Technical and Regulatory Comments

Submitted by:
Cook Inlet Keeper
Nanwalek IRA Council
Port Graham Village Council
Ninilchik Traditional Council
Chickaloon Village Traditional Council
Kachemak Bay Conservation Society
Alaska Center for the Environment

Presented to:
U.S. Environmental Protection Agency, Region 10;
Alaska Department of Environmental Conservation;
Division of Governmental Coordination,
Office of Management and Budget, State of Alaska

Regarding:
Draft NPDES Permit Proposed by U.S. EPA Region 10;
State of Alaska Certification under Section 401, Federal Clean Water Act;
State of Alaska Approval Under Alaska Coastal Management Plan

Concerning:
Wastewater Discharge of Tesoro Alaska Petroleum Company, Kenai, AK

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Cook Inlet Keeper
P.O. Box 3269, Homer, AK 99603
(907) 235-4068; bob@inletkeeper.org
http://www.inletkeeper.org

Prepared by Alexander J. Sagady & Associates, Environmental Consultant
P.O. Box 39, East Lansing, MI 48826
(517)332-6971; ajs@sagady.com

Table of Contents

1 Introduction

This document is the technical and regulatory comment of Cook Inlet Keeper, Nanwalek IRA Council, Port Graham Village Council, Ninilchik Traditional Council, Chickaloon Village Traditional Council, Alaska Center for the Environment and Kachemak Bay Conservation Society [hereafter "Commentors"] to the U.S. Environmental Protection Agency - Region 10 concerning a draft NPDES issued on April 18, 2000 for the discharge of wastewater from Tesoro Alaska Petroleum Refinery. Commentors and their members regularly use, enjoy and rely on the water and fishery resources of Cook Inlet.

The document also is a comment concerning the protection of water quality, compliance with Alaska Water Quality Standards and Clean Water Act Section 401 certification of the EPA permit by the Alaska Department of Environmental Conservation [hereafter "ADEC"]. Finally, this document also comments on approval of the EPA permit under the Alaska Coastal Management Plan by the Division of Governmental Coordination, Department of Management and Budget, State of Alaska.

These comments raise substantial and material concerns that must be resolved prior to a lawful issuance of the permit by U.S. EPA and certification/approvals by the State of Alaska. At this writing, fundamental aspects of the NPDES Draft Permit and mixing zone applications by Tesoro Alaska Petroleum Company [hereafter "TAPC"] are substantially defective. Aspects of both the U.S. EPA Region 10 and State of Alaska review and fact-finding concerning their respective proceedings and draft determinations raise important issues of federal and state law compliance and certain regulatory decision errors.

Commentors raise other descriptive and narrative issues concerning the need for enhanced environmental and resource protection of the Cook Inlet for the benefit of all concerned parties that go beyond fundamental issues of regulatory and statutory compliance.

Commentors assert the above problems cannot be resolved without significant additional revision of the company's application, significant revisions of the draft permit and the need for a re-publication of the public notice and a revised draft. It is our hope that these measures can be accomplished most expeditiously so that the Cook Inlet and its water quality may benefit from issuance of a more stringently regulated NPDES permit for this refinery wastewater discharge.

2. The Proposed Discharge Violates the Enforceable Policies of the Alaska Coastal Management Program (ACMP) and the Kenai Peninsula Borough Coastal Management Program (KPBCMP) Without Additional Review

Pursuant to the federal Coastal Zone Management Act, "the term "estuary" means that part of a river or stream or **other body of water having unimpaired connection with the open sea, where the seawater is measurably diluted with the fresh water derived from land drainage**." 16 U.S.C. 1453(7) (emphasis added). Similarly, the ACMP defines "estuary" to be a "semi-enclosed coastal body of water which has a free connection with the sea and within which seawater is measurably diluted with fresh water derived from land drainage." 6 AAC 80.900(6). In light of the considerable freshwater inputs to Upper Cook Inlet, and the free connection between the Gulf of Alaska and the Upper Inlet, the receiving waters for the Tesoro Refinery discharge are clearly estuarine in nature. In fact, measurable dilutions of seawater have been identified in and around the Upper Cook Inlet near Nikiski.[1]

The Alaska and Kenai Peninsula Borough Coastal Management Plans prohibit the discharge of toxic wastes into estuaries, 6 AAC 80.130(c)(2), and these comments and the EPA Fact Sheet clearly demonstrate the toxic nature of the Tesoro effluent. Therefore, because there has been no determination establishing the needs and alternatives required under 6 AAC 80.130(d), this project is not consistent with either local, state or federal coastal zone management law.

3. Issues Raised by the PM System Groundwater Remediation Effluent

3.1 EPA Region 10's Review and Draft Permit Fail to Properly Characterize the PM Groundwater Remediation Effluent Outfalls, the Relationship of Such Flows to the Main Refinery Process-Related Effluent and the Treatment this Wastewater Receives

In EPA's Fact Sheet, the Agency found that the PM Groundwater Remediation Effluent is routed to the final aerated lagoon and that this effluent was subjected to both the aerated lagoon and to the final filtration (operated in summer months).[2] This prior

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[1] Sharma, G.D., Wright, F.F., Burns, J.J., & Burbank, D.C., Sea-Surface Circulation, Sediment Transport and Marine Mammal Distribution, Alaska Continental Shelf (1974) (prepared for NASA, Goddard Flight Center, Greenbelt, MD 20771 and referencing Figure 26: Surface water isohalines in Cook Inlet, Alaska, 25-29 September 1972).

[2] EPA Tesoro Permit Fact Sheet, Appendix B, Page 18.

practice was confirmed by a consultant to Tesoro:

> "Treated groundwater from an on-site remediation system (i.e., the "PM" effluent) is currently introduced to the treatment system at Outfall Pond 2. The Facility's effluent is discharged from Pond 4 to Cook Inlet."[3]

In addition, the EPA Fact Sheet appears to show as a single discharge all of the flows from the facility, including the PM flows, at up to 1,260,000 gallons per day.

However, an ADEC NPDES inspection report indicates the following:

> "Outfall building: Grab and composite effluent samples are collected in the Outfall building. Looked at flow meter. Registered no flow. This is because flow was shut off while conducting the tie in of PM (treated groundwater) line to the discharge line AFTER the Outfall building - thus bypassing treatment and refinery effluent monitoring. For the new NPDES permit, the PM effluent will be monitored separately from the treated facility effluent."[4]

This conclusion was buttressed by Parametrix's characterization of Tesoro's position:

> "The onsite-remediation system treats and discharges approximately 180-240 gallons per minute (gpm) of treated groundwater (i.e., the "PM" discharge). Tesoro seeks the option to discharge up to 750 gpm of treated groundwater through either the existing Refinery wastewater discharge, entering the system at pond 2 and discharging through 001A, or as a separate discharge."[5]

Tesoro also wrote:

> "Under the renewed permit, Tesoro seeks to discharge up to 1,080,000 GPD treated groundwater either through Pond 2 of the existing industrial wastewater treatment system and/or through an independent outfall."[6]

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[3] Final Sampling and Analysis Plan to Complete Effluent Characterization of Tesoro Alaska's Nikiski Refinery Facility, Parametrix, Inc., February 1998, Page 3.

[4] October 15, 1998 ADEC NPDES inspection report by Judy Kitagawa, Page 3.

[5] Ibid, Parametrix Final Sampling Plan, Page 2-3.

[6] September 24, 1997 letter from D. Jeffrey Haffner, Tesoro to Robert Robichaud, EPA..

If the facility inspector was correct, a substantial portion, or all, or the PM Groundwater Effluent system will not be subject to treatment through the facility's secondary treatment system, which includes two aeration lagoons and a settling lagoon. Under this circumstance, the EPA's finding in the Fact Sheet that the PM Groundwater System Effluent is subject to the secondary treatment previously provided for this effluent under all circumstances is demonstrably wrong.

