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June 1, 2014 ELECTRONIC TRANSMITTAL

Brent M. White
Water Use Permit Compliance Manager, Water Use Permit Bureau
Southwest Florida Water Management District
Water Use Permit Bureau, Tampa Service Office
7601 US Highway 301
Tampa, Florida 33637

Subject: **WUP 20011400.026**
Integrated Water Use Permit (IWUP)
Annual Water Conservation Progress Report (AWCPR)

Dear Mr. White:

Mosaic Fertilizer LLC ("Mosaic") is pleased to provide the IWUP Annual Water Conservation Progress Report (AWCPR) as required by Permit No 20011400, revision 026, special condition 19.0 Section A. This submittal addresses all required components of the report as described in the IWUP. Each of the required report components are addressed below:

Water Conservation Plan Progress Report

During 2013-2014, Mosaic facilities operated below the facilities' permitted annual average (moving twelve month) withdrawal limits. In addition, Mosaic's combined water usage was below the overall annual average withdrawal limit of 69.6 MGD and the 20 year mean withdrawal of approximately 55.2 MGD. These continued reductions have been made possible by the increased use of recycled water in mining operations, through energy and freshwater conservation in the chemical processing facilities, through the closure of less efficient facilities, and by the closure of older mining facilities where mineral reserves have been exhausted. Mosaic has provided 2013-2014 Water Usage Graphs for each facility as Attachment A.

Updates to the Water Conservation Plan.

The following updates to the Water Conservation Plan are provided below:

Concentrates Facilities – Current Conservation Practices

Sulfuric Acid Plant:
Reuse of Reverse Osmosis (RO) permeate from the process water RO treatment system for boiler feed water makeup. The benefits include a reduction of the dissolved solids in the makeup water, which can increase the cycles of concentration. This reduces boiler blow down. Overall, this

practice would provide long term improvements of the condensate recovery and return system and a reduction in ground water usage.

Ongoing and Past Conservation Projects

Flatford Swamp:
Flatford Swamp is a large wetland system located in eastern Manatee County. The Myakka River enters the swamp at its north end and exits at the southeast corner. The habitat within the property is mostly bottomland swamp and freshwater marsh with scattered pine flatwood and hardwood forest along the periphery.

Hydrologic alterations and extended hydroperiods are causing environmental damage (i.e., tree mortality) within Flatford Swamp. Long-term average streamflow in the Upper Myakka River Watershed has increased over the past several decades due to a combination of factors including agricultural irrigation and related practices, residential development, and drainage improvements.

The Southwest Florida Water Management District (District) purchased a majority of Flatford Swamp (2,357 acres) in 1991 under the Preservation 2000 program. The restoration of Flatford Swamp is the primary focus of the Myakka River Watershed Initiative.

In 2011, Mosaic and the District jointly funded the Flatford Swamp Hydrologic Restoration Feasibility Study to identify projects that could facilitate the restoration of Flatford Swamp, by transferring excess water from Flatford Swamp to Mosaic, without adversely affecting Mosaic's ability to efficiently operate its existing and proposed future mining operations.

The feasibility study was completed in 2013, but has not yet been presented to the District Board. Mosaic continues to work with the District to determine a beneficial use for the Flatford water. Mosaic is currently assessing our deep well use and quantifying opportunities to utilize Flatford water in lieu of the deep wells. Mosaic anticipates utilizing District-Wide Regulation Model (DWRM) to estimate potential beneficial effects on groundwater levels in the Southern Water Use caution Area (SWUCA). District staff has requested this step be complete before the project proceeds to the District Board review.

N-5 Reservoir:
In 2007, Mosaic joined with other industry and local governments to develop a project to convert and utilize one of Mosaic’s existing, unused clay settling areas as a reservoir for reclaimed water and develop a distribution network where this water could be used by other entities to offset groundwater withdrawals.

The purpose of the project was to connect existing, available reclaimed water quantities in Tampa and Hillsborough County to the reservoir, located in extreme western Polk County, where it could be distributed to the phosphate and power industries and other non-potable water users to

offset groundwater use. The project was also beneficial in that it would remove existing nitrogen loads to Tampa Bay, further the District's legislative mandate to promote the availability of sufficient water supply for all existing and future reasonable and beneficial uses, and accelerate SWFWMD's goals with respect to the SWUCA Recovery Strategy.

This project was not realized due to a number of factors. N-5 has been approved for abandonment and not as an alternative water source. Mosaic currently has a minor modification submitted for our NPDES to lower the crest of this dam. Mosaic expects to commence dewatering and initiate reclamation late 2014.

CS-11:

One of the objectives of the SWUCA Recovery Strategy is to restore Minimum Flows and Levels to the Upper Peace River. The proposed minimum flows for the Upper Peace River are focused on returning perennial flow conditions to this segment of the river. Specifically, they are based on maintaining the higher of the water elevations needed for fish passage or the lowest wetted perimeter inflection point (as much streambed coverage as possible for the least amount of flow). This approach yielded minimum low flows of 17 cfs (10.2 mgd), 27 cfs (16.2 mgd) and 45 cfs (27 mgd) at the Bartow, Fort Meade and Zolfo Springs USGS stream gages, respectively. These flows are required to be exceeded at least 95 percent of the time on an annual basis.

Mosaic had proposed that one of its existing, partially used clay settling areas at the Clear Springs site could be converted to a reservoir to capture high flows during the rainy season and then release this water back to the system during low flow periods to assist in MFL compliance. Mosaic requested and received extensions from FDEP Bureau of Mining and Minerals Regulation to keep the CS-11 system in caretaker status while SWFWMD evaluated this as one of many options to help achieve the MFL's for the Upper Peace. Ultimately the District decided not to pursue this option and Mosaic will be moving forward with final reclamation of the settling area.

Reclamation was completed on this settling area, the dam was breached and is officially abandoned. Reclamation is complete with the exception of general maintenance that will be required for Release from FDEP.

Hookers Prairie Mine/Bowling Green Waste Water Treatment Plant Synergy:

The Mosaic former Fort Meade Mine, now Hookers Prairie Mine footprint receives approximately 150,000 gallons per day of treated wastewater from the City of Bowling Green Wastewater Treatment Plant Facility. This water is received at the reservoir south of Clay Settling Area (CSA) Area H to assist with irrigation for adjacent Mosaic agricultural properties. Please see Attachment B depicting a map of this location.

South Fort Meade Mine/Fort Meade Waste Water Treatment Plant Synergy:

The Mosaic South Fort Meade facility receives approximately 550,000 gallons per day of treated wastewater from the City of Fort Meade Wastewater Plant. This water is received at the Clay Settling Area (CSA) SFM-3 and recycled into the South Fort Meade mine water recirculation system. Please see Attachment B depicting a map of this location.

