FACT SHEET

NPDES Permit Number:	ID-002381-7
Public Notice Start Date:	April 27, 2001
Public Notice Expiration Date:	May 29, 2001
Technical Contact:	Kelly Huynh 206/553-8414 1-800-424-4372 (within Region 10) huynh.kelly@epa.gov

The United States Environmental Protection Agency (EPA) Plans To Reissue A National Pollutant Discharge Elimination System (NPDES) Permit To:

The City of Rexburg
12 North Center Street
Rexburg, Idaho 83440

the Idaho Department of Environmental Quality Proposes to Certify the Permit

EPA Proposes NPDES Permit Reissuance.

EPA proposes to reissue an NPDES permit to the City of Rexburg. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to the Rexburg Canal and the South Fork Teton River. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a description of the current discharge
- a listing of draft effluent limitations and other conditions
- a map and description of the discharge location
- detailed technical material supporting the conditions in the permit

The State of Idaho Proposes Certification.

EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for the City of Rexburg, under section 401 of the Clean Water Act.

Public Comment.
Persons wishing to comment on the draft permit may do so in writing by the expiration date of the public notice. All comments must be in writing and include the commenter's name, address, and telephone number and either be addressed to the Office of Water Director at U.S. EPA, Region 10, 1200 6th Avenue, OW-130, Seattle, WA 98101; submitted by facsimile to (206) 553-0165; or submitted via e-mail to huynh.kelly@epa.gov.

After the comment period closes, and all significant comments have been considered, EPA's regional Director for the Office of Water will make a final decision regarding permit reissuance. If no comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon reissuance. If comments are received, EPA will address the significant comments and reissue the permit. The permit will become effective 30 days after the issuance date, unless an appeal is filed with the Environmental Appeals Board within 30 days.

Public comment on State certification
Persons wishing to comment on State Certification should submit written comments by the Public Notice expiration date to the Idaho Department of Environmental Quality, c/o Greg Eager, 900 North Skyline, Suite B, Idaho Falls, Idaho 83402. A copy of the comments should also be submitted to EPA.

Documents are Available for Review.
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday (See address below). Draft permits, Fact Sheets, and other information can also be found by visiting the Region 10 website at "www.epa.gov/r10earth/water.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-0523 or
1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The Fact Sheet and draft permit are also available at:

EPA Idaho Operations Office
1435 North Orchard Street
Boise, Idaho 83706
(208) 378-5746

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LIST OF ACRONYMS

AML	Average Monthly Limit
BMP	Best Management Practices
BOD_5	five day Biochemical Oxygen Demand
cfs	Cubic feet per second
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
IDEQ	Idaho Department of Environmental Quality
LTA	Long Term Average
MDL	Maximum Daily Limit or Method Detection Limit
mgd	Million gallons per day
mg/L	Milligrams per liter
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
POTW	Publicly Owned Treatment Works
QAP	Quality Assurance Plan
RP	Reasonable Potential
s.u.	Standard units
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA 1991)
TSS	Total Suspended Solids
µg/L	Micrograms per liter
USFWS	United State Fish and Wildlife Service
USGS	United States Geological Survey
WET	Whole Effluent Toxicity
WLA	Wasteload Allocation

I. APPLICANT

City of Rexburg
NPDES Permit No.: ID-002381-7

Mailing address:	Physical location:
P.O. Box 280	525 North 5th West
Rexburg, Idaho 83440	Rexburg, Idaho 83440

Contact: John Millar, Public Facilities Coordinator

II. FACILITY INFORMATION

A. Treatment Plant Description

The City of Rexburg owns, operates, and has maintenance responsibility for a municipal treatment system and facility which treats domestic sewage from approximately 20,000 local residents of the City of Rexburg, Sugar City and Teton as well as from commercial establishments. In addition, the City receives and treats local industrial waste. The City has separate sanitary and storm systems. The facility's application indicates that the design flow of the facility is 3.6 million gallons per day (mgd). However, previous monitoring records (from December 1994 through March 2000) show that the average monthly flow from the facility was 1.65 mgd.

From 1979 through late October 1994, the City operated a facultative lagoon system consisting of five partially aerated lagoons followed by chlorine disinfection. Since then, the wastewater has been treated via the new mechanical plant where flow is measured via a parshall flume before screening and entering the grit chamber, one of four available oxidation ditches, and finally one of three available secondary clarifiers. The effluent is disinfected using chlorine and dechlorinated (using sulfur dioxide) prior to discharge (See appendix A for a process diagram). The sludge (a.k.a. biosolids) is digested using an aerobic digester and is dewatered in centrifuges. The dewatered biosolids are placed in sand drying beds for storage prior to final disposal on land. The wastewater may be discharged either to the South Fork Teton River through outfall 001 or the Rexburg Canal through outfall 002.

B. Background Information

The first NPDES permit was issued to the City of Rexburg on October 22, 1979 and expired on October 22, 1984. This permit was reissued on December 20, 1984 and expired December 19, 1989. The current NPDES permit was effective from December 7, 1990 and expired on December 6, 1995. Under federal law,

specifically, the Administrative Procedures Act (APA), a federally issued NPDES permit is administratively extended (i.e., continues in force and effect) provided that the permittee submits a timely and complete application for a new permit prior to the expiration of the current permit. The City of Rexburg submitted a timely application for a new permit that was received by EPA on May 15, 1995, and therefore the current permit was administratively extended. The City subsequently filed a General Form 1 and NPDES Form 2A that was received by EPA on February 9, 2001.

A review of the facility's Discharge Monitoring Reports[1] from December 1994 through March 2000 indicate that the facility has been in compliance with its permit effluent limits with the exception of one total suspended solids violation.

A map has been included in Appendix A which shows the location of the treatment plant and the discharge location.

III. RECEIVING WATERS

The treated effluent from the City of Rexburg wastewater treatment facility is currently discharged five feet from shore through outfall 001 to the South Fork of the Teton River. However, the draft permit still retains the option of discharging to the Rexburg Canal through outfall 002. Outfall 002, to the canal, is approximately 6 miles from the Teton River. The state of Idaho Water Quality Standards (IDAPA 58.01.02.150.06) protects the Teton River (US-1) for the following uses: cold water communities, salmonid spawning, secondary contact recreation, and agricultural and industrial water supply. The Rexburg Canal (a man-made waterway) is protected for the use in which it was developed; agricultural uses and general surface water uses (IDAPA 58.01.02.101.02).

Flow information for the Teton River, at United States Geological Survey (USGS) Station 13055340 at River Mile 19.1, was used to determine the 1Q10[2] and 7Q10[3] low flows. This gauging station is approximately one mile upstream from outfall 001. The 1Q10 and 7Q10 for the Teton River at this location are 0 cubic feet per second (cfs) and 0.035 cfs, respectively. Flow information is not available for the Rexburg Canal and is therefore assumed to be an extension of the outfall until further information is available.