3.2 EPA's Attempt to Characterize the Nature of the PM Effluent as Though It Were Remediation Wastewater from Cleanup of a Leaking Underground Gasoline Storage Tank Mis-characterizes the Likely Nature of the PM Effluents and Renders EPA's Proposed Demonstration of Best Available Technology Determined by Best Professional Judgement Invalid

The Clean Water Act requires that EPA propose a permit having effluent limitations reflecting Best Available Technology for the control of toxic pollutants determined by Best Professional Judgement (BPJ) when there are no applicable effluent guidelines published for the source category.[7]

In Appendix E of the Fact Sheet[8] EPA asserts that its Best Professional Judgement BAT determination for effluent limitations on the PM effluent is represented by an existing RCRA permit covering groundwater discharge and EPA's model permit for discharge of remediation water from cleanup of leaking gasoline storage tanks.

However, the attempt to characterize this aqueous waste as analogous to aqueous waste from remediation of leaking gasoline storage tank doesn't pass muster. Material in the file shows that this aqueous waste source will not likely be characterized solely or even primarily as leaking gasoline. According to a Parametrix report:

> "Previous groundwater investigations revealed contamination in a portion of the unconfined aquifer partially underlying Tesoro's refinery facility and extending to the west and south beneath the adjacent properties of two other landowners. Contaminants included dissolved hydrocarbons and light, non-aqueous phase liquid (LNAPL or "floating product"). **The predominant origin of this contamination has been attributed to a release from several subsurface hubs**

[7] 33 USC §1342(a)(1). See also EPA NPDES Permit Writer's Manual, Section 5.1.4, Page 68.

[8] Ibid, EPA Tesoro Fact Sheet, page 32.

> **linking the refinery oily water sewer systems (or OWSS), which receives and transports all industrial wastewater to the refinery's wastewater treatment facility.**"[9] (emphasis added)

While the Parametrix document admits the presence of light hydrocarbons, which might be characteristic of gasoline volatiles, Parametrix also admits that the predominate source of the groundwater contamination came not from the products of this refinery but from its oily wastewater system. As a result, treating this aqueous effluent as though it were a mere gasoline contamination wastewater stream seriously mis-characterizes the water pollution potential of this waste. This waste can be expected to contain many of the pollutants already known to be contained in untreated, raw main refinery wastewater streams, including metals, benzene and other aromatic hydrocarbons, poly-cyclic aromatic hydrocarbons and other petroleum refinery waste pollutants.

Although it is clear the PM remediation wastewater contains many significant pollutants, the draft permit imposes only a single effluent limitation for benzene. All other conventional, non-conventional and toxic pollutants in the PM wastewater would be unregulated and uncontrolled when this wastewater stream is conducted as a direct discharge to Cook Inlet without going through the refinery secondary waste treatment facilities.

Tesoro admits in its November, 1999 amended Form 2C submittal covering the PM effluent wastewater that the concentration of some aromatic hydrocarbon constituents in the PM effluent exceeds or is comparable to concentrations of the same toxic materials in the regular refinery 001 effluent. See table below:

[9] Ibid Parametrix Final Sampling and Analysis Plan, Page 3.

Substance	Maximum Refinery Effluent Concentration (mg/l)	Maximum PM Effluent Concentration (mg/l)
Benzene	0.0013	0.0069
Ethylbenzene	0.0013	0.0296
Toluene	0.0013	0.0126
Crysene	0.005	0.0037
Fluoanthene	0.00083	0.00289
Napthalene	<0.0010	0.0693
Phenanthrene	0.00057	0.07555
Pyrene	0.00113	0.00442
Manganese	0.80	1.18
Total Aqueous Hydrocarbons	0.04145	0.354
Total Aromatic Hydrocarbons	0.00134	0.115

Although this wastewater stream will likely be reduced in its pollution content over time as more of the petroleum refining waste is removed from groundwater and as the groundwater is drawn down, other file materials in the EPA Region 10 file indicate that this PM wastewater stream must receive effluent limitations and treatment to a far greater degree than would be provided for remediation wastewater for a leaking underground gasoline storage tank.

EPA must redo both its BAT BPJ analysis for toxic and non-conventional pollutants, its Best Conventional Treatment (BCT) technology determination for conventional pollutants and its determination of final effluent limitations for PM system effluents to adequately recognize and control all of the pollutants and toxic substances found in this waste stream (apart from 001A) if Tesoro intends to discharge this stream without the benefit of secondary treatment.

3.3 Tesoro's Attempt to Pump and Discharge PM Groundwater Remediation Effluent Without the Treatment this Discharge Currently Receives Triggers Required Review for Anti-Backsliding and Water Quality Non-Degradation

As noted previously, Tesoro has apparently, until now[10], subjected all PM Groundwater Remediation effluent to the secondary treatment system presently provided for refinery process wastewater. This means that volatile components in the PM wastewater that are not removed for whatever reason by the packed tower air stripping equipment system still have an additional opportunity for removal in the two aeration lagoons and single settling lagoon that constitutes the refinery process secondary wastewater treatment system. In addition, this secondary system can also be expected to provide significant removal efficiencies for any remaining biochemical oxygen demand, chemical oxygen demand, total suspended solids and total aqueous hydrocarbon pollutants remaining in this effluent.

In light of Tesoro's clearly stated intent to circumvent this currently used wastewater control system for a large portion of their PM effluent, as well as their stated intent to increase the amount of PM overall flow without providing for a total ceiling on flow, additional environmental protection considerations are triggered.

First, we hold that the factual circumstance of Tesoro's proposal to allow a portion (or all) of the PM system's input to no longer be required for input to the refinery secondary treatment system and instead be allowed for direct discharge without such treatment must be interpreted as backsliding on the water pollution control practices and effluent limitations provided in the prior permit. The prior permit put no limitation on total flow and Tesoro was thus authorized to discharge as much PM effluent as it desired through the refinery's secondary treatment system provided that all final effluent limitations were met.

Now comes the revised permit that apparently envisions direct discharge of PM effluent flow to Cook Inlet with no secondary treatment system required and with only a single effluent limitation for benzene (and even this limitation will likely be violated). All of the other previous effluent limitations provided for discharge of this effluent through the refinery secondary system have been stripped away and thus unlimited release of all other pollutants is thus authorized.

This is precisely the kind of situation that Congress intended to prohibit when it enacted anti-backsliding provisions of the Clean Water Act. This situation does not fall

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[10] However, there are no EPA inspection reports which verify one way or another whether TAPC has already started discharging PM effluent without secondary treatment or not.

within any of the exceptions that allow backsliding under the Act and the regulations. For example, where this discharge was previously authorized through the refinery's wastewater system through its unlimited flow permit provisions, Tesoro and EPA cannot now argue that such additional pumping constitutes a material and substantial alteration or addition to the facility.

Second, in order for the additional pollutants implicit with reducing the level of treatment of the PM effluent to be discharged to the Cook Inlet, aspects of the Alaska Water Quality Standards non-degradation provision are invoked. Nothing in the Fact Sheet, Tesoro's mixing zone application or the record provides the demonstration required by 18 AAC 70.015 to authorize this water quality degradation. Tesoro has not met the burden required to justify the degradation implicit in direct discharge of PM effluent. EPA and ADEC have not made the required findings under 18 AAC 70.015 to justify this degradation.

ADEC never provided public notice concerning this proposed water quality degradation in its pending proceeding on NPDES permit certification. Further, the ADEC non-degradation policy must be interpreted as applying outside of a mixing zone boundary as the presence of a mixing zone does not mitigate the fact that water quality outside of the mixing zone will be lessened commensurate with discharge of increased pollution from more polluted PM remediation effluents implicit with allowing discharge without secondary treatment.

The burden is on TAPC to justify such an increased discharge and the resulting water quality degradation. Tesoro has not demonstrated that direct discharge of PM system effluent constitutes "the methods of pollution prevention, control and treatment found the department to be the most effective and reasonable." Such a finding cannot be made when TAPC has previously engaged in a long-standing practice of providing secondary treatment for this wastewater discharge.

