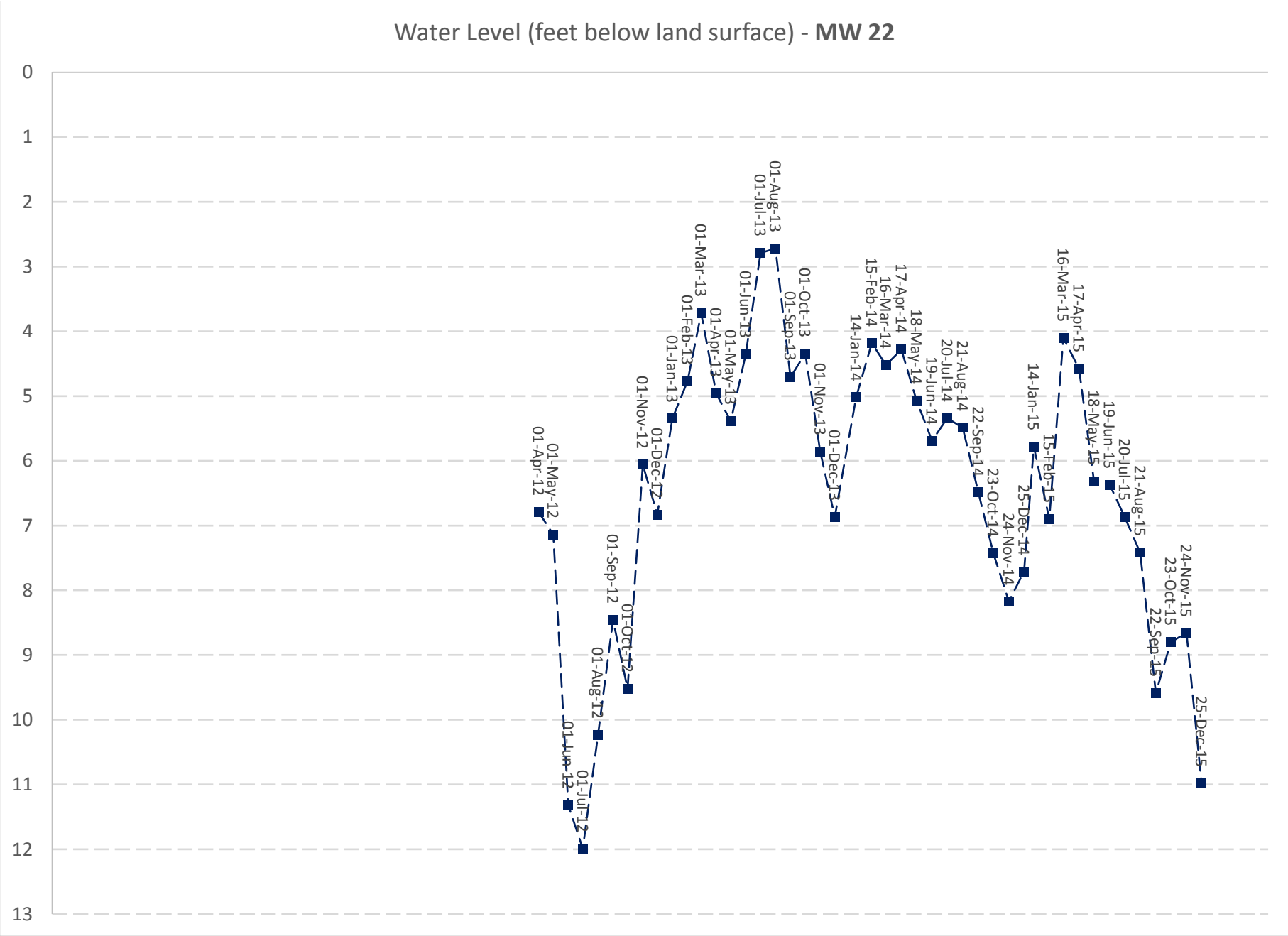
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15

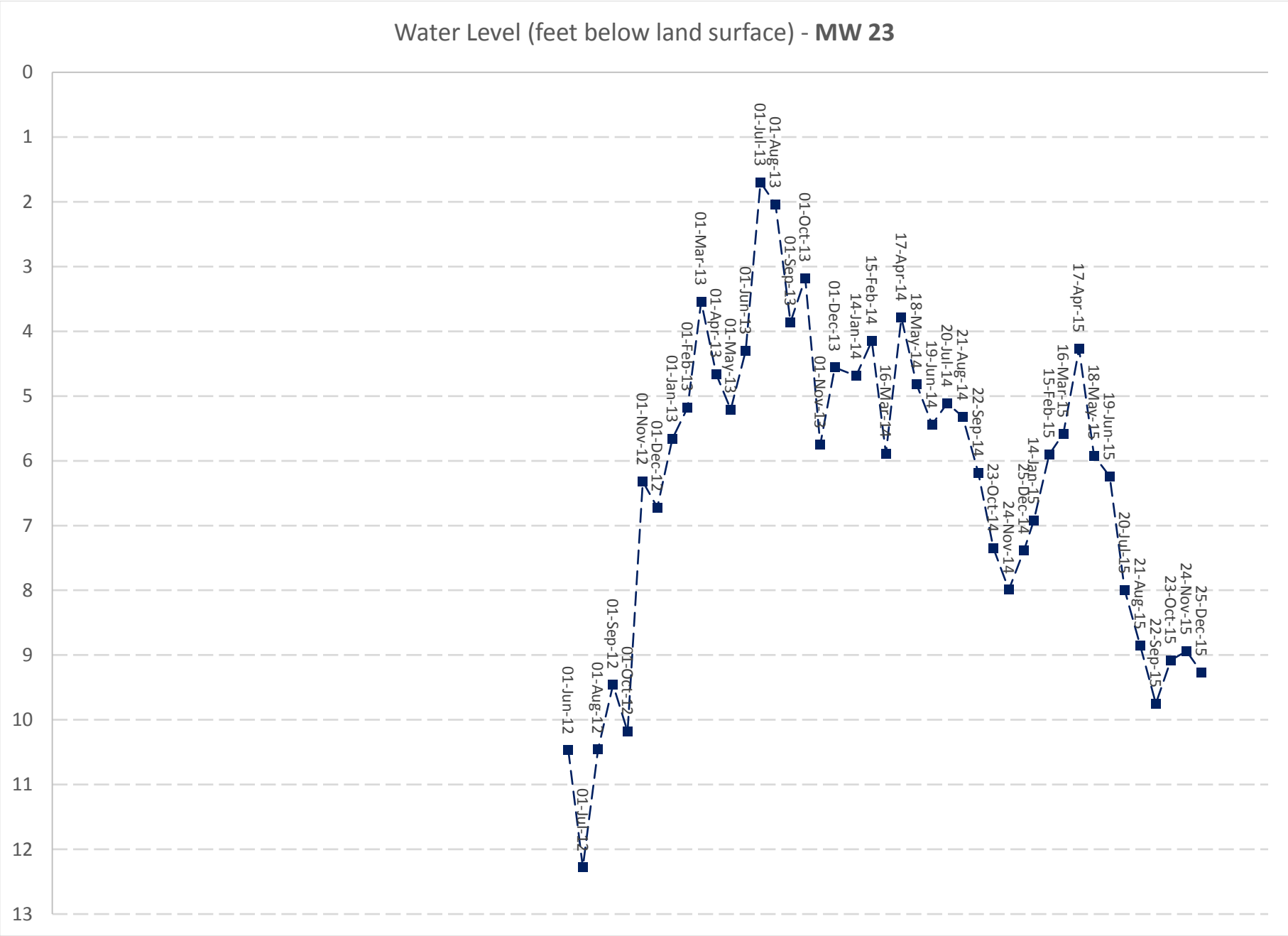

Water Level (feet below land surface) - **MW 18**
0
1
2
3
4
5
6
7
8
9
10
11
12
01-Oct-11
01-Nov-11
01-Jan-12
01-Feb-12
01-Mar-12
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15

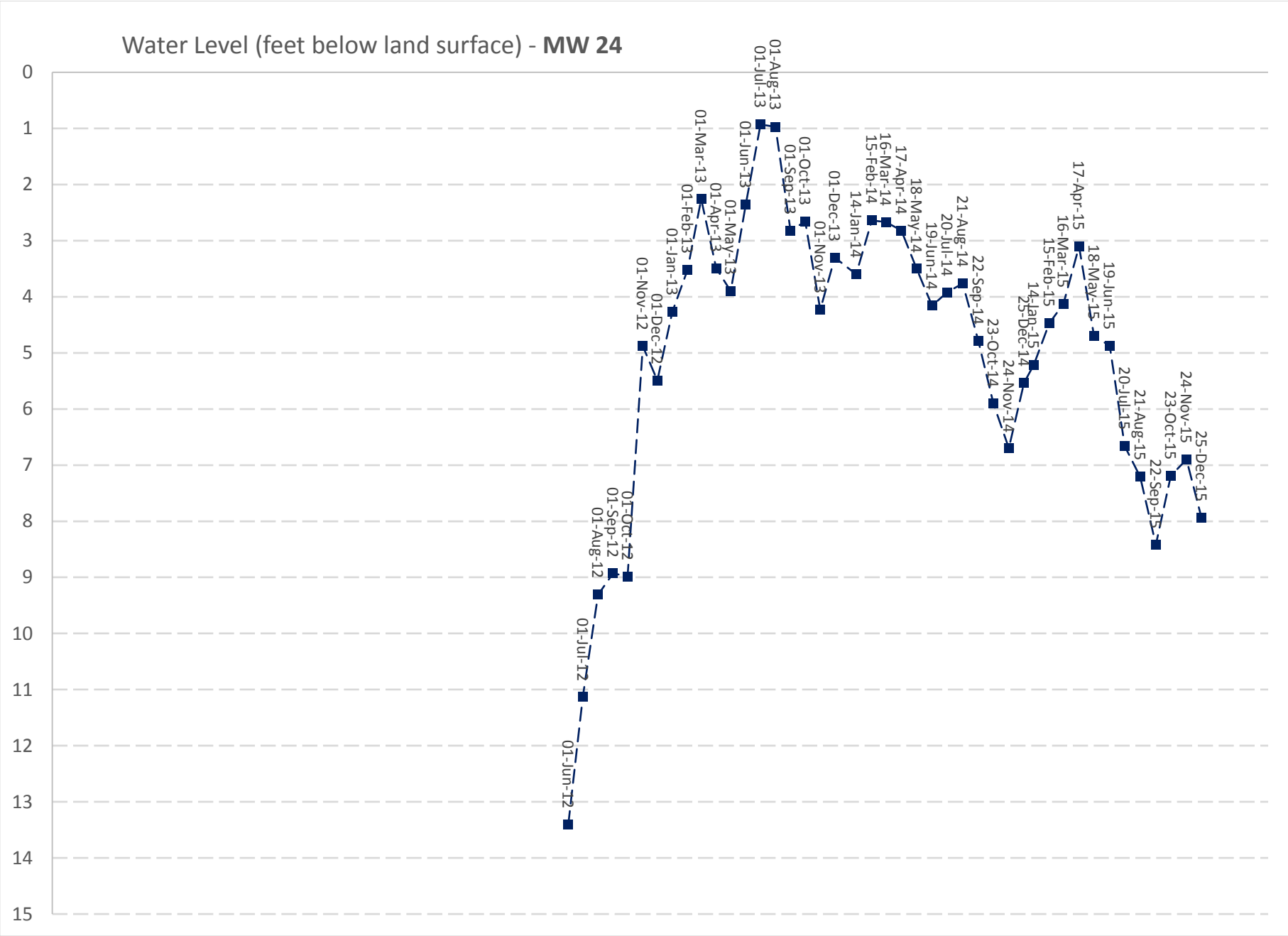

Water Level (feet below land surface) - **OW 19**
0
1
2
3
4
5
6
7
8
9
10
11
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15
01-Jun-13
01-May-13
01-Apr-13
01-Mar-13
01-Feb-13
01-Jan-13
01-Dec-12
01-Nov-12
01-Oct-12
01-Sep-12
01-Aug-12
01-Jul-12
01-Jun-12
01-May-12

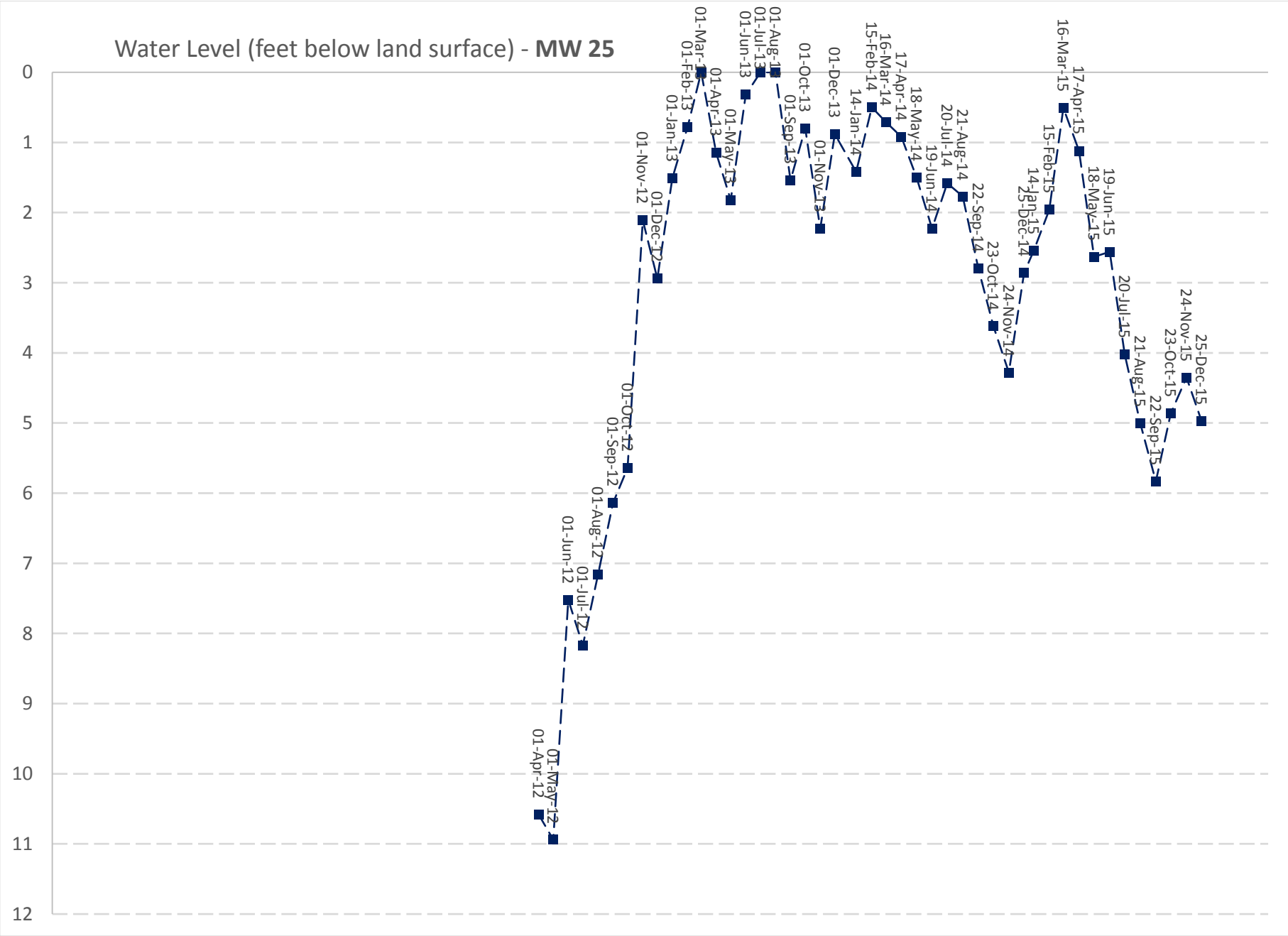

Water Level (feet below land surface) - **OW 20**
0
1
2
3
4
5
6
7
8
9
10
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 21**
0
1
2
3
4
5
6
7
8
9
10
11
12
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15

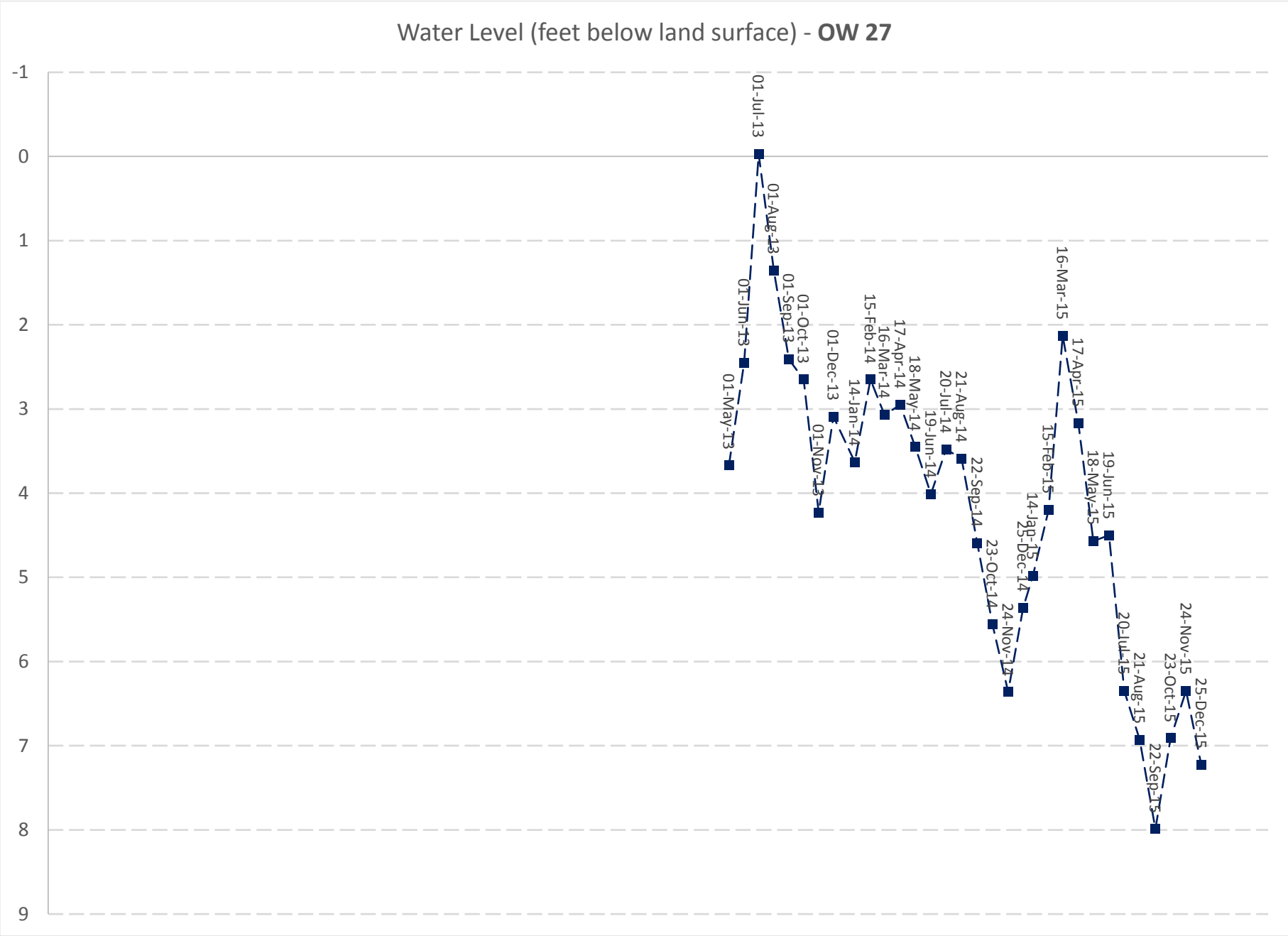

Water Level (feet below land surface) - **MW 22**
0
1
2
3
4
5
6
7
8
9
10
11
12
13
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 23**
0
1
2
3
4
5
6
7
8
9
10
11
12
13
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **MW 24**
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - MW 25
0
1
2
3
4
5
6
7
8
9
10
11
12
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15

Water Level (feet below land surface) - **MW 26**
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Water Level (feet below land surface) - **OW 27**
-1
0
1
2
3
4
5
6
7
8
9
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15
01-Jun-13
01-May-13

Water Level (feet below land surface) - **OW 28**
0
1
2
3
4
5
6
7
8
9
10
11
12
13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15

Appendix 8

Groundwater Elevations Table

groundwater elevations
in feet above sea level

Well No.	Permit No.	1-Jan-11	1-Feb-11	1-Mar-11	1-Apr-11	1-May-11	1-Jun-11	1-Jul-11	1-Aug-11	1-Sep-11	1-Oct-11	1-Nov-11	1-Dec-11
MW1	86145	16.76	17.51	17.86	19.06	18.11	17.66	16.91	16.46	18.11	17.41	17.41	17.84
MW2	86146	14.51	15.55	15.71	16.41	15.79	15.36	14.66	14.36	15.91	15.16	15.05	15.46
MW3	237996												
MW4	237997												
MW5	86153	13.95	14.65	15.10	15.75	15.20	15.10	14.20	13.75	15.08	14.49	14.65	14.90
MW6	86150	16.57	17.07	17.57	18.07	17.92	17.92	16.57	16.20	17.42	16.92	16.85	17.17
MW7	86151	14.90	15.90	16.00	16.65	16.05	15.90	15.20	14.80	16.00	15.15	15.72	15.55
MW8	86152	14.98	15.63	15.98	16.76	16.18	15.98	15.08	14.68	15.87	15.13	15.18	15.48
MW9	86148	17.06	17.66	19.86	18.61	18.11	17.96	17.01	16.51	17.70	17.21	24.55	17.46
MW10	89573	17.04	17.64	18.04	18.79	18.14	18.04	16.39	16.69	17.98	16.49	17.24	17.64
MW11	208213	17.97	18.32	0.27	20.02	19.47	1.17	18.17	17.62	18.67	18.37	18.61	18.57
MW12	208214	14.08	15.03	15.18	15.91	15.83	15.13	14.11	13.78	15.48	14.73	14.62	15.03
MW13	208215	14.17	15.23	15.28	15.98	15.38	15.23	14.48	14.08	15.56	14.73	14.56	15.02
MW14	208216	14.06	14.92	15.10	15.82	15.27	15.12	14.47	13.92	15.32	14.42	14.31	14.77
MW15	208217	13.11	13.71	14.11	14.91	14.31	14.21	13.36	12.91	13.91	13.26	13.11	13.31
MW16	228543	14.94	15.96	16.06	16.76	16.11	15.96	14.96	14.66	16.31	15.56	15.43	15.86
OW17	228544	14.43	15.53	15.63	16.41	15.83	15.63	14.63	14.28	15.93	15.13	14.96	15.43
MW 18	237074										13.77	13.37	
OW 19	237999												
OW 20	237998												
MW 21	238298												
MW 22	238299												
MW 23	238967												
MW 24	238968												
MW25	238969												
MW26	238970												
OW27	242933												
OW28	242934												

groundwater elevations
in feet above sea level

Well No.	Permit No.	1-Jan-12	1-Feb-12	1-Mar-12	1-Apr-12	1-May-12	1-Jun-12	1-Jul-12	1-Aug-12	1-Sep-12	1-Oct-12	1-Nov-12	1-Dec-12
MW1	86145	17.76	17.75	17.91	17.73	17.26	17.05	16.15	17.5	18.85	18.21	21.76	21.09
MW2	86146	15.29	15.35	15.52	15.29	14.95	14.79	13.83	15.75	17.67	16.53	20.29	19.51
MW3	237996		15.96	17.13	16.91	16.58	16.42	15.78	17.29	18.8	18.07	21.14	20.53
MW4	237997		15.92	17.50	17.28	16.95	16.80	16.13	17.82	19.52	18.53	20.87	20.01
MW5	86153	14.72	14.90	14.88	14.70	14.33	14.18	13.37	14.66	15.96	15.53	21.62	21.00
MW6	86150	17.12	17.17	17.37	17.30	16.83	16.51	15.93	17.01	18.1	17.81	21.86	21.23
MW7	86151	15.42	15.49	15.60	15.41	15.06	14.76	14.15	15.74	17.34	16.37	20.57	19.87
MW8	86152	15.38	15.37	15.58	15.48	15.10	14.78	14.13	14.58	15.03	16.25	20.23	19.66
MW9	86148	17.41	17.71	17.61	17.53	17.10	16.96	16.23	17.18	18.13	18.12	22.14	21.37
MW10	89573	17.46	17.49	17.64	17.49	17.07	16.78	16.13	17.54	18.95	18.18	21.2	20.71
MW11	208213	18.62	18.67	18.87	18.92	18.35	18.02	17.28	18.06	18.85	18.98	23	22.34
MW12	208214	14.88	14.93	15.13	14.93	14.53	14.33	13.49	15.26	17.06	15.88	18.95	18.21
MW13	208215	14.83	14.41	15.18	14.92	14.62	14.44	13.79	15.85	17.91	16.5	20.07	19.31
MW14	208216	14.57	14.89	14.88	14.67	14.35	14.06	13.57	15.49	17.41	16.1	20.05	19.23
MW15	208217	13.41	13.41	13.73	13.66	13.35	13.02	12.4	14.01	15.62	14.68	18.75	17.99
MW16	228543	15.26	15.71	15.96	15.74	15.35	15.18	14.37	16.32	18.28	16.85	18.93	18.18
OW17	228544	15.26	15.28	15.56	15.28	14.96	14.78	13.96	17.36	20.76	16.49	19.62	19.9
MW 18	237074	13.77	13.75	14.02	13.76	13.41	13.17	12.41	14.53	16.66	15.03	19.27	18.55
OW 19	237999					15.32	14.99	14.44	16.36	18.29	17.06	20.41	20.95
OW 20	237998					15.58	15.21	14.72	16.66	18.6	17.25	20.25	20.71
MW 21	238298				10.07	9.71	13.13	12.48	13.49	14.51	15.01	18.54	17.71
MW 22	238299				17.21	16.86	12.68	12.01	13.77	15.54	14.48	17.94	17.17
MW 23	238967						16.13	14.32	16.14	17.14	16.42	20.28	19.88
MW 24	238968						11.95	14.22	16.04	16.42	16.37	20.47	19.86
MW25	238969						13.93	13.27	15.03	16.72	15.34	19.38	18.83
MW26	238970						15.62	13.17	14.85	17.73	15.26	19.24	18.66
OW27	242933												
OW28	242934												

groundwater elevations
in feet above sea level

Well No.	Permit No.	1-Jan-13	1-Feb-13	1-Mar-13	1-Apr-13	1-May-13	1-Jun-13	1-Jul-13	1-Aug-13	1-Sep-13	1-Oct-13	1-Nov-13	1-Dec-13
MW1	86145	22.05	22.49	23.76	22.21	21.82	22.35	24.93	24.24	22.62	22.94	21.26	21.77
MW2	86146	20.41	21.36	22.19	20.32	19.92	21.90	22.7	22.2	20.07	21.22	19.5	20.7
MW3	237996	21.62	22.68	23.25	21.87	21.35	23.25	24.15	24.02	21.84	22.55	20.89	21.93
MW4	237997	21.11	22.16	22.54	21.17	20.67	22.79	23.62	23.39	21.23	21.52	20.31	21.58
MW5	86153	22.13	22.82	23.72	22.25	21.80	23.25	25.52	25.38	22.67	22.82	21.32	22.51
MW6	86150	22.68	23.08	24.69	23.31	22.59	23.87	26.13	25.56	23.29	23.57	22.05	22.87
MW7	86151	21.15	22.26	23.07	21.81	21.34	23.31	24.37	24.60	22.36	22.71	20.98	22.46
MW8	86152	20.91	21.44	22.97	21.80	21.34	22.40	24.42	24.44	22.59	22.27	21	21.65
MW9	86148	24.44	25.61	25.61	26.58	22.74	26.56	25.48	25.44	23.38	23.59	22.15	25.94
MW10	89573	21.87	22.44	23.91	22.65	22.02	23.30	25.44	25.05	22.91	23.25	21.67	22.55
MW11	208213	23.61	24.17	25.55	24.28	23.66	24.24	27.31	26.37	24.09	24.29	22.99	23.52
MW12	208214	18.97	19.59	20.29	18.79	18.5	19.59	20.88	20.22	18.68	19.09	17.87	18.78
MW13	208215	20.19	21.16	21.81	20.15	19.9	21.61	22.39	21.8	20.04	20.57	19.65	20.49
MW14	208216	20.45	21.40	22.48	20.91	20.4	22.11	22.75	23.27	21	21.73	19.7	21.17
MW15	208217	19.49	20.17	21.46	19.98	19.7	21.11	22.49	22.62	19.74	20.75	18.99	20.29
MW16	228543	18.04	19.66	20.34	18.82	18.5	19.83	21.35	20.32	18.77	19.08	17.98	19.02
OW17	228544	19.64	20.42	20.76	19.52	19.2	20.65	22.65	21.32	20.15	19.92	18.7	19.81
MW 18	237074	19.47	20.34	21.07	19.38	17.62	20.05	20.26	19.78	18.33	18.83	17.58	18.9
OW 19	237999	20.53	21.68	21.75	20.57	20.26	21.71	23.46	22.26	21.45	21.03	19.79	20.83
OW 20	237998	20.53	21.61	21.72	20.66	20.28	21.73	23.37	22.23	21.23	21.39	19.86	20.63
MW 21	238298	19.14	19.87	20.7	19.5	18.83	20.33	20.65	20.65	19.11	19.85	18.42	19.77
MW 22	238299	18.65	19.23	20.28	19.04	18.61	19.64	21.21	21.28	19.29	19.66	18.14	17.13
MW 23	238967	20.94	21.42	23.06	21.94	21.39	22.30	24.9	24.56	22.74	23.42	20.85	22.04
MW 24	238968	21.08	21.83	23.09	21.86	21.45	22.99	24.42	24.38	22.53	22.69	21.12	22.05
MW25	238969	20.09	20.47	22.19	21.15	20.66	21.26	23.71	23.74	21.99	21.51	20.37	20.82
MW26	238970	20.01	20.40	22.12	24.00	20.5	21.23	23.58	22.66	21.73	21.61	20.14	20.77
OW27	242933					19.65	20.87	23.35	21.96	20.91	20.67	19.09	20.23
OW28	242934					18.58	19.7	21.42	21.09	20.23	19.7	17.96	19.09

groundwater elevations
in feet above sea level

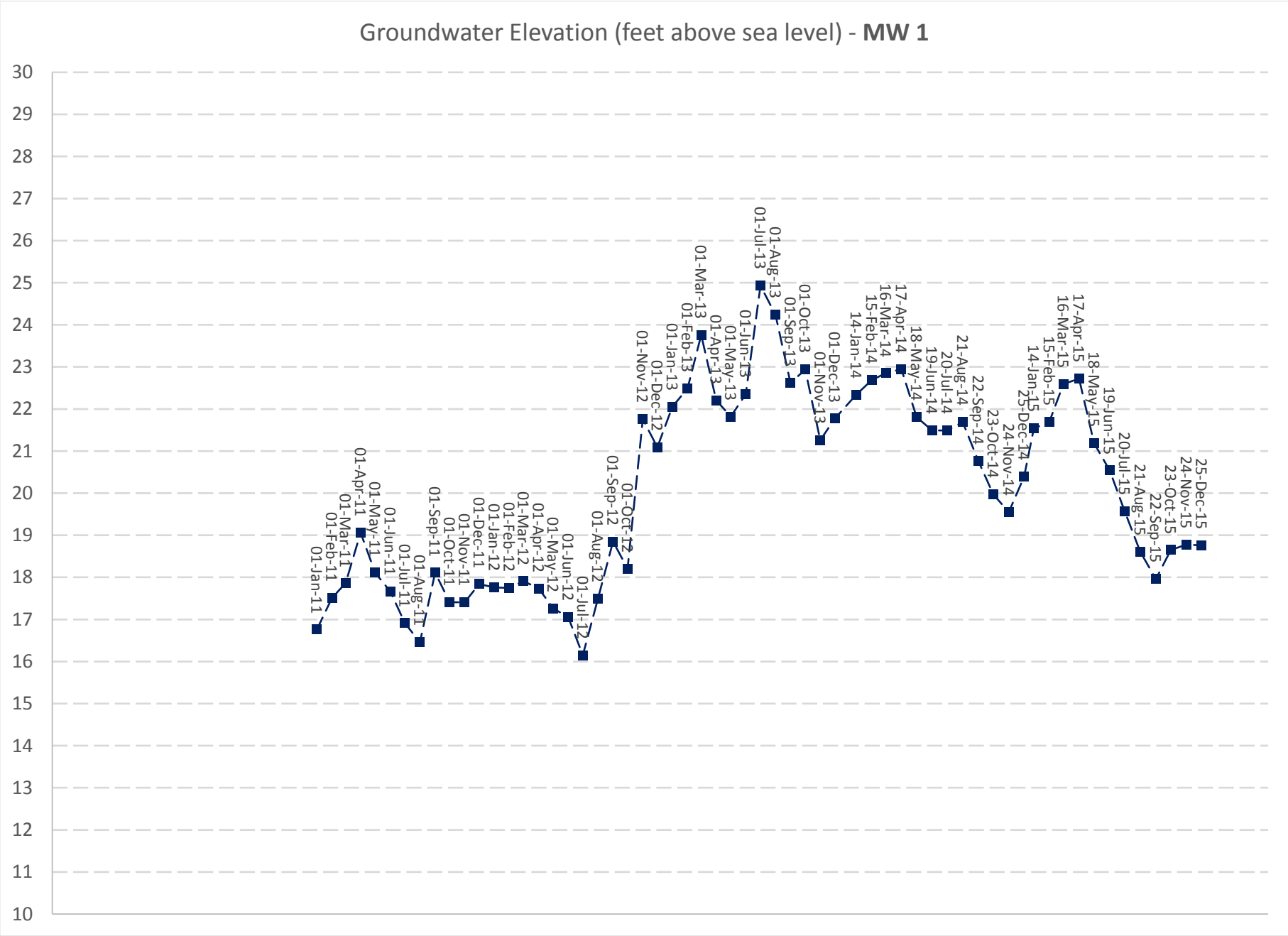
Well No.	Permit No.	14-Jan-14	15-Feb-14	16-Mar-14	17-Apr-14	18-May-14	19-Jun-14	20-Jul-14	21-Aug-14	22-Sep-14	23-Oct-14	24-Nov-14	25-Dec-14
MW1	86145	22.34	22.69	22.85	22.95	21.81	21.49	21.49	21.69	20.76	19.97	19.55	20.39
MW2	86146	20.22	21.2	20.66	20.94	19.94	19.71	20.53	20.06	18.77	18.26	17.88	19.17
MW3	237996	21.77	22.62	22.72	22.51	21.62	21.09	21.58	21.39	20.35	19.49	18.95	20.09
MW4	237997	21.07	21.93	21.5	21.78	20.8	20.37	20.66	20.84	19.59	19.01	18.39	19.74
MW5	86153	22.24	23.02	22.62	23.05	21.82	21.42	21.71	21.70	20.78	19.84	19.31	20.52
MW6	86150	23.23	23.77	23.95	24.09	22.81	22.17	22.37	22.27	20.95	20.35	19.72	20.69
MW7	86151	21.57	22.11	22.66	22.45	21.84	21.19	21.61	21.55	20.39	19.48	18.69	20.29
MW8	86152	21.69	22.33	22.5	22.57	21.64	21.02	21.4	21.12	20.27	19.13	18.82	19.14
MW9	86148	23.33	25.86	25.93	24	22.75	22.36	22.55	22.46	21.1	20.43	19.96	20.91
MW10	89573	22.48	23.03	23.35	23.35	22.38	18.72	22.12	21.85	20.05	19.91	18.35	20.13
MW11	208213	24.48	24.78	24.92	25.12	23.72	23.14	22.95	23.19	19.96	21.34	20.77	21.42
MW12	208214	18.64	19.31	19.19	19.16	18.27	18.04	18.38	18.24	17.44	16.86	16.49	17.56
MW13	208215	20.02	21.06	21.03	20.72	19.97	19.52	20.07	19.94	18.96	18.14	17.65	19.05
MW14	208216	20.49	21.6	21.07	21.19	20.63	19.99	20.62	20.33	19.5	18.62	17.88	18.95
MW15	208217	19.89	20.89	20.64	20.63	19.97	19.35	19.76	19.69	18.69	17.69	16.94	17.78
MW16	228543	18.73	19.48	19.33	19.22	18.43	18.14	18.62	18.46	17.54	16.92	16.51	17.68
OW17	228544	19.42	20.32	20.22	20.11	19.14	18.92	19.38	19.21	18.26	17.59	17.18	18.46
MW 18	237074	18.28	19.25	19.07	18.83	18.03	17.57	18.15	17.9	18.11	16.3	15.81	17.33
OW 19	237999	20.45	21.87	21.43	21.12	20.36	19.98	20.51	20.33	19.36	18.52	17.92	19.18
OW 20	237998	20.56	20.64	21.03	21.09	20.49	19.93	20.49	20.21	19.43	18.58	17.84	18.98
MW 21	238298	19.23	20.15	19.94	19.73	19.15	18.42	19.07	18.88	17.85	17.03	16.37	17.79
MW 22	238299	18.98	19.82	19.48	19.72	18.93	18.31	18.66	18.51	17.51	16.57	15.83	16.29
MW 23	238967	21.91	22.45	20.71	22.81	21.78	21.16	21.49	21.28	20.41	19.25	18.61	19.22
MW 24	238968	21.75	22.71	22.68	22.53	21.85	21.19	21.43	21.59	20.56	19.45	18.65	19.82
MW25	238969	21.09	21.57	21.83	21.98	20.93	20.32	20.63	20.32	19.57	18.37	17.72	18.15
MW26	238970	20.91	21.50	21.68	21.79	20.79	20.17	20.54	20.26	19.88	18.26	17.59	18.02
OW27	242933	19.69	20.67	20.25	20.37	19.87	19.31	19.84	19.73	18.73	17.76	16.96	17.96
OW28	242934	18.84	19.69	19.6	19.68	18.93	18.34	18.76	18.67	17.68	16.58	15.84	16.7

groundwater elevations
in feet above sea level

Well No.	Permit No.	14-Jan-15	15-Feb-15	16-Mar-15	17-Apr-15	18-May-15	19-Jun-15	20-Jul-15	21-Aug-15	22-Sep-15	23-Oct-15	24-Nov-15	25-Dec-15
MW1	86145	21.54	21.69	22.59	22.72	21.19	20.54	19.57	18.61	17.96	18.65	18.78	18.76
MW2	86146	19.4	19.85	21.65	20.85	19.19	18.71	17.79	16.74	16.09	17.39	17.45	17.05
MW3	237996	20.39	21.21	22.82	22.41	20.59	20.09	18.98	18.13	17.27	18.07	18.41	17.96
MW4	237997	20.01	20.58	22.36	21.7	20.01	19.48	18.28	17.41	16.57	17.7	17.92	17.54
MW5	86153	20.95	23.12	23.37	21.86	21.05	20.39	19.38	18.34	17.72	19.35	18.69	18.42
MW6	86150	20.77	21.56	23.63	23.87	21.75	21.07	19.7	18.89	18.28	18.6	18.67	18.6
MW7	86151	20.36	21.02	22.89	22.13	20.51	17.39	18.61	18.04	16.91	17.48	19.08	17.44
MW8	86152	19.56	20.5	20.84	22.13	19.37	20.22	18.46	17.45	16.7	17.7	17.8	17.2
MW9	86148	26.61	24.89	26.69	23.77	21.18	21.19	19.83	19.01	17.21	18.91	19.81	18.76
MW10	89573	20.5	21.5	22.85	23.15	21.2	20.59	18.4	17.63	17.4	18.19	18.42	18
MW11	208213	21.98	22.19	23.72	24.79	22.71	22.14	20.74	19.97	18.53	19.48	19.46	19.67
MW12	208214	17.89	18.18	19.27	19.09	17.72	17.29	16.49	15.62	15.03	16.07	16.08	15.99
MW13	208215	19.23	19.72	21.39	20.72	19.05	18.6	17.52	16.4	15.59	16.89	17.39	16.85
MW14	208216	19.39	20.03	21.75	20.99	19.53	19.63	17.75	15.95	16.11	17.29	17.85	17.01
MW15	208217	18.19	18.89	21.17	20.39	18.79	18.82	16.89	15.93	15.49	16.47	16.51	15.91
MW16	228543	18.06	18.48	19.79	19.23	17.79	17.32	16.47	15.71	14.73	16.08	16.14	14.92
OW17	228544	18.7	19.08	20.57	20.02	18.22	18.14	17.08	16.08	15.3	16.47	16.86	16.62
MW 18	237074	17.69	18.16	19.73	18.83	17.11	16.68	15.71	14.69	14.09	15.16	15.53	15.17
OW 19	237999	19.52	20.08	22.19	21.18	19.39	19.12	17.95	16.83	16.02	17.27	17.69	17.13
OW 20	237998	19.52	20.02	22.09	21.01	19.44	19.57	17.72	16.82	16.04	17.24	17.74	17.01
MW 21	238298	18.11	18.69	20.14	19.53	18.02	18.09	16.63	15.65	14.82	15.79	16.3	15.68
MW 22	238299	18.22	17.10	19.90	19.42	17.68	17.63	17.13	16.58	14.41	15.20	15.34	13.02
MW 23	238967	19.68	20.70	21.02	22.33	20.68	20.36	18.60	17.75	16.85	17.52	17.66	17.33
MW 24	238968	20.14	20.88	21.22	22.25	20.65	20.48	18.69	18.14	16.93	18.16	18.45	17.41
MW25	238969	18.67	19.79	19.95	21.36	19.88	19.54	17.74	16.94	16.07	16.62	16.63	16.46
MW26	238970	18.51	19.57	19.80	21.24	19.71	19.41	17.66	16.84	16.00	16.56	16.62	16.34
OW27	242933	18.34	19.12	21.19	20.15	18.75	18.82	16.97	16.39	15.33	16.41	16.97	16.09
OW28	242934	17.02	17.77	19.76	19.3	17.76	17.12	15.6	17.28	14.07	15	15.54	14.72

