

RESPONSE TO COMMENTS DOCUMENT

December 14, 2009

Introduction

On September 30, 2009, the Environmental Protection Agency (EPA) issued a notice of proposed reissuance of a National Pollutant Discharge Elimination System (NPDES) permit for Washington Beef, LLC (hereafter referred to as Washington Beef). Washington Beef owns, operates, and has maintenance responsibility for a complex slaughterhouse facility located on deeded land within the boundaries of the Reservation of the Confederated Tribes and Bands of the Yakama Nation (the “Yakama Nation”), in Toppenish, Washington. The public review and comment period for the proposed permit ended on October 30, 2009.

This Response to Comments document serves as a supplement to and, in some cases, a correction to the Fact Sheet. Comments were received from the National Marine Fisheries Services (NOAA) and Washington Beef. The following summarizes the significant comments received and responds to each of them.

Comments from Washington Beef

Comment 1. Washington Beef will install chlorination/dechlorination facilities in connection with its planned expansion. Chlorination will be added at the point of discharge from the sequential batch reactor (SBR), and de-chlorination facilities will be added after the discharge from the surge basin to allow ample contact time. Dechlorination will occur in the weir chamber prior to UV light system. The chlorination/dechlorination facilities are standby facilities that would only be used in periods of biological upset. Washington Beef has requested that they be allowed to discharge chlorine when the chlorination/dechlorination system is being used.

Response 1. The final permit allows chlorine to be discharged, however since chlorine is a toxic pollutant the permit also includes effluent limitations for chlorine that will apply when the facility needs to use the chlorination/dechlorination system. The effluent limitations ensure that the amount of chlorine discharged will be protective of aquatic life. The calculations used to develop the chlorine limitations are included in Appendix A of this document.

Comment 2. The description of the treatment for Outfall 008 on page 1 of application form 2C has been revised to include all of the treatment steps that apply to Outfall 002. Additionally, Washington Beef has installed a temporary sand filtration system. The filtration unit follows the Dissolved Air Flootation Unit which follows the SBR. Washington Beef also provided an updated schematic of the wastewater treatment system.

Response 2. The fact sheet for the draft permit is a final document, however, the change has been noted here for the administrative record. The amended application pages have also been included in the administrative record.

Comment 3. Washington Beef requested that the compliance schedule for ammonia be revised. Specifically, they requested that the interim daily maximum effluent limit for ammonia be

changed to specify the final effluent limit of 11.2 mg/L (149.5 lbs/day) for Outfall 002. This will allow the final daily maximum limit to be effective upon permit issuance.

Response 3. The final permit has been revised to require that the final daily maximum effluent limit (*i.e.*, 11.2 mg/L and 149.5 lbs/day) be effective upon permit issuance. As a result of this change, the compliance schedule for ammonia has also been revised since there is no longer a need for an interim daily maximum effluent limit. The compliance schedule for ammonia in the final permit addresses the average monthly limit only. This same change was made for Outfall 008.

Comment 4. Washington Beef requests that the three year period for required toxicity testing begin two years after the permit effective date. This will allow development of a data set that reflects performance of the wastewater treatment system after completion of the improvements to the system in connection with the plant expansion. All of the requisite testing can then be completed within the permit term if it begins two years after the effective date of the permit and the two toxicity test result that will be generated after the next application submittal can be submitted as supplements to the next application for reissuance.

Response 4. The draft permit already requires whole effluent toxicity (WET) testing to start two years after the effective date of the permit (see footnote 4 in Table 1 and Table 2). For clarity, this requirement has also been added to Part I.B.1. To clarify, the permit does not require 3 years of WET testing, rather WET testing is required until 10 valid samples are collected. As such, EPA believes that Washington Beef should have sufficient time to collect 10 samples prior to submittal of the next NPDES permit application.

