FACT SHEET

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

The City of Ketchum
Ketchum/Sun Valley Wastewater Treatment Plant
P.O. Box 2315
Ketchum, Idaho 83340

Permit Number: ID-002028-1
Public Notice starts: February 7, 2001
Public Notice ends: March 9, 2001

EPA Proposes NPDES Permit Reissuance.
EPA proposes to reissue an NPDES permit to the City of Ketchum. The draft permit places conditions on the discharge of pollutants from the City of Ketchum's wastewater treatment plant to the Big Wood 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 and current sewage sludge (biosolids) practices
- a listing of proposed effluent limitations, schedules of compliance, and other conditions
- a map and description of the discharge location
- technical material supporting the conditions in the permit

State Certification.
EPA is requesting that the Idaho Department of Environmental Quality certify the NPDES permit for the City of Ketchum, under section 401 of the Clean Water Act.

Public Comment.
Persons wishing to comment on, or request a Public Hearing for, the draft permit may do so in writing by the end date of the Public Notice. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Office of Water will make a final decision regarding permit reissuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 30 days after the

issuance date, unless the permit is appealed to the Environmental Appeals Board.

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) 553-2108 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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I. APPLICANT

City of Ketchum
Ketchum/Sun Valley Wastewater Treatment Plant
NPDES Permit No.: ID-002028-1

Facility Mailing Address:
P.O. Box 2315
Ketchum, Idaho 83340

Facility Address:
110 River Ranch Road
Ketchum, Idaho 83340

II. FACILITY INFORMATION

A. Treatment Plant Description

The City of Ketchum owns, operates, and has maintenance responsibility for a facility which treats domestic sewage from local residents and commercial establishments.

The facility consists of screening and grit removal followed by biological treatment using extended aeration activated sludge process. Alum and polymers are added prior to secondary clarification for phoshorous removal. The effluent is then chlorinated followed by dechlorination using sulfur dioxide. Sludge from the facility is treated by aerobic digestion and is disposed of at a landfill site.

The facility serves a population that can range from 3949 to 9793 depending on the tourist season, and has the following design characteristics:

Design Flow:	2.48 mgd
Design Removal, 5-day Biochemical Oxygen Demand	85 %
Design Removal, Total Suspended Solids	85 %
Design Removal, Phosphorus	90 %

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

B. Permit Information

The NPDES permit for the wastewater treatment plant expired on April 23, 1997. The City submitted an application for the facility on November 15, 1996. 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. Since the City did submit a timely application for a new permit, the current permit was administratively extended.

C. Compliance Information

A review of the facility's Discharge Monitoring Reports[1] and compliance inspection reports for the past five years indicates that the facility has generally been in compliance with the terms of its existing permit.

III. RECEIVING WATER

A. Outfall location/ Receiving Water Flows

The treated effluent from the treatment facility is discharged from outfall 001 to the Big Wood River, in the Upper Snake Basin, at approximately river mile 96. The outfall is located approximately twenty feet from the bank of the river, is submerged one foot below the river, and is at latitude 43° 40' 08", and longitude 114° 21' 07" .

This reach of the Big Wood River has a 1Q10 low flow of 75 cfs (48.5 mgd), and a 7Q10 low flow of 88 cfs (56.9mgd). The 1Q10 flow is the lowest recorded one day flow with a return period of 10 years, and the 7Q10 is the average low flow over seven days with a return period of 10 years.

B. Water Quality Standards

A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve (such as cold water biota, contact recreation, etc.). The numeric and/or narrative water quality criteria are the criteria deemed necessary, by the State, to support the beneficial use classification of each water body. The anti-degradation policy represents a three tiered approach to maintain and protect various levels of water quality and uses.

The Idaho *Water Quality Standards and Wastewater Treatment Requirements* (IDAPA 16.01.02.150.21.) protect this segment of the river for domestic water supply, agricultural water supply, cold water biota, salmonid spawning, and primary contact recreation. This reach is also designated as a special resource water.

