

Statement of Basis

PERMITEE: U.S. Department of Interior, Fish and Wildlife Service

FACILITY: Hotchkiss National Fish Hatchery

PERMIT NO: CO-000086

RESPONSIBLE OFFICIAL: Regional Director
U.S. Fish and Wildlife Service
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PERMIT TYPE: Fish Hatchery-Federal (Renewal)

Background Information

Hotchkiss National Fish Hatchery is located at latitude 38°46'20.66"N and longitude 107°46'10.11"W in the SW ¼ of Section 3, T15S, R93W on the north bank of the North Fork of the Gunnison River approximately three miles southwest of the town of Hotchkiss, Colorado and approximately one half mile east of the town of Lazear, Colorado. The Hatchery was established in 1967 for the production and distribution of trout throughout Colorado, Utah, New Mexico, Wyoming, Montana, and North Dakota. The Hatchery currently provides over 1.5 million trout for the Colorado River Storage Project and Colorado Division of Wildlife and Southern Ute Indian Reservation. In 2008, this facility produced 160,086 pounds of rainbow trout, with a maximum weight of 71,355 pounds present at any one time.

The facility is currently being modified with new construction and potential rerouting of flows. The planned modifications to the facility are anticipated to be completed and running by September 2010; these modifications are discussed further in this Statement of Basis. These modifications will likely have a significant impact on future permit requirements, especially monitoring.

The current design of the facilities includes a spring house, settling pond, aeration tank, hatchery building, residences, 32 outdoor concrete raceways, 24 nursery tanks, and 6 earthen ponds (see Figure 1 for flow schematic).

Tommy Dowell Spring serves as the water supply for the Hatchery. The spring has a constant water temperature of 56 degrees Fahrenheit and flows from 2,200 to 5,000 gallons per minute, providing the ideal conditions for trout production. The spring is protected under a covered structure (spring house); from this point, the water is directed into an underground pipe which directs the water downhill

approximately 100 feet to a settling pond. From the settling pond, water is directed approximately eight feet to an aeration tank. The aeration tank consists of eight water columns within which influent water is oxygenated to ensure 105-110% oxygen saturation. Approximately every five weeks or so water is rerouted directly from the spring to the aeration tank and bypassing the settling pond to allow for the removal of accumulated sediment. The sediment is then given away to community members for domestic purposes.

From the aeration tank, water is then moved downslope via an underground pipe. At the bottom of the slope, a valve directs water to either the hatchery house or to the water control mixing structure. Approximately 25% of the water is directed to the hatchery house while approximately 75% of the water is directed to the water control mixing structure.

Hatchery House. The Hatchery house consists of two discrete components: 1) the rearing tanks and 2) the hatchery area. There are 24 rearing tanks in the hatchery house for rearing trout in various stages of life. pH readings are taken in the hatchery house at the head of one of the tanks.

Feeding. Each tank has an automatic and timed feeding system. Food is dispensed every fifteen minutes. How much food is dispensed depends on how fast they want to grow the fish and to what size. It has been observed that there is less food waste inside the hatchery house with fish in their earlier life stages relative to larger fish in the exterior raceways.

Water flow. Water flows continuously through to each of the rearing tanks directly from the aeration tank to a pipe in each tank, at a maximum flow of 40 gallons/tank/minute. Water then flows to the opposite end of the tank from the water inflow pipe. At this end of each of the tanks, water flows through a screen and into a headbox which contains two drains – a water overflow drain, and a drain used for cleaning. The drain used for cleaning is unplugged only during cleaning – this causes water to flow out that drain; because there is no valve to control which outfall the effluent will flow to, discharge will occur at either Outfall 001a and/or 001b. The second drain in the headbox continuously drains overflow water to the water control mixing structure to be reused in the raceways and rearing ponds. The rate of flow from the rearing tanks to the water control mixing structure is approximately 960 (40 gpm x 24 tanks) gallons per minute when all tanks are in operation.

Cleaning. Each tank is cleaned once a day. During cleaning, the flow is increased to about 50 gpm. No chemicals are used during cleaning. It takes about one hour to clean all 24 tanks.

Hatchery area. The hatchery area is only used when the Hatchery receives a batch of eggs. The Hatchery receives approximately 7-8 batches of eggs per year; each batch would require approximately 17 days in the hatchery area. When in operation, water would flow directly from the aeration tank to the hatchery area at a continuous rate of 20-50 gallons per minute. No food is used in the hatchery area, the only waste product being egg shells. Water from the hatchery area flows directly to the water control mixing structure.

Water Control Mixing Structure. The water control mixing structure mixes fresh water from the aeration tank with reuse water from the hatchery house and delivers the water to both the raceways and the earthen rearing ponds.

Raceways. There are 32 raceways arranged in eight parallel lines of four raceways each. The first raceway in each line is considered to be in Bank A, the second raceway in each line Bank B, the third

raceway in each line Bank C, and the fourth raceway in each line Bank D. The flow through each line of the raceways is consecutively from Bank A through Bank D. Raceways in Banks A and B are approximately 504 ft³ in volume each, while raceways in Bank C are 819 ft³ and Bank D raceways are 861 ft³. Water flows continuously through the raceways and is stopped only during cleaning. Water flows from the water control mixing structure to the Bank A raceways. From the Bank A raceways, water flows to the adjacent raceway in the line to Bank B raceways; from Bank B, water flows to the adjacent raceway in Bank C and from Bank C to Bank D. When the hatchery is in full operation and the rearing ponds are in operation, water from the raceways discharge from the bottom of Bank D to the rearing ponds. If the rearing ponds are not in operation, water from the bottom of Bank D will discharge directly to Outfall 001b. Raceways are in use for approximately 50-70% of the year (generally November through July). From July through October, use of raceways is sporadic and may only be running at 50% capacity; however, the quantity of water being used remains the same as during peak production. Each raceway is cleaned with brushes every other day (no chemicals are used). The facility estimates that it takes approximately 2-3 hours for water to move from Bank A to Outfall 002.