Appendix 9

Groundwater Elevation Hydrographs


Groundwater Elevation (feet above sea level) - **MW 1**
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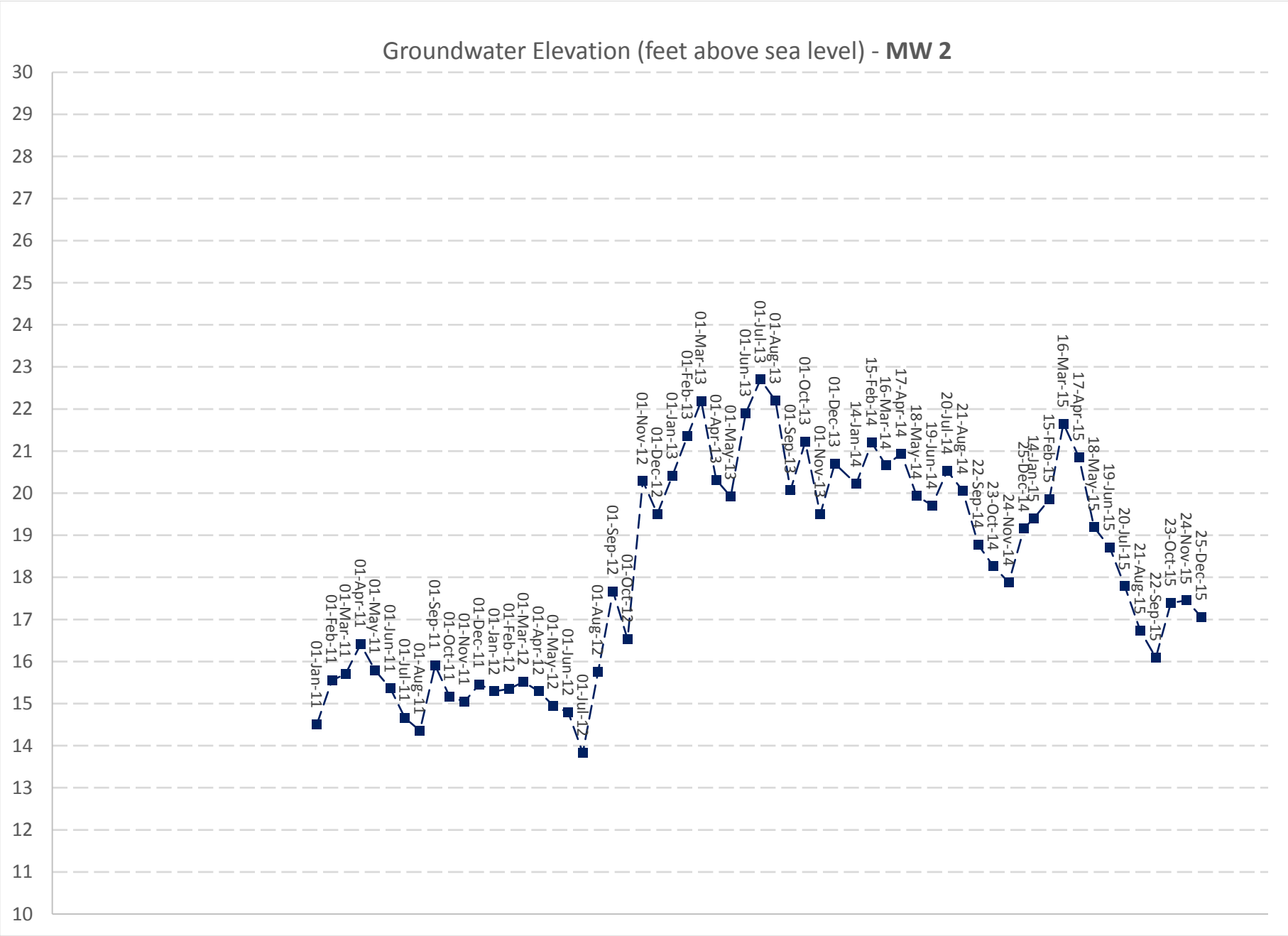
Groundwater Elevation (feet above sea level) - **MW 2**
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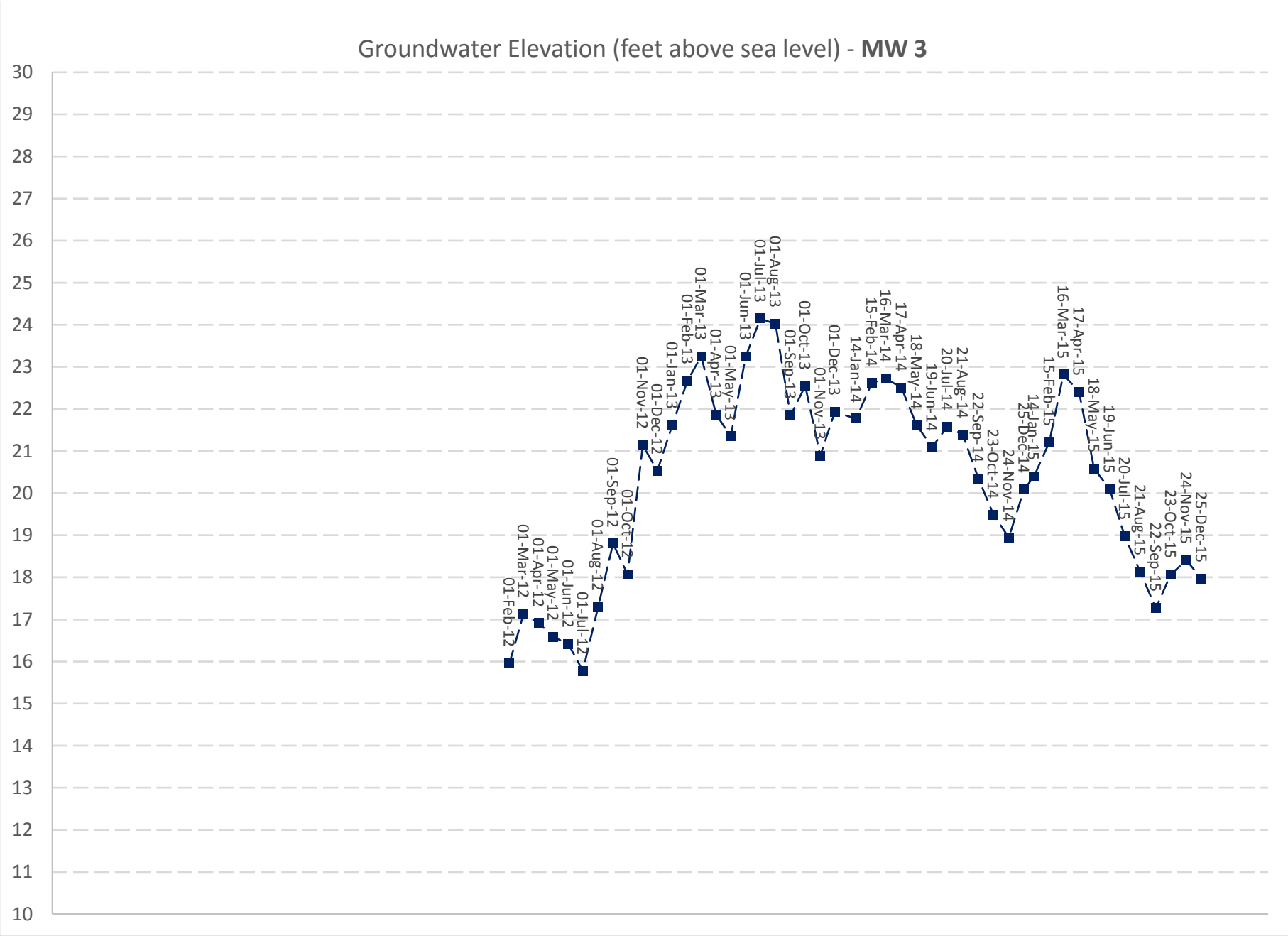
Groundwater Elevation (feet above sea level) - **MW 3**
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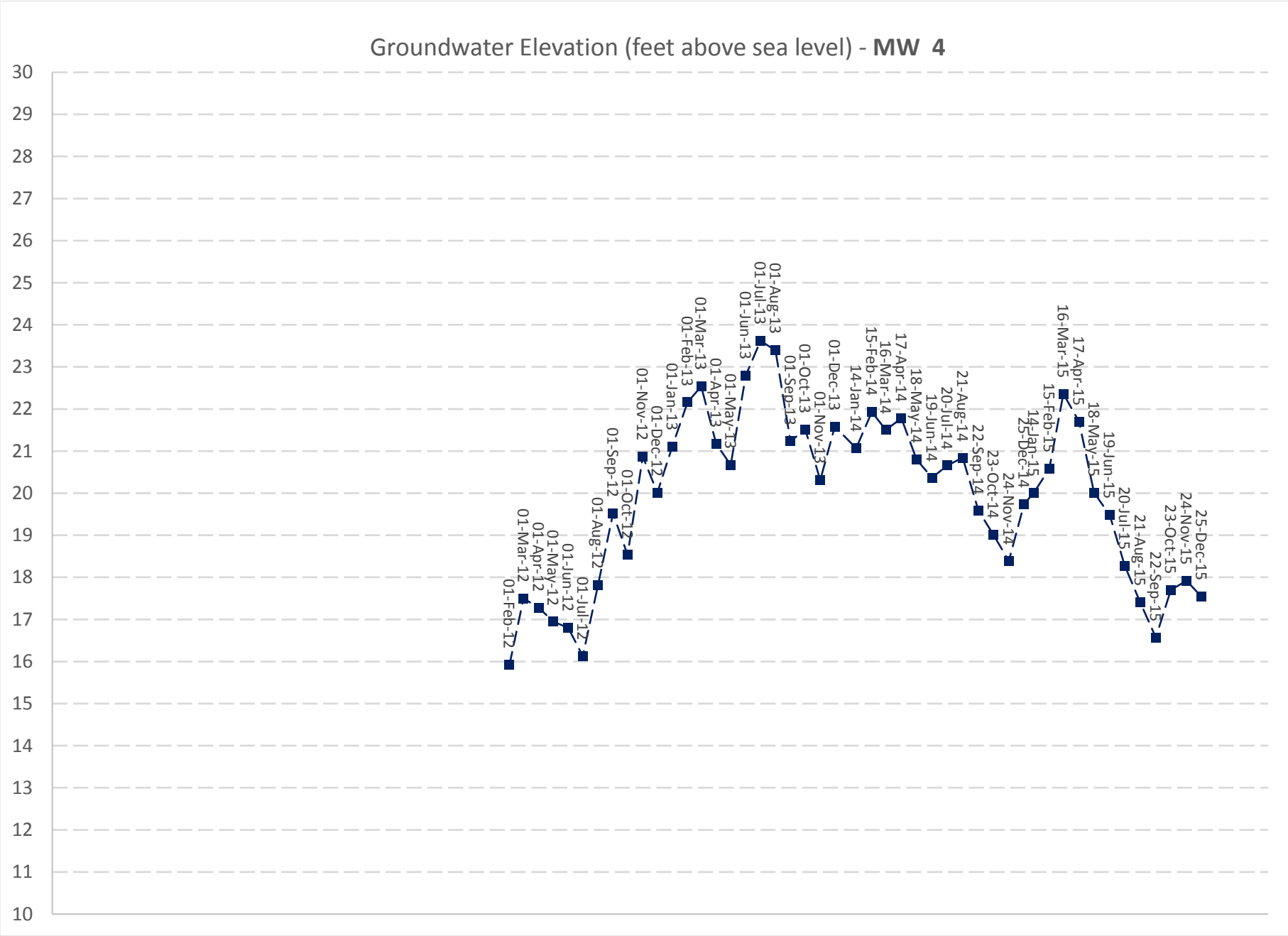
Groundwater Elevation (feet above sea level) - **MW 4**
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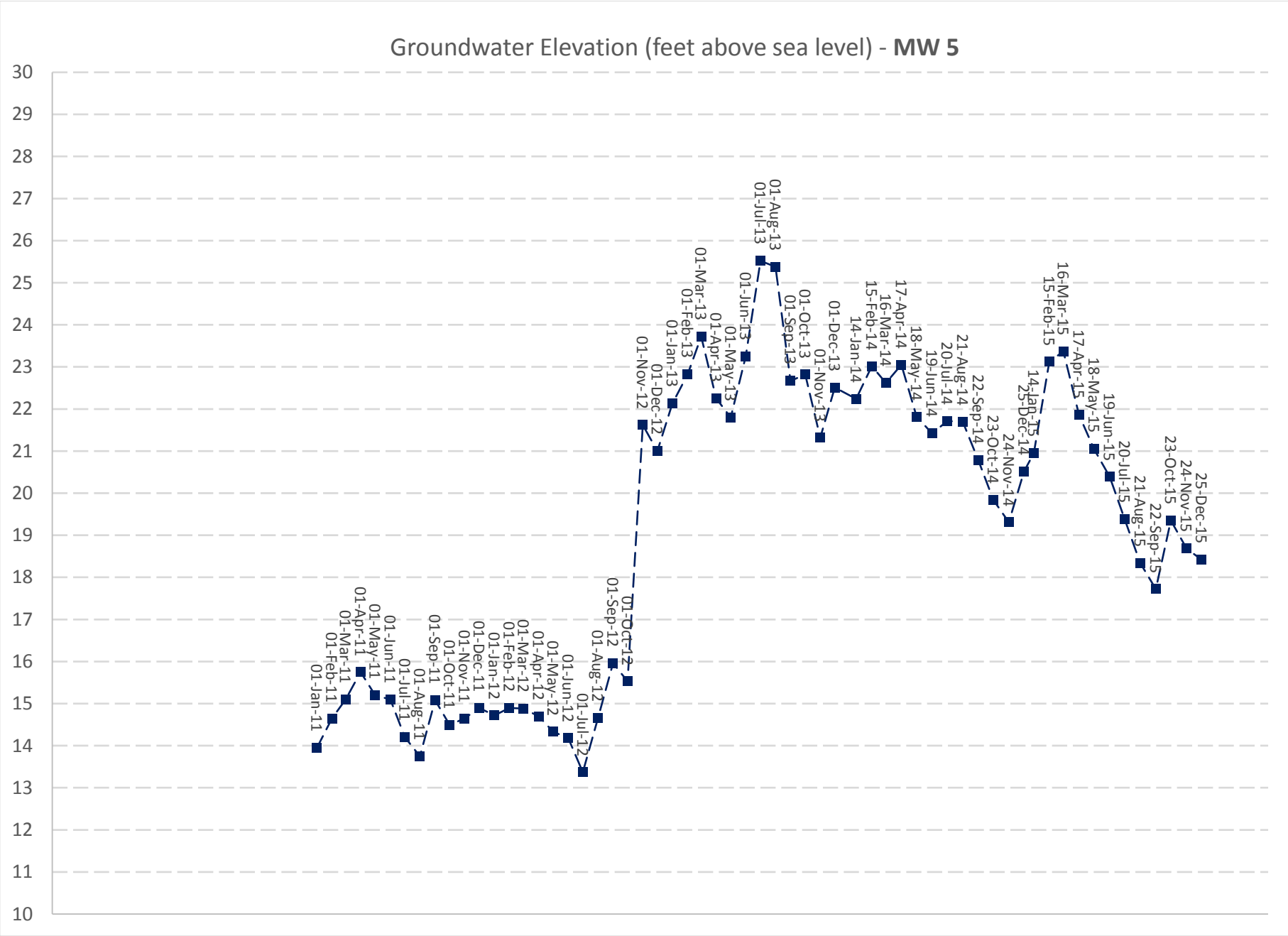
Groundwater Elevation (feet above sea level) - **MW 5**
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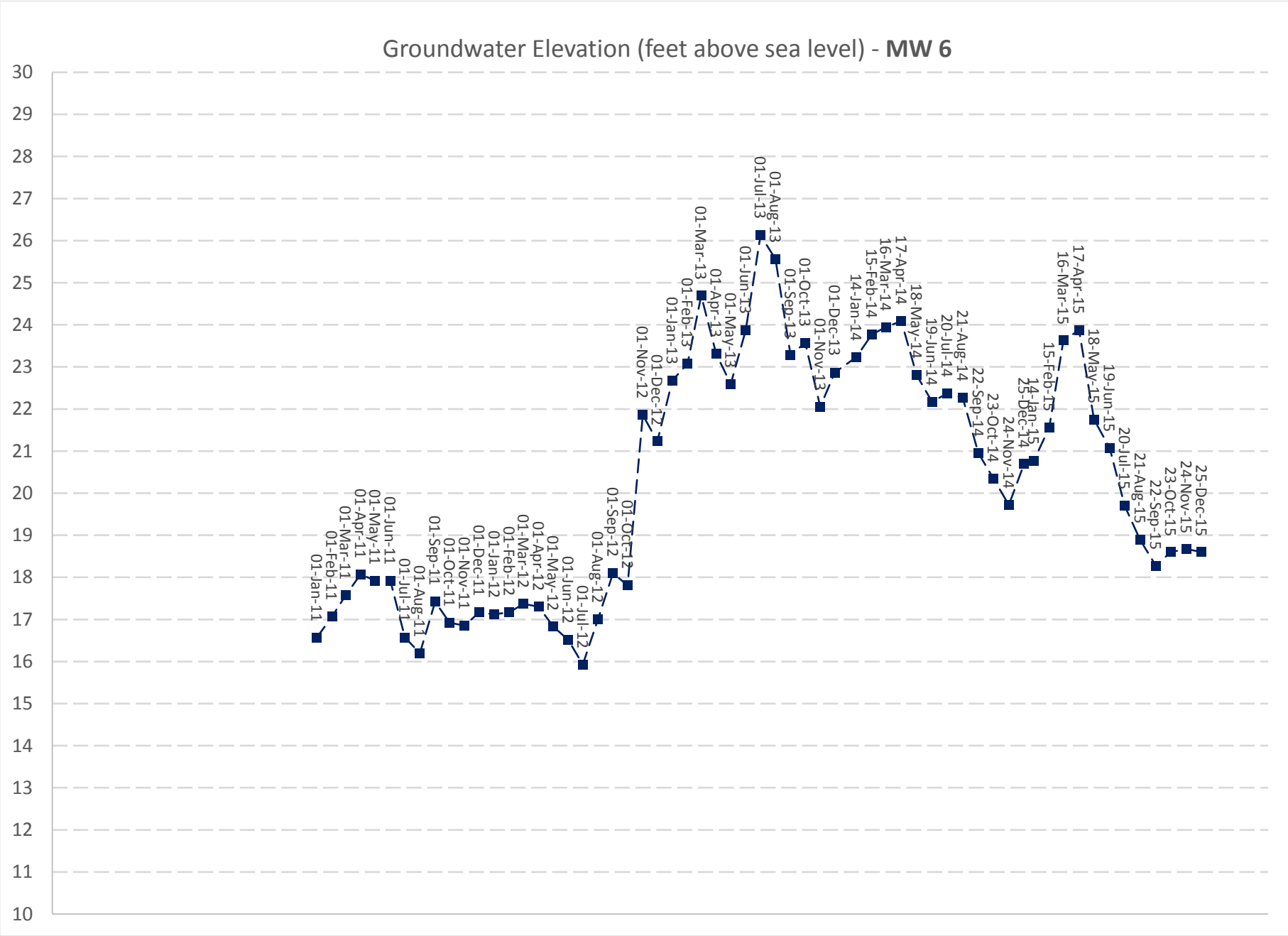
Groundwater Elevation (feet above sea level) - **MW 6**
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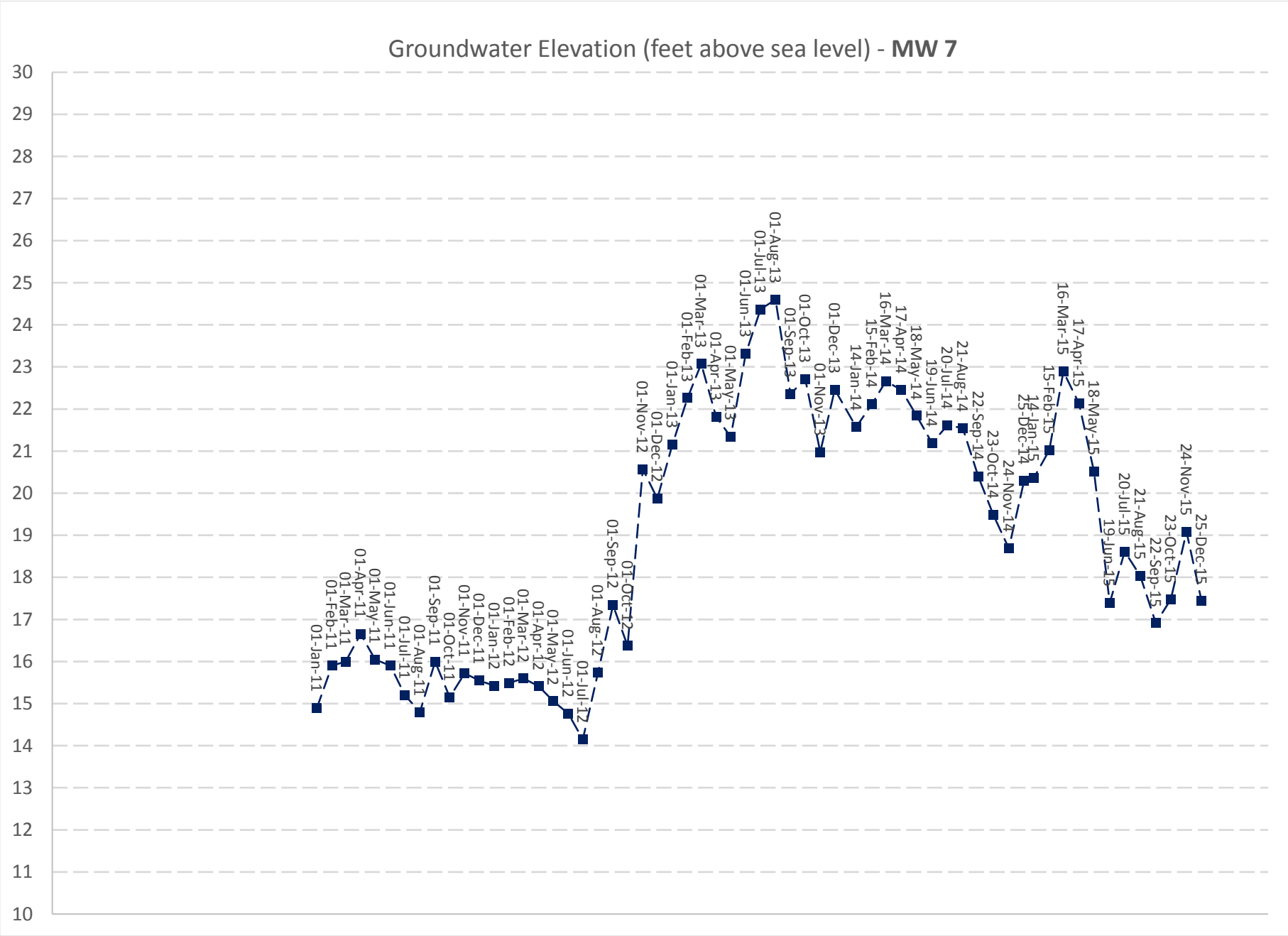
Groundwater Elevation (feet above sea level) - **MW 7**
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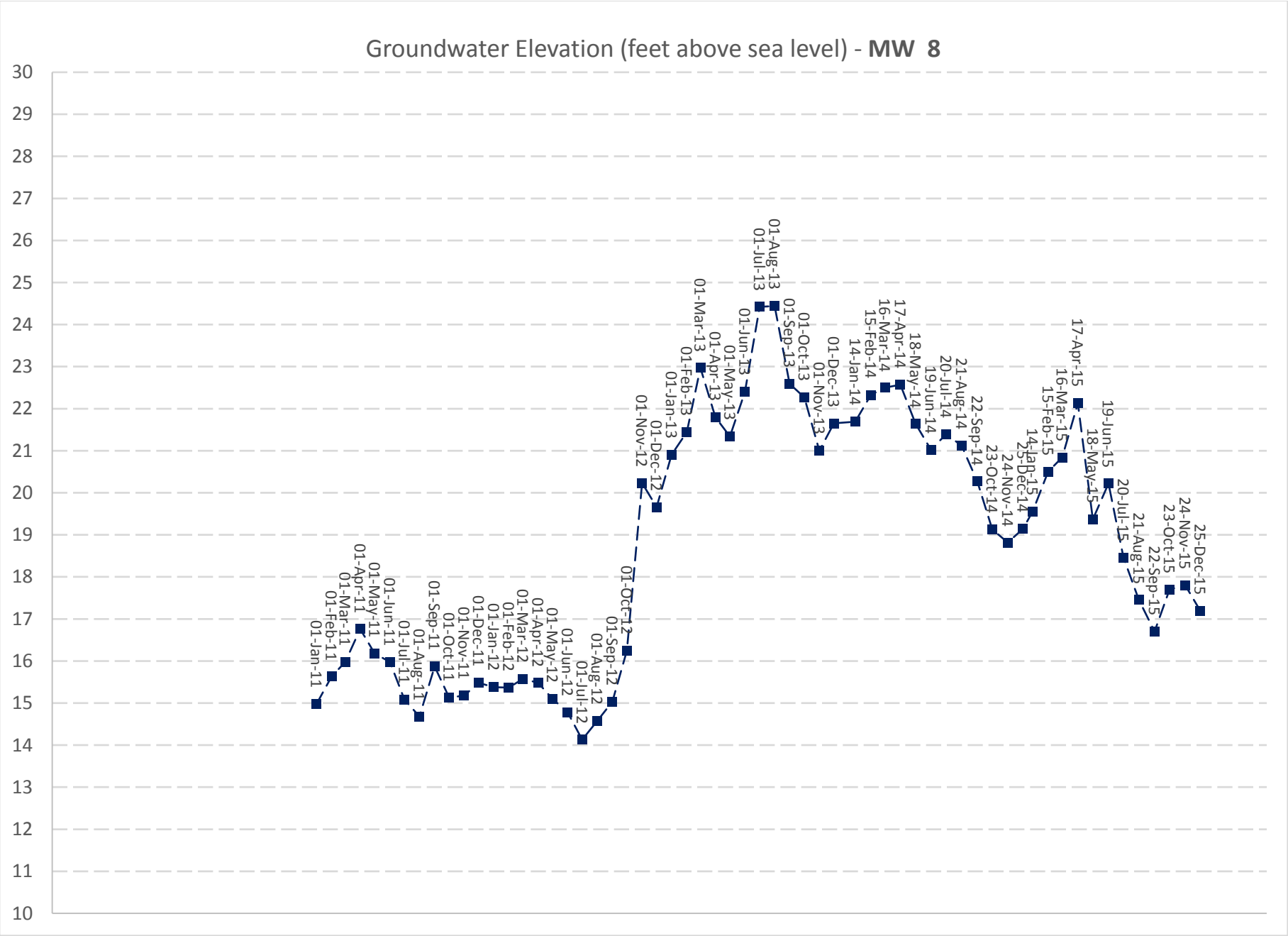
Groundwater Elevation (feet above sea level) - **MW 8**
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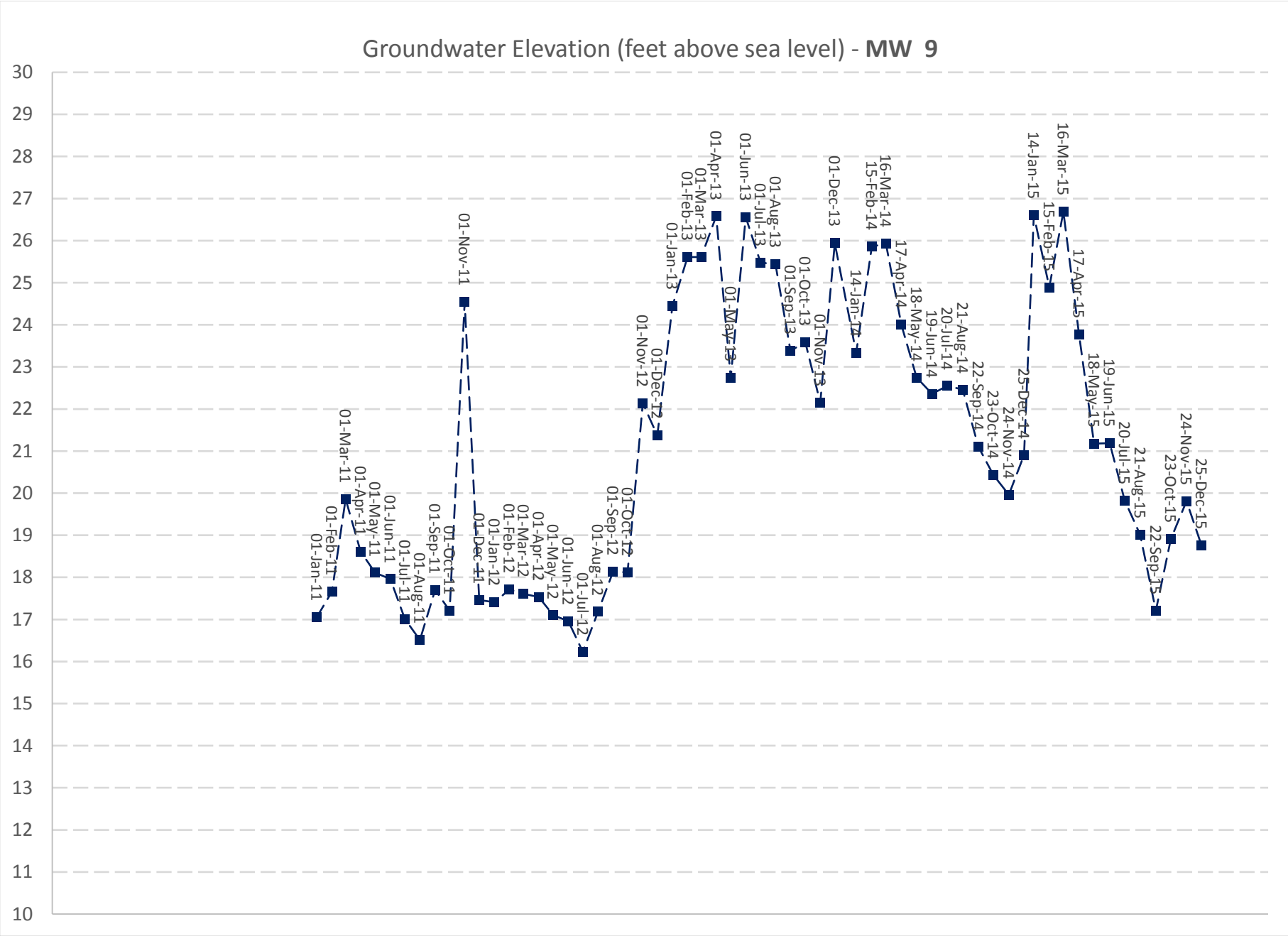
Groundwater Elevation (feet above sea level) - **MW 9**
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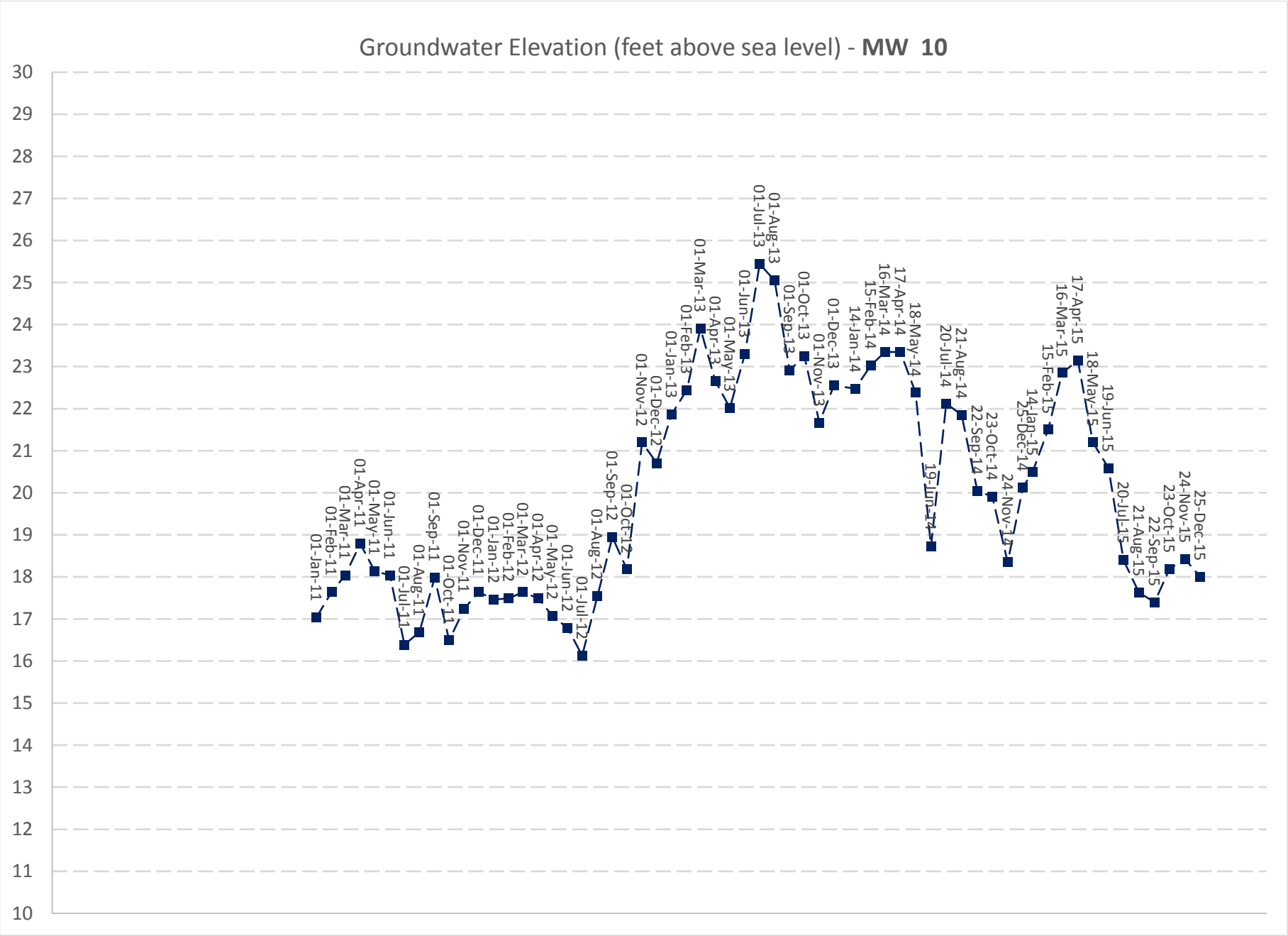
Groundwater Elevation (feet above sea level) - **MW 10**
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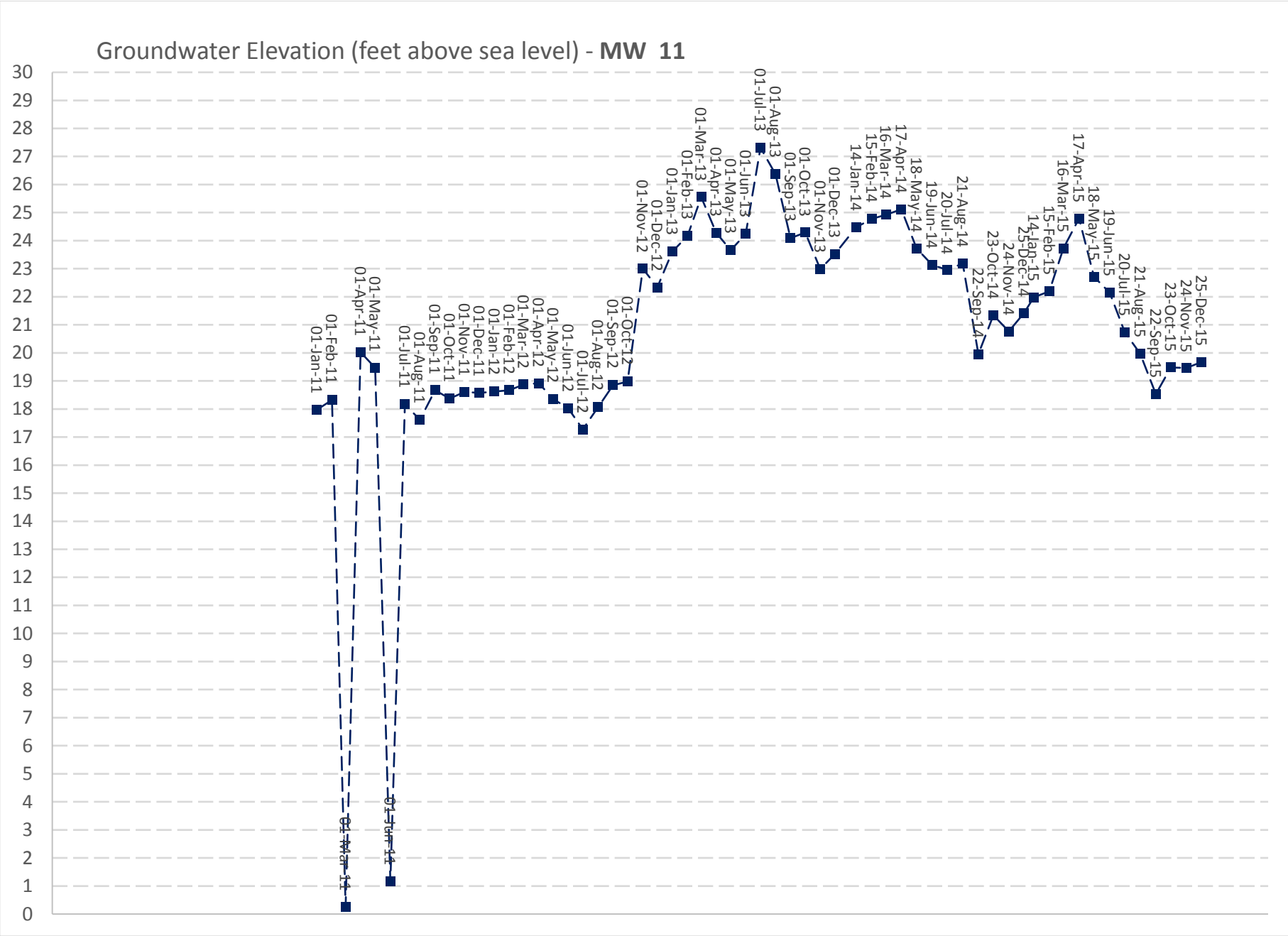
Groundwater Elevation (feet above sea level) - **MW 11**
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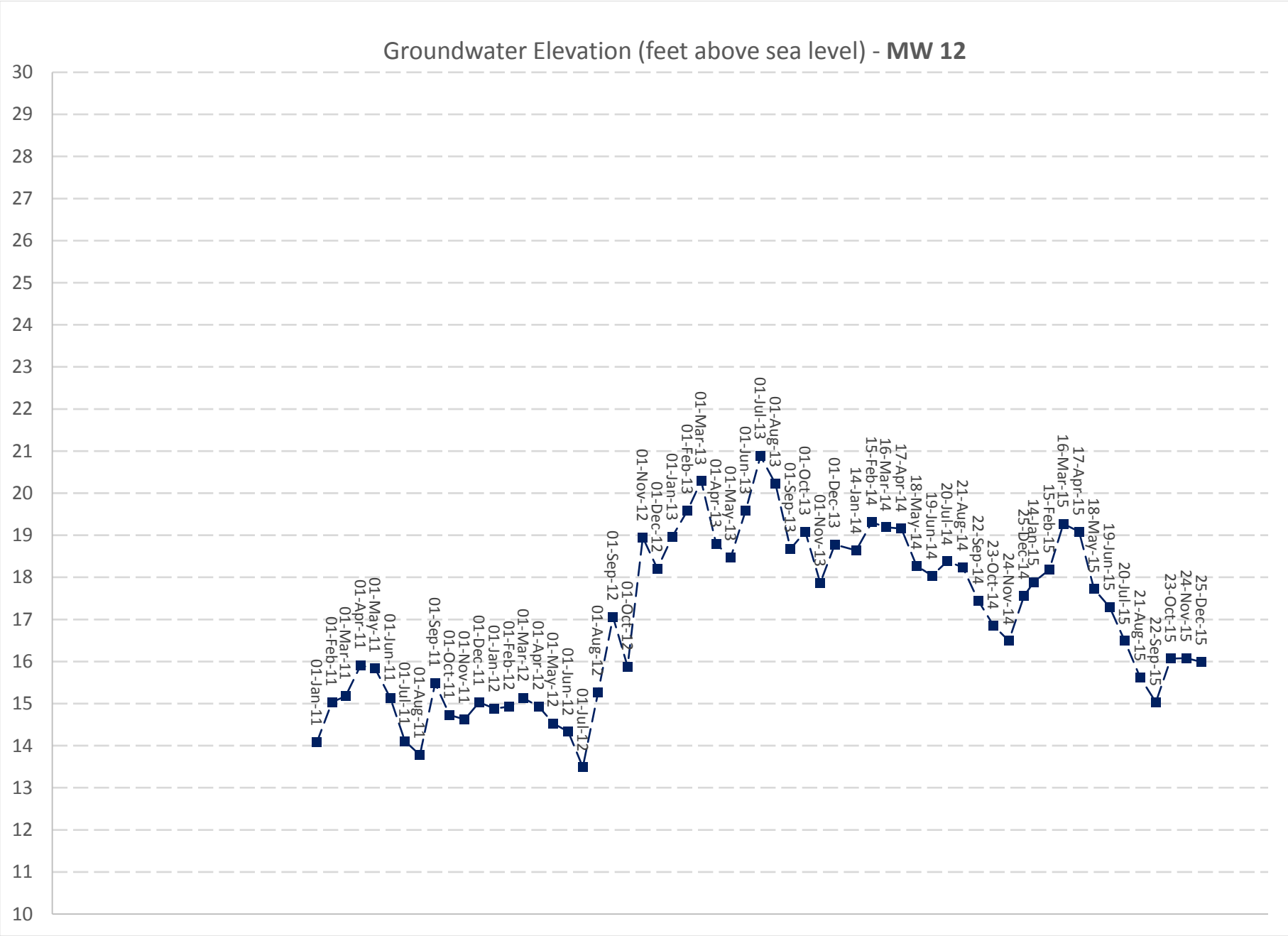
Groundwater Elevation (feet above sea level) - **MW 12**
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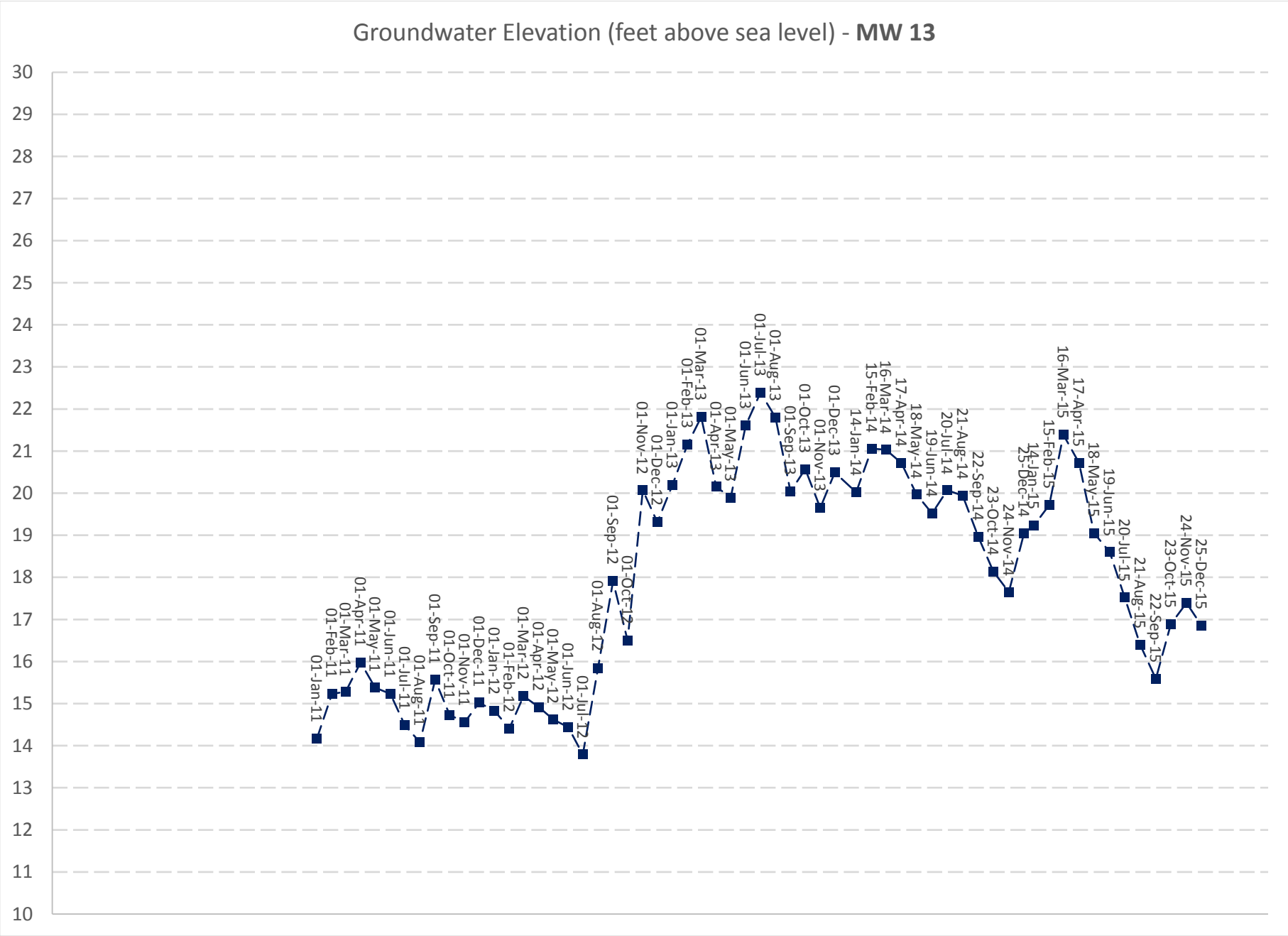
Groundwater Elevation (feet above sea level) - **MW 13**
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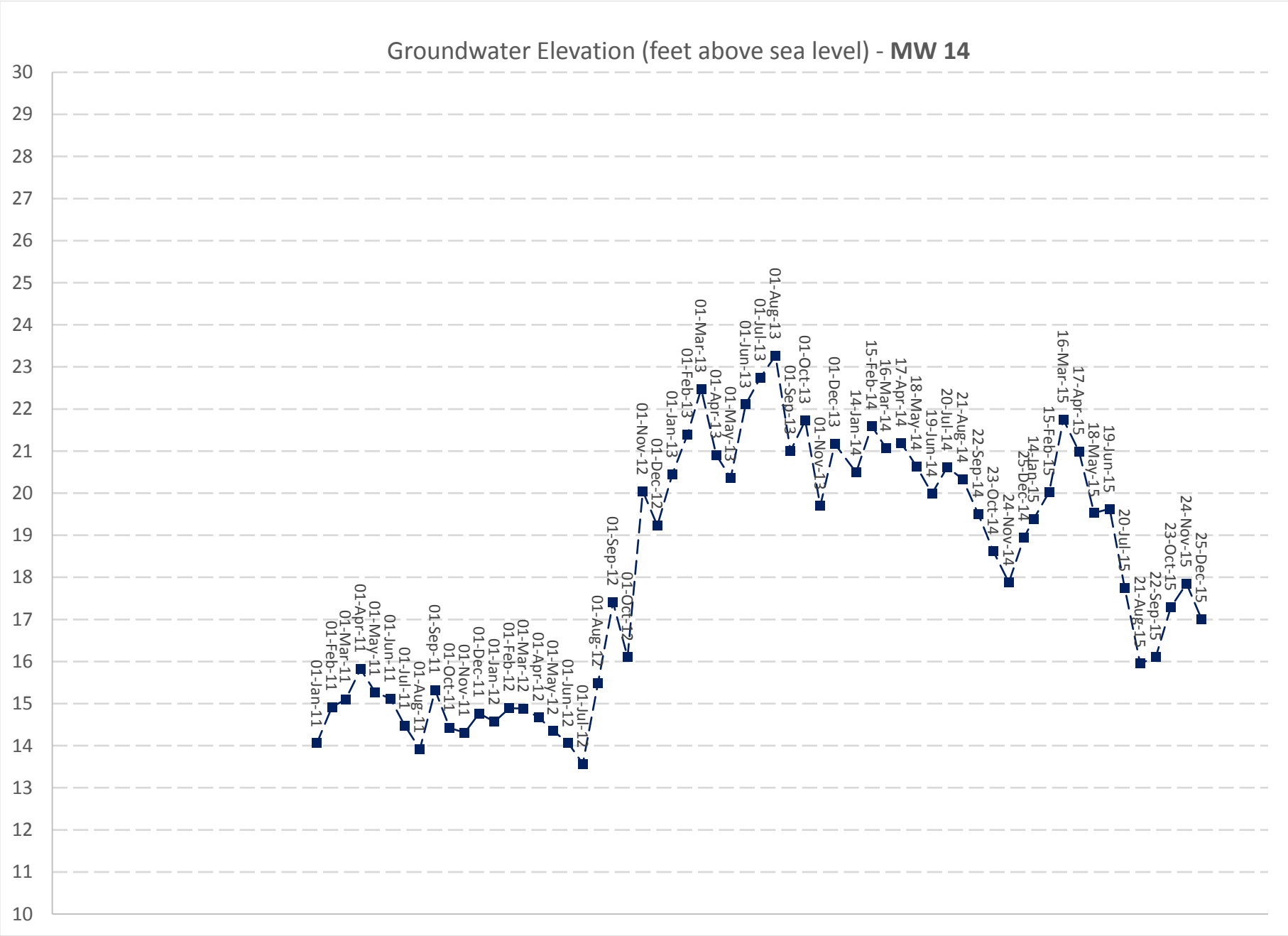
Groundwater Elevation (feet above sea level) - **MW 14**
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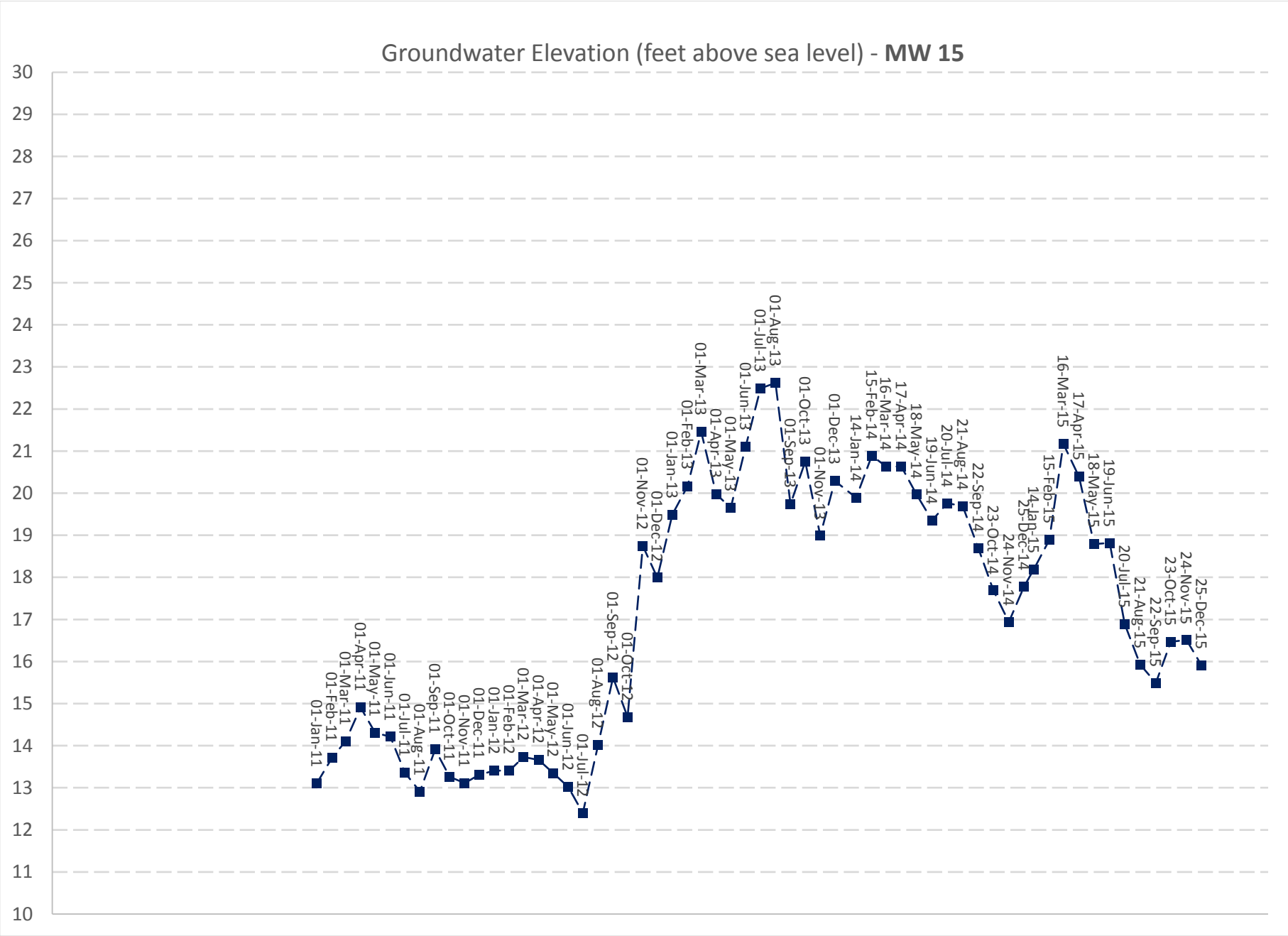
Groundwater Elevation (feet above sea level) - **MW 15**
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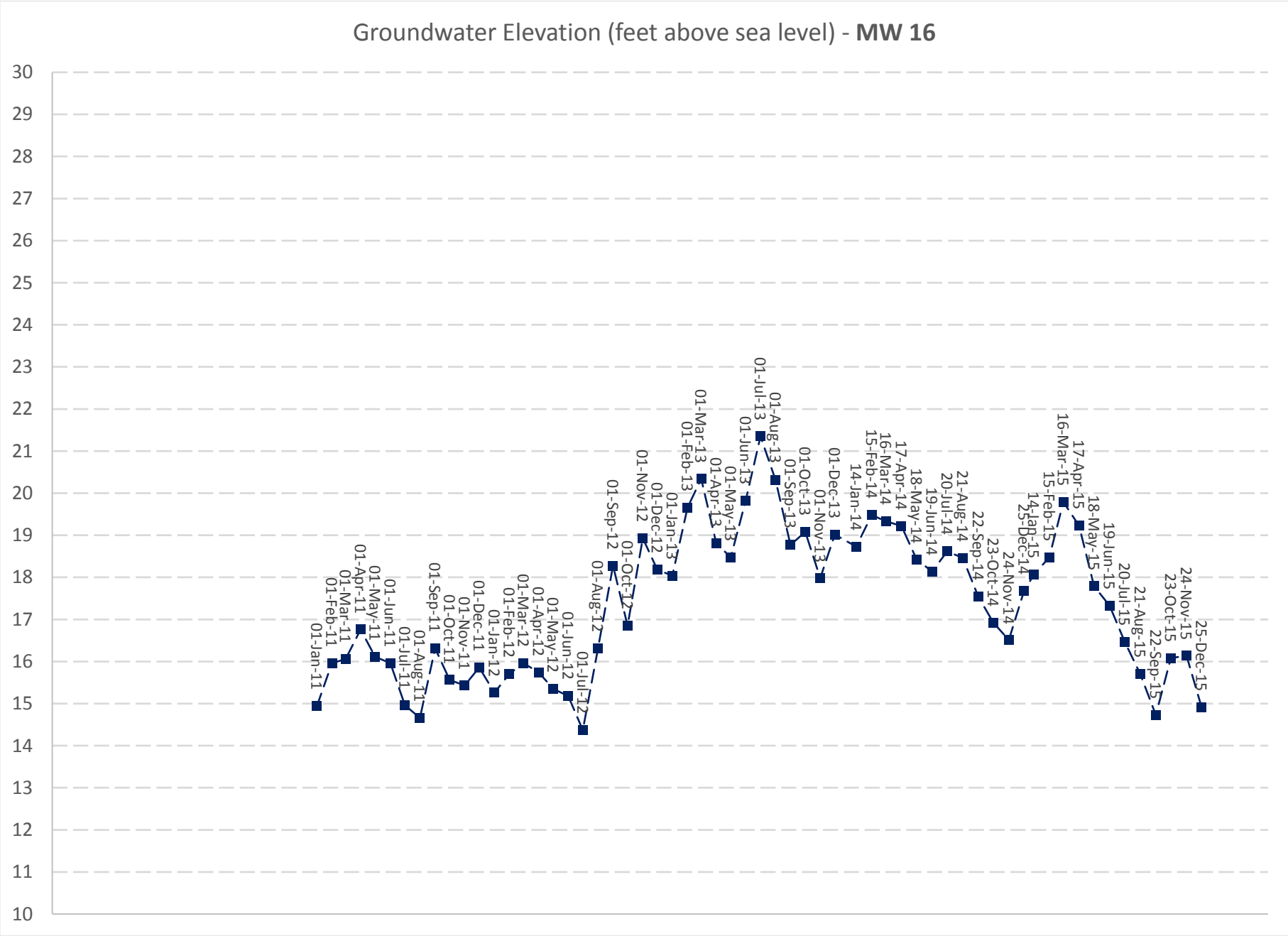
Groundwater Elevation (feet above sea level) - **MW 16**
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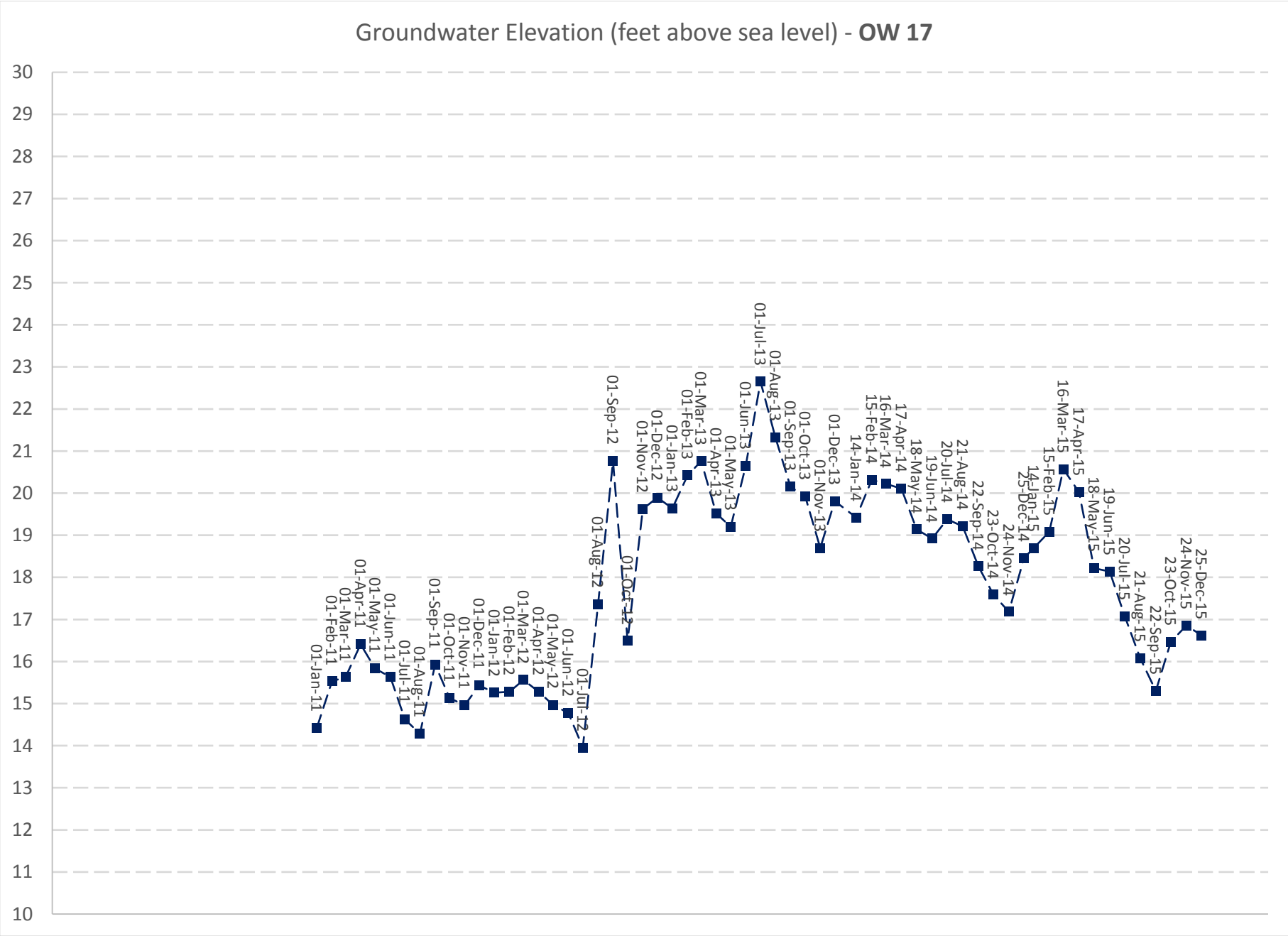
Groundwater Elevation (feet above sea level) - **OW 17**
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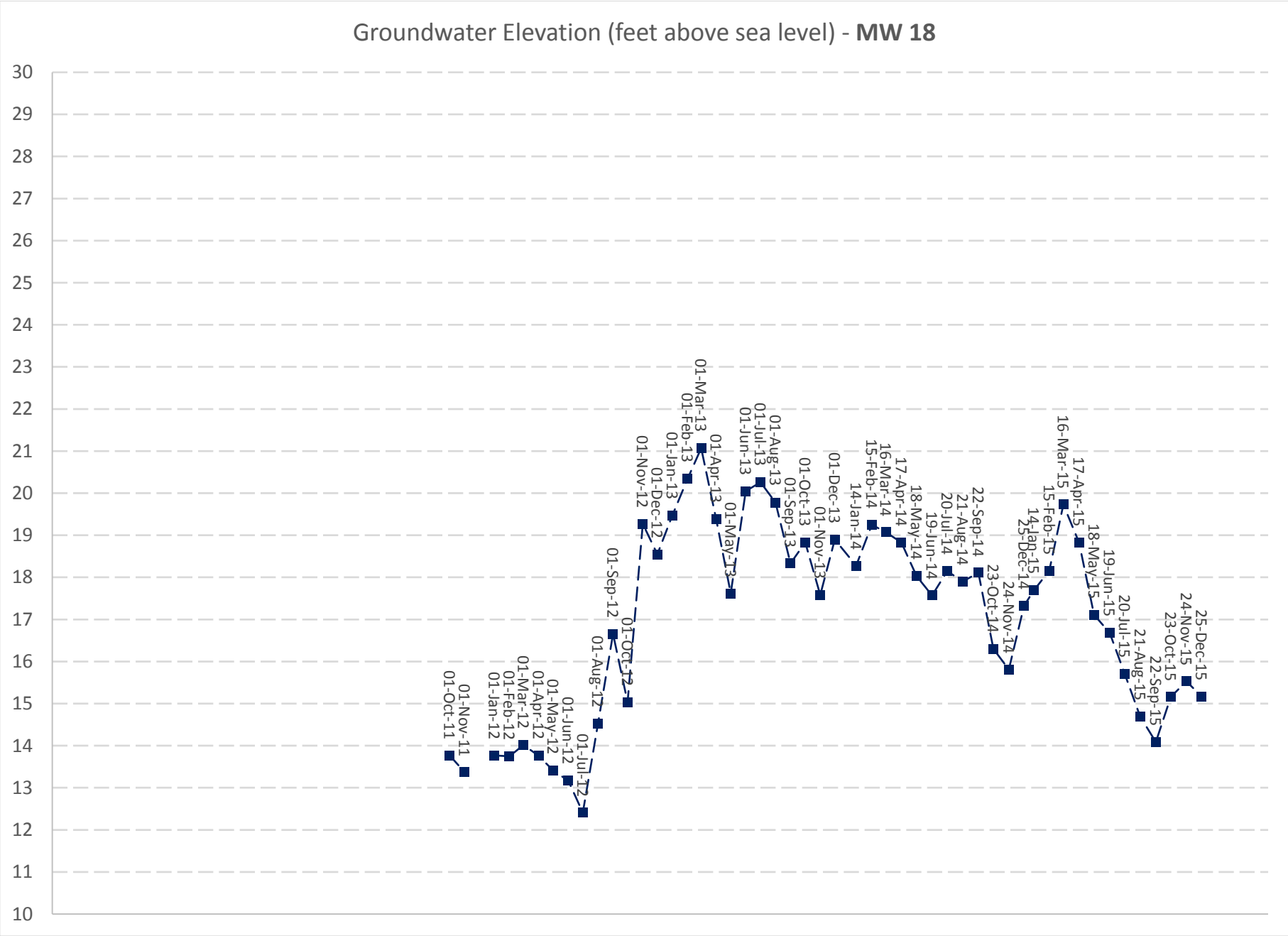
Groundwater Elevation (feet above sea level) - **MW 18**
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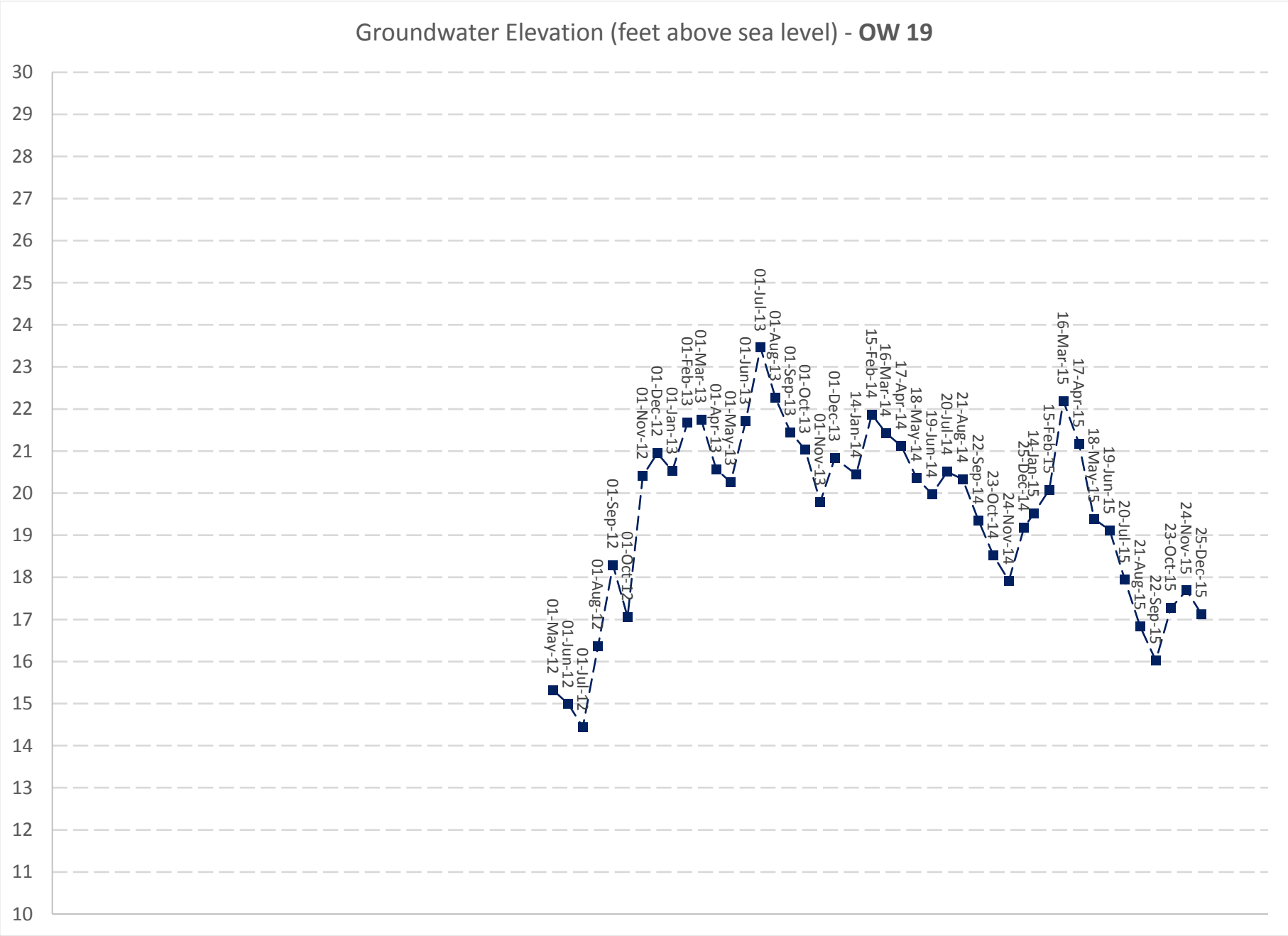
Groundwater Elevation (feet above sea level) - **OW 19**
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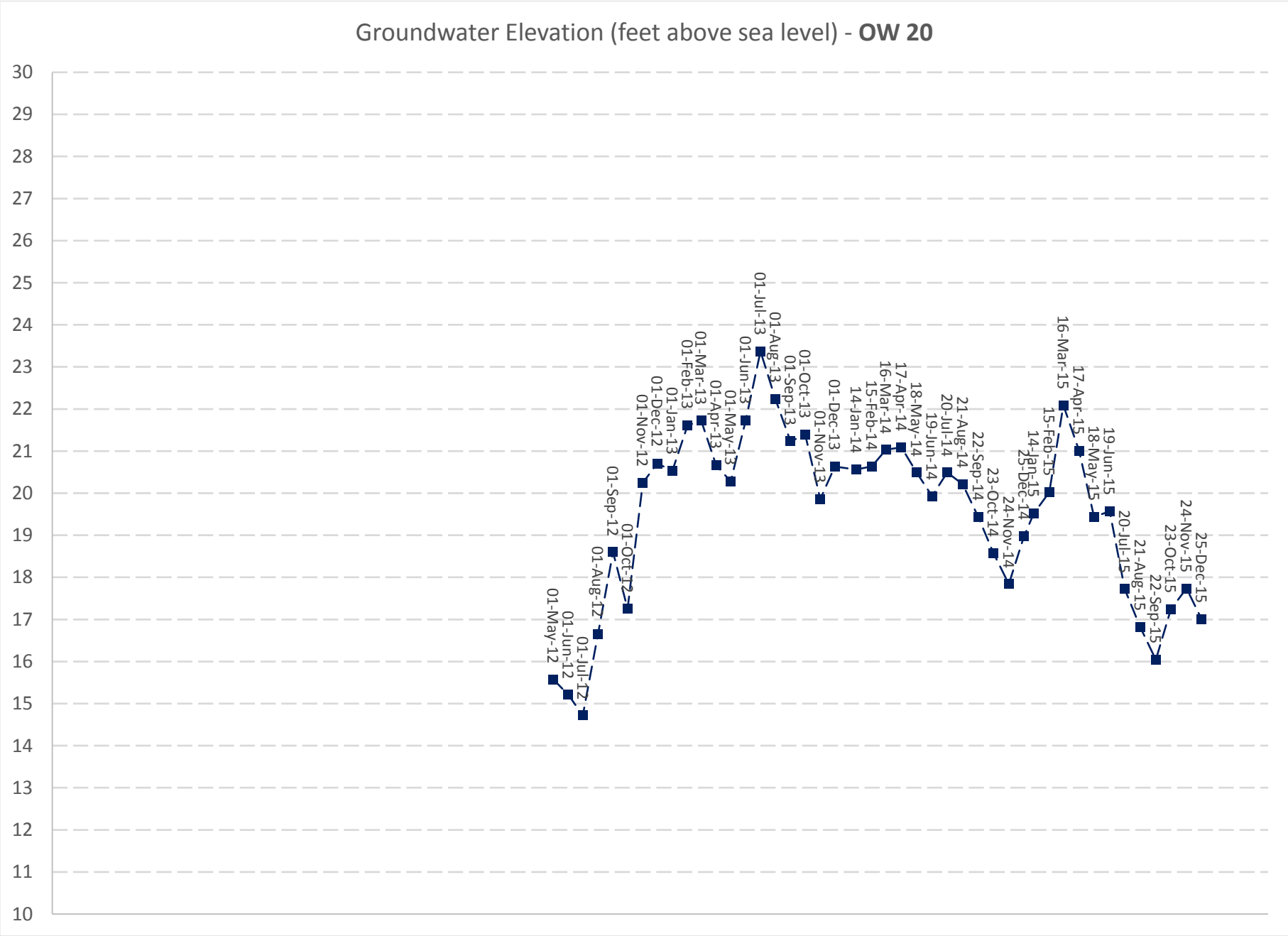
Groundwater Elevation (feet above sea level) - **OW 20**
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16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
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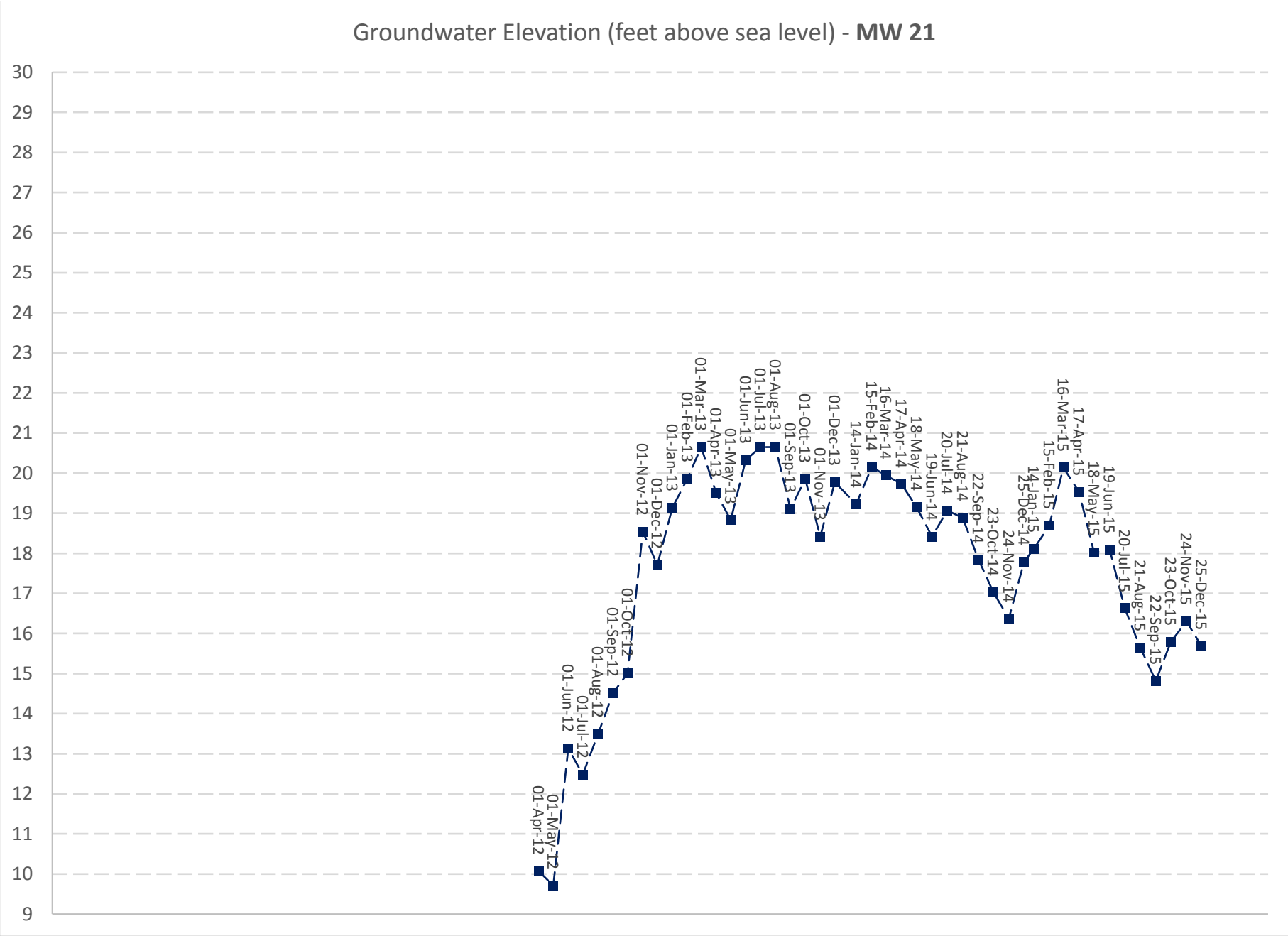
23-Oct-15
24-Nov-15
25-Dec-15


