RESPONSE TO COMMENTS

Permittee: City of Puyallup
Permit No.: WA-003716-8

Background: On October 25, 2002, EPA proposed to reissue the NPDES permit for the City of Puyallup Wastewater Treatment Plant (WWTP). The public notice of the proposal initiated a 30-day comment period which was to expire on November 25, 2002. At the City of Puyallup's request, the comment period was extended to December 26, 2002. Comments on the draft permit were received from the City of Puyallup. The City also provided comments on the Fact Sheet, which reiterate the issues that the City raises on the draft permit. In addition, the Puyallup Tribe submitted one comment that was not part of the stipulations of their 401 certification. This document presents the comments on the draft permit and EPA's responses to those comments. The comments are provided verbatim.

City Comment 1 NPDES Permit Limit Conditions for BOD, TSS and Ammonia

Comment Table 1, below, details the numeric limitations the City believes to be correct based on available data. Discussion of data, parameters and requirements follow.

Comment Table 1
NPDES Permit Limit Corrections

Parameter	*Avg. Monthly*	*Avg. Weekly*	*Maximum Daily*
BOD, mg/l	*30*	*45*	*N/A*
Lbs/day	*2179*	*3268*	*N/A*
TSS, mg/l	*30*	*45*	*N/A*
Lbs/day	*2333*	*3499*	*N/A*
Nov 1 - Apr 30			
NH3, mg/l	*7.7*	*N/A*	*19.9*
Lbs/day	*898*	*N/A*	*3236*
May 1 to Oct 31			
NH3, mg/l	*6.8*	*N/A*	*19.2*
Lbs/day	*551*	*N/A*	*792*
Max Month Avg. Winter Flow (mgd)	*13.98*		
Max Day Winter flow(mgd)			*19.5*

1. 95% percentile values for pH and temp. in the river in winter are 7.6 and 10.1.
2. 95th percentile values for pH and temp. in the river in dry weather are 7.6 and 16.4.
The percentile pH values above are based on the data presented on page F-5 of the Fact Sheet.

Response

Responses to requested modifications for BOD_5, TSS and NH_3 are provided under Comment/Response 3 and 4.

City Comment 2 Testing Frequency

Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS) and Fecal Coliform testing frequency is increased from the existing frequency of 3/Week to 5/Week without justification (I.A.1., Table 1). More frequent testing involves additional staff labor and additional cost. No statistical evaluation or other explanation is provided in the Fact Sheet to justify this change. Based on existing performance data we do not believe there is justification to increase the monitoring schedule. The testing frequencies should remain as specified in the City's existing permit. Additionally, the ammonia monitoring requirements should remain at 1/Week rather than the proposed 2/Week.

Response

The EPA has reviewed the monitoring frequency for BOD_5, TSS, Fecal Coliform and ammonia, and agrees that the monitoring frequency in the existing permit is adequate to characterize the effluent. The final permit is modified to require the existing monitoring frequency for BOD_5, TSS, Fecal Coliform and ammonia. However, the comment incorrectly states that the existing monitoring frequency for ammonia is 1/week. The monitoring frequency for ammonia in the existing permit is 2/week. The comment provides no justification for reducing the existing monitoring frequency for ammonia.

Permit modification: Table 1 of the final permit has been modified to require a monitoring frequency of 3/week for BOD_5, TSS, and Fecal Coliform. The monitoring frequency for ammonia remains at 2/week.

City Comment 3 Consistency with TMDL

The June 2000 Draft NPDES permit included a BOD/ammonia trade as allowed in the 1993 Puyallup River TMDL. This trade is not included in the October 23, 2002 draft (I.A.1., Table 1). In 1994, EPA approved the Puyallup River TMDL. In 1998, the Puyallup Tribe, EPA, the Washington Department of Ecology, the City and other interested parties entered into an Agreement to implement the TMDL. The 1998 Agreement also confirms the ability of permitted dischargers to convert or trade BOD allocations for ammonia allocations. On December 17, 2001, the City notified EPA of its intent to exchange 88 lbs./day of ammonia for 1183 lbs./day of additional BOD limit. There is no explanation provided why this conversion was not incorporated in the Draft Permit. EPA regulations require that effluent limits be consistent with the assumptions and requirements of approved TMDLs. See 40 CFR § 122.44(d)(1)(vii)(B). Since the City's proposed exchange is consistent with the 1993 TMDL, the average weekly BOD limit should be reinstated at 3268 lbs/week and the maximum day ammonia limit needs to be reinstated to 792 lbs./day as shown in Comment Table 1, above.

Response

Per the City's request, the BOD_5 and ammonia loading limits in the final permit are revised for the period from May - October to allow for the BOD_5/ammonia exchange as allowed in the preventative TMDL. The preventative TMDL is seasonal, applying from May - October. The BOD_5/ammonia exchange only applies during that time period. In the draft permit, the BOD_5 TMDL WLA was inadvertently applied to the BOD_5 loading limits for the entire year. The final permit has been revised to apply the BOD_5 TMDL WLA only during the critical season (May - October).

The recommended Waste Load Allocations (WLAs) for BOD_5 and ammonia from May - October given in the preventative TMDL for the Puyallup WWTP are:

BOD_5: 2,085 lbs/day maximum weekly average
Ammonia: 880 lbs/day maximum daily load

The preventative TMDL for the Puyallup River allows the option of reducing the WLA for ammonia with a corresponding increase in the WLA for BOD_5 since both parameters together influence dissolved oxygen. The preventative TMDL states that a WLA for BOD_5 can be increased by 13.4 lbs/day for each 1 lb/day decrease in a WLA for ammonia.

In the above comment and in comment 1, the City requested the following BOD_5 loading limits:

Average monthly = 2,179 lbs/day
Average weekly = 3,268 lbs/day

The requested increase in the BOD_5 average weekly WLA is equal to 1,183 lbs/day, i.e.:

$$3{,}268 - 2{,}085 = 1{,}183 \text{ lbs/day}$$

Based on the conditions of the preventative TMDL, the ammonia maximum daily WLA correspondingly decreases to 792 lbs/day, i.e.:

$$880 - (1{,}183 \div 13.4) = 792 \text{ lbs/day}$$

With the increase in the average weekly BOD_5 loading limit, the average monthly BOD_5 loading limit increases to 2,179 lbs/day, based on an average weekly:average monthly factor of 1.5 (i.e. $3{,}268 \div 1.5 = 2{,}179$ lbs/day.) The revised average monthly BOD_5 loading limit corresponds to 85% removal of the BOD_5 loading design criteria for the treatment plant (of 14,525 lbs/day), i.e. $14{,}525 \times 0.15 = 2{,}179$ lbs/day.

The preventative TMDL is seasonal (May - October). In the draft permit, the BOD_5 TMDL WLA was inadvertently applied to the BOD_5 loading limits for the entire year. The final permit has been revised to apply the BOD_5 TMDL WLA only for the critical

season (May - October). For the period from November - April, the BOD_5 loading limits in the final permit are equal to:

Average monthly = 2,179 lbs/day
Average weekly = 3,268 lbs/day

These loading limits are based on the facility design criteria and assumptions. They are the same as the revised BOD_5 mass-based limits for the critical season, with the ammonia exchange as requested by the permittee. The influent BOD_5 loading criteria for the treatment plant is 14,525 lbs/day. Assuming 85% removal, results in an average monthly mass-based effluent limit for BOD_5 of 2,179 lbs/day (i.e. 14,525 x 0.15 = 2,179 lbs/day). Assuming an average weekly:average monthly ratio of 1.5, results in an average weekly mass-based effluent limit of 3,268 lbs/day. Note that these limits are more stringent than mass-based limits calculated from the effluent concentration limits and the facility design flow (of 13.98 mgd).

Additional revisions to the ammonia limits are addressed under Comment/Response 4.

Permit Modification: Table 1 of the final permit has been modified to allow the requested BOD_5/ammonia exchange from May - October. From November - April, the BOD_5 loading limits are revised to reflect design criteria of the facility.

City Comment 4 Ammonia Limitations

The average monthly ammonia limits need to be recalculated based on more representative data. There are two main issues:

- *The ammonia limit calculations should be based on pH and temperature data pairs not individual pH and temperature values in the river. Although pH and temperature are somewhat independent variables, it is unrealistic that the 95th percentile value for pH would occur on the same day as the 95th percentile value for temperature. Therefore, the pH and temperature data need to be evaluated together. Based on several years of river temperature and pH data, the City believes the winter data pair to be used should be 10.1° C and 7.6 su pH. The appropriate summer data pair should be 16.4° C and 7.6 su pH.*

- *Despite the narrative on page C-12 and the pH data on page F-5 of the Fact Sheet, most of the river pH data used is only from a 2-week period in1990. This is not representative of current conditions and appears arbitrary to use two weeks of 1990 data and determine such data is representative of current conditions.*

The average monthly ammonia limits need to be revised as shown in Comment Table 1 based on representative pH and temperature values. Additionally, the November to April maximum lbs/day ammonia limit needs to be recalculated based on winter maximum day flow of 19.5 mgd as also shown in Comment Table 1.

