UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 W. 15th STREET, SUITE 3200
HELENA, MONTANA 59626

STATEMENT OF BASIS

PERMITEE:	Jack Stanford, Director Flathead Lake Biological Station 32125 Bio Station Lane Polson, MT 59860 (406) 982- 3301
FACILITY:	Yellow Bay Wastewater Treatment Plant
PERMIT NO:	MT0023388
CONTACT:	Mark Potter Assistant Director of Facilities and Properties 32125 Bio Station Lane Polson, MT 59860 (406)982-3301
PERMIT TYPE:	Minor Industrial, Indian Country, Renewal
RECEIVING WATER:	Flathead Lake
LOCATION:	NE ¼ of Section 4, Township 24N, Range 19W Latitude 47º 52’ 37.06”N, Longitude 114º 02” 7.82”W

A. Permit Status

This statement of basis is for the renewal of the National Pollutant Discharge Elimination System (NPDES) permit for the discharge from the Yellow Bay Wastewater Treatment Plant (WWTP). The WWTP and its discharge are located within the boundaries of the Flathead Reservation which is home to the Confederated Salish and Kootenai Tribes (CSKT). The CSKT has been approved by the Environmental Protection Agency (EPA) for “Treatment as a State.” The CSKT’s water quality standards (WQS) have been approved by EPA.

The previous permit was issued on June 1, 2007 and expires on May 31, 2012. The previous permit will remain in effect until this permit is reissued.

B. Facility Description

The University of Montana Biological Station at Yellow Bay is a freshwater research and education facility housing students and staff. Laboratories at the Station generate only domestic wastewater. The Biological Station operates a package plant for treatment of its own domestic wastewater as well as domestic wastewater from the neighboring State Park. The Park has limited camping and restrooms. In the summer, the WWTP serves up to 100 people per day and in the winter serves about 25 people per day. Flow from the WWTP averages 2,562 gallons per day (gpd) year round and 4,020 gpd from June through September. Peak design flow is 33,000 gpd. Dechlorination was installed on April 4, 2012.

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The WWTP is an activated sludge package plant followed by an alum treatment tank to remove phosphorus. The wastewater then flows through a sand and charcoal filter before entering a chlorine contact well. In September 2008, an anoxic zone for biological nutrient removal was added. Dechlorination was installed in April 2012. The discharge is piped approximately 200 feet to the lake. The pipe extends approximately 100 feet into the lake and is 15 to 25 feet below the surface, depending on the lake level. Sampling takes place at the chlorine well. Waste activated sludge and alum sludge are treated with a polymer, filtered and stored in filtration bags. Air dried sludge is annually incorporated into farmland soil.

C. Past Discharge Data

The data in the tables below covers the period from June 1, 2007 through December 31, 2011. From the effective date of the previous permit until May 31, 2011, there were interim permit limits for total nitrogen (TN), total phosphorus (TP), and total residual chlorine (TRC). The final permit limitations for TN, TP, and TRC were effective June 1, 2011.

Table 1. Discharge Data for BOD, TSS, E. coli, and pH 6/1/07 through 12/31/11

Parameter	Range	Average	Permit Limit(s)	Number of Data Points	Number of Exceedances
Biological Oxygen Demand (BOD_5), mg/L	0.1 – 6.9	1.41	30/45 a/	54	0
Total Suspended Solids (TSS), mg/L	0 – 1.3	---	30/45 a/	51	0
E. coli, # organisms/100 mL	0 -- 9	---	32/50 b/	54	0
pH, standard units	6.1 – 7.0	--	6.5-9.0	53	15

a/ 30-Day Average/45-Day Average
b/ Limitations are 30-day and 7-day geometric means.

Table 2. Discharge Data for Total Nitrogen, Total Phosphorus, and Total Residual Chlorine 6/30/07 – 5/31/11

Parameter	Range	Average	Interim Permit Limit	Number of Data Points	Number of Exceedances
Total Nitrogen, mg/L	6.58 – 33.95	17.88	28 a/	46	2
Total Phosphorus, mg/L	0.01 – 1.44	0.12	1 a/	47	1
Total Residual Chlorine, mg/L	0.14 – 1.0	0.29	0.5 b/	46	1

a/ 30 Day Average
b/ Daily Maximum

Table 3. Discharge Data for Total Nitrogen, Total Phosphorus, 6/1/11 – 12/31/11

Parameter	Permit Limits	Cumulative Loading for 6/1/11 – 12/31/11
Total Nitrogen	154 lbs/yr	32.62 lbs
Total Phosphorus	0.3 lbs/yr	0.352 lbs

Effective June 1, 2011, the limits for TN and TP were in pounds per year. There has not been a complete year since these limits went into effect to fully evaluate compliance. As shown in Table 3, the WWTP

will most likely be in compliance with the TN limit at the end of the compliance year. However, the TP limit of 0.3 lbs/yr has already been exceeded.

