CHAPTER 3.0 – REGULATORY REQUIREMENTS AND WATER QUALITY OBJECTIVES

Wastewater effluent requirements depend on the disposal method. Treated effluent may be discharged to surface water, applied to land, or reused. Surface water discharges are regulated through NPDES permits issued and managed by the Environmental Protection Agency (EPA) as the state of Idaho has not been granted primacy to administer NPDES permits. Effluent quality limits are specified to protect the beneficial uses of the receiving water.

This chapter reviews the City's existing NPDES permit requirements and attempts to forecast discharge permit limits and conditions for surface water disposal into the Snake River. This chapter does not include a thorough review of regulatory requirements for other disposal alternatives, including land application, groundwater recharge, and reuse. Disposal alternatives are evaluated in Chapter 7.

3.1 DISPOSAL CHARACTERIZATION

The City of Jerome operates a Class IV Membrane Bioreactor (MBR) wastewater treatment plant that also includes aerobic digestion and ultraviolet disinfection (UV). Treated effluent is currently discharged into the J8 Canal. The canal is owned and operated by the Northside Canal Company. It is understood that the Northside Canal Company has informed the City that they no longer wish to accept effluent discharge from the City's Wastewater Treatment Plant. Chapter 7 discusses the possible alternatives and the affects of discharging directly to the Snake River rather than to the canal system that is connected to the river.

The J8 Canal system distributes water to a myriad of agriculture farms and livestock operations. During the irrigation season canal flows can be greater than 100 cubic feet per second. With most of the water in the canal diverted for irrigating crop land, minimal flows ultimately reach the Snake River. During the non-irrigation season the City of Jerome is the only flow in the canal. Most of the flow infiltrates into the ground with little or no flow reaching the Snake River.

3.2 WATER QUALITY OBJECTIVES

The Idaho DEQ has authority to adopt regulations and standards as necessary to protect the environment and health of the citizens of the State. Specific standards have been established for surface water.

3.2.1 Surface Water

Idaho water quality standards have been developed to protect beneficial uses of specific surface waters. A nutrient of particular concern for the Jerome effluent is phosphorus, which can result in degraded water quality. The Snake River has been classified as a Class A water with designated beneficial uses that include:

- Aquatic life uses – salmonid spawning, rearing, and migration
- Recreational uses – primary contact recreation
- Water supply uses – domestic, agricultural, industrial, and stock watering

- Miscellaneous freshwater uses – wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics

The Jerome WWTP effluent eventually discharges to the portion of the Snake River classified as the Middle Snake River. The Middle Snake River has a Total Maximum Daily Load (TMDL) management plan known as the Middle Snake River Watershed Management Plan which contains load allocations for point source discharges. The waste load allocations under the existing management plan for the City of Jerome WWTP include:

- *204.7 lbs/day of total phosphorus*
- *375 tons per year of Total Suspended Solids (TSS)*

Both of these TMDLs are included as waste load allocations in the current NPDES permit.

3.3 REGULATORY AGENCY REQUIREMENTS

3.3.1 Surface Water Discharge

Currently the City of Jerome is discharging treated effluent into the Snake River under the NPDES permit ID-002016-8. The City's NPDES permit was issued by Region 10 EPA on July 1, 2010. It expires June 30, 2015. A summary of the effluent limits is summarized in Table 3.1.

TABLE 3.1 – NPDES PERMIT LIMITS

Parameter	Avg. Monthly	Avg. Weekly
Biochemical Oxygen Demand (BOD_5)	30 mg/L 750 ppd 85% removal	45 mg/L 1,100 ppd
TSS	30 mg/L 750 ppd 85% removal	45 mg/l 1,100 ppd
Total Phosphorus	204.5 ppd	377 ppd
pH	Daily minimum and maximum between 6.5 and 9.0	
Total Residual Chlorine	0.5 mg/L	1.0 mg/L
E. coli Bacteria	126/100 mL	406/100 mL

*ppd = pounds per day, mg/L = milligrams per liter, mL = milliliter

Keller Associates has had correspondence with EPA regarding the existing and future permit conditions. There are a few wastewater constituents that may change or be included in future NPDES permits that are worthy of mentioning based on these conversations. Although it was dropped from monitoring requirements in the last permit cycle, temperature implications along the Middle Snake River have the potential to trigger a TMDL for

temperature. Additionally, the NPDES permit contains monitoring requirements for nitrite, zinc and nickel to determine if a reasonable potential exists to violate standards for the metals. Based on data to date, it appears that no reasonable potential exists for nitrite, zinc, or nickel. Ongoing work on contaminants of emerging concern (toxic substances), including pharmaceuticals and personal care products, polychlorinated biphenyls (PCBs), mercury, and DDT, could also have future effects on wastewater treatment plants along the Snake River.

3.4 CITY PRETREATMENT PROGRAM

The City has adopted discharge and industrial pretreatment regulations (Chapters 13.18 and 13.36 of the Jerome City Code Title 13 – referred to as the sewer use ordinance), which are intended to assist the City to comply with federal and state requirements. In general, the existing sewer use ordinance governs prohibited discharges, outlines loading limits, establishes costs for heavy strength waste discharges, and outlines procedures for administering and enforcing the pretreatment program. Based on a recent consent order (EPA letter received October 25, 2011), the City has updated the pretreatment program to meet EPA's requirements for an approvable pretreatment program as outlined in 40 Code of Federal Regulations (CFR) 403.8.

As part of this update, a technical evaluation of local limits for a number of "pollutants of concern" was completed and existing limits were revised accordingly. (The Local Limits Determination is included in Appendix B.) Local maximum daily discharge limits for the parameters listed in Table 3.2 will be included in permits for industrial dischargers. Mass loading limits allocated individually for each significant industrial user will be used for conventional pollutants (BOD, TSS, and phosphorus).

TABLE 3.2 – CITY LOCAL LIMIT PARAMETERS

Parameter	
Arsenic	0.086 mg/L
Cadmium	0.020 mg/L
Chromium, total	1.044 mg/L
Copper	0.839 mg/L
Cyanide	0.181 mg/L
Lead	0.068 mg/L
Mercury	0.0004 mg/L
Nickel	0.980 mg/L
Silver	0.161 mg/L
Zinc	3.622 mg/L
Fats, oil and grease	100 mg/L

The pretreatment program update as required by EPA also involved a review of the sewer use ordinance and industrial permits for compliance with EPA requirements, and development of detailed written procedures for inspection, monitoring, and enforcement. These procedures are included in a separate document entitled "City of Jerome Pretreatment Program".

3.5 HISTORY OF COMPLIANCE

The City of Jerome WWTP is currently under a compliance order issued by EPA. In addition, the City received notification that EPA has reserved the right to seek injunctive relief. These actions are a result of two major upsets that occurred at the treatment plant and resulted in the bypass of partially treated sewage to the discharge location. EPA also notified the City in a letter dated February 8, 2011 of additional permit violations during the period from 2005 to 2009.

Since converting to an MBR facility in 2008, the plant has experienced two major upsets and one minor upset event. The minor event at startup was attributed to improper installation of the fine screens which resulted in debris bypass that damaged the membranes. The second event in the summer/fall of 2009 was also attributed to membrane damage. The membrane damage from the second upset event was attributed to the original membranes supplied (EW units) being susceptible to the harsh conditions experienced (namely high mixed liquor concentrations, poor sludge quality, and debris). The membrane supplier (Ovivo) provided replacement membranes (RW units). The third upset event occurred beginning in December of 2010. The third upset was recently attributed to the bio-towers being offline during construction, which led to an overload condition. The overload condition scaled the membranes, resulting in the plant upset.