The criteria that the State of Idaho has deemed necessary to protect the beneficial uses for

[1] Discharge monitoring reports are forms used by the permittee to report the results of monitoring that is conducted to verify that they are adhering to the effluent limitations and conditions in their NPDES permit.

this portion of the Big Wood River, and the State's anti-degradation policy are summarized in Appendix B.

C. Water Quality Limited Segment

A water quality limited segment is any waterbody, or definable portion of a water body, where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards. The section of the Big Wood River that the facility discharges to has been listed as a water quality limited segment for flow.

Section 303(d) of the Clean Water Act requires States to develop a plan, known as a Total Maximum Daily Load management plan (TMDL), for water bodies listed as water quality limited. The TMDL documents the amount of a pollutant a waterbody can assimilate without violating a state's water quality standards and allocates that load to known point sources and nonpoint sources. The Idaho Division of Environmental Quality (IDEQ) plans to complete a TMDL for the Big Wood River by December 2001.

IV. EFFLUENT LIMITATIONS

In general, the Clean Water Act requires that the effluent limits for a particular pollutant be the more stringent of either technology-based effluent limits or water quality-based effluent limits. A technology based effluent limit requires a minimum level of treatment for municipal point sources based on currently available treatment technologies. A water quality based effluent limit is designed to ensure that the water quality standards of a waterbody are being met and it may be more stringent then technology-based effluent limits. For more information on deriving technology-based effluent limits and water quality-based effluent limits see Appendix C.

The following summarizes the proposed effluent limitations that are in the draft permit.

1. The pH range must not be less than 6.0 standard units nor greater than 9.0 standard units.

2. For any month, the monthly average effluent concentration for BOD_5 and TSS must not exceed 15 percent of the monthly average influent concentration for BOD_5 and TSS.

3. The permittee must not discharge any floating solids, visible foam in other than trace amounts, or oily wastes tha produce a sheen on the surface of the receiving water.

4. Table 1, below, presents the proposed average monthly, average weekly, maximum daily, and instantaneous maximum effluent limits for BOD_5, TSS,

escherichia coli (E. coli) bacteria, fecal coliform bacteria, total phosphorus and total residual chlorine.

TABLE 1: Monthly, Weekly and Instantaneous Maximum Effluent Limitations				
Parameters	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit
BOD_5	30 mg/L (505 lbs/day)	45 mg/L (760 lbs/day)	—	—
TSS	30 mg/L (505 lbs/day)	45 mg/L (760 lbs/day)	---	—
E. coli Bacteria	126 /100 ml	---	---	406 /100 ml
Fecal Coliform Bacteria	---	200 colonies/100 ml	—	—
Total Residual Chlorine	47.0 µg/L (1.0 lbs/day)	---	108.5 µg/L (2.3 lbs/day)	---
Total Phosphorus	1.0 mg/L	1.5 mg/L	---	—

V. MONITORING REQUIREMENTS

A. Basis for Monitoring/Monitoring Requirements

Section 308 of the Clean Water Act and the federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and ambient data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting the results to EPA.

Table 2 presents the proposed effluent monitoring requirements, and table 3 presents the proposed ambient monitoring requirements.

TABLE 2: Ketchum Facility Monitoring Requirements			
Parameter	Sample Location	Sample Frequency	Sample Type
Flow, mgd	Effluent	Continuous	---
BOD_5, mg/L	Influent and effluent	1/week	24-hour composite
TSS, mg/L	Influent and effluent	1/week	24-hour composite
pH, standard units	Effluent	daily	grab
Temperature, °C	Effluent	1/week	grab
Fecal Coliform Bacteria, colonies/100 ml	Effluent	1/week	grab
E. Coli Bacteria, colonies/100 ml	Effluent	5/month	grab
Total Residual Chlorine, µg/L	Effluent	1/day	grab
Total Phosphorus as P, mg/L	Effluent	1/week	24-hour composite
Total Ammonia as N, mg/L	Effluent	1/month	24-hour composite
Alkalinity as $CaCO_3$[1], mg/L	Effluent	1/quarter	24-hour composite
Cadmium, total recoverable[2], µg/L	Effluent	1/month	24-hour composite
Copper, total recoverable[2], µg/L	Effluent	1/month	24-hour composite
Lead, total recoverable[2], µg/L	Effluent	1/month	24-hour composite
Mercury, total[2], µg/L	Effluent	1/month	24-hour composite
zinc, total recoverble[2], µg/L	Effluent	1/month	24-hour composite