Response

In this comment, the City is making three requests regarding ammonia limits.

1. Base the ammonia criteria on pH and temperature data pairs.
2. Use pH and temperature data more representative of current conditions - 1990 pH data is not representative of current conditions.
3. Base the maximum day loading limits for ammonia on the winter maximum day flow of 19.5 mgd.

Each of these requests is addressed below.

Background of Calculating the Ammonia Criteria

Low concentrations of ammonia can be toxic to freshwater fish, particularly salmonids. Un-ionized ammonia (NH_3) is the principal toxic form of ammonia. The ammonium ion (NH_4^+) is much less toxic. The relative percentages of these two forms of ammonia in the water vary as the temperature and pH vary. As the pH and temperature increase, the percentage of ammonia that is in the un-ionized form increases, causing increased toxicity. Because the toxicity of ammonia is dependent upon pH and temperature, the criteria are also pH and temperature dependent. The EPA calculates the ammonia criteria based on the pH and temperature of the receiving water downstream of the outfall.

Request 1 - Base the Ammonia Criteria on pH and Temperature Data Pairs

The EPA is unable to base the ammonia criteria on data pairs because of an insufficient amount of data for the receiving water. The most recent pH and temperature data available for the downstream station for the Puyallup River include 26 months of samples. With the exception of a two week period in 1990, the sampling frequency was monthly.

The wasteload allocations and permit limits for ammonia were calculated based on a steady-state model. When using steady-state models, EPA calculates the wasteload allocation and permit limits for a pollutant at critical conditions. Critical conditions are a combination of worst-case assumptions of receiving water flow, effluent pollutant concentrations, and environmental effects. In developing ammonia limits, the worst-case assumptions consider the highest pH and highest temperature of the receiving water. Developing the criteria based on data pairs for pH and temperature would require dynamic modeling. Dynamic models account for the daily variations of and relationships between flow, effluent and environmental conditions. There are insufficient data to adequately ascertain the daily variations of and relationships between the pH and temperature of the receiving water. Therefore, data pairs and dynamic model were not used to calculate the ammonia criteria, instead the criteria were calculated based on individual receiving water pH and temperature values.

Request 2 - Base the ammonia criteria on current pH and temperature conditions of the river - 1990 pH data is not current

The EPA believes that the 1990 data is valid data to include in the ammonia criteria calculation. As discussed above, the recent data available for the station is limited to 26 months of sampling. At the response to an earlier request from the City, seasonal ammonia limits were developed thus narrowing the data available for calculating each seasonal ammonia criteria. The 2-week sampling period in 1990 to which the City refers in the comment, was sampling conducted in September and October 1990, as part of the Puyallup River preventative TMDL study. The City gives no reason why this data is no longer valid.

In response to the City's concern that "most of the river pH data used is only from a 2-week period in 1990," the 1990 data was revised to restrict the use of the 1990 data to include one pH and one temperature value for each of the two sampling months. The purpose of this was to weigh the 1990 data evenly with the rest of the available data for the receiving water, which was collected at a monthly frequency. To be representative of the worst-case conditions, the highest temperature and highest pH measured values were used for each month.

To address the City's request that the monitoring data be representative of the current conditions, additional monthly data have been added to the data set. These data were collected by Ecology for the monitoring station since preparation of the draft permit.

The ammonia limits in the final permit were recalculated based on this revised data set for receiving water pH and temperature. The resulting data set includes 26 monthly pH and temperatures values. The set is provided in the attachment (pages A-1 and A-2). Ammonia criteria were calculated based on the 95th percentile of the individual pH and temperature data. The revised 95th percentile pH and temperature data for each season and the revised acute and chronic criteria are listed in the table below.

Ammonia Criteria				
Time Period	**Receiving Water Conditions**		**Acute Criteria (mg/L)**	**Chronic Criteria (mg/L)**
	pH	**Temperature (°C)**		
November to April	7.7	8.3	9.8	1.9
May to October	7.9	16.4	6.7	1.2

Ammonia limits were recalculated for the final permit based on the revised criteria. The revised limits have been incorporated into Table 1of the final permit. A summary of the effluent limit calculations is provided in the attachment (page A-3).

Request 3 - Base the maximum day loading limits for ammonia on the winter maximum day flow of 19.5 mgd.

As requested by the permittee, the maximum day mass based limit for November to April is revised to be based on the winter maximum day design flow of 19.5 mgd.

Permit Modification: Ammonia limits in Table 1 of the final permit has been modified.

City Comment 5a Metals Limitations - Hardness

The metals limits need to be recalculated with more representative hardness and effluent data. We recognize and agree that the Ecology STORET receiving water metals data used in the draft 2002 NPDES permit calculations is appropriate. It is accurate, based on samples collected and analyzed with up-to-date techniques, and is far more accurate than the metals data used in the June 2000 draft permit.

The assumed water hardness of 18 mg/l does not reflect actual water hardness in the mixing zone and represents a significant departure from what was agreed to in Puyallup's Wastewater Facility Plan as approved by the Department of Ecology.

In mid-1997, EPA, the Puyallup Tribe, and the Department of Ecology (Ecology) signed a memorandum of agreement regarding implementation of the NPDES permit program on the Puyallup Reservation. The memorandum of understanding stipulated that Ecology would provide technical review and permit preparation services for NPDES permits on the Reservation and that EPA would issue the permits.

Page 8-31 of Puyallup's Facility Plan for treatment plant improvements states that the combined hardness of the effluent/river blend is used for the calculation of aquatic life water quality standards. In late 1997, Ecology approved Puyallup's Wastewater Facility Plan for significant and costly improvements to its wastewater treatment plant. In accordance with the memorandum of understanding, and before the new Facility Plan was approved or constructed, the Tribe and EPA were advised that these expensive improvements were premised upon achieving limits derived from hardness of the effluent/river blend. The Tribe and EPA did not object. In fact, on numerous occasions, EPA acknowledged that hardness at the edge of the mixing zone was appropriate to calculate water quality criteria. See Fact Sheet and Draft Permit No. WA-003716-8 dated June 21, 2000 (p. C.13) Fact Sheet and Draft Permit dated April 4, 2002 (p. C.13). Use of combined hardness in EPA permitting decisions is common in Region X. That is because hardness affects the toxicity of the pollutants of concern. As specified by EPA in previous Fact Sheets: "The Tribe's aquatic life criteria for these metals are expressed as dissolved metals, calculated as a function of hardness . . . As the hardness of the receiving water increases, the toxicity decreases." See 6-21-01 Fact Sheet at p. C-12. The use of combined hardness also appears to be dictated by the Puyallup Tribe's Water Quality Standards which focuses upon compliance with criteria "outside the boundary of the mixing zone." See § 9(5).

It was not until June 2002, after five years of agency acceptance of these hardness calculations that the Puyallup Tribe and EPA changed position on this issue. We are unaware of any change in Tribal or EPA requirements which would justify this change. We understand that EPA's change in use of combined hardness may have been included in the Draft Permit by reason of the Tribe's draft 401 certification. The City is requesting that the Tribe reevaluate this condition for the above reasons and in light of prior legal obligations between the City and the Tribe. The City requests that EPA not issue a final Permit until this matter is resolved with the Tribe.

Using only the hardness of the Puyallup river to calculate permit limits constitutes a significant change because a number of significant calculations and design parameters are based on the combined hardness of the river and effluent. The Tribe's new requirement, however, reverses previously agreed upon methods for water quality based calculations and arbitrarily lowers discharge limits.

Response

The metals criteria for the final permit have been revised to be based on the hardness at the edge of the acute and chronic mixing zones i.e. the "mixing zone hardness" using the upstream receiving water and effluent hardness data. The mixing zone hardness values used to calculate the final permit limits are:

Acute: 43.5 mg/L as $CaCO_3$
Chronic: 25.5 mg/L as $CaCO_3$

See attachment page A-5 for the hardness calculations.

In the draft permit, metals criteria were derived from the downstream receiving water hardness data alone. The metals criteria in the final permit have been recalculated using a mixing zone hardness based on upstream receiving water and effluent hardness because:

- EPA has determined that for this particular discharge, the permit limits derived from the mixing zone hardness will be protective of the receiving water quality.
- The Puyallup Tribe has removed a previous stipulation (that was in their pre certification of the draft permit) that required that the metals criteria be based on the receiving water hardness alone.
- The upstream hardness data are more recent than the downstream hardness data. Monitoring for hardness downstream of the outfall has been added to the final permit. This information may be used to evaluate future permit limits.

In deriving permit limits the EPA must ensure that the effluent limits are protective of the receiving water quality. In some cases, the use of a mixing zone hardness in deriving

permit limits is not adequately protective. An effluent with a metal concentration that just meets the metals criteria (based on the mixing zone hardness) at the edge of the mixing zone, could exceed the metals criteria (based on the downstream hardness) outside of the mixing zone. Poor mixing and high effluent hardness relative to the receiving water can exacerbate adverse impacts to the aquatic life.