Table 4. Discharge Data for Total Residual Chlorine, 6/1/11 – 12/31/11

Parameter	Permit Limit	Average	Range	Number of Data Points	Exceedanes
Total Residual Chlorine	0.019 mg/La/	0.242	0.14 – 0.4	7	7

a/ Daily Maximum

D. Technology Based Effluent Limitations

The Secondary Treatment regulations at 40 CFR 133.102 establish the minimum level of treatment for Publically Owned Treatment Works (POTWs). The Yellow Bay WWTP is not a POTW. However the WWTP is based upon the same technology as many POTWs are. Based on Best Professional Judgment (BPJ), the secondary treatment standards of Part 133 will be applied with the exception of percent removal. Based on this regulation, the minimum level of effluent quality for secondary treatment is 30-day average concentrations of BOD_5 and TSS that do not exceed 30 mg/L and 7-day average concentrations of these parameters that do not exceed 45 mg/L. In addition, the Secondary Treatment Regulations require a minimum 85 percent removal of BOD_5 and TSS as a 30-day average. The secondary treatment regulations also provide a limit for pH to be maintained between 6.0 and 9.0.

Because the treated effluent contains very low levels of BOD and TSS, the percent removal requirement will not be applied in this permit.

The limit for pH contained in the permit is more stringent than required by the secondary treatment regulations for protection of water quality as discussed below.

E. Water Quality Effluent Limitations

1. Water Quality Classification

The portion of Flathead Lake within the Flathead Indian Reservation is classified A-1. Waters classified A-1 must be maintained suitable for drinking, culinary, and food processing purposes after conventional treatment for removal of naturally present impurities. Water quality is to be suitable for bathing, swimming and recreation; wildlife (birds, mammals, amphibians and reptiles); the growth and propagation of salmonid fishes and associated aquatic life; and agricultural and industrial water supply purposes.

2. Ammonia

Previous permits did not contain ammonia limits based on effluent monitoring data which demonstrated no potential to exceed water quality standards. There will be no limits or monitoring for ammonia in this permit.

3. E. Coli

The previous permit contained E. coli limits based on Tribal WQS. The geometric mean of E. coli may not exceed 32 colony forming units (cfu)/100 mL if resulting from domestic sewage and 10% may not exceed 50 cfu/100 ml. A 30 day geometric mean effluent limit of 32 cfu/100 mL and a 7 day geometric effluent limit of 50 cfu are retained in this permit.

4. Total Residual Chlorine

Chlorine is added to the discharge for disinfection. Residual chlorine in the discharge is of potential concern to aquatic life. The previous permit has a final daily maximum permit limit of 0.019 mg/L. This limit will be maintained in the current permit.

For the purpose of this permit, the minimum limit of analytical reliability in the analysis of total residual chlorine is considered to be 0.10 mg/L. For calculating averages and reporting on the Discharge Monitoring Report (DMR), analytical values less than 0.10 mg/L shall be considered zero and in compliance with the permit limits.

5. pH

The pH for A-1 waters is 6.5 to 9 standard units. These limits from the previous permit will be retained.

6. Total Maximum Daily Load (TMDL)

A 15% reduction in the nitrogen and phosphorus loads discharged in 2000 was established as the TMDL for Flathead Lake by the Montana Department of Environmental Quality (DEQ) in collaboration with the Confederated Salish and Kootenai Tribes and EPA *(Nutrient Management Plan and TMDL for Flathead Lake, DEQ, 2001)*. The previous permit developed total nitrogen (TN) and total phosphorus (TP) limits based on a 15% reduction in the loads discharged by the WWTP in 2000. Because of the variability in flows and concentrations, the limits are in pounds per year. The limits did not go into effect until June 1, 2011.