Comment 5. Washington Beef requests that the receiving water monitoring in Wanity Slough begin two years after the permit effective date. This will allow development of a data set that reflects the downstream water quality after completion of the improvements to the treatment system. The permit requirement is for three years of instream monitoring and submittal of the results with the next application for reissuance of the permit. All of the monitoring can be completed within the permit term if it begins two years after the effective date of the permit and the last six months of monitoring results that will be generated after the application submittal can be submitted as a supplement to the application. Additionally, Washington Beef will need time to work with the Yakama Nation to obtain permission to install monitoring equipment, and they will need time to safely install monitoring equipment as currently there is no available access point for monitoring downstream of the outfall.

Response 5. The draft permit required receiving water monitoring to start 60 days after the effective date of the permit and continue for three years. EPA agrees with the timing that Washington Beef set forth in its comment, thus, the final permit has been revised to require ambient monitoring for Wanity Slough to start two years after the effective date of the permit. An additional condition has been added to the final permit which requires that any ambient samples collected after the submittal of the NPDES permit application must be submitted as an addendum to the application.

Comment 6. Washington Beef requests that the receiving water monitoring in Spencer Lateral begin two years after the permit effective date. This will allow development of a data set that reflects the downstream water quality after completion of the improvements to the treatment system.

In addition, Washington Beef requests that Spencer Lateral instream monitoring be required only if and only during months that there is a discharge from Outfall 008. Since development of the Draft Permit there have been changes in the opportunity to use the flow from Outfall 008 for wetlands restoration and use of Outfall 008 is expected to be limited.

Response 6. The draft permit required receiving water monitoring, upstream and downstream of the Outfall, to start 60 days after the effective date of the permit and continue for three years. EPA agrees with the timing that Washington Beef set forth in its comment, thus, the final permit has been revised to require ambient monitoring to start two years after the effective date of the permit. The final permit also requires only two years of monitoring and does not require downstream monitoring if there is no discharge from Outfall 008.

The permit still requires upstream monitoring in Spencer Lateral regardless of whether the facility is discharging because Washington Beef has requested that EPA consider a mixing zone for Spencer Lateral if/when Washington Beef develops background flow information (see comment # 12 below). If, in the future, Washington Beef requests a permit modification to allow a mixing zone in Spencer Lateral during the irrigation season, EPA will need upstream data to determine if assimilative capacity exists to allow the mixing zone. Therefore, the upstream monitoring requirement in the permit has been retained; however, this monitoring has been reduced from three years to two years and, as explained above, the permit does not require downstream monitoring in Spencer Later if the facility is not discharging.

Comment 6. Washington Beef wishes to note that while Wanity Slough is a water of the United States, the status of Spencer Lateral as to whether it is a water of the United States has not been determined.

Response 6. Comment noted. As discussed in the Fact Sheet for the Draft Permit EPA believes that both Wanity Slough and Spencer Lateral are waters of the United States.

Comment 7. Washington Beef requests that the facility description on page 5 of the fact sheet be revised to clarify that the facility is located on deeded land within the boundaries of the Yakama Nation.

Response 7. Comment noted. The Fact Sheet is a final document, however, this Response to Comments Document serves as a correction to the Fact Sheet.

Comment 8. Pages 6 and 8 of the Fact Sheet refer to the tertiary ponds in the treatment system as artificial wetlands. Washington Beef requests that the references to artificial wetlands be changed to tertiary ponds to accurately describe this portion of the plant wastewater treatment system. The tertiary ponds are a waste treatment system designed to meet requirements of the Clean Water Act.

Response 8. Comment noted. The Fact Sheet is a final document, however, this Response to Comments Document serves as a correction to the Fact Sheet.

Comment 9. Washington Beef requests that the description of treatment as it applies to Outfall 008 and land application be corrected. The Fact Sheet states “alternatively, the effluent from the surge basin may be routed to a series of 3 artificial wetlands and it is then either land applied or discharged through Outfall 008 which discharges to Spencer Lateral...” This order of treatment is only in the event that the effluent will be land applied. If the effluent is to be discharged via Outfall 008 the order of treatment is the same as that for Outfall 002.

Response 9. Comment noted. The Fact Sheet is a final document, however, this Response to Comments Document serves as a correction to the Fact Sheet.

