CDQAP - WDR General Order Reference Binder
Tab 1.4
Revised March 2011

NUTRIENT MONITORING

The following information was obtained from Tables 2 through 4 from the revised Monitoring and Reporting Program Order No. R5-2007-0035, posted March, 2011, at http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2007-0035_mrp_rev.pdf.

Representative samples must be collected, preserved, and handled appropriately to maintain sample integrity. Additional information on sampling containers and preservation methods for the discharge samples is available at www.cdqa.org/binder.asp Tab 8, documents 2 and 3.

PROCESS WASTEWATER (LIQUID MANURE)		
Minimum Sampling Frequency	**Minimum Analyses**	
	Field	**Laboratory**
Each application	Date applied, definition of land application area and volume (gallons or acre-inches) applied	None
Quarterly during one application event	Electrical conductivity (may be done in laboratory)	Nitrate-nitrogen (only when pond is aerated), ammonium-nitrogen, total Kjeldahl nitrogen, total phosphorus, total potassium and total dissolved solids
Once every two years	None	General minerals: calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, and chloride
Annually, prior to blending with irrigation water		pH (if requested), total dissolved solids, electrical conductivity, nitrate-nitrogen (only when pond is aerated), total Kjeldahl nitrogen, total phosphorus, and total potassium

The Regional Board will accept analysis of ammonium-nitrogen, although the revised MRP indicates analysis of un-ionized ammonia.

SOLID MANURE		
Minimum Sampling Frequency	**Minimum Analyses**	
	Field	**Laboratory**
Each application to each land application area	Total weight (tons) applied	Percent Moisture
Once every two years		General minerals: calcium, magnesium, sodium, sulfur, chloride, and fixed solids (ash).
Twice per year		Total nitrogen, total phosphorus, total potassium, and percent moisture
Each offsite export of manure	Total weight (tons) exported	Percent moisture
Annually	Total dry weight (tons) manure applied annually to each land application area, and total dry weight (tons) manure exported offsite annually	

IRRIGATION WATER SAMPLING		
Minimum Sampling Frequency	**Minimum Analyses**	
	Field	**Laboratory**
Each irrigation event for each land application area	Date applied, source of water, volume (gallons or acre-inches)[1] applied	
One irrigation event during each irrigation season during actual irrigation events – for each irrigation water source (well and canal)		Electrical conductivity, total-nitrogen[2], total dissolved solids 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) of harvested material removed from each land application area	Total nitrogen, total phosphorus, total potassium (expressed on a dry weight basis), fixed solids (ash) and percent moisture
Mid-season, if necessary to assess need for additional nitrogen fertilizerduring 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)		Total nitrogen, expressed on a dry weight basis

SOIL SAMPLING		
Minimum Sampling Frequency	**Minimum Analyses**	
	Field	**Laboratory**
Once every five years (may be distributed over a five year period by sampling 20% annually)	None	Soluble phosphorus (Olsen test)
Recommended: Spring pre-plant for each crop		0 to 1 foot: Nitrate-nitrogen and organic matter 1 to 2 feet: Nitrate-nitrogen
Recommended: Fall pre-plant for each crop	None	**0 to 1 foot: Electrical conductivity, nitrate-nitrogen, soluble phosphorus, potassium, organic matter**

GROUND WATER MONITORING

DOMESTIC AND AGRICULTURAL SUPPLY WELLS		
Minimum Sampling Frequency	**Minimum Analyses**	
	Field	**Laboratory**
Annually for each domestic and agricultural supply well present in the production and land application areas	Electric conductivity (may be done in laboratory), ammonium nitrogen[3]	Nitrate- nitrogen, ammonium nitrogen if field test presence[3]
Every five years (may be distributed over a 5-year period by sampling 20% of the wells annually)		Calcium, magnesium, sodium, bicarbonate, carbonate, sulfate, chloride, and total dissolved solids

SUBSURFACE (TILE) DRAINAGE SYSTEMS		
Minimum Sampling Frequency	**Minimum Analyses**	
	Field	**Laboratory**
Annually thereafter for each tile drain present in the production and land application areas	Electric conductivity (may be done in laboratory) and ammonium nitrogen (see footnote 3)	Nitrate-nitrogen and total phosphorus, ammonium nitrogen if field test indicates presence[3]

[3] If field measurement indicates the presence of ammonium nitrogen, the discharger shall collect a sample for laboratory analysis of ammonium nitrogen

DISCHARGE MONITORING

DISCHARGES (INCLUDING OFF- PROPERTY DISCHARGES) OF MANURE OR PROCESS WASTEWATER, from the production area or land application area		
Minimum Sampling Frequency	**Minimum Analyses**	
	Field	**Laboratory**
Daily during each discharge	Electric conductivity (may be done in laboratory), temperature and pH. Record: date, time, approximate volume (gallons) or weight (tons), duration, location, source, and ultimate destination of discharge[4]	Nitrate-nitrogen, total ammonia-nitrogen, un-ionized ammonia-nitrogen, total Kjeldahl nitrogen, total phosphorus, potassium, total dissolved solids, BOD_5, total suspended solids, and total and fecal coliform
Daily during each discharge to surface water – for surface water both upstream and downstream of the discharge	Electric conductivity, dissolved oxygen, temperature and pH	Nitrate-nitrogen, total ammonia-nitrogen, un-ionized ammonia-nitrogen, total Kjeldahl nitrogen, total phosphorus, potassium, total dissolved solids, 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 the discharge and for surface water both upstream and downstream of the discharge	Electric conductivity, dissolved oxygen, temperature, pH, total ammonia-nitrogen and un-ionized ammonia-nitrogen Record: date, time, approximate volume (gallons), duration, location, source, and ultimate destination of discharge[4]	Nitrate-nitrogen, turbidity, total phosphorus, total and fecal coliform

[4] Form available for reporting of significant events at http://www.cdqa.org/docs/Priority_Reporting_of_Significant_Events-part_1_of_2.doc

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)	Electric conductivity, temperature, pH, total ammonia-nitrogen and un-ionized ammonia-nitrogen Record: date, time, approximate volume, duration, location, and ultimate destination of discharge	Nitrate- nitrogen, total phosphorus, turbidity, 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 <60 days after application of manure and/or process wastewater (liquid manure)	Electric conductivity, temperature, pH, total ammonia-nitrogen and un-ionized ammonia-nitrogen Record: date, time, approximate volume (gallons), duration, location, and ultimate destination of discharge	NONE
First discharge of the year where irrigation has occurred < 60 days after application of manure and/or process wastewater (liquid manure)	Electric conductivity, temperature, pH, total ammonia-nitrogen and un-ionized ammonia-nitrogen Record: date, time, approximate volume (gallons), duration, location, and ultimate destination of discharge	Nitrate-nitrogen, total phosphorus, total and fecal coliform