3.4 Discharge of Significantly Increased Amounts of PM Wasterwater Under an Alternate Operating Scenario Through the Secondary Treatment System May Trigger Secondary Treatment Efficacy Concerns

Aspects of a significant increase in PM effluent generation give rise to concerns about flow input restraints to the secondary treatment system. Nothing in EPA's records provides a discussion on any negative aspects of increased flows through the secondary treatment system on its treatment efficacy. While TAPC professes the intent to discharge apart from this system, their operational practice could easily envision the full PM flow through the secondary system for whatever operational or compliance reason they see fit. There is no discussion in the record about the effects of increased flows

through the secondary treatment system on pond residence time, BOD5 reduction in the secondary treatment system and other parameters of treatment efficacy. The ability of the secondary system to efficaciously control water pollution is not unlimited and can be expected to degrade at some point with increased flows. Failure to provide information in the record on this issue could lead to compliance problems and degradation of water quality.

Alternatively, if TAPC choses to direct all of the PM flow to the Cook Inlet without the benefit of the present secondary treatment system provided for the 001A effluent, such an operating condition may adversely affect acute and chronic whole effluent toxicity of the 001A flow inherent in pollutants contained in 001A flow that are not present in PM flow.

3.5 Tesoro's Application Contains Incomplete and/or Erroneous Characterization of the "Commingled" 001A/PM Wastewater and the PM Effluent

EPA Environmental Engineer Ben Cope sought additional information in an attempt to characterize both the PM wastewater stream and the potential commingled 001A/PM stream.[11] Tesoro had previously never submitted an NPDES outfall application and analysis form for NPDES permit renewal which showed characteristics of a commingled effluent beyond 172,800 gallons per day of PM effluent or showed the PM effluent alone as a separate outfall.

Tesoro replied with:

> "....an Application Form 2C revised to reflect the proposed discharge of treated groundwater to Cook Inlet."[12]

Tesoro's additional Form 2C was nevertheless conflicted on outfall identification and did not reflect prior statements of the company on the record about their intent to discharge PM effluent alone from a separate outfall. The form did not follow all aspects of the data exposition requirement of NPDES Application Form 2C for outfall characterization and identification. Tesoro's additional submission of Form 2C doesn't pass muster for the following reasons:

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[11] October 7 , 1999 letter from Ben Cope to Robert Napier, Tesoro.

[12] November 10, 1999 letter from W. Robert Napier, Tesoro to Ben Cope, EPA Region 10.

Tesoro's 1999 Form 2C application amendment did not identify maximum 30 day averages or long term values of specific pollutant parameters. This failure denies adequate data exposition needed for treatability and BPJ-BAT decisions.

Tesoro's 1999 Form 2C application amendment contains apparent serious errors in the characterization of mass effluents in pounds per day from a 1300 gallon per minute commingled effluent discharge. For example, the commingled discharge is showing mass per day effluents of 2.59 lbs/day BOD5, 3.52 lbs/day COD, 0.78 lbs/day TSS, 0.28 lbs/day ammonia, 0.30 lbs/day for oil and grease, 0.001 lbs/day sulfide and 0.003 lbs/day total phenols. These characterizations of the commingled effluent cannot be correct as they are physical impossibilities when the underlying 001A refinery effluent contains far more mass effluents than those indicated for the commingled effluent.

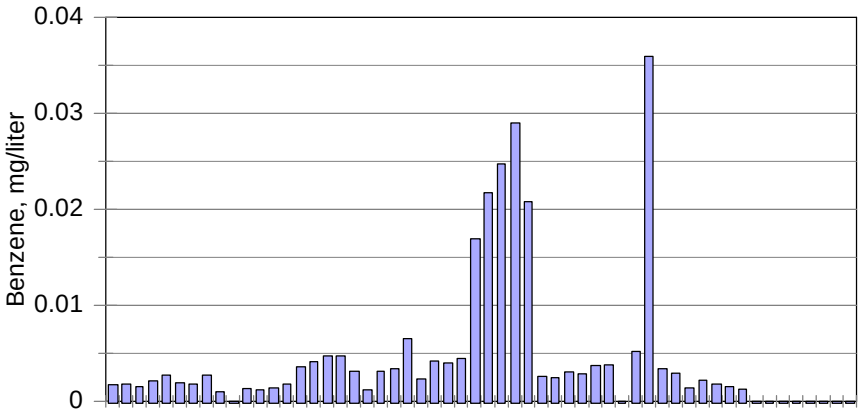
EPA Region 10 never sought correction of these numbers for the commingled effluent from Tesoro.

Finally, Tesoro's November, 1999 analytical work submission includes analysis of refinery process water augmented by PM System effluent flows totaling up to 473,000 gallons of effluent per day. This is for a facility which has a process-related effluent flow of only 206,678 gallons per day. Under a circumstance of such a maximum flow, the PM effluent acts as a diluent for other toxic materials found in the basic refinery effluent. As a result, such dilution undermines the ability of Tesoro's contractors to properly analyze Tesoro's effluent. More on this particular point will be found in subsequent sections.

3.6 Tesoro's Historical Data Shows that PM System Effluents Will Not Meet EPA's Alleged Best Available Technology - Best Professional Judgement Effluent Limitation of 5 ug/l for Benzene

In 1997, Tesoro provided data on EPA Method 602 and 610 results on the PM Groundwater Remediation System effluent. The following chart shows this data from January, 1995 through July, 1997. Zeros in the chart are non-detects.

The chart below shows that Tesoro's PM effluent will be unable to continuously comply with the proposed benzene maximum daily permit limitation of 5.0 micrograms per liter (0.005 mg/liter) either at an internal monitoring point prior to introduction to the refinery's final secondary treatment system or as a discharge to Cook Inlet with no further treatment steps.



4 Effluent Limitation and Monitoring Issues

4.1 Review of Historical Permissible Effluents Allowed by Prior TAPC Permits and the Proposed Draft Permit

The following table illustrates all of the effluent limitations on the TAPC wastewater discharge contained in previously issued permits compared with the present proposed effluent limitations in the Draft Permit:

	Daily Limitation (lbs/day unless otherwise noted)	08/21/1984 Permit Effluent Limitations	02/21/1985 Permit Modification Effluent Limitations	03/19/1991 Permit Effluent Limitations	04/18/2000 Proposed Renewal Permit Effluent Limitations
Biochemical Oxygen Demand (5-day)	Monthly Average	72.2	233.5	204	173
	Maximum	134.2	406.6	371.4	314
Oil & Grease	Monthly Average	10	54	48.3	38
	Maximum	15	97.5	86.9	67
Phenols	Monthly Average	0.51	0.76	0.62	0.62
	Maximum	0.85	1.94	1.34	1.34
Total Suspended Solids	Monthly Average	60.9	182	166.3	166
	Maximum	96	286	261.4	261
Chemical Oxygen Demand	Monthly Average	400	1456.7	1320	1084
	Maximum	692	2728.6	2464.9	2002
Ammonia as Nitrogen	Monthly Average	14	96.5	85.9	65
	Maximum	32	213.6	190.1	143
Polynuclear Aromatic Hydrocarbons	Monthly Average	none	none	none	NNIP
	Maximum	none	none	none	NNIP
Sulfide	Monthly Average	0.38	1.18	1.08	0.91
	Maximum	0.86	2.65	2.42	2.05
Total Chromium	Monthly Average	1.2	1.47	1.29	1.29
	Maximum	2	2.92	2.43	2.43
Hexavalent Chromium	Monthly Average	0.1	0.12	0.1	0.1
	Maximum	0.17	0.23	0.19	0.19