Usage of Chloramine-T. The Hatchery has been approved for use of chloramine-T, an Investigational New Animal Drug (INAD) used to control bacterial gill disease. The manager of the facility mentioned that fish are treated with chloramine-T primarily during the months of November through July, when fish are at maximum density and only when appearing sick. On an average year, a total of approximately twenty raceways are treated with chloramine-T via one of two treatment methodologies. There are two means by which fish are treated by chloramine-T at the facility:

- 1) Flow through treatment: chloramine-T is added to the influent water to the raceways. This treatment would require administering 1000g chloramine-T for one hour. Water containing chloramine-T would continue to flow from the treated raceway to the remainder of the system in operation. 50-80% of the treatments are administered in this manner;
- 2) Treatment baths: this method is much more labor intensive and would require adding Chloramine-T with salt (sodium chloride) to a treatment bath in the fish transport truck. 12 g of chloramine-T are required to treat 500 pounds of fish; 24g are required to treat one raceway. Water from the treatment bath would be returned to the raceway from which the fish came, and continue to circulate through the remainder of the system in operation.

Flows in the raceway are currently measured at the tail end of either the B, C or D raceways, depending on which raceways are in use.

Earthen Rearing Ponds. There are six plastic lined, earthen rearing ponds (Ponds 1-6) down slope from the raceways. The source of water for the ponds comes from outflow from Bank D raceways together with water from the water mixing control structure. Flow from these two sources into the ponds is at a combined rate of 2200-2300 gallons/minute, with a maximum flow of 3200 gallons/minute. . The water flows from Pond 1 to Pond 2, and so on to Pond 6. There is a bypass pipe that also channels water directly to Pond 4. From Pond 6, effluent is discharged to Outfall 002. The ponds are cleaned once a week with a vacuum to remove all material which has settled at the bottom of the ponds. The wastewater from vacuuming is discharged to the field located between the rearing ponds and the North Fork of the Gunnison River.

Flows are measured at Ponds 4 and 5.

Cleaning / Disinfection House. The cleaning / disinfection house is 6-7 years old and is used to clean/disinfect the truck used to transport fish on an occasional basis (the manager indicated that this structure has only been used once since it was constructed). Bleach is used for cleaning/disinfection and it is then neutralized with sodium thiosulfate and held for 24 hours. The discharge is tested with a chlorometer to ensure that it is neutralized before it is discharged to the North Fork of the Gunnison River from Outfall 003. Outfall 003 was recognized but not covered in the previous permit; Outfall 003 is now being included for coverage under this permit.

Modifications to Facility

EPA received a letter from Hotchkiss National Fish Hatchery dated April 28, 2010 which notified EPA of planned modifications to the facility. The planned modifications are (see Figure 2):

- 1) The facility is currently in the process of constructing a new set of eight raceways (Bank E) below the existing raceways and before the six earthen rearing ponds. A control box will be established to direct water flow from upgradient raceways via the main water line into this new set of raceways. The Bank E raceways will also be directly connected to a new outfall (Outfall 004) located above current Outfall 003 and below Outfall 001b. The Bank E raceways will be cleaned daily; during cleaning, water will be pumped to the settling ponds.
- 2) The existing earthen rearing ponds will be converted to effluent settling ponds to assist with settling of suspended solids before the water is released to the North Fork of the Gunnison River. Ponds 1 through 4 will be combined into a single, large settling pond (Pond A), and Ponds 5 and 6 will be combined into a single settling pond (Pond B).
- 3) Valves will be installed to control the flow of effluent from Outfalls 001a, 001b and 004. The facility indicated that the valves to Outfalls 001a, 001b and 004 will be closed most of the time; to the extent practicable, the facility will discharge effluent through a single outfall (Outfall 002). However, when the tailboxes of Banks A, B, C, D, and/or E are being cleaned, there is possibility of discharge via Outfalls 001a, 001b, and/or 004.
- 4) During cleaning of raceways, water from the raceways will be drained to the drain pipe parallel to the river, and pumped from the base of Bank E raceways to the effluent settling ponds.
- 5) A pump lift station will be installed at the bottom of the new raceways to direct water flow uphill to a control box. From the control box, water will move via gravity flow to effluent settling ponds. The water will move in sequence from Pond A to Pond B and then through Outfall 002.
- 6) The bypass pipe to Pond 4 will be eliminated

Points of Discharge

Wastewater from the hatchery house, raceways and rearing ponds are discharged from either Outfalls 001a, 001b, 002 and/or 004. The points of discharge identified below reflect historical flow patterns prior to planned modifications to the facility anticipated to be completed by September 2010. Previously, no valves existed to control whether effluent was being discharged through Outfall 001a, 001b or 002. Planned modifications to the facility include valves which will be installed to control the flow of effluent from Outfalls 001a, 001b, 002 and 004. The facility indicated that the valves to Outfalls 001a, 001b and

004 will be closed most of the time; to the extent practicable, the facility will discharge effluent through a single outfall (Outfall 002). However, when the tailboxes of Banks A, B, C, D, and/or E are being cleaned, there is possibility of discharge via Outfalls 001a, 001b, and/or 004.

Outfalls 001a and/or 001b. Historically, because there is no valve that can control the direction of water flow in the drainage pipe running parallel to the southern edge of the raceways, water directed to this drainage will discharge to either Outfall 001a and/or 001b. Historically, it was not possible to determine to which Outfall water will be discharged in the following situations, despite knowing that it will be discharged from either Outfall 001a and/or 001b: a) leakage from Bank A and B raceways, b) when raceways in Bank A and B are being cleaned, c) from the hatchery house during cleaning, d) leakage from Bank C and D raceways, and e) when earthen rearing ponds are in use, a percentage of discharge from raceways continues to be discharged from either Outfalls 001a and/or 001b (~20% of total discharge). At Outfall 001a, the facility reports a maximum daily flow of 6.35 mgd, a maximum 30-day flow of 190.50 mgd, and a long-term average daily flow of 5.15 mgd.

Outfall 001b. Historically, discharge to Outfall 001b occurred in the following situations: a) discharge during cleaning of raceways in Banks C and D will be to Outfall 001b, b) when water is directed only to raceways in Banks C and D, and c) when the earthen ponds are out of production, most of the effluent is discharged through Outfall 001b (though there may be some leakage to Outfall 001a). At Outfall 001b, the facility reports a maximum daily flow of 1.17 mgd, a maximum 30 day flow of 30.05 mgd, and a long-term average daily flow of 0.82 mgd.

Outfall 002. Prior to planned modifications to the facility, approximately 80% of the effluent is discharged through Outfall 002 during the peak season (December-June) when the rearing ponds are in production. Following completion of the planned modifications to the facility, the facility indicated that the valves to Outfalls 001a, 001b and 004 will be closed most of the time and discharge will occur largely via Outfall 002 to the extent practicable.