1. Quarterly monitoring shall occur in January, April, July, and October of each year.
2. Effluent monitoring for cadmium, copper, lead, mercury and zinc shall start 2 years after the effective date of the permit and continue for 24 months.

TABLE 3: Big Wood River Monitoring Requirements			
Parameter	Sample Location	Sample Frequency	Sample Type
Temperature, °C	upstream of outfall	1/month	composite
pH, standard units	upstream of outfall	1/month	composite
Hardness as $CaCO_3$	upstream of outfall	1/month	composite
Alkalinity as $CaCO_3$, mg/L	upstream of outfall	1/month	composite
Total Ammonia, mg/L	upstream of outfall	1/month	composite
Cadmium, dissolved, µg/L	upstream of outfall	1/month	composite
Copper, dissolved, µg/L	upstream of outfall	1/month	composite
Lead, dissolved, µg/L	upstream of outfall	1/month	composite
Mercury, total, µg/L	upstream of outfall	1/month	composite
zinc, dissolved, µg/L	upstream of outfall	1/month	composite
Note: Ambient monitoring for ammonia, hardness, cadmium, copper, lead, mercury, and zinc must start 2 years after the effective date of the permit and continue for 2 years. Ambient monitoring for temperature, pH, and alkalinity must start 6 months after the effective date of the permit and continue to the expiration date of the permit.			

B. Method Detection Limits for Metals.

The aquatic life, and human health criteria and for metals are very low. In order to determine if the effluent discharged from the facility has the potential to cause or contribute to a violation of these criteria, the facility must use analytical test methods with method detection levels below the aquatic life and human health criteria. The draft permit requires the permittee to use test methods that achieve the following method detection limits.

Parameter	**Method Detection Limit**
Cadmium	0.5 µg/L
Copper	5.0 µg/L
Lead	1.0 µg/L
Mercury	0.005µg/L
Zinc	5.0 µg/L

VI. SLUDGE (BIOSOLIDS) REQUIREMENTS

The biosolids conditions in the existing permit were based on best professional judgment since EPA had not promulgated biosolids regulations at the time of permit issuance. Since then EPA has promulgated regulations for the use and disposal of biosolids. Therefore, the

biosolids requirements contained in the existing permit have not been retained in the proposed permit.

The publication of 40 CFR 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 biosolids regulations, except for those requirements that indicate that the permitting authority shall specify what has to be done.

Biosolids requirements contained in 40 CFR 503 include: acceptable biosolids pollutant levels; reduction requirements for pathogens; reduction requirements of the characteristics in biosolids that attract vectors; quality of the exit gas from a biosolids incinerator stack; the quality of biosolids that are placed in a municipal solid waste landfill unit; requirements for sites where biosolids are either land applied or placed for final disposal; and requirements for biosolid incinerators.

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. The permitting regulations in 40 CFR 122 and 124 have been revised to expand its authority to issue NPDES permits with biosolids requirements. EPA Region 10 plans to issue a separate NPDES general permit which deals only with the use and disposal of biosolids. When the general permit is issued facilities that generate biosolids, including the City of Ketchum, will be required to be covered under this general permit.

Presently, the permittee disposes biosolids at the Ohio Gulch landfill. The draft permit requires the permittee to submit its updated sludge application within one year of the effective date of the permit.

VIII. OTHER PERMIT CONDITIONS

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to submit a Quality Assurance Plan (Plan) to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The Plan must consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The Plan must be submitted to EPA within 60 days of the effective date of the final permit.