Comment 10. The Fact Sheet describes the wetlands restoration project that had a potential for development at the time of the development of the Draft Permit. The Fact Sheet also includes Appendix A describing the potential project. Washington Beef wishes to note that the potential that the wetlands restoration project will be undertaken is remote at this time. However, in the event that the potential project is reconsidered in the future, the statements in the Fact Sheet and the materials in Appendix A are useful in describing the project.

Response 10. Comment noted.

Comment 11. Washington Beef requests that EPA confirm its understanding that effluent limitations and conditions for Outfall 008 have been developed to apply whether or not the discharge from Outfall 008 is used for wetlands restoration.

Response 11. The effluent limitations and conditions are applicable to the discharge to Spencer Lateral and apply regardless of whether the discharge is diverted for wetlands restoration.

Comment 12. Washington Beef requests EPA’s acknowledgement that if Washington Beef develops flow information for Spencer Lateral for the irrigation season, EPA will accept a request for a revision of the water quality based effluent limitations for Outfall 008.

Response 12. A mixing zone may be appropriate in Spencer Lateral during the irrigation season provided there is sufficient flow and assimilative capacity in the receiving water. The federal regulation at 40 CFR 122.62 allows an NPDES permit to be modified during its term if the Director receives new information that was not available at the time of permit issuance. Thus, Washington Beef may submit the flow information and EPA will use the information to determine if a permit modification is appropriate.

Comment 13. Washington Beef requests that page 20 of the Fact Sheet (Improvement of Wastewater Treatment System) which states that “because of a recent enforcement action, the facility has taken steps to try to improve its current treatment system” be changed to state “because of a planned plant expansion, the facility is taking steps to expand and improve its wastewater treatment system.” The correction is needed to make the statement accurate.

Response 13. Comment noted. The Fact Sheet is a final document, however, this Response to Comments Document serves as a correction to the Fact Sheet.

Comments from National Marine Fisheries Services (NOAA)

Comment 1. As this is a proposed re-issuance of an existing permit, it would be helpful in assessing this renewal to know if the conditions in the original permit ‘worked’ at protecting water quality. In several instances, the proposal would use the same conditions as the existing permit, but if they are insufficient, they should be adjusted to protect the water quality parameter related to the specific permit condition.

Response 1. The effluent limits in the 1994 permit were developed to ensure that the water quality in Wanity Slough was protective of both human health and aquatic life criteria. Water quality criteria are designed to protect the aquatic ecosystem and humans from the adverse effects of pollutant discharges that could occur at levels above the criteria. The critical conditions and modeling that were done to support the development of the 1994 effluent limitations are discussed in EPA’s 1994 *Fact Sheet for Draft NPDES Permit No. WA-005020-2, Washington Beef, Inc.* When developing the effluent limits in the permit, EPA took into account the following four factors: (1) facility flow may increase to 1.6 mgd, (2) some water quality criteria were updated (*e.g.*, ammonia and temperature), (3) the mixing zone size in Wanity Slough was reduced from the previous permit, and (4) since there was no flow in Spencer Lateral during the non-irrigation season, when the effluent is discharged to Spencer Lateral the effluent quality must be protective of aquatic life and human health. As a result, some of the effluent limitations are more stringent than those in the 1994 permit. EPA’s analysis shows that the effluent limits contained in the proposed permit are protective of aquatic life and ensure that water quality standards are met in Wanity Slough and Spencer Lateral.

Comment 2. EPA is presuming compliance with permit conditions (page 22; ¶4) and that, therefore, there are no adverse effects – but on page 11, the last paragraph, it is stated several reaches do not comply with water quality criteria and on page 12, paragraph 2 – it is stated there are no §303(d) listed streams on the Yakama Reservation, but that the streams are likely to have the same issues as nearby state waters. Since there are streams not meeting standards and the streams on the Yakama Reservation are presumed to “have the same issues”; it seems reasonable that streams on the Yakama Reservation would also not meet the state standards (not inferring the state standards apply to the Yakama Reservation).