Outfall 004. Discharge associated with this new outfall established under current modifications to the facility will be associated with discharge that will occur when the new set of raceways (Bank E) are being cleaned.

Wastewater from the disinfection house is released to a separate drainline which discharges from Outfall 003 to the river. Outfall 003 was not covered under the previous permit even though the disinfection house was occasionally in operation.

Outfall 003. There is discharge to this outfall when the disinfection house is in use. However, in the past, the disinfection house was used only 1-2 times per year since construction.

The discharge from these outfalls discharges to the North Fork of the Gunnison River.

Figure 1. Current and historical flow diagram for facility

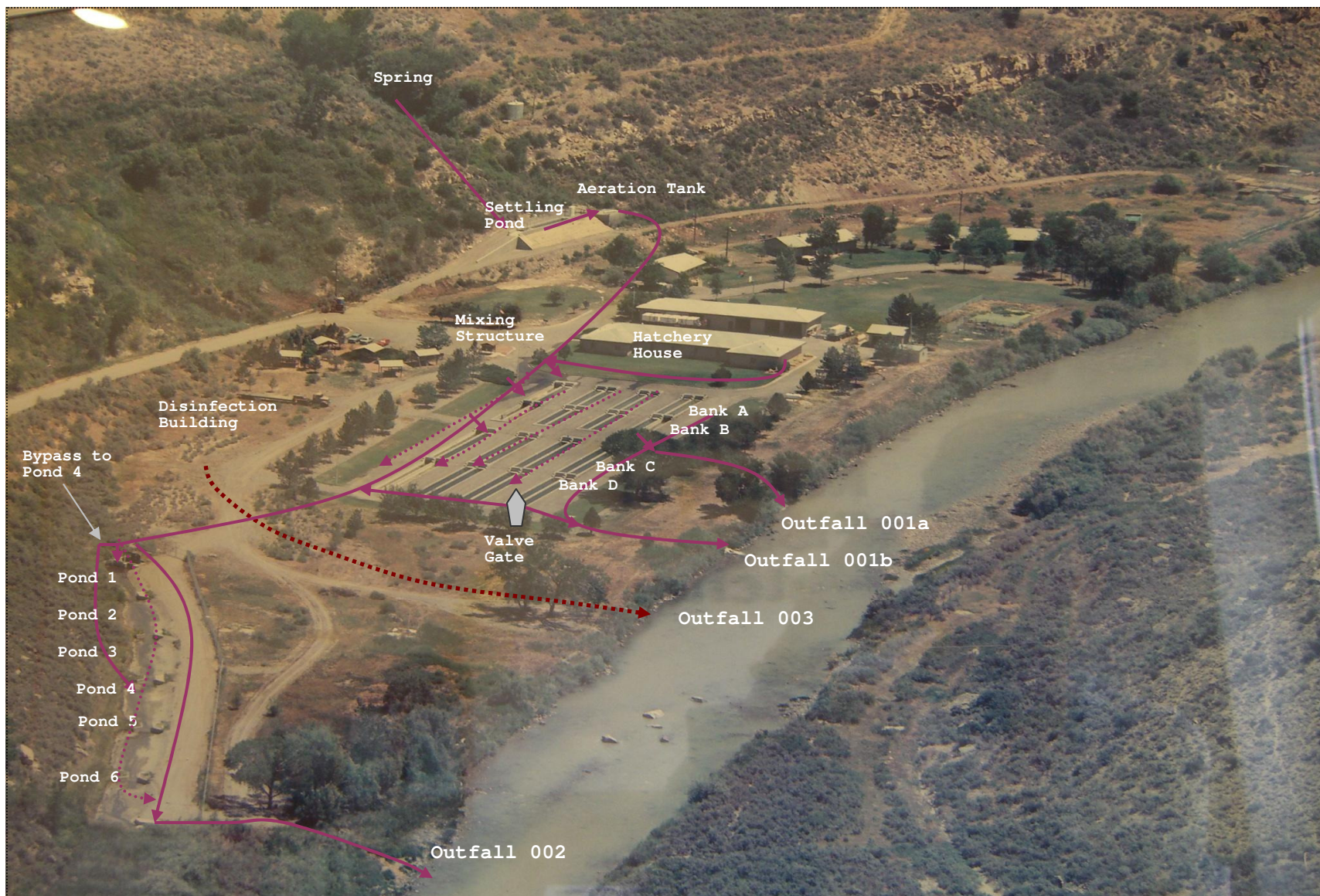
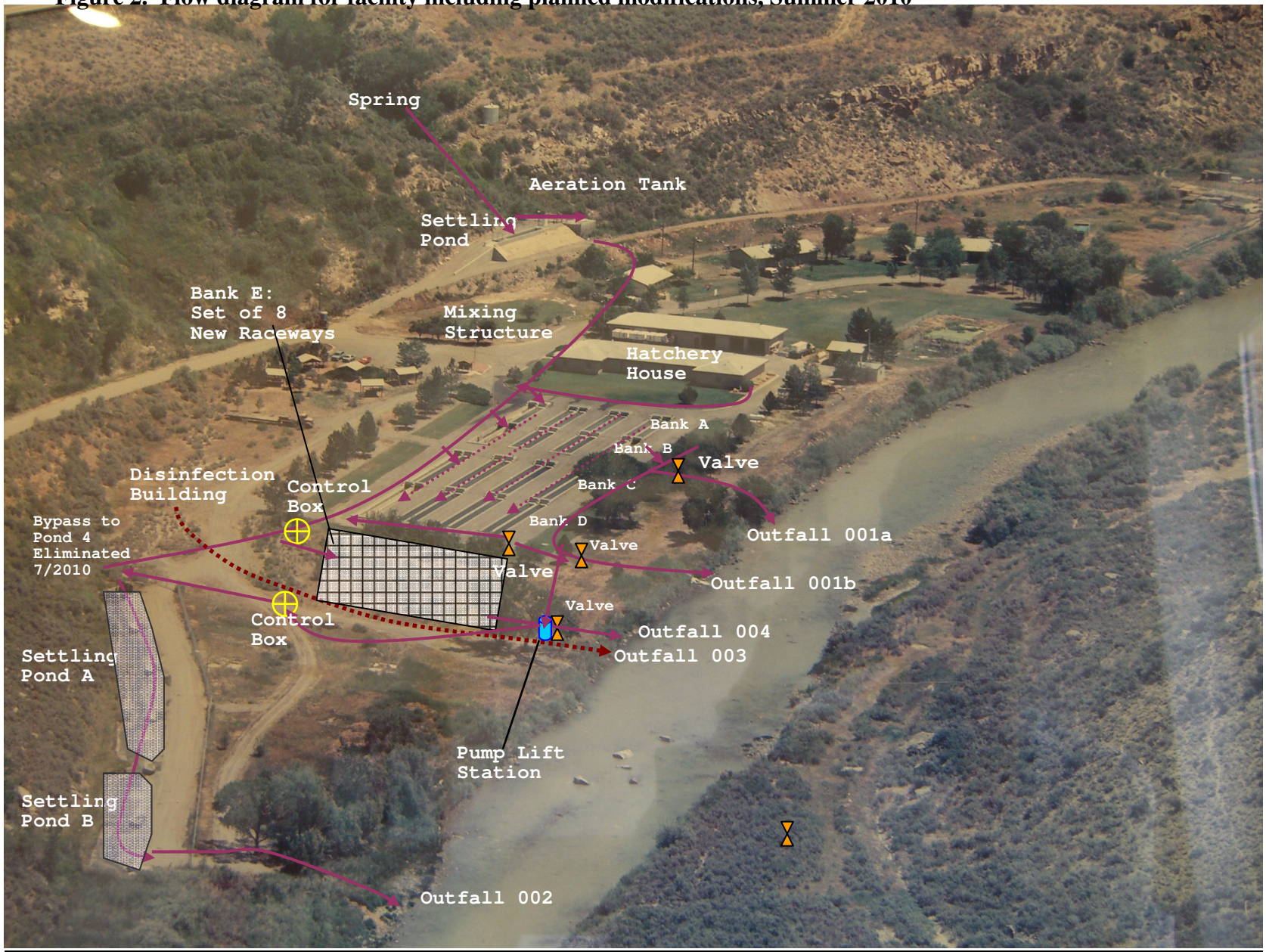