Groundwater Elevation (feet above sea level) - **MW 21**
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15
14
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12
11
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9
01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
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01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
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18-May-15
19-Jun-15
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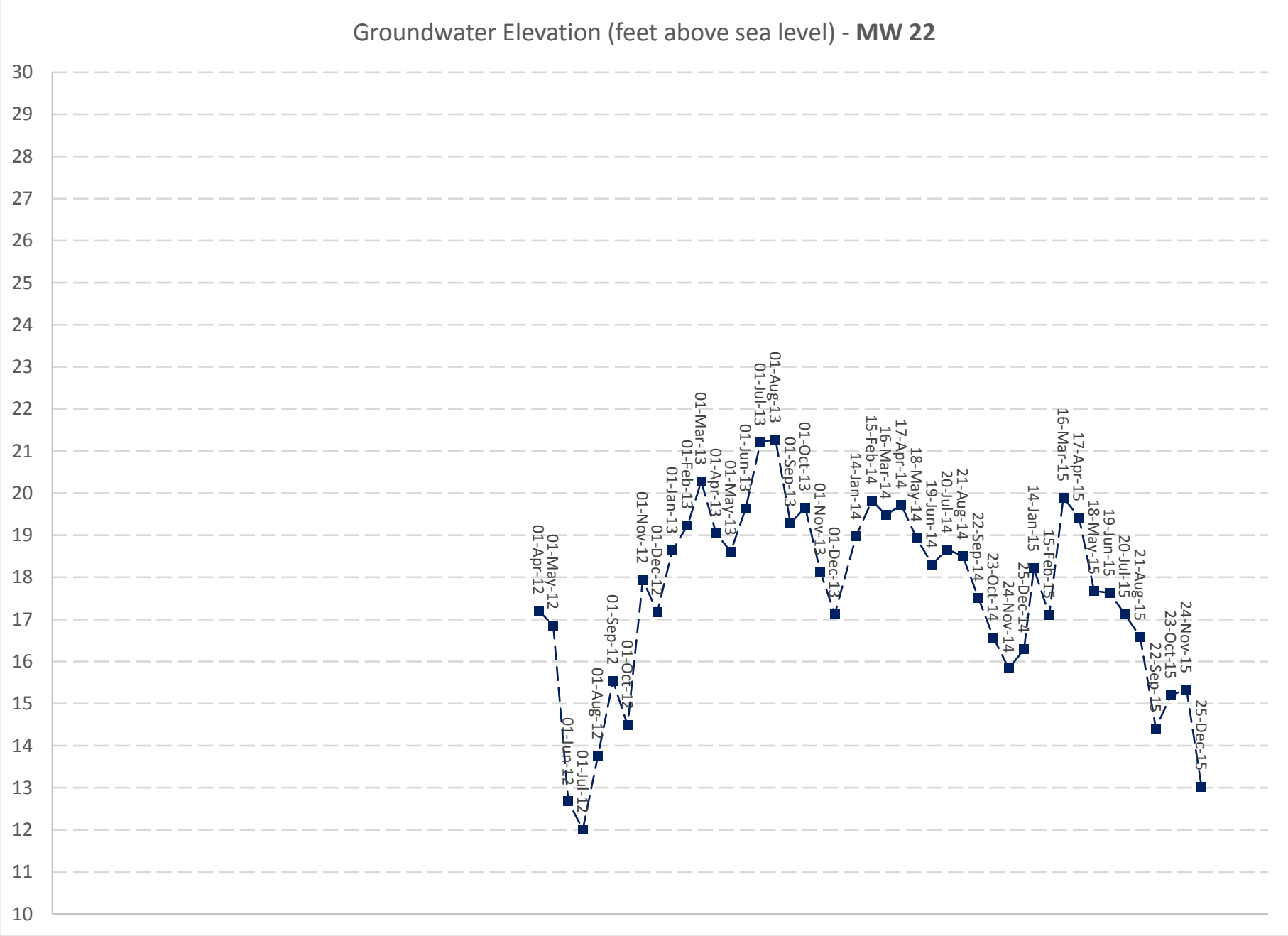
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Groundwater Elevation (feet above sea level) - **MW 22**
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01-Apr-12
01-May-12
01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
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01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
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21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
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15-Feb-15
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18-May-15
19-Jun-15
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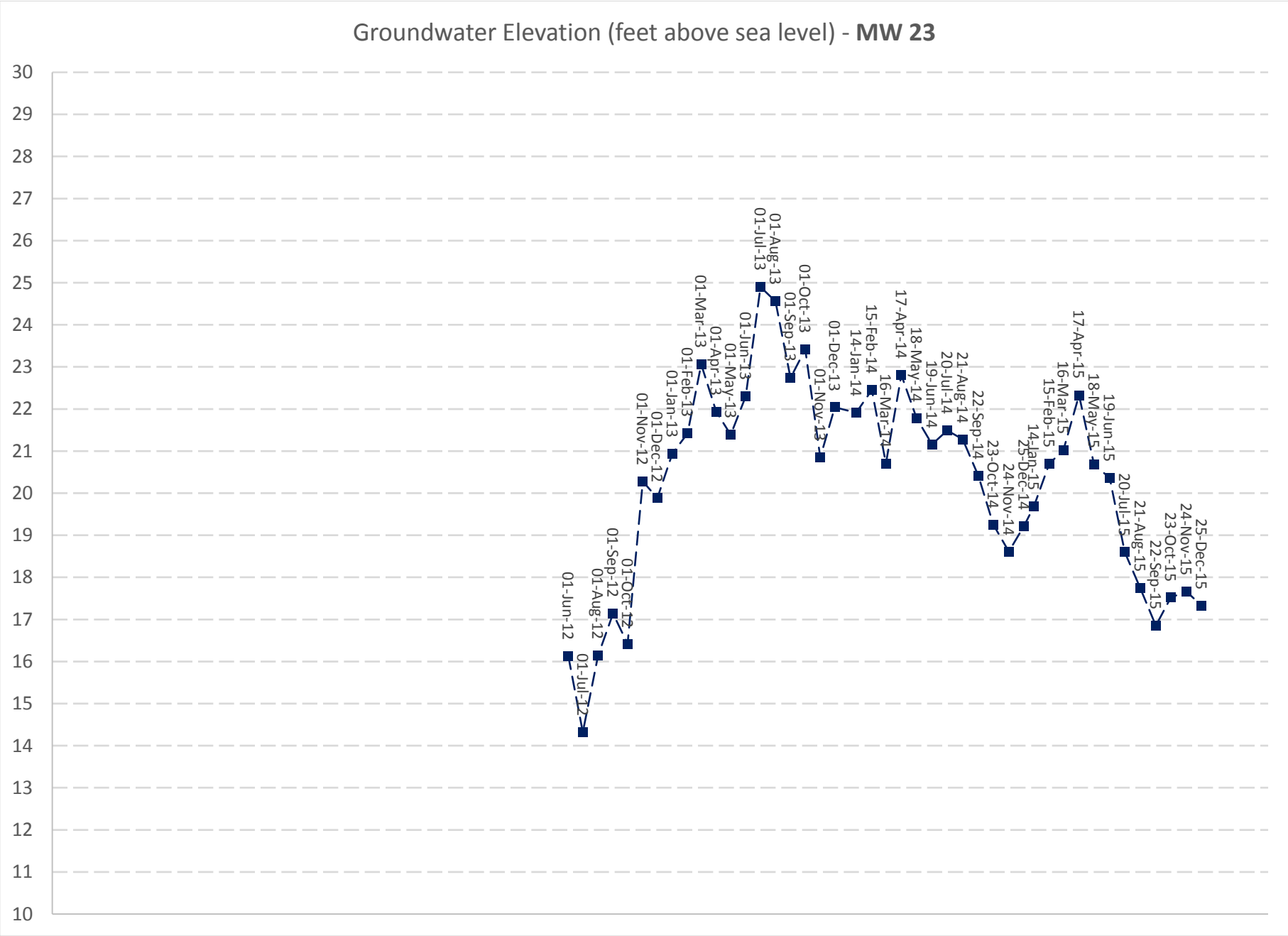
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Groundwater Elevation (feet above sea level) - **MW 23**
30
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01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
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01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
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23-Oct-14
24-Nov-14
25-Dec-14
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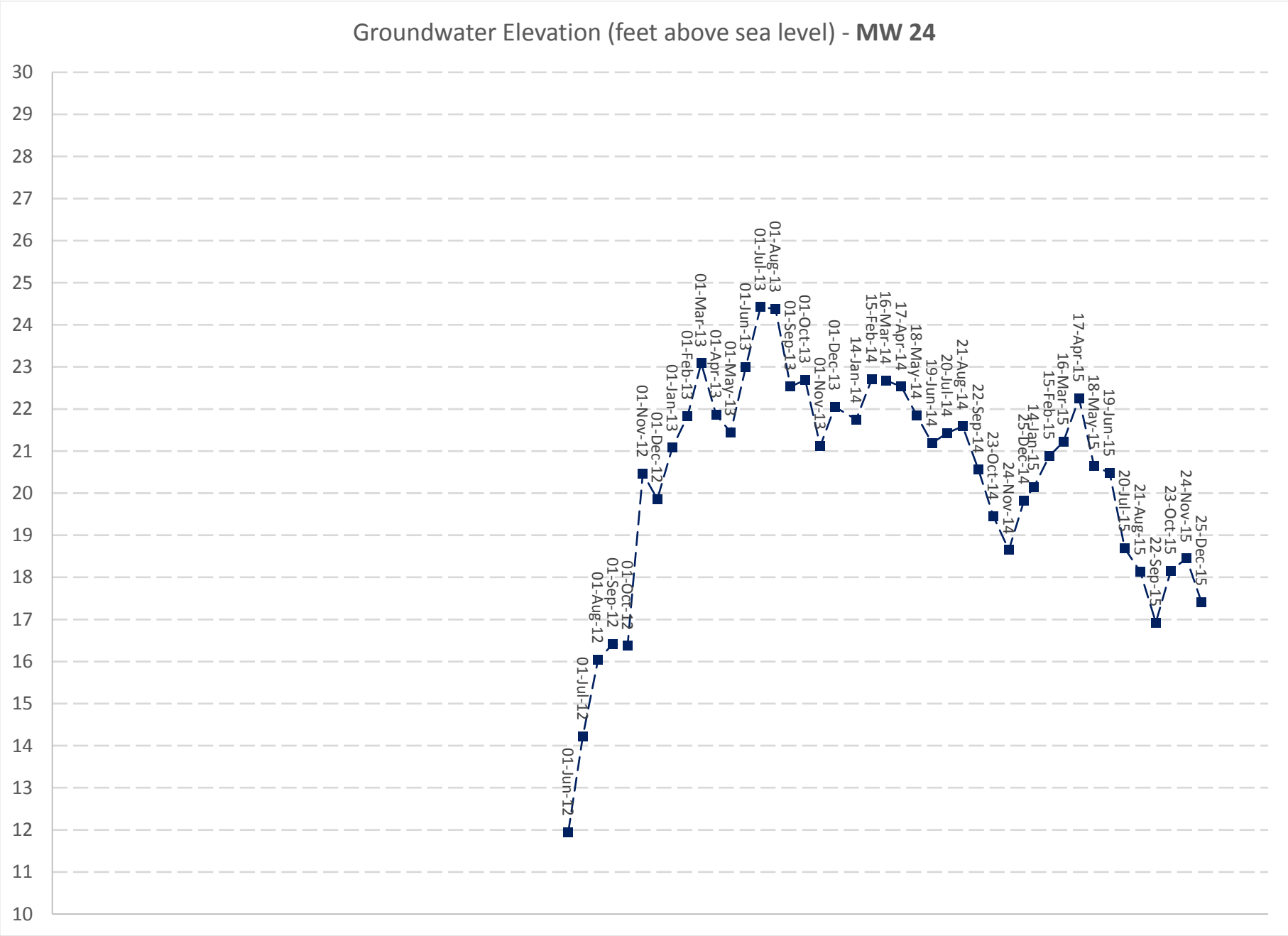
23-Oct-15
24-Nov-15
25-Dec-15