none = Certain monitoring required but no effluent limitation is provided

NNIP = Not named in permit effluent limitation or monitoring table

	Daily Limitation (lbs/day unless otherwise noted)	08/21/1984 Permit Effluent Limitations	02/21/1985 Permit Modification Effluent Limitations	03/19/1991 Permit Effluent Limitations	04/18/2000 Proposed Renewal Permit Effluent Limitations
Total Petroleum Hydrocarbons	Monthly Average	NNIP	none	none	none
	Maximum	NNIP	none	10 mg/l	none
Total Aromatic Hydrocarbons	Monthly Average	NNIP	none	none	none
	Maximum	NNIP	none	0.40 mg/l	none
Total Aqueous Hydrocarbons	Monthly Average	NNIP	NNIP	NNIP	none
	Maximum	NNIP	NNIP	NNIP	none
Total Recoverable Copper	Monthly Average	NNIP	none	NNIP	NNIP
	Maximum	NNIP	none	NNIP	NNIP
Total Recoverable Lead	Monthly Average	NNIP	none	NNIP	NNIP
	Maximum	NNIP	none	NNIP	NNIP
Total Recoverable Zinc	Monthly Average	NNIP	none	NNIP	NNIP
	Maximum	NNIP	none	NNIP	NNIP
Dioxin Congeners, TOX, AOX	Monthly Average	NNIP	NNIP	none	none
	Maximum	NNIP	NNIP	none	none
Cyanide (CN, ug/l)	Monthly Average	NNIP	NNIP	NNIP	none
	Maximum	NNIP	NNIP	NNIP	none
Acute Whole Effluent Toxicity (TUa)	Monthly Average	NNIP	NNIP	none	none
	Maximum	NNIP	NNIP	none	none
Chronic Whole Effluent Toxicity (TUc)	Monthly Average	NNIP	NNIP	none	none
	Maximum	NNIP	NNIP	none	none
none = Certain monitoring required but no effluent limitation is provided					
NNIP = Not named in permit effluent limitation or monitoring table					

4.2 The Proposed Permit Fails to Provide Effluent Limitations for Chlorinated Dioxin/Furan Toxic Equivalents at an Internal Monitoring Point for Reformer Catalyst Regeneration Operations; The Draft Permit Also Relaxes Previous Dioxin/Furan Monitoring Requirements

The 1991 TAPC NPDES permit provided monitoring and reporting requirements for internal process flows from reformer catalyst regeneration operations that generally occur at TAPC for a short interval of time once per year. These operations are a concern because of the presence of chlorinated dibenzo-dioxin/furan compounds in the aqueous waste streams from this batch processing operation.

The 1991 permit required reporting of reformer wastewater flow, pre-treatment concentrations in that flow of 2,3,7,8 tetra-chloro-dibenzo(p) dioxin, 2,3,7,8 tetra-chloro-dibenzofuran, as well as all other chlorinated dibenzo dioxins and furans with tetra, penta, hexa, hepta and octa chlorine substitution configurations. In addition, the 1991 permit required reporting of total organic halides (TOX) and adsorbable organic halogen (AOX).

The 1991 permit did not provide any legally enforceable effluent limitations for any of these highly toxic substances at either an internal monitoring point or in the final effluent.

Commentors object to the Draft Permit because it does not impose a technology-based effluent limitation representing Best Available Technology determined by Best Professional Judgement (BAT-BPJ) on effluents of poly-chlorinated dibenzo dioxin/furan (PCDD/PCDF) compounds as required by the Clean Water Act. Although TAPC has committed to activated carbon treatment of catalyst reformer wastewater in an attempt to control PCDD/PCDF effluents, nothing in the permit holds them accountable for a level of treatment efficacy equivalent to Best Available Technology.

No review of the need for water quality-based effluent limitations for PCDD/PCDF was done and no water quality-based effluent limitations on these highly toxic pollutants were imposed.

Commentors object to the Draft Permit because it does not require sampling, analysis and reporting at an aqueous internal monitoring point in the outflow from the reformer catalyst regeneration operation for all forms of PCDD and PCDF. Instead of sampling, analysis and reporting of all PCDD and PCDF congeners as was required in the 1991 permit, the proposed permit relaxes monitoring requirements by only requiring reporting of 2,3,7,8 TCDD -- the most toxic congener. There will be no testing and reporting on all other congeners generally regarded in the class of compounds reported as

TCDD equivalents which are proportionalized by the relative toxicity of each dioxin congener relative to the 2,3,7,8 TCDD congener.

Commentors object to the methodology in the Draft Permit[13] for reporting 2,3,7,8 TCDD effluents. This methodology allows the reported concentration to be rolled back based on a proportion defined by the daily flow of the reformer catalyst regeneration waste stream divided by the daily flow of final effluent. This reporting rollback scheme creates an incentive to minimize reported 2,3,7,8 TCDD effluents by increasing final effluent flows to show a lower overall reported 2,3,7,8 TCDD effluent concentration. This reporting methodology emphasizing dilution of effluent is not compatible with the need to properly demonstrate the efficacy of the treatment system in removing PCDD/PCDF from the reformer catalyst regeneration effluent.

The draft permit should be specifically amended to include, at a minimum, a technology-based effluent limitation reflecting BAT on the aqueous concentration of total 2,3,7,8 TCDD toxic equivalents in the post treatment waste stream at an internal monitoring point before this effluent stream enters the main wastewater treatment system. After such a determination has been made, additional review should be completed to determine whether additional water quality-based effluent limitations should be imposed on residual TCDD equivalent effluents to ensure compliance with both numerical and narrative water quality standards applicable to TCDD toxic equivalents. EPA's current draft permit does not specifically state whether the monitoring location is pre or post treatment for the reformer catalyst regeneration waste; this monitoring point should be clarified.

Given the limited volume of reformer catalyst regeneration aqueous wastes, TAPC should strongly consider offsite shipment of these aqueous wastes and other solid wastes from this process to a fully RCRA-permitted commercial hazardous waste incinerator capable of 99.9999% destruction and removal efficiency. This waste management option would avoid the imposition of treating and disposing this dioxin/furan waste on the environment of Cook Inlet. In addition, Commentors reserve the issue of future potential objections to this discharge on the basis of a future evaluation of whether or not the reformer catalyst regeneration waste process is subject to RCRA regulation for hazardous waste treatment.

Finally, Commentors object to removal of the requirement to monitor, analyze and report effluents of TOX and AOX at an internal monitoring point at the reformer catalyst regeneration flow. Commentors further object to the failure to control these TOX and AOX effluents with a technology-based effluent limitation reflecting BAT-BPJ.

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[13] See Note #1, Table 1, Page 6 of draft permit.

4.3 Commentors Strongly Support the Requirement of the Draft Permit to Increase the Sampling Frequency on Effluents of Total Suspended Solids, Chemical Oxygen Demand and Ammonia as N; Sampling Frequencies Must Still be Improved for Total Chromium, Hexavalent Chromium, Cyanide and Phenolic Compounds

The 1991 permit provided effluent limits on both maximum daily and monthly average effluents for chemical oxygen demand, total suspended solids and ammonia as nitrogen. However, the monitoring frequency required by the 1991 permit was only monthly for these pollutants. As a result, self monitoring by the company could not disclose any problems with compliance with the monthly average effluent limit since the only data that would exist would be a single monthly sample. This arrangement fundamentally frustrates the requirement to impose monthly average performance levels reflecting BAT on the wastewater discharge of these pollutants.

Commentors strongly support the move to require weekly sampling of these three pollutants.

A similar problem existed in the 1991 permit for total chromium and hexavalent chromium, which were only sampled on a quarterly basis according to that permit. Although EPA proposes increased frequency of sampling for these two pollutants, the Draft Permit's monthly sampling requirements are inadequate as proposed.