If waters are already not meeting water quality standards, it seems reasonable to extrapolate that adding *more* effluent will only lower water quality. The effectiveness of the existing conditions is questionable since stream reaches are currently §303(d) listed, and potentially at least partially due to effluent from Washington Beef LLC.

Response 2. A review of Washington’s 303(d) list found that several rivers and streams in the Lower Yakima River Basin do not meet some water quality criteria. As stated previously, water quality criteria are designed to protect the aquatic ecosystem and humans from the adverse

effects of pollutant discharges that could occur at levels above the criteria. Where the existing background level of a pollutant in a water segment is greater than the criteria related to the designated uses of that segment, the segment is considered to be impaired and the aquatic environment or human health may be adversely impacted. When a water body segment is impaired, it is generally listed on a State's 303(d) list.

In the absence of a total maximum daily load (TMDL), NPDES permit limits must be sufficiently stringent to ensure that the effluent discharged from the facility meets water quality criteria before it is discharged from the outfall (*i.e.*, the effluent is of higher quality than the receiving water). If water quality-based effluent limits for a discharger are set at the water quality criteria end-of pipe (CEOP), EPA believes that the discharge from that source to an impaired water segment would not cause or contribute to the violation of a water quality standard.

Consistent with the NPDES water quality-based permitting regulation at 40 CFR 122.44(d), EPA has determined that water quality-based effluent limits set at CEOP are an appropriate mechanism for complying with water quality standards in certain circumstances. Under EPA's NPDES regulation at 40 CFR 122.44(d)(1)(vii)(A), water quality-based effluent limits must ensure that the "level of water quality to be achieved by limits on point sources . . . is derived from, and complies with all applicable water quality standards." The water quality that is "achieved" by CEOP limits on point sources will be no greater than the applicable numeric water quality criteria. Therefore, EPA believes that limiting discharges from point sources to CEOP is an appropriate mechanism for ensuring that a discharger will comply with, and thus not cause or contribute to a violation of, water quality standards.

A point source discharging at CEOP where the water is impaired for a criterion expressed as a concentration (*i.e.*, the background concentration is higher than the criterion) will contain a lower concentration of the pollutant than the receiving water, and therefore will not increase the pollutant concentration in the waterway.¹ In fact, such a discharge may cause the pollutant concentration in the receiving water to decrease. Limiting discharges from a point source to CEOP in these circumstances would, therefore, result in no further degradation of the waterbody, and may actually improve the water quality of the waterbody.

The pollutant parameters on the 303(d) list for various waterbodies in the Lower Yakama River Basin are primarily pesticides and metals. Other parameters listed for some river segments in the Yakima River Basin include bacteria, pH, turbidity, dissolved oxygen, and temperature. Each of these parameters is discussed below.

Pesticides and metals

A review of the facilities monitoring data found that the facility does not discharge pesticides or metals. Since the discharge does not contain the pollutant causing the impairment, the discharge will not cause or contribute to the violation of a water quality standard, and effluent limitations are not necessary for these parameters.

¹Note that EPA endorses this approach for criteria and WQBELs expressed as concentrations, but not for criteria expressed as mass.

Bacteria

A review of the data from Wanity Slough found that there were some elevated levels of bacteria. It was assumed that Spencer Lateral may also have exceedances of bacteria, since the water in Spencer Lateral comes from Wanity Slough during the irrigation season. To address this, the permit requires the facility to meet the water quality criteria for bacteria at the end of pipe when discharging to Wanity Slough or Spencer Lateral (see Appendix C, Part I.A. of the Fact Sheet for the reasonable potential analysis, and Appendix D, Part I.C of the Fact Sheet for development of the effluent limits).

pH

A review of the sampling data for Wanity Slough found that it meets the aquatic life water quality for pH, however, the permit still requires the effluent to be discharged within the water quality criterion range of 6.5 to 8.5 standard units. When discharging to Spencer Lateral the permit also requires the effluent to be discharged within the water quality criterion range of 6.5 to 8.5 standard units. Therefore, the pH levels in Wanity Slough and Spencer Lateral are protective of aquatic life (see Appendix C, Part IV of the Fact Sheet for the reasonable potential analysis, and Appendix D, Part I.B. of the Fact Sheet for development of the effluent limits).