Groundwater Elevation (feet above sea level) - **MW 24**
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01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
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15-Feb-15
16-Mar-15
17-Apr-15
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19-Jun-15
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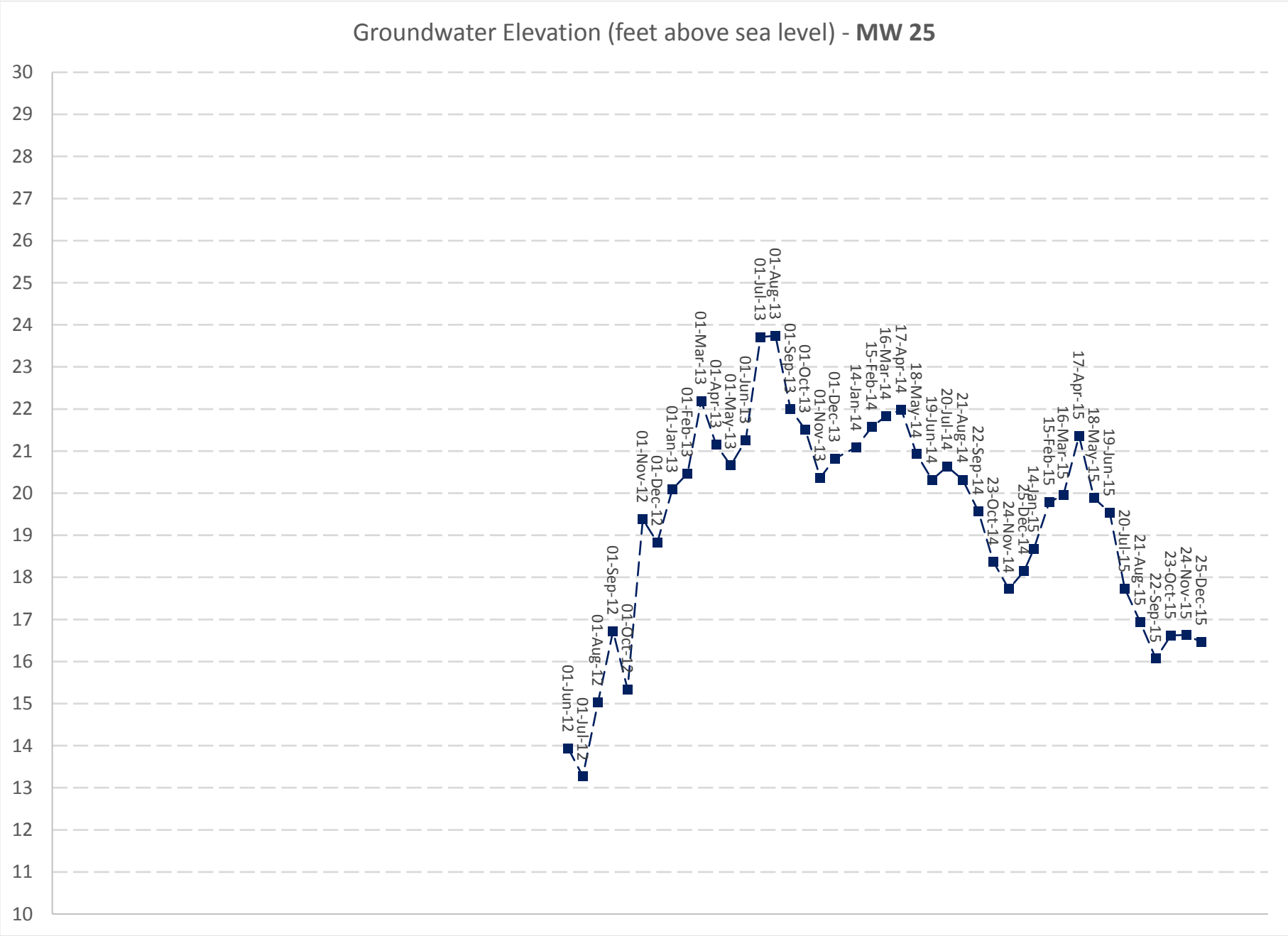
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Groundwater Elevation (feet above sea level) - **MW 25**
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01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
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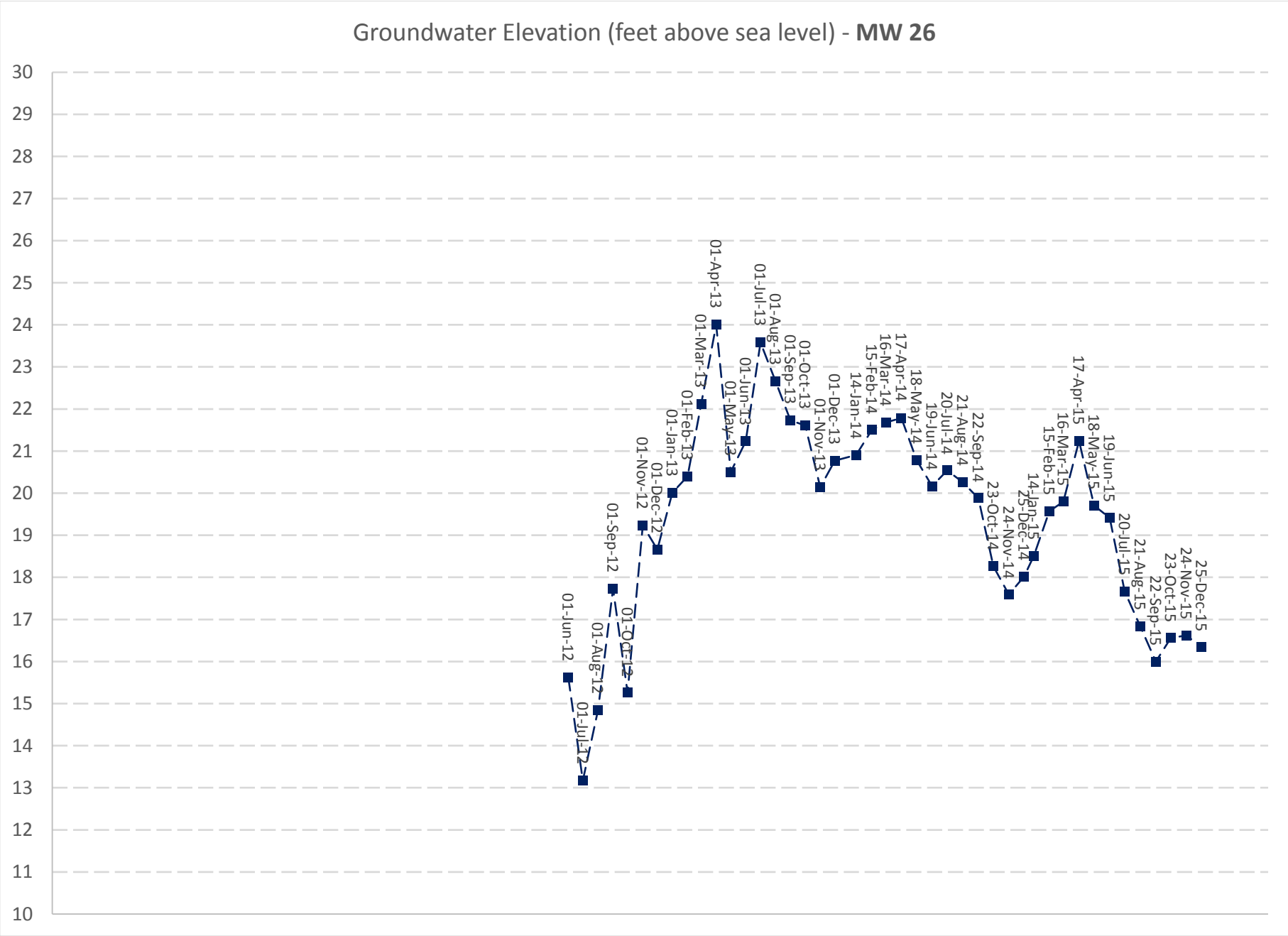
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15


Groundwater Elevation (feet above sea level) - **MW 26**
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01-Jun-12
01-Jul-12
01-Aug-12
01-Sep-12
01-Oct-12
01-Nov-12
01-Dec-12
01-Jan-13
01-Feb-13
01-Mar-13
01-Apr-13
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
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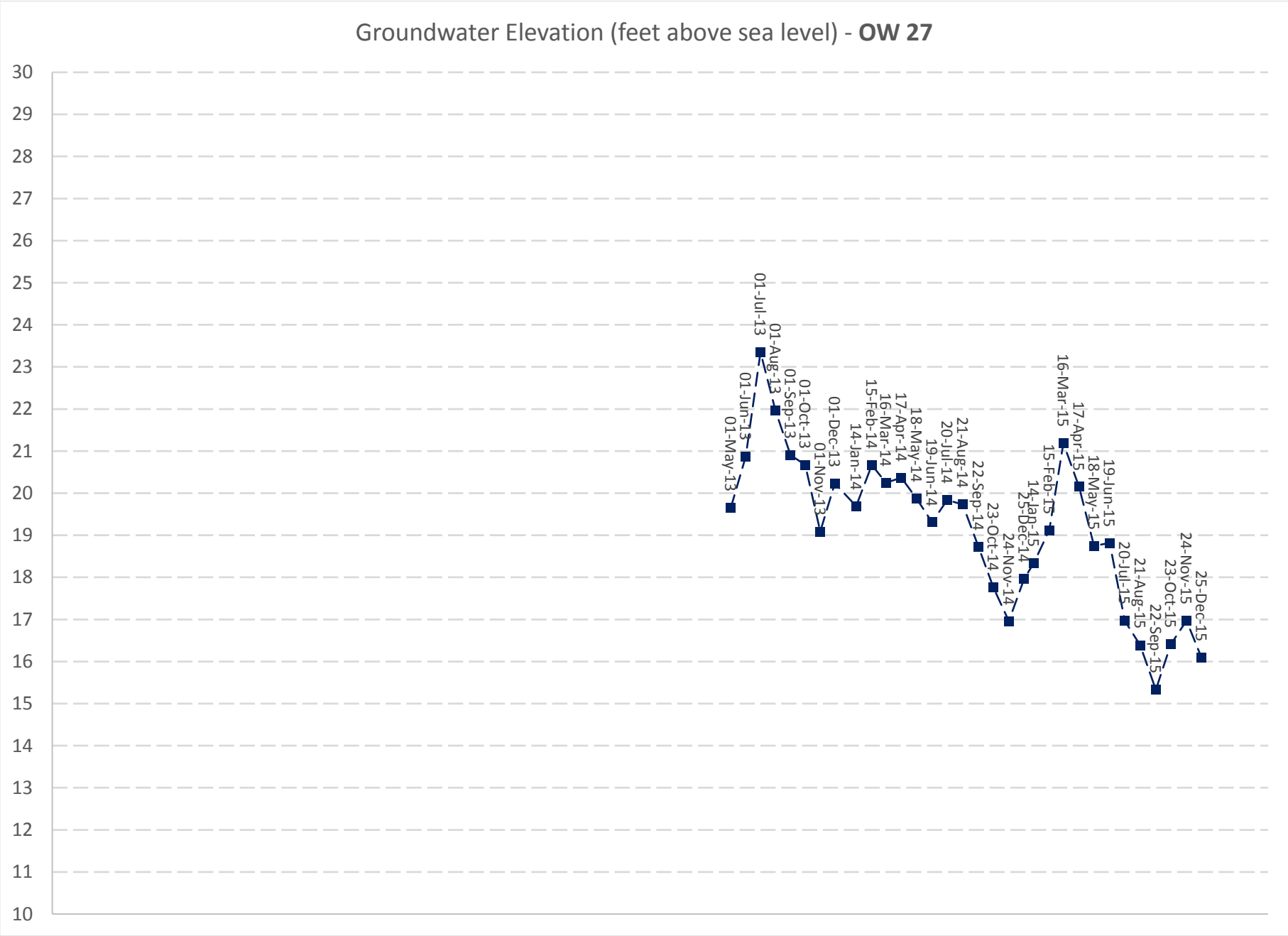
23-Oct-15
24-Nov-15
25-Dec-15


Groundwater Elevation (feet above sea level) - **OW 27**
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01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
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20-Jul-15
21-Aug-15
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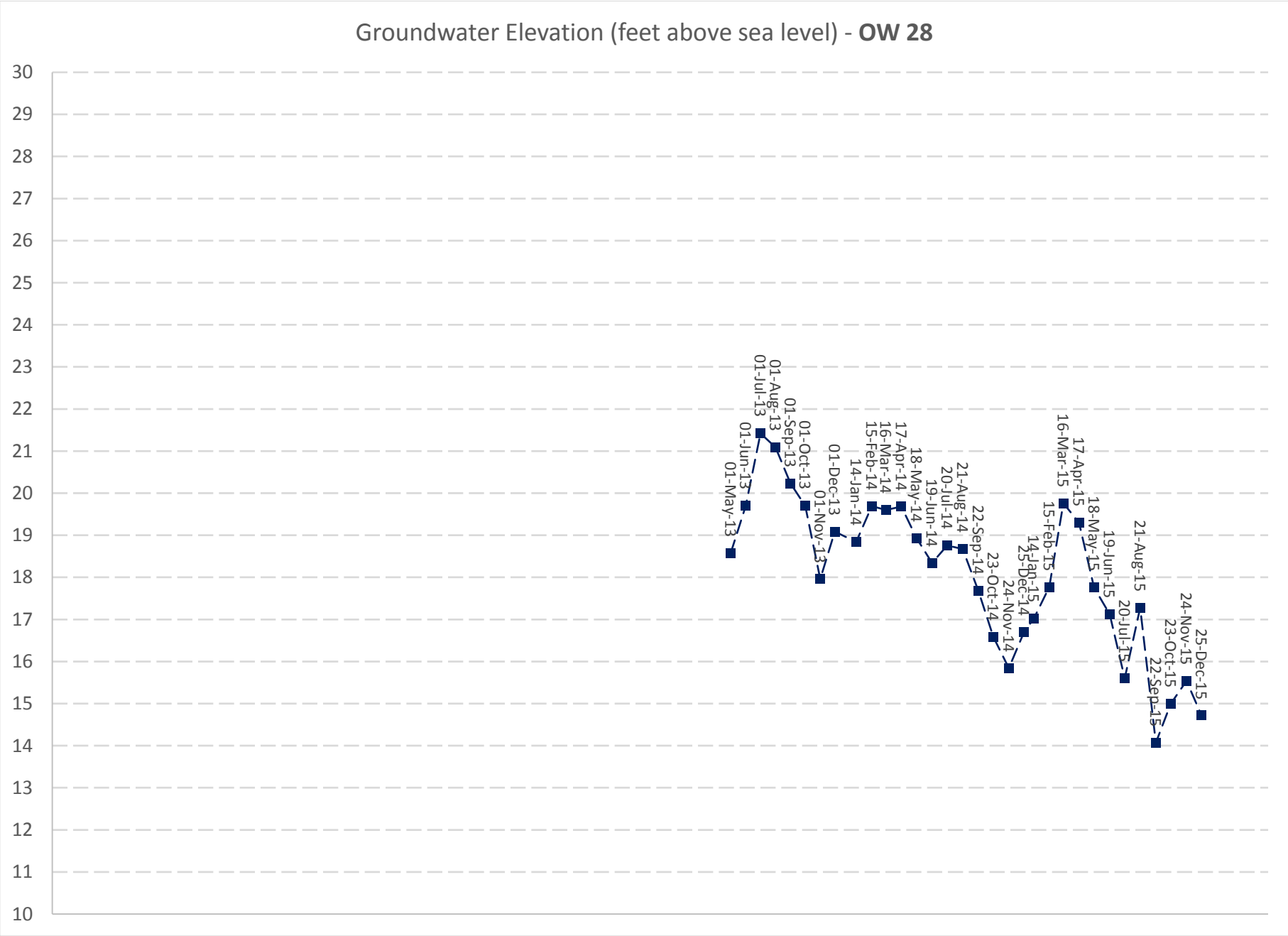
23-Oct-15
24-Nov-15
25-Dec-15


Groundwater Elevation (feet above sea level) - **OW 28**
30
29
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17
16
15
14
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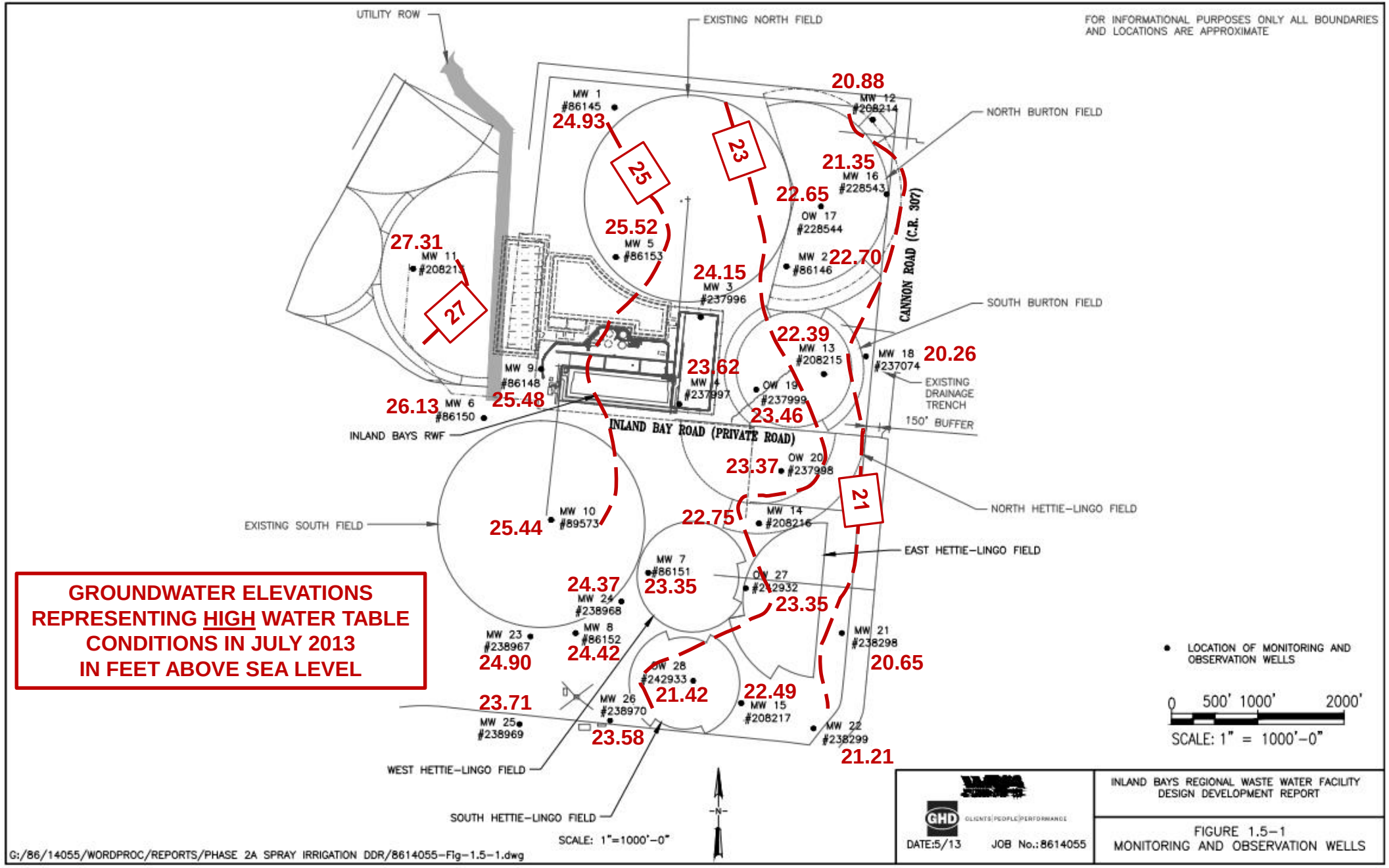
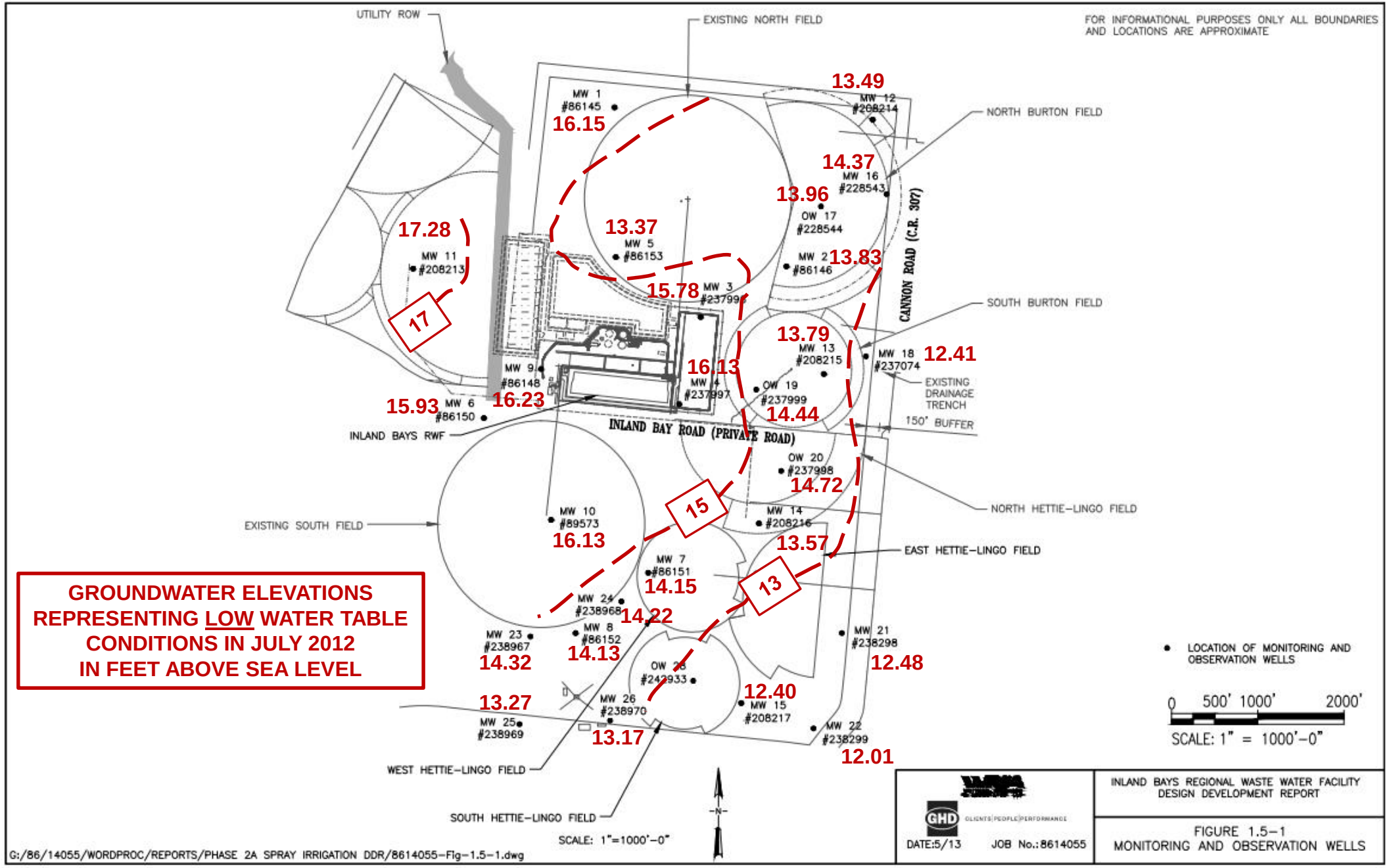
01-May-13
01-Jun-13
01-Jul-13
01-Aug-13
01-Sep-13
01-Oct-13
01-Nov-13
01-Dec-13
14-Jan-14
15-Feb-14
16-Mar-14
17-Apr-14
18-May-14
19-Jun-14
20-Jul-14
21-Aug-14
22-Sep-14
23-Oct-14
24-Nov-14
25-Dec-14
14-Jan-15
15-Feb-15
16-Mar-15
17-Apr-15
18-May-15
19-Jun-15
20-Jul-15
21-Aug-15
22-Sep-15
23-Oct-15
24-Nov-15
25-Dec-15

Appendix 10

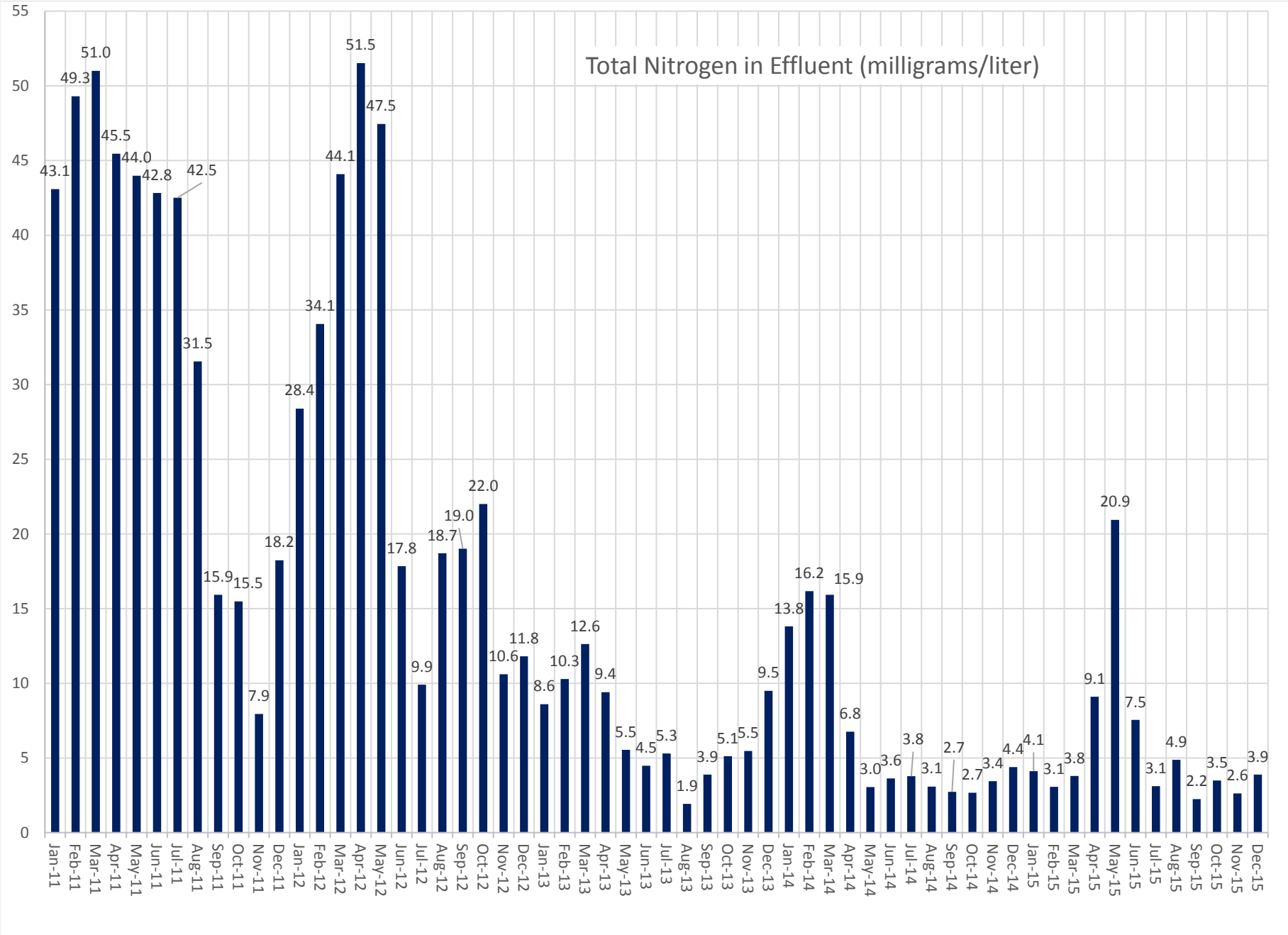
Water Table Maps


FOR INFORMATIONAL PURPOSES ONLY ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE
UTILITY ROW
EXISTING NORTH FIELD
NORTH BURTON FIELD
SOUTH BURTON FIELD
CANNON ROAD (C.R. 307)
EXISTING DRAINAGE TRENCH
150' BUFFER
INLAND BAY ROAD (PRIVATE ROAD)
INLAND BAYS RWF
EXISTING SOUTH FIELD
NORTH HETTIE-LINGO FIELD
EAST HETTIE-LINGO FIELD
WEST HETTIE-LINGO FIELD
SOUTH HETTIE-LINGO FIELD
MW 1 #86145 24.93
MW 12 #208214 20.88
MW 16 #228543 21.35
OW 17 #228544 22.65
MW 2 #86146 22.70
MW 5 #86153 25.52
MW 3 #237996 24.15
MW 11 #208213 27.31
MW 13 #208215 22.39
MW 18 #237074 20.26
MW 9 #86148 23.62
MW 4 #237997
OW 19 #237999 23.46
MW 6 #86150 26.13 25.48
OW 20 #237998 23.37
MW 10 #89573 25.44
MW 14 #208216 22.75
MW 7 #86151 23.35
OW 27 #242932 23.35
MW 24 #238968 24.37
MW 8 #86152 24.42
MW 23 #238967 24.90
MW 21 #238298 20.65
OW 28 #242933 21.42
MW 26 #238970 23.58
MW 25 #238969 23.71
MW 15 #208217 22.49
MW 22 #238299 21.21
25
23
27
21
LOCATION OF MONITORING AND OBSERVATION WELLS
0 500' 1000' 2000'
SCALE: 1" = 1000'-0"
SCALE: 1"=1000'-0"
N
GROUNDWATER ELEVATIONS REPRESENTING HIGH WATER TABLE CONDITIONS IN JULY 2013 IN FEET ABOVE SEA LEVEL
GHD CLIENTS|PEOPLE|PERFORMANCE
DATE:5/13
JOB No.:8614055
INLAND BAYS REGIONAL WASTE WATER FACILITY DESIGN DEVELOPMENT REPORT
FIGURE 1.5-1
MONITORING AND OBSERVATION WELLS
G:/86/14055/WORDPROC/REPORTS/PHASE 2A SPRAY IRRIGATION DDR/8614055-Fig-1.5-1.dwg


FOR INFORMATIONAL PURPOSES ONLY ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE
UTILITY ROW
EXISTING NORTH FIELD
NORTH BURTON FIELD
SOUTH BURTON FIELD
CANNON ROAD (C.R. 307)
EXISTING DRAINAGE TRENCH
150' BUFFER
INLAND BAY ROAD (PRIVATE ROAD)
INLAND BAYS RWF
NORTH HETTIE-LINGO FIELD
EAST HETTIE-LINGO FIELD
EXISTING SOUTH FIELD
WEST HETTIE-LINGO FIELD
SOUTH HETTIE-LINGO FIELD
MW 1 #86145 16.15
MW 12 #208214 13.49
MW 16 #228543 14.37
OW 17 #228544 13.96
MW 5 #86153 13.37
MW 2 #86146 13.83
MW 11 #208213 17.28
MW 3 #237995 15.78
MW 13 #208215 13.79
MW 18 #237074 12.41
MW 9 #86148 16.23
MW 4 #237997 16.13
OW 19 #237999 14.44
MW 6 #86150 15.93
OW 20 #237998 14.72
MW 14 #208216 13.57
MW 10 #89573 16.13
MW 7 #86151 14.15
MW 24 #238968 14.22
MW 23 #238967 14.32
MW 8 #86152 14.13
MW 21 #238298 12.48
OW 28 #242933
MW 26 #238970 13.17
MW 25 #238969 13.27
MW 15 #208217 12.40
MW 22 #238299 12.01
17
15
13
GROUNDWATER ELEVATIONS REPRESENTING LOW WATER TABLE CONDITIONS IN JULY 2012 IN FEET ABOVE SEA LEVEL
LOCATION OF MONITORING AND OBSERVATION WELLS
0 500' 1000' 2000'
SCALE: 1" = 1000'-0"
SCALE: 1"=1000'-0"
-N-
G:/86/14055/WORDPROC/REPORTS/PHASE 2A SPRAY IRRIGATION DDR/8614055-Fig-1.5-1.dwg
GHD
CLIENTS|PEOPLE|PERFORMANCE
DATE:5/13
JOB No.:8614055
INLAND BAYS REGIONAL WASTE WATER FACILITY
DESIGN DEVELOPMENT REPORT
FIGURE 1.5-1
MONITORING AND OBSERVATION WELLS

Appendix 11

Effluent Quality Data


Total Nitrogen in Effluent (milligrams/liter)
55
50
45
40
35
30
25
20
15
10
5
0
43.1
49.3
51.0
45.5
44.0
42.8
42.5
31.5
15.9
15.5
7.9
18.2
28.4
34.1
44.1
51.5
47.5
17.8
9.9
18.7
19.0
22.0
10.6
11.8
8.6
10.3
12.6
9.4
5.5
4.5
5.3
1.9
3.9
5.1
5.5
9.5
13.8
16.2
15.9
6.8
3.0
3.6
3.8
3.1
2.7
2.7
3.4
4.4
4.1
3.1
3.8
9.1
20.9
7.5
3.1
4.9
2.2
3.5
2.6
3.9
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
Jan-12
Feb-12
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Aug-15
Sep-15
Oct-15
Nov-15
Dec-15

Average Effluent Nitrogen Data (mg/l) at Inland Bays Regional Wastewater Facilities								
Month	Year	Organic N	NH_4	NO_3 - N	NO_2 - N	NO_2 + NO_3	TKN	TN
January	2011	10.1	20.0	12.9	0.1	13.0	30.1	43.1
February	2011	9.9	24.0	15.5	0.1	15.5	33.8	49.3
March	2011	8.7	25.7	16.7	0.1	16.7	34.3	51.0
April	2011	8.9	25.9	10.8	0.1	10.8	34.7	45.5
May	2011	6.6	29.1	8.3	0.1	8.3	35.7	44.0
June	2011	6.0	28.3	8.5	0.1	8.5	34.3	42.8
July	2011	5.7	26.6	10.3	0.1	10.3	32.2	42.5
August	2011	10.3	18.0	2.8	0.4	3.2	28.3	31.5
September	2011	3.3	8.6	2.2	1.9	4.1	11.9	15.9
October	2011	5.6	3.0	3.5	3.4	6.8	8.7	15.5
November	2011	3.4	1.8	2.3	0.4	2.7	5.2	7.9
December	2011	4.2	9.5	4.5	0.1	4.5	13.7	18.2
Average		6.9	18.4	8.2	0.6	8.7	25.2	

Average Effluent Nitrogen Data (mg/l) at Inland Bays Regional Wastewater Facilities								
Month	Year	Organic N	NH_4	NO_3 - N	NO_2 - N	NO_2 + NO_3	TKN	TN
January	2012	7.7	17.5	3.1	0.1	3.2	25.2	28.4
February	2012	10.2	23.2	0.5	0.2	0.7	33.4	34.1
March	2012	5.5	38.0	0.4	0.2	0.6	43.5	44.1
April	2012	22.7	11.3	15.2	2.4	17.6	34.0	51.5
May	2012	18.7	8.3	19.4	1.2	20.6	26.9	47.5
June	2012	9.7	4.3	3.9	0.0	3.9	14.0	17.8
July	2012	5.1	3.7	0.9	0.1	1.1	8.8	9.9
August	2012	11.8	2.6	4.1	0.3	4.4	14.4	18.7
September	2012	8.8	6.4	3.6	0.2	3.8	15.2	19.0
October	2012	12.3	1.4	8.6	0.0	8.7	13.6	22.0
November	2012	0.1	2.0	8.5	0.1	8.6	2.1	10.6
December	2012	3.0	2.0	6.7	0.1	6.8	5.0	11.8
Average		9.6	10.0	6.2	0.4	6.6	19.7	15.3

Average Effluent Nitrogen Data (mg/l) at Inland Bays Regional Wastewater Facilities								
Month	Year	Organic N	NH_4	NO_3 - N	NO_2 - N	NO_2 + NO_3	TKN	TN
January	2013	2.0	0.7			5.9	2.7	8.6
February	2013	2.6	1.0			6.7	3.6	10.3
March	2013	3.4	1.5			7.8	4.9	12.6
April	2013	3.0	0.5			5.9	3.5	9.4
May	2013	2.2	2.1			1.2	4.3	5.5
June	2013	1.1	3.1			0.3	4.2	4.5
July	2013	0.9	4.4			0.0	5.3	5.3
August	2013	1.2	0.5			0.3	1.7	1.9
September	2013	1.4	1.1			1.4	2.5	3.9
October	2013	1.4	1.1			2.6	2.5	5.1
November	2013	0.7	1.9			2.9	2.6	5.5
December	2013	0.8	2.3			6.4	3.1	9.5
Average		1.7	1.7			3.4	3.4	6.8

Average Effluent Nitrogen Data (mg/l) at Inland Bays Regional Wastewater Facilities								
Month	Year	Organic N	NH_4	NO_3 - N	NO_2 - N	NO_2 + NO_3	TKN	TN
January	2014	1.8	1.8			10.2	3.6	13.8
February	2014	1.9	1.8			12.4	3.7	16.2
March	2014	3.1	0.2			12.6	3.3	15.9
April	2014	1.2	1.2			4.4	2.4	6.8
May	2014	1.7	0.6			0.8	2.3	3.0
June	2014	1.6	1.0			1.1	2.6	3.6
July	2014	2.2	1.0			0.6	3.2	3.8
August	2014	2.4	0.4			0.4	2.7	3.1
September	2014	1.8	0.4			0.5	2.3	2.7
October	2014	1.4	1.0			0.3	2.4	2.7
November	2014	1.5	1.4			0.6	2.8	3.4
December	2014	1.6	1.5			1.3	3.1	4.4
Average		1.8	1.0			3.7	2.9	6.6

