Major Industrial
Permit No.: MT0000248

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Montana Water Quality Act, Title 75, Chapter 5, Montana Code Annotated (MCA) and the Federal Water Pollution Control Act (the "Clean Water Act"), 33 U.S.C. § 1251 *et seq.*,

Sidney Sugars Incorporated

is authorized to discharge from its **Sugar Beet Processing Facility**

located at **NW ¼ Section 34, T 23N, R 59E, Richland County**

to receiving waters named, **an unnamed irrigation return channel, the Yellowstone River, and Class I and II ground water**

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein. Authorization for discharge is limited to those outfalls specifically listed in the permit.

This permit shall become effective: **December 1, 2009.**

This permit and the authorization to discharge shall expire at midnight, **November 30, 2014.**

FOR THE MONTANA DEPARTMENT OF
ENVIRONMENTAL QUALITY

Jenny Chambers

Jenny Chambers, Chief
Water Protection Bureau
Permitting & Compliance Division

Issuance Date: October 30, 2009

TABLE OF CONTENTS

Cover Sheet--Issuance and Expiration Dates

I. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS & OTHER CONDITIONS 3

A. Description of Discharge Points and Mixing Zone 3
B. Effluent Limitations 4
C. Monitoring Requirements 7
D. Special Conditions 22
E. Reporting Schedule 26

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS 28

A. Representative Sampling 28
B. Monitoring Procedures 28
C. Penalties for Tampering 28
D. Reporting of Monitoring Results 28
E. Compliance Schedules 28
F. Additional Monitoring by the Permittee 29
G. Records Contents 29
H. Retention of Records 29
I. Twenty-four Hour Notice of Noncompliance Reporting 29
J. Other Noncompliance Reporting 30
K. Inspection and Entry 30

III. COMPLIANCE RESPONSIBILITIES 32

A. Duty to Comply 32
B. Penalties for Violations of Permit Conditions 32
C. Need to Halt or Reduce Activity not a Defense 32
D. Duty to Mitigate 32
E. Proper Operation and Maintenance 32
F. Removed Substances 33
G. Bypass of Treatment Facilities 33
H. Upset Conditions 34
I. Toxic Pollutants 34
J. Changes in Discharge of Toxic Substances 34

IV. GENERAL REQUIREMENTS 36

A. Planned Changes 36
B. Anticipated Noncompliance 36
C. Permit Actions 36
D. Duty to Reapply 36
E. Duty to Provide Information 36
F. Other Information 36
G. Signatory Requirements 36
H. Penalties for Falsification of Reports 37
I. Availability of Reports 38
J. Oil and Hazardous Substance Liability 38
K. Property or Water Rights 38
L. Severability 38
M. Transfers 38
N. Fees 39
O. Reopener Provisions 39

V. DEFINITIONS 41

APPENDIX A – FARM MANAGEMENT PLAN (FMP) TECHNICAL STANDARDS 44

I. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS & OTHER CONDITIONS

A. Description of Discharge Points and Mixing Zone

The authorization to discharge provided under this permit is limited to those outfalls specially designated below as discharge locations. Discharges at any location not authorized under an MPDES permit is a violation of the Montana Water Quality Act and could subject the person(s) responsible for such discharge to penalties under the Act. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge within a reasonable time from first learning of an unauthorized discharge could subject such person to criminal penalties as provided under Section 75-5-632 of the Montana Water Quality Act.

Outfall	Description
001	**Location:** At the end of the pipe, discharging into the effluent ditch, located at N 47° 43' 29" latitude, W 104° 05' 52" longitude. **Mixing Zone:** No mixing zone is granted. **Treatment Works**: Primary settling.
002	**Location:** Infiltration from the Section 25 pond to the Yellowstone River, N 47° 43' 13" latitude, W 104° 05' 45" longitude. **Mixing Zone:** No mixing zone is granted. **Treatment Works**: Primary settling.
003	**Location:** Infiltration from various unlined wastewater factory ponds, discharging into Class II ground water, N 47° 42' 57" latitude, W 104° 07' 41" longitude. **Mixing Zone:** No mixing zone is granted. **Treatment Works**: Primary settling.
Land application	**Location:** At the irrigation system used for land application, N 47° 42' 28" latitude, W 104° 06' 36" longitude. **Mixing Zone:** Not applicable. **Treatment Works**: None.

B. Effluent Limitations

Outfall INTL

Effective August 1, 2014 and lasting through the term of the permit, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below:

Outfall INTL – Final Effluent Limitations, Effective August 1, 2014 [1]			
Parameter	Units	Average Monthly	Daily Maximum
Biochemical Oxygen Demand (BOD_5)	lb/day	3,342	5,013
Total Suspended Solids (TSS)	lb/day	3,342	5,013
Fecal coliform Bacteria	MPN/100 mL	---	400
pH	s.u.	6.0-9.0	
Temperature	°F	Not to exceed 90°	

Footnotes:
1. See Definitions section at end of permit for explanation of terms.

Outfall 001

Effective immediately and lasting through midnight July 31, 2014, the quality of effluent discharged from the Section 25 pond to the effluent ditch, as a minimum, shall meet the limitations as set forth below:

Outfall 001 – Interim Numeric Effluent Limitations [1]			
Parameter	Units	Average Monthly	Daily Maximum
Biochemical Oxygen Demand (BOD_5)	lb/day	3,342	5,013
Total Suspended Solids (TSS)	lb/day	3,342	5,013
E. coli bacteria, summer [2]	cfu/100-mL	126	252
E. coli bacteria, winter [2]	cfu/100-mL	630	1,260

Footnotes:
1. See Definitions section at end of permit for explanation of terms.
2. Summer is defined as April 1 through October 31 and winter is defined as November 1 through March 31.

Effluent pH shall remain between 6.0 and 9.0 standard units. For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

The instantaneous maximum limitation for oil & grease in any grab sample shall not exceed 10 mg/L.

There shall be no discharge which causes visible oil sheen in the receiving stream.

There shall be no acute toxicity in the effluent discharged by the facility.

Effective August 1, 2014 and lasting through the term of the permit, TBEL limitations for Outfall 001 will be met at Outfall INTL. Effective August 1, 2014 and lasting through the term of the permit, the quality of effluent discharged from the Section 25 pond to the effluent ditch at Outfall 001, as a minimum, shall meet the limitations as set forth below:

Outfall 001 – Final Numeric Effluent Limitations, effective August 1, 2014 [1]			
Parameter	Units	Average Monthly	Daily Maximum
E. coli bacteria, summer [2]	cfu/100-mL	126	252
E. coli bacteria, winter [2]	cfu/100-mL	630	1,260

Footnotes:
1. See Definitions section at end of permit for explanation of terms.
2. Summer is defined as April 1 through October 31 and winter is defined as November 1 through March 31.

Effluent pH shall remain between 6.0 and 9.0 standard units. For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

The instantaneous maximum limitation for oil & grease in any grab sample shall not exceed 10 mg/L.

There shall be no discharge which causes visible oil sheen in the receiving stream.

There shall be no acute toxicity in the effluent discharged by the facility.

Outfall 002

Effective immediately and lasting through midnight July 31, 2014, the quality of effluent discharged from the Section 25 pond to the ground water, as a minimum, meet the limitations as set forth below:

Outfall 002 - Interim Numeric Effluent Limitations [1]			
Parameter	Units	Effluent Limitations [2]	
		Average Monthly	Maximum Daily
Biochemical Oxygen Demand (BOD_5)	lb/day	3,342	5,013
Total Suspended Solids (TSS)	lb/day	3,342	5,013
Total Nitrogen	lb/day	8.0	9.9

Footnotes:
1. See Definitions section at end of permit for explanation of terms.
2. Limit compliance is load-based calculated from the average concentration from P-2, -3, and -4 and multiplied by 22 gpm (assumed ground water flow).