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[1] Discharge monitoring reports are forms that the facility uses to report the results of monitoring the facility has done in compliance with their NPDES permit.

[2] The 1Q10 represents the lowest daily flow that is expected to occur once in ten years.

[3] The 7Q10 represents the lowest 7 day average flow that is expected to occur once in ten years.

IV. EFFLUENT LIMITATIONS

The EPA followed the Clean Water Act (CWA), state and federal regulations, and EPA's 1991 *Technical Support Document for Water Quality-Based Toxics Control* (TSD) to develop the effluent limits in the draft permit. In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either the technology-based limit or water quality-based limit. Appendix B includes the water quality criteria considered when developing the water quality-based effluent limitations. Appendix C provides discussion on the legal basis for the development of technology-based and water quality-based effluent limits.

The EPA sets technology-based limits by considering the effluent quality that is achievable using readily available technology. The EPA evaluates the technology-based limits to determine whether they are adequate to ensure that water quality standards are met in the receiving water. If the limits are not adequate, EPA must develop and apply the more stringent water quality-based limits. Water quality-based limits are designed to prevent exceedences of the Idaho water quality standards in the receiving waters.

The draft permit includes technology-based limits for five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and the upper pH range. Water quality-based limits have been included for E. coli, fecal coliform, chlorine, total ammonia, lead. silver, and zinc, and the lower pH range. In addition, narrative water quality-based limits are included in the draft permit. Appendix C describes in detail how the effluent limits were developed.

Table 1, below, presents the current effluent limits for outfalls 001 and 002. The draft effluent limits for outfalls 001 and 002 are provided in Table 2.

Table 1: Current Effluent Limits for Outfalls 001 and 002			
Parameter	**Maximum Daily**	**Average Weekly**	**Average Monthly**
BOD_5[1]	---	45 mg/L 975 lbs/day	30 mg/L 650 lbs/day
TSS[1]	---	45 mg/L 975 lbs/day	30 mg/L 650 lbs/day
Fecal Coliform outfall 001 outfall 002	 — ---	 200/100 ml 23/100 ml	 100/100 ml ---
Total Residual Chlorine	below detection levels (mg/L)	below detection levels (mg/L)	below detection levels (mg/L)
Total Recoverable Cyanide	42.6 µg/L	---	31 µg/L
pH	within the range of 6 - 9 s.u.		
Footnote: 1 The 1990 and draft permit require that the average monthly percent removal for BOD_5 and TSS be at least 85%			

Table 2: Draft Effluent Limits for Outfalls 001 or 002[1]					
Parameter	**Flow Upstream of Outfall 001 or 002**	**Maximum Daily**	**Instantaneous Maximum Daily**	**Average Weekly**	**Average Monthly**
BOD_5[2]	not dependent on receiving water flow	---	---	45 mg/L 1350 lbs/day	30 mg/L 901 lbs/day
TSS[2]	not dependent on receiving water flow	---	---	45 mg/L 1350 lbs/day	30 mg/L 901 lbs/day
Fecal Coliform	not dependent on receiving water flow	—	---	200/100 ml[3]	—
E. coli	not dependent on receiving water flow	---	576/100 ml[3]	—	126/100 ml
Total Residual Chlorine	not dependent on receiving water flow	0.1 mg/L	---	—	—
Total Ammonia (as N)[4/5]	< 81 cfs	1.90 mg/L 58 lbs/day	---	—	0.69 mg/L 21 lbs/day
	$\geq$ 81 cfs	2.0 mg/L 61 lbs/day	---	—	0.73 mg/L 22 lbs/day

Table 2: Draft Effluent Limits for Outfalls 001 or 002[1]					
Parameter	**Flow Upstream of Outfall 001 or 002**	**Maximum Daily**	**Instantaneous Maximum Daily**	**Average Weekly**	**Average Monthly**
Lead[4], Total Recoverable	< 81 cfs	10.8 µg/L 0.32 lbs/day	---	—	5.4 µg/L 0.16 lbs/day
	≥ 81 cfs	19.0 µg/L 0.56 lbs/day	---	—	9.2 µg/L 0.28 lbs/day
Silver[4], Total Recoverable	< 81 cfs	11.0 µg/L 0.32 lbs/day	---	—	5.4 µg/L 0.16 lbs/day
	≥ 81 cfs	13.0 µg/L 0.39 lbs/day	---	—	6.5 µg/L 0.20 lbs/day
Zinc[4/5], Total Recoverable	< 81 cfs	190 µg/L 5.7 lbs/day	---	—	95.0 µg/L 2.8 lbs/day
	≥ 81 cfs	450 µg/L 14.0 lbs/day	---	—	230 µg/L 6.8 lbs/day

Footnotes:
1 The permittee may discharge from either outfall 001 or 002, but not from both at the same time.
2 The average monthly percent removal for BOD_5 and TSS shall be at least 85%.
3 Monthly and weekly averages shall be measured as a geometric mean.
4 The effluent limits will be determined by the monthly average flows measured in the Teton River or the Rexburg Canal.
5 A compliance schedule may be included in the final permit, consistent with IDEQ's final 401 certification, to allow time to achieve these limitations.

The draft permit requires that the pH of the waste water treatment plant effluent be within the range of 6.5 and 9.0 standard units (s.u.). The draft permit prohibits the discharge of waste streams that are not part of the normal operation of the facility, as reported in the permit application. The draft permit also prevents discharges of floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. In addition, the draft permit prevents surface waters from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses.

V. PRETREATMENT PROGRAM

The City of Rexburg has an approved pretreatment program. Pretreatment programs are established in order to regulate industries who discharge waste to a publicly owned treatment works (POTW). The objectives of the pretreatment program are: 1) to prevent the introduction of pollutants to the treatment system that will interfere with the plant's operation, that could pass untreated through the system and contribute to water quality violations, or otherwise be incompatible with the treatment plant; 2) to improve

opportunities to reclaim and recycle municipal and industrial waste water and sludges; and 3) to protect the health and safety of both the POTW workers and the general public. Industrial users who discharge to POTWs are required by 40 CFR 403.1(b) and 403.5(a) and (b) to comply with certain pretreatment requirements established under Section 307 of the CWA.

The draft permit requires the City to implement the pretreatment program which was approved by EPA Region 10 on December 20, 1984, including any subsequent modifications approved by EPA. For "categorical" and other significant industrial users, the City must issue individual pretreatment permits; require effluent monitoring and reporting under the requirements of 40 CFR 403.12(b),(d),(e), (f); and conduct annual industrial user inspections and sampling to meet the requirements of 40 CFR 403.8(f)(1)(iii) and (2)(v). The permittee has reported that the significant industrial users that discharge to the City of Rexburg include NorSun Foods of Idaho, Ricks College, Madison Memorial Hospital, B&V Technology, and Artco.