Figure 2. Flow diagram for facility including planned modifications, Summer 2010



Receiving Waters

Water Quality Standards. All outfalls from this facility discharge to Segment 3 of the North Fork of the Gunnison River of the Gunnison River Basin. Segment 3 of the North Fork of the Gunnison River has been classified by the State of Colorado as: Class 1 Cold Water Aquatic Life, Agriculture, Class 1a Recreation (April 1 to September 30) and Class 2 Recreation (October 1 to March 31). Water quality standards that are of potential concern for the discharges from this hatchery include:

DO = 6.0 mg/l

DO (spring) = 7.0 mg/l

pH= 6.5 – 9.0

Cl₂ (acute) = 0.019 mg/l

Cl₂ (chronic) = 0.011 mg/l

E.Coli limits were not included in the previous permit and will not be added based on BPJ. The reasoning for this is that E.Coli are associated with mammals and not fish.

This segment of the North Fork of the Gunnison River is not identified as either an Outstanding Water or Use Protected by the State of Colorado, thereby qualifying it as a Reviewable Water under Colorado's antidegradation regulation.

Water Quality Considerations.

Monitoring Data

A summary of monitoring data from January 2004 to June 2009 shows compliance with effluent limits established in the previous permit. The presence of TRC is due to the presence and use of chloramine-T; the TRC values should not be interpreted as having the same toxicity as TRC associated with the use of compounds such as chlorine, sodium hypochlorine, etc. used for disinfection. While no effluent limits were established in the previous permit beyond monitoring for TRC, based on monitoring data provided below, it appears that TRC in the effluent may pose a problem for the facility based on limits established for Chloramine-T in this permit. Maximum and minimum values are reported from summary data reports sent to EPA by the facility and are presented below in Table 1.

Table 1. Maximum and Minimum Data Values from Hotchkiss National Fish Hatchery

USFWS Hotchkiss National Fish Hatchery max/min data from 2004-2009				
	Outfall			
	001a	Outfall 001b	Outfall 002	
pH				7.26 / 7.57
Flow (mgd)	0.3 / 7.5	0.5 / 7.8	2.9 / 3.9	
TSS (mg/L)	1.0 / 15.5	1.7 / 16.6	1.3 / 9.2	
TSS (kg/day)	1.0 / 79.7	10.4 / 221.6	16.8 / 120.7	
TRC (mg/l)		0.03 / 1.55	0.01 / 2.50	0.02 / 0.87
Formaldehyde (ug/l)				
Oil & Grease visual	0	0	0	
Oil and Grease	0	0	0	
Floating Solids	0	0	0	

Inspections

The hatchery was inspected on September 14, 2000 by Darcy O’Conner and Patricia Ochoa of the US. EPA, Region 8 office. Findings from the inspection have been noted in the permit file and recommendations to monitor for TRC and analyze pH onsite have since been addressed by the facilities.

Pollutants of Potential Concern

Chloramine-T is a pollutant of potential concern based on the independent environmental assessment conducted by the USGS (Schmidt, et. Al, 2007) for the U.S. Food and Drug Administration (FDA), Center for Veterinary Medicine, assessing impacts of use of this compound to aquatic life.

Background, Chloramine-T. Chloramine-T (n-sodium-n-chloro-para-toluenesulfonamide) is an organic N-chloramine and used in hatcheries to control for bacterial gill disease and external flavobacterial infections on freshwater fish. Chloramine-T has been in use at this facility since the mid-1980’s. Chloramine-T is an Investigational New Animal Drug (INAD) as established by the US Food and Drug Administration’s Office of New Animal Drug Evaluation, Center for Veterinary Medicine. Chloramine-T is generally administered during a 60-minute static or flow through bath treatment. Both before and after discharge, Chloramine-T can remain unchanged, release its chlorine as aqueous free chlorine, or donate its chlorine directly to produce ammonia chloramines or other chlorinated organic-N or non-N compounds. As chloramine-T degrades, it also produces p-TSA, the dechlorinated remainder of the chloramine-T molecule as its primary degradation product. An independent report (Schmidt, et. al, 2007) submitted to the U.S. Food and Drug Administration indicates that potential biological impacts exist if hatchery effluent containing either chloramine-T or any of its chlorine-exchange products are released into or produced in receiving waters after discharge. The Environmental Assessment for chloramine-T developed by the United States Geological Survey suggested that the kinetics of Chloramine-t breakdown demonstrated a low possibility of free chlorine toxicity, and that observed toxicity impacts were most likely attributed to the chloramine-T compound itself. The study derived an acute water quality benchmark for the protection of freshwater aquatic life for FDA of 0.13 mg/L chloramine-T. This value is equivalent to the Secondary Maximum Concentration (one half of the Secondary Acute Value). The acute benchmark was established to be protective of aquatic life when the receiving water pH is at or above pH 6.5.