EPA has determined that for the Puyallup WWTP, the use of the mixing zone hardness will be protective of the receiving water for two reasons:

1. Mixing provided by the treatment plant's outfall.
   As part of the 1999 upgrade of the treatment plant, the City's existing outfall was replaced. Dilution modeling by the City indicated that the outfall provides rapid and complete mixing and achieves a greater actual dilution at the acute zone boundary than that allowed by the Puyallup Tribe's water quality standard (of 2.5 percent). Although the acute mixing zone of 2.5 percent is retained in deriving permit limits, complete and rapid mixing supports the use of mixing zone hardness to derive the metal limits.

2. Effluent limits derived from the use of the mixing zone hardness will not likely adversely affect the threatened and endangered species.
   Both USFWS and NMFS concurred in informal ESA consultation that issuance of the permit is not likely to adversely affect the threatened and endangered species. Of particular concern in deriving the permits limits was the possible effects of copper concentrations on salmon. In subsequent discussion following the agencies concurrence, NMFS reaffirmed that the proposed copper limits would not likely adversely affect the salmon.

Permit Modification: Metal limits for copper, zinc and lead have been recalculated based on the revised metals criteria using the mixing zone combined hardness. See Table 1 of the final permit. The final permit requires that the City monitor the receiving water hardness downstream of the outfall, see Table 2 of the final permit.

City Comment 5b Metals Limitations - Hardness

The river water hardness data used is almost all 20 to 40 years old and does not reflect current conditions. Of 205 data points, only three were collected within the last 20 years.

The City believes that background river hardness should be 21.15 mg/l.

Response

The metals criteria in the final permit have been recalculated using upstream river and effluent hardness data. The upstream hardness data are more recent than the downstream hardness data used in the draft permit. There are 26 hardness data points, 21 of which were collected in the last 20 years. The data are provided in the attachment (page A-4).

The 5th percentile upstream river hardness from this data, of 21.25 mg/L as $CaCO_3$, was used to represent the worst case upstream river hardness.

Permit Modification: Metal limits for copper, zinc and lead have been modified based on the revised metals criteria derived from the more recent upstream hardness data. See Table 1 of the final permit.

City Comment 5c Metals Limitations and Reasonable Potential - Effluent Data

The effluent metals data used are not suitable or accurate enough for calculating metals permit limits at the low levels proposed. The City is in the process of providing accurate effluent metals data that can be used to properly evaluate effluent limits. Previous effluent metals data, used in calculating the draft metals limits, were not based on sampling and analysis methods with the rigor required for trace metals sampling.

Based on our clean sampling efforts to date, we concur that copper and zinc require effluent limits. However, the clean sampling of lead and mercury concentrations in the effluent data show there is no reasonable potential for violations. We believe that lead and mercury do not exhibit a "reasonable potential" and should be removed from the permit.

Response

The EPA disagrees, the EPA believes that the previous metals data used to assess reasonable potential and to calculate the metals effluent limits are valid. To incorporate the City's current sampling efforts, additional validated metals data collected since preparation of the draft permit, were added to the metals effluent data set used to assess reasonable potential and to calculate the metals effluent limits for the final permit. Based on the additional data, all four metals (lead, mercury, zinc, and copper) showed reasonable potential to exceed water quality standards. Results of the calculations are included in the attachment (pages A-6 and A-7) along with the revised effluent limit calculations.

EPA believes the previous metals data to be valid and therefore did not eliminate these data from the analyses for the following reasons:

- All detected metal results were within the accuracy of the EPA-approved analytical methods.
- The City has not identified a basis to exclude the metals data.
- All effluent data used in the reasonable potential and permit limit calculations were provided in the Fact Sheet. The City has not identified any specific effluent results that it considers suspect.

- The EPA excluded any metals data from the data set that it considered to be an outlier or that did not meet laboratory quality control. (Any data excluded from the analysis were identified in the Fact Sheet.)

- The City was aware of the available clean sampling methods, but chose to use normal methods for their NPDES metals permit sampling. If the City considered normal sampling methods to be unsuitable, they had the option to use the clean sampling methods, as opposed to using normal sampling and later contending that the sampling methods they used were unsuitable. In 1995, the City conducted a clean sampling effluent evaluation program for copper and mercury. The clean sampling program was part of a settlement agreement reached between the City and Ecology, following the City's appeal of conditions of the 1994 NPDES permit. One of the City's conclusions of the clean sampling evaluation was that the use of clean sampling procedures for the metals analysis was "beneficial and warranted." Following the 1995 clean sampling evaluation, the City returned to normal sampling procedures for metals analysis conducted as part of the City's NPDES permit. So although the City acknowledged the benefits of the clean sampling methods in 1995, the City chose to use normal sampling methods to collect subsequent metal data.

- When preparing the draft permit, the City's 2002/03 clean sampling program was still under development. The City was informed (in April 2002) by the EPA that their proposed clean sampling program would not impact the development of the limits for this permit. The City was also informed that their current clean sampling effort would not guarantee that the EPA would disregard the previous data.

The EPA needs a sufficient amount of data to assess reasonable potential and calculate the metals effluent limits. The EPA relies on the most recent metals data available at that time that the reasonable analysis is conducted and the permit limits are developed. In preparing the draft permit limits, the EPA used all metals effluent data collected as of1996 (with the exception of mercury which is discussed below). The metals data consisted primarily of quarterly sampling collected as part of the City's pretreatment program requirements.

The City also provided to the EPA the sampling results from the 2002/03 sampling program as they became available. The City's transmittal of the sampling results stated that the results were preliminary until reviewed to determine analytical validity. At the time that the draft permit limits were developed, none of the clean samples had been validated by the City. Therefore, none of the results were used in the draft permit metals analysis.

In preparing the final permit, the data used to evaluate reasonable potential and calculate permit limits was revised to include data from the City's 2002/03 sampling program. City-validated recent data results submitted by the City since preparation of the draft permit, were included in the reasonable potential analysis and effluent limit calculations for the final permit. The City-validated metals results that were available at the time that the proposed final permit limits were prepared included sampling results from July and August 2002. These results have been added to the data set. Based on the revised data set, all four metals showed reasonable potential to exceed water quality standards. Results of the reasonable potential calculations are included in the attachment (pages A-6 and A-7) along with the revised effluent limit calculations.

Regarding mercury, the 1994 permit included mercury limits of 0.014 ug/L (average monthly) and 0.019 ug/L (maximum daily). The compliance level in the 1994 permit was 0.2 ug/L. During the last permit, the facility has been in compliance with this compliance level. Since 1996, the DMRs reported four detected mercury concentrations (all below 0.2 ug/L). In all other DMRs, mercury values were reported as either "less than 0.2 ug/L" or "0 ug/L."

Because the water quality-based permit limits were below the compliance level, compliance with the water quality based permit limits could not be evaluated directly from the DMR data only. In order to have a more extensive set of detected concentrations to evaluate the reasonable potential for mercury, the EPA included the results of the 1995 clean sampling evaluation. The data set analyzed for reasonable potential for the draft permit included the four reported concentrations using normal sampling techniques and the 1995 clean sampling results. In evaluating reasonable potential and calculating permit limits for the final permit, sampling results from July and August 2002 were added to the data set. The results of the reasonable potential evaluation indicated that mercury would have a reasonable potential to exceed the acute water quality criterion.

Permit Modification: Metal limits for copper, zinc, mercury and lead have been recalculated based on the inclusion of recent additional metals effluent data. See Table 1 of the final permit.

City Comment 5d Metals Limitations - Compliance Schedule

The draft permit includes a compliance schedule for copper and zinc. Table 1 of the draft permit should make it clear that the copper and zinc limits are not enforceable immediately upon permit issuance. The specified limits should not become enforceable until the end of the compliance period.

Response

The footnote in Table 1 of the final permit has been clarified to state that the effluent limits for copper will become effective in accordance with the date specified on the

compliance schedule.

The Puyallup treatment facility should not have difficulty meeting the revised zinc limits. A compliance schedule to meet the zinc limits is not included in the final 401 certification and has been removed from the final permit.

City **Comment 6 Inaccurate Limits. pH (I.A.1., Table 1)**

The alkalinity (150 mg/L) used in the pH modeling to derive the 6.2 lower pH permit limit is not representative of the effluent from an activated sludge wastewater treatment plant. The actual plant effluent alkalinity currently varies between 75 mg/L and 112 mg/L based on a month of continuous sampling.

Response

The lower pH limit was reevaluated based on alkalinity data provided by the City (see attachment page A-8). An alkalinity value of 108 mg/L was used in the evaluation, which is equal to the 95th percentile of the alkalinity data. The Puyallup River data and effluent temperature data were the same as listed in Table C-9 of the Fact Sheet. The results of the evaluation indicate that an effluent pH of 6.1 is required to achieve a pH of 6.5 at the edge of the mixing zone, thereby complying with the Tribe's water quality standard for pH.