Green Bay & Hookers Prairie/Duke Energy Hines Complex Project:
As another example of our commitment to responsible water use, Mosaic has partnered with Duke Energy to eliminate up to 4.6 million gallons per day of groundwater withdrawal in Polk County, Florida. In May 2012, Mosaic and Duke Energy commenced construction on pipelines that link Mosaic's Green Bay and Hookers Prairie facilities to Duke's Hines Energy Complex, which allows Mosaic to transfer treated water and storm water to the Hines Complex. The transfer alleviates the need for the Hines Station to pump groundwater. Please see Attachment B depicting a map of this location.

Concentrates Facilities

v. Plant Utility Systems
Treatment Water*:* Strict limits on total suspended solids and conductivity are imposed by the NPDES discharge permit for Mosaic outfalls. Freshwater is often used to supplement the wastewater for discharge and lower the conductivity of the discharge to meet these limits. Facilities may also utilize groundwater for the operation of a process water treatment system for the treatment and discharge of process wastewater, non-process wastewater, and stormwater. The process wastewater in the facility phosphogypsum stacks are typically treated using a two-stage liming and acidulation process prior to discharge. The solids from the liming process are allowed to settle in impoundment areas. The double-limed wastewater is then pumped through sets of sprays for ammonia removal. The wastewater then enters an acidulation station, where the pH is reduced to 6.2 - 6.5 range. Freshwater is typically used to supplement the final double-lime treated process water to reduce TDS; the combined stream is then discharged through an NPDES outfall. By rule, all facilities that operate a phosphogypsum management system must maintain minimum storage capacities to ensure that rain events will not exceed the minimum storage requirements. If the minimum storage capacity threshold is exceeded the facility must remove process water from the system. Such process water must be treated to discharge standards, which requires the use of low conductivity water. Typically, reclaimed water is not of sufficient quality or quantity for this service. Captured stormwater may be viable if sufficient quantity is available. Freshwater consumed for these treatment categories varies between 0-20% of all freshwater used.

The South Pierce phosphogypsum stack system is entering the closure stage and there is a need for blend water to manage conductivity in the facility discharge. This will require use of lower conductance water sources to manage the South Pierce D-001 or D-001T outfall within permitted limits for conductivity. The Hookers Prairie is approaching completion of mining at which time active mining will cease. Once the mine has ceased operations, Mosaic has a 5 year plan to complete much of the required mined lands reclamation, clay settling areas reclamation and plant site demolition. During the mine closure stages much of the mine circuit water that was used to transport phosphate ore to the plant site and separated clays and sands to tailings areas will need to be discharged from the facility. These discharges will be to the South Prong of the Alafia River and to the Peace River basins.

Mosaic is evaluating the transfer of Hookers Prairie mine recirculation water and mine site drainage associated with reclamation of mined areas and clay settling areas to the South Pierce NPDES land area for blending with treated wastewaters prior to discharge at outfall D-001 or D-001T. The use of mine recirculation water from the Hookers Prairie mine will reduce the need for groundwater at the South Pierce facility for phosphogypsum stack closure.

Current and Future Water Conservation Practices

Mosaic is continually updating our long-term water strategy for our Florida operations, with the goal of conserving water resources and reducing the amount of water we impound for operational use. Our water management programs actively engage in facility-specific and business unit-wide initiatives to reduce our water footprint. Facilities continuously monitor and evaluate water use to ensure it is minimized and water recycling and reuse are maximized. Additionally, cross-training of water conservation projects is ongoing between facilities.

Concentrates Facilities

Bartow:
The Bartow facility has an existing RO system in place for process water treatment. In October 2013, a pipeline was installed from the RO system effluent (permeate) to the sulfuric acid plant to provide boiler feed water makeup. This project accounted for a 250 gpm ground water savings.

New Wales:
Please see Attachment C containing the updated New Wales completed fresh water savings projects list, as a result of the GE study. These projects are monitored by the onsite Mosaic utility engineer. The New Wales facility is still undergoing the evaluation of the application of Riverview's water "re-injection" approach at this facility. Timing for implementation of this project has not been determined.

Riverview (Not IWUP):
In the spring of 2013, Mosaic and SWFWMD met to further discuss the use of reclaim water as an alternative water source at the Riverview facility. As a result, Mosaic has proposed a comprehensive water study be performed at the Riverview facility (not under the IWUP), similar to the study performed at New Wales to better understand the requirements for the facility. Mosaic has carefully evaluated the reclaimed water option and determined that based on quantity/quality of water available, cost of water, and associated infrastructure needs/costs, the use of reclaim water in the plant process was not preferred. However, Mosaic considers reclaimed water as a viable source (as demonstrated by ongoing projects that receive treated municipal waste water at various Mosaic facilities) and will continue to consider various alternative sources in evaluating future water resource needs.

Economic, technical, and environmental feasibility analysis

Mosaic has provided an update to the economic, technical and environmental feasibility analysis of alternative water use and conservation, see Attachment D "Alternative Water Use and Conservation Analyses for Mines and Concentrates".

Analysis of Gypsum Stack Closure Water Use

Please see the update provided in the Ongoing Projects Section.

Analysis of reclaimed water sources for the area

Mosaic currently has existing connections with three reclaimed water sources. Mosaic has a connection with the Hillsborough County Falkenburg and South County Wastewater treatment Plants with an available interruptible supply of up to 1.2 MGD. The Mosaic Fort Meade Mine receives approximately 150,000 gallons per day of treated wastewater from the City of Bowling Green Wastewater Treatment Plant Facility and the Mosaic South Fort Meade facility receives approximately 550,000 gallons per day of treated wastewater from the City of Fort Meade Wastewater Plant and the Bowling Green Wastewater Treatment Plant. At the Riverview facility (which is not included in the IWUP), reclaimed water is tied into the sulfuric acid plant cooling tower supply; however usage is limited due the high TDS, conductivity and Chloride levels in the reclaimed water.

Previous studies conducted by Mosaic, reveal that the majority of available reclaimed water supplies within a reasonable proximity of Mosaic's operations are already utilized by other projects. Some limited quantities of additional reclaimed water are available in the general region, but the distance from Mosaic facilities and the lack of existing infrastructure makes utilization of these reclaimed water sources expensive and not likely to be the most cost effective water conservation strategy.

Mosaic will continue to pursue economically, technically, and environmentally feasible options for utilizing additional reclaimed water. We will consider the specific reclaimed streams which appear most cost-effective (such as Winter Haven-Conine and Highlands Avon Park), determine the actual Mosaic facility (and processes within that facility) where the stream could be utilized, and finally determine the degree of pretreatment which would be required to utilize the reclaimed water

In general, Mosaic has found that the primary limitations to integrating substantially more reclaimed water into our water management systems is the cost to deliver the water to Mosaic, the cost to treat the water to reduce nutrients (Phosphorus and Nitrogen), and the variability of the quality and quantity of reclaimed water available from any source. Mosaic will continue to work with SWFWMD and the wastewater treatment authorities to maximize our use of reclaimed water.