The City most recently evaluated its local limits in 1996 and adopted revised limits (except for mercury) on November 19, 1997. Since the City has significantly changed the treatment processes at the POTW since that time and has improved its sampling data collection, it is appropriate to required a new evaluation using the newer data. Therefore, EPA is requiring a local limits evaluation to be submitted to EPA by June 30, 2002.

VI. SLUDGE REQUIREMENTS

The biosolids management regulations at 40 CFR §503 were designed so that the standards are directly enforceable against most users or disposers of biosolids, whether or not they obtain an NPDES permit. Therefore, the publication of Part 503 in the *Federal Register* on February 19, 1993 served as notice to the regulated community of its duty to comply with the requirements of the rule, except those requirements that indicate that the permitting authority shall specify what has to be done.

Requirements are included in Part 503 for pollutants in biosolids, the reduction of pathogens in biosolids, the reduction of the characteristics in biosolids that attract vectors, the quality of the exit gas from a biosolids incinerator stack, the quality of biosolids that are placed in a municipal solid waste landfill unit, the sites where biosolids are either land applied or placed for final disposal, and for a biosolids incinerator.

Even though Part 503 is self-implementing, Section 405(f) of the CWA requires the inclusion of biosolids use or disposal requirements in any NPDES permit issued to a Treatment Works Treating Domestic Sewage. In addition, the biosolids permitting regulations in 40 CFR §122 and §124 have been revised to expand its authority to issue NPDES permits with these requirements. This includes all biosolids generators, biosolids treaters and blenders, surface disposal sites and biosolids incinerators. In the future, EPA Region 10 will be issuing a separate NPDES general permit which deals only with the use and disposal of biosolids. Facilities that generate biosolids, including the City of Rexburg,

will be required to be covered under the biosolids general permit. As mentioned earlier, even though the permittee does not presently have a permit for biosolids use or disposal, the Permittee is responsible for complying with the requirements of 40 CFR 503.

Presently, the permittee disposes of biosolids through land application. The draft permit requires the permittee to comply with 40 CFR Part 503.

VII. MONITORING REQUIREMENTS

A. Effluent Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The Permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports to EPA. Table 3 presents the proposed effluent monitoring requirements.

Table 3: City of Rexburg Monitoring Requirements

Parameter	Sample Location	Sample Type	Draft Sample Frequency	1990 Sample Frequency
Flow, mgd	Influent	Recording	Continuous	Continuous
$BOD_{5,}$ mg/L[1]	Influent and Effluent	24-hour composite	1/week	1/week
TSS, mg/L[1]	Influent and Effluent	24-hour composite	1/week	1/week
pH, s.u.	Effluent	Grab	5/week	5/week
Fecal coliform, organisms/100 mL	Effluent	Grab	5/week	1/week
E. coli Bacteria, organisms/100 mL	Effluent	Grab	5/month	---
Total Residual Chlorine, mg/L	Effluent	Grab	5/week	1/day
Total Ammonia as N, mg/L	Effluent	24-hour composite	5/week	1/week
Total Lead, µg/L	Effluent	24-hour composite	1/week	---
Total Silver, µg/L	Effluent	24-hour composite	1/week	---

Table 3: City of Rexburg Monitoring Requirements				
Parameter	**Sample Location**	**Sample Type**	**Draft Sample Frequency**	**1990 Sample Frequency**
Total Zinc, µg/L	Effluent	24-hour composite	1/week	---
Temperature, °C	Effluent	Grab	1/month	---
Nitrate, mg/L	Effluent	Grab	1/quarter	---
Hardness (as $CaCO_3$) mg/L	Effluent	24-hour composite	1/quarter	---
Footnote: 1 Influent and effluent composite samples shall be collected during the same 24 hour period.				

B. Ambient Monitoring

The 1990 permit required that upstream and downstream monitoring occur once every two weeks in the Teton River for temperature, pH, and ammonia. The draft ambient monitoring requirements are found in Table 4 and are required to begin **four months from the date of permit issuance**. The ambient monitoring shall be concurrent with the effluent monitoring and results submitted with the following month's discharge monitoring report.

The data will be used to determine the need for incorporating, retaining, and/or revising water quality-based effluent limits based on mixing zones. In order to perform these evaluations, it is necessary that the ambient monitoring use analytical methods that have method detection limits below the water quality criteria. In addition, daily flow monitoring upstream of outfall 001 in the Teton River, and monitoring upstream of outfall 002 in the Rexburg Canal is required in order to demonstrate compliance with flow-based effluent limits.

Table 4: City of Rexburg Ambient Monitoring Requirements			
Parameter	**Monitoring Location**	**Sample Type**	**Sample Frequency**
Flow	upstream of 001 in Teton River[1] upstream of 002 in Rexburg Canal[2]	Recording	1/week
Temperature	downstream of 001 in Teton River where Rexburg Canal enters Teton River	Grab	1/quarter[3]
pH	downstream of 001 where Rexburg Canal enters Teton River	Grab	1/quarter[3]
Total Ammonia	upstream and downstream of 001 in Teton River where Rexburg Canal enters Teton River	24-hour composite	1/quarter[3]
Nitrate	downstream of 001 in Teton River downstream of 002 in Rexburg Canal	Grab	1/quarter[3]
Hardness	downstream of 001 in Teton River where Rexburg Canal enters Teton River	24-hour composite	1/quarter[3]
Lead, total recoverable	upstream of 001 in Teton River	24-hour composite	1/quarter[3]
Silver, total recoverable	upstream of 001 in Teton River	24-hour composite	1/quarter[3]
Zinc, total recoverable	upstream of 001 in Teton River	24-hour composite	1/quarter[3]

Footnotes:

1 If the USGS continues to monitor at station 13055340 the permittee shall report the average monthly flow for compliance with the effluent limits when discharge is through outfall 001. If the USGS monitoring is discontinued, the flow monitoring shall be conducted by the permittee at this same site.

2 The permittee must report the average monthly flow in the Rexburg Canal when the discharge is through outfall 002. Weekly monitoring is required irregardless of the use of outfall 002.

3 The quarterly monitoring shall be conducted on a calender quarter (i.e. Jan-Mar, Apr-June, July-Sept, and Oct-Dec).

C. Representative Sampling

The draft permit has expanded the requirement in the federal regulations regarding

monitoring (40 CFR 122.41[j]). This provision now specifically requires representative sampling whenever a bypass, spill, or non-routine discharge of pollutants occurs, if the discharge may reasonably be expected to cause or contribute to a violation of an effluent limit under the permit. This provision is included in the draft permit because routine monitoring could easily miss permit violations and/or water quality standards exceedences that could result from bypasses, spills, or non-routine discharges. This requirement directs the permittee to conduct additional, targeted monitoring to quantify the effects of these occurrences on the final effluent discharge.