Average Effluent Nitrogen Data (mg/l) at Inland Bays Regional Wastewater Facilities								
Month	Year	Organic N	NH_4	NO_3 - N	NO_2 - N	NO_2 + NO_3	TKN	TN
January	2015	2.1	0.9			1.1	3.0	4.1
February	2015	2.2	0.0			0.9	2.2	3.1
March	2015	3.3	0.2			0.3	3.5	3.8
April	2015	3.3	4.8			1.0	8.1	9.1
May	2015	3.5	9.9			7.5	13.4	20.9
June	2015	1.9	3.6			2.0	5.5	7.5
July	2015	1.9	1.2			0.0	3.1	3.1
August	2015	4.2	0.6			0.0	4.9	4.9
September	2015	2.0	0.2			0.0	2.2	2.2
October	2015	1.4	1.6			0.6	3.0	3.5
November	2015	1.4	1.3			0.0	2.6	2.6
December	2015	1.9	0.9			1.0	2.9	3.9
Average		2.4	2.1			1.2	4.5	5.7

2011				2012				2013			
	Eff. pH	BOD5	TSS		Eff. pH	BOD5	TSS		Eff. pH	BOD5	TSS
Jan.	7.8	34.75	36	Jan.	7.31	41.04	25	Jan.	6.56	7.36	9.69
Feb.	7.8	36.5	35	Feb.	7.39	29.65	23.5	Feb.	6.59	4.76	13.36
March	7.8	13.5	29.35	March	7.31	31.05	14	March	6.77	8.06	14.28
April	7.64	33.45	47	Apr.	6.52	24	13	April	6.98	8.47	19.87
May	7.52	42.59	28.5	May	6.76	9.67	20.75	May	7.16	4.46	2.85
June	7.51	47.5	43.6	June	6.99	5	4.25	June	7.1	4.39	2.65
July	7.44	51.71	43	July	7.26	8.34	3	July	7.25	8.4	10.35
Aug.	7.36	54.9	28.5	Aug.	7.02	7.67	5	Aug.	7.18	4.91	8.73
Sept.	7.29	24.5	35.5	Sept.	6.94	3.45	5.25	Sept.	7	2.75	4.25
Oct.	7.26	16.05	39	Oct.	6.81	2.74	3	Oct.	7.13	2.62	1.93
Nov.	7.55	33.45	26.5	Nov.	6.97	3.16	2.25	Nov.	6.84	2.26	4.15
Dec.	7.19	40.92	35	Dec.	6.83	3.19	4.3	Dec.	6.48	4.8	3.6
YEARLY AVG.	7.5133	35.818	35.579	YEARLY AVG.	7.0092	14.08	10.275	YEARLY AVG.	6.92	5.27	7.9758

2014				2015				2016			
	Eff. pH	BOD5	TSS		Eff. pH	BOD5	TSS		Eff. pH	BOD5	TSS
Jan.	6.58	5.27	10	Jan.	7.05	8.16	12.35	Jan.	6.61	7.32	9.75
Feb.	6.35	5.33	7.48	Feb.	7.05	8.95	15.75	Feb.	6.59	5.83	11.4
March	6.66	8.35	19.1	March	6.95	9.92	28.45	March	6.67	3.53	5.04
April	7.21	5.11	3.8	April	6.93	13.75	18.1	Apr.	6.73	4.74	10.27
May	7.24	4.7	2.45	May	6.91	5.93	1.85	May	6.77	2.64	1.6
June	7.09	5.22	6.15	June	7.23	4.56	2.15	June	6.83	5.56	12.2
July	7.29	6.36	16.25	July	7.21	7.2	11.1	July	6.84	6.59	12.96
Aug.	7.22	5.91	22.35	Aug.	7.23	5.3	14.2	Aug.			
Sept.	7.14	4.63	16.95	Sept.	7.15	5.36	17.4	Sept.			
Oct.	7.12	3.12	15.9	Oct.	6.86	3.31	6.1	Oct.			
Nov.	7.08	2.35	8.6	Nov.	6.69	2.55	4.89	Nov.			
Dec.	7.04	3.29	4.75	Dec.	6.55	3.68	5.9	Dec.			
YEARLY AVG.	7.0017	4.97	23.852	YEARLY AVG.	6.9842	6.5558	11.52	YEARLY AVG.	6.72	5.1729	9.0314

Spray Irrigation Loading Form for METALS , 2011

SYSTEMS	ACRES IRR.	YTD TOTAL FLOW MG	YTD ZINC * LBS/AC	YTD NICKEL * LBS/AC	YTD CADMIUM LBS/AC	YTD COPPER * LBS/AC	YTD LEAD * LBS/AC
North Field	103.00	81.000000	0.18692	0.01836	0.00656	0.09117	0.01312
South Field	103.00	94.000000	0.21692	0.02131	0.00761	0.10580	0.01522
North Burton	52.00	33.000000	0.15084	0.01482	0.00529	0.07357	0.01059
South Burton	41.90	0.000000	0.00000	0.00000	0.00000	0.00000	0.00000
North Hettie L	47.50	0.000000	0.00000	0.00000	0.00000	0.00000	0.00000
South Hettie L	30.48	0.000000	0.00000	0.00000	0.00000	0.00000	0.00000
East Hettie L	34.46	0.000000	0.00000	0.00000	0.00000	0.00000	0.00000
West Hettie L	20.16	0.000000	0.00000	0.00000	0.00000	0.00000	0.00000
TOTAL	432.50	208.000000	0.55468	0.05450	0.01946	0.27053	0.03893
AVERAGE		34.666667	0.09245	0.00908	0.00324	0.07357	0.01059
MINIMUM		0.000000	0.00000	0.00000	0.00000	0.27053	0.03893
MAXIMUM		94.000000	0.21692	0.02131	0.00761	0.34410	0.04951

LAB RESULTS - PPM			
		CADMIUM *	0.0010
ZINC	0.0285	COPPER *	0.0139
NICKEL *	0.0028	LEAD *	0.0020

NOTES:

* Denotes annual sampling parameters.
** Denotes quarterly sample of

Spray Irrigation Loading Form for METALS , 2012

SYSTEMS	ACRES IRR.	YTD TOTAL FLOW MG	YTD ZINC * LBS/AC	YTD NICKEL * LBS/AC	YTD CADMIUM LBS/AC	YTD COPPER * LBS/AC	YTD LEAD * LBS/AC
North Field	103.00	85.454000	0.29753	0.02699	0.00346	0.12455	0.00692
South Field	103.00	73.361000	0.25542	0.02317	0.00297	0.10692	0.00594
North Burton	52.00	31.674000	0.21844	0.01981	0.00254	0.09144	0.00508
South Burton	41.90	15.988000	0.13684	0.01241	0.00159	0.05728	0.00318
North Hettie L	47.50	21.108000	0.15936	0.01445	0.00185	0.06671	0.00371
South Hettie L	30.48	0.000000	0.00000	0.00000	0.00000	0.00000	0.00000
East Hettie L	34.46	0.000000	0.00000	0.00000	0.00000	0.00000	0.00000
West Hettie L	20.16	0.000000	0.00000	0.00000	0.00000	0.00000	0.00000
TOTAL	432.50	227.585000	1.06760	0.09683	0.01241	0.44690	0.02483
AVERAGE		37.930833	0.17793	0.01614	0.00207	0.21543	0.01197
MINIMUM		0.000000	0.00000	0.00000	0.00000	0.57089	0.03172
MAXIMUM		85.454000	0.29753	0.02699	0.00346	0.72904	0.04050

LAB RESULTS - PPM			
		CADMIUM *	0.0005
ZINC	0.0430	COPPER *	0.0180
NICKEL *	0.0039	LEAD *	0.0010

NOTES:

* Denotes annual sampling parameters.

** Denotes quarterly sample of

Spray Irrigation Loading Form for METALS , 2013

SYSTEMS	ACRES IRR.	YTD TOTAL FLOW MG	YTD ZINC * LBS/AC	YTD NICKEL * LBS/AC	YTD CADMIUM LBS/AC	YTD COPPER * LBS/AC	YTD LEAD * LBS/AC
North Field	103.00	84.848000	0.03813	0.01649	0.00344	0.03160	0.00687
South Field	103.00	87.290000	0.03923	0.01696	0.00353	0.03251	0.00707
North Burton	52.00	42.000000	0.03739	0.01617	0.00337	0.03099	0.00674
South Burton	41.90	20.000000	0.02209	0.00955	0.00199	0.01831	0.00398
North Hettie L	47.50	33.526000	0.03267	0.01413	0.00294	0.02708	0.00589
South Hettie L	30.48	12.261000	0.01862	0.00805	0.00168	0.01543	0.00335
East Hettie L	34.46	7.759000	0.01042	0.00451	0.00094	0.00864	0.00188
West Hettie L	20.16	7.691000	0.01766	0.00764	0.00159	0.01464	0.00318
TOTAL	432.50	279.925000	0.18813	0.08135	0.01695	0.15592	0.03390
AVERAGE		46.654167	0.03135	0.01356	0.00282	0.11508	0.02502
MINIMUM		12.261000	0.01862	0.00805	0.00000	0.24002	0.05218
MAXIMUM		87.290000	0.03923	0.01696	0.00353	0.33679	0.07322

LAB RESULTS - PPM			
		CADMIUM *	0.0005
ZINC	0.0056	COPPER *	0.0046
NICKEL *	0.0024	LEAD *	0.0010

NOTES:

* Denotes annual sampling parameters.
** Denotes quarterly sample of

Spray Irrigation Loading Form for METALS , 2014

SYSTEMS	ACRES IRR.	YTD TOTAL FLOW MG	YTD ZINC * LBS/AC	YTD NICKEL * LBS/AC	YTD CADMIUM LBS/AC	YTD COPPER * LBS/AC	YTD LEAD * LBS/AC
North Field	103.00	78.513000	0.32104	0.07947	0.00636	0.06421	0.01780
South Field	103.00	70.660000	0.28893	0.07152	0.00572	0.05779	0.01602
North Burton	52.00	42.590000	0.34495	0.08538	0.00683	0.06899	0.01913
South Burton	41.90	20.567000	0.20674	0.05117	0.00409	0.04135	0.01146
North Hettie L	47.50	24.760000	0.21954	0.05434	0.00435	0.04391	0.01217
South Hettie L	30.48	21.195000	0.29287	0.07249	0.00580	0.05857	0.01624
East Hettie L	34.46	19.557000	0.23903	0.05916	0.00473	0.04781	0.01325
West Hettie L	20.16	10.565000	0.22072	0.05463	0.00437	0.04414	0.01224
TOTAL	432.50	258.285000	1.67407	0.41437	0.03315	0.33481	0.09282
AVERAGE		43.047500	0.27901	0.06906	0.00552	0.30477	0.08449
MINIMUM		20.567000	0.20674	0.05117	0.00000	0.57059	0.15818
MAXIMUM		78.513000	0.34495	0.08538	0.00683	0.83401	0.23121

LAB RESULTS - PPM			
		CADMIUM *	0.0010
ZINC	0.0505	COPPER *	0.0101
NICKEL *	0.0125	LEAD *	0.0028

NOTES:

* Denotes annual sampling parameters.

** Denotes quarterly sample of

Spray Irrigation Loading Form for METALS , 2015

SYSTEMS	ACRES IRR.	YTD TOTAL FLOW MG	YTD ZINC * LBS/AC	YTD NICKEL * LBS/AC	YTD CADMIUM LBS/AC	YTD COPPER * LBS/AC	YTD LEAD * LBS/AC
North Field	103.00	66.817000	0.10820	0.02489	0.00271	0.00595	0.00541
South Field	103.00	67.664000	0.10958	0.02520	0.00274	0.00603	0.00548
North Burton	52.00	39.458000	0.12657	0.02911	0.00316	0.00696	0.00633
South Burton	41.90	24.610000	0.09797	0.02253	0.00245	0.00539	0.00490
North Hettie L	47.50	27.680000	0.09720	0.02236	0.00243	0.00535	0.00486
South Hettie L	30.48	27.521000	0.15061	0.03464	0.00377	0.00828	0.00753
East Hettie L	34.46	24.801000	0.12005	0.02761	0.00300	0.00660	0.00600
West Hettie L	20.16	20.276000	0.16776	0.03858	0.00419	0.00923	0.00839
TOTAL	432.50	298.827000	0.69013	0.15873	0.01725	0.03796	0.03451
AVERAGE		42.291667	0.11502	0.02645	0.00288	0.04181	0.03801
MINIMUM		24.610000	0.09720	0.02236	0.00000	0.07280	0.06619
MAXIMUM		67.664000	0.15061	0.03464	0.00377	0.10922	0.09929

LAB RESULTS - PPM			
		CADMIUM *	0.0005
ZINC*	0.0200	COPPER *	0.0011
NICKEL *	0.0046	LEAD *	0.0010

NOTES:

* Denotes annual sampling parameters.
** Denotes quarterly sample of

Appendix 12

Groundwater Quality Quarterly Tables

Quarterly Groundwater Quality Data reported by Sussex County

2011 First Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	10.7	10.55			12.3	19	9.8	12.6	8.15	10.7	Dry	11.75	10.7	10.82	14	8.7	11.1											
Specific Conductivity (micromho/cm)	77.7	553			574	59.4	544	264	163.4	713		248	169.3	219	423	517	228											
Temperature (degrees C)	11.7	11.4			12.6	13.9	12.7	12.8	13.6	13.9		12.5	11.5	11.3	12.7	12.1	12.5											
Nitrate as N (mg/l)	2.33	5.47			6.94	2.48	1.9	11.5	0.4	6.67		8.13	4.21	12.4	31.7	7.87	12.6											
Sodium (mg/l)	3.9	51			72	3.5	56	4.1	3.3	109		6.2	3.8	4.1	12	21	6.7											
Ammonia as Nitrogen (mg/l)	0.05	0.05			0.068	0.05	14.9	0.05	0.062	0.05		< .05	< .05	< .05	< .05	< .05	< .05											
pH	5.94	4.75			6.2	6.12	6.13	5.85	6.8	5.07		5.87	5.4	4.68	4.49	5.73	5.1											
Chloride (mg/l)	6.91	121			54.2	3.49	68.2	19.2	4.23	154		13.6	9.88	15.2	22.5	82.4	16.4											
Phosphorus as P (mg/l)	0.05	0.18			0.91	0.05	0.056	0.051	0.077	0.067		< .05	0.11	< .05	0.15	< .05	0.051											
Fecal Coliform (per 100 ml)	0	2	0	0	3	0	0	0	3	0		0	0	0	0	0	0											

2011 Second Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17
Depth to Water (feet)	8.4	8.8			11.4	16.7	8.7	9.8	8.9	8.8		9.9	8.8	8.8	12.1	5.9	8.7
Specific Conductivity (micromho/cm)	128.4	321			969	66.8	523	258	177.2	769		297	175.7	201	401	593	294
Temperature (degrees C)	20.3	22.1			22.4	21.7	21.9	22.7	18.6	22.1		20.7	21.7	22.5	22.8	21.3	21.8
Nitrate as N (mg/l)	5.41	9.38			7.17	2.66	0.2	10.9	0.2	19.8		14.1	6.61	10.7	31.7	17.2	12.9
Sodium (mg/l)	5.3	18			88	3.4	37	3.5	2.4	96		5.5	2.8	3.1	9.8	22	10
Ammonia as Nitrogen (mg/l)	0.05	0.05			0.05	0.05	16.9	0.05	0.86	0.12		< .05	< .05	< .05	< .05	< .05	< .05
pH	4.88	4.01			5.92	5.49	5.67	5.46	6.99	4.56		5.72	4.83	4	4.02	5.51	4.6
Chloride (mg/l)	11.4	51.8			99.8	3.56	43.1	18.5	3.62	163		20.8	13	14.2	21	85.8	35.9
Phosphorus as P (mg/l)	0.05	0.05			0.28	0.05	0.056	0.05	0.38	0.43		< .05	< .05	< .05	< .05	< .05	< .05
Fecal Coliform (per 100 ml)	2	0			0	0	0	2	1	0		0	1	0	0	3	0
Total Dissolved Solids (mg/l)	93.6	230			682	45.8	372	184	125	547		212	124	142	289	418	210

Quarterly Groundwater Quality Data reported by Sussex County

2011 Third Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17
Depth to Water (feet)	8	8.3			11.4	17.2	8.6	9.9	9.1	8.9	24.6	9.6	8.4	8.6	12.4	5.6	8.4
Specific Conductivity (micromho/cm)	60.4	385			914	56.3	235	294	177	757	70.4	416	378	516	367	771	469
Temperature (degrees C)	21.1	20.8			20.7	19.8	19.8	21.5	19.6	20.8	21.7	22.7	22.1	22.5	20.7	20.5	19.8
Nitrate as N (mg/l)	1.08	6.99			0.64	1.86	3.94	12.3	0.22	15.3	2.31	21.4	17.5	21.7	29	33.5	19
Sodium (mg/l)	2.5	21			81	3.3	25	3.6	2.2	89	4.3	6.3	4.1	5.1	8.15	29.6	24
Ammonia as Nitrogen (mg/l)	0.05	0.05			0.13	0.05	2.66	0.05	0.16	0.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
pH	5.33	4.22			5.83	4.87	5.46	5.58	7.87	4.58	5.01	5.65	4.66	4.18	4.22	5.56	4.37
Chloride (mg/l)	5.94	66.5			76.1	3.37	18.9	16.5	4.24	144	3.27	30.1	45.8	70.5	19.7	99.5	74.1
Phosphorus as P (mg/l)	0.05	0.05			0.32	0.05	0.05	0.05	0.189	0.15	<.05	<.05	<.05	0.06	<.05	0.18	0.11
Fecal Coliform (per 100 ml)	10	0			20	0	36	1	10	0	1	25	20	2	2	1	0
Total Dissolved Solids (mg/l)	42.7	274			650	39.7	166	209	126	539	50.2	289	268	364	262	549	335

2011 Fourth Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18
Depth to Water (feet)	8.2	8.7			11.6	17.4	9.1	10.3	9.4	9.2	24.7	10	9	9.2	13	6	8.9	13.5
Specific Conductivity (micromho/cm)	126.6	360			595	56.2	505	269	233	763	70.4	318	312	289	390	620	382	252
Temperature (degrees C)	17.2	16.4			16.8	15.9	15	15.4	16.2	16.5	14.7	16.1	16.5	14.7	15.1	16.6	15.9	16.5
Nitrate as N (mg/l)	4.9	9.45			8.99	2.34	0.99	14.2	0.4	12.1	2.78	15.1	14.6	13.2	30	17.3	12.8	
Sodium (mg/l)	5.1	17			76	2.9	52	3.6	2.7	92	4.8	5.9	4	4.1	8.8	26	18	
Ammonia as Nitrogen (mg/l)	0.05	0.06			0.05	0.05	6.26	0.05	0.67	0.062	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
pH	5.09	4.87			6.24	4.9	5.11	5.6	6.17	4.59	4.98	5.79	5.22	4.17	4.19	5.96	4.97	4.94
Chloride (mg/l)	7.71	65.2			82.4	3.59	124	20.5	7.41	188	3.47	25.5	34	30.3	21.2	71.7	42.2	
Phosphorus as P (mg/l)	0.05	0.056			1.37	0.05	0.49	0.05	0.28	0.1	0.05	0.05	0.05	0.058	0.05	0.097	0.05	
Fecal Coliform (per 100 ml)	46	16			45	12	2	0	40	0	0	38	0	0	0	10	25	
Total Dissolved Solids (mg/l)	89.5	254			420	39.9	323	190	166	542	49.8	225	221	204	276	441	270	178

Quarterly Groundwater Quality Data reported by Sussex County

2012 First Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	8.2	8.6	9.4	7.8	11.6	17.2	9	10.2	9.2	9.2	24.4	9.9	8.8	9	12.6	5.9	8.8	8.91										
Specific Conductivity (micromho/cm)	122.1	461	211	158.6	656	56.9	362	291	223	689	68.9	334	318	292	388	521	280	244										
Temperature (degrees C)	16.8	16.6	20.4	16.5	15.5	19.2	17.9	18	18	19.5	20.1	16.6	17.8	18	19.1	16.8	17.4	18.9										
Nitrate as N (mg/l)	4.67	10.1	10.7	2.57	6.39	2.22	1.3	15.8	<0.4	7.21	2.61	0.65	15.4	13.7	27.4	18	12.1	11.9										
Sodium (mg/l)	9.7	23	6.6	11	130	6.7	50	4.2	3.4	99	4.9	6.3	4.4	4.6	10	26	8	4.6										
Ammonia as Nitrogen (mg/l)	<0.05	<0.05	<0.05	<0.05	,0.05	<0.05	1.53	<0.05	0.093	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05										
pH	4.74	4.44	4.53	5.83	6.91	4.92	5.35	5.7	6.22	4.58	5.03	5.57	4.92	4.14	4.31	5.76	5.09	4.3										
Chloride (mg/l)	7.45	95.1	18.5	28.6	75.9	3.55	72.9	20.1	5.46	145	3.68	25.6	31.4	27	20.2	65.2	32.7	18.6										
Phosphorus as P (mg/l)	<0.05	<0.05	<0.05	<0.05	0.505	<0.05	<0.05	<0.05	<0.05	0.051	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05										
Fecal Coliform (per 100 ml)	19	56	2	3	92	0	0	65	48	0	0	0	6	3	5	0	0	0										
Total Dissolved Solids (mg/l)	86.1	327	150	112	465	40.5	259	207	159	490	49.3	237	227	204	274	370	200	174										

2012 Second Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	9.01	9.37	10.11	8.5	12.3	18.1	9.8	11	9.9	10.06	25.3	10.6	9.54	9.76	13.29	6.68	9.55	9.76			7.52	11.32	10.47	13.4	10.9	11.58		
Specific Conductivity (micromho/cm)	99.7	448	203	152.3	866	55.8	375	330	252	785	70	310	346	235	366	511	280	254			360	245	488	177.2	149.9	353		
Temperature (degrees C)	21.2	22.1	22.9	22.6	21.9	19.7	19.7	20.8	21	21.1	22	21.6	22.9	21.1	20.9	21.7	21.8	21.3			20.1	20.8	21.6	21.2	21.7	20.4		
Nitrate as N (mg/l)	3.3	11	11.3	2.76	1.57	2.14	<0.4	22.1	<0.4	14.7	2.58	15.8	17.8	11.4	24.5	20.9	12.5	12.5			12.4	12.3	8.42	15.9	4.45	11.6		
Sodium (mg/l)	4.7	26	8.2	14	210	3.9	65	5.6	3.4	132	6.2	9.4	7.6	4.9	11	41	10	5.8			36	12	49	49	6.6	3.6		
Ammonia as Nitrogen (mg/l)	<0.05	0.17	<0.05	<0.05	<0.05	<0.05	1.69	<0.05	0.58	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			0.13	0.096	<0.05	<0.05	<0.05	<0.05		
pH	5.66	4.34	4.28	4.46	5.99	4.7	5.16	5.27	6.23	4.23	4.71	5.64	4.6	4.94	4.06	5.65	4.93	4.19			4.8	4.64	4.54	4.52	4.5	4.36		
Chloride (mg/l)	6.1	92.2	18.5	31.9	86.9	3.43	75.6	22.6	12	183	3.97	25.7	33.7	17.8	19.7	58.8	31.4	19.8			27.6	19.3	63.4	80.7	18.4	11.3		
Phosphorus as P (mg/l)	<0.05	0.092	<0.05	<0.05	<0.05	<0.05	0.051	<0.05	0.61	0.087	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Fecal Coliform (per 100 ml)	90	2	36	32	150	13	0	11	200	2	3	4	0	0	0	0	0	0			3	0	<2.0	4	<2.0	<2.0		
Total Dissolved Solids (mg/l)	71.8	319	144	108	620	39.6	267	237	180	560	49.9	223	246	167	258	364	193	183			256	175	347	126	106	249		

Quarterly Groundwater Quality Data reported by Sussex County

2012 Third Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	7.21	6.49	7.73	5.75	10.54	16.47	7.26	10.75	8.68	7.89	24.42	7.97	6.07	6.51	10.69	3.58	3.57	6.27	5.97	5.43	6.14	8.46	9.46	8.93	8.11	9.47		
Specific Conductivity (micromho/cm)	88.1	189.2	224	188.5	643	55.4	189.8	289	282	538	71.4	338	394	208	313	392		237			251	244	325	356	186.6	186.9		
Temperature (degrees C)	20.4	23.1	20.5	20.1	20.1	19	20.2	21	18.3	20.8	19.7	22.4	22.5	22.3	20.7	22.9		19.1			19.1	18.1	20.1	21.1	21.5	20.3		
Nitrate as N (mg/l)	2.18	6.35	10.3	4.08	<0.4	2.1	6.68	19.9	0.46	11.6	2.5	17.8	15.4	9.84	23.5	17.6		9.64			11.2	13.5	9.2	22.2	8.64	13.1		
Sodium (mg/l)	5.3	16	9	18	71	3.1	26	3.8	1.5	75	4.8	8.3	7.5	3	7.3	26		4.4			8.1	7.4	42	26	9.1	1.7		
Ammonia as Nitrogen (mg/l)	<0.05	0.198	<0.05	<0.05	0.279	<0.05	0.46	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
pH	4.65	5.11	4.3	4.33	6.56	4.58	4.9	5.58	6.04	4.45	4.73	5.41	5.45	5.04	4.23	5.44		4.1			4.68	4.77	4.4	4.34	4.32	4.33		
Chloride (mg/l)	4.74	31.2	22.6	38.6	45.3	3.64	18.6	15.7	5.91	83.4	4.52	29.6	24.2	13.4	15.2	25		19.8			22.1	18.3	56.2	41.1	16.5	13.8		
Phosphorus as P (mg/l)	<0.05	0.28	<0.05	<0.05	1.28	<0.05	<0.05	<0.05	0.19	0.08	<0.05	<0.05	0.068	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Fecal Coliform (per 100 ml)	128	26	80	18	100	0	5	51	100	33	1	45	36	2	0	48		0			4	2	2	0	2	0		
Total Dissolved Solids (mg/l)	62.6	134	158	134	457	39.3	135	205	201	381	50.6	240	279	147	222	278		168			178	173	230	252	132	132		
Total Nitrogen (mg/l)	2.18	6.73	10.3	4.08	1.4	2.2	7.63	20.1	1.56	11.9	2.57	17.8	15.8	10.1	23.7	17.9		9.64			11.4	13.7	9.44	22.4	8.8	13.3		
Dissolved Oxygen (mg/l)	6.16	6.63	5.26	3.56	0.82	6.53	2.81	7.35	3.43	2.78	6.82	7.71	6.91	6.64	6.53	6.93		7.47			4.74	4.78	2.58	6.18	7.38	7.6		

2012 Fourth Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	4.97	4.65	6	5.26	5.5	13.34	4.73	6.12	5.44	6.13	20.93	6.82	4.67	4.69	8.32	3.68	4.43	4.38	3.31	3.32	2.94	6.83	6.72	5.49	6	8.54		
Specific Conductivity (micromho/cm)	73	521	189.7	177.6	1098	54.6	107.6	284	217	390	72.1	408	413	315	329	481		215			241	239	258	411	245	193.5		
Temperature (degrees C)	17.4	17.4	<	16.3	16.6	16	15.6	16.2	15.3	17	15.5	17.3	17.5	15	15.6	18		18.6			16.8	16.5	16.6	16.4	16.7	16.8		
Nitrate as N (mg/l)	1.45	23.5	9.85	4.16	2.57	1.37	0.87	15.8	0.4	11.2	2.56	20.7	3.14	4.99	23.7	30.6		9.24			11.1	12	7.24	21.8	14.5	11.5		
Sodium (mg/l)	3.8	33	7.7	15	154	3.6	15	3.9	2	65	5.8	7.6	16	9.7	8.8	25		4.5			9.2	6.8	31	31	13	4.2		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.05	0.1	0.06	0.05	0.05	0.05	<.05	<.05	<.05	<.05	<.05	<.05		<.05			<.05	<.05	<.05	<.05	<.05	<.05		
pH	5.29	4.21	4.5	5.16	6.61	4.74	5.4	5.59	6.28	4.74	4.78	5.63	5.77	4.68	4.28	5.65		4.4			4.77	4.8	4.74	4.42	5.08	4.5		
Chloride (mg/l)	3.96	85.4	16.8	35.2	359	4.04	8.52	15.2	4.62	37.8	3.46	35.82	66.6	52.7	17.9	26.5		21.4			20.7	18.3	40.9	45.4	12.8	13.4		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	0.26	0.05	0.05	0.05	0.2	0.09	<.05	<.05	0.32	<.05	<.05	<.05		<.05			<.05	<.05	<.05	<.05	<.05	<.05		
Fecal Coliform (per 100 ml)	2	2	2	5	4	1	52	3	24	3	<1	<2	4	60	<1	<2		<2			40	7	17	5	<1	1		
Total Dissolved Solids (mg/l)	51.7	369	134	126	778	38.6	76.4	202	154	277	51.1	289	293	223	233	341		152			170	169	183	291	174	137		
Total Nitrogen (mg/l)	1.53	23.7	9.85	4.24	3.14	1.37	1.14	16	0.52	11.3	2.56	20.8	3.48	5.33	23.8	31.1		9.24			11.2	12.2	7.34	22	14.7	11.5		
Dissolved Oxygen (mg/l)	7.37	7.99	5.51	4.46	8.26	7.33	2.83	8.13	2.12	5.02	7.89	8.34	8.05	5.83	7.97	8.22		8.11			6.01	6.38	6.02	5.88	8.24	8.51		

Quarterly Groundwater Quality Data reported by Sussex County

2013 First Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26
Depth to Water (feet)	2.3	2.8	3.28	2.73	2.78	9.88	1.53	2.81	1.2	2.93	17.72	4.74	2.17	1.44	4.85	1.52	3.57	1.86	2.51	2.31	0	1.85	2.07	2.25	2.37	2.25
Specific Conductivity (micromho/cm)	56.7	546	175.8	194.6	846	49.4	391	309	288	454	71.2	584	536	527	319	443		260			265	237	207	404	203	235
Temperature (degrees C)	12.4	11.6	11.5	12	10.7	10.4	9.7	10.6	10.2	11.8	12.4	11.7	11	11.3	11.6	12.5		13.6			9.8	14.2	11.8	11.5	11.8	12
Nitrate as N (mg/l)	1.05	27.1	9.24	4.24	3.66	0.4	0.4	19	0.4	8.56	2.42	44.5	1.58	3.49	27.2	24.1		9.65			11.9	10.8	3.43	36.2	11.7	13.9
Sodium (mg/l)	2.3	10	5.1	19	141	2.5	31	3.7	2.8	82	4.9	10	35	38	7.7	17		4.6			8.4	5.6	19	23	7.4	6.3
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.05	0.05	7.7	0.05	0.05	0.05	<.05	<.05	<.05	<.05	<.05	<.05		<.05			<.05	<.05	<.05	<.05	<.05	<.05
pH	6.61	4.87	4.57	4.95	6.26	4.79	6.05	5.72	6.25	4.7	4.92	6.12	5.94	5.22	5.13	6.13		4.25			5.61	4.8	4.98	4.99	5.45	4.63
Chloride (mg/l)	3.7	71	14.8	35.9	136	3.16	47.3	16.4	5.02	79	3.41	42.8	109	112	20.6	22		22.6			29.4	21.2	30.8	45.9	9.72	13.7
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	0.48	0.05	1.42	0.05	0.09	0.1	0.05	<.05	0.6	<.05	<.05	<.05		<.05			0.06	<.05	<.05	<.05	<.05	<.05
Fecal Coliform (per 100 ml)	14	200	0	0	200	2	24	0	92	40	0	17	44	2	0	228		7			7	0	0	3	0	0
Total Dissolved Solids (mg/l)	40.2	386	124	138	601	35.1	278	219	205	321	50.5	414	380	374	226	315		184			188	168	146	286	144	167
Total Nitrogen (mg/l)			9.24	4.31	4.38	0.4	11.8	19.1	0.38	8.75	2.42	44.5	1.96	3.71	27.4	24.4		9.77			12.2	3.53	3.53	36.4	11.9	14
Dissolved Oxygen (mg/l)	6.28	6.64	7.23	5.76	7.08	8.63	2.45	10.85	3.95	6	10.86	7.4	7.17	7.27	9.77	6.75		7.05			8.44	6.55	8.99	9.27	9.89	12

2013 Second Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	3.71	2.81	3.28	2.48	3.25	10.71	1.29	3.38	0.25	3.54	19.03	5.44	2.37	1.81	5.21	2.03	2.99	2.88	2.55	2.31	0.32	4.36	4.31	2.36	3.57	5.97	2.45	6.09
Specific Conductivity (micromho/cm)	59.2	487	119.4	188.6	510	62.1	778	345	265	754	69.4	541	940	749	466	425		264			256	207	226	425	174.1	187.1		
Temperature (degrees C)	17.4	17.5	18.6	18.2	18.8	16.4	16.6	18.2	17.3	18.6	17	17	18.5	17.7	17.9	17.1		16.5			18.8	17.5	18.5	17.9	18.7	17.5		
Nitrate as N (mg/l)	0.5	25.3	9.34	4.71	0.78	0.4	0.4	23.1	0.4	4.12	2.19	34.7	15.8	0.72	31.6	10.2		9.04			13.8	10.1	2.52	14.2	8.75	11.2		
Sodium (mg/l)	2	34	6.2	7.4	47	4.1	47	5.6	2.9	106	5.8	9.7	61	66	10	20		6.1			8	7	16	60	8.8	6.4		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.05	0.05	0.35	0.05	0.07	0.05	<.05	<.05	<.05	<.05	<.05	<.05		<.05			<.05	<.05	<.05	<.05	<.05	<.05		
pH	5.29	4.74	5.11	4.85	6.71	5.12	6.35	6.03	6.25	5.13	5.29	6.11	6.35	4.84	4.71	6.26		4.85			5.12	5.37	5.14	5.24	5.76	5.09		
Chloride (mg/l)	3.74	59.5	12.4	37.3	44.8	4.15	44.2	15.8	6.92	172	3.19	42.5	129	23.9	21.5	18.3		22.1			21.5	21.2	36.6	64.3	4.16	12.4		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	1.17	0.05	0.05	0.05	0.24	0.07	<.05	<.05	0.46	<.05	<.05	<.05		<.05			<.05	<.05	<.05	<.05	<.05	<.05		
Fecal Coliform (per 100 ml)	150	100	1	31		48	50	1		36	64	37	3	30	40	2		3			92	13	1	15	< 1	4		
Total Dissolved Solids (mg/l)	42.2	346	83.9	134	361	44	552	245	188	535	49.3	384	665	531	331	301		187			182	147	160	302	124	133		
Total Nitrogen (mg/l)	0.65	25.5	9.46	4.83	1.47	0.13	1.85	23.3	0.89	4.57	2.24	35	16.5	1	31.9	10.5		9.15			14	10.9	2.63	14.5	9.01	11.3		
Dissolved Oxygen (mg/l)	7.99	9.96	6.98	4.78	7.04	7.84	3.34	10.29	2.95	3.33	8.22	10.19	8.22	11.01	9.46	9.89		9.14			7.97	9.19	9.69	6.37	9.92	10.21		

Quarterly Groundwater Quality Data reported by Sussex County

2013 Third Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	3.44	2.81	4.69	4.04	3.83	11.28	2.24	3.19	3.43	3.93	19.18	6.35	3.94	2.92	6.57	3.09	4.18	4.61	2.81	2.81	1.54	4.71	3.86	2.82	2.84	5.47	2.41	5.56
Specific Conductivity (micromho/cm)	54	368	162.7	207	651	44.4	490	346	450	799	64.2	429	565	588	402	385		158.3			196.5	231	120.5	590	216	191.1		
Temperature (degrees C)	18.3	19.5	20.4	18.6	22.7	18.3	18.9	21.4	17.9	18.7	16.1	20.9	21.5	22	19.6	21.7		18.6			18.6	18.9	22.7	21.5	22.2	20.3		
Nitrate as N (mg/l)	1.15	16.2	8.22	5.42	1.09	0.64	0.4	20.1	0.4	2.7	1.98	24.4	20.9	2.53	27.2	7.76		4.33			12.8	11.9	1.06	36.7	14	11.8		
Sodium (mg/l)	4.5	28	6.8	16	48	2.7	28	4.1	23	100	4.7	7.8	60	64	9.7	17		3.7			7.3	5.9	12	39	5.4	3.7		
Ammonia as Nitrogen (mg/l)	0.09	0.09	0.09	0.09	1.15	0.09	8.98	0.09	2.38	0.09	0.09	0.09	0.09	0.09	0.1	0.09		0.09			0.09	0.09	0.1	0.09	0.1	0.09		
pH	5.59	4.55	4.31	4.36	5.71	4.63	5.79	5.43	5.88	4.31	4.73	5.53	5.46	4.08	4.24	5.52		4.65			4.99	4.36	4.69	4.44	4.69	4.45		
Chloride (mg/l)	4.65	47.9	12.1	40.1	86.5	3.47	32.6	15.5	45.1	199	2.78	27.4	101	141	25.6	37.8		13.3			21.5	20.5	10.6	57.6	11.1	11.4		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	1.78	0.05	0.14	0.05	1.11	0.09	<0.05	<0.05	0.46	<0.05	0.09	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Fecal Coliform (per 100 ml)	64	68	11	0	100	0	7	17	20	0	0	2	16	18	<1	0		0			0	0	0	5	0	4		
Total Dissolved Solids (mg/l)	41.3	261	115	146	463	31.4	348	245	321	567	45.5	304	401	415	285	273		112			139	163	85.4	417	153	135		
Total Nitrogen (mg/l)	1.15	16.3	8.22	5.42	2.73	0.64	9.08	20.1	2.41	3.02	1.98	24.4	21.5	2.53	27.4	8.12		4.33			12.9	11.9	1.06	36.7	14	11.8		
Dissolved Oxygen (mg/l)	4.79	4.43	5.59	3.42	1.97	3.21	1.82	7.65	3.66	1.96	5.22	5.83	4.28	7.67	5.92	4.97		7.26			5.81	7.44	8.49	7.57	7.85	8.17		

2013 Fourth Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	OW-27	OW-28
Depth to Water (feet)	4.29	2.81	4.61	3.69	3.99	11.7	2.14	4.13	0.87	4.29	19.75	6.25	3.49	2.75	6.02	2.84	4.52	4.03	3.43	3.41	0.88	6.87	4.56	3.31	4.01	6.43	3.09	6.71
Specific Conductivity (micromho/cm)	71.3	342	152	238	468	48.2	402	344	191	601	62.5	433	658	744	445	423		162.5			251	223	139.3	1022	243	217		
Temperature (degrees C)	16.5	16.5	18.5	15.6	14.7	16.7	15.9	16.7	12.6	17.7	13.6	15.5	16.2	14.5	15.6	17		16.3			16.6	16.3	18.7	16.1	16.9	14.5		
Nitrate as N (mg/l)	2.26	14.4	8.52	6.81	0.82	1.31	0.2	21.7	0.2	3.68	1.95	25	19.8	23.8	33.2	3.79		4.94			13.9	11.2	0.34		18.6	16		
Sodium (mg/l)	3.8	32	7.3	7.2	34	3.6	43	4.9	4.8	138	5.5	9	70	105	7.6	17		4			8.9	7.7	10		6.4	5.1		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.05	0.05	9.59	0.05	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05		< 0.05			< 0.05	< 0.05	< 0.05		< 0.05	< 0.05		
pH	4.98	4.33	4.36	4.82	5.94	4.64	5.44	5.53	6.13	4.46	4.67	5.65	5.42	4.74	3.94	5.73		4.11			4.62	4.41	4.65	4.12	4.87	4.42		
Chloride (mg/l)	3.94	49.5	10.5	43.7	60.7	3.54	69.8	14.7	5.92	170	2.71	24.9	94.7	137	19.6	19.3		14.6			21.1	19.5	13		10.8	10.4		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	0.33	0.05	0.05	0.05	0.16	0.09	< 0.05	< 0.05	0.25	< 0.05	< 0.05	< 0.05		< 0.05			< 0.05	< 0.05	< 0.05		< 0.05	< 0.05		
Fecal Coliform (per 100 ml)	8	56	4	4	100	17	104	12	160	1	2	48	10	<1	<1	30		<1			29	<1	<1	<1	<1	<1		
Total Dissolved Solids (mg/l)	50.5	242	108	167	332	34.3	286	244	136	426	44.3	307	467	526	315	301		115			178	158	98	724	172	153		
Total Nitrogen (mg/l)																												
Dissolved Oxygen (mg/l)	4.22	4.17	3.81	2.68	2.96	3.52	1.49	5.17	4.67	2.04	3.65	5.79	4.57	5.42	4.98	3.86		4.65			3.95	5.42	3.41	4.24	5.36	5.46		

Quarterly Groundwater Quality Data reported by Sussex County

2014 First Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	3.21	3.5	3.81	3.77	3.88	10.62	1.94	3.28	0.88	3.49	18.35	5.84	2.95	2.85	5.67	2.53	4.11	3.86	2.38	3.01	0.71	4.52	5.89	2.67	3.03	5.52	3.07	6.19
Specific Conductivity (micromho/cm)	67	345	150.6	240	544	35.1	272	393	195.9	7.19	59.9	373	463	624	453	489		159.6			250	224	150.1	992	309	249		
Temperature (degrees C)	13.8	12.8	11.5	14.9	13.1	12.5	9.1	12.5	9.8	14.1	15.1	11.5	11.7	10.8	13.3	13.5		15.9			14.4	14.5	14.1	11	12.5	12.5		
Nitrate as N (mg/l)	0.0776	13	8.19	7.82	2.95	0.82	0.2	26.1	0.59	5.61	1.64	12.6	4.61	22.1	29.5	4.42		3.58			13.7	12	0.35	109	23.4	17.8		
Sodium (mg/l)	0.34	39	6.2	18	120	3.6	65	5.2	2.9	162	5.2	7	88	134	11	18		3.6			8	6.4	12	60	6.4	5.4		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.05	0.05	3.5	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
pH	5.66	4.67	7.85	4.95	5.73	7.38	6.23	5.81	6.72	4.65	7.86	6.86	5.47	4.83	4.01	7.27		7.72			7.36	7.43	4.96	4.63	5.14	4.63		
Chloride (mg/l)	4.1	49.7	11.1	47.4	77.4	3.44	54.1	20	7.76	167	2.3	20.1	75.9	115	45.2	34.6		15			23.7	19.6	23.5	39.65	19	15.2		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	0.36	0.05	0.63	0.05	0.29	0.07	<0.05	<0.05	0.45	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Fecal Coliform (per 100 ml)	1	6	1	1	28	1	4	1	56	1	2	60	40	2	1	1		1			1	1	1	1	1	1		
Total Dissolved Solids (mg/l)	47.5	244	107	169	387	24.9	192	279	139	509	42.2	265	325	442	322	347		113			177	158	106	703	219	176		
Total Nitrogen (mg/l)	0.846	13.1	8.28	7.95	3.43	0.87	5.81	26.3	1.12	6.07	1.71	12.72	4.95	22.38	29.63	4.66		3.68			13.05	12.05	0.45	109.23	23.67	18.01		
Dissolved Oxygen (mg/l)	3.91	4.88	4.81	2.58	2.98	5.03	2.85	6.46	4.97	1.62	4.11	5.33	4.53	5.45	5.47	3.62		5.55			4.41	4.99	3.97	5.12	5.85	6.62		