B. Pretreatment Requirements

The pretreatment conditions in the draft permit are based on the federal regulations at 40 CFR 403 through 471.

C. Additional Permit Provisions

Sections III, IV, and V 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, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service if their actions could adversely affect any threatened or endangered species. EPA has determined that there are no endangered species in the vicinity of the discharge.

B. State Certification

Section 401 of the Clean Water Act requires EPA to seek state certification before issuing a final permit. As a result of the certification, the state may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards.

C. Permit Expiration

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

APPENDIX A

Wastewater Treatment Plant Location

APPENDIX B
WATER QUALITY STANDARDS

(A) Water Quality Criteria

For the City of Ketchum discharge, the following water quality criteria are necessary for the protection of the beneficial uses of the Big Wood River:

1. IDAPA 16.01.02.200.02 - Surface waters of the State shall be free from toxic substances in concentrations that impair designated beneficial uses. These substances do not include suspended sediment produces as a result of nonpoint source activities.

2. IDAPA 16.01.02.200.05 - 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 16.01.02.200.06 - Excess Nutrient. 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 16.01.02.210.01 - Numeric Criteria for Toxic Substances. Toxic substance criteria set forth in 40 CFR 131.36(b)(1), as of July 1, 1993, is hereby incorporated by reference in the manner provided in subsection 210.02, however, the standard for arsenic shall be 50 µg/L.

5. IDAPA 16.01.02.250.01.a. - Hydrogen ion concentration (pH) values within the range of 6.5 to 9.5 standard units.

6. IDAPA 16.01.02.250.01.c. - The one hour average concentration (acute criterion) shall not exceed 19 µg/L, and the four day average concentration (chronic criterion) shall not exceed 11 µg/L.

8 IDAPA 16.01.02.250.04.a - Dissolved oxygen concentrations shall exceed 6mg/L at all times.

9. IDAPA 16.01.02.250.04.b. - Water temperature shall be 22° C or less with a maximum daily average of no greater than 19° C .

10. IDAPA 16.01.02.250.04.c. - 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 $\geq$ 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

11. IDAPA 16.01.02.250.02.c.iii - The four day average concentration of un-ionized ammonia (as N) is not to exceed (0.66A/B/C) mg/L, where:

$A = 1.4$ if T is $\geq 15°$ 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

12. IDAPA 16.01.02.251.01. - Waters designated for primary contact recreation are not to contain E. coli bacteria significant to the public health in concentrations exceeding:

a. A single sample of four hundred and six E. coli organisms per one hundred ml; or
b. A geometric mean of one hundred and twenty six E. coli organisms per one hundred ml based on a minimum of five samples taken, every three to five days, over a thirty day period.

(B) <u>Anti-Degradation Policy</u>

The State of Idaho has adopted an anti-degradation policy as part of their water quality standards. The anti-degradation policy represents 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 - Protects existing uses and the level of water quality necessary to protect those uses.

- Tier 2 - Protects the level of water quality necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water in waters that are currently of higher quality than required to support these uses. Before water quality in Tier 2 waters can be lowered, there must be an anti-degradation review consisting of: (1) a finding that it is necessary to accommodate important economic or social development in the area where the waters are located (2) full satisfaction of all intergovernmental coordination and public participation provisions; and (3) assurance that the highest statutory and regulatory requirements for point sources and best management practices for nonpoint sources are achieved. Furthermore, water quality may not be lowered to less than the level necessary to fully protect the "fishable/swimmable" uses and other existing uses.

- Tier 3 - Protects the quality of outstanding national resources, such as waters of national and State parks and wildlife refuges and waters of exceptional recreational or ecological significance. There may be no new or increased discharges to these waters and no new or increased discharges to tributaries of these waters that would result in lower water quality.

The Big Wood River is a tier 2 waterbody, and the water quality is of higher quality then required to support its beneficial uses. Water quality in Tier 2 waters cannot be lowered without an anti-degradation review. The draft permit contains effluent limitations that ensure water quality will not be lowered.