Permit Modification: Paragraph I.A.3 of the final permit has been modified to require an effluent pH range of 6.1 to 9.0.

City **Comment 7 Copper and Zinc Compliance Schedule**

The Puyallup Tribe grants the City of Puyallup a compliance schedule of three years from the effective date of the permit to meet the draft copper and zinc limits. The City concurs that a compliance schedule is appropriate; however, the City requests that this requirement is coordinated with the draft permit requirement to develop an Industrial Pretreatment Program.

Also, the City requests that the permit clarify that the copper and zinc limits specified in the permit only become effective following completion of all steps of the compliance schedule.

Industrial Pretreatment Programs are costly and complex. There are a number of legal, administrative, staffing and funding aspects to developing an Industrial Pretreatment Program. The focus of the program is, however, based on three main precepts: 1) preventing the introduction of pollutants into a treatment plant that are incompatible or interfere with the treatment process or pass through adversely affecting water quality; 2) improving opportunities to recycle and reclaim wastewaters and sludges; and, 3) to protect collection system and treatment plant workers.

Upon program completion, the City will have the procedures, equipment, staffing and legal authority to regulate industrial discharges, require self-monitoring reports of discharges and conduct compliance inspections. In addition to copper, lead, mercury, and zinc, other pollutants of "concern" will also be evaluated and a sewer use ordinance will be developed minimally specifying necessary numeric limits for metals, fats, oil, and grease.

In the draft permit, EPA is proposing a one-year completion date for the entire Industrial Pretreatment Program and all components thereof. The City is, however, requesting a two-year completion date in recognition of the following considerations.

- *Depending upon the complexity and scope, the development of an Industrial Pretreatment Program can run as high as $500,000.*

- *The draft permit was issued nearly simultaneous with the City's adoption of its 2003 annual budget. Adequate funds are not provided in 2003 to fully complete an Industrial Pretreatment Program and other required tasks in the draft permit.*

- *Upon the effective date of the permit, the City will initiate a process whereby a list of consultants is pre-qualified to bid on program development followed by a review of proposals from the qualified consultants. Following the selection of a proposal, the City Council will have to approve the proposal because of its significant cost. This process will take 90 days.*

- *Because of differences in dry and wet weather flows, related removal efficiency and potential differences in seasonal manufacturing the proposed EPA schedule does not allow adequate time to accurately and thoroughly develop allowable headworks loadings based on sampling throughout all four seasons.*

- *The type of treatment process now used differs from the process previously used. Consequently, historical data is not representative of current operations. Additionally, before the introduction of trace metals sampling at water quality levels, sampling protocols were not as rigorous as current practice demands.*

- *Any necessary local limits that the City develops will have an economic impact on existing commercial and industrial entities as well as on potential commercial/industrial development within the City. Therefore, the limits must be predicated on accurate sampling data collected using "clean sampling" techniques.*

To coordinate the requirements for copper and zinc compliance with sampling and other evaluations that will be performed in the course of establishing an Industrial Pretreatment Program, and consistent with a recommendation made by the City to the

Tribe in connection with the Tribe's section 401 certification, the City proposes the following schedule:

- *Within 18 months of permit issuance, the City will complete the evaluation required in I.A.6.a. This allows the City to concurrently work on the development of necessary local limits, as required under Industrial Pretreatment (II.C.1.) while simultaneously focusing specifically on copper and zinc.*

- *Within 24 months of permit issuance, the City will submit the investigation required under I.A.6.b. A potential part of the City's source control strategy for mitigating discharges of copper and zinc will involve discharge limitations on commercial and industrial sources. At 24 months, the City will have a completed Industrial Pretreatment Program and have the legal authority to regulate discharges to its system.*

- *At 30 months, the City will fulfill the requirements of section I.A.6.c. The selected measures may include a combination of regulation of industrial contributions as well as corrosion control within the City's potable water supply. The timing of this requirement will allow the City, if necessary, to request funding for City-system mitigation projects at a period in time following expenditures for Industrial Pretreatment Program development.*

- *At 48 months, as required under I.A.6.d. the City will fully implement all source control measures necessary to meet the copper and zinc permit limits. Forty-eight (48) months is required for the following reason - both the City and industrial contributors will need time to design removal systems, select equipment, order and install equipment and bring systems to operational equilibrium.*

- *As stipulated in the draft, an annual report would be submitted outlining the progress made in the previous year as well as milestones targeted for the upcoming year.*

Finally, there is a discrepancy between the draft permit and Appendix G of the Fact Sheet for the submittal date of the annual report regarding compliance with the copper and zinc effluent limits. The draft permit lists January 15, while Appendix G lists January 1.

Response

Zinc limits have been revised in the final permit, the Puyallup treatment facility should not have difficulty meeting the revised zinc limits. Therefore, a compliance schedule for zinc in not included in the final 401 certification or final permit.

Regarding copper, there are three issues raised in this comment:

1. Compliance schedule for copper
   The compliance schedule is a condition of the Tribe's certification of the permit. The Tribe has revised the copper compliance schedule in their final 401 certification. The revisions have been incorporated in Section I.6 of the final permit.

2. Effective dates for copper
   See Comment/response 5d.

3. Submittal date for compliance schedule annual report
   The submittal date of the annual report regarding compliance with the copper effluent limits is January 15.

City Comment 8a Chronic Whole Effluent Toxicity Testing - Chronic Toxic Units

Section I.C.1.c. states that results must be reported in TU_c (chronic toxic units), where TU_c = 100/NOEC. Normally, to be consistent with the conventional usage of TU, TU_c = 100/EC50 (TU = 100/lethal threshold for 50% kill). Please document the usage of the formula requiring the 100/NOEC. We believe the formula shown in section I.D.1.c. correctly represents correct application of this formula.

Response

In the WET testing, two different types of toxic units are used depending on whether acute or chronic aquatic toxicity is measured. They are defined as:

Acute Toxic Units = TU_a = 100/LC50
Chronic Toxic Units = TU_c = 100/NOEC

Refer to page 6 of the *Technical Support Document for Water Quality-based Toxics Control* EPA/505/2-90-001 (March 1991).

Permit Modification: None

City Comment 8b Chronic Whole Effluent Toxicity Testing - Dilutions

Section I.C.2.a. specifies that one dilution at 8.7 percent, two dilutions above 8.7 percent and two dilutions below 8.7 percent are to be used. Under the proposed method, the geometric progression of concentrations would be 0, 2.175, 4.35, 8.7, 17.4 and 34.8 percent. This does not provide a large enough range to adequately test the effluent. A geometric series of some kind is preferable because it allows for the use of powerful parametric testing rather than using non-parametric testing. We believe it preferable to "fit" the 8.7 percent in the usual progression: 0%, 8.7%, 12.5%, 25%, 50% and 100%.

Response
The intent of requiring two dilutions above 8.7 percent and two dilutions below 8.7 percent, was to bracket the dilution of interest (i.e. 8.7 percent). See guidance on the selection of the dilution series as provided in *Methods Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFS Part 136)* (EPA 821-B-004, July 2000).

Permit Modification: At the request of the permittee, Section I.C.2.a of the permit is revised to require that the dilution series include one dilution equal to 8.7 percent effluent, without specifying the distribution above or below the 8.7 percent.

City **Comment 8c Chronic Whole Effluent Toxicity Testing - Reference Toxicant Tests**
Section I.C.2.c.ii. is problematic since it has been the case that occasionally the reference toxicant tests can fail and the effluent test pass. The City believes it is preferable to have an expert, such as Randy Marshall of the Department of Ecology, make a determination rather than automatically invoking a re-sample and re-test provision. We request that language be added stating that if the toxicant test fails and the effluent test passes, the Technical Services Unit of the Washington State Department of Ecology Water Quality Program shall act as arbiter in determining whether re-sampling and re-testing is required as specified under I.C.2.c.ii..

Response
Permit Modification: Section I.C.2.c.ii. of the final permit is revised to eliminate the requirement for resampling and retesting if the reference toxicant tests do not meet test acceptability criteria.

City **Comment 8d Chronic Whole Effluent Toxicity Testing - Dilution Water**
Section I.C.2.c.iii. is too restrictive. The EPA manual allows for dilution water other than laboratory derived dilution water as long as it passes all physical and chemical requirements. This allows the bioassay laboratory to have some flexibility in selecting what works best for them and which water will provide the best control response, without which a rigorous evaluation of the effluent cannot be made.

Response
Section I.C.2.c.iii. of the final permit is revised to allow the use of synthetic laboratory water or uncontaminated receiving water for the control and dilution water.

City **Comment 8e Chronic Whole Effluent Toxicity Testing - Second Control**
Additionally, a second control as required in I.C.2.c.iii., using the water from the fish supplier, has no realistic bearing on any results and should be eliminated.