The 1991 permit and the proposed Draft Permit both provide for maximum daily and a monthly average effluent limitations on total chromium and hexavalent chromium effluents. However, the Draft Permit fails to provide weekly sampling and this failure renders the monthly average effluent limitation for these two pollutants ineffective and unenforceable in the absence of weekly sampling conducted to be conducted by a party other than TAPC. Both the original Best Professional Judgement determination and application of the petroleum refining industry wastewater effluent guidelines require imposition of a monthly average effluent limitation. However, a failure to impose a method by which monthly average total chrome and hexavalent chrome effluent limitations can be realistically enforced means required longer term average performance in the control of these pollutants will not necessarily be achieved or demonstrated.

If a permit requirement cannot be realistically enforced, this failure rises to an impermissible failure to ensure compliance with mandatory requirements for Best Available Technology.

The comments of the prior paragraph concerning the need to apply a weekly sampling regime in order to enforce monthly average effluent limitations that represent

BAT also holds for the issue of phenolic compounds. The 1991 permit properly required weekly sampling of phenolic compounds in order to determine compliance with the monthly average effluent limitation. EPA now proposes in the current draft permit to roll back phenolic compound regulation by relaxing the sampling frequency to a monthly requirement. Commentors object to this relaxation of sampling frequency for a pollutant known to cause serious tainting problems in fish (taste and odor).

4.4 Commentors Object to EPA's Block Process Method for Setting Technology-Based Effluent Limitations Because This Method Ignores Demonstrated Treatment Capabilities of TAPC's System, Undermines the Original BPJ Determination and Circumvents the Prohibition Against Backsliding

Most of the effluent limitations of TAPC's August 21, 1984 NPDES permit represented the application of Best Available Technology and Best Conventional Technology determined by Best Professional Judgement. Implicit in the August 21, 1984 effluent limitations determination was consideration of the original production level of 49, 183 bbl/day.

A 1985 subsequent permit modification dramatically increased permissible effluents from the plant (see tables in section 3.1) using a technology-based determination that considered the original BPJ limits on a plant based on 49,183 bbl/day crude handling capacity and added limits based on national guidelines for an incremental additional expansion of 30,817 bbl/day. No new equipment was added to the plant with this determination; the modification was based solely on an increase in crude input. This determination concluded the facility was entitled to maximize its effluents based on the new crude input level without regard to the demonstrated treatment capabilities the installed equipment afforded implicit with the original BPJ determination at a 49,133 bbl/day crude input rate.

The resulting effluent limits of the 1985 permit modification and the March 1991 permit renewal gave TAPC significant increased permissible effluent limits for a number of pollutants. Some of the pollutant limits increased by a factor of two to five times what was permissible in the 1984 permit. The 1991 permit reissuance reduced permissible effluents over those allowed in the 1985 modification based on a reduction the characterized crude input rate from 80,000 bbl/day to 72,000 bbl/day.

The current review on the Draft Permit again continues EPA Region 10's hybrid approach, considering a portion of allowed effluents to be determined base on the original 1984 BPJ decision and a portion based on application of effluent limitations. The latter application assumes a total crude input rate of 65,800 bbl/day and allowance for new equipment. The new equipment included a new vacuum distillation unit, seasonal

production of asphalt emulsion and an expansion of the hydrocracker unit.

The procedure EPA used may have some superficial appeal as a simple method of developing an effluent limitation. However, EPA's procedure attempts to authorize an overall technology-based determination giving no weight at all to the demonstrated capacity of the existing treatment system in determining how well this system will control relatively small incremental additional effluent loadings over those previously authorized in the 1984 permit.

Under EPA's method , the Agency determined, for example, that the existing treatment system will limit the maximum effluent of chemical oxygen demand (COD) effluent to **692 lbs/day**[14] for ***49,133 bbl/day*** worth of production capacity as represented by the BPJ effluent limits in the 1984 permit. However, EPA also claims that TAPC is entitled to discharge an **additional 1310 lbs/day of COD** by virtue of TAPC adding new incremental crude production input of ***16,667 bbl/day*** and the modest contribution of the new process equipment added since the 1984 permit. EPA thus arrives at a final limit of 2002 lbs/day of COD in the April, 2000 draft permit.

There is no way that the underlying BCT/BAT BPJ-related treatment performance efficacy can ever be monitored or evaluated since there is only one effluent control treatment system and one effluent that can be tested. For example, one cannot take a portion of the effluent and judge that only 692 lbs/day of COD in this effluent came from crude processing capability that existed in 1984 and that 1310 lbs/day in the rest of the effluent came from post 1984 additional crude processing and new equipment. It is one effluent with one value for COD effluent loading.

Under the procedure EPA used to write effluent limitations in the April, 2000 draft, the permissible effluent discharge from the incremental production increase portion (at only about one third of the original BPJ specified production level) overwhelms the much smaller permissible effluent portion associated with the original BPJ determination. As a result, the prohibition against backsliding and the rule requiring deference to the original BPJ-derived limitation are undermined in a manner that maximizes effluents to the benefit of the discharger. We cannot know whether the treatment efficacy on production inherent in the 1984 BPJ determination is being maintained when permissible effluents from a post-1984 incremental increase overwhelm the loadings implicit in the original BPJ determination. If the original treatment efficacy can no longer be verified, there will be no way to enforce the treatment efficacy performance originally guarenteed

[14] In this case, EPA's April 4, 2000 memorandum from Ben Cope to file shows they even adjusted their original BPJ determination upward by a factor 1.17, a practice never carried out for any of the previous permit determinations using the fundamental procedure described.

in the 1984 BPJ decision. Overall, this is a result contrary to the ultimate no-discharge goals articulated by the Clean Water Act.

Alternatively, EPA should assume that effluent control equipment that was evaluated and permitted as part of the prior 1984 BPJ determination will control additional effluent from production increases and new production units with the same or similar levels of treatment efficacy on a pound of pollution effluent removed per barrel of production input basis. This alternative method would ensure continued realistic enforceability of the original BPJ determination and ensure that no backsliding will be permitted. In addition, such a method provides a sound engineering basis that gives full weight to an engineering evaluation of the capabilities of the installed wastewater treatment system.

4.5 The Production Rate Used by EPA in its Methodology for Calculating Technology-Based Effluent Limits is Too High, Resulting in Excessive Permissible Effluents and Violating Required Elements for Application of Effluent Guidelines Found at 40 CFR §122.45(b)(2)(I)

EPA specified its methodology for setting technology based effluent limits using a crude oil input production basis of 65,800 bbl/day.[15] This level of crude input is claimed as the "peak production level" according to this determination.[16] All other effluent limit decisions in EPA's method rely on this level of crude input, including the calculation of both maximum daily limits and monthly average limits.

Federal regulations specify how production-related national effluent guidelines must be applied to production data to derive permissible effluent limitations[17]:

> "(b) Production-based limitations.....(2)(I) Except in the case of POTWs or as provided in paragraph (b)(2)(ii) of this section, calculation of any permit limitations, standards, or prohibitions which are based on production (or other measure of operation) shall be based **not** upon the designed production capacity but rather upon a reasonable measure of actual production of the facility..... The time period of the measure of production shall correspond to the time period of the

[15] See April 4, 2000 Memorandum to File by Ben Cope, Environmental Engineer.

[16] Ibid, 4/4/2000 memo, page 5.

[17] The reader should note that the objections of Commentors in this section are not intended as an implicit endorsement of methods used to which Commentors fundamentally object as undermining the 1984 BPJ determination that are argued in the prior section.

> calculated permit limitations; for example, monthly production shall be used to calculate average monthly discharge limitations."[18] (emphasis added)

EPA has issued guidance concerning how to determine the "reasonable measure of actual production" for use in applying national effluent limitations.[19] The guidance indicates that a high historical production level can be used as long as its variability from the average production rate over a long term, such as a 5 year period, does not exceed more than 10-20%. An example given states as follows:

> "The use of the highest year of production might be an appropriate and reasonable measure of expected production. One check on this could be to determine if maximum yearly values are within a certain percent of the average, such as 20 percent."[20]

Production rate data and EPA's analysis of it for the TAPC facility was obtained by this reviewer.[21] The data provided included total monthly production and the number of days each month there was no production. From this, EPA staff calculated a monthly average for each month on the daily production rate. A chart of this production data for January 1990 through December, 1998 is shown below.