APPENDIX C
Basis for Effluent Limitations

The Clean Water Act (CWA) requires industries and Publicly Owned Treatment Works (POTW) to meet certain effluent limits based on available wastewater treatment technology. These types of effluent limits are called technology based effluent limits. EPA may find, by analyzing the effect of an effluent discharge on the receiving water, that technology based effluent limits are not sufficiently stringent to meet water quality standards. In such cases, EPA is required to develop more stringent water quality-based effluent limits which are designed to ensure that the water quality standards of the receiving water are met.

Technology based effluent limits don't always limit every parameter that is in an effluent. For example, technology based effluent limits for POTWs only limit five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH. Yet effluent from a POTW may contain other pollutants such as chlorine, ammonia, or metals depending on the type of treatment system used and the service area of the POTW (i.e., industrial facilities as well as residential areas discharge into the POTW). When technology based effluent limits do not exist for a particular pollutant, EPA must still determine if the pollutants expected to be in the effluent will cause or contribute to a violation of the water quality standards for the water body. If they do, EPA is required to develop water quality-based effluent limits. The effluent limits in the draft permit reflect whichever limits (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. Part A discusses technology based effluent limits, Part B discusses water quality based effluent limits, and Part C compares the numeric technology based effluent limits with the numeric water quality based effluent limits, and shows the effluent limits that are proposed in the draft permit.

A. Technology-based Effluent Limitations

1. Statutory Basis for Technology Based Effluent Limits

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. As a result, EPA developed "secondary treatment" regulations which are specified in the 40 CFR 133. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. The technology based effluent limits applicable to the Ketchum facility are as follows:

(a) BOD_5 and TSS, concentration based limits:

Average Monthly Limit =	30 mg/L
Average Weekly Limit =	45 mg/L
Percent Removal Requirements =	85 %

(b) BOD_5 and TSS, mass based limits:

Federal regulations at 40 CFR 122.45 (f) require BOD_5 and TSS limitations to be expressed as mass based limits. Additionally, section 403(o) of the CWA prohibits backsliding of effluent limitations, except in very limited cases as outlined in sections 402(o)(2) and 303(d)(4) of the CWA. These pollutant parameters do not qualify for any of the listed exceptions, therefore, the mass based limits from the existing permit will be retained in the proposed permit. The limits are as follows.

Average Monthly Limit = 505 lbs/day
Average Weekly Limit = 760 lbs/day

(c) pH:

The pH range must be between 6.0 - 9.0 standard units.

(d) Fecal Coliform Bacteria:

In addition to the above, the Idaho *Water Quality Standards and Wastewater Treatment Requirements* (IDAPA16.01.02.420.02.b) require that fecal coliform concentrations in treated effluent not exceed a geometric mean of 200 colonies/ 100 ml based on no more than one week's data and a minimum of five samples. IDEQ has determined that monitoring once per week will satisfy the Idaho water quality standards. IDEQ will include this monitoring frequency in their certification of the final permit.

B. <u>Water Quality-Based Effluent Limits</u>

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 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. Determining Reasonable Potential to Cause of Contribute to a Water Quality Standards Violation

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 a 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 (see Appendix B for the applicable water quality criteria, and Appendix C for Reasonable Potential Calculations).

As mentioned above, 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 loadings 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. Mixing zones can only be authorized by the Idaho Department of Environmental Quality.

For this particular discharge the pollutants that need to be evaluated to ensure that water quality standards are protected include pH, total ammonia, total phosphorus, total residual chlorine, temperature, toxic substances, metals, and bacteria.

3. Procedure for Deriving Water Quality-Based Effluent Limits

Once it has been determined that an effluent has the reasonable potential to cause or contribute to an exceedance of a water quality standard a water quality based effluent limit must be developed.

The first step in developing a water quality based permit limit is to develop a

wasteload allocation for the pollutant which can then be converted into a permit limitation. A wasteload allocation is the effluent concentration or loading of a pollutant that a permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. For this permit wasteload allocations have been developed using a simple mass balancing equation. The equation takes into account the available dilution provided by the mixing zone, if one is authorized by the state, the background concentrations of the pollutant in the receiving water, and the design flow of the facility.