Turbidity/Sediment

The Washington Department of Ecology has completed and EPA has approved a TMDL for turbidity/sediment for the Lower Yakima River basin (*A Suspended Sediment and DDT TMDL Evaluation Report for the Yakima River*, July 1997, Publication No. 97-321). The TMDL reviewed the scientific literature and found that turbidity of 25 NTU and total suspended solids of 56 mg/L (total suspended solids is a surrogate parameter for sediment) will be supportive of aquatic life. The proposed permit for Washington Beef requires the facility to achieve a turbidity level of 12.4 NTU. This value is based on the Yakama Nation water quality standards and is well below the value established by Washington in its water quality standards. The total suspended solids limit in the permit is based on available technology and is 39 mg/L, this limit is also below the value that Washington established for the protection of aquatic life (note: the Yakama Nation has not established a water quality criterion for total suspended solids). Therefore, EPA believes that the effluent discharge or turbidity and total suspended solids will be protective of water quality necessary for aquatic life (see Appendix C, Part I.B. of the Fact Sheet for the reasonable potential analysis, and Appendix D, Part III. of the Fact Sheet for development of the effluent limits).

Dissolved Oxygen

The water quality criterion for dissolved oxygen (DO) established by the Yakama Nation for Wanity Slough and Spencer Lateral from June 1- August 14 is 8.5 mg/L, and from August 15 – May 31st the criterion is 10 mg/L to support salmonid spawning.

The Yakama Nation collected 23 dissolved oxygen samples in Wanity Slough from March 1990 to April 1991. The collection site was *below* the discharge from the Washington Beef facility. The DO concentrations varied from 6.2 mg/L to 11.4 mg/L. Three of the samples were below 8.0 mg/L (two collected in early February were 6.2 mg/L and 7.8 mg/L), and one sample collected in late September was 6.7 mg/L).

On July 23, 1993 a contractor for EPA conducted a stream survey of Wanity Slough to characterize the receiving water characteristics. In-stream vertically averaged concentrations of dissolved oxygen were between 9.09 mg/L and 11.2 mg/L throughout the stream study area. These values are between 102.2% saturation and 119.1% saturation. It was postulated that the supersaturated DO values were due to large populations of rooted aquatic plants, which were observed throughout the stream.

To ensure that the effluent discharge to Wanity Slough does not cause or contribute to an exceedance of the water quality standards a Streeter-Phelps model was used to establish the necessary effluent limitations for biochemical oxygen demand (BOD) and DO. The effluent limits ensure that the effluent discharge will have no measureable near field or far field effect on the dissolved oxygen concentration in Wanity Slough. Results for Spencer Lateral should be similar since water in Spencer Lateral is from Wanity Slough (see Appendix C, Part V. of the Fact Sheet for the reasonable potential analysis, and Appendix D, Part IV. of the Fact Sheet for development of the effluent limits).

Temperature

The water quality criteria for temperature for the protection of salmonids are:

- Non-irrigation season (mid- October- mid-March): 16° C as a 7-day daily average
- Irrigation season (mid-March through mid-October): 18° C as a as a 7-day daily average
- No single sample daily maximum temperature exceeding 20° C.

The metric for expressing water temperature is the 7-day daily average. The 7-day daily average is the measure of the maximum temperatures in a stream, averaged over a seven day period. This metric is considered better than an instantaneous maximum metric because it is believed to integrate more information into one value. The metric is not overly influenced by the maximum temperature of any single day as it reflects an average temperature that fish are exposed to over a week-long period. The 7-day daily average metric is recommended for temperature standards by the *USEPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards* (EPA910-B-03-002, April 2003, hereafter referred to as the Temperature Guidance). The Temperature Guidance and the six Technical Issue Papers that serve as the scientific basis for the recommendations in the Guidance may be found at:

www.epa.gov/r10earth/temperature.htm.