Limit compliance is load-based, calculated from the average concentration from P-2, -3, and -4 and multiplied by 22 gpm (assumed ground water flow).

Effective August 1, 2014 and lasting through the term of the permit, TBEL limitations for Outfall 002 will be met at Outfall INTL. Effective August 1, 2014 and lasting through the term of the permit, the following Total Nitrogen final effluent limitations must be met at the monitoring wells identified as P-2, -3, and -4.

Outfall 002 – Final Numeric Effluent Limitations[1] Effective August 1, 2014			
Parameter	Units	Effluent Limitations	
		Average Monthly Limit	Maximum Daily Limit
Total Nitrogen	lb/day	8.0	9.9

1. Limit compliance is load-based calculated from the average concentration from P-2, -3, and -4 and multiplied by 22 gpm (assumed ground water flow).

C. Monitoring Requirements

Outfall INTL – Internal Compliance Monitoring Location

Outfall INTL is an internal compliance monitoring location located at the influent pipe into the Section 25 pond. Water samples must be collected at the influent pipe.

As a minimum, upon the effective date of this permit, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

Outfall INTL Monitoring Requirements				
Parameter	Units	Sample Frequency	Sample Type[1]	RRV [2]
Discharge Flow	gpd	Continuous [3]	Instantaneous	--
Biochemical Oxygen Demand (BOD_5)	mg/L	1/Week	Composite	4
	lb/day	1/Week	Calculated	--
	lb/day	1/Month	Calculated	--
Total Suspended Solids (TSS)	mg/L	1/Week	Composite	10
	lb/day	1/Week	Calculated	--
	lb/day	1/Month	Calculated	--
pH	s.u.	1/Week	Instantaneous	0.1
Temperature	° F	1/Week	Instantaneous	--
Specific Conductivity (SC)	µS/cm	1/Week	Instantaneous	--
Fecal coliform bacteria	MPN/100 mL	1/Week	Grab	1
Total Ammonia as N	mg/L	1/Week	Composite	0.05
Total Kjeldahl Nitrogen	mg/L	1/Week	Composite	--
Nitrate + Nitrite as N	mg/L	1/Week	Composite	0.010
Total Phosphorus as P	mg/L	1/Month	Composite	--
Iron, total recoverable	µg/L	1/Month	Composite	0.050
Arsenic, total recoverable	µg/L	1/Year [4]	Composite	0.003
Lead, total recoverable	µg/L	1/Year [4]	Composite	0.0005
Mercury, total recoverable	µg/L	1/Year [4]	Composite	0.00001
Selenium, total recoverable	µg/L	1/Year [4]	Composite	0.001
Total Dissolved Solids	mg/L	1/Month	Composite	--
Total Hardness (as $CaCO_3$)	mg/L	1/Month	Composite	--

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.
3. Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR.
4. Sample is required to be collected during the 4th calendar quarter of the year to represent the campaign.

1. Reporting Requirements

Load Calculations

In addition to reporting the concentration values, the monthly average loads and daily maximum loads, expressed in pounds per day (lb/day), must be calculated and reported. For the monthly average, load is calculated using the 30-day average flow rate and 30-day average parameter concentration as shown in the following equations.

The daily maximum load is calculated using the weekly parameter concentration (maximum daily if more than one sample is collected during a calendar week) and the daily recorded flow at the time of the sample collection as shown in the following equations. The maximum calculated load is the reported maximum daily load for the calendar month.

Load (lb/day)
Parameter concentration (mg/L) x Effluent Flow Rate (mgd) x (8.34)

Outfall 001 – Interim Monitoring

As a minimum, upon the effective date of this permit through July 31, 2014, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

Effluent monitoring shall occur at the discharge pipe into the effluent ditch.

Outfall 001 Interim Monitoring Requirements Effective Through July 31, 2014				
Parameter	Units	Sample Frequency	Sample Type[1]	RRV [2]
Discharge Flow	gpd	Continuous [3]	Instantaneous	--
Biochemical Oxygen Demand (BOD_5)	mg/L	1/Week	Composite	4
	lb/day	1/Week	Calculated	--
	lb/day	1/Month	Calculated	--
Total Suspended Solids (TSS)	mg/L	1/Week	Composite	10
	lb/day	1/Week	Calculated	--
	lb/day	1/Month	Calculated	--
pH	s.u.	2/Week	Instantaneous	0.1
Temperature	° F	2/Week	Instantaneous	--
Specific Conductivity (SC)	µS/cm	2/Week	Instantaneous	--
E. coli bacteria	cfu/100 mL	2/Week	Grab	1
Total Ammonia as N	mg/L	2/Week	Composite	0.05
Total Kjeldahl Nitrogen	mg/L	2/Week	Composite	--
Nitrate + Nitrite as N	mg/L	2/Week	Composite	0.01
Total Phosphorus as P	mg/L	1/Month	Composite	--
Iron, total recoverable	µg/L	2/Week	Composite	0.050
Arsenic, total recoverable	µg/L	1/Month	Composite	0.003
Lead, total recoverable	µg/L	1/Month	Composite	0.0005
Mercury, total recoverable	µg/L	1/Month	Composite	0.00001
Selenium, total recoverable	µg/L	1/Month	Composite	0.001
Total Dissolved Solids	mg/L	1/Month	Composite	--
Hardness (as $CaCO_3$)	mg/L	1/Month	Composite	--
Whole Effluent Toxicity, Acute [4]	% Effluent	1/Quarter	Grab	NA

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.
3. Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR.
4. See narrative discussion of permit for additional details.

1. Whole Effluent Toxicity Monitoring – Acute Toxicity

Starting in the first calendar quarter following the effective date of the permit, the permittee shall, at least once each quarter conduct an acute static replacement toxicity test on a composite/grab sample of the effluent. Testing will employ two species per quarter and will consist of 5 effluent concentrations (100, 50, 25, 12.5, 6.25 percent effluent) and a control. Dilution water and the control shall consist of the receiving water. Samples shall be collected on a two day progression; i.e., if the first quarterly sample is on a Monday, the second quarter sample shall be on a Wednesday, etc. Saturdays, Sundays and Holidays will be skipped in the progression.

The static toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms, EPA-600/4-90/027 and the "Region VIII EPA NPDES Acute Test Conditions-State Renewal Whole Effluent Toxicity". The permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia sp.* and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*) as the alternating species. The control of pH in the toxicity test utilizing CO2 enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. If more than 10 percent control mortality occurs, the test is considered invalid and shall be repeated until satisfactory control survival is achieved, unless a specific individual exception is granted by the Department. This exception may be granted if less than 10 percent mortality was observed at the dilutions containing high effluent concentrations.

If acute toxicity occurs in a routine test, an additional test shall be conducted within 14 days of the date of the initial sample. Should acute toxicity occur in the second test, testing shall occur once a month until further notified by the Department. In all cases, the results of all toxicity tests must be submitted to the Department in accordance with Part II of this permit.

The quarterly results from the laboratory shall be reported along with the Discharge Monitoring Report (DMR) form submitted for the end of the reporting calendar quarter (e.g., whole effluent results for the reporting quarter ending March 31 shall be reported with the March DMR due April 28th with the remaining quarterly reports submitted with the June, September, and December DMR's). The format for the laboratory report shall be consistent with the latest revision of Region VIII Guidance for Acute

Whole Effluent Reporting, and shall include all chemical and physical data as specified.

If the results for four consecutive quarters of testing indicate no acute toxicity, the permittee may request a reduction to quarterly acute toxicity testing on only one species on an alternating basis. The Department may approve or deny the request based on the results and other available information without an additional public notice. If the request is approved, the test procedures are to be the same as specified above for the test species.