Once the wasteload allocation 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.

4. Specific Water Quality-Based Effluent Limits

(a) **Toxic Substances/Whole Effluent Toxicity**

The Idaho state water quality standards require surface waters of the state to be free from toxic substances in concentration that impair designated uses. The facility has performed several whole effluent toxicity tests which indicate that the toxic effect of the effluent will not impair the designated uses of the waterbody. Therefore, a water quality based effluent limit has not been proposed, and the WET testing requirements have been removed from the permit.

(b) **Floating, Suspended or Submerged Matter/Oil and Grease**

The Idaho state 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 that may impair designated beneficial uses. Therefore, a narrative condition is proposed for the draft permit that states there must be no discharge of floating solids or visible foam in other than trace amounts or oily wastes that produce a sheen on the surf of the receiving water.

(c) **Excess Nutrients** (Total phosphorus)

The Idaho state water quality standards require surface waters of the state be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses.

The existing permit requires the facility to meet an average monthly limit of

1.0 mg/L and an average weekly limit of 1.5 mg/L. Section 403(o) of the CWA prohibits the relaxation of effluent limitations in existing permits, except in very limited cases as outlined in Sections 402(o)(2) and 303(d)(4) of the CWA. This discharge does not qualify for any of the listed exceptions, therefore, the limits from the existing permit will be retained in the proposed permit.

(d) **Metals**

The Idaho water quality standards have developed criteria for metals that are intended to protect aquatic life and human health. The criteria are numeric values that represent contaminant concentrations that are not to be exceeded in the receiving water. These criteria are applicable to the Big Wood River.

Currently, there are no metals data from the facility. Since the Big Wood River is classified as a special resource water it is important to ensure that the discharge from the facility does not degrade the water. In order to determine if the discharge has the reasonable potential to exceed the allowable metals criteria for the Big Wood River the draft permit is requiring the facility to collect data for metals. The draft permit is requiring the permittee to monitor for cadmium, copper, lead, mercury, and zinc.

(e) **pH**

The Idaho state water quality standards require surface waters of the state to have a pH value within the range of 6.5 - 9.5 standard units.

The technology based effluent limit range for pH is 6.0 - 9.0 standard units, and must be met before the effluent is discharged to the receiving water (i.e, mixing zones are not allowed for technology based effluent limits).

The existing permit requires the pH of the discharge to be between 6.0 standard units and 9.0 standard units, rather than between 6.5 standard units and 9.0 standard units which would be protective of water quality standards. The existing permit allowed this because the pH of the effluent is often below 6.5 standard units because alum is added to the wastewater to facilitate phosphorus removal and to ensure that the phosphorus limitations in the permit are met. The addition of alum lowers the pH of the wastewater.

The receiving water may have sufficient buffering capacity to accommodate the low pH of the effluent discharge without exceeding the instream pH criteria of 6.5 standard units, however, the necessary data are not available to confirm this. Therefore, the proposed permit will retain the pH requirements in the existing permit, and require the permittee to monitor its

effluent and the receiving water for ph, temperature, and alkalinity. When the permit is next up for reissuance this data will be used to ensure that the receiving water has the buffering capacity to accommodate the effluent pH of 6.0 standard units.

(f) **Total Residual Chlorine**

The Idaho state water quality standards established a total residual chlorine acute criterion of 19 µg/L, and a total residual chlorine chronic criterion of 11 µg/L for the protection of aquatic life.

A reasonable potential analysis was performed using data collected from January 1995 through October 2000. The result of this analysis showed that water quality based effluent limitations are required for chlorine (see appendix D for more information on the reasonable potential analysis).

The existing permit contains an average monthly limit of 0.1 mg/L, and an average weekly limit of 0.2 mg/L. The effluent limits for chlorine were recalculated to ensure that they are protective of low flow conditions. The result of the calculations show that to protect aquatic life the average monthly limit should be 0.047 mg/L (47.0 µg/L). This limit was incorporated into the draft permit.