Response
This is a recommendation of the test method. Refer to *Short-Term Methods for*

Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October, 2002. Note that a new edition of this document has been published. Additional guidance on using dual controls is provided in *Methods Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFS Part 136)* (EPA 821-B-004, July 2000).

Permit Modification: No modification of the permit regarding a requirement for a second control. Reference to the new edition of the test method has been incorporated into Section I.C. of the final permit.

City Comment 8f Chronic Whole Effluent Toxicity Testing - TRE Workplan

Section I.C.4. requires the preparation of an Initial Investigation TRE Workplan. The workplan is required before there is an acknowledged problem or any test failures. In the City's existing permit, the development of a TRE is not required until there are multiple WET failures. We believe this is an extraneous and unnecessary cost to incur without first exhibiting a problem. The City believes there are procedural flaws with the test methodology and the requirement to develop a Toxicity Reduction Workplan, in the absence of demonstrated toxicity, is excessive and costly.

Response

The requirement to prepare an Initial Investigation TRE Workplan was not intended to be a burden to the permittee, but instead prompt the permittee to think ahead and outline the basic procedures the permittee will follow if toxicity is detected.

Permit Modification: At the request of the permittee, the requirement to prepare the initial TRE Workplan is deleted from the final permit (section I.C.4 *Preparation of Initial Investigation*). Reference to the TRE Workplan is deleted from section I.C.5 *Toxicity Reduction Evaluation (TRE) and Toxicity Identification Evaluation (TIE)*. Note that section I.C.5 still requires that the permittee initiate a TRE within 15 days of receipt of the sample results indicating chronic toxicity greater than 11.5 TU_c.

City Comment 8g Chronic Whole Effluent Toxicity Testing - Accelerated Testing

Section I.C.5. requires accelerated testing if certain requirements are triggered. Accelerated testing without provisions for rejecting or challenging anomalous WET results will result in needless expense for the City. Language regarding anomalous results similar to that in typical State permits should be inserted. For example, if the Permittee believes that a test indicating noncompliance will be identified by EPA as an anomalous test result, the Permittee may notify EPA that the compliance test result might be anomalous and that the Permittee intends to take only one additional sample for toxicity testing and wait for notification from EPA before completing the additional monitoring required in this subsection.

Such a statement would clarify the provisions of sections I.C.5.b. and I.D.5.b. that "...in

cases where additional test quality assurance/ quality control is necessary, only one additional test is necessary ."

Response

Permit Modification: Section I.C.4 in the final permit is reworded to clarify that only one accelerated test is necessary if the permittee adequately demonstrates through an evaluation of facility operations that the cause of the toxicity exceedence is known and corrective actions have been implemented. Reference to quality assurance/quality control is removed from section I.C.4 since section I.C.2 *Quality Assurance* addresses quality assurance criteria and statistical analyses used. Additional guidance on reviewing the toxicity testing results is provided in *Methods Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFS Part 136)* (EPA 821-B-004, July 2000).

City Comment 9a Acute Whole Effluent Toxicity Testing - Typographical Error

Section I.D.1.d. contains a typographical error: TU_c should be TU_a

Response

Section I.D.1.d. of the final permit is modified to refer to TU_a, instead of TU_c.

City Comment 9b Acute Whole Effluent Toxicity Testing - Dilutions

Section I.D.2.a. specifies that one dilution at 56 percent, two dilutions above 56 percent and two dilutions below 56 percent are to be used. The proposed method does not permit testing a wide range of concentrations with which to establish an LC50 and still maintain a geometric progression of concentrations. A geometric progression will allow the use of many powerful parametric tests rather than using non-parametric testing.

If the intent is to establish an LC50, the range of concentrations from 0 percent to 100 percent will provide the best estimate and provide for measurement of the response in 100 percent effluent.

Response

The intent of requiring two dilutions above 56 percent and two dilutions below 56 percent, was to bracket the dilution of interest (i.e. 56 percent). Guidance of the selection of the dilution series is provided in *Methods Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFS Part 136)* (EPA 821-B-004, July 2000).

Permit Modification: At the request of the permittee, Section I.D.2.a of the permit is revised to require that the dilution series include one dilution equal to 56 percent effluent, without specifying the distribution above or below the 56 percent.

City Comment 9c Acute Whole Effluent Toxicity Testing - Reference Toxicant Tests

Section I.D.2.c.ii. is problematic since it has been the case that occasionally the reference toxicant tests can fail and the effluent test pass. The City believes it is preferable to have

an expert, such as Randy Marshall of the Department of Ecology, make a determination rather than automatically invoking a re-sample and re-test provision. We request that language be added stating that if the toxicant test fails and the effluent test passes, the Technical Services Unit of the Washington State Department of Ecology Water Quality Program shall act as arbiter in determining whether re-sampling and re-testing is required as specified under I.D.2.c.ii..

Response
Section I.D.2.c.ii. of the final permit is revised to eliminate the requirement for resampling and retesting if the reference toxicant tests do not meet test acceptability criteria.

City Comment 9d Acute Whole Effluent Toxicity Testing - Dilution Water
Section I.D.2.c.iii. is too restrictive. The EPA manual allows for dilution water other than laboratory derived dilution water as long as it passes all physical and chemical requirements. This allows the bioassay laboratory to have some flexibility in selecting what works best for them and which water will provide the best control response, without which a rigorous evaluation of the effluent cannot be made.

Response
Section I.D.2.c.iii. of the final permit is revised to allow the use of synthetic laboratory water or uncontaminated receiving water for the control and dilution water.

City Comment 9e Acute Whole Effluent Toxicity Testing - Second Control
Additionally, a second control as required in I.D.2.c.iii., using the water from the fish supplier, has no realistic bearing on any results and should be eliminated.

Response
This is a recommendation of the test method. Refer to *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*, Fifth Edition, EPA-821-R-02-012, October 2002. Note that a new edition of this document has been published. Additional guidance on using dual controls is provided in *Methods Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFS Part 136)* (EPA 821-B-004, July 2000).

Permit Modification: No modification of the permit regarding a requirement for a second control. Reference to the new edition of the test method has been incorporated into Section I.D. of the final permit.

City Comment 9f Acute Whole Effluent Toxicity Testing - TRE Workplan
Section I.D.4. requires the preparation of an Initial Investigation TRE Workplan. The workplan is required before there is an acknowledged problem or any test failures. In Puyallup's existing permit, the development of a TRE is not required until there are

multiple WET failures. We believe that as stated in the draft permit this is an extraneous and unnecessary cost to incur without first exhibiting a problem.

Response

The requirement to prepare an Initial Investigation TRE Workplan was not intended to be a burden to the permittee, but instead prompt the permittee to think ahead and outline the basic procedures the permittee will follow if toxicity is detected.

Permit Modification: At the request of the permittee, the requirement to prepare the initial TRE Workplan is deleted from the final permit (section I.D.4 *Preparation of Initial Investigation TRE Workplan*). Reference to the TRE Workplan is deleted from section I.D.5 *Toxicity Reduction Evaluation (TRE) and Toxicity Identification Evaluation (TIE).* Note that section I.D.5 still requires that the permittee initiate a TRE within 15 days of receipt of the sample results indicating acute toxicity greater than 1.8 TU_a.

City **Comment 9g Acute Whole Effluent Toxicity Testing - Accelerated Testing**

Section I.D.5. requires accelerated testing if certain requirements are triggered. Accelerated testing without provisions for rejecting or challenging anomalous WET results will result in needless expense for the City. Language regarding anomalous results similar to that in typical State permits should be inserted. For example, if the Permittee believes that a test indicating noncompliance will be identified by EPA as an anomalous test result, the Permittee may notify EPA that the compliance test result might be anomalous and that the Permittee intends to take only one additional sample for toxicity testing and wait for notification from EPA before completing the additional monitoring required in this subsection.

Such a statement would clarify the provisions of section I.D.5.b. where it states "...in cases where additional test quality assurance/ quality control is necessary, only one additional test is necessary."

Response

Section I.D.4 of the final permit is reworded to clarify that only one accelerated test is necessary if the permittee adequately demonstrates through an evaluation of facility operations that the cause of the toxicity exceedence is known and corrective actions have been implemented. Reference to quality assurance/quality control is removed from section I.D.4 since section I.D.2 *Quality Assurance* addresses quality assurance criteria and statistical analyses used. Additional guidance on reviewing the toxicity testing results is provided in *Methods Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFS Part 136)* (EPA 821-B-004, July 2000).

City **Comment 10 Receiving Water Monitoring Requirements**

As a condition allowing a mixing zone, the Puyallup Tribe's pre-certification draft section 401 certifications requires the City to annually monitor during critical flow

conditions at the downstream edge of the mixing zone to demonstrate compliance with the Tribe's Water Quality Standards. The City believes there are variables that make the application of the data questionable and are asking that the Tribe reevaluate this condition prior to its final 401 certification. Accordingly, please do not issue a final permit until this matter is resolved with the Tribe.