Mosaic appreciates the District's continued assistance and collaboration as Mosaic implements the new systems and processes supporting implementation of the newly issued IWUP permit. If you have any questions regarding the reported information please contact me at 813-500-6656

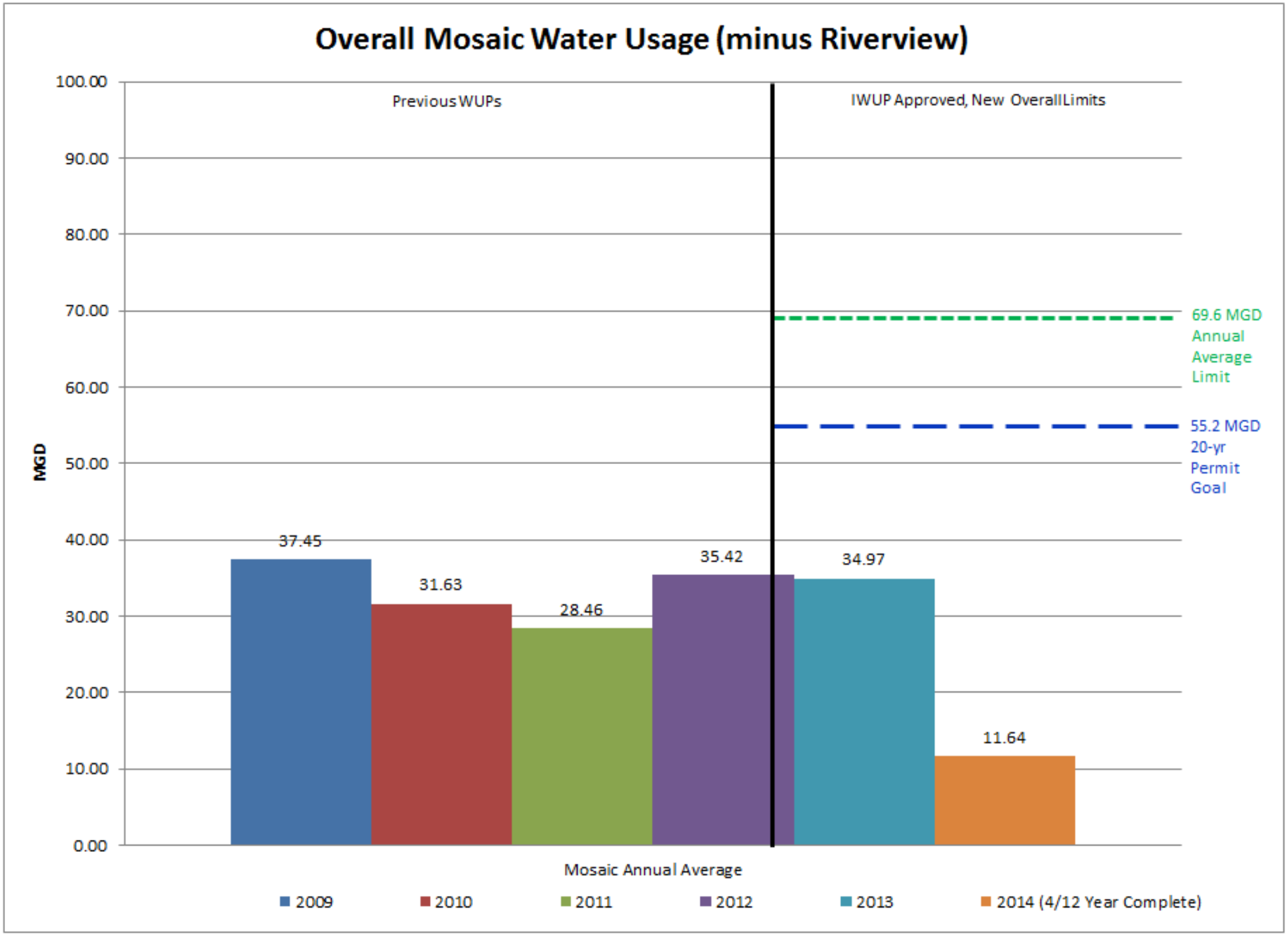
Sincerely,

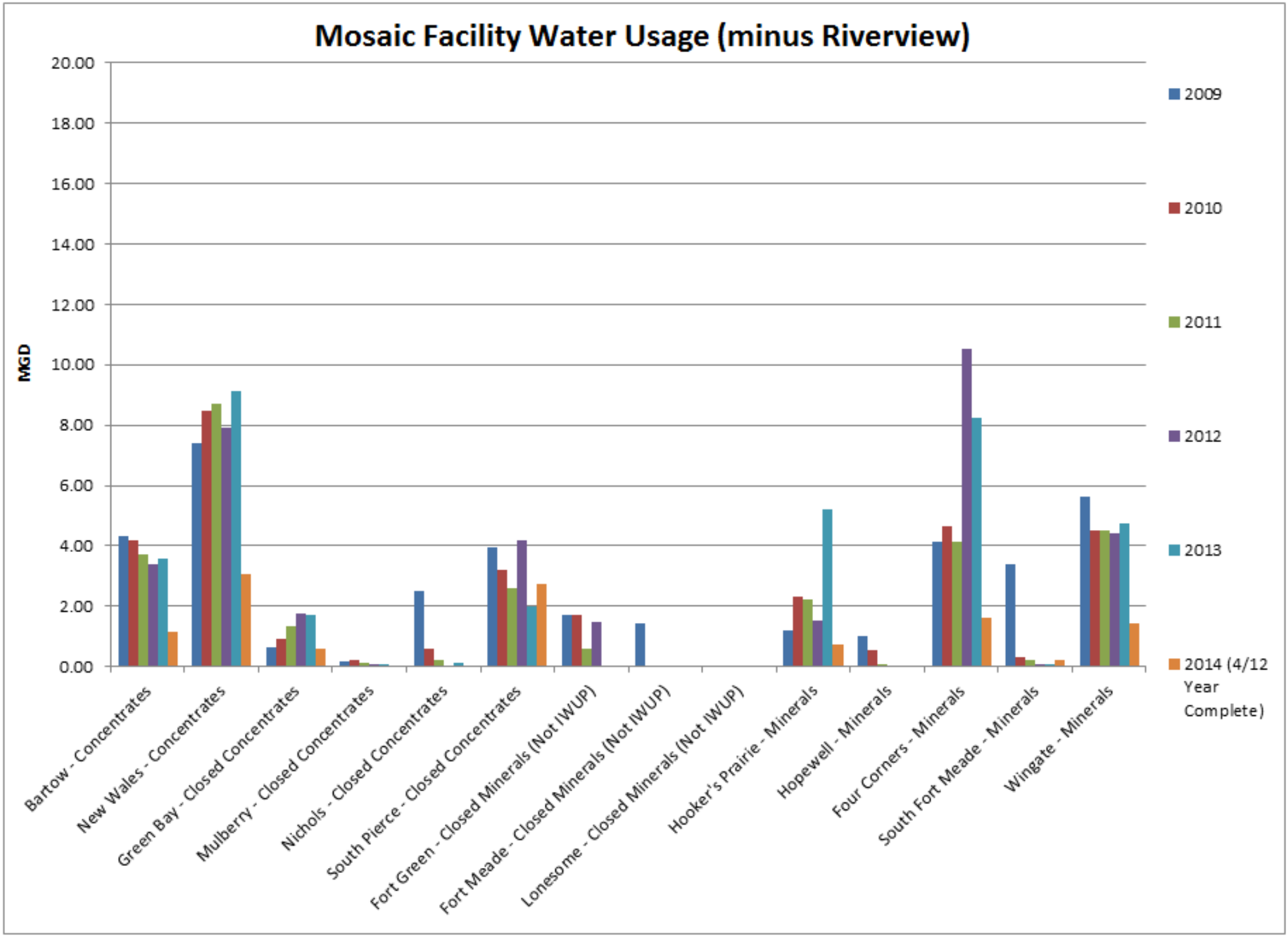
Kacie Blue
Sr. Environmental Specialist

cc: IWUP File
Subrata Bandyopadhyay, Mosaic
Scott Lehr, Mosaic

ATTACHMENT A

2013-2014 WATER USAGE GRAPHS


Overall Mosaic Water Usage (minus Riverview)
Previous WUPs
IWUP Approved, New Overall Limits
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
MGD
69.6 MGD Annual Average Limit
55.2 MGD 20-yr Permit Goal
37.45
31.63
28.46