Total Residual Chlorine (TRC) is often used as a surrogate in monitoring for the presence and concentration of chloramine-T. The U.S. Fish and Wildlife Service, Aquatic Animal Drug Approval Partnership in Bozeman, Montana has established methodology to convert chlorine measurements to chloramine-T concentration. This method is best used when no other sources of chlorine are present. The conversion is as follows: 1) Calculate the bound chlorine concentration by subtracting the free chlorine concentration from the total chlorine concentration; 2) multiply the bound chlorine concentration by 3.97 to obtain the sodium chloramine-T trihydrate concentration (most common available form of chloramine-T). If another variety of chloramine-T is being used, divide its molecular weight by 70.9 to obtain the proper conversion factor.

Effluent Limitations

Effluent limitations are the same for Outfalls 001a, 001b, 002 and 004 (as soon as Outfall 004 comes on line and begins to discharge) and are summarized below in Table 2. Effluent limitations for Outfall 003 are summarized below in Table 3.

Table 2. Effluent limitations for Outfalls 001a, 001b, 002 and 004

The limitations established in the table apply separately to each outfall with the exception of the total mass limitation on TSS.

Effluent Characteristic	Effluent Limitation		
	30-Day Average <u>a/</u>	7-Day Average <u>a/</u>	Daily Maximum <u>a/</u>
Total Suspended Solids, mg/L	20	N/A	30
Total Suspended Solids, lbs/day <u>b/</u>	801	N/A	1201
Total Dissolved Solids, mg/L <u>c/</u>			
Chloramine-T, mg/l <u>d/</u>			
Through March 31, 2011	Report	N/A	Report
Effective April 1, 2011 <u>e/</u>			0.13
The pH of the discharge shall not be less than 6.5 or greater than 9.0 in any single sample or analysis			
There shall be no discharge of floating solids or visible foam in other than trace amounts. A daily inspection shall be made.			
The concentration of oil and grease in any single sample shall not exceed 10 mg/L nor shall there be any visible sheen in the discharge or receiving water. If a sheen is observed, a grab sample of the discharge shall be taken and analyzed for oil and grease.			
Colorado River Salinity Control Program: the concentration of total dissolved solids (TDS) in the effluent from either Outfall 001a, 001b, 002 or 004 shall not be more than 100 mg/l greater than (incremental increase of 400 mg/l) the TDS concentration of the raw water supply (water supply before treatment). <u>c/</u>			

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

b/ The effluent limitation for Total Suspended Solids (TSS) is established as the sum of total in discharge from Outfalls 001a, 001b, 002 and 004.

c/ Colorado River Salinity Control Program: Total Dissolved Solids (TDS) limitations are applicable to all discharges within the Colorado River Basin. TDS shall be monitored in the raw water source as well as the

effluent by grab sample. The yearly sample shall be taken at the time of year during which the fish population is greatest. The concentration of total dissolved solids (TDS) in the effluent from Outfalls 001a, 001b, 002 and 004 shall not be more than 100 mg/l greater than the TDS concentration of the raw water supply (water supply before treatment). If the monitoring data for a calendar year show an incremental increase in TDS concentration greater than 100 mg/l, the permittee may request from the Colorado Department of Public Health and Environment, Water Quality Control Division, a waiver from the TDS limitation. The request is to be made by April 1 of each year, if appropriate. If a waiver is not granted, the permittee has an additional six months to submit a report addressing salt removal in accordance with Sections 3.10.0-3.10.5 of the Colorado Water Quality Control Commission Regulations and Appendix A of the Regulations for Implementation of the Colorado River Salinity Standards through the NPDES permit program. Copies of the report shall be submitted to EPA and the Colorado Department of Public Health and Environment.

d/ The effluent limitation for chloramine-T is established at the end of pipe for each of the Outfalls 001a, 001b, 002 and 004. Chloramine-T will be determined by the analysis and conversion of TRC to chloramine-T concentrations.

e/ The chloramine-T limitation is established as the maximum instantaneous concentration that may not be exceeded in any grab sample or instantaneous measurement.

Additionally,

- Only commercially produced fish feed shall be used (no unprocessed offal or other animal byproduct).
- No sanitary wastes shall be introduced into this discharge
- No chlorine containing compounds other than chloramine-T may be used without prior written approval from the permit issuing authority

Table 3. Effluent limitations for Outfall 003

There shall be no discharge until samples from the holding tank show that the concentration of total residual chlorine and the pH will meet the respective effluent limitations

Effluent Characteristic	Effluent Limitation		
	30-Day Average a/	7-Day Average a/	Daily Maximum a/
Total Residual Chlorine, mg/L b/	N/A	N/A	0.019
Total Suspended Solids, mg/L	30	45	N/A
The pH of the discharge shall not be less than 6.5 or greater than 9.0 in any single sample or analysis			
There shall be no discharge of floating solids or visible foam in other than trace amounts. A daily inspection shall be made.			
The concentration of oil and grease in any single sample shall not exceed 10 mg/L nor shall there be any visible sheen in the discharge or receiving water. If a sheen is observed, a grab sample of the discharge shall be taken and analyzed for oil and grease.			

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

b/ Analytical limitations exist for establishing TRC concentrations. The concentration of total residual chlorine (TRC) shall not exceed this value in any grab sample or single measurement. The analysis for TRC must be done with an analytical method that has a method detection limit of no greater than 0.050 mg/L. In the calculation of average TRC concentrations, those analytical results that are less than 0.050 mg/L shall be considered to be zero for calculation purposes. If all individual analytical results that would be used in the calculations are less than 0.050 mg/L, then “less than 0.050 mg/L” shall be reported on the discharge monitoring report form. Otherwise, report the maximum value and the calculated average value.

Justification of numeric limits.