2. Reporting Requirements

Load Calculations

In addition to reporting the concentration values, the monthly average loads and daily maximum loads, expressed in pounds per day (lb/day), must be calculated and reported. For the monthly average, load is calculated using the 30-day average flow rate and 30-day average parameter concentration as shown in the following equations.

The daily maximum load is calculated using the weekly parameter concentration (maximum daily if more than one sample is collected during a calendar week) and the daily recorded flow at the time of the sample collection as shown in the following equations. The maximum calculated load is the reported maximum daily load for the calendar month.

Load (lb/day)
Parameter concentration (mg/L) x Effluent Flow Rate (mgd) x (8.34)

Outfall 001 – Final Monitoring

As a minimum, effective August 1, 2014 through the term of the permit, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

Effluent monitoring shall occur at the discharge pipe into the effluent ditch.

Outfall 001 Final Monitoring Requirements Effective August 1, 2014				
Parameter	Units	Sample Frequency	Sample Type[1]	RRV [2]
Discharge Flow	gpd	Continuous [3]	Instantaneous	--
pH	s.u.	2/Week	Instantaneous	0.1
Temperature	° F	2/Week	Instantaneous	--
Specific Conductivity (SC)	µS/cm	2/Week	Instantaneous	--
E. coli bacteria	cfu/100 mL	2/Week	Grab	1
Total Ammonia as N	mg/L	2/Week	Composite	0.05
Total Kjeldahl Nitrogen	mg/L	2/Week	Composite	--
Nitrate + Nitrite as N	mg/L	2/Week	Composite	0.01
Total Phosphorus as P	mg/L	1/Month	Composite	--
Iron, total recoverable	µg/L	2/Week	Composite	0.050
Arsenic, total recoverable	µg/L	1/Month	Composite	0.003
Lead, total recoverable	µg/L	1/Month	Composite	0.0005
Mercury, total recoverable	µg/L	1/Month	Composite	0.00001
Selenium, total recoverable	µg/L	1/Month	Composite	0.001
Total Dissolved Solids	mg/L	1/Month	Composite	--
Hardness (as $CaCO_3$)	mg/L	1/Month	Composite	--
Whole Effluent Toxicity, Acute [4]	% Effluent	1/Quarter	Grab	NA

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.
3. Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR.
4. See narrative discussion of permit for additional details.

1. Whole Effluent Toxicity Monitoring – Acute Toxicity

Starting in the first calendar quarter following the effective date of the permit, the permittee shall, at least once each quarter conduct an acute static replacement toxicity test on a composite/grab sample of the effluent. Testing

will employ two species per quarter and will consist of 5 effluent concentrations (100, 50, 25, 12.5, 6.25 percent effluent) and a control. Dilution water and the control shall consist of the receiving water. Samples shall be collected on a two day progression; i.e., if the first quarterly sample is on a Monday, the second quarter sample shall be on a Wednesday, etc. Saturdays, Sundays and Holidays will be skipped in the progression.

The static toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms, EPA-600/4-90/027 and the "Region VIII EPA NPDES Acute Test Conditions-State Renewal Whole Effluent Toxicity". The permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia sp.* and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*) as the alternating species. The control of pH in the toxicity test utilizing CO2 enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. If more than 10 percent control mortality occurs, the test is considered invalid and shall be repeated until satisfactory control survival is achieved, unless a specific individual exception is granted by the Department. This exception may be granted if less than 10 percent mortality was observed at the dilutions containing high effluent concentrations.

If acute toxicity occurs in a routine test, an additional test shall be conducted within 14 days of the date of the initial sample. Should acute toxicity occur in the second test, testing shall occur once a month until further notified by the Department. In all cases, the results of all toxicity tests must be submitted to the Department in accordance with Part II of this permit.

The quarterly results from the laboratory shall be reported along with the Discharge Monitoring Report (DMR) form submitted for the end of the reporting calendar quarter (e.g., whole effluent results for the reporting quarter ending March 31 shall be reported with the March DMR due April 28th with the remaining quarterly reports submitted with the June, September, and December DMR's). The format for the laboratory report shall be consistent with the latest revision of Region VIII Guidance for Acute Whole Effluent Reporting, and shall include all chemical and physical data as specified.

If the results for four consecutive quarters of testing indicate no acute toxicity, the permittee may request a reduction to quarterly acute toxicity testing on only one species on an alternating basis. The Department may approve or deny the request based on the results and other available

information without an additional public notice. If the request is approved, the test procedures are to be the same as specified above for the test species.

Outfall 001 Receiving Water Characterization

Effective upon issuance and lasting through the term of the permit, in the event that the permittee discharges from Outfall 001, the receiving water quality and discharge (flow) characteristics for the receiving water must be completed for the following parameters are required monitoring at the given frequency. Monitoring will occur in the unnamed irrigation return ditch immediately upstream of the effluent ditch confluence.

The permittee must initiate the following required monitoring within 48 hours of starting a discharge from Outfall 001.

Data collected shall be submitted as a report along with the respective DMRs for the discharge at Outfall 001.

Outfall 001 Receiving Water Characteristics (Unnamed Irrigation Return Channel)

Parameter	Units	Sample Frequency	Sample Type[1]	RRV [2]
Flow Rate	gpm	1/Week	Instantaneous	--
pH	s.u.	1/Week	Instantaneous	0.1
Water Temperature	° C	1/Week	Instantaneous	--
Specific Conductivity (SC)	µS/cm	1/Week	Instantaneous	--
Total Ammonia as N	mg/L	1/Week	Grab	0.05
Total Kjeldahl Nitrogen	mg/L	1/Week	Grab	--
Nitrate + Nitrite as N	mg/L	1/Week	Grab	0.01
Total Phosphorus as P	mg/L	1/Week	Grab	--
Total Dissolved Solids	mg/L	1/Week	Grab	--

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.

Outfall 002 – Interim Monitoring

As a minimum, upon the effective date of this permit through July 31, 2014, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

Effluent compliance monitoring will be conducted at monitoring wells P-2, -3, and -4. Ambient ground water monitoring will be conducted at P-1.

Outfall 002 Interim Monitoring Requirements
Monitoring Wells P-1, -2, -3, and -4
Effective through July 31, 2014

Parameter	Units	Sample Frequency	Sample Type[1]	RRV [2]
Static Water Level	Feet	1/Quarter	Instantaneous	--
pH	s.u.	1/Quarter	Instantaneous	0.1
Water Temperature	° C	1/Quarter	Instantaneous	--
Specific Conductivity (SC)	µS/cm	1/Quarter	Instantaneous	--
Biochemical Oxygen Demand (BOD_5)	mg/L	1/Quarter	Grab	4
	lb/day	1/Quarter	Calculated	--
Total Suspended Solids (TSS)	mg/L	1/Quarter	Grab	10
Total Ammonia as N	mg/L	1/Quarter	Grab	0.05
Total Kjeldahl Nitrogen	mg/L	1/Quarter	Grab	--
Nitrate + Nitrite as N	mg/L	1/Quarter	Grab	0.01
Total Phosphorus as P	mg/L	1/Quarter	Grab	--
Iron, total recoverable	mg/L	1/Quarter	Grab	0.050
Arsenic, total recoverable	mg/L	1/Year [3]	Grab	0.003
Lead, total recoverable	mg/L	1/Year [3]	Grab	0.0005
Mercury, total recoverable	mg/L	1/Year [3]	Grab	0.00001
Selenium, total recoverable	mg/L	1/Year [3]	Grab	0.001
Total Dissolved Solids	mg/L	1/Quarter	Grab	--

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.
3. Collected during the 3rd calendar quarter of the year.