Response

The Tribe has included receiving water monitoring requirements in their final 401 certification. The condition requires annual monitoring at the edge of the mixing zone, and includes upstream sampling as well as sampling within the mixing zone boundary. Per the 401 certification, annual downstream monitoring is included in the final permit. To insure that adequate receiving water monitoring data is collected during the permit cycle, quarterly upstream monitoring is included. See Section I.E and Table 2 of the final permit.

City **Comment 11 Infiltration and Inflow Evaluation**

The City previously conducted an evaluation and as currently proposed the draft provision does not provide sufficient detail on which cost or compliance may be evaluated. The City believes this is an extraneous and costly requirement that should be eliminated from the draft permit.

At considerable cost about ten years ago the City of Puyallup conducted an Infiltration and Inflow study. This project prioritized sewerage basins and identified those with major I/I problems. This evaluation continues to serve as a guidance document for prioritization of capital improvements of the sewerage system.

Finally, the word "overflow" should be deleted from Section I.G. The City has separate sanitary and stormwater collection systems and does not have sanitary sewer overflows during storm events.

Response

In response to this comment and a followup discussion with the City regarding their I/I program (which has included trunkline rehabilitation/replacement, television inspection, inflow separation program, and manhole rehabilitation) the requirement to conduct an Infiltration and Inflow Evaluation (Section I.G) is removed from the final permit. The City is encouraged to continue its efforts to reduce I/I in the system.

City **Comment 12 Fluoride Toxicity Study**

Fluoride Toxicity Study (I.H.) is Too Vague. Prior to beginning fluoridation of the City's water supply, the Puyallup Tribe requires a fluoride toxicity study. The specific protocols for the required evaluation of the effects of fluoride on salmonids and the "most sensitive biota" in the lower Puyallup River are undefined. A study may range in scope from conducting a simple literature review to in-situ testing. Without proper

technical detail and guidance, it is impossible to evaluate the cost of this requirement or adequately budget for it.

The City requests that this study requirement be deleted for EPA's permit for the following reasons:

- *EPA's Fact sheet and Appendix E demonstrate that concentrations of fluoride in the City's effluent after treatment would not have a reasonable potential to violate the Tribe's Water Quality Standards. The City proposes, consistent with Section 5(2) of the Tribe's Water Quality Standards, acute and chronic WET testing combined with monthly effluent monitoring to determine whether fluoride bearing effluent complies with Section 5(1) of the Tribe's Water Quality Standards. Other jurisdictions with water quality standards similar to the Tribe's, i.e., including the State of Washington Department of Ecology, determine compliance with narrative water quality standards similar to Section 5(1) of the Tribe's Water Quality Standards through whole effluent toxicity (WET) testing like that proposed by the City.*

- *The State of Washington has water quality standards similar to the Tribe's which are applicable to portions of the Puyallup River outside the 1873 Survey Area of the Puyallup Reservation. Like the Tribe, Washington does not have a numeric water quality standard for fluoride. The Department of Ecology's strategy for dealing with effluent limitations where no numeric water quality standard exists has been promulgated is through whole effluent toxicity (WET) testing. That strategy has been effective and is supported by the City in this case.*

- *The Microchip facility discharging to the Puyallup River from the same outfall as the City has been discharging fluoride at nearly twenty times the concentration levels expected in the City's effluent. The draft Microchip permit reduces Microchip's fluoride discharge. Present and past owners of the Microchip facility have been required to perform WET tests and fluoride has been a constituent of their discharge for several permit cycles. To the best of our knowledge, Microchip has never failed a Whole Effluent Toxicity (WET) test due to the presence of fluoride. The reasonable potential analysis conducted by EPA and included in the Fact Sheet and actual experience with WET tests conducted by Microchip demonstrate that the City's fluoride discharge component would not have reasonable potential to violate section 5(1) of the Tribe's Water Quality Standards. The chronic and acute WET testing proposed by the City of the City's effluent will provide information demonstrating whether additional treatment or other actions are necessary to comply with the purpose and intent of Section 5(1).*

- *In November and December of 1997, the City of Puyallup conducted biological testing on City effluent, MASCA (predecessor of Microchip) effluent, and*

combined City of Puyallup and MASCA effluent. The study was conducted using continuous-flow effluent delivery systems through a series of aquaria (approximately 36) containing steelhead trout and coho salmon provided by the Puyallup Tribal Fisheries Division. The effluent from MASCA was representative of typical daily manufacturing activity and presumably contained fluoride in their permitted range of 16 – 26 mg/L. No significant toxicity was observed in any of the tests at any of the test concentrations.

- *In August 2002 a Determination of Non-Significance was issued on the Tacoma-Pierce County Health Department Environmental Checklist requiring all water purveyors in the County serving 5,000 or more people to add fluoride to their water supplies. Adolfson Associates, Inc. reviewed comments provided during the SEPA comment period from those opposed to fluoridation and maintained the finding of Non-Significance.*

- *Both Tribal and non-tribal health authority's recognize fluoridation of the public water supply as a public health benefit (see Attachment E).*

The City recognizes that EPA does not typically look beyond water quality certification conditions. See 40 CFR §124.55(e). However, EPA is under an independent obligation not to include conditions in NPDES permits which are unconstitutionally vague (void for vagueness). The scope of the Tribe's requested fluoride study is so vague that it is impossible for the City to discern what is required. This problem is compounded by the fact that this undefined study is subject to the approval of the Tribe.

How the City is supposed to evaluate the effects to salmonids and other biota from a predicted fluoride discharge is not known (beyond the evaluation EPA undertook at Appendix E in the Fact Sheet). The City believes that the effect of this vague permit condition will ensure that the City does not fluoridate its drinking water even though it has a legal obligation to fluoridate. If it does fluoridate, it will face potential liability for permit violations because the scope of the study is so undefined. Accordingly, the City requests that EPA strike this permit condition as unconstitutionally vague.

Further, the City is requesting that the Tribe re-evaluate this condition in light of the above and based on prior legal obligations between the City and the Tribe. Therefore, alternatively the City requests that EPA not include this condition in any final permit until the Tribe and the City resolve this issue.

Response

The fluoride toxicity study in the draft permit was a stipulation of the pre-certification of the draft permit. The Tribe has removed the stipulation from their final 401 certification. Therefore, Section I.H Fluoride Toxicity Study has been removed from the final permit. However, in order to assess the impact of fluoridation on the receiving water quality, the

final permit requires that the City monitor effluent and receiving water fluoride concentrations if the City begins fluoridation of the public water supply. Tables 1 and 2 of the final permit have been modified accordingly.

City Comment 13 Pretreatment Requirements

In the draft permit, EPA is proposing a one-year completion date for the entire Industrial Pretreatment Program and all components thereof. Industrial Pretreatment Programs are costly and complex. There are a number of legal, administrative, staffing and funding aspects to developing an Industrial Pretreatment Program. Therefore, the City is requesting a two-year completion date in recognition of the following considerations.

- *Depending upon the complexity and scope, the development of an Industrial Pretreatment Program can run as high as $500,000.*

- *As required by state law, the Puyallup City Council has adopted Puyallup's 2003 annual budget. Because the draft permit has been issued late in the year, funds necessary to fully implement an Industrial Pretreatment Program were not incorporated. Therefore, acceptance of the schedule proposed below will not only allow for a more comprehensive program but will also provide the opportunity to request program funding during the 2004 budget process, conducted mid-2003.*

- *Upon the effective date of the permit, the City will initiate a process whereby a list of consultants is pre-qualified to bid on program development followed by a review of proposals from the qualified consultants. Following the selection of a proposal, the City Council will have to approve the proposal because of its significant cost. This process will take 90 days.*

- *(Section II.C.1.) Because of differences in dry and wet weather flows, related removal efficiency and potential differences in seasonal manufacturing the proposed 9 month time period specified to complete a local limits evaluation does not allow adequate time to accurately and thoroughly develop allowable headworks loadings.*

- *The type of treatment process now used differs from the process previously used. Consequently, historical data is not representative of current operations or removal efficiencies.*

- *Before the introduction of clean sampling techniques, sampling protocols were not as rigorous as current practice demands.*

- *Any necessary local limits that the City will have an economic impact on existing commercial and industrial entities as well as on potential commercial/industrial development within the City. Therefore, the necessity for and any limits adopted*

must be predicated on accurate sampling data collected using "clean sampling" techniques.

The development of an Industrial Pretreatment Program is complex, costly, and requires numerous policy decisions. Because of these factors the Puyallup City Council will be significantly involved in policy aspects of program development. Significant factors requiring Council approval include user fee structure, program budget, equipment purchases and staffing.

The City proposes the following schedule that better meets data collection and program funding needs.

- *Within 90 days of the date of permit issuance, the City will begin quarterly clean sampling for one year for the parameters listed under II.C.1. of the draft permit.*

  24-hour composite samples will be conducted on each of two consecutive weekdays, representative of industrial flow, each quarter for four consecutive quarters yielding a total of eight sampling events. Grab samples will be taken as required by the analytical protocol.