35.42
34.97
11.64
Mosaic Annual Average
2009
2010
2011
2012
2013
2014 (4/12 Year Complete)


Mosaic Facility Water Usage (minus Riverview)
MGD
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2009
2010
2011
2012
2013
2014 (4/12 Year Complete)
Bartow - Concentrates
New Wales - Concentrates
Green Bay - Closed Concentrates
Mulberry - Closed Concentrates
Nichols - Closed Concentrates
South Pierce - Closed Concentrates
Fort Green - Closed Minerals (Not IWUP)
Fort Meade - Closed Minerals (Not IWUP)
Lonesome - Closed Minerals (Not IWUP)
Hooker's Prairie - Minerals
Hopewell - Minerals
Four Corners - Minerals
South Fort Meade - Minerals
Wingate - Minerals

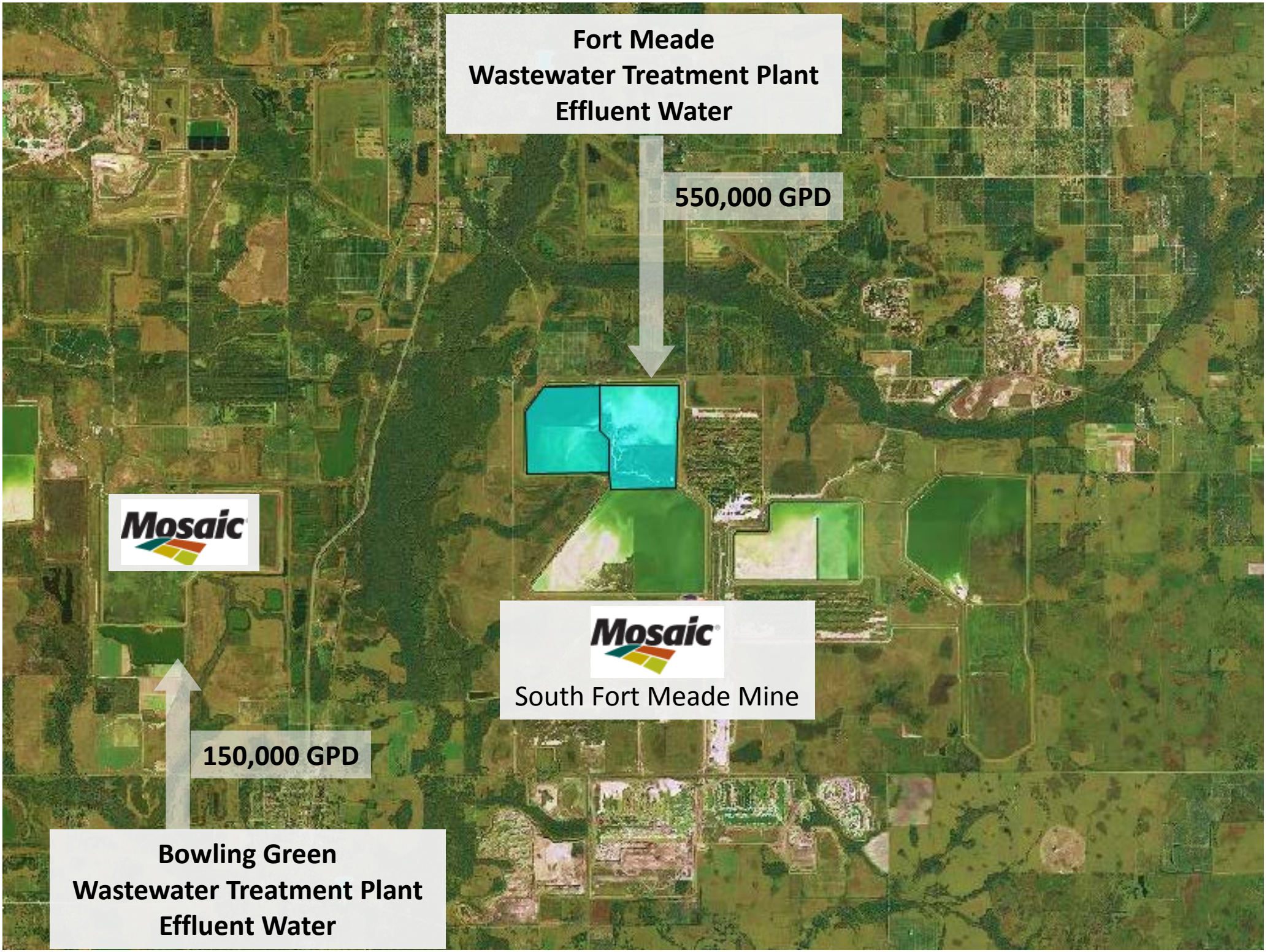
Mosaic Facility Water Usage Table (minus Riverview)

