



NUTRIENT MONITORING

SOLID MANURE		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Each application to each land application area	Total volume (cubic yards) applied and density (pounds per cubic foot) OR Total weight (tons) applied and percent moisture	Density (when volume applied is reported) OR Percent Moisture (when weight applied is reported)
Once within 12 months	None	General minerals, including: calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride
Twice per year	None	Total nitrogen, total phosphorus, potassium, and density (when volume manure applied is reported) OR percent moisture (when weight manure applied is reported)
Each offsite export of manure (requires manure tracking manifest)	Total volume (cubic yards) OR Total weight (tons) exported	Density (grams per liter) when volume manure exported is reported OR Percent moisture when weight of manure exported is reported
Annually	Total <u>dry weight</u> (tons) manure <u>applied</u> annually to each land application area, and total <u>dry weight</u> (tons) manure <u>exported</u> offsite annually	None

PROCESS WASTEWATER (LIQUID MANURE)		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Each application	Date applied and volume (gallons or acre-inches) applied	None
Quarterly during one application event	Electrical conductivity	Nitrate-nitrogen (only when pond is aerated), ammonium-nitrogen, total Kjeldahl nitrogen, total phosphorus, and potassium
Once within 12 months and annually for two years after groundwater monitoring wells are required	None	General minerals, including: calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride
Each offsite export of process wastewater (requires manure tracking manifest)	Total volume (gallons or acre-inches) exported	None
Annually	Total <u>volume applied</u> annually to each land application area, and total <u>volume exported</u> offsite annually	None

IRRIGATION WATER SAMPLING		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Each irrigation event for each land application area	Volume (gallons or acre-inches) ¹ applied and date applied	
One irrigation event during each irrigation season – for each irrigation water source (well and canal)	None	Electrical conductivity and total-nitrogen ² Data collected to satisfy the groundwater monitoring requirements will satisfy this requirement for irrigation wells

¹ Initial volume measurements may be the total volume for all land application areas. Actual volume measurements for each irrigation source for each land application area are to be recorded no later than July 1, 2011.

² In lieu of sampling the irrigation water, the Discharger may provide equivalent data from the local irrigation district.

PLANT TISSUE SAMPLING		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
At each harvest from each land application area	Total weight (tons) OR Total volume (cubic yards) harvested material removed from each land application area	Percent wet weight when weight of harvested material removed is reported OR Density (grams per liter) when volume of harvested material removed is reported Total nitrogen, phosphorus, and potassium, expressed on a dry weight basis
Mid-season, if necessary to assess need for additional nitrogen during the growing season (only if Discharger wants to add fertilizer in excess of 1.4 times the nitrogen expected to be removed by the harvested portion of the crop)	None	Total nitrogen, expressed on a dry weight basis

SOIL SAMPLING		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Once in the summer of 2008 and then once every five years from each land application area	None	Total phosphorus
Recommended: Spring pre-plant for each crop	None	<u>0 to 1 foot:</u> Nitrate-nitrogen and organic matter <u>1 to 2 foot:</u> Nitrate-nitrogen
Recommended: Fall pre-plant for each crop	None	<u>0 to 1 foot:</u> Electrical conductivity, nitrate-nitrogen, soluble phosphorus, potassium, organic matter <u>1 to 2:</u> Nitrate- nitrogen <u>2 to 3 foot:</u> Nitrate-nitrogen



GROUND WATER MONITORING

DOMESTIC AND AGRICULTURAL SUPPLY WELLS		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Once prior to Nov. 3, 2007 and then annually thereafter for each well present in the production and land application areas	Electric conductivity	Nitrate-nitrogen

SUBSURFACE (TILE) DRAINAGE SYSTEMS		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Once prior to Nov. 3, 2007 and then annually thereafter for each tile drain present in the production and land application areas	Electric conductivity	Nitrate-nitrogen and total phosphorus



DISCHARGE MONITORING

UNAUTHORIZED DISCHARGES (INCLUDING OFF- PROPERTY DISCHARGES) OF MANURE OR PROCESS WASTEWATER		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Daily during each discharge	Electric conductivity, temperature and pH. **Record: date, time, approximate volume (gallons) or weight (tons), duration, location, source, and ultimate destination of discharge	Nitrate-nitrogen, total ammonia-nitrogen, unionized ammonia-nitrogen, total Kjeldahl nitrogen (TKN), total phosphorus, potassium, total dissolved solids, BOD ₅ , total suspended solids, and total and fecal coliform
Daily during each discharge to surface water – for water both upstream and downstream of the discharge	Electric conductivity, dissolved oxygen, temperature and pH	Nitrate-nitrogen, total ammonia-nitrogen, unionized ammonia-nitrogen, total Kjeldahl nitrogen (TKN), total phosphorus, potassium, total dissolved solids, BOD ₅ , total suspended solids, and total and fecal coliform

STORM WATER DISCHARGES TO SURFACE WATER FROM THE PRODUCTION AREA		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Daily during each discharge to surface water – for water both upstream and downstream of the discharge	Electric conductivity, temperature, pH, total ammonia-nitrogen and unionized ammonia-nitrogen. **Record: date, time, approximate volume (gallons), duration, location, source, and ultimate destination of discharge	Nitrate-nitrogen, turbidity, total phosphorus, total and fecal coliform



DISCHARGE MONITORING (CONTINUED)

STORM WATER DISCHARGES TO SURFACE WATER FROM THE LAND APPLICATION AREA		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
First storm event of the wet season and during the peak storm season (typically February) each year from one third of the land application areas (sample areas within the land application area to be rotated each year)	<p>Electric conductivity, temperature, pH, total ammonia-nitrogen and unionized ammonia-nitrogen.</p> <p>**Record: date, time, approximate volume, duration, location, and ultimate destination of discharge</p>	Nitrate- nitrogen, turbidity, phosphorus, total and fecal coliform

TAIL WATER DISCHARGES TO SURFACE WATER FROM THE LAND APPLICATION AREA		
Minimum Sampling Frequency	Minimum Analyses	
	Field	Laboratory
Each discharge from each land application area where irrigation has occurred less than 60 days after application of manure and/or process wastewater (liquid manure)	<p>Electric conductivity, temperature, pH, total ammonia-nitrogen and unionized ammonia-nitrogen.</p> <p>**Record: date, time, approximate volume (gallons), duration, location, and ultimate destination of discharge</p>	NONE
First discharge of the year where irrigation has occurred less than 60 days after application of manure and/or process wastewater (liquid manure)	NONE	Nitrate-nitrogen, total phosphorus, total and fecal coliform