In order to determine if the temperature criterion in Wanity Slough is being achieved, consecutive *daily* temperature values are needed. Currently, only weekly temperature data has been gathered (*i.e.*, one temperature sample was taken each week). However, it has been found that an 18° C temperature as a 7-day daily average approximates a 1-day maximum temperature of 19° C (see the Temperature Guidance for an explanation of temperature metric comparisons and references). EPA has reviewed the weekly effluent temperature data from the Washington Beef facility (2002-2008) and found that the facility consistently complies with the temperature criteria described above from mid-September through mid-May. However, the effluent temperature exceeded the temperature criterion from mid-May through mid-September. Therefore, it is during this time period when the facility's effluent has the potential to increase the receiving water temperature.

The facility collected weekly temperature samples in 2002 in order to determine the effect of the effluent on the receiving water during the summer (mid-May through mid-September), when the effluent would most likely adversely influence stream temperatures. Temperature samples were collected at the following three locations: (1) in Wanity Slough (upstream of the effluent discharge), (2) in the effluent, and (3) downstream of the outfall location, at the edge of the mixing zone. During the summer the applicable criterion is 18°C as a 7-day daily average, which approximates a 1-day daily maximum temperature of 19°C. The data is provided below:

Date	Temperature in Wanity Slough, upstream of outfall (°C)	Effluent Temperature (°C)	Temperature in Wanity Slough, below outfall (°C)
May 21, 2002	12.2	17.7	12.4
May 24, 2002	15.3	16.5	15.5
May 30, 2002	15.6	19.2	15.8
June 4, 2002	16.1	19.4	16.1
June 21, 2002	16.1	19.6	16.3
June 27, 2002	17.0	23.3	17.1
July 9, 2002	17.2	21.3	17.2
July 17, 2002	17.42	23	17.5
July 23, 2002	17.6	23	17.7
August 7, 2002	17.9	18.7	18
August 15, 2002	18.4	21.5	18.4
August 21, 2002	18.2	19.8	18.3
August 28, 2002	17.46	22.3	17.5
Sept. 3, 2002	16.7	20.3	16.7
Sept. 11, 2002	15.9	20.3	16.1
Sept. 18, 2002	15.0	18.95	15.1
Sept. 27, 2002	14.9	17.49	13.4

Based on the available data, the temperature at the edge of the mixing zone does not exceed a 1-day maximum temperature of 19°C, therefore, based on this data set, it is not likely that the temperature criterion will be exceeded in Wanity Slough. To confirm this analysis the permit requires the facility to collect daily temperature data upstream and downstream of the facility and in the effluent.

EPA expects that the temperature in Spencer Lateral would be similar since the water in Spencer Lateral, during the irrigation season, is diverted from Wanity Slough, approximately two miles upstream of the Washington Beef facility.

Comment 3. Page 9, c. – NOAA requested to know why there was no monitoring required in the Spencer Lateral.

Response 3. The permit does require monitoring for Spencer Lateral. Part I.C.1 of the permit provides the monitoring requirements for Wanity Slough, and Part I.C.2 of the permit provides the monitoring requirements for Spencer Lateral.

Comment 4. The Fact Sheet (page 14, ¶ 4) says that the Spencer Lateral should also be designated as a Class III, which includes use by anadromous fish, among other uses. On page 10 (¶ 4) the statement is made that Spencer Lateral is a water of the US. With no water at times, no mixing zone and effluent flow comprising the entire flow of the Lateral – data are needed for making management decisions on this water body and using a conservative approach, *i.e.* limiting discharges, is advisable until data are available.