  Sampling will be conducted in three locations: influent, effluent and digested sludge.

- *Within 90 days of the final sampling episode, the City will submit the local limits evaluation required in II.C.2. as well as the proposed sewer use ordinance incorporating any necessary limits as required in II.D.1.*

- *As required in II.D.2., within 90 days of EPA's approval of the proposed sewer use ordinance, the City will codify the ordinance.*

- *Within 24 months of the date of permit issuance, the City will complete all of the requisite tasks specified in section II. B.*

Other problems noted with requirements as proposed in the draft are as follows:

The pretreatment program sampling requirements in Section I.E and Table 3 are inconsistent. Section I.E.3 indicated that sampling is required twice a year for (presumably) influent, effluent and sludge, while Table 3 indicates that "24-hour composite" samples are required on 3 days within a week on influent and effluent, and "once" for sludge.

Table 3 requires more clarification. For example, are we to assume that the sampling stipulated in Table 3 is to be performed weekly or as a condition of II.E.3? Are the three

days within a week to be contiguous? Are the samples to be treated as discrete, 24-hour composites, or may a composite of the three day sampling event suffice as an indicator of average pollutant concentration?

Section I.E.10 describes a requirement to identify unknown compounds for which analytical calibration (with known compound concentrations) is not employed, when determining volatile and semi-volatile organic priority pollutants with gas chromatography-mass spectrometry. However, the Pretreatment Program sampling and analysis requirements listed in the rest of Section I.E does not include determination of priority pollutants. Therefore, the description in Section I.E.10 appears to be not applicable to the Pretreatment Program.

Response

The Pretreatment Requirements (Section II of the permit) have been modified to include revisions to the schedule, as well as clarifications and modifications to the sampling program to develop the local limits. Modifications include:

- The final permit allows two years for completion of the pretreatment program.
- The permit language regarding the number of samples required has been modified to distinguish more clearly between the number of samples required versus the number of sampling events. Note that in some cases, one sampling event may require three 24-hour composite samples.
- Per the City's comments, the sampling frequency for developing local limits has been modified to be quarterly instead of semiannually.
- Paragraph II.E has been added to provide sampling protocol for all constituents which are to be evaluated as part of the local limits development and to clarify expectations of the sampling.
- Clarification that the three sampling days required in a sampling event need not be contiguous, but must be Monday through Friday. The three 24-hour composite samples are to be sampled and analyzed as discrete samples and may not be combined to provide a composite of the three day sampling event. Footnotes to Table 3 have been added to clarify these points.
- The pretreatment program requires evaluation of limits for all pollutants listed in Tables II and III of Appendix D of 40 CFR Part 122 which include volatile and semi-volatile organic priority pollutants. Identification of the ten most abundant substances refers to the toxic organic analyses. Section II.E has been added to the final permit to provide sampling protocol for the organics.

City Comment 14 Facility Planning Requirements (V.E.4.) Table 5.

Average Flow is not a significant treatment plant design parameter and was not used to size equipment or the treatment process. The City recommends that the Maximum Month average Flow value of 13.98 mgd be used instead.

Response

Table 5 is revised to include the Maximum Month Design Flow of 13.98 mgd. Because this design parameter is based on the maximum month and not average annual, the language of the final permit requiring facility planning has been modified accordingly.

City Comment 15 Submittal / Task Deadlines

A table listing all submittal/task deadlines should be included in the final permit.

Response

A table with submittal/task deadlines has been added at the front of the final permit.

Puyallup Tribe Comment

The Tribe is requesting that diffuser/outfall maintenance be conducted on an annual basis (as opposed to the 3rd and 5th year only). A key assumption of the permit is simultaneous and complete mixing of the effluent. Given the dynamic nature of the Puyallup River, annual maintenance is necessary.

Response

The EPA agrees. The draft permit required that the permittee inspect the submerged portion of the outfall line and diffuser to document its integrity and continued function in years 2 and 4 of the permit cycle. Section I.F of the final permit has been revised to require that this work be conducted annually, beginning in 2004.

Additional Permit Revisions

Additional permit revisions have been made to clarify the permit. These include:

Section V.L "Compliance Schedules"
This section has been added to the final permit. This is standard permit language that was inadvertently omitted from the draft permit.

Section I.A.6
The following sentence has been added: "See also Part V.L, "Compliance Schedules."

Section I.A.6.a
The following sentence has been added: "Submit the study to the Tribe, EPA, and Ecology."

Section I.A.6.c
The following phrase has been added: "Within 14 days of selecting the measures,"

Section II
The term "industrial user" is revised to be "non-domestic user." A definition is added to the Definitions Section which defines a "non-domestic user" to mean a commercial or industrial user.

Section II.B.6
Examples of policies and procedures is added as: "permitting, inspections, compliance, and enforcement."

Section II.A and IV.D
The mailing address for the Puyallup Tribe has been updated.

Section V.B
The penalties for civil/administrative violations of permit conditions have been updated.

Section IV.H
The following items have been added under this section:

"1.a. any noncompliance that may endanger health or the environment;"
"1.e any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limitation in the permit."
"2.e if the non compliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow."

This is standard permit language that was inadvertently omitted from the draft permit.

Section IV.A
Item 2 describing the minimum requirements to be included in the Quality Assurance Plan has been removed since the requirements of the Quality Assurance Plan are already addressed under the referenced documents in that section (*Requirements for Quality Assurance Project Plans*, EPA QA/R-5 and *Guidance for Quality Assurance Project Plans, EPA-QA/G-5).* The web addresses of the quality assurance documents have been added to the section.

Puyallup River Downstream pH	
May 1 - Oct. 31	
Date	pH
9/20/90	8.0
10/4/90	7.9
10/18/00	7.52
5/23/01	7.68
6/20/01	7.5
7/18/01	7.51
8/22/01	7.45
9/19/01	7.54
10/31/01	7.25
5/28/02	7.44
6/25/02	7.51
7/30/02	7.11
8/27/02	7.21
9/24/02	7.28
Nov. 1 - April 30	
Date	pH
11/15/00	7.51
12/6/00	7.27
1/24/01	7.7
2/28/01	7.42
3/21/01	7.8
4/18/01	7.61
11/27/01	7.41
12/11/01	7.4
1/29/02	7.26
2/19/02	7.6
3/26/02	7.6
4/16/02	7.29

Data Sources:
Data from 1990 are from Puyallup River Preventative TMDL Study (River Mile 5.7), all other data from Washington Dept. of Ecology's River and Stream Water Quality Monitoring Program (Station 10A050)

Puyallup River Downstream Temperature	
May 1 - Oct. 31	
Date	Temperature (°C)
09/27/90	16.4
10/03/90	14.2
05/23/01	14.4
06/20/01	14.5
07/18/01	12.7
08/22/01	12.5
09/19/01	12.3
10/30/01	9.0
05/28/02	11.2
06/25/02	14.4
07/30/02	14.3
08/27/02	16.4
09/24/02	12.9
Nov. 1 - April 30	
Date	Temperature (°C)
11/15/00	4.5
12/06/00	4.1
01/24/01	5.1
02/28/01	4.5
03/21/01	7
11/27/01	6.3
12/11/01	5.3
04/18/01	9.8
01/29/02	3.3
02/19/02	6.1
03/26/02	6.6
04/16/02	6.6

Data Sources:
Data from 1990 are from Puyallup River Preventative TMDL Study (River Mile 5.7), all other data from Washington Dept. of Ecology's River and Stream Water Quality Monitoring Program (Station 10A050)

Puyallup WWTP - Monitoring Data and Final Permit Effluent Limits

	NH3 Total (as N) Nov. - April		NH3 Total (as N) May - Oct.	
Acute Criterion, mg/L	9.8		6.7	
Chronic Criterion, mg/L	1.9		1.2	
Standard Deviation	3.49		2.99	
CV	0.77		0.92	
C_e, mg/L	38.53		35.06	
C_u, mg/L	0.05		0.04	
WLA_acute, mg/L	17.60		12.028	
WLA_chronic, mg/L	21.33		13.38	
LTA_acute, mg/L	4.54		2.64	
LTA_chronic, mg/L	9.61		5.30	
MDL, mg/L	17.6		12.0	
AML, mg/L	6.8		4.2	
Mass Loading MDL, lbs/day	2,862		from TMDL	
Mass Loading AML, lbs/day	793		490	
Effluent Data:	Date	NH3 (mg/L)	Date	NH3 (mg/L)
	11/30/99	2.1	06/30/99	6.0
	12/31/99	5.6	07/31/99	2.8
	01/31/00	8.4	08/31/99	1.4
	02/29/00	4.1	09/30/99	9.3
	03/31/00	11.1	10/31/99	1.7
	04/30/00	1.6	05/31/00	1.1
	11/30/00	3.7	06/30/00	2.7
	12/31/00	2.2	07/31/00	5.2
	01/31/01	3.9	08/31/00	3.1
	02/28/01	11.7	09/30/00	1.5
	03/31/01	3.2	10/31/00	2.5
	04/30/01	0.5	05/31/01	0.3
	11/30/01	3.2	06/30/01	0.5
	12/31/01	2.0	07/31/01	0.5
			08/31/01	5.8
			09/30/01	9.9
			10/31/01	0.8