Total Suspended Solids. The limits for total suspended solids (801 lbs/day, 30 day average; 1201 lbs/day, daily maximum) are based on Best Professional Judgement (BPJ) and carried forward from the previous permit. Numeric limits for TSS are maintained in this permit due to Anti-backsliding Rules as provided by Clean Water Act Section 402(o). The Region 8 NPDES policy on effluent limitations for total suspended solids (TSS) from fish hatcheries was developed by Jim Harris in the mid 1970s. The limitations for TSS are calculated in the following manner: 1) waste production is calculated at 0.75 pounds of TSS per pound of food per day, and 2) Best Practical Treatment will be calculated to be twenty percent removal of TSS through either sedimentation or cleaning/vacuum cleaning of raceways. TSS limits established in the previous permit were based on estimated food usage (assumed to equal 2% of fish weight). TSS limits based on actual food usage (19,397 pounds during the maximum month of feeding for 2008) figures provided by the facility, would result in a TSS limit of 388 pounds TSS / day. This permit recognizes that carrying forward the TSS limit from the previous permit would allow for a higher TSS limit that that calculated from actual food usage figures from 2008. However, because 1) current Effluent Guidelines require only a BMP-based permit, and 2) anti-backsliding rules prevent relaxing previously established limits, this permit will maintain the limits as established in the previous permit.

TSS concentration limitations for Outfalls 001a, 001b, 002 and 004 established in this permit are based on best professional judgement (BPJ) and carried forth from the previous permit and are more stringent than the State of Colorado’s limitation of 30 mg/L (30-day average) and 45 mg./L (daily maximum). TSS concentration limitations for Outfall 003 is based on Colorado’s effluent limitation guidelines of 30 mg/L (30-day average) and 45 mg./L (daily maximum)..

pH. The limit for pH is based on the water quality standards for the North Fork of the Gunnison River.

Oil and Grease. The limits for oil and grease and no floating solids are based on EPA Region 8 policy (best professional judgement) and Colorado State Effluent Limitations.

Chloramine-T. In an April 2007 USGS report to the FDA, USGS derived a water quality benchmark for the protection of freshwater aquatic life of 0.13 mg/L for chloramine-T. This figure is an acute water quality benchmark and is equivalent to the secondary maximum concentration (one-half of the secondary acute value). Letters from the Director of New Animal Drug Evaluation, Center for Veterinary Medicine to the US Fish and Wildlife Service, Aquatic Animal Drug Approval Partnership Program, dated November 28, 2005 and December 5, 2007 similarly express concerns for the introduction of chloramine-T into surface water at concentrations above 0.1 mg/L (end of pipe) based on their analysis of available data suggesting

potential toxicity to aquatic life above this concentration. No chronic water quality benchmark was proposed given the short-term nature of use of chloramine-T.

Total Residual Chlorine. The TRC limitation applies only to Outfall 003. The effluent limitation for Total Residual Chlorine (TRC) is based on the acute criterion for water quality standards to ensure protection for aquatic life. The State of Colorado does not allow for dilution when determining acute criterion for TRC limits. If there were to be an effluent limitation based on the chronic criterion of 0.011 mg/L TRC, an allowance would have been made for dilution. With an allowance for dilution, the 0.019 mg/L limitation is the more stringent. Since 0.019 mg/L TRC limitation is the maximum limitation, there is no need for the less stringent effluent limitation based on the chronic criterion.

Narrative effluent limitation requirements. 40CFR 451.11 establishes that flow-through aquatic production facilities that produce over 100,000 pounds of aquatic animals a year must also meet the following requirements, expressed as practices representing the application of Best Practicable Control Technology. In FY2008, the Hotchkiss National Fish Hatchery produced 160,086 pounds of rainbow trout. Thus, the effluent limitation guidelines (40CFR 451) also apply to this facility since this facility produces over the minimum 100,000 pound per year production trigger of aquatic animals. The narrative effluent limitation requirements as established in the Effluent Limitation Guidelines are:

- a) Develop, certify (BMP certification forms found on website below) and maintain a BMP plan on site that describes how the facility will manage the following:
 - Solids Control
 - Material storage
 - Structural maintenance
- b) Maintain records that document the following:
 - Feed amounts and estimates of the numbers and weights of aquatic animals in order to calculate representative feed conversion ratios
 - Frequency of cleaning, inspections, maintenance, and repairs
 - Inspections and repairs
- c) Train all relevant facility personnel in the following:
 - Spill prevention and how to respond in the event of a spill,
 - Proper operation and cleaning of production and wastewater treatment systems
 - Feeding procedures and proper use of equipment

Examples of BMP plans, record keeping requirements and reporting forms can be found at: <http://epa.gov/guide/aquaculture/guidance/index.html>

Antidegradation Review.

As set out in The State of Colorado's *Basic Standards and Methodologies for Surface Water*, Section 31.8(2)(b), an antidegradation analysis is required except in cases where the receiving water is designated as "Use Protected.". The antidegradation section of the regulation became effective in December 2000, and therefore antidegradation considerations are applicable to the establishment of effluent limitations in this permit.

According to The State of Colorado's Classifications and Numeric Standards for the North Fork of the

Gunnison River, Segment 3 of the North Fork of the Gunnison River is Undesignated. Thus, this segment is a “reviewable water” and an antidegradation review is required for this segment if new or increased impacts are found to occur.

Introduction to the Antidegradation Process. The antidegradation process conducted as part of this water quality assessment is designed to determine if an antidegradation review is necessary and if necessary, to complete the required calculations to determine the limits that can be selected as the antidegradation-based effluent limit, absent further analyses that must be conducted by the facility. As outlined in The State of Colorado’s Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance (AD Guidance), the first consideration of an antidegradation evaluation is to determine if new or increased impacts are expected to occur. This is determined by a comparison of the newly calculated WQBELs versus the existing permit limitations in place as of September 30, 2000, and is described in more detail in the analysis. Note that the ADD Guidance refers to the permit limitations as of September 30, 2000 as the existing limits. If new or increased impacts are found to occur, then the next step of the antidegradation process is to go through the significance determination tests. These tests include: 1) bioaccumulative toxic pollutant test; 2) temporary impacts test; 3) dilution test (100:1 dilution at low flow) and; 4) a concentration test.

New or Increased Impact. This facility was in place as a discharger as of September 30, 2000. The design flow at this facility has not changed since that time. The effluent limitations established in the NPDES permit effective as of September 30, 2000 (effluent limitations were established for Total Suspended Solids, pH and Oil and Grease) are the same as that which are established in this current permit, with two exceptions: 1) a chloramine-T limit will be established for Outfalls 001a, 001b and 002; and 2) a TRC limitation is established for Outfall 003. The facility manager indicates that chloramine-T has been used at this facility since the mid-1980’s. No limits were previously established for either chloramine-T or TRC, although monitoring requirements were in place for TRC in the previous permit. However, because the use of chloramine-T is the same as, or less frequent than that which occurred before September 30, 2000 (statement from facility manager attached), EPA has determined that the discharge will not result in significant degradation of reviewable waters with respect to adopted narrative or numeric standards as long as all of the permit limitations are met. With respect to TRC, EPA has determined that the discharge will not result in a significant degradation of reviewable waters with respect to numeric standards for two reasons: 1) the use of the disinfection facilities is rare, and 2) when bleach is used in the facilities to disinfect equipment, it is neutralized before release to the North Fork of the Gunnison River.