D. Method Detection Limits

Some of the water quality-based effluent limits in the draft permit are close to the capability of current analytical technology to detect and/or quantify. Therefore, the permit contains a provision requiring the City of Rexburg to use methods that can achieve a method detection limit (MDL) less than the effluent limitation. Method detection limits are the minimum levels that can be accurately detected by current analytical technology. For purposes of averaging results, the draft permit allows the City of Rexburg to use 0 for all values below the MDL. The MDLs for those parameters without effluent limitations have been specified in the draft permit.

E. Whole Effluent Toxicity

Whole effluent toxicity (WET) is a term used to describe the aggregate toxic effect of an aqueous sample (e.g., whole effluent wastewater discharge or ambient receiving water) as measured according to an organism's response upon exposure to the sample. Whole effluent toxicity tests are laboratory tests that replicate to the greatest extent possible the total effect and actual environmental exposure of aquatic life to effluent toxicants without requiring the identification of specific toxicants. The tests use small vertebrate and invertebrate species, and/or plants. The effluent concentration that results in the survival of 50% of test organisms during a 96-hour exposure determines the short-term (acute) toxicity. The highest effluent concentration that causes reduced growth or reduced reproduction of test organisms and/or plants during a 7-day exposure determines the long-term (chronic) toxicity.

Federal regulation 40 CFR 122.44(d)(1) requires that permits contain limits on WET when a discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard. Idaho regulation (IDAPA 58.01.02200.02) states that surface waters of the state shall be free from toxic substances in concentrations that impair designated beneficial uses. Whole effluent toxicity data from the City of Rexburg is available from November 1991 through October 2000. This data demonstrates that the City currently achieves the state standard, therefore the draft permit requires less frequent monitoring than would otherwise be required. Annual chronic WET testing of the outfall 001 discharge has been

included in the draft permit. Testing for larval survival, reproduction, and seven day growth shall be conducted using samples at or before the point-of-discharge to the South Fork Teton River or Rexburg Canal.

VIII. OTHER PERMIT CONDITIONS

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the Permittee to develop and submit a Quality Assurance Plan to ensure that the monitoring data submitted are accurate and to explain data anomalies if they occur. The Permittee is required to complete a Quality Assurance Plan within **90 days** of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures the Permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Additional Permit Provisions

Sections II, III, and IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

C. Operation and Maintenance Plan

Section 402 of the CWA and federal regulations 40 CFR 122.44(k)(2) and (3) authorize EPA to require best management practices, or BMPs, in NPDES permits. Best management practices are measures for controlling the generation of pollutants and their release to waterways. For municipal facilities, these measures are typically included in the facility's Operation & Maintenance (O&M) plan. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires the City of Rexburg to incorporate appropriate BMPs into their O&M plan within **180 days** of the effective date of the permit. Specifically, the City must consider spill prevention and control, optimization of chemical use, public education aimed at controlling the introduction of household hazardous materials to the sewer system, and water conservation. To the extent that any of these issues have already been addressed, the City need only reference the appropriate document in its O&M plan. The O&M plan must be revised as new practices are developed.

IX. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) if their actions could adversely affect any threatened or endangered species. EPA has contacted both services regarding threatened and endangered species in the Teton River watershed. NMFS has indicated that there are no listed or threatened species at the location of Rexburg's discharge. The USFWS has indicated that none of the endangered species are expected to be impacted by reissuance of the NPDES permit Therefore, EPA has determined that issuance of this permit will have **no effect** on any of the endangered species that may occur in the vicinity of the discharge. See Appendix E for further details.

B. Essential Fish Habitat

Section 305(b) of the Magnuson-Stevens Act (16 USC 1855(b)) requires federal agencies to consult with the NMFS when any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated Essential Fish Habitat (EFH) as defined by the Act. The EFH regulations define an *adverse effect* as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

To date, federal management plans have been approved by the Secretary of Commerce for groundfish and coastal pelagics. None of the 83 West Coast groundfish surveyed for the federal management plan included habitat near the South Fork Teton River or Rexburg Canal (see Section III for a description of the discharge location). Similarly, the coastal pelagic species are not effected by the permitted discharges. Appendix A of Amendment 14 to the Pacific Coast Salmon Plan includes a geographic range freshwater EFH for coho, chinook, and pink salmon (Figure A-1) that does not include the South Fork Teton River or Rexburg Canal. Because the permit does not include discharges to EFH, EPA has made a finding of **no potential for adverse effect**.

C. State Certification

Section 401 of the CWA requires EPA to seek certification from the State that the permit is adequate to meet State water quality standards before issuing or reissuing a final permit. The regulations allow for the state to stipulate more stringent conditions in the permit, if the certification cites the CWA or State law references upon which that condition is based. In addition, the regulations require a

certification to include statements of the extent to which each condition of the permit can be made less stringent without violating the requirements of State law.

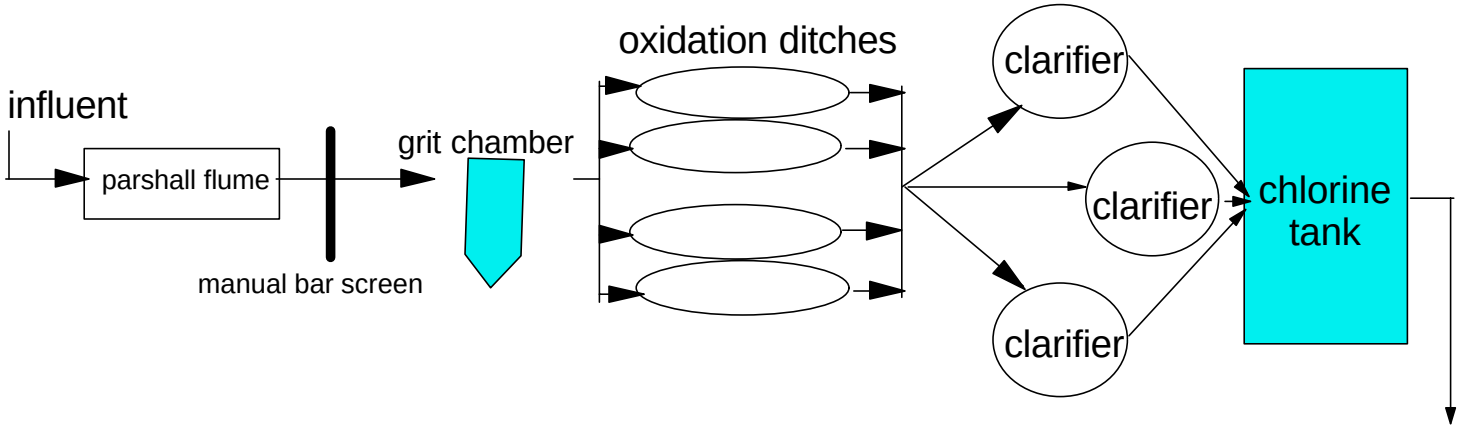
After the public comment period, a proposed final permit will be sent to the State for final certification within 30 days. If the State authorizes different requirements than are currently found in the draft permit in its final certification, EPA will incorporate those requirements into the final permit.