Upon further review of the TMDL, it has been determined that the 15% reduction applies to the entire basin and not to individual sources. Waste load allocations for individual point sources were not developed in the 2001 TMDL nor have they been developed since then. The permittee did successfully increase the level of nitrogen treatment and appears to be meeting the 15% reduction requirement for TN. Therefore the 154 lbs/year limit for TN will remain in the permit.

To meet the current TP limit of 0.3 lbs/yr, the Permittee would have to treat to less than 0.040 mg/L based on an average flow of 2,562 gpd. Effluent from the WWTP currently averages 0.12 mg/L for TP. The Tribes have not set a numeric standard for TP. Until the TMDL sets point source reduction targets or the Tribes set numeric criteria, TP discharges will be capped based on the last five years of discharge data. From 2007 – 20011, the amount of TP discharged by the WWTP ranged from 0.12 lbs/yr to 2.0 lbs/yr. Because of the high variability of TP in the discharge, the TP limits will be set at 2.0 lbs/yr. If the TMDL process assigns a waste load allocation to this facility, the permit may be reopened and the waste load allocation for TP will be assigned as the limit.

F. Effluent Limitations

The effluent limitations and the basis for the limitations are given in the table below:

Table 5. Final Effluent Limitations					
Effluent Characteristic	**30-Day Average**	**7-Day Average**	**Daily Maximum**	**Annual Load**	**Basis** a/
BOD_5, mg/L b/	30	45	NA	NA	Previous Permit TBEL, BPJ
Total Suspended Solids, mg/L c/	30	45	NA	NA	Previous Permit TBEL, BPJ
E. coli, Cfu/100 mL d/	32	50	NA	NA	Previous Permit WQS
Total Phosphorus as P, lbs/yr	NA	NA	NA	2	TMDL
Total Nitrogen as N, lbs/yr e/	NA	NA	NA	154	Previous Permit TMDL
Total Residual Chlorine, mg/L f/	NA	NA	0.019	NA	Previous Permit WQS
The pH of the discharge shall not be less than 6.5 or greater than 9.0 at any time. g/					Previous Permit WQS
There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall there be a discharge which causes a visible sheen in the receiving waters. The concentration of oil and grease in any single sample shall not exceed 10 mg/L.					Previous permit WQS

a/ The bases of the effluent limitations are given below:

"Previous Permit" refers to limitation in the previous permit. The NPDES regulations for reissued permits (40 CRF Part 122.44(l)(1) require that when a permit is renewed or reissued, interim limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit unless the circumstances on which the previous permit was issued have materially and substantially changed since the previous permit was issued and would constitute cause for permit modification or revocation and reissuance under 40 part 122.62.

"TBEL" refers to technology based effluent limitations. These are permit limits for a pollutant that are based on the capability of a treatment to reduce the pollutant to a certain level.

"TMDL" refers to Total Maximum Daily Load. See Section E.

"WQS" refers to effluent limitations based on water quality standards. See Section E.

b/ The limits for biochemical oxygen demand (BOD_5) are the same as 40 CFR 133.102(a) but are based on Best Professional Judgment (BPJ) since this is not a publicly owned treatment works.

c/ The limits for Total Suspended Solids (TSS) are the same as 40 CFR 133.102(b) but are based on Best Professional Judgment (BPJ) since this is not a publicly owned treatment works.

d/ The limits for E. coli apply year round.

e/ Pounds of total nitrogen discharged per month will be calculated by multiplying the average monthly flow time the average monthly concentrations of total nitrogen and total phosphorus. The amount discharged per year will be the sum of the pounds discharged each month.

f/ For purposes of the permit, the minimum limit of analytical reliability in the analysis for total residual chlorine is considered to be 0.10 mg/L. For purposes of calculating averages and reporting on the Discharge Monitoring Report form, analytical values less than 0.10 mg/L shall be considered to be zero and in compliance with the permit limit.

g/ The limits for pH are the same as those in the pervious permit are based on tribal water quality standards. The standards for A-1 water bodies state that variation of hydrogen ion concentration within the range of 6.5 su to 9.0 su must be less than 0.5 su.

G. Self-Monitoring Requirements

Samples will be collected just prior to chlorination for BOD and just after chlorination for TSS, total phosphorus and nitrogen, and E. coli. TRC shall be collected after dechlorination.