Additionally, the NPDES regulations at 40 CFR 122.45(d) require permit limits for publicly owned treatment works be expressed as average monthly limits (AMLs) and average weekly limits (AWLs) unless impracticable. Region 10 considers it impracticable to incorporate weekly limits for toxic pollutants into permits because federal regulations do not prohibit a permittee from increasing their sampling events above what is required in an NPDES permit. This is significant because a permittee may collect as many samples as necessary during a week to bring the average of the data set below the average weekly effluent limit. In such cases, spikes of a pollutant, which could be harmful to aquatic life, could be masked by the increased sampling.

While this is not a concern with pollutants that are not toxic, such as total suspended solids or phosphorus, it is a significant concern when toxic pollutants, such as chlorine or ammonia, are being discharged. Using a maximum daily limit instead of an average weekly limit will ensure that spikes do not occur, and that aquatic life is protected.

For these reasons EPA, Region 10 considers it impracticable to develop average weekly limits for total residual chlorine, and instead will incorporate maximum daily limits into permits. The proposed permit includes an average monthly limit of limit of 47.0 µg/L (1.0 lbs/day) and a

maximum daily limit of 108.5 µg/L (2.3 lbs/day).

The proposed water quality based effluent limits for chlorine fall below the level at which chlorine can be accurately quantified using EPA analytical test methods. In such cases it is difficult to determine compliance with the effluent limits. The inability to measure to the necessary level of detection is addressed by establishing the Minimum Level[2] as the compliance evaluation level for use in reporting Discharge Monitoring Report data. Effluent discharges at or below the Minimum Level will be considered in compliance with the water quality-based effluent limit (*Draft National Guidance for the Permitting, Monitoring, and Enforcement of Water Quality-based Effluent Limitations Set Below Analytical Detection/Quantitation Levels*, March 1994). The minimum level for chlorine is 100 µg/L (*Guidelines Establishing Test Procedures for analysis and Pollutants and National Primary Drinking Water Regulations*, March 28, 1997).

(g) **Temperature**

The state water quality standards require ambient water temperatures of 22 degrees C or less with a maximum daily average of no greater than 19 degrees C.

Ambient and effluent monitoring for temperature have been incorporated into the draft permit, to determine if effluent limits for temperature may necessary in the future.

(h) **Ammonia**

The Idaho Water Quality Standards contain water quality criteria to protect aquatic life against short term and long term adverse impacts from ammonia.

The reasonable potential calculation done in the 1991 fact sheet determined that effluent limits were not required. However, that analysis was not consistent with EPA's Technical Support Document (EPA, 1991), therefore, the analysis was done again in accordance with the TSD. The data used in the analysis was the data collected by the permittee from 1989 through 1992. The analysis showed that effluent limits are not required (see Appendix E). However, effluent and ambient monitoring for ammonia are

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[2] Minimum Level (ML) means the concentration at which the entire analytical system must give a recognizable signal and an acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specified sample weights, volumes and processing steps have been followed..

being proposed in the draft permit. This monitoring is required so that the reasonable potential analysis can be re-calculated during the next round of permitting to ensure that ambient and effluent characteristics have not changed significantly, and that the water quality standards of the river are still being protected.

(i) **Escherichia Coli (E. Coli) Bacteria**

According to the Idaho Water Quality Standards, waters designated for primary contact recreation, such as the Big Wood River, are not to contain E. coli bacteria significant to the public health in concentrations exceeding:

a. A single sample of four hundred and six E. coli organisms per one hundred ml; or
b. A geometric mean of one hundred and twenty six E. coli organisms per one hundred ml based on a minimum of five samples taken, every three to five days, over a thirty day period.

It is anticipated that a mixing zone will not be authorized for bacteria, therefore, the criteria must be met before the effluent is discharged to the receiving water. The proposed water quality based effluent limits in the permit include an instantaneous maximum limit of 406 organisms/100 ml, and an average monthly limit of 126 organisms/100 ml.