1. Reporting Requirements

Load Calculations

In addition to reporting the concentration values, the monthly average loads and daily maximum loads, expressed in pounds per day (lb/day), must be calculated and reported. For reporting both the daily maximum and the 30-day average loads, the loads will be calculated using the quarterly parameter concentration and the assumed ground water flow rate of 22 gpm, as shown in the following equation. The average quarterly parameter concentrations from P-2, -3, and -4 will be used in the load calculation.

Load (lb/day) = Parameter concentration (mg/L) x 22 gpm x (0.012)

Outfall 002 – Final Monitoring

As a minimum, effective August 1, 2014 and lasting through the term of the permit, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

Effluent compliance monitoring will be conducted at monitoring wells P-2, -3, and -4. Ambient ground water monitoring will be conducted at P-1.

Outfall 002 Final Monitoring Requirements Monitoring Wells P-1, -2, -3, and -4 Effective August 1, 2014				
Parameter	Units	Sample Frequency	Sample Type[1]	RRV [2]
Static Water Level	Feet	1/Quarter	Instantaneous	--
pH	s.u.	1/Quarter	Instantaneous	0.1
Water Temperature	° C	1/Quarter	Instantaneous	--
Specific Conductivity (SC)	µS/cm	1/Quarter	Instantaneous	--
Total Ammonia as N	mg/L	1/Quarter	Grab	0.05
Total Kjeldahl Nitrogen	mg/L	1/Quarter	Grab	--
Nitrate + Nitrite as N	mg/L	1/Quarter	Grab	0.01
Total Phosphorus as P	mg/L	1/Quarter	Grab	--
Iron, total recoverable	mg/L	1/Quarter	Grab	0.050
Arsenic, total recoverable	mg/L	1/Year [3]	Grab	0.003
Lead, total recoverable	mg/L	1/Year [3]	Grab	0.0005
Mercury, total recoverable	mg/L	1/Year [3]	Grab	0.00001
Selenium, total recoverable	mg/L	1/Year [3]	Grab	0.001
Total Dissolved Solids	mg/L	1/Quarter	Grab	--

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.
3. Collected during the 3rd calendar quarter of the year.

Outfall 003 – Factory Ponds Influent Monitoring

Effective August 1, 2012 and lasting through the duration of the permit, as a minimum, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

Influent samples shall be collected at the influent pipes into the following process wastewater pond systems:

CWI – Cooling Water/Spray Ponds
API – Ash Pond
PCC – Lime Sludge/PCC Ponds
MPI – Mud Ponds
AIR – Aeration Pond

Outfall 003 Influent Monitoring CWI, API, PCC, MPI, AIR Effective August 1, 2012				
Parameter	Units	Sample Frequency	Sample Type[1]	RRV [2]
Biochemical Oxygen Demand (BOD_5)	mg/L	1/Month	Grab	4
pH	s.u.	1/Week	Instantaneous	0.1
Temperature	° F	1/Week	Instantaneous	--
Specific Conductivity (SC)	µS/cm	1/Week	Instantaneous	--
Total Ammonia as N	mg/L	1/Month	Grab	0.05
Total Kjeldahl Nitrogen	mg/L	1/Month	Grab	--
Nitrate + Nitrite as N	mg/L	1/Month	Grab	0.01
Total Phosphorus as P	mg/L	2/Year [3]	Grab	--
Iron, dissolved	mg/L	2/Year [3]	Grab	0.050
Arsenic, dissolved	mg/L	2/Year [3]	Grab	0.003
Lead, dissolved	mg/L	2/Year [3]	Grab	0.0005
Mercury, dissolved	mg/L	2/Year [3]	Grab	0.00001
Selenium, dissolved	mg/L	2/Year [3]	Grab	0.001
Total Dissolved Solids	mg/L	1/Month	Grab	--

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.
3. Sample is required to be collected during the 1st and 4th calendar quarter of the year to represent the campaign.

Outfall 003 – Discharge Rate

As a minimum, effective August 1, 2012 and lasting through the term of the permit, discharge from Outfall 003 shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume of the monitored discharge.

Monitoring is required during the campaign or whenever wastewater is routed into or recycled from a process water pond. If no wastewater is routed into or out

of the process water ponds during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

The reported flow rate discharged to Outfall 003 will be determined as the gross difference between the flows into all process- and wastewater ponds (excluding wastewater directed to the Section 25 pond) and metered recycle flows. Until such time that a more representative method for monitoring is developed and/or approved by the Department, this gross difference in influent and recycle flows quantity into each/all process water ponds will be considered comparable to the infiltrated (discharged) wastewater at Outfall 003.

The discharge rate (Q) at Outfall 003 will be the sum of all the process- and wastewater ponds, at these process wastewater pond systems:

CWI – Cooling Water/Spray Ponds
API – Ash Pond
PCC – Lime Sludge/PCC Ponds
MPI – Mud Ponds
AIR – Aeration Pond

The sum of non-recycled flows will be:

$$Q_{Outfall\ 003} = Q_{CWI} + Q_{API} + Q_{PCC} + Q_{MPI} + Q_{CWI}.$$

Outfall 003 Monitoring – Effective August 1, 2012			
Parameter	Unit	Sample Frequency	Sample Type[1]
Discharge Flow	gpd	Continuous [2]	Instantaneous

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR.

Land Application Area – Applied Process Water Monitoring

As a minimum, effective March 1, 2010 and lasting through the term of the permit, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

Effluent monitoring will be conducted at the sample port.

Process wastewater used on the land application site can only be applied from March 1 through October 31.

Land Application Area Monitoring Requirements Effective March 1, 2010				
Parameter	Units	Sample Frequency	Sample Type[1]	RRV [2]
Discharge Flow	mgd	Continuous [3]	Instantaneous	--
Biochemical Oxygen Demand (BOD_5)	mg/L	1/Month	Grab	4
	lb/day	1/Month	Calculated	--
Total Suspended Solids (TSS)	mg/L	1/Month	Grab	10
	lb/day	1/Month	Calculated	--
pH	s.u.	1/Week	Instantaneous	0.1
Specific Conductivity (SC)	µS/cm	1/Week	Grab	--
E. coli Bacteria	cfu/100 mL	1/Month	Grab	1
Total Ammonia as N	mg/L	1/Week	Grab	0.05
Nitrate + Nitrite as N	mg/L	1/Week	Grab	0.01
Total Nitrogen [4]	mg/L	1/Week	Calculated	--
	lb/day	1/Month	Calculated	--
Total Phosphorus as P	mg/L	1/Week	Grab	--
	lb/day	1/Month	Calculated	--
Total Dissolved Solids	mg/L	1/Month	Grab	--

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.
3. Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR.
4. Calculated as the sum of nitrate plus nitrite as N and TKN concentrations

1. Reporting Requirements

Load Calculations

In addition to reporting the concentration values, the monthly average load, expressed in pounds per day (lb/day), must be calculated and reported. The monthly average load is calculated using the 30-day average flow rate and 30-day average parameter concentration as shown in the following equations.

Load (lb/day)
Parameter concentration (mg/L) x Effluent Flow Rate (mgd) x (8.34)

Ground Water Monitoring – MW-1, -3, -4, and -5

As a minimum, upon the effective date of this permit, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred.