Table 6. Effluent Monitoring Requirements

Effluent Characteristic	**Frequency**	**Sample Type** a/
Flow, MGD	Weekly	Instantaneous
BOD_5, mg/l	Monthly	Grab
TSS, mg/l	Monthly	Grab
E. coli, cfu/100 ml	Monthly b/	Grab
Total Phosphorus, mg/L	Weekly	Grab
Nitrite + Nitrate as N, mg/L	Weekly	Grab
Total Kjeldahl Nitrogen as N, mg/L	Weekly	Grab
Total Nitrogen, mg/L	Weekly	Calculated c/
Total Residual Chlorine, mg/L	Weekly	Grab or Instantaneous
pH, standard units	Monthly	Grab or Instantaneous
Oil and Grease, Visual	Monthly	Observation d/

a/ See Definitions, Part 1.1 of the permit for definition of terms.

b/ Monitoring for E. coli applies year-round.

c/ Calculated as the sum of nitrite + nitrate as nitrogen and Total Kjeldahl Nitrogen (TKN) concentrations.

d/ In the event that an oil sheen or floating oil is observed in the discharge, a grab sample shall immediately be taken, analyzed, and reported.

Total Nitrogen and total phosphorus annual loads for the pervious twelve months shall be reported annually on the July Discharge Monitoring Report.

H. Biosolids

The use and/or disposal of sewage sludge shall be done under the authorization of an NPDES permit issued for the use and/or disposal of sewage sludge by the EPA Region 8 biosolids program.

I. Whole Effluent Toxicity Monitoring (WET)

WET testing will not be required at this facility. The WWTP receives only domestic flow and receives no discharge from industrial users.

J. Endangered Species Act (ESA) Requirements

Section 7(a) of the Endangered Species Act requires federal agencies to insure that any actions authorized, funded, or carried out by an Agency are not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species.

According to the U.S. Fish and Wildlife Service, Montana Field Office, internet site at http://www.fws.gov/mountain-prairie/mt.html, Table 7 lists the federally listed threatened, endangered and candidate species and proposed and designated critical habitat found on the Flathead Reservation in Montana.

Table 7: Threatened, Endangered, and Candidate Species on the Flathead Reservation

Common Name	Scientific Name	Status	Habitat
Gray Wolf	*Canis lupus*	Endangered	Resident, transient; Forests in western Montana
Bull Trout	*Salvelinus confluentus*	Threatened; Proposed Critical Habitat	Clark Fork, Flathead, Kootenai, St Mary, and Belly River basins; cold water rivers and lakes.
Grizzly Bear	*Ursus arctos horribilia*	Threatened;	Resident, transient; Alpine/subalpine coniferous forest
Canada Lynx	*Lynx canadensis*	Threatened;	Resident; western Montana- montane spruce/fir forests
Spaldings's Campion (or "catchfly")	*Silence spaldingii*	Threatened	Upper Flathead River Fisher river drainages; Tobacco Valley – open grasslands with rough fescue or bluebunch wheatgrass
Water Howellia	*Howellia aquatilis*	Threatened	Wetlands; Swan Valley, Lake and Missoula Counties
Wolverine	*Gulo gulo luscus*	Threatened	High elevation alpine and boreal forests that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season

EPA finds this permit is Not Likely to Adversely Affect any of the species listed by the US Fish and Wildlife Service under the Endangered Species Act. The finding is based upon the following: (1) the renewed permit is for an existing facility; (2) the renewal of this permit does not allow for any increase in effluent limitations over the previous permit; (3) The facility does not provide any habitat for any of the endangered, threatened, or candidate species listed in Table 7; and (4) effluent limits are protective of water quality.

K. National Historic Preservation Act (NHPS) Requirements

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. EPA has evaluated its planned reissuance of the NPDES permit for the Facility to assess this action's potential effects on any listed /eligible historic properties or cultural resources. EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources because this permit is a renewal and will not be associated with any new ground disturbance or changes to the volume or point of discharge.

L. Miscellaneous

The effective date of the permit and the permit expiration date will be determined at the time of issuance. The permit will be issued for a period of approximately five years but not to exceed five years.

Prepared by Rosemary Rowe
April 10, 2012

No comments were received during the public comment period.
Rosemary Rowe
May 22, 2012