Response 4. EPA reviewed the *Statewide Salmon and Fish Distribution GIS database*, and the *Salmon Stock Inventory (SaSI)*. These databases provide the most complete and current salmonid distribution and timing information for the State of Washington (these databases can be viewed on the Washington Department of Fish and Wildlife’s *Salmonscape* website). The databases show that spawning does not occur in Wanity Slough or Spencer Lateral. Additionally, the databases show the presence of salmonids in Wanity Slough, but not in Spencer Lateral. Although there are no documented fish occurring in Spencer Lateral, EPA agrees that Spencer Lateral must be protected for all aquatic life, and a conservative approach was taken when developing the effluent limits. The most conservative approach available to EPA is to develop effluent limitations based on zero flow in the receiving water. This approach ensures that the quality of water being discharged to Spencer Lateral is protective of water quality (*i.e.*, the effluent limits are either at or below the water quality criterion). This approach was taken for all parameters except BOD/dissolved oxygen.

EPA’s primary concern with Washington Beef’s discharge to Spencer Lateral is that during the irrigation season (mid-March through mid-October), a portion of the Spencer Lateral flow can leak through the check dam and enter Wanity Slough where fish are present, and during the non-irrigation season water from Spencer Lateral (*i.e.*, any flow in Spencer Lateral during the non-irrigation season is comprised entirely of Washington Beef effluent) can be diverted to Wanity Slough and therefore, it is important that the quality of water in Spencer Lateral be sufficient to ensure that it does not adversely affect aquatic life in Wanity Slough. EPA believes the effluent limits for BOD and D.O. will be sufficient.

Comment 5. Page 17. G. 2. – Any event required to be reported should also be identified by location – where, exactly, did the event occur. A schematic drawing would be useful. If an event occurs where there is moderate-to-high probability of something harmful getting into water where mid-Columbia steelhead might be, NMFS is concerned.

Response 5. The information required in this section is standard regulatory language that must be included in all NPDES permits (see 40 CFR § 122.41). Because it is a regulation, it cannot be changed in an NPDES permit action. However, it is EPA’s experience that 24-hour non-compliance reports are detailed reports, and EPA follows up on these reports if additional information is needed.

Clarification Made to Final Permit

The federal regulation at 40 CFR 136 requires a grab sample for oil and grease. The final permit was revised to change the oil and grease sample type from a 24-hour composite sample to a grab sample in Tables 1 and 2.

The final permit was changed to clarify that the average monthly limit for *E.coli* is expressed as a geometric mean.

APPENDIX A

Effluent Limits for Total Residual Chlorine

Calculate the Wasteload Allocations (WLAs)

A wasteload allocation is the maximum allowable pollutant concentration that can be discharged in the effluent (after accounting for available dilution, if allowable) without causing an instream water quality exceedance. Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis.

$$C_d Q_d = C_e Q_e + C_u Q_u \quad \text{where,}$$

C_d = water quality criterion (chronic = 11 $\mu\text{g/L}$, acute = 19 $\mu\text{g/L}$)

C_e = WLA

C_u = Maximum measured receiving water upstream concentration (0 in this case)

Q_d = Receiving water flow rate downstream of the effluent discharge = $Q_e + Q_u$

Q_e = Effluent flow rate (set equal to the highest discharge from facility)

Q_u = Receiving water low flow rate upstream of the discharge = 7.3 mgd for Wanity Slough and 0 mgd for Spencer Lateral

To calculate a wasteload allocation (*i.e.*, C_e), C_d is set equal to the criterion and the equation is solved for C_e . The calculated C_e is the WLA. This procedure is done for both the acute criterion, and the chronic criterion. If mixing zones are allowed, the equation becomes:

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

The calculations for TRC are as follows:

TRC, Outfall 002 (discharge to Wanity Slough)

C_d (acute) = 19 mg/L

C_d (chronic) = 11 mg/L

Q_u = 7.3 mgd

C_u = 0 $\mu\text{g/L}$

Q_e = 1.6 mgd

C_e = WLA

MZ (acute) = 0

MZ (chronic) = 0.2

$$\text{WLA}_{\text{acute}} = \frac{19(7.3 \times 0) + (19 \times 1.6)}{1.6} - \frac{[(0.0 \times 7.3) \times 0]}{1.6} = 19 \mu\text{g/L}$$

$$WLA_{\text{chronic}} = \frac{11 (7.3 \times 0.20) + (11 \times 1.6)}{1.6} - \frac{[(0.0 \times 7.3) \times 0.20]}{1.6} = 21 \mu\text{g/L}$$