Ground Water Monitoring – MW-1, -3, -4 and -5				
Parameter	Unit	Sample Frequency	Sample Type[1]	RRV[2]
Static Water Level	Feet	1/Quarter	Instantaneous	--
pH	s.u.	1/Quarter	Instantaneous	0.1
Water temperature	° C	1/Quarter	Instantaneous	--
Specific Conductivity (SC)	µS/cm	1/Quarter	Instantaneous	--
Total Ammonia, as N	mg/L	1/Quarter	Grab	0.05
Total Kjeldahl Nitrogen	mg/L	1/Quarter	Grab	--
Nitrate + Nitrite, as N	mg/L	1/Quarter	Grab	0.01
Total Phosphorus	mg/L	1/Quarter	Grab	--
Iron, dissolved [3]	mg/L	1/Quarter	Grab	0.050
Arsenic, dissolved [3]	mg/L	1/Quarter	Grab	0.003
Lead, dissolved [3]	mg/L	1/Quarter	Grab	0.0005
Mercury, dissolved [3]	mg/L	1/Quarter	Grab	0.00001
Selenium, dissolved [3]	mg/L	1/Quarter	Grab	0.001
Total Dissolved Solids	mg/L	1/Quarter	Grab	--

Footnotes:
1. See Definition section at end of permit for explanation of terms.
2. The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA approved methods or methods approved by the Department.
3. Sample filtration through a 0.045 µm membrane filter (Circular DEQ-7, February 2008).

D. Special Conditions

1. Toxicity Reduction Evaluation / Toxicity Identification Evaluation

Should acute toxicity be detected in the required resample, a TIE-TRE shall be undertaken by the permittee to establish the cause of the toxicity, locate the source(s) of the toxicity, and develop control or treatment for the toxicity. Failure to initiate or conduct an adequate TIE-TRE, or delays in the conduct of such tests, shall not be considered a justification for noncompliance with the whole effluent toxicity limits contained in Part I.B of this permit. A TRE plan needs to be submitted to the Department within 45 days after confirmation of the continuance of effluent toxicity (resample).

2. Wastewater Flow Monitoring

The permittee can only estimate discharge rates at Outfalls 001 and 003. This special condition requires the permittee install and use continuous flow monitoring devices at all outfalls.

The permittee will install and begin using equipment that will monitor wastewater flows by **August 1, 2012**. Reporting of flow volumes is required beginning August 2012 (to be reported on the August 2012 DMRs) for all outfalls and identified monitoring locations (CWI, API, PCC, MPI, AIR).

The permittee shall submit a statement with the **August 2012 DMR** stating the type, location, and verifying implementation of the flow measuring devices sufficient to measure discharges at Outfalls 001 and 003.

3. TBEL Compliance

The previous MPDES permit allowed the permittee to use ground water dilution for compliance monitoring at Outfall 002. However, federal regulations do not allow for dilution of waste streams to meet final TBELs. The permittee is required to employ technology to meet these limits. At present, the facility is not equipped to treat high-strength organic waste.

The permittee will install and begin using equipment that will treat its wastewater to consistently achieve TBELs by **August 1, 2014**. Final effluent limits are effective on August 1, 2014.

Annually, the permittee must submit a report stating milestones and accomplishments achieved towards completing this special condition. Annual reports are due to the Department post marked **January 31 of 2011, 2012, 2013, 2014**.

4. Sampling Port

Industrial wastewater used for irrigation is required to meet minimum treatment standards. A sample port is required to be installed where representative water quality samples can be collected prior to spray irrigation.

Before **March 1, 2010**, the permittee must install a sample port used to monitor water quality that land applied. By **March 28, 2010**, the permittee must submit a statement to the Department documenting the sample port installation and its location. Monitoring requirements are effective on March 1, 2010.

5. Farm Management Plan

The permittee will submit a site-specific FMP to the Department by **January 31, 2011**. The FMP must be signed by the principle executive officer in accordance with Part IV.G. "Signatory Requirements" of the MPDES permit. The permittee must amend the FMP at a minimum of once every five years. However, the FMP must reflect current operational characteristics and practices, so the FPM may have to be amended more frequently. The current FMP will be retained on site, in accordance to Part II.H "Retention of Records" in the MPDES permit.

Use of process wastewater on the land application site can only be applied from March 1 through October 31.

The minimum elements required in the FMP are:

a. The volume of wastewater applied;
b. A description of the size and volume capacity of the wastewater storage facilities;
c. A description of the BMPs implemented to control the runoff of pollutants from the land application area to state waters;
d. Guidance for implementation, operation, maintenance, and record keeping;
e. A detailed description of area(s) where wastewater will be applied. The description must have:

   i. An aerial photo or map and a soil map
   ii. Location of any down-gradient surface waters, open tile line intake structures, sinkholes, agricultural well heads, or other conduits to surface water, current and/or planned plant production sequence or crop rotation or irrigated crop
   iii. Realistic yield goals for the crops in the rotation
   iv. Specific methods of sample collection, frequency, analysis, and results used to test the nutrient content of the soil
   v. A field-specific assessment of the potential of applied pollutant transport from the field to surface or ground waters (nitrogen species, phosphorus, TDS, bacteria as indicated by *E. coli*, and BOD_5)
   vi. Quantification of all nitrogen and phosphorus sources
   vii. Complete nutrient budget for nitrogen and phosphorus for the rotation or crop sequence
   viii. Recommended and actual nitrogen and phosphorous application rates, timing, and method of application
   ix. Expected frequency of land application
   x. Description of equipment used for land application, calibration procedures and records.

f. Meet the technical standards for nutrient management, as described in Appendix A. Specifically, the FMP will address a field-specific

assessment, expected crop yield, nutrient needs of the crop, and a nutrient budget.

6. Ground water monitoring wells

SSI needs to reassess its monitoring well configuration. The reassessment must include: the representativeness of MDU and MW-2 and the continued use; monitoring wells downgradient of each process wastewater pond system (not necessarily each individual wastewater ponds); and monitoring wells around the land application area, including a representative ambient well.

By **January 31, 2011,** the permittee must submit a preliminary plan with recommendations and a concise plan, with dates, of achieving well installation and monitoring that specifically addresses collected data representative ambient water quality and the impacts of each process/outfall to the ground water.

Annually thereafter (**2012** and **2013**), the permittee must submit a progress report stating milestones and accomplishments achieved towards completing the project. The permittee must begin monitoring ground water at any well completed for the parameters and frequencies specified for MW-1, -3, -4, and -5. The annual reports must be postmarked by **January 31, 2012** and **January 31, 2013**. Collected ground water data must be summarized in the annual reports.

The recommendations of the study need to be implemented as soon as possible, but **no later than August 1, 2013**. This date allows for at least one year of sampling from any newly established or deepened wells prior to the expiration of this permit.

Beginning **January 2014** and annually thereafter through the duration of the permit, the permittee must submit a report that contains all the ground water data from the wells added as a result of the study (and excluding data reported on DMRs).

7. Lime Pile Site Assessment

The permittee will conduct a site assessment of the lime pond. The assessment will include the following but will not be limited to these criteria:

a. An evaluation of methods (process control and/or wastewater management) that will reduce and/or cease the discharge of pollutants from the lime pile to state waters.
b. A comprehensive geochemical and hydrological assessment of the lime pile at various depths.
c. A water balance of wastewater discharged to the lime ponds and wastewater infiltrated to the ground water.

d. The installation of monitoring wells around the lime piles that will be used to monitoring the ground water quality, to determine the mounding effects, and to define the plume created by the lime pond leachate. The number of wells will depend on placement and tie-in to the wells required in the Section Condition D. (above).

e. A professional survey of the monitoring wells and ground water elevations.

The emphasis of the assessment is to determine the fate of the discharge nitrogen species. Data collected may be used to determine a source specific mixing zone and effluent limits.

By **January 31, 2011,** the permittee must submit a preliminary plan for the site assessment. The plan will include a timeline of events and identify the company and/or individuals retained by SSI to complete the assessment.

The permittee shall implement the plan no later than **June 1, 2011.** Ground water monitoring of any installed monitoring wells must be for the parameters and frequencies specified for MW-1, -3, -4, and -5.