D. Permit Expiration

This permit will expire five years from the effective date of the permit.

APPENDIX A - Wastewater Treatment Plant Location

The map indicated the outfall location for the City of Rexburg is found at ID0023817 FS App A.pdf. The map has been provided separate from the fact sheet because of the size of the file (155 KB).



City of Rexburg
Process Diagram

APPENDIX B - Water Quality Standards

A. Water Quality Criteria

For the City of Rexburg's discharge, the following water quality criteria were considered when drafting the permit for the protection of the beneficial uses of the South Fork Teton River (after outfall 001 and where the Rexburg Canal enters the Teton River). The Rexburg Canal is protected for numbers 1 and 2:

1. IDAPA 58.01.02.200.02 - Surface waters of the State shall be free from toxic substances in concentrations that impair designated beneficial uses. Furthermore, IDAPA 58.01.02.210.01 incorporates the National Toxics Rule by reference as found in 40 CFR 131.36(b)(1) that includes numeric criteria for toxic substances.

2. IDAPA 58.01.02.200.05 - Surface waters of the State shall be free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.

3. IDAPA 58.01.02.200.06 - Surface waters of the State shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses.

4. IDAPA 58.01.02.250.01.a. - Hydrogen ion concentration (pH) values within the range of 6.5 to 9.5 standard units.

5. IDAPA 58.01.02.250.01.c.i. - The one-hour average concentration of total residual chlorine shall not exceed 19 ug/L.

6. IDAPA 58.01.02.250.01.c.ii. - The four-day average concentration of total residual chlorine shall not exceed 11 ug/L.

7. IDAPA 58.01.02.250.02.c.i - The one hour average concentration of un-ionized ammonia (as N) is not to exceed (0.43/A/B/2) mg/L, where:

   A = 1 if the water temperature (T) is $ 20°C, or
   $A = 10^{(0.03(20-T))}$ if T < 20°C, and

   B = 1 if the pH is $ 8.0, or
   $B = (1+ 10^{(7.4-pH)}) \div 1.25$ if pH is < 8.0

8. IDAPA 58.01.02.250.02.c.ii - The four day average concentration of un-ionized ammonia (as N) is not to exceed (0.66/A/B/C) mg/L, where:

   A = 1.4 if T is $ 15°C, or
   $A = 10^{(0.03(20-T))}$ if T < 15°C, and

   B = 1 if the pH is $ 8.0, or
   $B = (1+ 10^{(7.4-pH)}) \div 1.25$ if pH is < 8.0

   C = 13.5 if pH is $ 7.7, or
   $C = 20(10^{(7.7-pH)}) \div (1+ 10^{(7.4-pH)})$ if the pH is < 7.7

9. IDAPA 58.01.02.250.02.e - Waters designated for salmonid spawning are to exhibit the following characteristics during the spawning period and incubation for the particular species inhabiting those waters:
   - IDAPA 58.01.02.250.02.e.ii - Water temperatures shall be 13 degrees C or less with a maximum daily average no greater than 9 degrees C.

10. IDAPA 58.01.02.251.02 Waters designated for secondary contact recreation are not to contain E. coli bacteria significant to the public health in concentrations exceeding:
    - 576/100 mL at any time,
    - a geometric mean of 126/100 mL based on a minimum of five samples taken every 3 to 5 days over a thirty day period.

11. IDAPA 58.01.02.420.05.a Fecal Coliform concentrations in secondary treated effluent must not exceed a geometric mean of two hundred/one hundred (200/100) ml based on no more than one (1) week's data and a minimum of five (5) samples.

B. Anti-Degradation Policy

The State of Idaho has adopted an anti-degradation policy as part of their water quality standards. The anti-degradation policy includes a three-tiered approach to maintain and protect various levels of water quality and uses. The three tiers of protection are as follows:

Tier 1 – Maintenance of Existing Uses for all Waters - The existing in-stream uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

Tier 2 – High Quality Water – Where the quality of the water exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water, that quality shall be maintained and protected unless IDEQ finds, after full satisfaction on the intergovernmental coordination and public participation provisions of the IDEQ's continuing planning process, that allowing lower water quality is necessary to

accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the IDEQ shall assure water quality adequate to protect existing uses fully.

Tier 3 - Outstanding Resource Waters – Where high quality waters constitute an outstanding natural resource, such as waters of national and state parks and wildlife refuges, and waters of exceptional recreational or ecological significance, that water shall be maintained and protected from the impacts of point and nonpoint source activities.

The South Fork Teton River and the Rexburg Canal are Tier 1 waterbodies, therefore the existing stream uses must be protected. An NPDES permit cannot be issued that would result in the water quality criteria being violated. The draft permit contains effluent limits protective of the existing beneficial uses for the Teton River and Rexburg Canal.

APPENDIX C - Basis for Effluent Limitations

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the CWA provide the basis for the effluent limitations and other conditions in the draft permit. The EPA evaluates discharges with respect to these sections of the CWA and the relevant NPDES regulations to determine which conditions to include in the draft permit.

In general, the EPA first determines which performance-based requirement (a.k.a. technology-based limits) must be incorporated into the permit. EPA then evaluates the effluent quality expected to result from these controls, to see if it could result in any exceedences of the water quality standards in the receiving water. If exceedences could occur, EPA must include more stringent water quality-based limits in the permit. The draft permit limits reflect whichever requirements (technology-based or water quality-based) are more stringent. The following explains in more detail the derivation of technology-based effluent limits and water quality-based effluent limits.

A. Technology-Based Effluent Limitations

The 1972 CWA required POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," that all POTWs were required to meet by July 1, 1977.

More specifically, Section 301(b)(1)(B) of the CWA requires that EPA develop secondary treatment standards for POTWs as defined in Section 304(d)(1) of the CWA. Based on this statutory requirement, EPA developed secondary treatment regulations, found in 40 CFR Part 133.102. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of BOD_5, TSS and pH and have been included in Table C-1.

Table C-1: Secondary Treatment Requirements for POTWs

Parameter	Average Weekly Limit	Average Monthly Limit	Percent Removal
BOD_5	45 mg/L	30 mg/L	85%
SS	45 mg/L	30 mg/L	85%
pH	between 6.0 and 9.0 standard units		

The technology-based chlorine effluent limitation of 0.5 mg/L is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis. Additionally, NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) as well as average monthly limits (AMLs) unless impracticable. The AWL is expressed as 1.5 times the AML, or in this case 0.75 mg/L. Finally, since federal regulations require limitations to be expressed as mass-based limits using the design flow of the facility.

Idaho's water quality standards found at IDAPA 16.01.02.420.05 include the technology-based limit that fecal coliform concentrations in secondary treated effluent not exceed a geometric mean of two hundred per one hundred ml based on no more than one week's data and a minimum of five samples.