The next step is to compute the “long term average” (LTA) concentrations which will be protective of the WLAs. This is done using the following equations from Section 5.4 of the TSD:

$$LTA_a = WLA_a \times \exp(0.5\sigma^2 - z\sigma)$$

$$LTA_c = WLA_c \times \exp(0.5\sigma_{30}^2 - z\sigma_{30})$$

where,

$$\sigma^2 = \ln(CV^2 + 1)$$

$$\sigma = (\sigma^2)^{1/2}$$

$$\sigma_{30}^2 = \ln(CV^2/30 + 1)$$

$$\sigma_{30} = (\sigma_{30}^2)^{1/2}$$

$$z = 2.326 \text{ for } 99^{\text{th}} \text{ percentile probability basis}$$

For TRC,

$$CV = 0.6 \text{ (TSD recommendation when no effluent data is available)}$$

$$\sigma^2 = \ln(1.1^2 + 1) = 0.7929$$

$$\sigma = \sqrt{\sigma^2} = 0.8905$$

$$\sigma_{30}^2 = \ln(1.1^2/30 + 1) = 0.0395$$

$$\sigma_{30} = \sqrt{\sigma_{30}^2} = 0.1989$$

$$z = 2.326 \text{ for } 99^{\text{th}} \text{ percentile probability basis}$$

Therefore,

$$LTA_a = 6.1 \mu\text{g/L}$$

$$LTA_c = 11.1 \mu\text{g/L}$$

The acute and chronic LTAs are compared and the more stringent is used to develop the daily maximum (MDL) and average monthly (AML) permit limits as shown below. The acute LTA of 6.1 $\mu\text{g/L}$ is more stringent.

Derive the maximum daily and average monthly effluent limits

Using the equations in Section 5.4 of the TSD, the MDL and AML effluent limits are calculated as follows:

$$MDL = LTA \times \exp(z_m \sigma - 0.5 \sigma^2)$$

$$AML = LTA \times \exp(z_a \sigma_n - 0.5 \sigma_n^2)$$

where σ , and σ^2 are defined as they are for the LTA equations and,

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

$$\sigma_n = \sqrt{\sigma_n^2}$$

$z_a = 1.645$ for 95th percentile probability basis

$z_m = 2.326$ for 99th percentile probability basis

n = number of sampling events, in this case the chlorination will only be used in emergency's so n will be assigned a value of 4

CV = 0.6

For ammonia,

$$\text{MDL} = 19.0 \mu\text{g/L}$$

$$\text{AML} = 9.5 \mu\text{g/L}$$

Since the chlorination system is only going to be used in emergencies a mass based limits are not necessary.

TRC, Outfall 008 (discharge to Spencer Lateral)

A mixing zone is not appropriate for Spencer Lateral. In these cases, the WLA is set equal to the criterion.

$$\text{WLA}_a = 19 \mu\text{g/L}$$

$$\text{WLA}_c = 11 \mu\text{g/L}$$

The next step is to compute the "long term average" (LTA) concentrations which will be protective of the WLAs. This is done using the following equations from Section 5.4 of the TSD, and CV value of 1.1 was used:

$$\text{LTA}_a = \text{WLA}_a \times \exp(0.5\sigma^2 - z \sigma) = 6.1 \mu\text{g/l}$$

$$\text{LTA}_c = \text{WLA}_c \times \exp(0.5 \sigma_{30}^2 - z \sigma_{30}) = 5.8 \mu\text{g/l}$$

Using the equations in Section 5.4 of the TSD, the MDL and AML effluent limits are calculated as follows:

$$\text{MDL} = \text{LTA} \times \exp(z_m \sigma - 0.5 \sigma^2) = 18 \mu\text{g/l}$$

$$\text{AML} = \text{LTA} \times \exp(z_a \sigma_n - 0.5 \sigma_n^2) = 9.0 \mu\text{g/l}$$