Endangered Species Act (ESA) Requirements.

Section 7(a) of the Endangered Species Act requires federal agencies to insure that any actions authorized, funded, or carried out by an Agency are not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species. Federally listed threatened, endangered and candidate species and proposed and designated critical habitat found in Delta County, Colorado include:

Species	Status
Black-footed ferret (<i>Mustela nigripes</i>)	E
Bonytail (<i>Gila elegans</i>)	E
Canada lynx (<i>Lynx Canadensis</i>)	T
Clay-loving wild buckwheat (<i>Eriogonum pelinophilum</i>)	E, Critical Habitat Present
Colorado Basin hookless cactus (<i>Sclerocactus glaucus</i>)	T

Colorado pikeminnow (<i>Ptychocheilus lucius</i>)	E, Critical Habitat Present
Greenback cutthroat trout (<i>Oncorhynchus clarki stomias</i>)	T
Humpback chub (<i>Gila cypha</i>)	E
Razorback sucker (<i>Xyrauchen texanus</i>)	E, Critical Habitat Present
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	C

EPA finds that this permit is Not Likely to Adversely Affect any of the species listed by the US Fish and Wildlife Service under the Endangered Species Act. This facility discharges into the North Fork of the Gunnison River which flows into the mainstem of the Gunnison River. Informal discussions with a biologist at the USFWS Grand Junction Field Office indicated that no endangered aquatic species were identified as occupying the North Fork of the Gunnison River, although listed species are found in the mainstem of the Gunnison River. Limits established in this permit for pH and chloramine-T have been identified as being protective of aquatic life. TSS resulting from fish waste and uneaten food is anticipated to be diluted sufficiently before joining with the mainstem of the Gunnison River.

National Historic Preservation Act (NHPA) Requirements.

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. EPA has evaluated its planned reissuance of the NPDES permit for Hotchkiss National Fish Hatchery to assess this action’s potential effects on any listed or eligible historic properties or cultural resources. EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources because this permit is a renewal and will not be associated with any new ground disturbance or significant changes to the volume or point of discharge. However, this conclusion will need to be reassessed pending receipt of letter to amend application associated with modifications to be undertaken at the facility. During the public comment period, EPA will notify the State Historic Preservation Officer (SHPO) of the planned issuance of this NPDES permit and request their input on potential effects on historic properties and EPA’s preliminary determination in this regard.

Self-Monitoring Requirements

It is anticipated that once construction is complete, discharges will occur from Outfall 002 most of the time, to the extent practicable. However, in very limited circumstances, when the tailboxes of Banks A, B, C, D, and/or E are being cleaned, there is possibility of discharge via Outfalls 001a, 001b, and/or 004. The following self-monitoring requirements for Outfalls 001a, 001b and 004 (once Outfall 004 comes on line) are included in Table 4 this permit. Self-monitoring requirements for Outfall 002 are included in Table 5 of this permit. Self-monitoring requirements for Outfall 003 are included in Table 6 of this permit.

A method for determining the concentration of chloramine-T was established by The Aquatic Animal Drug Approval Partnership office in Bozeman, Montana and is derived as a conversion of TRC to chloramine-T concentration. The conversion is as follows: 1) Calculate the bound chlorine concentration by subtracting the free chlorine concentration from the total chlorine concentration; 2) multiply the bound chlorine concentration by 3.97 to obtain the sodium chloramine-T-trihydrate concentration (most common available form of chloramine-T). If another variety of chloramine-T is being used, divide its molecular weight by 70.9 to obtain the proper conversion factor. However, for practical purposes and supported by conversations with the FDA, the free chlorine concentration will be assumed to be zero due to extremely low concentrations of free chlorine likely to be present when sampling for chloramine-T.

Although chloramine-T gives a positive reaction to the test for TRC, it does not have the same toxicity properties as TRC from other sources as much of the chlorine is present in bound form and not as free chlorine. Although the apparent concentration of TRC is relatively high compared to the chronic and acute toxicity criteria for TRC, the actual amount of free chlorine is extremely low when using chloramine-T. If this were not the case, it would not be possible to treat fish with chloramine-T using exposure times of about one hour due to potential impacts on fish mortality.

Within six (6) months of the effective date of the permit, the permittee shall submit to the permit issuing authority a plan for sampling for chloramine-T for Outfalls 001a, 001b, 002 and 004 when chloramine-T is being used to treat fish in the hatchery. This sampling plan will account for monitoring when discharges containing chloramine-T are occurring from each of the respective Outfalls. Sampling frequency will be established in the approved sampling plan. Sampling frequency will be incorporated without further Public Notice within one year of permit issuance. See section 1.3.5 of the permit.

Table 4. Self-Monitoring Requirements for Outfalls 001a, 001b and 004

Parameter	Frequency	Sample Type
Flow, mgd a/	With Each Discharge	Instantaneous
Total Suspended Solids, mg/L	With Each Discharge	Grab
pH, standard units	With Each Discharge	Grab
Oil and Grease, mg/L b/	With Each Discharge	Visual
Total Dissolved Solids, mg/L c/	With Each Discharge	Grab
Chloramine-T, mg/L d/	Once during each use of chloramine-T	Grab
Through March 31, 2011	Per approved sampling plan	
Effective April 1, 2011 e/	f/	Per approved sampling plan f/

In addition,

- The facility will log when discharge is occurring from Outfalls 001a, 001b and 004. It shall be assumed that discharge will be continuously occurring from Outfall 002.
- A monthly grab sample shall be taken during raceway cleaning and analyzed for Total Suspended Solids. Frequency and duration of cleaning operations and related flows shall be reported.

a/ Flow measurements of effluent volume shall for Outfalls 001a, 001b and 004 will be estimated based on best professional judgement because there is no flow measuring device available for the aforementioned outfalls.

b/ The visual observation for oil and grease shall be performed on the sample taken for TSS and pH analysis. If a visible sheen is detected, a grab sample shall be taken and analyzed immediately. The concentration of oil and grease shall not exceed 10 mg/L in any sample.