B. Water Quality-Based Evaluation

1. Statutory Basis for Water Quality-Based Limits

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Discharges to state waters must also comply with limitations imposed by the state as part of its certification of NPDES permits under section 401 of the CWA.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing section 301 (b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality."

The regulations require that this evaluation be made using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

2. Determination of Need for Water Quality-Based Limits

When evaluating the effluent to determine if water quality-based effluent limits are needed based on chemical specific numeric criteria, a projection of the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern is made. The chemical specific concentration of the effluent and ambient water and, if appropriate, the dilution available from the ambient water are factors used to project the receiving water concentration. If the projected concentration of the receiving water exceeds the numeric criterion for a specific chemical, then there is the "reasonable potential" that the discharge may cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it is appropriate to allow a small area of ambient water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loading of the pollutant to the water body, and decrease treatment requirements. Mixing zones can be used only when there is adequate ambient flow volume and the ambient water is below the criteria necessary to protect designated uses. Table C-2 contains the information used to determine whether there is the reasonable potential to violate state water quality standards in the Teton River. Because flow information is not available for the Rexburg Canal it is assumed to be an extension of outfall 002 and shall be protected for the downstream uses of the Teton River.

TABLE C-2: Reasonable Potential Determination						
Parameter	**Effluent Data[1]**				**Receiving Water Upstream Concentration[5]**	**Reasonable Potential?[6]**
	Maximum Effluent Concentration	**Coefficient of Variation[2]**	**Number of Samples[3]**	**Reasonable Potential Multiplier[4]**		
Total Ammonia	2190 µg/L	1.4	50	2.7	0.0845 µg/L	1st tier = yes 2nd tier = yes
Total Recoverable Cadmium	0.3 µg/L	0.6	5	4.2	N/A	1st tier = no 2nd tier = no
Total Recoverable Chromium VI	2.0 µg/L	0.6	5	4.2	N/A	1st tier = no 2nd tier = no
Total Recoverable Copper	8.0 µg/L	1.3	46	2.6	N/A	1st tier = no 2nd tier = no
Total Recoverable Lead	4.0 µg/L	0.6	5	4.2	N/A	1st tier = yes 2nd tier = yes
Total Recoverable Silver	3.0 µg/L	0.6	4	4.7	N/A	1st tier = yes 2nd tier = yes
Total Recoverable Zinc	116 µg/L	0.6	6	3.8	N/A	1st tier = yes 2nd tier = yes

Footnotes:

1 The effluent data is based on sampling conducted by the City from December 1994 through January 2001.

2 When either less than 10 samples were taken effluent-specific variability cannot be determined, so a default coefficient of variation (CV) of 0.6 was used. The CV for copper was based on data gathered since December 1999 (after the test method changed). The CV is calculated as the standard deviation of the data divided by the mean.

3 The number of samples is used to develop the reasonable potential multiplier (RPM).

4 The RPM is based on the CV and the number of data points (i.e., number of samples collected).

5 The receiving water concentration for ammonia is based on samples collected in the Teton River upstream of Outfall 001. The value represents the 95th percentile concentration detected.

6 The first tier does not provide a mixing zone. The second tier provides a 25% mixing zone at the 20th percentile Teton River flow. See Appendix D for more details.

3. Procedure for Deriving Water Quality-Based Limits

The first step in developing a water quality based permit limit is to develop a wasteload allocation (WLA) for the pollutant. A WLA is the concentration (or loading) of a pollutant that the Permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

(a) TMDL-Based Wasteload Allocation

Where the receiving water quality does not meet water quality standards it

is "303(d) listed", and a TMDL is generally developed by the state that includes WLAs. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources, including a margin of safety, that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

Section 303(d) of the CWA requires states to develop TMDLs for water bodies that will not meet water quality standards after the imposition of technology-based effluent limitations to ensure that these waters will come into compliance with water quality standards. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (WLAs), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the WLA for the point source. The States 1999 303(d) list does not include the South Fork Teton River or the Rexburg Canal.

(b) Mixing Zone-Based WLA

When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a mass balance equation. The equation takes into account the available dilution provided within the mixing zone, and the background concentrations of the pollutant. A 25% mixing zone was used for the second tier of effluent limits for total ammonia, lead, silver, and zinc.

(c) Criterion as the Wasteload Allocation

In some cases a mixing zone cannot be authorized, either because the receiving water already exceeds the criteria, the receiving water flow is too low to provide dilution, or the state doesn't authorize a mixing zone. In such cases, the criterion becomes the WLA. Establishing the criterion as the WLA ensures that the Permittee will not contribute to an exceedance of the criteria.

Once the WLA has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards. This approach was used when developing the first tier effluent

limits for total ammonia, lead, silver, and zinc.

C. Basis for Effluent Limits

The following parameters have been evaluated for compliance with technology and water quality-based criteria. The more stringent criteria has been included in the draft permit when applicable. Until further information is known about the Rexburg Canal, it shall be protected for the downstream uses of the Teton River.

1. Biochemical Oxygen Demand and Total Suspended Solids

Water quality-based criteria are not available for BOD_5 and TSS, therefore the technology-based criteria for secondary treatment apply. These include a weekly average limit of 45 mg/L and an monthly average limit of 30 mg/L. The technology-based limits also require 85% removal of BOD and TSS. The removal requirements are determined using the 30-day average values of the raw wastewater influent concentrations and the 30-day average values of the effluent concentrations.

EPA methodology and Federal regulations at (40 CFR §122.45 (b) and 122.45 (f)) require BOD_5 and TSS limitations to be expressed as mass-based limits using the design flow (3.6 mgd) of the facility. The loading is calculated as follows: concentration X design flow X 8.34. Using this formula, the plant's BOD_5 and TSS permit limits are:

monthly average = 30 mg/L X 3.6 mgd X 8.34 = 901 lbs/day
weekly average = 45 mg/L X 3.6 mgd X 8.34 = 1350 lbs/day

Discharges from the City of Rexburg are not expected to have an appreciable effect on the dissolved oxygen concentration in the Teton River. BOD_5 limitations have been included in the permit to control the discharge of oxygen demanding constituents into the Teton River.

2. pH

In addition to limits on BOD_5 and TSS, 40 CFR 133.102 requires that effluent pH be within the range of 6.0 to 9.0 s.u. for POTWs. In addition, the State water quality standards for protection of aquatic life (IDAPA 58.01.02250.01) requires that ambient pH be in the range of 6.5 to 9.5 s.u.
Therefore, the minimum range in the draft permit is the water quality-based 6.5 s.u. while the maximum range is the technology-based limit of 9.0 s.u.