Beginning **January 2012** and continuing through the duration of the permit, the permittee shall submit annual reports to the Department. The reports shall be postmarked by **January 31** of each year. The reports shall include (but not be limited to) a concise statement of actions taken and milestones accomplished over the report year, quarterly ground water elevations measured in monitoring wells, quarterly sample results, ground water contour maps, any process wastewater handling changes and/or treatment, and any other relevant information aimed at assessing the site.

E. Reporting Schedule

The following table is a summary of reporting requirements stated in this part (Part I) of the permit. Refer to the specific permit section for additional submittal requirements, specific information, and/or deliverable details.

Submittal Date [1]	Frequency	Required Item	Permit Section
28th day of the month following each completed monitoring period	1/Month	• Influent monitoring – Outfall INTL • Effluent monitoring – Outfall 001 • Receiving Water – Outfall 001	Part. I. C
	1/Quarter	• Effluent monitoring – Outfall 002 • Ground Water Monitoring – MW-1, -3, -4, and -5	Part. I. C
March 28, 2010	Single Event	Report of Sampling Port Installation – Land Application	Part I.D.4
April 28, 2010 and 28th day of the month following each completed monitoring period thereafter	1/Month	Process wastewater quality – Land Application	Part. I. C
January 31, 2011	1/Year [2]	Report progress for achieving TBELs	Part I.D.3
	Single Event	Farm Management Plan	Part I.D.5
	Single Event	Preliminary Plan for Ground Water Monitoring	Part I.D.6
	Single Event	Preliminary Plan for Lime Pile Site Assessment	Part I.D.7
January 31, 2012	1/Year [3]	Annual Ground Water Report, including water quality data collected at added wells.	Part I.D.6
	1/Year [3]	Annual Lime Pile Assessment Report	Part I.D.7
August 28, 2012	Single Event	Submit statement documenting flow monitoring implementation at Outfalls 001 and 003	Part I.D.2
September 28, 2012 and 28th day of the month following each completed monitoring period thereafter	1/Month	• Wastewater Flow Monitoring – Outfall 001 • Wastewater Flow Monitoring – Outfall 003 • Influent quality monitoring – Outfall 003	Part. I. C

1. Specific dates shown are for Special Conditions and/or Compliance Schedule Items.
2. Annual reports are due years 2011, 2012, and 2013.
3. Annual reports are due through the term of the permit.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling

Samples taken in compliance with the monitoring requirements established under Part I of the permit shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under Part 136, Title 40 of the Code of Federal Regulations, unless other test procedures have been specified in this permit. All flow-measuring and flow-recording devices used in obtaining data submitted in self-monitoring reports must indicate values within 10 percent of the actual flow being measured.

C. Penalties for Tampering

The Montana Water Quality Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six months, or by both.

D. Reporting of Monitoring Results

Self-Monitoring results will be reported monthly. Monitoring results obtained during the previous reporting period shall be summarized and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. Whole effluent toxicity (biomonitoring) results must be reported on forms from the most recent version of EPA Region VIII's "Guidance for Whole Effluent Reporting" with copies of the laboratory analysis report. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the "Signatory Requirements" (see Part IV.G of this permit), and submitted to the Department and the Regional Administrator at the following addresses:

(a) Montana Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, Montana 59620-0901
Phone: (406) 444-3080

(b) U.S. Environmental Protection Agency
301 South Park Avenue
Drawer 10096
Helena, Montana 59626
Phone: (406) 441-1123

E. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using approved analytical methods as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

G. Records Contents

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;

2. The initials or name(s) of the individual(s) who performed the sampling or measurements;

3. The date(s) analyses were performed;

4. The time analyses were initiated;

5. The initials or name(s) of individual(s) who performed the analyses;

6. References and written procedures, when available, for the analytical techniques or methods used; and

7. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

H. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time. Data collected on site, copies of Discharge Monitoring Reports, and a copy of this MPDES permit must be maintained on site during the duration of activity at the permitted location.

I. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any serious incidents of noncompliance as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The report shall be made to the Water Protection Bureau at (406) 444-3080 or the Office of Disaster and Emergency Services at (406) 841-3911. The following examples are considered serious incidents:

a. Any noncompliance which may seriously endanger health or the environment;

b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G of this permit, "Bypass of Treatment Facilities"); or

c. Any upset which exceeds any effluent limitation in the permit (see Part III.H of this permit, "Upset Conditions").

2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

a. a description of the noncompliance and its cause;

b. the period of noncompliance, including exact dates and times;

c. the estimated time noncompliance is expected to continue if it has not been corrected; and

d. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Protection Bureau, by phone, (406) 444-3080.

4. Reports shall be submitted to the addresses in Part II.D of this permit, "Reporting of Monitoring Results".

J. Other Noncompliance Reporting

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.D of this permit are submitted. The reports shall contain the information listed in Part II.I.2 of this permit.

K. Inspection and Entry

The permittee shall allow the head of the Department or the Director, or an authorized representative thereof, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give the Department or the Regional Administrator advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance.

B. Penalties for Violations of Permit Conditions

The Montana Water Quality Act provides that any person who violates a permit condition of the Act is subject to civil or criminal penalties not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions of the Act is subject to a fine of not more than $50,000 per day of violation, or by imprisonment for not more than 2 years, or both, for subsequent convictions. MCA 75-5-611(a) also provides for administrative penalties not to exceed $10,000 for each day of violation and up to a maximum not to exceed $100,000 for any related series of violations. Except as provided in permit conditions on Part III.G of this permit, "Bypass of Treatment Facilities" and Part III.H of this permit, "Upset Conditions", nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. However, the permittee shall operate, as a minimum, one complete set of each main line unit treatment process whether or not this process is needed to achieve permit effluent compliance.

F. Removed Substances

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard.

G. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts III.G.2 and III.G.3 of this permit.

2. Notice:

   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.I of this permit, "Twenty-four Hour Reporting".

3. Prohibition of bypass:

   a. Bypass is prohibited and the Department may take enforcement action against a permittee for a bypass, unless:

      1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

      3) The permittee submitted notices as required under Part III.G.2 of this permit.

   b. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in Part III.G.3.a of this permit.

H. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of Part III.H.2 of this permit are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review (i.e. Permittees will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with technology-based permit effluent limitations).

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under Part II.I of this permit, "Twenty-four Hour Notice of Noncompliance Reporting"; and

   d. The permittee complied with any remedial measures required under Part III.D of this permit, "Duty to Mitigate".

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

J. Changes in Discharge of Toxic Substances

Notification shall be provided to the Department as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. One hundred micrograms per liter (100 mg/L);

b. Two hundred micrograms per liter (200 mg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 mg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

d. The level established by the Department in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

a. Five hundred micrograms per liter (500 mg/L);

b. One milligram per liter (1 mg/L) for antimony;

c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

d. The level established by the Department in accordance with 40 CFR 122.44(f).

IV. GENERAL REQUIREMENTS

A. Planned Changes

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of pollutant discharged. This notification applies to pollutants which are not subject to effluent limitations in the permit.

B. Anticipated Noncompliance

The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application must be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for revoking, modifying and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

F. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information with a narrative explanation of the circumstances of the omission or incorrect submittal and why they weren't supplied earlier.

G. Signatory Requirements

All applications, reports or information submitted to the Department or the EPA shall be signed and certified.

1. All permit applications shall be signed as follows:

   a. For a corporation: by a responsible corporate officer;

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Department shall be signed by a person described above or by a duly authorized representative of that person. A person is considered a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Department; and

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or an individual occupying a named position.)