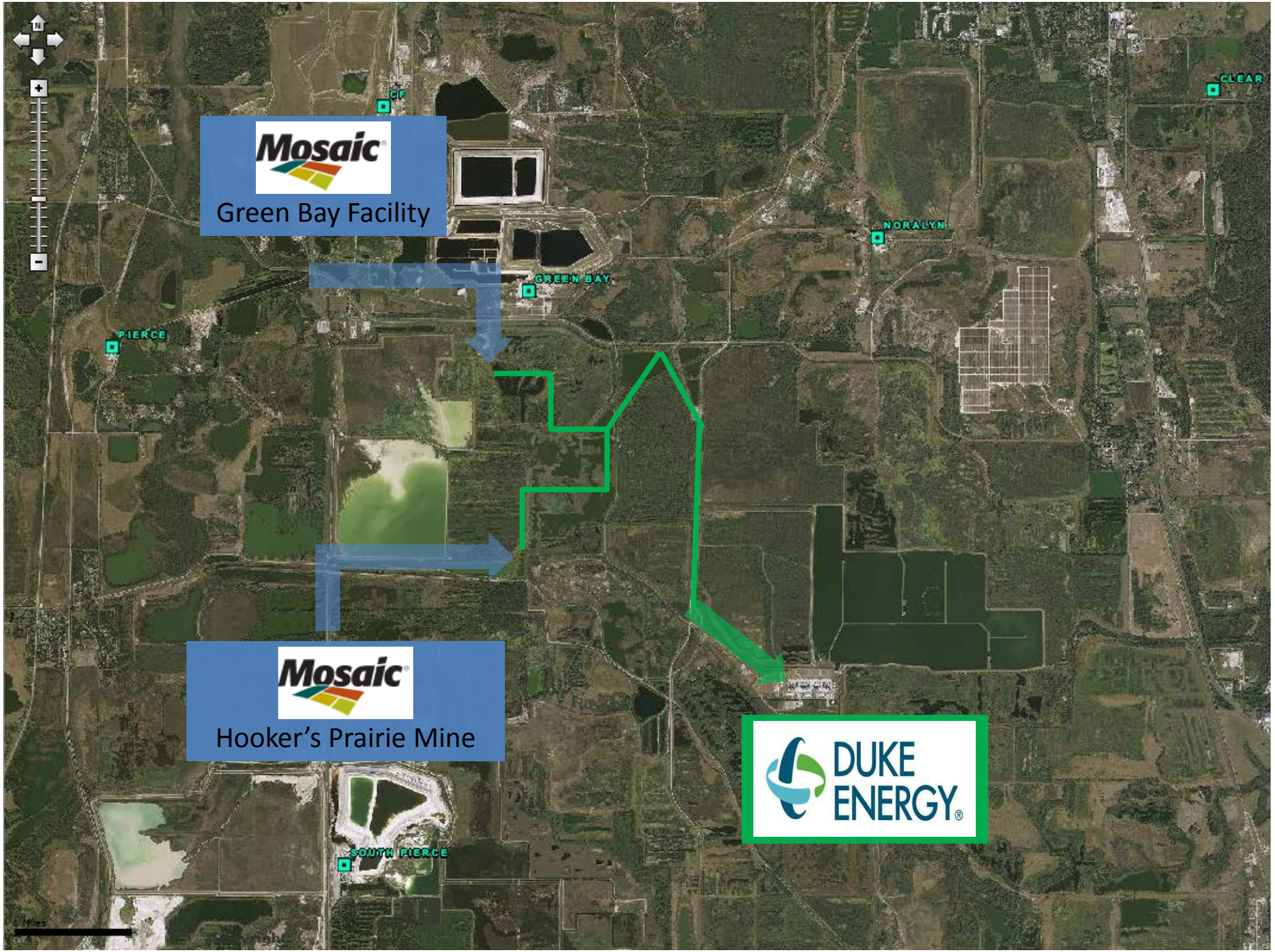
	2009	2010	2011	2012	2013	2014 (4/12 Year Complete)	Annual Average Limit
Bartow - Concentrates	4.33	4.18	3.71	3.39	3.57	1.16	5.7
New Wales - Concentrates	7.38	8.49	8.72	7.92	9.13	3.07	11.2
Green Bay - Closed Concentrates	0.64	0.91	1.34	1.74	1.73	0.60	3
Mulberry - Closed Concentrates	0.15	0.21	0.13	0.10	0.10	0.04	1.5
Nichols - Closed Concentrates	2.50	0.59	0.22	0.01	0.13	0.01	2.5
South Pierce - Closed Concentrates	3.94	3.21	2.60	4.19	1.97	2.74	8.7*
Fort Green - Closed Minerals (Not IWUP)	1.72	1.71	0.60	1.50	0.00	0.00	NA
Fort Meade - Closed Minerals (Not IWUP)	1.42	0.00	0.00	0.00	0.00	0.00	NA
Lonesome - Closed Minerals (Not IWUP)	0.00	0.00	0.00	0.00	0.00	0.00	NA
Hooker's Prairie - Minerals	1.22	2.34	2.22	1.53	5.23	0.71	3.0*
Hopewell - Minerals	1.01	0.54	0.06	0.00	0.00	0.00	0.5
Four Corners - Minerals	4.14	4.64	4.14	10.51	8.26	1.64	20
South Fort Meade - Minerals	3.37	0.29	0.21	0.10	0.10	0.24	15.4
Wingate - Minerals	5.63	4.52	4.50	4.43	4.76	1.43	5.8
Mosaic Annual Average	**37.45**	**31.63**	**28.46**	**35.42**	**34.97**	**11.64**	**69.60**

*Please Note: Facility Annual Average Reallocation shown below

IWUP 0.25 Oct 30, 2012 to Dec 13, 2013	South Pierce	5.9
	Hooker's Prairie	5.8
IWUP 0.26 Dec 13, 2013 to present	South Pierce	8.7
	Hooker's Prairie	3

ATTACHMENT B
WATER CONSERVATION SYNERGIES


Fort Meade
Wastewater Treatment Plant
Effluent Water
550,000 GPD
Mosaic
Mosaic
South Fort Meade Mine
150,000 GPD
Bowling Green
Wastewater Treatment Plant
Effluent Water


Mosaic
Green Bay Facility
Mosaic
Hooker's Prairie Mine
DUKE ENERGY
CF
CLEAR
NORALYN
GREEN BAY
PIERCE
SOUTH PIERCE