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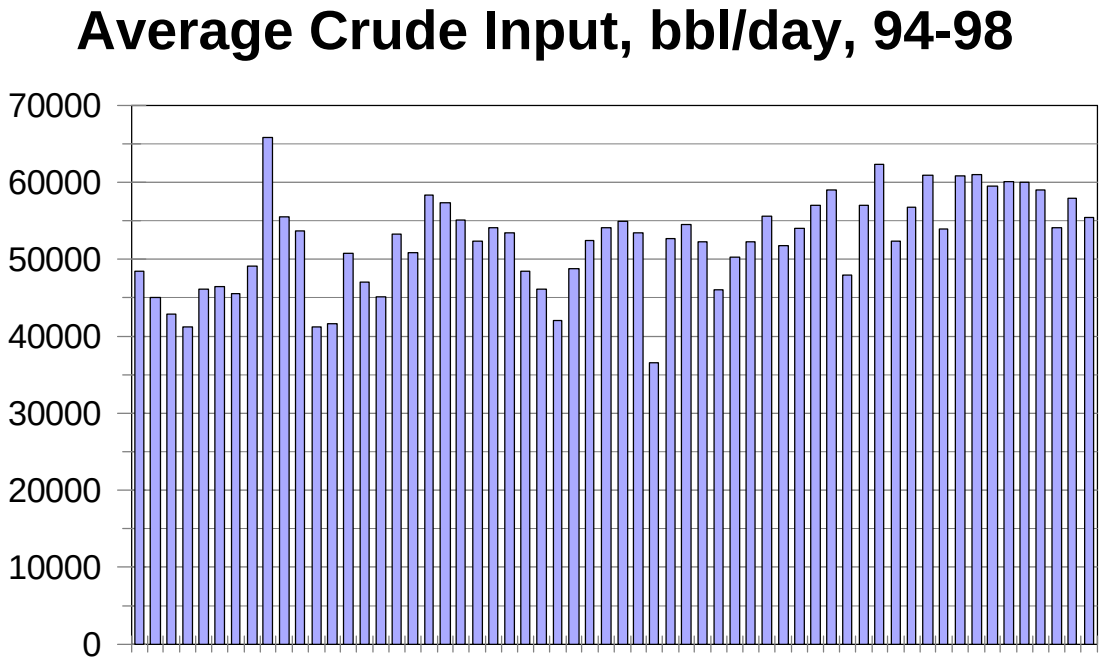
[18] 40 CFR §122.45(b)(2)(I).

[19] December 18, 1984 Memo from J. William Jordan, Chief, NPDES Technical Support Branch to Regional Permits Branch Chiefs; Subject: Calculation of Production-Based Effluent Limits.

[20] Ibid, 12/18/94 memo at page 2.

[21] May 16, 2000 electronic mail from Ben Cope, U.S. EPA Region 10 to Alexander J. Sagady with attached file, "prodata.xls."



The vertical scale shows average production per day. As per the EPA guidance memo, the five year average production rate for the most recent five year interval available for monthly averages of the daily production rate was calculated for January, 1994 to December 1998. The five year average daily production rate is 52,350 bbl per day. However, the peak production rate used by EPA for the TAPC draft permit calculations was 65,800 bbl/day. This EPA-chosen production rate, which EPA itself says is the peak production rate, is 26% higher than the average production rate. This is an amount of variability over the long term average production rate that exceeds EPA's own variability criteria of about 20% variability of peak production over average production rate. EPA's selection of an excessive number for the "reasonable measure of actual production" leads to subsequent calculations and decisions allowing excessive permissible effluent limitations. In essence, EPA is allowing an excessive amount of production rate variability leading to excessive amounts of permissible effluents. As the EPA guidance notes:

> "When ... [national effluent] guidelines are developed, a single long term average daily production value and its relationship to flow are determined. This is combined with effluent concentration data collected from plants to form the basis of the guideline standards. Variability factors are developed on concentration data obtained from samples taken during periods of varying production. The variability factors and performance data are then used to derive the guideline standards...."
>
> "The permit writer should avoid the use of a limited amount of production data in estimating the production for a specific facility. For example, the data from a

> particular month may be unusually high and thus lead to the derivation of effluent limitations which are not actually reflective of normal plant operations. As previously explained, effluent limitations guidelines already account for some of the variations which occur within long term production rates. Therefore, the use of too short a time frame in the calculation of production based limitations for a specific industrial facility may lead to "double accounting" of the variability factors."[22]

However, the precise practice warned about in the EPA headquarter's guidance memo is exactly what EPA Region 10 did when it carried out its method of calculation and production level determination. EPA Region 10 chose the highest month of production in the five year period in September, 1994 as the basis of its average crude oil input production. This level of production in that month displayed excessive variability from the long term, 5 year average production level of 52,350 bbl/day. EPA Region 10 then based many/most of the effluent limitations in the permit on this level.[23] For calculations to arrive at effluent limits for total phenolic compounds, total chromium and hexavalent chromium, the methodology used maximum feedrates for non-crude processes based on a single high production month of April 1998.

However, EPA Region 10 error in its technology-based determination does not stop with its adoption of an excessive average actual production rate to set effluent limits. The methodology used took this peak production rate and used it not only for the maximum daily limitations of the permit, but also for calculating monthly averages. Using what EPA states is a "peak production" level to calculate both maximum daily and monthly average effluent limitations is an explicit violation of the provisions of 40 CFR §122.45(b)(2)(I) which say:

> "The time period of the measure of production shall correspond to the time period of the calculated permit limitations; for example, monthly production shall be used to calculate average monthly discharge limitations."[24]

If EPA Region 10 continues to use its "hybrid" procedure for developing technology-based effluent limitations for this plant (a procedure to which Commentors object, as per the prior section), EPA must downwardly revise its determination of the

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[22] Ibid, 12/18/94 Jordan memo, p. 1-2.

[23] Ibid, 4/4/2000 Ben Cope memo to file, Section 2 chart on BOD, TSS and O&G, page 4; refinery process configuration chart, page 5; chart on COD, Ammonia and sulfide, page 7; plus reliance on these charts by other charts in the memorandum.

[24] 40 CFR §122.45(b)(2)(I).

"reasonable measure of average production." EPA must determine this parameter differently to calculate a production specification based on maximum production and then based on average production. EPA must then separately apply these different production level determinations to appropriately calculate maximum daily effluents and monthly average effluents using an averaging time for production level that is appropriate to the averaging time of the effluent guidance.

4.6 Commentors Object to Abolishing Requirements Found in the 1991 Permit for a Water Quality-Related Effluent Limitation for Total Petroleum Hydrocarbons and Total Aromatic Hydrocarbons

EPA's 1991 permit had water quality-based effluent concentration limits of 10.0 milligrams per liter for total petroleum hydrocarbons and 0.40 mg/l for total aromatic hydrocarbons. These were monitored monthly with a grab sample. EPA now proposes in the Draft Permit to allow unlimited effluents with no final effluent limitations for these two pollutants (although weekly sampling would still be required). According to the fact sheet:

> "Hydrocarbons. The limit for total aromatic hydrocarbons in the 1991 permit has been removed based on a lack of reasonable potential to exceed the water quality criterion."[25]

First, EPA's previous failure in the 1991 permit to require only monthly monitoring of these important pollutants might have contributed to a lack of data that would show potential problems and properly measure the consequences of process variability.

Second, any serious spill or upset may cause effluents of these two parameters to significantly increased in effluent flows. Note, for example, that benzene fluxes in upstream segments of TAPC's wastewater treatment system are so high that EPA's RCRA Division determined that TAPC was managing a regulated benzene hazardous waste (D018) downstream of the diffused air flotation unit and that TAPC was in violation of RCRA for managing this waste in a pond. TAPC had to install a tank to management this waste that is in-line with the wastewater flows through the TAPC's wastewater treatment system.[26]

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[25] April 18, 2000 EPA Fact Sheet on TAPC draft permit, Page 26.