3. Bacteria

a. Fecal Coliform

Idaho's water quality standards (IDAPA 58.01.02.420.05) include limits on fecal coliform for those sewage wastewater treatment plants that are required to disinfect. Disinfection is required when the discharge is through a significantly populated area or the receiving water has primary contact recreation as a beneficial use. Therefore, an average weekly limit of 200 organisms/100 ml has been included in the draft permit. The average monthly limit has been removed from the permit since the state's current water quality standards do not currently contain a monthly limit. Technology-based criteria are not available for fecal coliform.

b. E. coli

The South Fork Teton River is protected for secondary contact (i.e. boating, fishing etc). Therefore, an E. coli effluent limit has been added, consistent with the states water quality criteria (IDAPA 58.01.02.251.02), to the permit to ensure that the facility's discharge is protective of secondary contact. Idaho's standards require a maximum daily effluent limit of 576 E. coli organisms per 100 ml and a monthly average limit of 126 organisms per 100 ml. The monitoring frequency has been established at a minimum of five times per month based on the requirements in Idaho's standards. Technology-based criteria is not available for E. coli.

4. Total Residual Chlorine

Chlorine disinfection is utilized at the Rexburg treatment plant. The previous 1990 permit required that the effluent monitoring demonstrate levels below detection in order to comply with the permit. This limit has been clarified to specify the numeric compliance limit. The EPA has two approved test methods (330.3 Iodometric direct and 330.4 DPD-FAS) that achieve a minimum level of 100 ug/L (0.1 mg/L). This level has been included as a water quality-based effluent limit in the draft permit because it is more stringent than the technology-based limit.

5. Total Ammonia

Low concentrations of ammonia can be toxic to freshwater fish, particularly salmonids. Un-ionized ammonia (NH_3) is the principal toxic form of ammonia. The ammonium ion (NH_4^+) is much less toxic. The relative percentages of these two forms of ammonia in the water vary as the temperature and pH vary. As the pH and temperature decrease, the percentage of ammonia that is in the un-ionized form increases, causing increased toxicity.

As effluent mixes with receiving water, the temperature and pH change, making it difficult to predict how much of the total ammonia in the discharge will convert to the un-ionized form. Therefore, the limits in the draft permit are expressed as total

ammonia, not un-ionized ammonia. These limits are protective of Idaho's water quality criteria for cold water biota and salmonids found at IDAPA 58.01.02250.02.c.

Because the toxicity of ammonia is dependent upon pH and temperature, the criteria are also pH and temperature dependent. EPA calculated the total ammonia criteria using effluent pH and temperature values when a mixing zone was not available and downstream pH and temperature when a 25% mixing zone was available. The 95th percentile effluent and ambient temperature and pH were used to represent reasonable worst-case conditions.

Using the statistical permit derivation method in the TSD, EPA calculated water quality-based daily maximum and monthly average limits (See Appendix D for the calculations). In addition to the effluent limits, the draft permit includes requirements for ambient monitoring for temperature, pH, and ammonia in the South Fork Teton River and ambient monitoring of ammonia in the Rexburg Canal.

6. Narrative Criteria

The Idaho water quality standards require surface waters of the state to be free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. In addition, the water quality standards require that surface waters be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses. The draft permit has incorporated these water quality-based criteria.

7. Silver, Lead and Zinc

Water-quality based effluent limits have been developed for silver, lead and zinc because they had the reasonable potential to violate state water quality criteria. These effluent limits were developed to meet water quality criteria end-of-pipe at the first flow tier and at the edge of a (25% by volume) mixing zone at the second tier. The 5th percentile effluent and ambient hardness was used to determine the effluent limits, consistent with Region 10's policy.

The water quality-based limits were originally developed in terms of concentration (µg/L). However, with a few exceptions, NPDES regulations (40 CFR 122.45(f)) require that water quality-based effluent limits also be expressed in terms of mass. The following equation was used to convert the concentration-based limits into mass-based limits:

mass limit (lbs/day) = concentration limit (mg/L) × effluent flow rate (mgd) × conversion factor (8.34 lb/million gallons)/(milligrams per liter)).

APPENDIX D - Example Effluent Limit Calculation for Total Ammonia

This appendix describes how the water quality-based effluent limits were calculated for total ammonia. The calculations were performed according to procedures outlined in Chapter 5 of the TSD. Effluent limits for lead, silver and zinc were developed in a similar manner, although the specific calculations are not included herein.

Step 1 - Determine the appropriate water quality criteria

The water quality criteria is determined based on the use of the receiving water. The South Fork Teton River is protected for secondary contact recreation, cold water communities, salmonid spawning, and agricultural water supply. Because flow information is not available for the Rexburg Canal, it is assumed to be an extension of outfall 002 and shall be protected for the downstream uses of the Teton River. Idaho standard (IDAPA 58.01.02250.02.c) require that ammonia be protective of cold water aquatic life. Ammonia criteria are based on pH and temperature.

The South Fork Teton River at USGS station 13055340 is located at River Mile 19.1. This site (one mile upstream of where outfall 001 discharges) has a 1Q10 of 0 cfs and a 7Q10 of 0.354 cfs using data from September 1987 through September 1999. As previously mentioned flow information is not available in the Rexburg Canal. Because the Teton River flow is extremely variable (ranging from 0 cfs to 3310 cfs) EPA established two flow tiers (based on the 20^{th} percentile of the Teton River flow).

At the first tier, no mixing zone is available because of the lack of available dilution. At this tier the 95^{th} percentile effluent pH (7.8 s.u.) and temperature (23 °C) data were used to calculate the following total ammonia criteria:
Acute = 6.4 mg/L
Chronic = 1.05 mg/L

The second tier is established at the 20^{th} percentile Teton River flow (81 cfs). This flow is approximately 14 times the design flow of the facility. At 81 cfs, a 25% acute and chronic mixing zone is assumed. The previous permit required the permittee to monitor upstream and downstream pH, temperature and total ammonia. Using the 95^{th} percentile ambient downstream pH (8.7 s.u.) and temperature (13 °C) data, the acute and chronic total ammonia criteria are:
Acute = 1.29 mg/L
Chronic = 0.30 mg/L.

Step 2 - Determine whether there is “reasonable potential” to exceed the criteria

At the first tier (i.e., no mixing zone) there is RP to exceed water quality criteria if the maximum projected concentration (C_e) exceeds the criterion. C_e is the maximum reported effluent concentration times a reasonable potential multiplier (based on the coefficient of variation and a sampling frequency of 4 times per month). Therefore, C_e equals 2.19 mg/L

× 2.7 = 4.9 mg/L. This value exceeds the chronic criteria of 1.05 mg/L. Therefore, effluent limitations are needed at the first tier.

At the second tier (25% mixing zone) there is RP to exceed water quality criteria if the receiving water concentration at the edge of the mixing zone exceeds the criterion. Downstream ambient monitoring was required in the current permit. The 95th percentile of this data (0.8 mg/L) is greater than the chronic criteria 0.30 mg/L. Therefore, ammonia effluent limits are needed at the second tier.