ATTACHMENT C
NEW WALES UPDATED FRESHWATER SAVINGS PROJECT LIST

Area	Project Description	GPM Impact	Estimated Implementation Date	Description
Phos Acid	Repair ERM liners to allow pondwater use vs freshwater	130	10/28/2013	
Phos Acid	Unplug pond water line feeding belt filters to re-utilize pond water to them	200	4/5/2013	PW line unplugged and back to normal operation
Phos Acid	Install mechanical seal & dole valves in 3rd train rock transfer pumps (2 pumps)	65	12/31/2012	Pumps, seals, dole valves, and magmeters have been installed and are in service.
Phos Acid	Dole valves on gyp pumps	25	4/15/2012	Pumps, seals, filters and dolve valves installed. Seal water magmeters to be wired.
Phos Acid	Replace pump seals barrier tanks on 7 pumps	20	6/1/2012	
Phos Acid	Install mechanical seal & dole valves in the rod mill slurry pumps (4 pumps)	100	6/31/2012	
Phos Acid	Replace fresh water with pond water to filter vacuum scrubber.	100	2/27/2013	
Phos Acid	Improve / re-design filter frame sprays.	15		Third Train in process of being completed. Solenoid scheduled for installation.
Phos Acid	Eliminate/decrease water drained during slow rolling at rock slurry pumps and filter feed pumps.	30	1/1/2013	Rock slurry pumps still slow rolled intermittently
AFI	Replace water cooled air compressors with air cooled	40	6/1/2012	
Gran	Reclaim NH3 vaporizer condensate to the scrubber to diplace fresh water make-up	15	12/31/2012	
Gran	Reclaim TGS blowdownto displace fresh water used to keep gran. Duct clean.	10	12/31/2012	
Gran	Slurry Pump barrier tanks (2 pumps)	5	5/31/2012	
	FW Savings Projected	755		
	Total	755		

Fresh Water Usage Comparison

End	Average GPM
1/1/2012	5902
3/1/2014	5181
Change	721

ATTACHMENT D
ALTERNATIVE WATER USE & CONSERVATION ANALYSES FOR
MINES, CONCENTRATES & CLOSED CONCENTRATE FACILITIES

ALTERNATIVE WATER USE and CONSERVATION ANALYSES FOR MINES

GROUNDWATER USED FOR	Stream Labels	Groundwater Water (GW)	Reclaimed Water	Additional Stormwater Capture	MWRS	Consump-tive Use?	Further Analysis Required?	COMMENTS	2012-2013 Update	2013-2014 Update
Booster Pump Seal Water										
Technical Feasibility	**A**	H	H	H	H	**yes**	Engineering Evaluation, Pilot Project	Use of reclaimed water or stormwater is feasible to replace GW. Additional study is required to determine the extent of treatment, conveyance and storage costs required as well as an evaluation of how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	All active mines utilize MWRS. Budgeted engineering evaluation for 2014 for Ona.	All active mines utilize MWRS. Due to recent CF Industries acquisition, the mine plan for Ona has been pushed back to 2021. Therefore, the engineering evaluation for Ona will also be delayed.
Estimated Cost (Capital/ Operating)		L	H/L	M/L	M/L					
Beneficiation										
Technical Feasibility	**B/E**	H	M	H	H	**no**	Engineering Evaluation	GW used only in emergencies; no normal usage would be replaced by alternative water supplies. Use of reclaimed water or stormwater is feasible to replace GW. Additional study is required to determine the extent of treatment, conveyance and storage costs required as well as an evaluation of how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	All active mines utilize MWRS.	All active mines utilize MWRS. South Fort Meade Mine receives water from Fort Meade Wastewater Treatment Plant to the MWRS via CSA SFM-3.
Estimated Cost (Capital/ Operating)		L	H/M	M/L	L/M					
Flotation										
Technical Feasibility	**B/E**	H	L	H	H	**no**	Engineering Evaluation	The rate of GW usage for flotation varies from site to site, dependent on the quality of the MWRS return to the plant. Facilities such as FCO, SFM and HP use little GW for flotation, while Wingate and Hopewell flotations plant demands are met primarily with GW use of reclaimed water or stormwater is feasible to replace GW. Add'l study is required to determine the treatment, conveyance and storage costs and to evaluate how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	The Hopewell mine facility is no longer active. With activation of the CSA FM-1, the MWRS has improved at the Wingate facility, resulting in less groundwater used for floatation	CSA FM-2 was constructed and activated in the fall of 2013.
Estimated Cost (Capital/ Operating)		L	H/M	M/L	M/L					
Clay Transport										
Technical Feasibility	**C**	H	M	H	H	**no**	Engineering Evaluation	Captured stormwater, incorporated into the overall MWRS is the primary source. Use of reclaimed water or stormwater is feasible to replace GW. Additional study is required to determine the extent of treatment, conveyance and storage costs required as well as an evaluation of how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	All active mines utilize MWRS.	No update
Estimated Cost		L	H	L	L					
Sand Transport										
Technical Feasibility	**D**	H	M	H	H	**no**	Engineering Evaluation	Captured stormwater, incorporated into the overall MWRS is the primary source.Use of reclaimed water or stormwater is feasible to replace GW. Additional study is required to determine the extent of treatment, conveyance and storage costs required as well as an evaluation of how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	All active mines utilize MWRS. Budgeted engineering evaluation for 2014 for Ona.	All active mines utilize MWRS. Due to recent CF Industries acuisition, the mine plan for Ona has been pushed back to 2021. Therefore, the engineering evaluation for Ona will also be delayed.
Estimated Cost		L	H	L	L					
Hydraulic Stage Water										
Technical Feasibility	**F**	H	M	H	H	**no**	Engineering Evaluation	Captured stormwater, incorporated into the overall MWRS is the primary source. Use of reclaimed water or stormwater is feasible to replace GW. Additional study is required to determine the extent of treatment, conveyance and storage costs required as well as an evaluation of how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	All active mines utilize MWRS. Investigating options for staging water at Four Corners MU 20.	All active mines utilize MWRS. Investigating options for staging water at Four Corners MU 20. This project was not pursued due to constructability and high costs.
Estimated Cost		L	H	L	L					
Mitigation: recharge ditches/ cut flooding										
Technical Feasibility	**H**	H	M	H	H	**no**	None	GW used only in emergencies; no normal usage would be replaced by alternative water supplies. Captured stormwater is the primary source.Use of reclaimed water or stormwater is feasible to replace GW. Additional study is required to determine the extent of treatment, conveyance and storage costs required as well as an evaluation of how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	All active mines utilize MWRS. Cuts were flooded at Four Corners Long Branch area utilizing storm water only.	All active mines utilize MWRS. Cuts were flooded at Four Corners Long Branch, Four Corners MU 19, and Four Corners MU 20E areas utilizing storm water only.
Estimated Cost		L	H	L	L					
Mitigation: underground injection wells										
Technical Feasibility	**I**	H	L	L	L	**no**	None	For injection to the SAS in Florida, Federal UIC Program prohibits use of water that does not meet Primary Drinking water Standards. MWRS and/or reclaimed water does not meet these standards	Dewatering well water is the proposed source for Four Corner's Altman and South Fort Meade Bayhead areas, planned for mining in 2014. Groundwater will be used only as a back source.	Dewatering well water is the proposed source for Four Corner's Altman and South Fort Meade Bayhead areas, planned for mining in late 2014/early 2015. Groundwater will be used only as a back source.
Estimated Cost		L	H	H	H					
Water Table Maintenance: Direct Hydration										
Technical Feasibility	**G**	H	N/A	N/A	N/A	**no**	None	FDEP permit that authorizes direct, offsite discharges is limited to produced groundwater. Obtaining an NPDES permitted discharge point to utilize MWRS for direct discharge is technically feasible but not supported by the current regulatory climate	Dewating well water was historically used at Four Corners MU 19 and Wingate Manson Jenkins area. Dewatering well water is proposed for mitigation at Four Corners MU 21. Where water quality does not permit, an intermediate well would be proposed.	Dewating well water was historically used at Four Corners MU 19 and Wingate Manson Jenkins area. Dewatering well water is proposed for mitigation at Four Corners Long Branch and Four Corners MU 21. Where water quality does not permit, an intermediate well would be proposed. In April 2014, FDEP verbally approved aeration pilot study for dewatering well water. Currently, awaiting written approval.
Estimated Cost (Capital/ Operating)		L	N/A	N/A	N/A					
Outfall Treatment - Blending										
Technical Feasibility	**J**	H	M	M	M	**yes**	Engineering Evaluation	Low TDS/ low conductivity water is required for this service. Any water use that meets this criteria is potentially viable. Cost considerations include infrastructure development and pre-treatment to reduce conductivity prior to use. Stormwater captured on site is a viable water source provided conductivity remains low enough throughout the collection and storage process. Use of reclaimed water is feasible to replace GW. Additional study is required to determine treatment, conveyance and storage costs as well as an evaluation of how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	All active mines utilize MWRS. Ground water as blending water is not used at current mine facilities.	No update
Estimated Cost		L	H	M	M					
Potable Water										
Technical Feasibility	**K**	H	L	M	M	**yes**	None	Groundwater is treated at package plants at each facility to meet Class I DW standards, facilities are not geographically located such that connection to establish public supply is economically feasible	No update	No update
Estimated Cost (Capital/ Operating)		L	H	H	H					
Makeup Water for MWRS (includes new CSA charging)										
Technical Feasibility	**L**	H	H	M	NA	**no**	Yes, engineering evaluation	Capture, use and re-use of stormwater within the facility MWRS is already standard practice, groundwater is only used as make-up when the MWRS is insufficient. Use of reclaimed water or stormwater is feasible to replace GW. Additional study is required to determine the extent of treatment, conveyance and storage costs required as well as an evaluation of how development of stormwater capture areas outside of the MWRS could impact MFL's and other existing legal users.	No update	No update
Estimated Cost (Capital/ Operating)		L	H/L	M/L	NA					