2014 Second Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	4.57	3.94	5.44	4.91	5.08	12.41	3.41	4.76	4.45	8.12	20.13	6.99	4.46	3.93	6.96	3.72	5.41	5.36	4.28	4.11	2.23	5.69	5.44	4.16	4.51	7.03	4.01	7.45
Specific Conductivity (micromho/cm)	82.8	417	183.1	242	663	52.8	352	517	178.4	780	98.4	374	424	459	522	576		233			284	254	174.4	1113	358	250		
Temperature (degrees C)	21.9	19.8	21.5	19.8	19.6	19.4	20.7	18.8	18.5	18.7	23.9	20.4	21.1	21.4	20.1	20.6		20			19.7	19.4	18.7	18.5	18.2	17.8		
Nitrate as N (mg/l)	0.79	14.4	10.1	7.63	0.61	0.93	0.2	0.05	0.2	6.63	1.5	15.3	4.53	9.39	27.1	9.03		7.89			15.5	15.6	0.23	108	29.6	17.7		
Sodium (mg/l)	3.2	29	6.9	16	59	3.3	39	5.3	2.8	92	4.8	6.9	46	56	11	18		5.1			8.8	7.7	18	27	5.7	4.3		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.05	0.05	5.07	0.05	0.34	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
pH	5.33	5.01	5.26	5.13	6.24	5.24	6.51	6.33	6.76	5.11	6.04	6.43	6.29	5.35	4.81	6.48		4.86			5.42	5.23	5.32	4.87	5.45	5.06		
Chloride (mg/l)	4.23	45.2	13.5	43.6	87.8	3.27	52.6	28.1	7.06	161	4.39	20.7	65.3	81	49.9	35.3		25.6			26.1	19.6	29.3	49.5	24.3	14.9		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.07	0.52	0.06	0.05	0.09	0.33	0.17	0.15	<0.05	0.66	0.08	<0.05	<0.05		<0.05			<0.05	0.1	0.1	0.11	0.13	0.12		
Fecal Coliform (per 100 ml)	15	16	11	1	125	54	84	38	97	85	67	15	25	0	0	10		2			1	0	12	5	11	5		
Total Dissolved Solids (mg/l)	71.6	357	158	209	572	45.7	304	445	155	677	85.2	325	368	395	452	501		203			244	219	150	963	324	217		
Total Nitrogen (mg/l)	0.87	14.59	10.2	7.7	1.09	1	4.9	36.82	1.13	7.05	1.58	15.52	4.93	9.97	27.28	9.46		8.03			15.2	15.78	0.33	108.11	29.89	18.02		
Dissolved Oxygen (mg/l)	6.61	6.71	8.02	5.79	1.98	5.61	1.31	9.46	1.16	4.42	7.63	8.35	5.43	6.96	7.62	5.37		9.36			6.07	8.07	4.14	6.43	9.43	9.95		

Quarterly Groundwater Quality Data reported by Sussex County

2014 Third Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	MW-28
Depth to Water (feet)	5.31	5.39	6.18	5.68	5.72	13.62	4.21	5.51	5.71	6.79	23.31	7.59	5.02	4.42	7.62	4.32		4.82			2.81	6.49	6.19	4.79	5.26	7.32	4.59	8.11
Specific Conductivity (micromho/cm)	66.2	289	191.3	320	698	44.3	386	465	237	769	54.2	413	610	477	534	547		337			272	300	173.4	735	182.4	308		
Temperature (degrees C)	17.7	16.7	18.8	13.9	19.6	15.6	19.8	23.4	15	18.7	15.3	19.4	20.5	20.3	24	19.9		17.3			20.6	23.9	22.2	21.7	22.3	20.9		
Nitrate as N (mg/l)	0.941	14.1	11.8	6.87	0.168	1.45	0.2	30.7	0.4	7.39	1.23	16.1	20.7	7.96	26.9	14.7		18.9			15	20.6	0.82	62.5	9.79	26.2		
Sodium (mg/l)	3	23	6.3	16	60	2.9	38	5.5	4.7	97	4.1	8.4	54	57	12	19		7.1			8.2	7.5	18	18	3.6	5.2		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.21	0.05	5.36	0.05	0.26	0.05	<.05	<.05	<.05	<.05	<.05	<.05		<.05			<.05	<.05	<.05	1.4	<.05	<.05		
pH	5.31	5.09	5.12	5.17	6.08	5.29	6.23	6.34	6.71	5.14	5.55	6.36	6.04	5.19	4.72	6.39		4.73			5.22	5.01	5.43	4.86	5.76	5.01		
Chloride (mg/l)	4.32	35.8	14	42.6	97.1	2.97	55.8	25.4	5.44	159	2.59	30.6	75.2	78.6	44.3	29.4		39.8			25.6	18.7	27.4	36.3	10.7	18.4		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	0.99	0.05	0.05	0.05	0.11	0.05	<.05	95.7	0.3	<.05	<.05	<.05		<.05			<.05	<.05	<.05	<.05	<.05	<.05		
Fecal Coliform (per 100 ml)							16	<1					14	56	1						2	2	2	< 1	<1	17		
Total Dissolved Solids (mg/l)	57	247	166	276	605	38.1	334	402	205	665	47.1	357	527	417	462	475		292			236	257	151	635	158	267		
Total Nitrogen (mg/l)																												
Dissolved Oxygen (mg/l)	5.51	5.62	7.47	4.01	2.55	6.87	2.74	8.62	1.55	1.88	5.4	6.63	3.65	5.91	6.81	4.46		8.02			6.58	7.89	4.36	4.27	8.12	8.89		

2014 Fourth Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	OW-27	OW-28
Depth to Water (feet)	5.67	4.99	6.44	5.53	5.98	13.88	4.31	6.64	5.91	6.71	21.85	7.47	4.93	4.97	8.53	4.18	5.87	5.61	5.08	5.05	2.89	7.71	7.38	5.53	6.68	9.18	5.36	9.09
Specific Conductivity (micromho/cm)	42.5	329	198.1	232	604	50.1	367	372	313	774	513	432	469	389	430	627		319			264	316	179.7	1022	202	319		
Temperature (degrees C)	14	13.7	16.3	15.3	14	14.9	12.2	13.5	14.3	14.9	14.2	13.5	12.4	12.7	12.7	13.9		13.8			12.9	12.4	14.3	12.8	13.6	13.3		
Nitrate as N (mg/l)	0.67	8.98	11.75	5.97	0.6	1.89	0.4	22.1	0.4	7.42	1.5	17.2	5.03	7.35	28.6	36.4		17.3			14.2	23.5	0.47	104	12.1	25		
Sodium (mg/l)	2.3	35	6.9	21	57	3.2	42	5.6	3.2	105	4.9	12	55	64	26	37		9.6			8.8	7.9	44	20	3.5	5.5		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.05	0.05	4.34	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	7.23	<0.05	<0.05		
pH	5.51	4.88	5.25	5.22	6.5	5.35	6	5.96	6.99	5.13	5.74	6.08	6.11	5.24	4.73	6.22		4.72			5.24	5.03	5.17	4.6	5.37	4.91		
Chloride (mg/l)	2.89	18.1	13.15	48.1	84.5	3.6	55.1	21.8	6.18	161	2.55	48.9	62.9	62.6	32.8	34.1		34.7			25.8	18.5	33.9	46.8	15.1	22.8		
Phosphorus as P (mg/l)	0.05	0.06	0.05	0.05	0.47	0.05	0.08	0.08	0.12	0.12	0.48	<0.05	0.19	0.08	0.06	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	0.05		
Fecal Coliform (per 100 ml)	0	80	0	2	160	0	52	0	130	3	5	4	26	0	0	48		6			96	0	0	0	0	0		
Total Dissolved Solids (mg/l)	36.9	284	171	200	522	43.1	318	322	270	667	444	372	405	334	371	540		275			228	273	155	879	174	276		
Total Nitrogen (mg/l)	0.67	9.22	11.75	5.97	0.96	1.97	4.34	22.29	0.51	7.74	1.84	17.14	5.57	7.83	28.84	36.79		17.35			14.25	23.55	0.56	112.7	12.23	25.27		
Dissolved Oxygen (mg/l)	5.6	5.36	7.54	4.74	2.93	7.04	2.25	9.22	5.79	4.35	8.28	7.57	4.69	5.67	7.16	3.53		7.59			2.29	7.5	5.25	2.33	7.58	8.6		

Quarterly Groundwater Quality Data reported by Sussex County

2015 First Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	OW27	OW28
Depth to Water (feet)	3.47	2.51	3.71	2.91	3.13	10.94	1.71	4.94	0.12	3.99	19.55	5.76	2.59	2.17	5.14	2.07	3.76	3.2	2.07	1.94	0.51	4.11	5.58	4.13	4.88	7.41	2.13	6.03
Specific Conductivity (micromho/cm)	64.1	245	163.9	248	640	159.5	348	340	249	734	1257	350	420	380	537	954		260			517	270	182.2	875	230	261		
Temperature (degrees C)	11.3	11	15.4	16	10.7	12.8	7.4	10.3	13.7	13.6	12.5	9.3	9.1	9.1	9.5	10.2		13.8			13.1	12.7	10.7	9.9	10.8	10.7		
Nitrate as N (mg/l)	0.794	7.13	9.91	6.28	0.39	0.994	0.2	16.9	0.519	7.08	1.31	13.6	5.55	13.3	20.6	75.6		11			14.4	19.4	1.3	75.1	16.5	17.5		
Sodium (mg/l)	2.8	30	6.1	20	48	3.3	38.5	5.3	4.3	104	6	7.9	43	48	19	23		5.3			7.6	6.3	17	7.9	4.2	5.4		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.06	0.05	2.835	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	27.4	<0.05	<0.05		
pH	5.21	5.11	4.95	4.81	6.27	5.21	6.21	5.97	6.72	5.06	5.3	6.1	5.91	5.37	4.79	6.04		4.63			5.19	4.81	5.13	4.63	5.06	4.82		
Chloride (mg/l)	3.34	24.3	10.6	47.1	54.9	3.09	59.5	18	8.27	149	2.34	22	66.8	56.8	68.4	50.4		26.7			26.8	15.6	35	38	17.8	19.9		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	0.46	0.05	0.05	0.05	0.63	0.05	<0.05	<0.05	0.18	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Fecal Coliform (per 100 ml)	1	7	0	0	108	0	17.5	0	160	32	2	3	6	3	0			60			0	0	2	5	52	4		
Total Dissolved Solids (mg/l)	55.1	210	142	214	538	124	306	293	234	633	108	302	362	329	462	824		219			465	233	157	758	199	225		
Total Nitrogen (mg/l)	0.854	7.34	10	6.44	0.86	1.04	4.7	17.33	1.289	7.74	1.7	13.75	5.96	13.83	21.01	75.88		11.11			14.6	19.47	1.5	103.1	16.8	17.78		
Dissolved Oxygen (mg/l)	6.94	6.01	7.83	4.11	3.79	7.41	2.99	10.23	5.51	3.51	8.43	9.35	5.85	7.08	9.64	4.63		7.54			6.74	8.08	4.47	4.52	9.35	10.28		

2015 Second Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	OW-27	OW-28
Depth to Water (feet)	8.06	7.92	8.31	7.67	9.44	15.67	8.61	8.64	6.93	7.17	22.97	9.71	7.48	6.51	9.48	6.38	8.49	8.66	7.18	6.43	4.57	8.22	8.31	7.12	7.66	10.04	7.16	10.39
Specific Conductivity (micromho/cm)	122.9	305	173.5	118.4	183.1	27.8	381	360	111.1	448	37.9	490	349	346	568	748		233			760	310	191.2	865	271	233		
Temperature (degrees C)	16.8	18.4	18.1	17.9	21.3	15.7	13.8	16	15.1	17.5	18.2	17.4	17.8	16.8	18	18.4		17			16.9	16.2	15.8	19.7	15.6	21.1		
Nitrate as N (mg/l)	1.53	12.9	7.32	6.57	0.2	1.1	0.2	14.7	0.2	9.76	1.41	23	3.72	10.2	27.1	34.3		6.4			14.1	18.1	1.36	71.6	11.8	9		
Sodium (mg/l)	3.3	27	5.3	21	66	3.3	40	4.4	5.3	129	4.7	10	48	18	15	22		4.6			7.5	6.2	19	12	3.1	3.5		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.262	0.05	4.27	0.05	0.159	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	19.75	0.05	<0.05		
pH	5.61	5.59	5.93	5.15	6.05	5.46	5.14	6.24	7.19	5.23	5.76	5.63	6.01	5.17	5.03	5.65		5.57			4.84	5.29	5.65	5.14	5.68	5.38		
Chloride (mg/l)	4.56	27.9	8.26	44.6	70.8	2.69	47.7	15.6	16.1	140	5.31	35.3	61.1	49.7	53.9	61		22.5			25.3	16.5	25.7	42.95	12.3	14.8		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	1.12	0.05	0.05	0.05	0.37	0.05	0.07	<0.05	0.38	<.05	<0.5	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Fecal Coliform (per 100 ml)	1	21	0	4	58	3	37	2	125	31	12	0	23	48	3	60		2			32	41	3	13	2	52		
Total Dissolved Solids (mg/l)	105	262	148	85.8	132	20.4	327	309	80	320	27.7	420	356	298	491	647		198			646	255	165	746	223	199		
Total Nitrogen (mg/l)	1.62	13.13	7.45	6.71	0.64	1.18	4.44	14.86	1.3	10.24	1.62	23	4.21	10.53	27.32	34.89		6.46			14.23	18.2	1.52	94.05	12.02	9.18		
Dissolved Oxygen (mg/l)	5.68	4.03	6.93	3.4	2.42	6.06	3.19	9.01	1.57	2.55	6.9	6.72	4.16	4.1	6.4	3.4		6.13			6.17	7.61	3.23	2.15	7.67	8.51		

Quarterly Groundwater Quality Data reported by Sussex County

2015 Third Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	OW-27	OW-28
Depth to Water (feet)	10.64	10.54	11.13	10.58	12.11	18.46	9.09	11.98	10.91	10.36	26.58	11.97	10.49	10.03	12.81	8.97	11.33	11.25	10.28	9.96	7.84	11.44	11.82	10.67	11.13	13.45	10.65	13.44
Specific Conductivity (micromho/cm)	104.5	381	173.3	206	641	55.8	167.2	794	153.9	379	57.8	617	160	152.8	443	396		191.2			268	257	117.4	322	115.1	87.2		
Temperature (degrees C)	16.4	18.8	19.4	17.5	17.6	15.9	15.3	18	19.1	17.9	15.1	20.3	18.6	19.2	20.1	17.7		16.9			18.3	17.9	18.5	17.9	18.7	18.8		
Nitrate as N (mg/l)	1.21	12.6	5.27	6.49	0.2	1.69	0.4	14.7	3.38	9.02	1.56	45.4	5.71	10.1	31.5	16.9		4.13			<0.05	16.7	1.72	38.9	10.9	7.05		
Sodium (mg/l)	3.1	22	4.5	28	61	2.4	48	4.1	1.5	61	3.1	8.7	29	43	15	22		3.6			7.9	5.8	36	19.5	1.8	4.3		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.29	0.05	4.36	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	9.455	<0.05	<0.05		
pH	5.44	5.41	5.44	5.33	6.09	5.56	6.37	6.58	6.68	5.37	5.94	5.71	6.17	5.53	5.07	6.33		5.17			5.51	5.53	5.54	5.33	5.71	5.56		
Chloride (mg/l)	6.51	27.9	8.48	46	67.6	4.26	46.2	18.8	7.06	122	4.2	36.2	65.4	65.5	54.1	74.4		17.3			28	17.2	22.6	38.1	13.8	17.1		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	1.04	0.05	0.05	0.05	0.5	0.05	0.12	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Fecal Coliform (per 100 ml)	40	44	19	4	160	0	50	6	100	60	4	4	0	0	76	0		171			17	14	9	0	8	7		
Total Dissolved Solids (mg/l)	90.7	342	156	147	551	39.6	119	550	109	269	41	534	114	109	387	281		165			232	221	83.4	229	81.9	62.1		
Total Nitrogen (mg/l)	1.21	12.7	5.27	6.54	0.52	1.69	4.81	14.83	4.5	9.4	1.69	45.4	6.06	10.37	31.7	17.24		4.2			14.1	16.8	1.81	48.04	11.02	7.21		
Dissolved Oxygen (mg/l)	4.84	3.66	7.39	3.71	2.14	7.36	1.77	8.51	3.19	1.72	8.29	7.39	2.79	2.74	6.83	3.65		5.66			5.82	7.11	2.43	2.59	7.41	8.2		

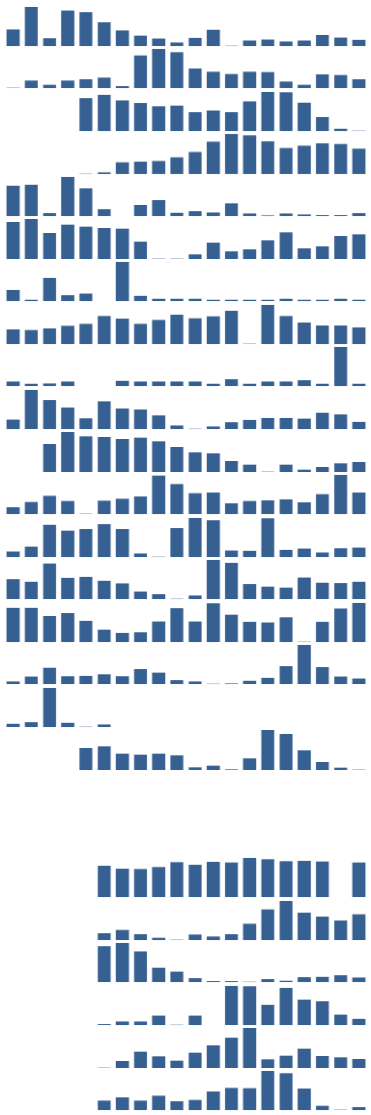
2015 Fourth Quarter	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	OW-17	MW-18	OW-19	OW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	OW-27	OW-28
Depth to Water (feet)	7.31	7.11	8.57	7.73	8.08	15.97	7.16	8.58	8.05	8.84	23.6	9.04	7.13	6.91	10.41	6.94	7.71	7.76	7.13	7.02	4.97	10.98	9.27	7.94	8.37	10.86	7.23	11.07
Specific Conductivity (micromho/cm)	42.5	155.1	77.2	117.2	6.21	22.6	250	211	118.6	439	53.1	444	250	347	291	375		84.6			242	152.6	86	260	120.4	127		
Temperature (degrees C)	14.5	15.5	17.2	18	15.7	17.3	15.6	16	15.9	19.3	15.2	14.5	16.7	14.5	15.9	15.2		16.2			15.1	15.2	16.4	17.2	16.3	15.8		
Nitrate as N (mg/l)	0.87	10.2	4.91	5.88	0.64	1.78	0.2	13.15	0.2	5.7	1.61	24.9	6.16	10.8	33.3	13.5		3.43			13.7	18.9	1.2	28.8	9.87	8.24		
Sodium (mg/l)	3.7	30	6.7	29	111	5.6	6	5.2	9.1	111	10	23	87	81	31	44		4			8.8	7	27	31	5.5	5.9		
Ammonia as Nitrogen (mg/l)	0.05	0.05	0.05	0.05	0.05	0.06	4.58	0.05	0.56	0.05	<0.05	<0.05	<0.05	0.19	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	7.55	<0.05	<0.05		
pH	5.49	5.25	5.34	4.91	6.07	5.41	6.04	6.21	6.55	4.94	5.53	6.03	6.04	5.51	4.88	6.29		5.01			5.41	5.09	5.26	4.97	5.19	5.28		
Chloride (mg/l)	5.95	29.8	7.38	46.4	227	3.55	61.9	16.7	16.8	151	3.66	51.7	107	66.5	44.1	65.2		14.3			26.2	15.5	21.9	37.6	13.7	15		
Phosphorus as P (mg/l)	0.05	0.05	0.05	0.05	0.31	0.05	0.05	0.05	0.11	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Fecal Coliform (per 100 ml)	0	16	0	65	128	0	2	0	110	3	24	3	1	0	0	1		9			0	0	0	0	0	0		
Total Dissolved Solids (mg/l)	30.2	110	54.9	83.3	440	161	177	150	84.9	312	37.7	315	178	247	207	266		60.2			172	108	61	184	85.4	90.1		
Total Nitrogen (mg/l)	0.94	10.4	4.96	5.98	1.16	1.78	5.24	13.25	1.23	6	1.73	24.9	6.58	11.1	33.5	13.8		3.49			13.8	18.9	1.26	35.9	9.95	8.29		
Dissolved Oxygen (mg/l)	4.36	4.95	7.65	4.31	3.26	7.31	1.91	8.81	3.56	1.74	8.73	7.47	4.85	2.29	8.01	3.69		5.13			5.77	6.56	2.96	2.74	7.49	8.53		

Appendix 13

Groundwater Quality Parameter Tables

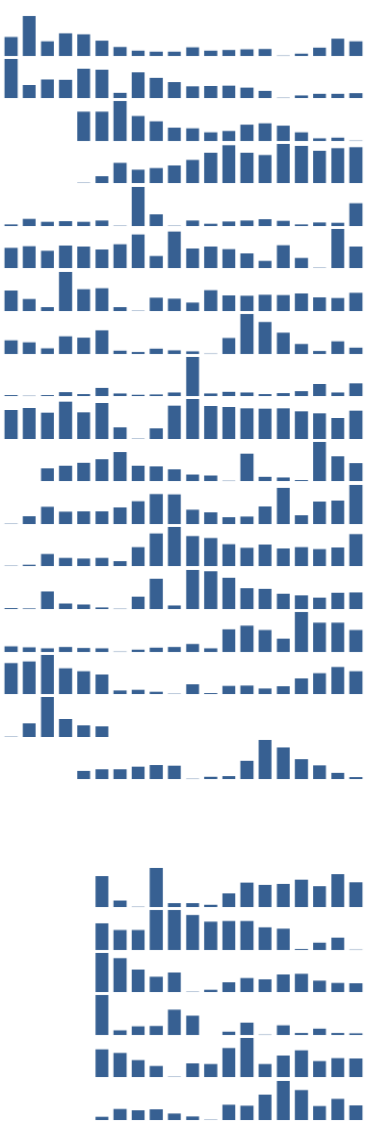
Nitrate (mg/l)

	Q1-2011	Q2-2011	Q3-2011	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	Q2-2013	Q3-2013	Q4-2013	Q1-2014	Q2-2014	Q3-2014	Q4-2014	Q1-2015	Q2-2015	Q3-2015	Q4-2015
MW-1	2.33	5.41	1.08	4.90	4.67	3.30	2.18	1.45	1.05	0.50	1.15	2.26	0.08	0.79	0.94	0.67	0.79	1.53	1.21	0.87
MW-2	5.47	9.38	6.99	9.45	10.10	11.00	6.35	23.50	27.10	25.30	16.20	14.40	13.00	14.40	14.10	8.98	7.13	12.90	12.60	10.20
MW-3					10.70	11.30	10.30	9.85	9.24	9.34	8.22	8.52	8.19	10.10	11.80	11.75	9.91	7.32	5.27	4.91
MW-4					2.57	2.76	4.08	4.16	4.24	4.71	5.42	6.81	7.82	7.63	6.87	5.97	6.28	6.57	6.49	5.88
MW-5	6.94	7.17	0.64	8.99	6.39	1.57	<0.4	2.57	3.66	0.78	1.09	0.82	2.95	0.61	0.17	0.60	0.39	0.20	0.20	0.64
MW-6	2.48	2.66	1.86	2.34	2.22	2.14	2.10	1.37	0.40	0.40	0.64	1.31	0.82	0.93	1.45	1.89	0.99	1.10	1.69	1.78
MW-7	1.90	0.20	3.94	0.99	1.30	<0.4	6.68	0.87	0.40	0.40	0.40	0.20	0.20	0.20	0.20	0.40	0.20	0.20	0.40	0.20
MW-8	11.50	10.90	12.30	14.20	15.80	22.10	19.90	15.80	19.00	23.10	20.10	21.70	26.10	0.05	30.70	22.10	16.90	14.70	14.70	13.15
MW-9	0.40	0.20	0.22	0.40	<0.4	<0.4	0.46	0.40	0.40	0.40	0.40	0.20	0.59	0.20	0.40	0.40	0.52	0.20	3.38	0.20
MW-10	6.67	19.80	15.30	12.10	7.21	14.70	11.60	11.20	8.56	4.12	2.70	3.68	5.61	6.63	7.39	7.42	7.08	9.76	9.02	5.70
MW-11			2.31	2.78	2.61	2.58	2.50	2.56	2.42	2.19	1.98	1.95	1.64	1.50	1.23	1.50	1.31	1.41	1.56	1.61
MW-12	8.13	14.10	21.40	15.10	0.65	15.80	17.80	20.70	44.50	34.70	24.40	25.00	12.60	15.30	16.10	17.20	13.60	23.00	45.40	24.90
MW-13	4.21	6.61	17.50	14.60	15.40	17.80	15.40	3.14	1.58	15.80	20.90	19.80	4.61	4.53	20.70	5.03	5.55	3.72	5.71	6.16
MW-14	12.40	10.70	21.70	13.20	13.70	11.40	9.84	4.99	3.49	0.72	2.53	23.80	22.10	9.39	7.96	7.35	13.30	10.20	10.10	10.80
MW-15	31.70	31.70	29.00	30.00	27.40	24.50	23.50	23.70	27.20	31.60	27.20	33.20	29.50	27.10	26.90	28.60	20.60	27.10	31.50	33.30
MW-16	7.87	17.20	33.50	17.30	18.00	20.90	17.60	30.60	24.10	10.20	7.76	3.79	4.42	9.03	14.70	36.40	75.60	34.30	16.90	13.50
OW-17	12.60	12.90	19.00	12.80	12.10	12.50														
MW-18					11.90	12.50	9.64	9.24	9.65	9.04	4.33	4.94	3.58	7.89	18.90	17.30	11.00	6.40	4.13	3.43
OW-19																				
OW-20																				
MW-21						12.40	11.20	11.10	11.90	13.80	12.80	13.90	13.70	15.50	15.00	14.20	14.40	14.10	<0.05	13.70
MW-22						12.30	13.50	12.00	10.80	10.10	11.90	11.20	12.00	15.60	20.60	23.50	19.40	18.10	16.70	18.90
MW-23						8.42	9.20	7.24	3.43	2.52	1.06	0.34	0.35	0.23	0.82	0.47	1.30	1.36	1.72	1.20
MW-24						15.90	22.20	21.80	36.20	14.20	36.70		109.00	108.00	62.50	104.00	75.10	71.60	38.90	28.80
MW-25						4.45	8.64	14.50	11.70	8.75	14.00	18.60	23.40	29.60	9.79	12.10	16.50	11.80	10.90	9.87
MW-26						11.60	13.10	11.50	13.90	11.20	11.80	16.00	17.80	17.70	26.20	25.00	17.50	9.00	7.05	8.24



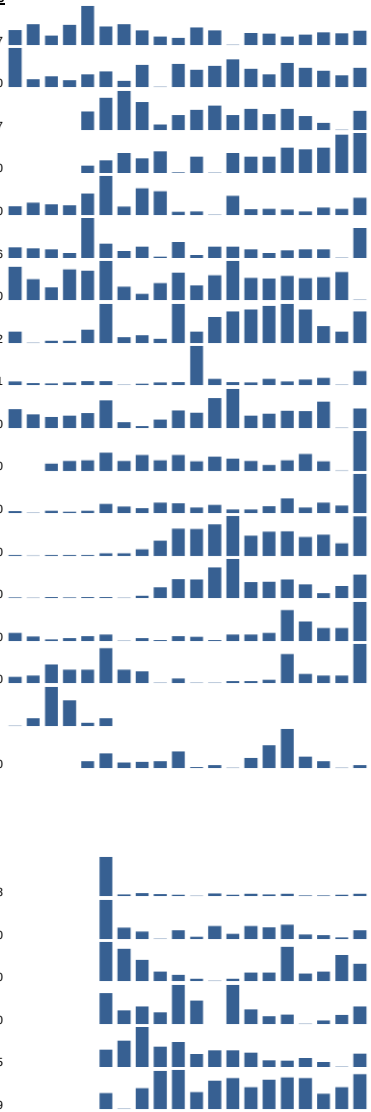
Chloride (mg/l)

	Q1-2011	Q2-2011	Q3-2011	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	Q2-2013	Q3-2013	Q4-2013	Q1-2014	Q2-2014	Q3-2014	Q4-2014	Q1-2015	Q2-2015	Q3-2015	Q4-2015
MW-1	6.91	11.40	5.94	7.71	7.45	6.10	4.74	3.96	3.70	3.74	4.65	3.94	4.10	4.23	4.32	2.89	3.34	4.56	6.51	5.95
MW-2	121.00	51.80	66.50	65.20	95.10	92.20	31.20	85.40	71.00	59.50	47.90	49.50	49.70	45.20	35.80	18.10	24.30	27.90	27.90	29.80
MW-3					18.50	18.50	22.60	16.80	14.80	12.40	12.10	10.50	11.10	13.50	14.00	13.15	10.60	8.26	8.48	7.38
MW-4					28.60	31.90	38.60	35.20	35.90	37.30	40.10	43.70	47.40	43.60	42.60	48.10	47.10	44.60	46.00	46.40
MW-5	54.20	99.80	76.10	82.40	75.90	86.90	45.30	359.00	136.00	44.80	86.50	60.70	77.40	87.80	97.10	84.50	54.90	70.80	67.60	227.00
MW-6	3.49	3.56	3.37	3.59	3.55	3.43	3.64	4.04	3.16	4.15	3.47	3.54	3.44	3.27	2.97	3.60	3.09	2.69	4.26	3.55
MW-7	68.20	43.10	18.90	124.00	72.90	75.60	18.60	8.52	47.30	44.20	32.60	69.80	54.10	52.60	55.80	55.10	59.50	47.70	46.20	61.90
MW-8	19.20	18.50	16.50	20.50	20.10	22.60	15.70	15.20	16.40	15.80	15.50	14.70	20.00	28.10	25.40	21.80	18.00	15.60	18.80	16.70
MW-9	4.23	3.62	4.24	7.41	5.46	12.00	5.91	4.62	5.02	6.92	45.10	5.92	7.76	7.06	5.44	6.18	8.27	16.10	7.06	16.80
MW-10	154.00	163.00	144.00	188.00	145.00	183.00	83.40	37.80	79.00	172.00	199.00	170.00	167.00	161.00	159.00	161.00	149.00	140.00	122.00	151.00
MW-11			3.27	3.47	3.68	3.97	4.52	3.46	3.41	3.19	2.78	2.71	2.30	4.39	2.59	2.55	2.34	5.31	4.20	3.66
MW-12	13.60	20.80	30.10	25.50	25.60	25.70	29.60	35.82	42.80	42.50	27.40	24.90	20.10	20.70	30.60	48.90	22.00	35.30	36.20	51.70
MW-13	9.88	13.00	45.80	34.00	31.40	33.70	24.20	66.60	109.00	129.00	101.00	94.70	75.90	65.30	75.20	62.90	66.80	61.10	65.40	107.00
MW-14	15.20	14.20	70.50	30.30	27.00	17.80	13.40	52.70	112.00	23.90	141.00	137.00	115.00	81.00	78.60	62.60	56.80	49.70	65.50	66.50
MW-15	22.50	21.00	19.70	21.20	20.20	19.70	15.20	17.90	20.60	21.50	25.60	19.60	45.20	49.90	44.30	32.80	68.40	53.90	54.10	44.10
MW-16	82.40	85.80	99.50	71.70	65.20	58.80	25.00	26.50	22.00	18.30	37.80	19.30	34.60	35.30	29.40	34.10	50.40	61.00	74.40	65.20
OW-17	16.40	35.90	74.10	42.20	32.70	31.40														
MW-18					18.60	19.80	19.80	21.40	22.60	22.10	13.30	14.60	15.00	25.60	39.80	34.70	26.70	22.50	17.30	14.30
OW-19																				
OW-20																				
MW-21						27.60	22.10	20.70	29.40	21.50	21.50	21.10	23.70	26.10	25.60	25.80	26.80	25.30	28.00	26.20
MW-22						19.30	18.30	18.30	21.20	21.20	20.50	19.50	19.60	19.60	18.70	18.50	15.60	16.50	17.20	15.50
MW-23						63.40	56.20	40.90	30.80	36.60	10.60	13.00	23.50	29.30	27.40	33.90	35.00	25.70	22.60	21.90
MW-24						80.70	41.10	45.40	45.90	64.30	57.60		39.65	49.50	36.30	46.80	38.00	42.95	38.10	37.60
MW-25						18.40	16.50	12.80	9.72	4.16	11.10	10.80	19.00	24.30	10.70	15.10	17.80	12.30	13.80	13.70
MW-26						11.30	13.80	13.40	13.70	12.40	11.40	10.40	15.20	14.90	18.40	22.80	19.90	14.80	17.10	15.00



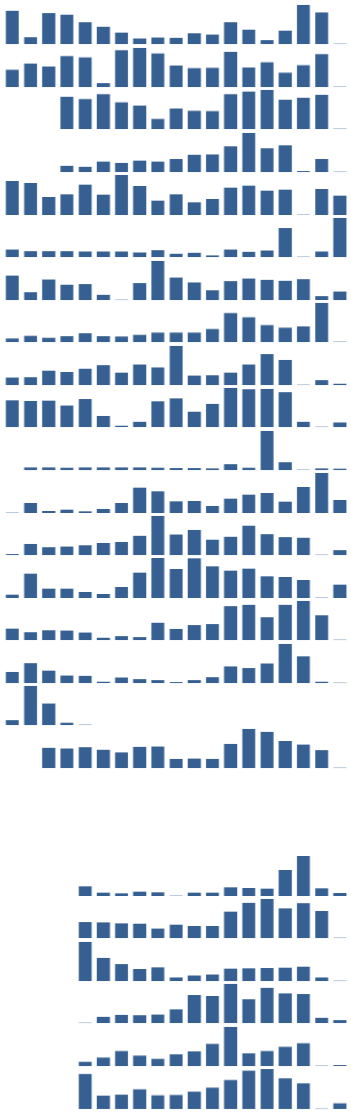
Sodium (mg/l)

	Q1-2011	Q2-2011	Q3-2011	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	Q2-2013	Q3-2013	Q4-2013	Q1-2014	Q2-2014	Q3-2014	Q4-2014	Q1-2015	Q2-2015	Q3-2015	Q4-2015
MW-1	3.9	5.3	2.5	5.1	9.7	4.7	5.3	3.8	2.3	2.0	4.5	3.8	0.3	3.2	3.0	2.3	2.8	3.3	3.1	3.7
MW-2	51.0	18.0	21.0	17.0	23.0	26.0	16.0	33.0	10.0	34.0	28.0	32.0	39.0	29.0	23.0	35.0	30.0	27.0	22.0	30.0
MW-3					6.6	8.2	9.0	7.7	5.1	6.2	6.8	7.3	6.2	6.9	6.3	6.9	6.1	5.3	4.5	6.7
MW-4					11.0	14.0	18.0	15.0	19.0	7.4	16.0	7.2	18.0	16.0	16.0	21.0	20.0	21.0	28.0	29.0
MW-5	72.0	88.0	81.0	76.0	130.0	210.0	71.0	154.0	141.0	47.0	48.0	34.0	120.0	59.0	60.0	57.0	48.0	66.0	61.0	111.0
MW-6	3.5	3.4	3.3	2.9	6.7	3.9	3.1	3.6	2.5	4.1	2.7	3.6	3.6	3.3	2.9	3.2	3.3	3.3	2.4	5.6
MW-7	56.0	37.0	25.0	52.0	50.0	65.0	26.0	15.0	31.0	47.0	28.0	43.0	65.0	39.0	38.0	42.0	38.5	40.0	48.0	6.0
MW-8	4.1	3.5	3.6	3.6	4.2	5.6	3.8	3.9	3.7	5.6	4.1	4.9	5.2	5.3	5.5	5.6	5.3	4.4	4.1	5.2
MW-9	3.3	2.4	2.2	2.7	3.4	3.4	1.5	2.0	2.8	2.9	23.0	4.8	2.9	2.8	4.7	3.2	4.3	5.3	1.5	9.1
MW-10	109.0	96.0	89.0	92.0	99.0	132.0	75.0	65.0	82.0	106.0	100.0	138.0	162.0	92.0	97.0	105.0	104.0	129.0	61.0	111.0
MW-11			4.3	4.8	4.9	6.2	4.8	5.8	4.9	5.8	4.7	5.5	5.2	4.8	4.1	4.9	6.0	4.7	3.1	10.0
MW-12	6.2	5.5	6.3	5.9	6.3	9.4	8.3	7.6	10.0	9.7	7.8	9.0	7.0	6.9	8.4	12.0	7.9	10.0	8.7	23.0
MW-13	3.8	2.8	4.1	4.0	4.4	7.6	7.5	16.0	35.0	61.0	60.0	70.0	88.0	46.0	54.0	55.0	43.0	48.0	29.0	87.0
MW-14	4.1	3.1	5.1	4.1	4.6	4.9	3.0	9.7	38.0	66.0	64.0	105.0	134.0	56.0	57.0	64.0	48.0	18.0	43.0	81.0
MW-15	12.0	9.8	8.2	8.8	10.0	11.0	7.3	8.8	7.7	10.0	9.7	7.6	11.0	11.0	12.0	26.0	19.0	15.0	15.0	31.0
MW-16	21.0	22.0	29.6	26.0	26.0	41.0	26.0	25.0	17.0	20.0	17.0	17.0	18.0	18.0	19.0	37.0	23.0	22.0	22.0	44.0
OW-17	6.7	10.0	24.0	18.0	8.0	10.0														
MW-18					4.6	5.8	4.4	4.5	4.6	6.1	3.7	4.0	3.6	5.1	7.1	9.6	5.3	4.6	3.6	4.0
OW-19																				
OW-20																				
MW-21						36.0	8.1	9.2	8.4	8.0	7.3	8.9	8.0	8.8	8.2	8.8	7.6	7.5	7.9	8.8
MW-22						12.0	7.4	6.8	5.6	7.0	5.9	7.7	6.4	7.7	7.5	7.9	6.3	6.2	5.8	7.0
MW-23						49.0	42.0	31.0	19.0	16.0	12.0	10.0	12.0	18.0	18.0	44.0	17.0	19.0	36.0	27.0
MW-24						49.0	26.0	31.0	23.0	60.0	39.0		60.0	27.0	18.0	20.0	7.9	12.0	19.5	31.0
MW-25						6.6	9.1	13.0	7.4	8.8	5.4	6.4	6.4	5.7	3.6	3.5	4.2	3.1	1.8	5.5
MW-26						3.6	1.7	4.2	6.3	6.4	3.7	5.1	5.4	4.3	5.2	5.5	5.4	3.5	4.3	5.9



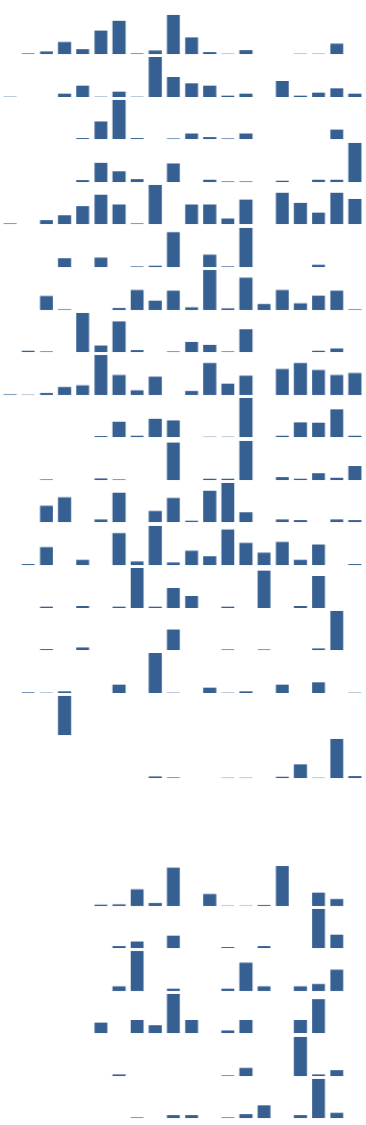
Total dissolved solids (mg/l)