3. Changes to authorization. If an authorization under Part IV.G.2 of this permit is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 of this permit must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports

The Montana Water Quality Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document

submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more that $25,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports
Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by the Clean Water Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability
Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

K. Property or Water Rights
The issuance of this permit does not convey any property or water rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

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

M. Transfers
This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Department at least 30 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them;

3. The Department does not notify the existing permittee and the proposed new permittee of an intent to revoke or modify and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part IV.M.2 of this permit; and

4. Required annual and application fees have been paid.

N. Fees

The permittee is required to submit payment of an annual fee as set forth in ARM 17.30.201. If the permittee fails to pay the annual fee within 90 days after the due date for the payment, the Department may:

1. Impose an additional assessment consisting of 15% of the fee plus interest on the required fee computed at the rate established under 15-31-510(3), MCA, or

2. Suspend the processing of the application for a permit or authorization or, if the nonpayment involves an annual permit fee, suspend the permit, certificate or authorization for which the fee is required. The Department may lift suspension at any time up to one year after the suspension occurs if the holder has paid all outstanding fees, including all penalties, assessments and interest imposed under this sub-section. Suspensions are limited to one year, after which the permit will be terminated.

O. Reopener Provisions

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements if one or more of the following events occurs:

1. Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. Water Quality Standards are Exceeded: If it is found that water quality standards or trigger values in the receiving stream are exceeded either for parameters included in the permit or others, the department may modify the effluent limits or water management plan.

3. TMDL or Wasteload Allocation: TMDL requirements or a wasteload allocation is developed and approved by the Department and/or EPA for incorporation in this permit.

4. Water Quality Management Plan: A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit.

5. Toxic Pollutants: A toxic standard or prohibition is established under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit.

6. Toxicity Limitation: Change in the whole effluent protocol, or any other conditions related to the control of toxicants have taken place, or if one or more of the following events have occurred:

a. Toxicity was detected late in the life of the permit near or past the deadline for compliance.

b. The TRE/TIE results indicated that compliance with the toxic limits will require an implementation schedule past the date for compliance.

c. The TRE/TIE results indicated that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits.

d. Following the implementation of numerical controls on toxicants, a modified whole effluent protocol is needed to compensate for those toxicants that are controlled numerically.

e. The TRE/TIE revealed other unique conditions or characteristics which, in the opinion of the Department, justify the incorporation of unanticipated special conditions in the permit.

V. DEFINITIONS

1. **"Act"** means the Montana Water Quality Act, Title 75, chapter 5, MCA.

2. **"Administrator"** means the administrator of the United States Environmental Protection Agency.

3. **"Acute Toxicity"** occurs when 50 percent or more mortality is observed for either species (See Part I.C of this permit) at any effluent concentration. Mortality in the control must simultaneously be 10 percent or less for the effluent results to be considered valid.

4. **"Arithmetic Mean" or "Arithmetic Average"** for any set of related values means the summation of the individual values divided by the number of individual values.

5. **"Average Monthly Limitation"** means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

6. **"Bypass"** means the intentional diversion of waste streams from any portion of a treatment facility.

7. **"Chronic Toxicity"** means when the survival, growth, or reproduction, as applicable, for either test species, at the effluent dilution(s) designated in this permit (see Part I.C.), is significantly less (at the 95 percent confidence level) than that observed for the control specimens.

8. **"Composite samples"** shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:

   a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

   b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;

   c. Constant sample volume, time interval between samples proportional to flow (i.e. sample taken every "X" gallons of flow); and,

   d. Continuous collection of sample, with sample collection rate proportional to flow rate.

9. **"Daily Discharge"** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

10. **"Daily Maximum Limit"** means the maximum allowable discharge of a pollutant during a calendar day. Expressed as units of mass, the daily discharge is cumulative mass discharged over the course of the day. Expressed as a concentration, it is the arithmetic average of all measurements taken that day.

11. **"Department"** means the Montana Department of Environmental Quality (MDEQ). Established by 2-15-3501, MCA.

12. **"Director"** means the Director of the Montana Department of Environmental Quality.

13. **"Discharge"** means the injection, deposit, dumping, spilling, leaking, placing, or failing to remove any pollutant so that it or any constituent thereof may enter into state waters, including ground water.

14. **"EPA"** means the United States Environmental Protection Agency.

15. **"Federal Clean Water Act"** means the federal legislation at 33 USC 1251, *et seq.*

16. **"Grab Sample"** means a sample which is taken from a waste stream on a one-time basis without consideration of flow rate of the effluent or without consideration for time.

17. **"Instantaneous Maximum Limit"** means the maximum allowable concentration of a pollutant determined from the analysis of any discrete or composite sample collected, independent of the flow rate and the duration of the sampling event.

18. **"Instantaneous Measurement"**, for monitoring requirements, means a single reading, observation, or measurement.

19. **"Minimum Level"** (ML) of quantitation means the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration point for the analyte, as determined by the procedure set forth at 40 CFR 136. In most cases the ML is equivalent to the Required Reporting Value (RRV) unless other wise specified in the permit. (ARM 17.30.702(22))

19. **"Mixing zone"** means a limited area of a surface water body or aquifer where initial dilution of a discharge takes place and where certain water quality standards may be exceeded.

20. **"Nondegradation"** means the prevention of a significant change in water quality that lowers the quality of high-quality water for one or more parameters. Also, the prohibition of any increase in discharge that exceeds the limits established under or determined from a permit or approval issued by the Department prior to April 29, 1993.

21. **"Regional Administrator"** means the administrator of Region VIII of EPA, which has jurisdiction over federal water pollution control activities in the state of Montana.

22. **"Severe property damage"** means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

23. **"TIE"** means a toxicity identification evaluation.

24. **"TMDL"** means the total maximum daily load limitation of a parameter, representing the estimated assimilative capacity for a water body before other designated uses are adversely affected. Mathematically, it is the sum of wasteload allocations for point sources, load allocations for non-point and natural background sources, and a margin of safety.

25. **"TRE"** means a toxicity reduction evaluation.

26. **"TSS"** means the pollutant parameter total suspended solids.

27. **"Upset"** means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation

Appendix A – Farm Management Plan (FMP) Technical Standards

The following technical standards for nutrient management are applicable to the land application site. Application rates must be determined according to the following procedure:

- A field-specific assessment, as specified below, must be conducted to determine the appropriate basis for application rates (nitrogen or phosphorus based applications);
- The expected crop type and yield for each field must be estimated, as specified below;
- The appropriate nutrient needs for the crop must be determined, as specified below;
- A nutrient budget must be conducted, as specified below, in order to determine the waste application rate. Representative waste and soil tests must be used to calculate the application rate.

Field-Specific Assessment

To determine the appropriate basis for application rates, the operator shall first conduct a field-specific assessment to determine the potential for phosphorus and nitrogen transport from the field to state waters. The results of this field-specific risk assessment shall be used to determine if wastewater should be land applied based on the crop nitrogen needs, phosphorus needs, or not all.

In order to provide flexibility, two different methods for conducting this field-specific assessment are provided. The facility has the option of either conducting the Phosphorus Assessment, as described in Phosphorus Index (PI) Assessment for Montana (NRCS, Nutrient Management, Technical Note 80 or most recent), or taking a representative soil sample and having it analyzed for phosphorus (Olsen P test).