Technical Feasibility:
H = easily implemented and permitted, proven commercially in similar application and similar size
M = probably can be implemented and permitted but commercial applications are limited and pilot testing is required
L = unlikely to be effective, no similar commercial applications

Estimated Costs (including development and testing; capital and operating costs):
H = cannot be easily estimated or estimated costs are greater than $2/ kgal
M = costs expected to be $0.50 to $2.00/ kgal
L = costs expected to be less than $0.50/kgal

H	highlighted cells area areas where Mosaic is already using this
M	water in this service

ALTERNATIVE WATER USE and CONSERVATION ANALYSES FOR CONCENTRATES

GROUNDWATER USED FOR	Stream Labels	Groundwater (GW)	Reclaimed Water	Stormwater	Process Water	Consump-tive Use?	Further Analysis Required?	COMMENTS	2012-2013 Update	2013-2014 Update
Sulfuric Acid production										
Sample Ejectors and Oil Coolers						**no**				
Technical Feasibility		H	H	H	H				Riverview conducted a water management study and reclaim use in Oct 2013 which is under review.	Riverview conducted a water management study and reclaim use in Oct 2013. Several projects may be implemented in 2015. At this time, reclaim use in SA was not preferred.
Estimated Cost (Capital/ Operating)	**A**	L	H/L	H/L	H/L		None	Alternative water sources would potentially require treatment to reduce calcium.		
Boiler Feed Water						**partial**				
Technical Feasibility		H	H	H	H				Riverview conducted a water management study and reclaim use in Oct 2013 which is under review.	Riverview conducted a water management study and reclaim use in Oct 2013. Several projects may be implemented in 2015. At this time, reclaim use in SA was not preferred. Bartow routed the RO process water treatment system permeate for boiler feedwater makeup.
Estimated Cost (Capital/ Operating)	**B**	L	H/M	M	H/H		Engineering Evaluation, Pilot Project	Water makeup is required for the boilers to replace steam lost thru condensate and leaks. Alternative sources would require more treatment (demineralization) than that which is required to make GW suitable for boiler feed.		
Cooling Tower Makeup						**yes**				
Technical Feasibility		H	H	H	H				Bartow and Riverview utilize a heat input system instead of cooling towers, which results in a FW savings	No update
Estimated Cost (Capital/ Operating)	**C**	L	H/M	H/L	H/H		None	Water makeup is required for the cooling towers to replace CW lost thru evaporation, drift and blowdown. Use of alternative sources would either require pretreatment to GW standards, or would increase blowdown rates and treatment chemical usage.		
Sulfuric Acid Production						**yes**				
Technical Feasibility		H	H	H	H				Riverview conducted a water management study and reclaim use in Oct 2013 which is under review.	Riverview conducted a water management study and reclaim use in Oct 2013. Several projects may be implemented in 2015. At this time, reclaim use in SA was not preferred.
Estimated Cost (Capital/ Operating)	**D**	L	H/L	H/L	H/H		None	Water is consumed in making sulfuric acid from elemental sulfur. Most of the water used comes from condensate from the evaporators, but some makeup water is required. Use of alternative sources is potentially feasible.		
Dry Products										
Fresh Water Line (Pump Seals)						**yes**				
Technical Feasibility		H	H	H	H		Engineering Evaluation	Source water with higher dissolved solids would need to be treated to GW standards to provide sufficient sealing capability.	Bartow implemented focus team to reduce FW usage in 2011-2012.	New Wales has implemented projects in 2012-2014 as a result of the GE Study
Estimated Cost (Capital/ Operating)	**E**	L	H/L	H/L	H/H					
Scrubber Feed Water						**yes**				
Technical Feasibility		H	H	H	H		Engineering Evaluation	Pond water is currently used to scrub impurities from the offgas streams in the granulation systems. Some well water is used as makeup. Alternative sources for make water is potentially feasible. Note that in the future, EPA requirements may require use of GW for all scrubbing.	No update	No update
Estimated Cost (Capital/ Operating)	**F**	L	H/L	H/L	H/H					
Phosphoric Acid Production										
Groundwater to Ball Mills						**no**			Bartow implemented focus team to reduce FW usage in 2011-2012. New Wales has implemented projects in 2012-2013 as a result of the GE Study	New Wales has implemented projects in 2012-2014 as a result of the GE Study
Technical Feasibility		H	H	H	H		Engineering Evaluation	Freshwater is used to supplement process water that is used in the wet rock grinding mills.		
Estimated Cost (Capital/ Operating)	**G**	L	H/L	H/L	H/H					
Groundwater to Flash Coolers and Filter Vacuum pumps	**H**					**yes**			Bartow implemented focus team to reduce FW usage in 2011-2012. New Wales has implemented projects in 2012-2013 as a	New Wales has implemented projects in 2012-2014 as a result of the GE Study
Technical Feasibility		H	M	H	L		Engineering Evaluation	Liquid ring vacuum pumps require clean, neutral water for sealing.		
Groundwater to Pump Seals						**yes**				
Technical Feasibility		H	H	H	H		Engineering Evaluation	Water is lost to the pumped material/ mechanical leakage- so water must be made up to pump seals.	Bartow implemented focus team to reduce FW usage in 2011-2012.	New Wales has implemented projects in 2012-2014 as a result of the GE Study
Estimated Cost (Capital/ Operating)	**I**	L	H/L	H/M	H/H					
Miscellaneous Users						**yes**				
Technical Feasibility		H	H	H	**H**		Engineering Evaluation	Includes wash water and unaccounted uses	Bartow implemented focus team to reduce FW usage in 2011-2012.	New Wales has implemented projects in 2012-2014 as a result of the GE Study
Estimated Cost (Capital/ Operating)	**J**	L	H/L	H/M	**L**					
Treatment Water										
Treatment Water						**no**				
Technical Feasibility		H	H	H			Engineering Evaluation	Fresh water is use to lower the conductivity of the NPDES discharge stream. The conductivity of reclaimed water is 30% higher than that of GW; thus much more reclaimed water would be required than GW, and would increase nutrient loading. Use of SW is technically feasibly but requires a SW infrastructure	Bartow and New Wales utilize fresh water for blending only in emergencies	No update
Estimated Cost (Capital/ Operating)	**K**	L	H/L	H/L						
Other Users										
Potable						**yes**				
Technical Feasibility		H	L	M	L		Engineering Evaluation	There are no reasonable substitutes for potable water. Any alternative source would require filtration and disinfection, which would be cost prohibitive for this small volume stream.	No update	No update
Estimated Cost (Capital/ Operating)	**L**	L	H	H	H					