	Q1-2011	Q2-2011	Q3-2011	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	Q2-2013	Q3-2013	Q4-2013	Q1-2014	Q2-2014	Q3-2014	Q4-2014	Q1-2015	Q2-2015	Q3-2015	Q4-2015
MW-1		93.6	42.7	89.5	86.1	71.8	62.6	51.7	40.2	42.2	41.3	50.5	47.5	71.6	57.0	36.9	55.1	105.0	90.7	30.2
MW-2		230.0	274.0	254.0	327.0	319.0	134.0	369.0	386.0	346.0	261.0	242.0	244.0	357.0	247.0	284.0	210.0	262.0	342.0	110.0
MW-3					150.0	144.0	158.0	134.0	124.0	83.9	115.0	108.0	107.0	158.0	166.0	171.0	142.0	148.0	156.0	54.9
MW-4					112.0	108.0	134.0	126.0	138.0	134.0	146.0	167.0	169.0	209.0	276.0	200.0	214.0	85.8	147.0	83.3
MW-5		682.0	650.0	420.0	465.0	620.0	457.0	778.0	601.0	361.0	463.0	332.0	387.0	572.0	605.0	522.0	538.0	132.0	551.0	440.0
MW-6		45.8	39.7	39.9	40.5	39.6	39.3	38.6	35.1	44.0	31.4	34.3	24.9	45.7	38.1	43.1	124.0	20.4	39.6	161.0
MW-7		372.0	166.0	323.0	259.0	267.0	135.0	76.4	278.0	552.0	348.0	286.0	192.0	304.0	334.0	318.0	306.0	327.0	119.0	177.0
MW-8		184.0	209.0	190.0	207.0	237.0	205.0	202.0	219.0	245.0	245.0	244.0	279.0	445.0	402.0	322.0	293.0	309.0	550.0	150.0
MW-9		125.0	126.0	166.0	159.0	180.0	201.0	154.0	205.0	188.0	321.0	136.0	139.0	155.0	205.0	270.0	234.0	80.0	109.0	84.9
MW-10		547.0	539.0	542.0	490.0	560.0	381.0	277.0	321.0	535.0	567.0	426.0	509.0	677.0	665.0	667.0	633.0	320.0	269.0	312.0
MW-11			50.2	49.8	49.3	49.9	50.6	51.1	50.5	49.3	45.5	44.3	42.2	85.2	47.1	444.0	108.0	27.7	41.0	37.7
MW-12		212.0	289.0	225.0	237.0	223.0	240.0	289.0	414.0	384.0	304.0	307.0	265.0	325.0	357.0	372.0	302.0	420.0	534.0	315.0
MW-13		124.0	268.0	221.0	227.0	246.0	279.0	293.0	380.0	665.0	401.0	467.0	325.0	368.0	527.0	405.0	362.0	356.0	114.0	178.0
MW-14		142.0	364.0	204.0	204.0	167.0	147.0	223.0	374.0	531.0	415.0	526.0	442.0	395.0	417.0	334.0	329.0	298.0	109.0	247.0
MW-15		289.0	262.0	276.0	274.0	258.0	222.0	233.0	226.0	331.0	285.0	315.0	322.0	452.0	462.0	371.0	462.0	491.0	387.0	207.0
MW-16		418.0	549.0	441.0	370.0	364.0	278.0	341.0	315.0	301.0	273.0	301.0	347.0	501.0	475.0	540.0	824.0	647.0	281.0	266.0
OW-17		210.0	335.0	270.0	200.0	193.0														
MW-18				178.0	174.0	183.0	168.0	152.0	184.0	187.0	112.0	115.0	113.0	203.0	292.0	275.0	219.0	198.0	165.0	60.2
OW-19																				
OW-20																				
MW-21						256.0	178.0	170.0	188.0	182.0	139.0	178.0	177.0	244.0	236.0	228.0	465.0	646.0	232.0	172.0
MW-22						175.0	173.0	169.0	168.0	147.0	163.0	158.0	158.0	219.0	257.0	273.0	233.0	255.0	221.0	108.0
MW-23						347.0	230.0	183.0	146.0	160.0	85.4	98.0	106.0	150.0	151.0	155.0	157.0	165.0	83.4	61.0
MW-24						126.0	252.0	291.0	286.0	302.0	417.0	724.0	703.0	963.0	635.0	879.0	758.0	746.0	229.0	184.0
MW-25						106.0	132.0	174.0	144.0	124.0	153.0	172.0	219.0	324.0	158.0	174.0	199.0	223.0	81.9	85.4
MW-26						249.0	132.0	137.0	167.0	133.0	135.0	153.0	176.0	217.0	267.0	276.0	225.0	199.0	62.1	90.1



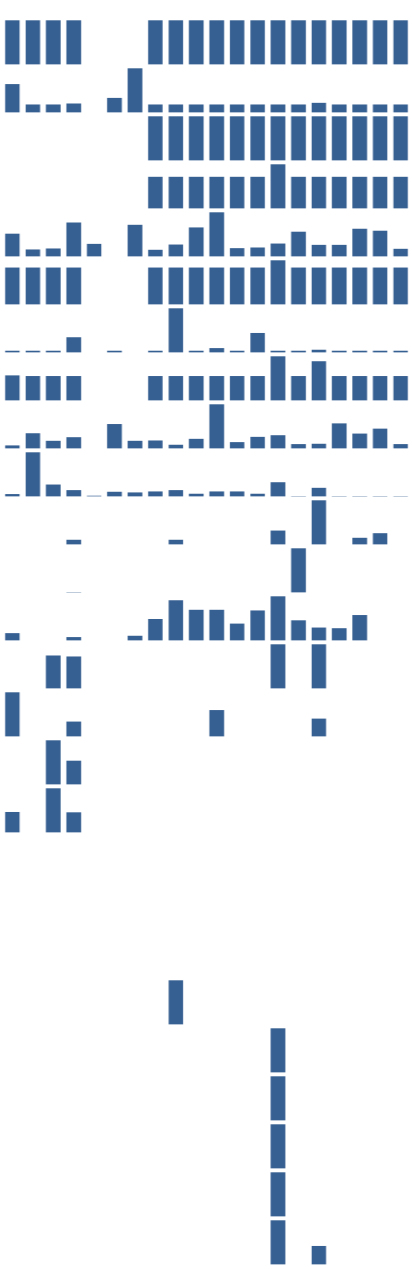
Fecal coliform (per 100 ml)

	Q1-2011	Q2-2011	Q3-2011	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	Q2-2013	Q3-2013	Q4-2013	Q1-2014	Q2-2014	Q3-2014	Q4-2014	Q1-2015	Q2-2015	Q3-2015	Q4-2015
MW-1	0.0	2.0	10.0	46.0	19.0	90.0	128.0	2.0	14.0	150.0	64.0	8.0	1.0	15.0		0.0	1.0	1.0	40.0	0.0
MW-2	2.0	0.0	0.0	16.0	56.0	2.0	26.0	2.0	200.0	100.0	68.0	56.0	6.0	16.0		80.0	7.0	21.0	44.0	16.0
MW-3	0.0				2.0	36.0	80.0	2.0	0.0	1.0	11.0	4.0	1.0	11.0		0.0	0.0	0.0	19.0	0.0
MW-4	0.0				3.0	32.0	18.0	5.0	0.0	31.0	0.0	4.0	1.0	1.0		2.0	0.0	4.0	4.0	65.0
MW-5	3.0	0.0	20.0	45.0	92.0	150.0	100.0	4.0	200.0		100.0	100.0	28.0	125.0		160.0	108.0	58.0	160.0	128.0
MW-6	0.0	0.0	0.0	12.0	0.0	13.0	0.0	1.0	2.0	48.0	0.0	17.0	1.0	54.0		0.0	0.0	3.0	0.0	0.0
MW-7	0.0	0.0	36.0	2.0	0.0	0.0	5.0	52.0	24.0	50.0	7.0	104.0	4.0	84.0	16.0	52.0	17.5	37.0	50.0	2.0
MW-8	0.0	2.0	1.0	0.0	65.0	11.0	51.0	3.0	0.0	1.0	17.0	12.0	1.0	38.0	<1	0.0	0.0	2.0	6.0	0.0
MW-9	3.0	1.0	10.0	40.0	48.0	200.0	100.0	24.0	92.0		20.0	160.0	56.0	97.0		130.0	160.0	125.0	100.0	110.0
MW-10	0.0	0.0	0.0	0.0	0.0	2.0	33.0	3.0	40.0	36.0	0.0	1.0	1.0	85.0		3.0	32.0	31.0	60.0	3.0
MW-11			1.0	0.0	0.0	3.0	1.0	<1	0.0	64.0	0.0	2.0	2.0	67.0		5.0	2.0	12.0	4.0	24.0
MW-12	0.0	0.0	25.0	38.0	0.0	4.0	45.0	<2	17.0	37.0	2.0	48.0	60.0	15.0		4.0	3.0	0.0	4.0	3.0
MW-13	0.0	1.0	20.0	0.0	6.0	0.0	36.0	4.0	44.0	3.0	16.0	10.0	40.0	25.0	14.0	26.0	6.0	23.0	0.0	1.0
MW-14	0.0	0.0	2.0	0.0	3.0	0.0	2.0	60.0	2.0	30.0	18.0	<1	2.0	0.0	56.0	0.0	3.0	48.0	0.0	0.0
MW-15	0.0	0.0	2.0	0.0	5.0	0.0	0.0	<1	0.0	40.0	<1	<1	1.0	0.0	1.0	0.0	0.0	3.0	76.0	0.0
MW-16	0.0	3.0	1.0	10.0	0.0	0.0	48.0	<2	228.0	2.0	0.0	30.0	1.0	10.0		48.0		60.0	0.0	1.0
OW-17	0.0	0.0	0.0	25.0	0.0	0.0														
MW-18					0.0	0.0	0.0	<2	7.0	3.0	0.0	<1	1.0	2.0		6.0	60.0	2.0	171.0	9.0
OW-19																				
OW-20																				
MW-21						3.0	4.0	40.0	7.0	92.0	0.0	29.0	1.0	1.0	2.0	96.0	0.0	32.0	17.0	0.0
MW-22						0.0	2.0	7.0	0.0	13.0	0.0	<1	1.0	0.0	2.0	0.0	0.0	41.0	14.0	0.0
MW-23						<2.0	2.0	17.0	0.0	1.0	0.0	<1	1.0	12.0	2.0	0.0	2.0	3.0	9.0	0.0
MW-24						4.0	0.0	5.0	3.0	15.0	5.0	<1	1.0	5.0	< 1	0.0	5.0	13.0	0.0	0.0
MW-25						<2.0	2.0	<1	0.0	< 1	0.0	<1	1.0	11.0	<1	0.0	52.0	2.0	8.0	0.0
MW-26						<2.0	0.0	1.0	0.0	4.0	4.0	<1	1.0	5.0	17.0	0.0	4.0	52.0	7.0	0.0



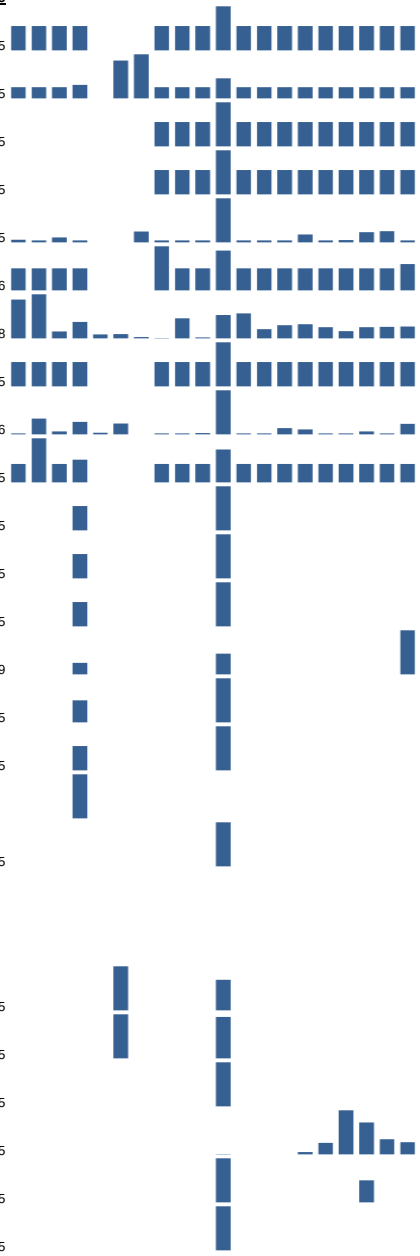
Phosphorus as P (mg/l)

	Q1-2011	Q2-2011	Q3-2011	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	Q2-2013	Q3-2013	Q4-2013	Q1-2014	Q2-2014	Q3-2014	Q4-2014	Q1-2015	Q2-2015	Q3-2015	Q4-2015
MW-1	0.05	0.05	0.05	0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MW-2	0.18	0.05	0.05	0.056	<0.05	0.092	0.28	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05
MW-3					<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MW-4					<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.05	0.05	0.05	0.05	0.05	0.05
MW-5	0.91	0.28	0.32	1.37	0.505	<0.05	1.28	0.26	0.48	1.17	1.78	0.33	0.36	0.52	0.99	0.47	0.46	1.12	1.04	0.31
MW-6	0.05	0.05	0.05	0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05
MW-7	0.056	0.056	0.05	0.49	<0.05	0.051	<0.05	0.05	1.42	0.05	0.14	0.05	0.63	0.05	0.05	0.08	0.05	0.05	0.05	0.05
MW-8	0.051	0.05	0.05	0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09	0.05	0.08	0.05	0.05	0.05	0.05
MW-9	0.077	0.38	0.189	0.28	<0.05	0.61	0.19	0.2	0.09	0.24	1.11	0.16	0.29	0.33	0.11	0.12	0.63	0.37	0.5	0.11
MW-10	0.067	0.43	0.15	0.1	0.051	0.087	0.08	0.09	0.1	0.07	0.09	0.09	0.07	0.17	0.05	0.12	0.05	0.05	0.05	0.05
MW-11			<.05	0.05	<0.05	<0.05	<0.05	<.05	0.05	<.05	<0.05	< 0.05	<0.05	0.15	<.05	0.48	<0.05	0.07	0.12	<0.05
MW-12	< .05	< .05	<.05	0.05	<0.05	<0.05	<0.05	<.05	<.05	<.05	<0.05	< 0.05	<0.05	<0.05	95.7	<0.05	<0.05	<0.05	<0.05	<0.05
MW-13	0.11	< .05	<.05	0.05	<0.05	<0.05	0.068	0.32	0.6	0.46	0.46	0.25	0.45	0.66	0.3	0.19	0.18	0.38	<0.05	<0.05
MW-14	< .05	< .05	0.06	0.058	<0.05	<0.05	<0.05	<.05	<.05	<.05	<0.05	< 0.05	<0.05	0.08	<.05	0.08	<0.05	<.05	<0.05	<0.05
MW-15	0.15	< .05	<.05	0.05	<0.05	<0.05	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	0.06	<0.05	<0.5	<0.05	<0.05
MW-16	< .05	< .05	0.18	0.097	<0.05	<0.05	<0.05	<.05	<.05	<.05	<0.05	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
OW-17	0.051	< .05	0.11	0.05	<0.05	<0.05														
MW-18					<0.05	<0.05	<0.05	<.05	<.05	<.05	<0.05	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
OW-19																				
OW-20																				
MW-21						<0.05	<0.05	<.05	0.06	<.05	<0.05	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-22						<0.05	<0.05	<.05	<.05	<.05	<0.05	< 0.05	<0.05	0.1	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-23						<0.05	<0.05	<.05	<.05	<.05	<0.05	< 0.05	<0.05	0.1	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-24						<0.05	<0.05	<.05	<.05	<.05	<0.05		<0.05	0.11	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-25						<0.05	<0.05	<.05	<.05	<.05	<0.05	< 0.05	<0.05	0.13	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-26						<0.05	<0.05	<.05	<.05	<.05	<0.05	< 0.05	<0.05	0.12	<.05	0.05	<0.05	<0.05	<0.05	<0.05



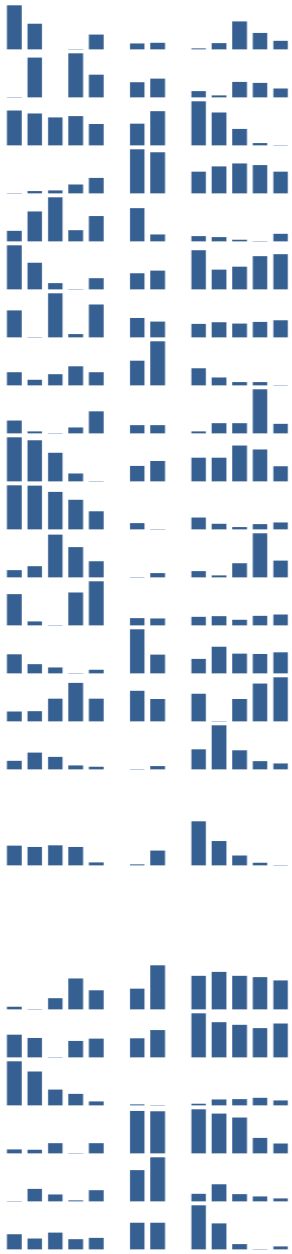
Ammonia as N(mg/l)

	Q1-2011	Q2-2011	Q3-2011	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	Q2-2013	Q3-2013	Q4-2013	Q1-2014	Q2-2014	Q3-2014	Q4-2014	Q1-2015	Q2-2015	Q3-2015	Q4-2015
MW-1	0.05	0.05	0.05	0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MW-2	0.05	0.05	0.05	0.06	<0.05	0.17	0.198	0.05	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MW-3					<0.05	<0.05	<0.05	0.05	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MW-4					<0.05	<0.05	<0.05	0.05	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MW-5	0.068	0.05	0.13	0.05	,0.05	<0.05	0.279	0.05	0.05	0.05	1.15	0.05	0.05	0.05	0.21	0.05	0.06	0.262	0.29	0.05
MW-6	0.05	0.05	0.05	0.05	<0.05	<0.05	<0.05	0.1	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06
MW-7	14.9	16.9	2.66	6.26	1.53	1.69	0.46	0.06	7.7	0.35	8.98	9.59	3.5	5.07	5.36	4.34	2.835	4.27	4.36	4.58
MW-8	0.05	0.05	0.05	0.05	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MW-9	0.062	0.86	0.16	0.67	0.093	0.58	<0.05	0.05	0.05	0.07	2.38	0.05	0.05	0.34	0.26	0.05	0.05	0.159	0.05	0.56
MW-10	0.05	0.12	0.05	0.062	<0.05	<0.05	<0.05	0.05	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MW-11			<.05	0.05	<0.05	<0.05	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-12	< .05	< .05	<.05	0.05	<0.05	<0.05	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-13	< .05	< .05	<.05	0.05	<0.05	<0.05	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-14	< .05	< .05	<.05	0.05	<0.05	<0.05	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	0.19
MW-15	< .05	< .05	<.05	0.05	<0.05	<0.05	<0.05	<.05	<.05	<.05	0.1	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-16	< .05	< .05	<.05	0.05	<0.05	<0.05	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
OW-17	< .05	< .05	<.05	0.05	<0.05	<0.05														
MW-18					<0.05	<0.05	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
OW-19																				
OW-20																				
MW-21						0.13	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-22						0.096	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-23						<0.05	<0.05	<.05	<.05	<.05	0.1	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW-24						<0.05	<0.05	<.05	<.05	<.05	0.09		<0.05	<0.05	1.4	7.23	27.4	19.75	9.455	7.55
MW-25						<0.05	<0.05	<.05	<.05	<.05	0.1	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	0.05	<0.05	<0.05
MW-26						<0.05	<0.05	<.05	<.05	<.05	0.09	< 0.05	<0.05	<0.05	<.05	<0.05	<0.05	<0.05	<0.05	<0.05



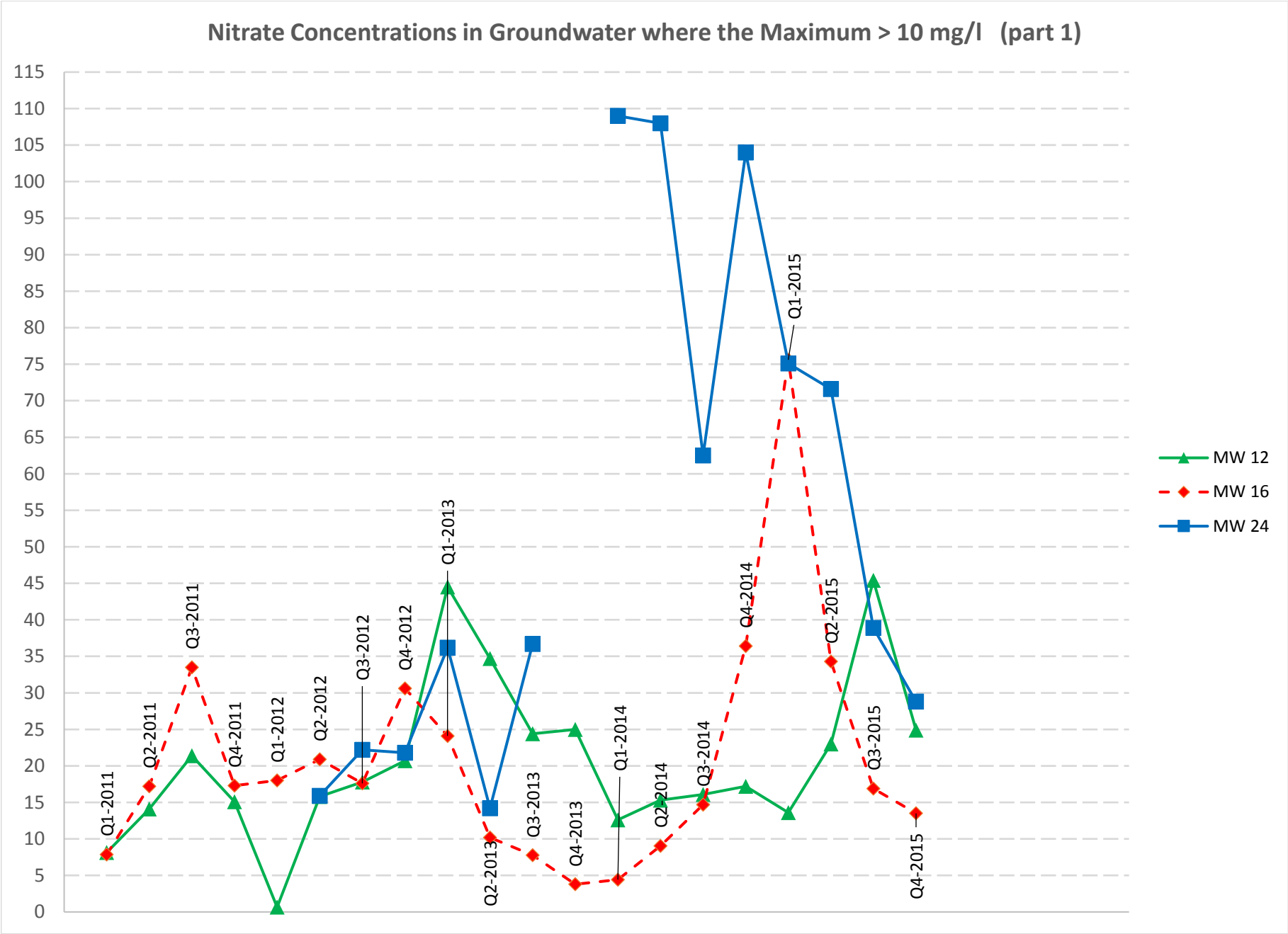
Total Nitrogen (mg/l)

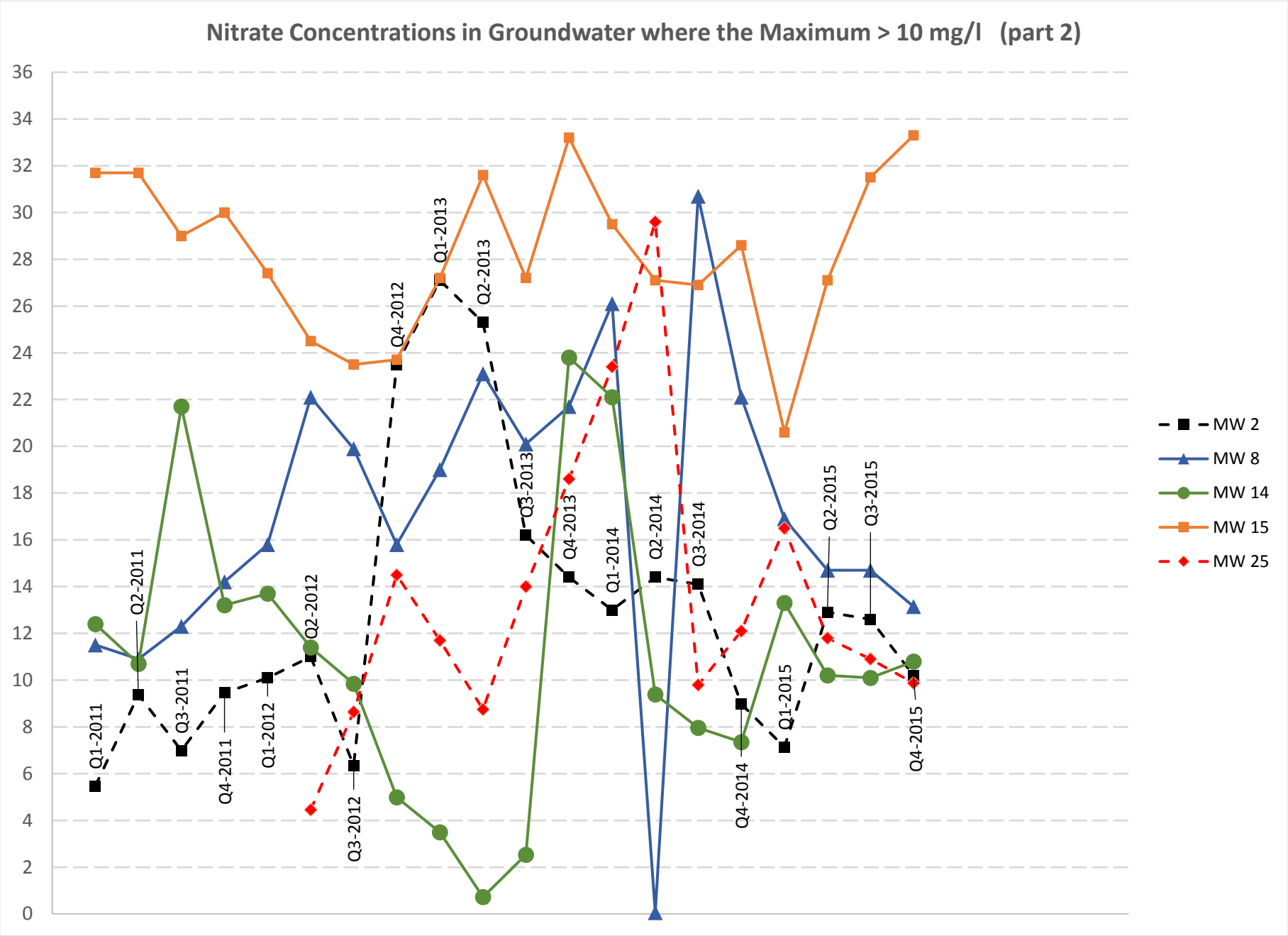
	Q1-2011	Q2-2011	Q3-2011	Q4-2011	Q1-2012	Q2-2012	Q3-2012	Q4-2012	Q1-2013	Q2-2013	Q3-2013	Q4-2013	Q1-2014	Q2-2014	Q3-2014	Q4-2014	Q1-2015	Q2-2015	Q3-2015	Q4-2015
MW-1							2.18	1.53		0.65	1.15		0.85	0.87		0.67	0.85	1.62	1.21	0.94
MW-2							6.73	23.70		25.50	16.30		13.10	14.59		9.22	7.34	13.13	12.70	10.40
MW-3							10.30	9.85	9.24	9.46	8.22		8.28	10.20		11.75	10.00	7.45	5.27	4.96
MW-4							4.08	4.24	4.31	4.83	5.42		7.95	7.70		5.97	6.44	6.71	6.54	5.98
MW-5							1.40	3.14	4.38	1.47	2.73		3.43	1.09		0.96	0.86	0.64	0.52	1.16
MW-6							2.20	1.37	0.40	0.13	0.64		0.87	1.00		1.97	1.04	1.18	1.69	1.78
MW-7							7.63	1.14	11.80	1.85	9.08		5.81	4.90		4.34	4.70	4.44	4.81	5.24
MW-8							20.10	16.00	19.10	23.30	20.10		26.30	36.82		22.29	17.33	14.86	14.83	13.25
MW-9							1.56	0.52	0.38	0.89	2.41		1.12	1.13		0.51	1.29	1.30	4.50	1.23
MW-10							11.90	11.30	8.75	4.57	3.02		6.07	7.05		7.74	7.74	10.24	9.40	6.00
MW-11							2.57	2.56	2.42	2.24	1.98		1.71	1.58		1.84	1.70	1.62	1.69	1.73
MW-12							17.80	20.80	44.50	35.00	24.40		12.72	15.52		17.14	13.75	23.00	45.40	24.90
MW-13							15.80	3.48	1.96	16.50	21.50		4.95	4.93		5.57	5.96	4.21	6.06	6.58
MW-14							10.10	5.33	3.71	1.00	2.53		22.38	9.97		7.83	13.83	10.53	10.37	11.10
MW-15							23.70	23.80	27.40	31.90	27.40		29.63	27.28		28.84	21.01	27.32	31.70	33.50
MW-16							17.90	31.10	24.40	10.50	8.12		4.66	9.46		36.79	75.88	34.89	17.24	13.80
OW-17																				
MW-18							9.64	9.24	9.77	9.15	4.33		3.68	8.03		17.35	11.11	6.46	4.20	3.49
OW-19																				
OW-20																				
MW-21							11.40	11.20	12.20	14.00	12.90		13.05	15.20		14.25	14.60	14.23	14.10	13.80
MW-22							13.70	12.20	3.53	10.90	11.90		12.05	15.78		23.55	19.47	18.20	16.80	18.90
MW-23							9.44	7.34	3.53	2.63	1.06		0.45	0.33		0.56	1.50	1.52	1.81	1.26
MW-24							22.40	22.00	36.40	14.50	36.70		109.23	108.11		112.70	103.10	94.05	48.04	35.90
MW-25							8.80	14.70	11.90	9.01	14.00		23.67	29.89		12.23	16.80	12.02	11.02	9.95
MW-26							13.30	11.50	14.00	11.30	11.80		18.01	18.02		25.27	17.78	9.18	7.21	8.29

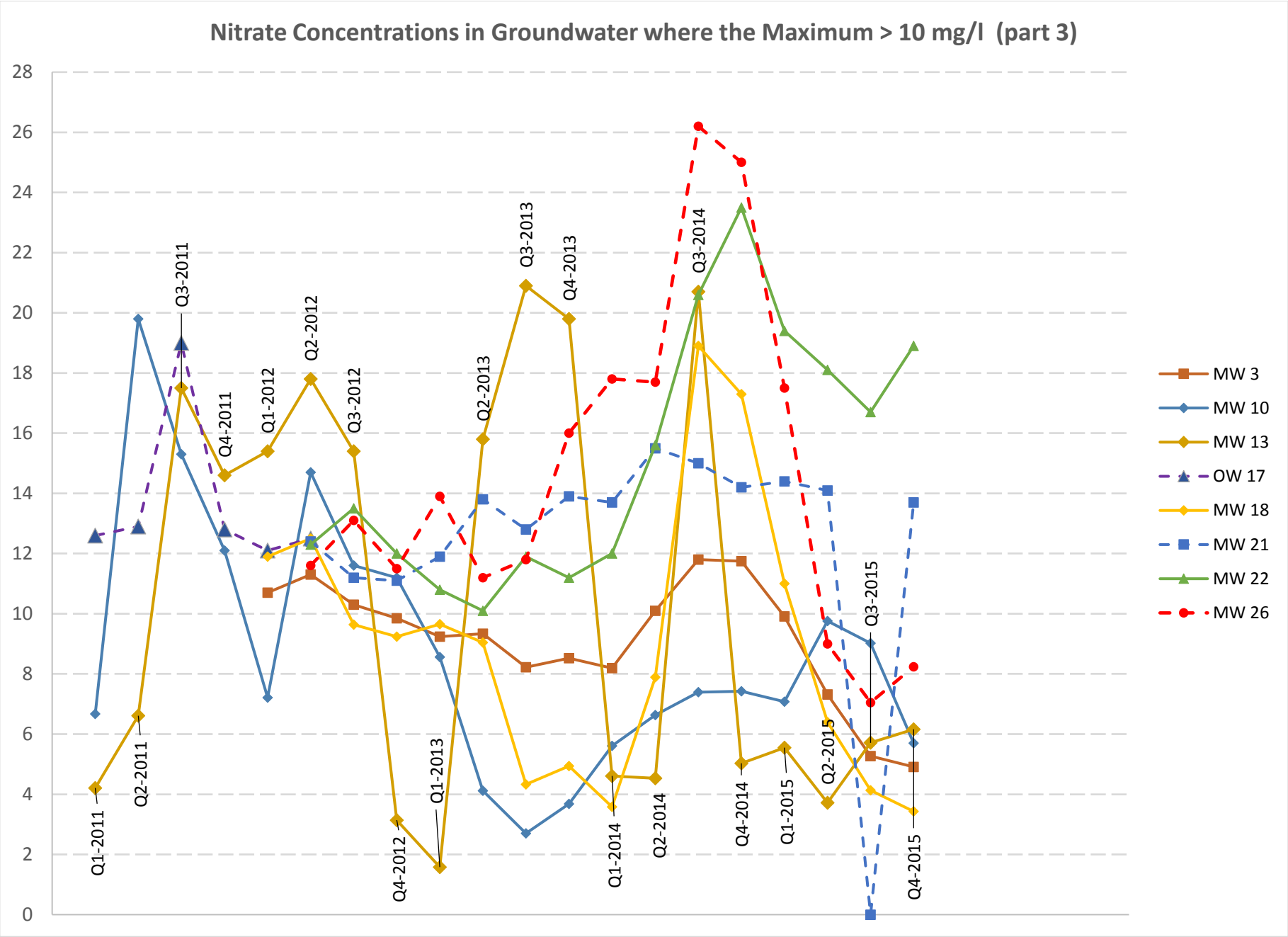


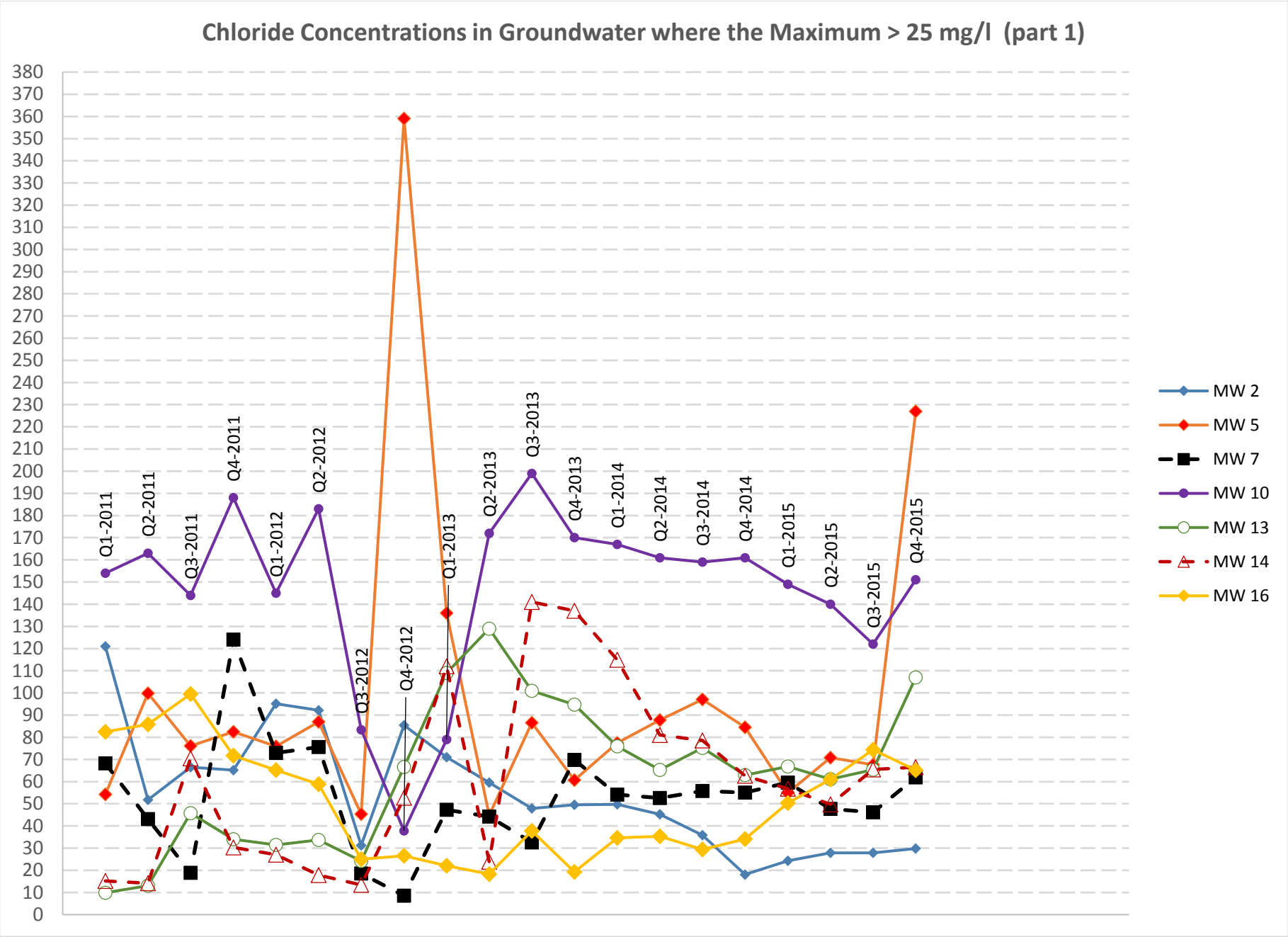
Appendix 14

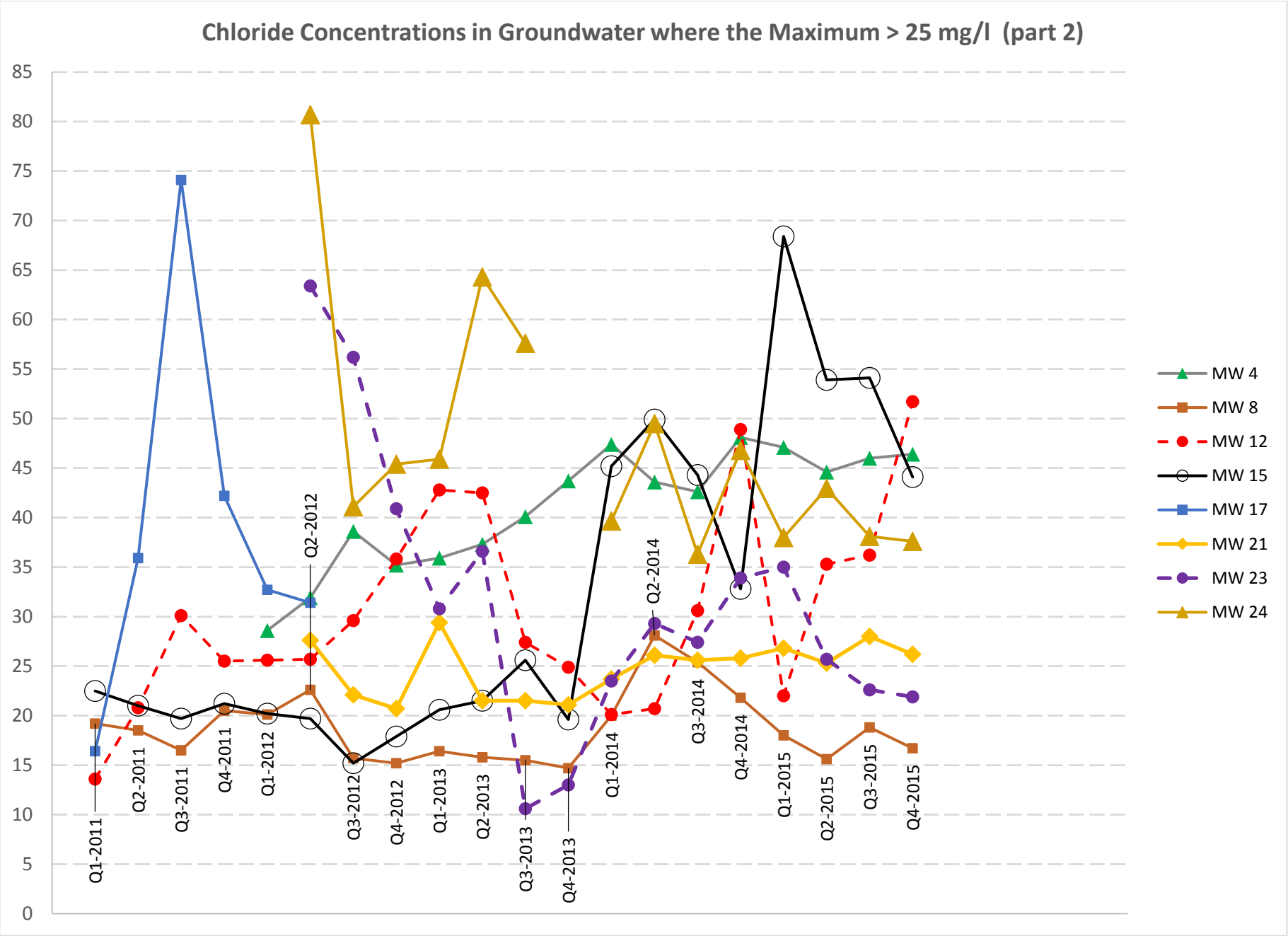
Groundwater Quality Graphs

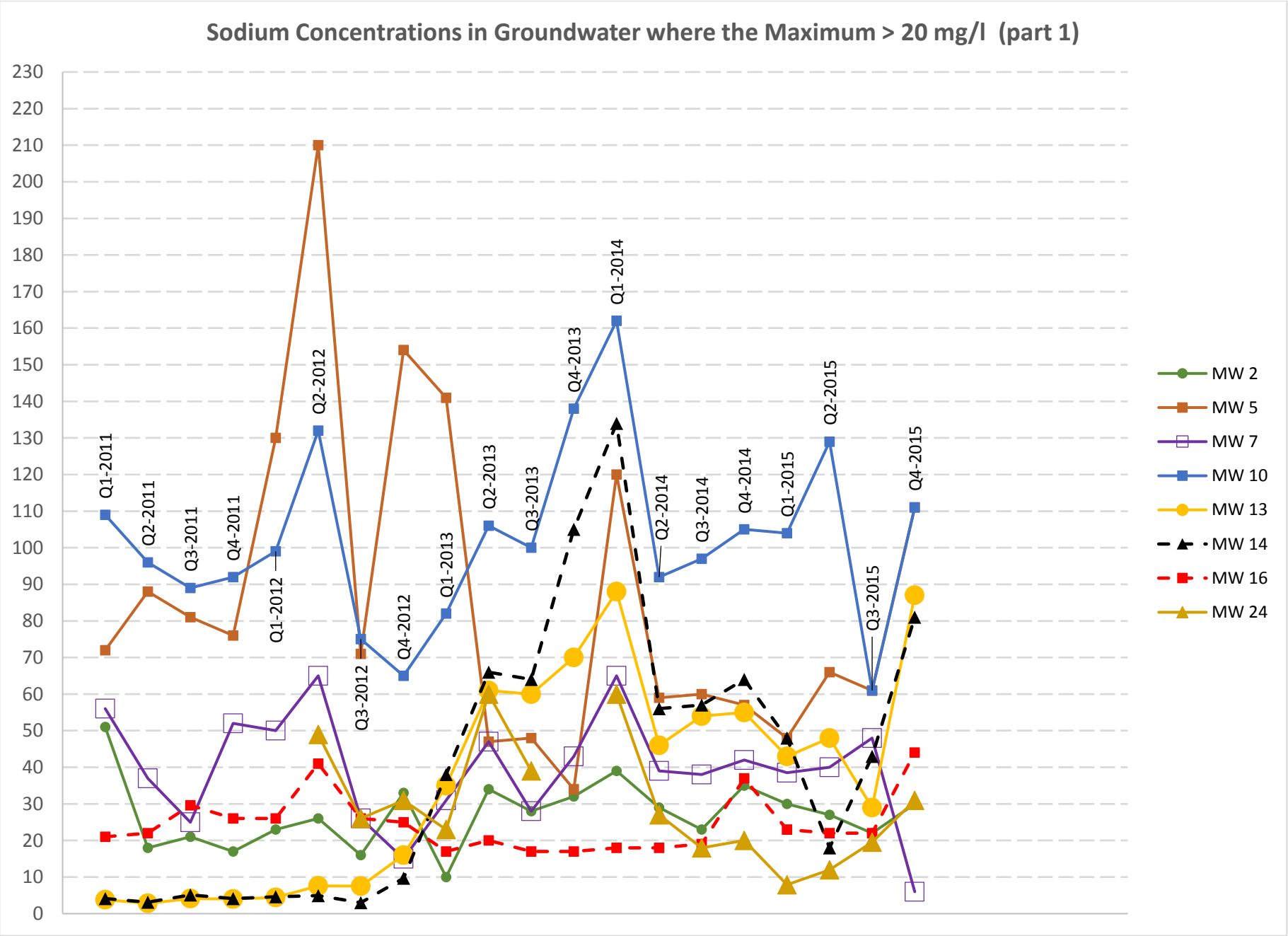

Nitrate Concentrations in Groundwater where the Maximum > 10 mg/l (part 1)
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 12
MW 16
MW 24