[26] See 5/15/92 letter from Linda Liu, EPA to "Sylvia" concerning RCRA compliance activity at TAPC and 4/30/92 letter from Damon King, TAPC to Linda Liu, U.S. EPA Region 10.

Third, the record contains conflicting and potentially erroneous information in the NPDES application concerning these pollutants. TAPC's November 9, 1999 amended NPDES permit application shows the maximum daily value of TAH as 0.00134 mg/l and the maximum daily TAqH[27] value as 0.04145 for effluent from 001A. Perhaps EPA Region 10 was looking at these datapoints when it made its determination that there was a lack of reasonable potential to exceed the water quality criteria. However, this TAPC submittal also shows maximum phenol concentration at 0.48 mg/l and benzene, toluene and ethylbenzene listed at a maximum of 0.0013 mg/l with a footnote saying this was set to the TAH as default. The characteristic aqueous concentrations of TAH and TAqH specified in TAPC's application are physically impossible if the maximum phenol, benzene, toluene and ethylbenzene concentrations are correct.

Fourth, these two pollutant groups, whose names for monitoring purposes have been changed in the new permit to total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH), are very important from an environmental health standpoint. Aside from hexavalent chromium, TAH and TAqH include many important toxic, carcinogenic, mutagenic and neurotoxic compounds that can be expected in refinery effluents, including benzene, toluene, phenol, toluene, xylene and the large family of poly-cyclic aromatic hydrocarbons. EPA has a duty to provide for technology-based effluent limitations for such important toxicants under 33 USC §1342(a)(1) and 33 USC §1311(b)(2)(A). EPA Region 10 has not evaluated the need for technology-based effluent limitations for these pollutants determined through Best Professional Judgement even as it moves to allow unlimited discharge of these carcinogens by removing the previously issued water quality-based effluent limitations.

Commentors object to the removal of all effluent limitations for TAH and TAQH and the failure to impose any substitute technology-based effluent limitations for the underlying carcinogenic pollutants. This decision violates the anti-backsliding provisions found at 33 USC §1342(o)(1) since TAPC's NPDES permit is not eligible for any of the exceptions at 33 USC §1342(o)(2) and 40 CFR 122.4(l). Commentors hold that the practice of allowing an unlimited effluent of pollutants like TAH and TAQH by removing all effluent limitations that were previously in place constitutes impermissible backsliding in the absence of a valid proceeding to invoke an exception to the anti-backsliding rule.

By removing all limitations on effluents of TAH and TAqH, the demonstrations and assurances provided in the mixing zone application for both acute and chronic toxicity and fish lethality are effectively invalidated. Water quality-based effluent limitations for TAH and TAqH must be inherent to a permit for which a mixing zone

[27] TAqH are total aqueous hydrocarbons.

application for these pollutants has been made and which must be authorized by ADEC.[28]

Finally, allowing unlimited effluents of these important pollutants is prohibited by the Alaska Water Quality Standards anti-degradation rule[29] without a specific demonstration by the applicant, recognition of this inherent decision as allowing water quality degradation outside of the mixing zone, public notice of such a degradation decision and a final determination by ADEC with findings of fact and conclusions of regulatory law.

Although we note that reported effluents of these two pollutants are generally low, there appears to be no satisfactory explanation as to why Total Petroleum Hydrocarbons as calculated by a different test method are still high at times from TAPC. The explanation is offered by the company that this condition is caused by high counts of algae in the wastewater. There has been no discussion, for example, of whether petroleum hydrocarbons bind to algae and or a systematic investigation of why specific test methods appear to be generating contradictory results.

In addition, some current research indicates that even Alaska's Water Quality Standards for these two pollutants do not afford adequate protection against deleterious effects of these pollutants upon embryonic fish.[30] This research indicates that water quality standards above 1 ppb of total polycyclic aromatic hydrocarbons may fail to protect fish embryos.

Finally, we cite TAPC's own consultant, Parametrix, who say there is a real risk from the discharge of violating water quality standards for TAqH and TAH:

> "TAqH and TAH end-of-pipe concentrations potentially exceed the state water quality standards. Both the 001A and PM effluents also potentially exhibit whole effluent toxicity.....Comparing the dilutions needed for TAqH, TAH and whole effluent toxicity, TaqH needs the highest dilution to meet its water quality standard (see Table 4 in Parametrix 1998a). Therefore, TAqH became the focus of the probability-based calculations."

For all of these reasons, effluent limitations should remain in the permit for total aromatic hydrocarbons, total aqueous aromatic hydrocarbons and total petroleum

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[28] February 10, 2000 letter from Judy Kitagawa, ADEC to Robert Napier, TAPC.

[29] 18 AAC 70.015.

[30] See, for example, Sensitivity of Pink Salmon to Weathered Crude Oil, Ron A. Heintz, Report from National Marine Fisheries Service, Juneau, AK. (Available from Cook Inlet Keeper.)

hydrocarbons.

4.7 TAPC's Withdrawal of a Request for an Acute Mixing Zone for Total Cyanide Compounds

TAPC claimed in a letter withdrawing its request for a cyanide acute mixing zone that the sole source of cyanide detected in wastewater was from laboratory reagents used in other water quality testing. It also claimed that:

> "The refining processes utilized by Tesoro's refinery facility are not recognized as potential generators of cyanide."[31]

However, EPA's effluent guideline development document for the petroleum industry indicates that, in a review of the industry, cyanide compounds were found in 26 of 39 refinery effluent tests with an average flow-weighted concentration of 45.5 micrograms per liter and a maximum pollutant concentration of 320 ug/l.[32] According to EPA's information on industry-specific best management practices, steam stripping and overhead accumulators on fractionaters are known sources of cyanide compounds at petroleum refineries.[33] The hydrocracking unit at TAPC will therefore be a potential source of cyanide given the use of catalytic, hydrogenated cracking that will take place in that unit.

4.8 EPA Should Require Installation of a Continuous pH Effluent Monitoring Device

EPA should require continuous pH monitoring and logging technology to be installed as a provision in the Draft Permit. Requiring only a weekly grab sample means

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[31] November 3, 1998 letter from Robert Napier, TAPC to Judy Kitagawa, ADEC and Laurie Best Mann, EPA Region 10.

[32] Development Document for Proposed Effluent Limitation Guidelines, New Source Performance Standards for Petroleum Refining Point Source Category, U.S. EPA, October, 1982, Table VI-7, Page 143.

[33] Guidance Manual for Developing Best Management Practices (BMP), U.S. EPA 833-B-93-004, October, 1993, Section 3.10.1, Page3-22.

that problems that have previously arisen at TAPC, such as the introduction of excessive amounts of ammonia into wastewaters, would be detected sooner. Such a requirement would allow immediate detection of pH excursion events when installed at an intermediate process point, such as the input to aeration pond #2.

4.9 Commentors Support the Recommendation Made in Prior Permitting Reviews by the U.S. Fish and Wildlife Service on May 2, 1986 that Effluents from TAPC for Certain Toxicants be Reduced by Setting More Stringent Water Quality-Based Effluent Limitations

On May 2, 1986, Robert Bowker, Field Supervisor of the U.S. Fish and Wildlife Service Office in Anchorage wrote to US EPA urging that effluent limitations for TAPC be significantly reduced for phenolic compounds, sulfide, PAH, total and hexavalent chromium. USFWS complained that EPA had not applied the water quality criteria developed in its "Red Book" and "Ambient Water Quality Criteria" documents for these pollutants. According to a 10/17/90 memorandum in the file, US FWS was urging that effluents be restricted in the following manner:

sulfide	0.004 lbs/day
phenol	0.105 lbs/day
total chromium	0.21 lbs/day
hex chromium	0.04 lbs/day

Commentors support these recommendations on the record. US EPA Region 10 and ADEC should recalculate water quality-based effluent flows on the final water quality criteria previously recommended by US Fish and Wildlife Service and ensure that TAPC will be able to meet these criteria during conditions of low effluent flow but standard loading of these pollutants.