If ambient ammonia data was not available, the edge of mixing zone concentration would be calculated using the following mass-based equation:

$$C_d = \frac{(C_e \text{ X } Q_e) + (C_u \text{ X } (Q_u \text{ X } \%MZ))}{Q_e + (Q_u \text{ X } \%MZ)}$$

Where,

C_d = receiving water concentration downstream of the effluent discharge

C_e = maximum projected effluent concentration (5.9 mg/L)

= maximum reported effluent concentration (2.19 mg/L) X reasonable potential multiplier (2.7)

In calculating the reasonable potential multiplier, EPA would assume a sampling frequency of four per month, and used a coefficient of variation (1.36) based on monthly data reported between December 1994 through September 2000.

C_u = upstream concentration of pollutant (0.085 mg/L)

Q_e = maximum effluent flow (5.6 cfs)

Q_u = upstream flow (81 cfs)

C_d = 1.34 mg/L > acute criteria of 1.29 mg/L and chronic criteria of 0.30 mg/L
Therefore, total ammonia limits must be included in the permit.

Step 3 - Calculate Wasteload Allocations

For the first tier, the acute and chronic wasteload allocations (WLA_{acute} or $WLA_{chronic}$) are simply the acute and chronic criterion. This is because a mixing zone is not available at this tier.

WLA_{acute} = 6.4 mg/L
$WLA_{chronic}$ = 1.05 mg/L

At the second tier, WLA_{acute} and $WLA_{chronic}$ are calculated using the same mass balance equation used to calculate the concentration of the pollutant at the edge of the mixing zone (equation in the box). However, C_d becomes the criterion and C_e is replaced by the WLA_{acute} or $WLA_{chronic}$. The WLAs define the appropriate concentration of pollutant allowed in the effluent.

$$WLA = \frac{C_d(Q_u \times \%MZ) + (C_d Q_e)}{Q_e} - \frac{Q_u C_u (\%MZ)}{Q_e}$$

WLA_{acute} = 5.6 mg/L
$WLA_{chronic}$ = 1.1 mg/L

Step 4 - Develop Permit Limits

a) Convert the WLAs to Long Term Averages (LTAs)

The acute and chronic WLAs are converted to acute and chronic LTA concentrations (LTA_{acute} and $LTA_{chronic}$) using the following equations from Section 5.4 of EPA's TSD:

$LTA_{acute} = WLA_{acute} \times e^{[0.5F^2 - zF]}$ where,

CV = coefficient of variation of the effluent concentration, standard deviation/mean = 1.36
F^2 = $\ln(CV^2 + 1) = 1.05$
z = 2.326 for 99th percentile probability basis

1st Tier: LTA_{acute} = 0.998 mg/L
2nd Tier: LTA_{acute} = 0.873 mg/L

$LTA_{chronic} = WLA_{chronic} \times e^{[0.5F^2 - zF]}$ where,

CV = coefficient of variation of the effluent concentration = 1.36
F^2 = $\ln(CV^2/4 + 1) = 0.380$
z = 2.326 for 99th percentile probability basis

1st Tier: $LTA_{chronic}$ = 0.303 mg/L
2nd Tier: $LTA_{chronic}$ = 0.32 mg/L

b) Calculate Average Monthly and Maximum Daily Permit Limits

To protect a water body from both acute and chronic effects, the more limiting of the calculated LTA_{acute} and $LTA_{chronic}$ is used to derive the effluent limitations. The TSD recommends using the 95th percentile for the Average Monthly Limit (AML) and the 99th percentile for the Maximum Daily Limit (MDL).

To derive the MDL and the AML for ammonia the calculations would be as follows:

MDL = $LTA_{chronic}$ X $e^{(zF-0.5F^2)}$ where,

CV = coefficient of variation = 1.36

F^2 = $\ln(CV^2 + 1)$ = 1.05

z = 2.326 for 99th percentile probability basis

MDL 1st Tier = **1.9 mg/L**

MDL 2nd Tier = **2.0 mg/L**

AML = $LTA_{chronic}$ X $e^{(zF- 0.5F^2)}$ where,

CV = coefficient of variation = 1.36

F^2 = $\ln(CV^2/n + 1)$ = 0.38

z = 1.645 for 95th percentile probability basis

n = number of sampling events required per month = 4

AML 1st Tier = **0.69 mg/L**

AML 2nd Tier = **0.73 mg/L**

Mass based concentration limits were calculated by multiplying the concentration limit by the design flow (3.6 mgd) and the 8.34 conversion factor.

MDL 1st Tier = (3.6 mgd) X (8.34) X (1.94 mg/L) = **58 lbs/day**

MDL 2nd Tier = (3.6 mgd) X (8.34) X (2.04 mg/L) = **61 lbs/day**

AML 2nd Tier = (3.6 mgd) X (8.34) X (0.69 mg/L) = **21 lbs/day**

AML 2nd Tier = (3.6 mgd) X (8.34) X (0.73 mg/L) = **22 lbs/day**

APPENDIX E - Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed endangered species.

On August 18, 2000, NMFS sent an e-mail to EPA Region 10 indicating that there are no listed or threatened species at the location of Rexburg's discharge. In a letter dated September 1, 2000, the USFWS identified the Canada lynx, gray wolf, grizzly bear, bald eagle, whooping crane, and Ute ladies'- tresses (a plant found in wet meadows and river meanders) as being federally-listed endangered species occurring in Teton County, Idaho (the location of Regburg's discharge). This list has not changed according to the updated species list (1-4-01-SP-362) dated March 1, 2001.

EPA has determined that the requirements contained in the draft permit will not have an impact on the Canada lynx, gray wolf, grizzly bear, bald eagle, whooping crane, or Ute ladies'- tresses. Hunting and habitat destruction are the primary causes of declines of the Canada lynx, the gray wolf and the grizzly bear. Issuance of the draft NPDES permit to the City of Rexburg will not result in habitat destruction, nor will it result in changes in population that could result in increased habitat destruction. Furthermore, issuance of this draft permit will not impact the food sources of the Canada lynx, the gray wolf, or the grizzly bear.

The primary reasons for the decline of the bald eagle are destruction of their habitat and food sources and widespread historic application of DDT. This permit will not impact any of these issues.

The whooping crane and gray wolf are included on the list as an experimental and non-essential population in the area. Habitat management plans are not developed for these populations.

Modification of riparian and wetland habitats associated with livestock grazing, vegetation removal, excavation, construction, stream channelization, and actions that alter hydrology are the primary causes for adverse impacts to Ute ladies' - tresses. Issuance of an NPDES permit for the City of Driggs wastewater treatment plant will not result in habitat destruction. Data is unavailable regarding whether or not the Ute ladies'- tresses are found in the vicinity of the discharge.

Informal consultation on September 21, 2000 and September 29, 2000 with the USFWS indicated that reissuance of the permits would not affect the Canada lynx, gray wolf, grizzly bear, whooping crane, bald eagle, or Ute ladies'- tresses. Therefore, EPA has determined that issuance of this permit will **not affect** any of the endangered species that may occur in the vicinity of the discharge.