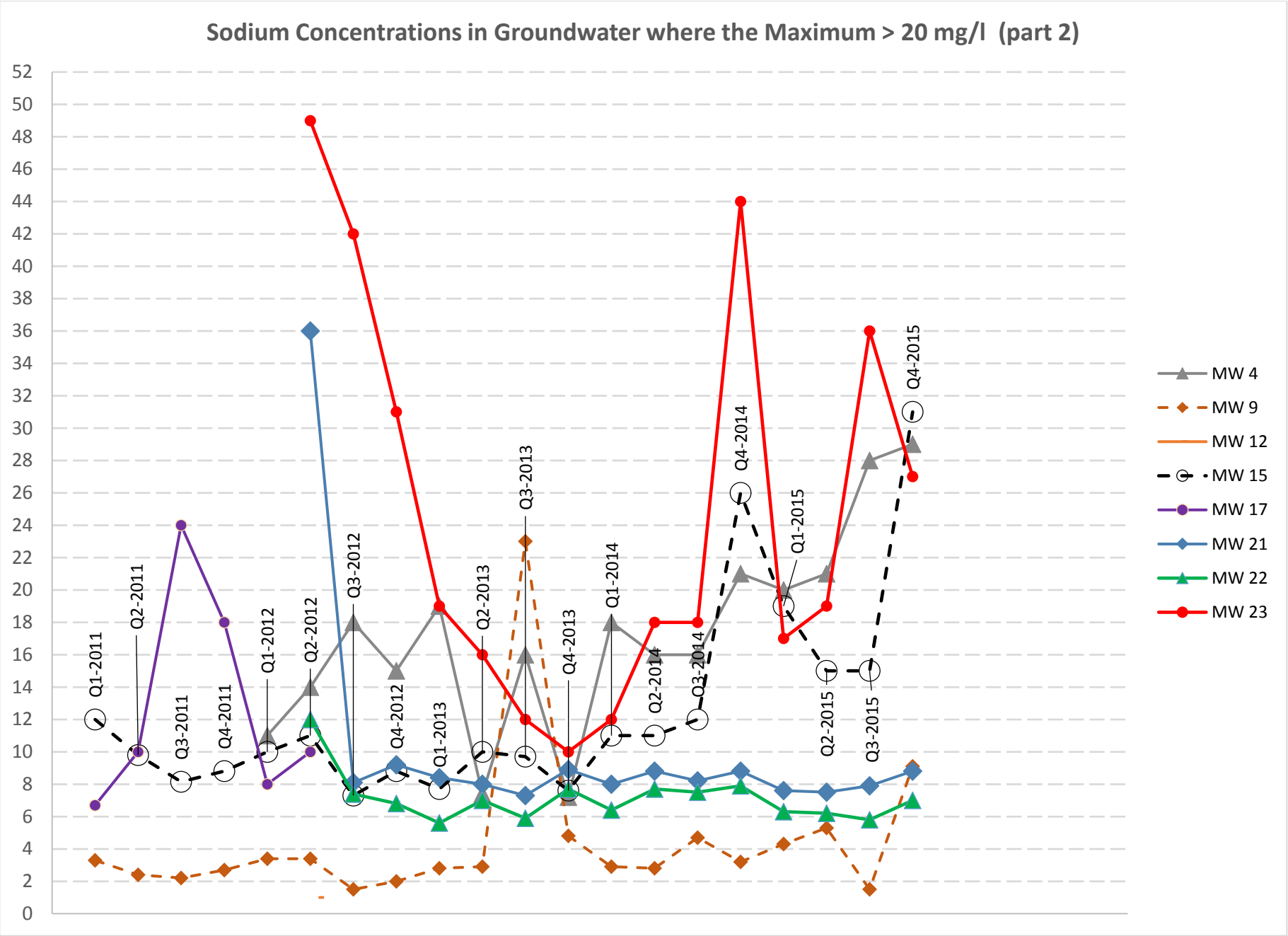

Nitrate Concentrations in Groundwater where the Maximum > 10 mg/l (part 2)
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 2
MW 8
MW 14
MW 15
MW 25

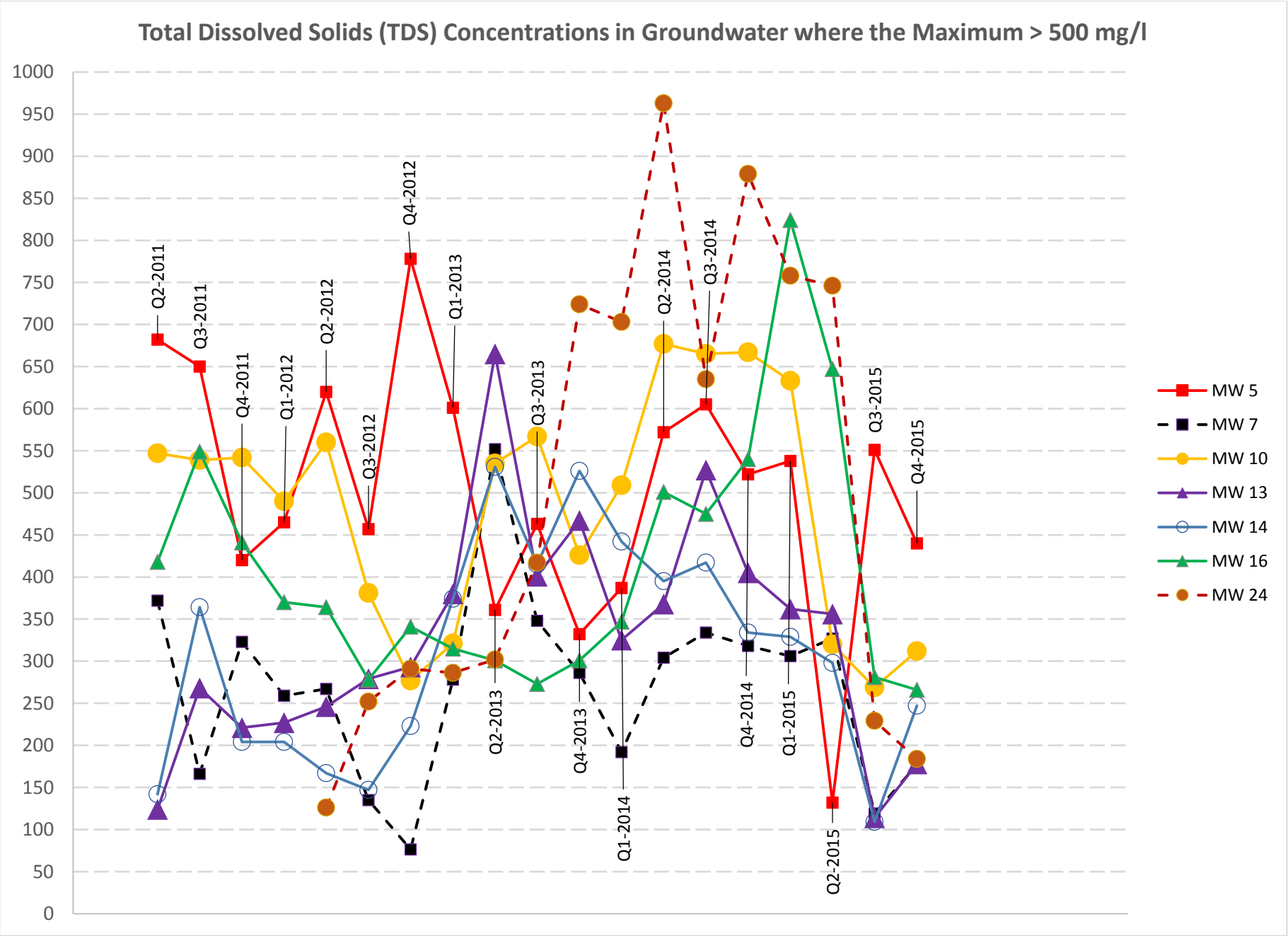

Nitrate Concentrations in Groundwater where the Maximum > 10 mg/l (part 3)
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 3
MW 10
MW 13
OW 17
MW 18
MW 21
MW 22
MW 26

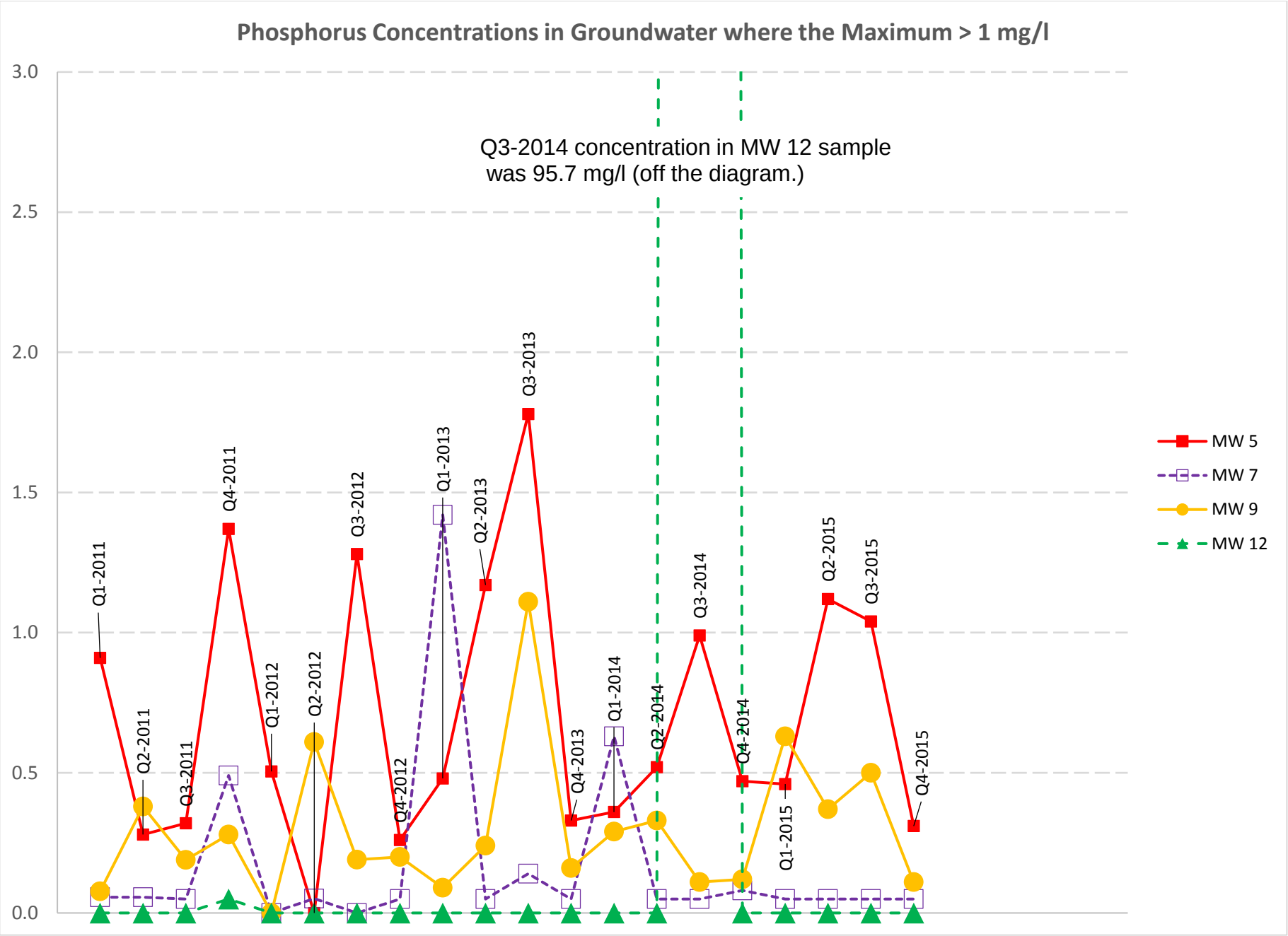

Chloride Concentrations in Groundwater where the Maximum > 25 mg/l (part 1)
380
370
360
350
340
330
320
310
300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 2
MW 5
MW 7
MW 10
MW 13
MW 14
MW 16

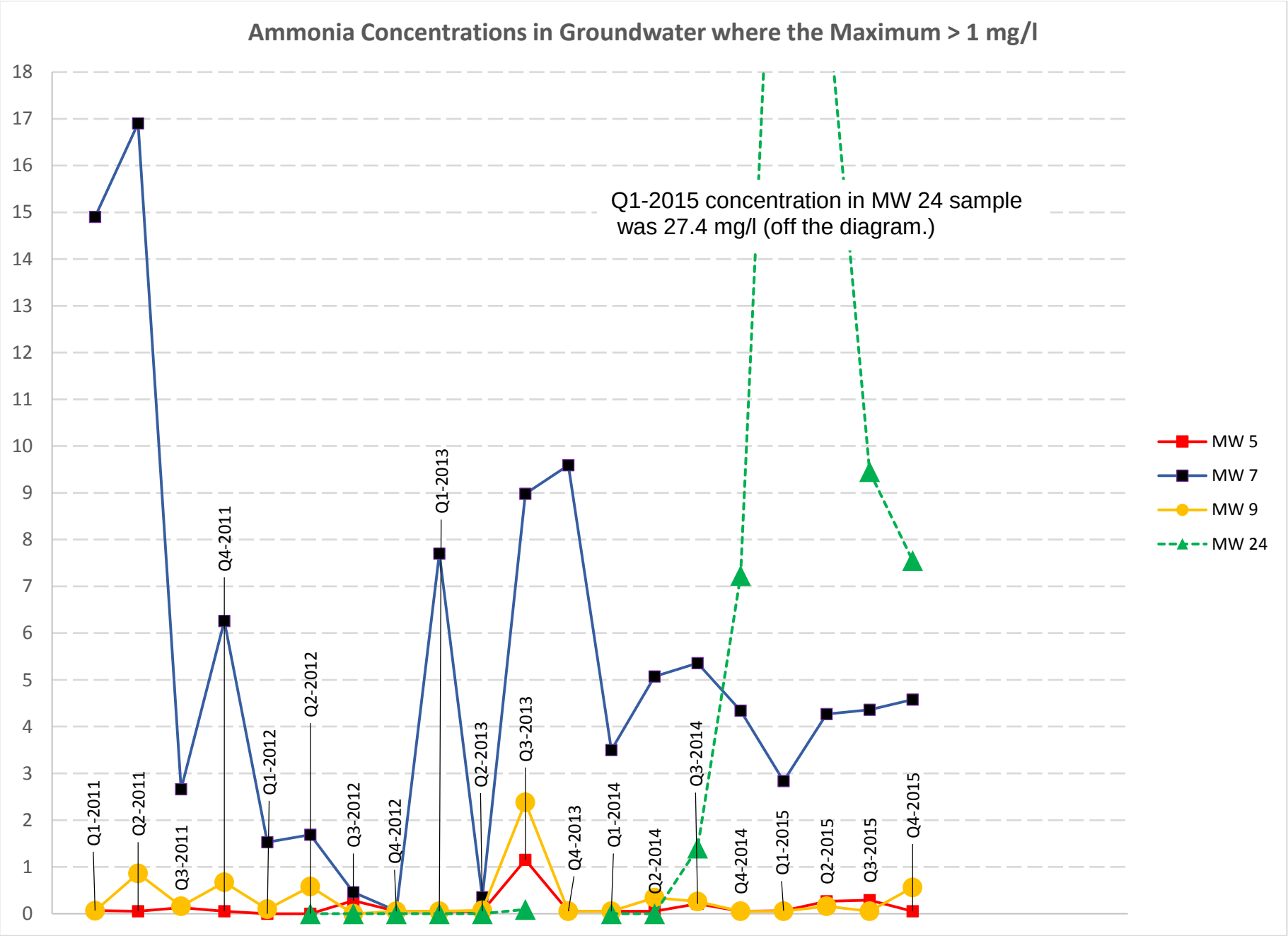

Chloride Concentrations in Groundwater where the Maximum > 25 mg/l (part 2)
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 4
MW 8
MW 12
MW 15
MW 17
MW 21
MW 23
MW 24


Sodium Concentrations in Groundwater where the Maximum > 20 mg/l (part 1)
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 2
MW 5
MW 7
MW 10
MW 13
MW 14
MW 16
MW 24


Sodium Concentrations in Groundwater where the Maximum > 20 mg/l (part 2)
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 4
MW 9
MW 12
MW 15
MW 17
MW 21
MW 22
MW 23

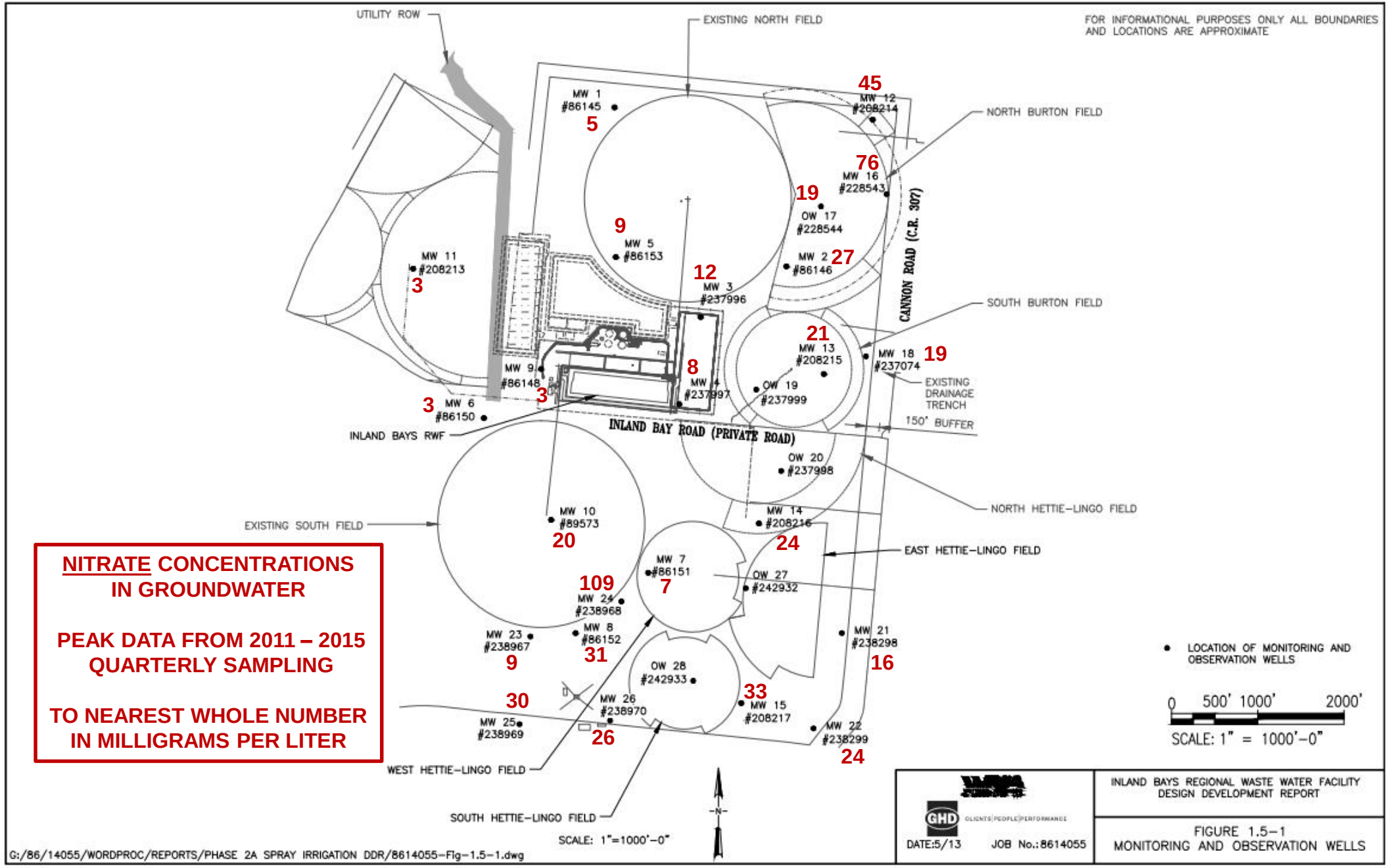

Total Dissolved Solids (TDS) Concentrations in Groundwater where the Maximum > 500 mg/l
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 5
MW 7
MW 10
MW 13
MW 14
MW 16
MW 24


Phosphorus Concentrations in Groundwater where the Maximum > 1 mg/l
Q3-2014 concentration in MW 12 sample was 95.7 mg/l (off the diagram.)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 5
MW 7
MW 9
MW 12


Ammonia Concentrations in Groundwater where the Maximum > 1 mg/l
Q1-2015 concentration in MW 24 sample was 27.4 mg/l (off the diagram.)
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Q1-2011
Q2-2011
Q3-2011
Q4-2011
Q1-2012
Q2-2012
Q3-2012
Q4-2012
Q1-2013
Q2-2013
Q3-2013
Q4-2013
Q1-2014
Q2-2014
Q3-2014
Q4-2014
Q1-2015
Q2-2015
Q3-2015
Q4-2015
MW 5
MW 7
MW 9
MW 24

Appendix 15

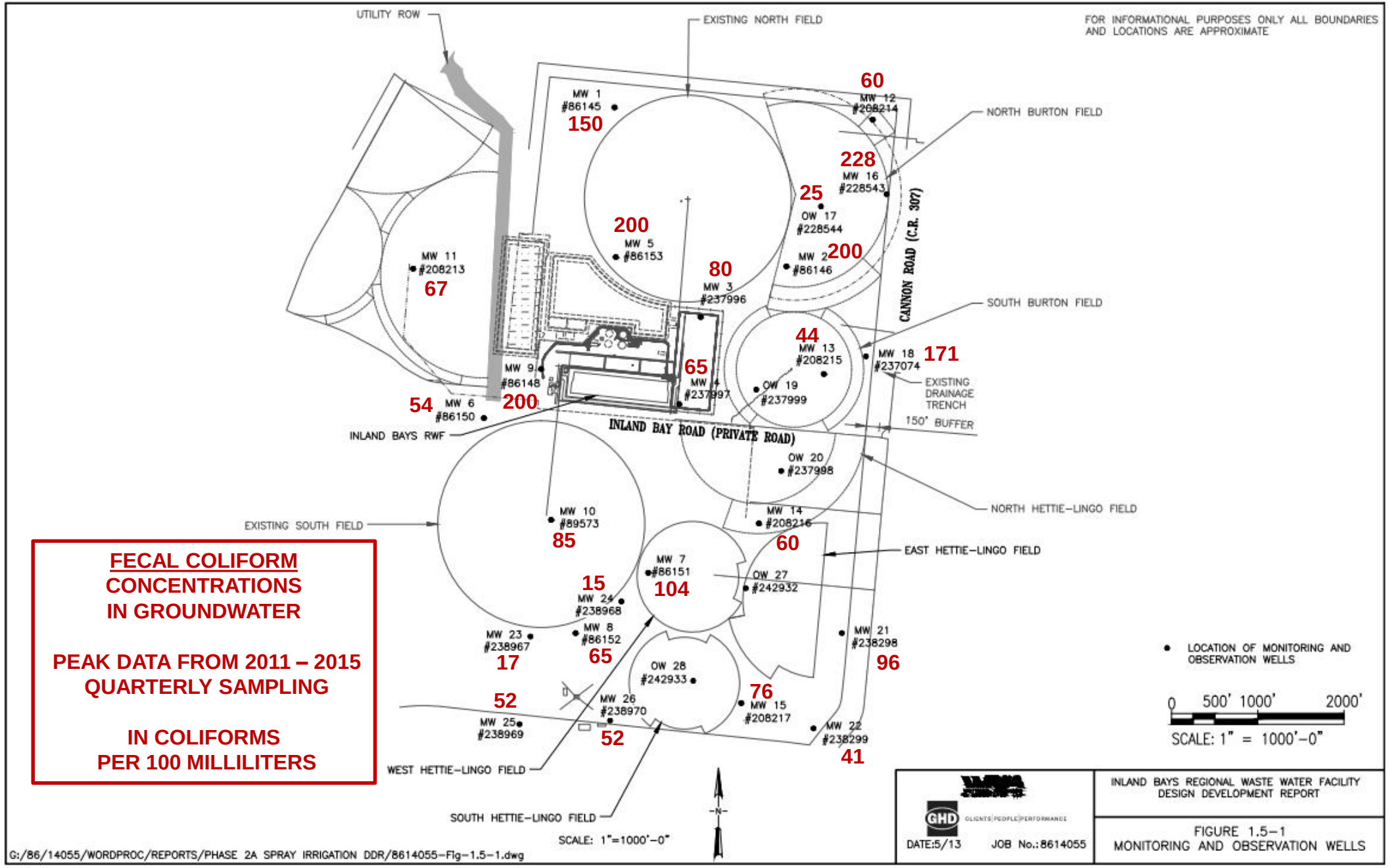
Groundwater Quality Maps



NITRATE CONCENTRATIONS IN GROUNDWATER

PEAK DATA FROM 2011 – 2015 QUARTERLY SAMPLING

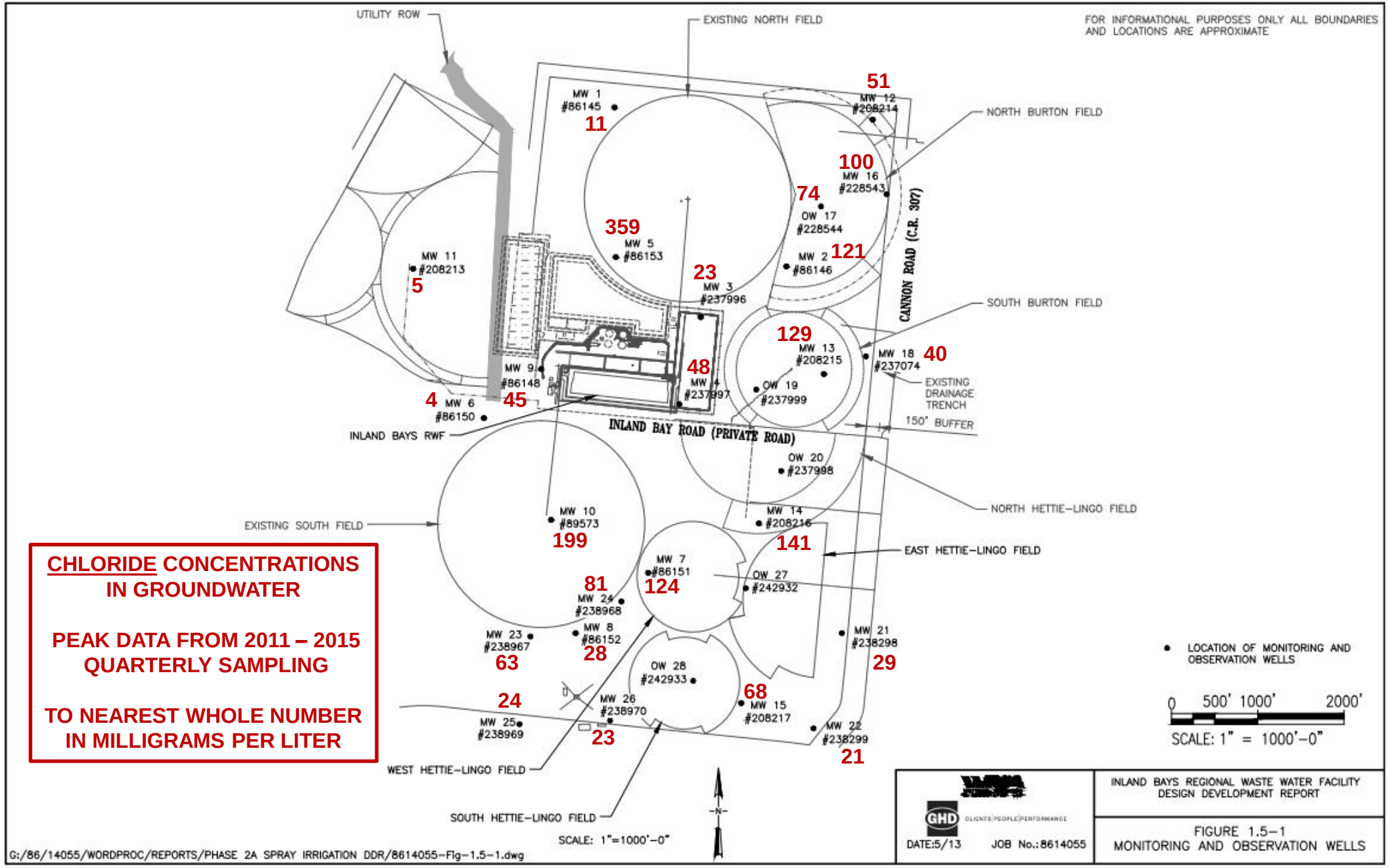
TO NEAREST WHOLE NUMBER IN MILLIGRAMS PER LITER



FECAL COLIFORM CONCENTRATIONS IN GROUNDWATER

PEAK DATA FROM 2011 – 2015 QUARTERLY SAMPLING

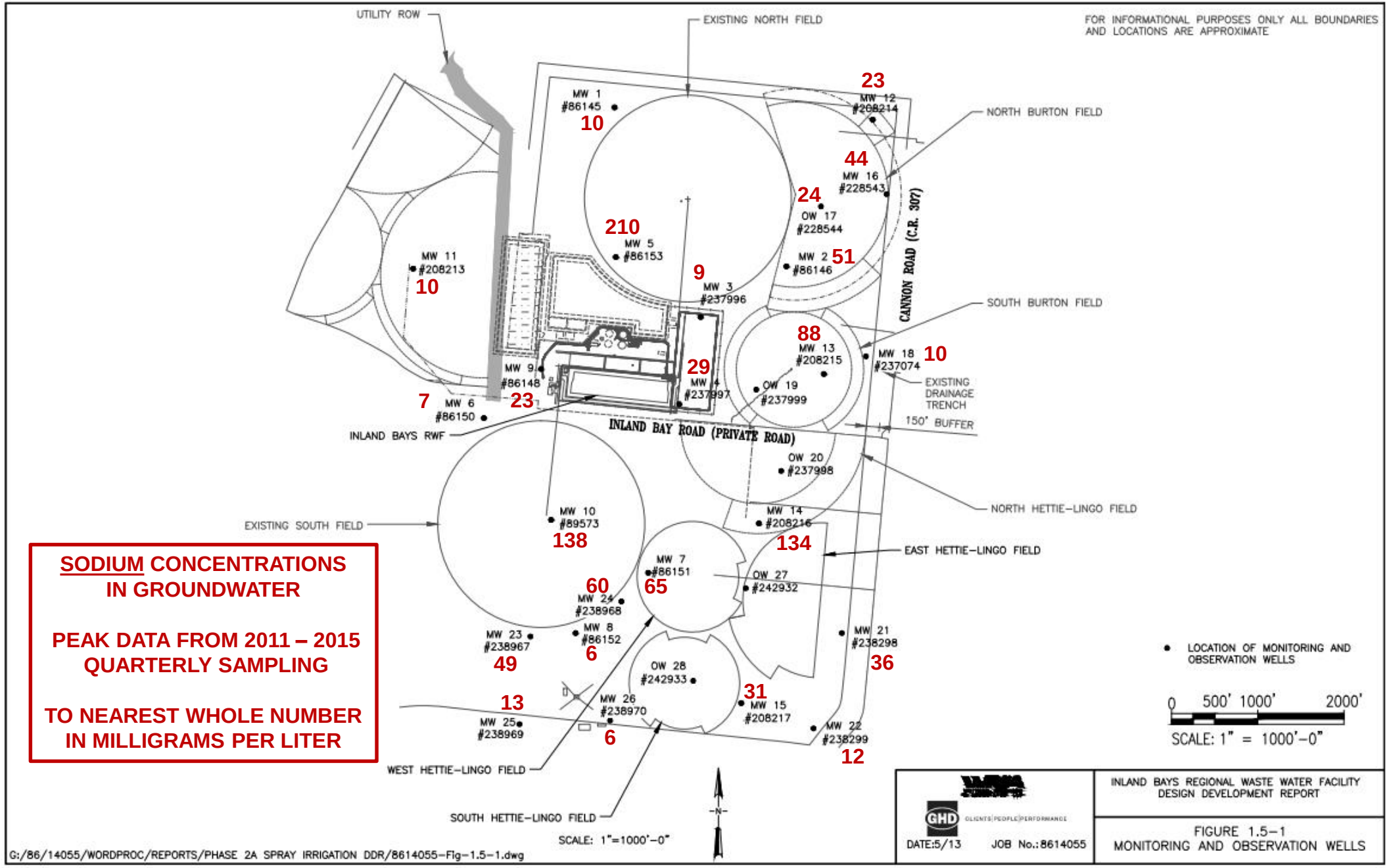
IN COLIFORMS PER 100 MILLILITERS



CHLORIDE CONCENTRATIONS IN GROUNDWATER

PEAK DATA FROM 2011 – 2015 QUARTERLY SAMPLING

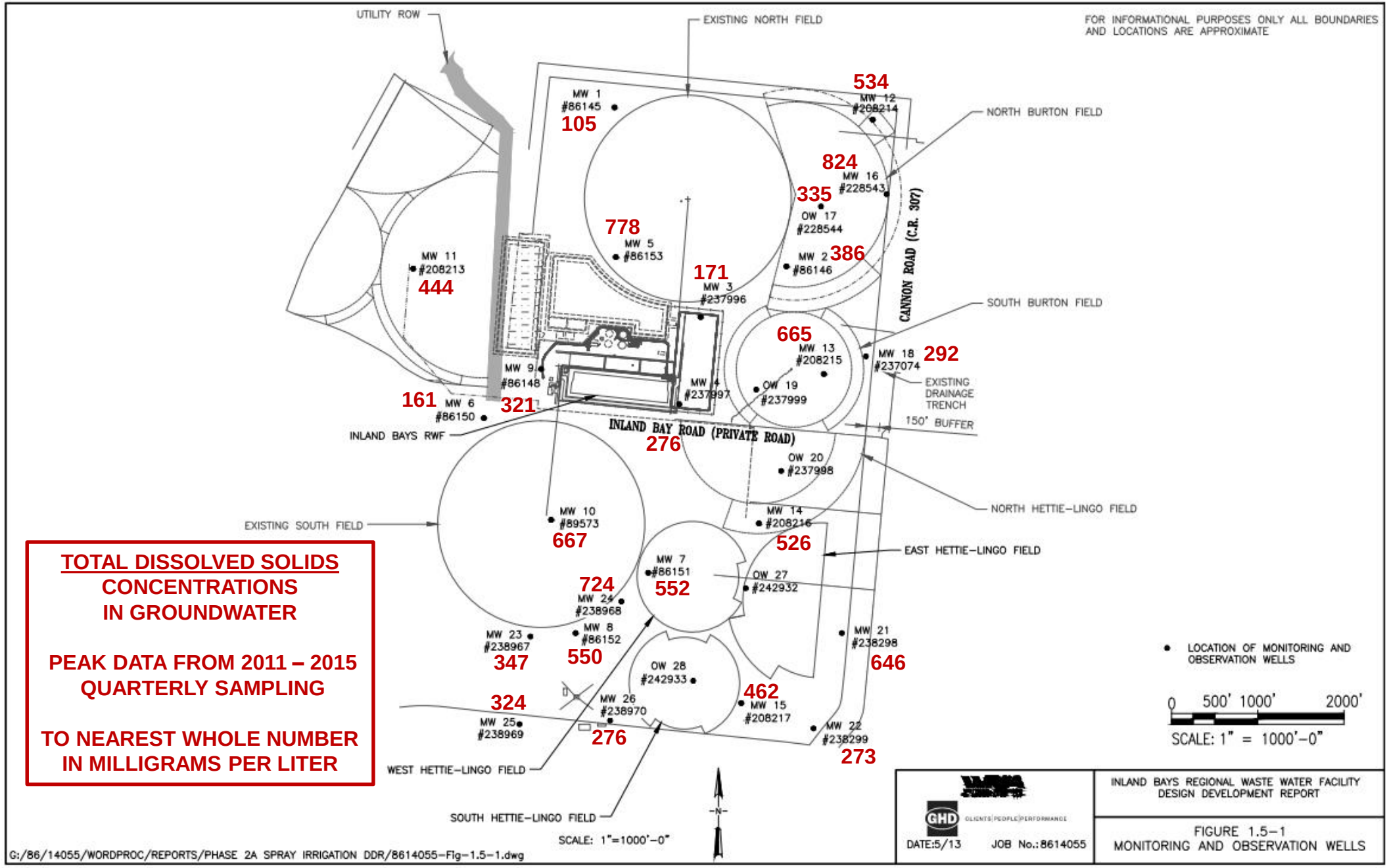
TO NEAREST WHOLE NUMBER IN MILLIGRAMS PER LITER



SODIUM CONCENTRATIONS IN GROUNDWATER

PEAK DATA FROM 2011 – 2015 QUARTERLY SAMPLING

TO NEAREST WHOLE NUMBER IN MILLIGRAMS PER LITER


UTILITY ROW
EXISTING NORTH FIELD
FOR INFORMATIONAL PURPOSES ONLY ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE
NORTH BURTON FIELD
SOUTH BURTON FIELD
CANNON ROAD (C.R. 307)
EXISTING DRAINAGE TRENCH
150' BUFFER
INLAND BAY ROAD (PRIVATE ROAD)
INLAND BAYS RWF
NORTH HETTIE-LINGO FIELD
EAST HETTIE-LINGO FIELD
EXISTING SOUTH FIELD
WEST HETTIE-LINGO FIELD
SOUTH HETTIE-LINGO FIELD
MW 1 #86145 105
MW 12 #208214 534
MW 16 #228543 824
OW 17 #228544 335
MW 5 #86153 778
MW 2 #86146 386
MW 3 #237996 171
MW 11 #208213 444
MW 13 #208215 665
MW 18 #237074 292
MW 9 #86148
MW 4 #237997
OW 19 #237999
MW 6 #86150 161
321
276
OW 20 #237998
MW 10 #89573 667
MW 14 #208216 526
MW 7 #86151 552
OW 27 #242932
MW 24 #238968 724
MW 23 #238967 347
MW 8 #86152 550
MW 21 #238298 646
OW 28 #242933
MW 26 #238970 276
MW 25 #238969 324
MW 15 #208217 462
MW 22 #238299 273
LOCATION OF MONITORING AND OBSERVATION WELLS
0 500' 1000' 2000'
SCALE: 1" = 1000'-0"
SCALE: 1"=1000'-0"
N
TOTAL DISSOLVED SOLIDS CONCENTRATIONS IN GROUNDWATER
PEAK DATA FROM 2011 – 2015 QUARTERLY SAMPLING
TO NEAREST WHOLE NUMBER IN MILLIGRAMS PER LITER
GHD CLIENTS|PEOPLE|PERFORMANCE
DATE:5/13
JOB No.:8614055
INLAND BAYS REGIONAL WASTE WATER FACILITY DESIGN DEVELOPMENT REPORT
FIGURE 1.5-1
MONITORING AND OBSERVATION WELLS
G:/86/14055/WORDPROC/REPORTS/PHASE 2A SPRAY IRRIGATION DDR/8614055-Fig-1.5-1.dwg