If the Phosphorus Index (PI) is used to conduct a field-specific assessment, the calculated PI risk rating must be used to determine the appropriate application basis, as follows:

Table A.1: Phosphorus Application based on PI

Phosphorus Index Risk Rating	Application Basis
Low	Nitrogen need
Medium	Nitrogen need
High	Phosphorus need up to crop removal
Very High	Phosphorus crop removal or no application

Source: NRCS Specification MT590, July 2002

Olsen P test analyses from representative soil samples to determine the appropriate application basis. Representative samples are field specific. Sampling procedures are subject to Department review. If the Olsen P test is used to conduct a field-specific assessment, the results, in ppm, must be used to determine the appropriate application basis, as follows:

Table A.2: Phosphorus Application from Soil Test Results

Olsen P Soil Test (ppm)	Application Basis
≤ 8.0	Nitrogen need
8.1-25.0	Nitrogen need
25.1-100.0	Phosphorus need
100.1-150.0	Phosphorus need up to crop removal
>150.0	No application

Source: NRCS Specification MT590, July 2002

Multi-Year Phosphorus Application Rate

In some situations, it may be necessary to use a multi-year phosphorus application rate. This approach consists of applying a single application of wastewater at a rate equal to the recommended phosphorus application rate or estimated phosphorus removal in harvested plant biomass for the crop rotation for multiple years in the crop sequence. These applications may provide the phosphorus needed for multiple years.

In this situation, the facility may not apply additional phosphorus to these fields until the amount applied in the single year had been removed through plant uptake and harvest. However, even under the multi-year application rate, the facility may not exceed the annual nitrogen recommendation of the year of application. In addition, the Phosphorus Index must be used to evaluate the potential for phosphorus runoff to surface waters. Fields with a "Very High" PI rating may not receive a multi-year phosphorus application.

Expected Crop Yield

Actual yield records from previous years (or other reliable estimate if actual yield records are unavailable) shall be used to estimate the crop yields for the upcoming season, using the following equation:

Estimated Yield, bu/acre or t/a = 1.05 x Average Yield in bu/acre or t/a (based on past records)

Yield goals for cereals and safflower can be estimated using an alternative method as described in NRCS Code 590.

Nutrient Needs of Crop

The Fertilizer Guidelines for Montana Crops published in Montana State University Extension Service Educational Bulletin 161 (January 2003, or most recent edition) must be used to determine crop nutrient needs and the appropriate application rates (subject to whether waste must be applied on a nitrogen-basis or a phosphorus-basis). For crops not listed in this bulletin, the Department may approve the use of site-specific information to determine fertilizer rates.

Nutrient Budget

Once the estimated nutrient needs of the crop, in lbs/acre, have been determined the operator shall complete a nutrient budget. This nutrient budget must account for all sources of nutrients available to the crop. These sources include:

- *Credits from previous legume crops (Table A.3).* Legume plants fix atmospheric nitrogen and bring it into the soil. The amount of nitrogen added by legume production varies according to plant species and growing conditions. Table A.3 must be used to determine the appropriate legume crop credits for Montana.

- *Residuals from past applications (Table A.4).* Nitrogen is potentially a mobile nutrient that occurs in many forms. Not all nitrogen in land-applied wastewater is available to the crop during the year of application. Organic material decomposition may be required before it is made available for plants. A percentage of last year's nitrogen and an even smaller percentage of the previous year's nitrogen will become plant-available during the current crop season. Therefore, mineralization rates as specified in Table A.4 must be used to determine the amount of nitrogen available from previous application(s). Typically, organic phosphorus is considered 100% plant-available the year of application. Therefore, no residual amounts of phosphorus need to be calculated.

- *Nutrients supplied by commercial fertilizer.* The nutrient budget must include nutrient contributions from other sources, if applicable. In addition, because nitrogen losses occur through volatilization, the availability of nitrogen to crops is affected by the application method used (ie. broadcast, incorporated, etc.). Nitrogen availability must be adjusted to reflect the method of application as specified in Table A.5.

Table A.3. Legume Crop Credits

Legume	Nitrogen Fixation (lbs/acre)*
Alfalfa (after harvest)	40-80
Alfalfa (green manure)	80-90
Spring Pea	40-90
Winter Pea	70-100
Lentil	30-100
Chickpea	30-90
Fababean	50-125
Lupin	50-55
Hairy Vetch	90-100
Sweetclover (annual)	15-20
Sweetclover (biennial)	80-150
Red Clover	50-125
Black Medic	15-25
*The maximum N fixation in lbs/acre must be used unless appropriate justification is given showing lower N fixation is appropriate. In all cases, the N fixation used must be within the ranges specified above.	

Source: NRCS Specification MT590, July 2002.

Table A.4. Mineralization Rates

Type of Waste	1st Year after Application Fraction Available*	2nd Year After Application Fraction Available
Fresh poultry manure	0.90	0.02
Fresh swine manure	0.75	0.04
Fresh Cattle manure	0.70	0.04
Fresh sheep and horse manure	0.60	0.06
Liquid manure, covered tank	0.65	0.05
Liquid manure, storage pond	0.65	0.05
Solid manure, stack	0.60	0.06
Solid manure, open pit	0.55	0.05
Manure pack, roofed	0.50	0.05
Manure pack, open feedlot	0.45	0.05
Storage pond effluent	0.40	0.06
Oxidation ditch effluent	0.40	0.06
Aerobic lagoon effluent	0.40	0.06
Anaerobic lagoon effluent	0.30	0.06
* If irrigated, reduce 1st year mineralization by 0.05		

Source: NRCS Specification MT633, August 2001

Table A.5. Nitrogen Availability and Loss as Affected by Method of Application

Application Method	Nitrogen Availability and Loss as Affected by Method of Application
Injection (sweep)	0.90
Injection (knife)	0.95
Broadcast (incorporated within 12 hours)	0.7
Broadcast (incorporated after 12 hours, but before 4 days)	0.6
Broadcast (incorporated after 4 days)	0.5
Sprinkling	0.75

Source: NRCS Specification MT633, August 2001

The following table, Table A.6, must be used to conduct a nutrient budget.

Table A.6. Nutrient Budget Worksheet

Nutrient Budget	Nitrogen-based Application	Phosphorus-based Application
Crop Nutrient Needs, lbs/acre (from MSU EB161, January 2003 or most recent edition)		
(-) Credits from previous legume crops, lbs/acre (from A.3)		
(-) Residuals from past application, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in Table A.4)		
(-) Nutrients supplied by commercial fertilizer and biosolids, lbs/acre		
(-) Nutrients supplied in irrigation water, lbs/acre (from nutrient analysis)		
= **Additional Nutrients Needed, lbs/acre**		
Total Nitrogen or Phosphorus in wastes, lbs/ton or lbs/1,000 gal (from testing)		
(x) Nutrient Availability factor (for Nitrogen based application see Table A.5 above; for Phosphorus based application use 1.0)		
= **Available Nutrients in Wastes, lbs/ton or lbs/1,000 gal**		
Additional Nutrients needed, lbs/acre (calculated above)		
(/) Available Nutrients in Wastes, lbs/ton or lbs/1,000 gal (calculated above)		
= **Waste Application Rate, tons/acre or 1,000 gal/acre**		

Other Acceptable Methods

The Natural Resources Conservation Service has developed standards for nutrient management and waste utilization. These methods may be used in lieu of the above-mentioned technical standards for nutrient management provided the following conditions are met:

- A field-specific assessment of the potential for nitrogen and phosphorus transport from the field to surface waters must be conducted;

- The form, source, amount, timing, and method of application of nutrients on each field to achieve realistic production goals, while minimizing nitrogen and phosphorus movement to surface waters must be addressed;
- Appropriate flexibilities are included to allow for the facility to implement multi-year phosphorus application on fields;
- Applied, treated wastewater must be sampled according to permit conditions stated in Part I. C. "Monitoring Requirements" for organic content as measured by BOD_5, TSS, pathogens as measured by *E. coli* bacteria, and nitrogen and phosphorus content;
- Soil must be analyzed a minimum of once every five years for phosphorus content (Olsen P test); and,
- The results of the waste and soil sampling analyses must be used in determining application rates of wastewater, and other nutrient sources.