c/ Samples of raw water intake before treatment and effluent from Outfalls 001a, 001b and 002 shall be collected and analyzed for total dissolved solids (TDS) on a quarterly basis. Electrical conductivity measurements may be substituted for TDS measurements if a satisfactory correlation is established on a

minimum of five samples

- d/ The most practical method of determining the concentration of chloramine-T as established by The Aquatic Animal Drug Approval Partnership office in Bozeman, Montana is derived as a conversion of TRC to chloramine-T concentration. The conversion is as follows: 1) Calculate the bound chlorine concentration by subtracting the free chlorine concentration from the total chlorine concentration; 2) multiply the bound chlorine concentration by 3.97 to obtain the sodium chloramine-T-trihydrate concentration (most common available form of chloramine-T). If another variety of chloramine-T is being used, divide its molecular weight by 70.9 to obtain the proper conversion factor.
- e/ Starting when the effluent limitations on chloramine-T are a daily maximum of 0.13 mg/L, the analysis for total residual chlorine shall be done by the amperometric titrimetric method (EPA Method 330.1 or equivalent) unless the use of another method is approved in writing by the permit issuing authority. The analytical procedure shall have a method detection limit of no greater than 50 ug/L. If all individual analytical results for TRC that would be used in the calculations for chloramine-T are below the method detection limit, then "less than x ", where x is the chloramine-T concentration at the method detection limit, shall be reported on the monthly DMR. Otherwise, report the calculated value.
- f/ Within six (6) months of the effective date of the permit, the permittee shall submit to the permit issuing authority a plan for sampling for chloramine-T for Outfalls 001a, 001b, 002 and 004 when chloramine-T is being used to treat fish in the hatchery. This sampling plan will account for monitoring when discharges containing chloramine-T are occurring from each of the respective Outfalls. Sampling frequency will be established in the approved sampling plan. Sampling frequency will be incorporated without further Public Notice within one year of permit issuance. See section 1.3.5 of the permit.

Table 5. Self-Monitoring Requirements for Outfall 002

Parameter	Frequency	Sample Type
Flow, mgd a/	Weekly	Instantaneous
Total Suspended Solids, mg/l	Quarterly	Composite
pH, standard units	Quarterly	Grab
Oil and Grease, mg/l b/	Weekly	Visual
Total Dissolved Solids, mg/l c/	Quarterly	Grab
Chloramine-T, mg/l d/		
Through March 31, 2011	During each use of chloramine-T	Grab
Effective April 1, 2011 d/	Per approved sampling plan e/	Per approved sampling plan e/

In addition,

- A monthly grab sample shall be taken during cleaning and analyzed for Total Suspended Solids. Frequency and duration of cleaning operations and related flows shall be reported.

- a/ Flow measurement of effluent volume for Outfall 002 will be based on weir flow
- b/ The visual observation for oil and grease shall be performed on the sample taken for TSS and pH analysis. If a visible sheen is detected, a grab sample shall be taken and analyzed immediately. The concentration of oil and grease shall not exceed 10 mg/L in any sample.

- c/ Samples of raw water intake before treatment and effluent from Outfall 002 shall be collected and analyzed for total dissolved solids (TDS) on a quarterly basis. Electrical conductivity measurements may be substituted for TDS measurements if a satisfactory correlation is established on a minimum of five samples
- d/ The concentration of chloramine-T may be determined by analyzing the sample for total residual chlorine (TRC) and multiplying that value by 3.97 to obtain the sodium chloramine-T-trihydrate concentration (most common available form of chloramine-T). If another variety of chloramine-T is being used, divide its molecular weight by 70.9 to obtain the proper conversion factor. The analysis for TRC must be done with an analytical method that has a detection limit of no greater than 0.050 mg/L. In the calculation of average chloramine-T concentrations, those analytical results for TRC that are less than 0.050 mg/L shall be considered to be zero for purposes of calculating the average concentration of chloramine-T. If all individual analytical results for TRC that would be used in the calculations are less than 0.050 mg/L, then “less than 0.198 mg/L” shall be reported for chloramine-T on the discharge monitoring report form. Otherwise, report the maximum value and the calculated average of chloramine-T.
- e/ Within six (6) months of the effective date of the permit, the permittee shall submit to the permit issuing authority a plan for sampling for chloramine-T for Outfalls 001a, 001b, 002 and 004 when chloramine-T is being used to treat fish in the hatchery. This sampling plan will account for monitoring when discharges containing chloramine-T are occurring from each of the respective Outfalls. Sampling frequency will be established in the approved sampling plan. Sampling frequency will be incorporated without further Public Notice within one year of permit issuance. See section 1.3.5 of the permit.

Table 6. Self-Monitoring Requirements for Outfall 003

Parameter	Frequency	Sample Type
Total Residual Chlorine, mg/l a/	Prior to each controlled release of wastewater	Grab
Total Suspended Solids	Once during each discharge event	Grab
Oil and Grease, mg/l b/	Once during each discharge event	Visual

The wastewater from the disinfection house will be held in the holding tank until the analytical results show that the TRC concentration is less than the method detection limit

- a/ The analysis for total residual chlorine shall be done by the amperometric titrimetric method (EPA Method 330.1 or equivalent) unless the use of another method is approved in writing by the permit issuing authority. The analytical procedure shall have a method detection limit of no greater than 0.050 mg/L. In the calculation of average TRC concentrations, those analytical results that are less than 0.050 mg/L shall be considered to be zero for calculation purposes. If all individual analytical results that would be used in the calculations are less than 0.050 mg/L, then “less than 0.050 mg/L” shall be reported on the discharge monitoring report form. Otherwise, report the maximum value and the calculated average value.
- b/ The visual observation for oil and grease shall be performed on the sample taken for TSS and pH analysis. If a visible sheen is detected, a grab sample shall be taken immediately and analyzed in accordance with 40 CFR 136. The concentration of oil and grease shall not exceed 10 mg/L in any sample.

Reporting Requirements

The facility is required to report semi-annually on a discharge monitoring report. If no discharge occurred during that six month period, the report is to be marked "no discharge". Sampling periods will be specified on the DMR forms and should follow the six month periods from January - June and July - December as had been done for the previous DMRs.

In addition to the semi-annual DMRs, the facility shall send production data to EPA on an annual basis. The data will include: annual production (lbs. of fish), amount of food fed in maximum production month, daily food usage during maximum month, and annual mean water flow through the hatchery. The report shall accompany the six month DMR due, January 28th of each year.

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