C_u = Upstream Concentration
CV = Coefficient of Variation
C_e = Maximum Projected Effluent Concentration
C_d = Maximum Projected Downstream Concentration at Edge of Mixing Zone
WLA = Wasteload allocation
LTA = Long term average
MDL = Maximum Daily Limit
AML = Average Monthly Limit

Puyallup River
Receiving Water Hardness (mg/L as CaCO3)

Date	Hardness
11/14/74	28
11/20/74	35
12/11/74	37
12/18/74	24
10/13/82	32
9/18/90	29.5
10/2/90	24.5
10/30/91	30
5/25/94	24 E
7/27/94	37 E
9/28/94	41 E
11/14/94	28
1/16/95	26
3/20/95	28
10/18/95	20
12/19/95	24
2/21/96	24
4/24/96	26
6/19/96	26
8/21/96	30
10/23/96	26
12/17/96	28
2/19/97	22
4/23/97	24
6/18/97	21
8/20/97	27

Lab Qualifiers:
E - Result is an estimate due to interference.

Data from 1990 are from Puyallup River Preventative TMDL Study (River Mile 8.3), all other data from Washington Dept. of Ecology's River and Stream Water Quality Monitoring Program (Station 10A070)

Mixing Zone Hardness Calculations

$$\text{Hardness} = (Q_{effluent} * \text{Hardness}_{effluent} + \%\ \text{Mixing} * Q_{river} * \text{Hardness}_{river})/(Q_{effluent} + \%\ \text{Mixing} * Q_{river})$$

$Q_{effluent}$ = 13.98 mgd = 21.63 cfs
Q_{river} = 757 cfs
% Mixing Acute = 2.5
% Mixing Chronic = 25
Hardness_{river} = 21.25 mg/L as $CaCO_3$
$\text{Hardness}_{effluent}$ = 63 mg/L as $CaCO_3$

$$\text{Hardness}_{chronic} = (21.63 * 63 + 0.25 * 757 * 21.25)/(21.63 + 0.25 * 757) = 25.5 \text{ mg/L as } CaCO_3$$

$$\text{Hardness}_{acute} = (21.63 * 63 + 0.025 * 757 * 21.25)/(21.63 + 0.025 * 757) = 43.5 \text{ mg/L as } CaCO_3$$

Puyallup WWTP - Monitoring Data and Effluent Limits

	Copper	Lead
Acute Criterion (dissolved), ug/L	7.0	19.4
Chronic Criterion (dissolved), ug/L	3.2	0.38
Acute Criterion (total), ug/L	na	na
Chronic Criterion (total), ug/L	na	na
C_u (Total), ug/L	1.03	0.06
Maximum Effluent Concentration	54	4
CV	0.809	0.933
C_e (total), ug/L	153.71	12.84
Acute C_d (total)	85.85	7.16
Chronic C_d (total)	14.31	1.17
Acute C_d (dissolved), ug/L	74.00	4.92
Chronic C_d (dissolved), ug/L	12.33	0.80
WLA_acute, ug/L	13.74	50.89
WLA_chronic, ug/L	31.49	5.79
LTA_acute, ug/L	3.39	11.04
LTA_chronic, ug/L	13.73	2.28
MDL, ug/L	13.7	10.5
AML, ug/L	8.5	6.1
Mass Loading MDL, lbs/day	1.60	1.22
Mass Loading AML, lbs/day	0.99	0.71

Effluent Data:

Date	ug/L	Date	ug/L
11/27/96	15	05/08/01	0.5
02/25/97	10	11/12/00	0.5
05/15/97	24	08/15/00	0.5
08/06/97	24	05/22/00	1
11/13/97	1 U	03/07/00	0.5
02/25/98	1 U	12/13/99	0.5
05/13/98	14	09/21/99	0.5
08/13/98	1 U	06/29/99	4
10/21/98	23	04/13/99	2
04/13/99	46	10/21/98	0.5
06/29/99	32	08/13/98	2
09/21/99	4	05/13/98	1
12/13/99	20	02/25/98	2
03/07/00	28	11/13/97	0.5
05/22/00	15	08/06/97	1
08/15/00	8	05/15/97	3
11/12/00	31	02/25/97	0.5
05/08/01	54	01/01/96	0.5
7/1/02	6.9	7/1/02	0.37
7/17/02	10.8	7/17/02	0.53
8/26/02	7.2	8/26/02	0.32

C_u = Upstream Concentration
CV = Coefficient of Variation
C_e = Maximum Projected Effluent Concentration
C_d = Maximum Projected Downstream Concentration at Edge of Mixing Zone
WLA = Wasteload allocation
LTA = Long term average
MDL = Maximum Daily Limit
AML = Average Monthly Limit

U = Parameter was not detected at 2 times the indicated concentration.
(1) Statistical outliers were eliminated. These include: Lead - 16 ug/L on 11/27/96.

Puyallup WWTP - Monitoring Data and Effluent Limits

	Zinc	Mercury
Acute Criterion (dissolved), ug/L	51.5	na
Chronic Criterion (dissolved), ug/L	29.7	na
Acute Criterion (total), ug/L	na	2.4
Chronic Criterion (total), ug/L	na	0.0120
C_u (Total), ug/L	2.5	0.0088
Maximum Effluent Concentration	79	0.0600
CV	0.593	0.5250
C_e (total), ug/L	177.45	0.1059
Acute C_d (total)	99.70	0.0627
Chronic C_d (total)	17.71	0.0172
Acute C_d (dissolved), ug/L	88.83	NA
Chronic C_d (dissolved), ug/L	15.78	NA
WLA_acute, ug/L	102.05	4.3130
WLA_chronic, ug/L	356.69	0.0456
LTA_acute, ug/L	33.07	1.5459
LTA_chronic, ug/L	189.32	0.0259
MDL, ug/L	102	0.0720
AML, ug/L	70	0.0520
Mass Loading MDL, lbs/day	11.9	0.0084
Mass Loading AML, lbs/day	8.2	0.0061

Effluent Data:

Date	ug/L	Date	ug/L
05/08/01	26	01/09/95	0.03
11/12/00	38	01/09/95	0.02445
08/15/00	60	01/09/95	0.0237
05/22/00	32	01/09/95	0.03
03/07/00	25	01/16/95	0.05
12/13/99	10	01/16/95	0.03
09/21/99	35	01/16/95	0.02668
06/29/99	61	01/16/95	0.02245
04/13/99	7	01/23/95	0.02
10/21/98	13	01/23/95	0.01933
08/13/98	13	01/23/95	0.02
05/13/98	38	01/23/95	0.01914
02/25/98	49	01/30/95	0.01735
11/13/97	1 U	01/30/95	0.05
08/06/97	79	02/06/95	0.02
05/15/97	52	02/06/95	0.01833
11/27/96	54	02/13/95	0.01
01/01/96	13	02/13/95	0.01835
7/1/02	38.5	2/21/95	0.03
7/17/02	46.9	2/21/95	0.0356
8/26/02	36.7	2/27/95	0.06
		2/27/95	0.01926
		3/6/95	0.02625
		3/13/95	0.027945
		3/13/95	0.03
		3/20/95	0.01
		3/20/95	0.02102
		3/27/95	0.03
		4/3/95	0.03
		3/31/96	0.03
		4/30/96	0.03
		7/31/96	0.02
		8/31/96	0.0002
		7/1/02	0.0044
		7/17/02	0.0049
		8/26/02	0.003

C_u = Upstream Concentration
CV = Coefficient of Variation
C_e = Maximum Projected Effluent Concentration
C_d = Maximum Projected Downstream Concentration at Edge of Mixing Zone
WLA = Wasteload allocation
LTA = Long term average
MDL = Maximum Daily Limit
AML = Average Monthly Limit

U = Parameter was not detected at 2 times the indicated concentration.
(1) Statistical outliers were eliminated. These included: Zinc - 120 ug/L on 2/25/97.
(2) A mercury value of 0.08 ug/L on 3/6/95 was eliminated due to laboratory QC results.
(3) No non-detect data were included in mercury calculation, due to high detection limit.

Alkalinity Testing – Nov. 2002

Influent Alkalinity, mg/L as CaCO3	Effluent Alkalinity, mg/L as CaCO3
190	85
170	75
185	88
190	85
197	92
176	88
190	85
187	86
201	89
197	90
183	101
207	89
188	89
182	112
190	94
190	94
195	105
174	108
200	103
189	97
199	94
190	88
190	80
185	105
195	107