Technical Feasibility:

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M = probably can be implemented and permitted but requires permit changes, additional equipment, and/or commercial applications are limited and pilot testing is required

L = unlikely to be effective, no similar commercial applications

H	highlighted areas are indicated for further analysis of
M	the potential to use the source stream in this service.

Estimated Costs (including development and testing; capital and operating costs):

H = cannot be easily estimated or estimated costs are greater than $2/ kgal

M = costs expected to be $0.50 to $2.00/ kgal

L = costs expected to be less than $0.50/kgal

ALTERNATIVE WATER USE and CONSERVATION ANALYSES FOR CONCENTRATES - CLOSED FACILITIES

GROUNDWATER USED FOR	Stream Labels	Groundwater (GW)	Reclaimed Water	Stormwater	Process Water	Consump-tive Use?	Further Analysis Required?	COMMENTS	2012-2013 Update	2013-2014 Update
Sulfuric Acid production (South Pierce facility only)										
Demin Feed Water						**partial**				
Technical Feasibility		H	H	H	H		Engineering Evaluation, Pilot Project	Water makeup is required for the boilers to replace steam lost thru condensate and leaks. Alternative sources would require more treatment (demineralization) than that which is required to make GW suitable for boiler feed.	South Pierce utilizes surface water instead of ground water. Mulberry, Green Bay, and Nichols are not operational.	No update
Estimated Cost (Capital/ Operating)	**B**	L	H/M	M	H/H					
Non-Process Recycle Make-Up						**yes**				
Technical Feasibility		H	H	H	H			Water makeup is required for the recycle water pond to replace CW lost thru evaporation, drift and blowdown. Use of alternative sources would either require pretreatment to GW standards, or would increase blowdown rates and treatment chemical usage.	South Pierce utilizes surface water instead of ground water. Mulberry, Green Bay, and Nichols are not operational.	No update
Estimated Cost (Capital/ Operating)	**C**	L	H/M	H/L	H/H		None			
Acid Tower Feed						**yes**				
Technical Feasibility		H	H	H	H			Water is consumed in making sulfuric acid from elemental sulfur. Most of the water used comes from condensate from the evaporators, but some makeup water is required. Use of alternative sources is potentially feasible.	No update	No update
Estimated Cost (Capital/ Operating)	**A**	L	H/L	H/L	H/H		None			
Process Water Treatment System										
Miscellaneous Users						**yes**				
Technical Feasibility		H	H	H	**H**		Engineering Evaluation	Includes wash water and unaccounted uses	Wash water is not used at the closed facilities.	no update
Estimated Cost (Capital/ Operating)	**F**	L	H/L	H/M	**L**					
Treatment Water										
Treatment Water						**yes**				
Technical Feasibility		H	H	H				Fresh water is use to lower the conductivity of the NPDES discharge stream. The conductivity of reclaimed water is 30% higher than that of GW; thus much more reclaimed water would be required than GW, and would increase nutrient loading. Use of SW is technically feasibly but requires a SW infrastructure.	Evaluating utilizing mine cut water instead of ground water at South Pierce. FW is used at the Green Bay Reverse Osmosis treatment system and the resulting treated stream is used for blending at the outfall.	Evaluating utilizing Hooker's Prairie mine recirculation water instead of ground water at South Pierce process water treatment system. FW is used at the Green Bay Reverse Osmosis treatment system and the resulting treated stream is used for blending at the outfall.
Estimated Cost (Capital/ Operating)	**E**	L	H/L	H/L			Engineering Evaluation			
Other Users										
Potable						**yes**				
Technical Feasibility		H	L	M	L		Engineering Evaluation	There are no reasonable substitutes for potable water. Any alternative source would require filtration and disinfection, which would be cost prohibitive for this small volume stream.	No update	No update
Estimated Cost (Capital/ Operating)	**D**	L	H	H	H					

Technical Feasibility:
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Estimated Costs (including development and testing; capital and operating costs):
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L = costs expected to be less than $0.50/kgal

H
M

highlighted areas are indicated for further analysis of the potential to use the source stream in this service.