4.10 EPA Should Require Total Mercury Monitoring at an Internal Monitoring Point

EPA's development document for effluent guidelines in the petroleum refining industry indicates that mercury was found in 74% of all wastewater samples collected. Mercury is known to occur in some crude oil in the form of elemental mercury, methylated and ethylated mercury and ionic mercury compounds, such as mercury chloride, mercury sulfide and mercury oxide.[34]

[34] See research papers on-line at http://www.hgtech.com

According to TAPC's revised NPDES Application Form 2C, only 1 mercury test has ever been performed on the 001A effluent and only 2 tests have been performed on the PM effluent. This is not a sufficient analytical effort to properly determine whether or not mercury is present in this refinery system given potential changes in crude mercury contents and feedstocks.

Given the fact that elevated concentrations of mercury in the water column of Cook Inlet have been detected,[35] EPA should require a monthly monitoring effort for mercury to explore any potential contribution of mercury effluents TAPC may be discharging. EPA should also require the mercury BMP suggested in a subsequent section of this comment. Total recovery of elemental mercury and all mercury compounds should be required in analytical work at an internal monitoring point located at the inlet to pond #2 prior to the influence of any PM wastewater input. Additional mercury analytical work should also be required for the PM effluent.

5. Comments Associated with TAPC Use of Flow Augmentation from Introduction of PM Groundwater Remediation Flow When the Aqueous Concentrations of PM-Related Pollutants are Significantly Below Refining Process-Related Pollutant Concentrations

5.1 TAPC's Existing and Proposed Systems of Wastewater Management and Disposal Inherently and Explicitly Use Flow Augmentation

For a large set of pollutants, PM groundwater flow will contain significantly lower concentrations of pollutants than are presently found in refinery waste. As groundwater cleanup progresses, the pollutant concentrations for many constituents in the PM system wastewater will continue to decline with removal of petroleum hydrocarbons from the light hydrocarbon layer and continued inflow of clean groundwater.

Both existing practices and future projected practices raise issues about the use of PM wastewater flow to augment and dilute petroleum process wastewater. In addition, the refinery is also using non-contact cooling water and mixing it with the refinery process waste water stream and this practice also raises similar issues.

In the company's 1989 renewal application, total flow was 342,518 gallons per

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[35] Reference to 1995 MMS study of Cook Inlet contained in EPA report, Cook Inlet Beluga Whale, Its Life Cycle and Potential Impacts from Five NPDES Dischargers, EPA Region 10, February, 2000, Page 22; this secondary reference to the 1995 MMS study mentions elevated mercury values in the water column of Cook Inlet with a maximum of 0.35 ug/l, which is over the limit of EPA's Water Quality Criteria.

day with 150,635 gallons per day of either clean steam condensate, non-contact cooling water or PM remediation system inflow for a proportion of 44% of total flow.

In the company's 1995 renewal application, total flow was 428,358 gallons per day with 247,931 gallons per day of either non-contact cooling water, clean condensate or PM remediation system inflow for a proportion of 58% of total flow. However, the 1995 application also proposed a design basis operation with total flow of 1,260,421 gallons per day with 1,255,131 gallons per day of PM flow, clean condensate and non-contact cooling water. This latter design flow operation envisions that 92% of total flow would be non-process waste water.

Tesoro does not appear to have conducted wastewater analysis when no PM remediation system was flowing into its wastewater system. The laboratory analysis by CT&E Environmental Services, Inc. submitted in support of the wastewater analysis information in its 1995 application shows wastewater flow on the sample collection day to be 620,000 gallons per day – an amount that was 144% of their specified base flow.

5.2 Tesoro Appears to be Using Flow Augmentation as its Strategy to Meet Water Quality Standards and Certain Effluent Limitations Without Required Authorizations Necessary to Allow Such a Practice

Inherent with TAPC's mixing zone application is the fact that they would not have qualified for such a small sized mixing zone that was requested if they were not already diluting their effluent with non-process wastewater because of potential lethality and failure to conform to water quality standards at the boundary of the mixing zone. In addition, it is possible that when their air stripping process was working in an exemplary manner, introduction of PM effluent to Tesoro's process waste water would assist in meeting concentration-based effluent limits for Total Aromatic Hydrocarbon and Poly-cyclic Aromatic Hydrocarbon in the 1991 permit.

Such flow augmentation to achieve water quality standards is not absolutely prohibited by the Clean Water Act and EPA clean water regulations. However, in the passage of the 1972 Federal Water Pollution Control Act Amendments, Congress was determined that stream flow augmentation was not a substitute for controlling wastewater pollution at the source. The Senate Report recognized a national "no-discharge" goal under the act and provided as follows:

> "Section 102 of the bill parallels section 3 of existing law. Subsection (b) is modified to make it clear that regulation of streamflow, while a legitimate project purpose, cannot substitute for adequate waste treatment or other methods of eliminating waste at the sources. Under the amended language, the Administrator

is given the responsibility for determining when low flow augmentation is an appropriate technique for supplementing primary pollution control programs."[36]

The Conference Committee Report provided:

"The Conference substitute specifically bans pollution dilution as an alternative to waste treatment. At the same time it recognizes that stream flow augmentation may be useful as a means for reducing the environmental impact of runoff from non-point sources. The Conference substitute also recognizes that stream flow augmentation may be useful for recreational, navigational, and other purposes. Finally section 102(b) specifically sets forth that any calculation for the need for and value of stream flow augmentation to reduce the impact of pollution must be determined by the Administrator of the Environmental Protection Agency."[37]

We hold that Congress was specifically interested in ensuring that flow augmentation would not be a substitute for water quality based effluent limitations required under 33 USC §1312.

Techniques of flow augmentation....

"... may be considered as a method of achieving water quality standards on a case-by-case basis when:

> (1) the technology-based treatment requirements applicable to the discharge are not sufficient to achieve the standards; (2) The discharger agrees to waive any opportunity to request a variance under Section 301(c), (g) or (h) of the Act; and (3) The discharger demonstrates that such a technique is the preferred environmental and economic method to achieve the standards after consideration of alternatives such as advanced waste treatment, recycle and reuse, land disposal, changes in operating methods, and other available methods."[38]

Our view is that, under the present circumstances, TAPC is forbidden to employ either the present or the proposed future flow augmentation scheme for process

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[36] Senate Report No. 92-414 on Federal Water Pollution Control Act Amendments of 1972; United States Code Congressional and Administrative News, 1972, Page 3679.

[37] Conference Report No. 92-1236, Joint Explanatory Statement of the Committee of Conference, Federal Water Pollution Control Act Amendments of 1972; United States Code Congressional and Administrative News, 1972, Page 3778-9.

[38] 40 CFR §125.3(f).

wastewater dilution because they have not waived an opportunity for a variance under 33 USC §1311c, (g) or (h) of the Act, they have made no environmental and/or economic demonstration, they haven't implemented advanced waste treatment methods and they haven't changed their process in all technically feasible ways to otherwise achieve protection of water quality (including whole effluent toxicity) without the use of flow augmentation of their process-related effluents.

Neither U. S. EPA Region 10, nor ADEC, have specifically received a TAPC application and demonstration of the need for flow augmentation, recognized the present situation as being, in fact, a case of the use of flow augmentation, and then made a deliberate decision with findings of fact and conclusions of law that such a TAPC flow augmentation application and demonstration was valid and approvable.

1.1 TAPC's Flow Augmentation System Will Make Toxic Constituent Effluent Quantification More Difficult and Subject to Error

TAPC's flow augmentation scheme can be expected to interfere with wastewater analytical detection of toxic materials in process-related wastewater given certain practical quantification levels of the test methods employed. Stated simply, use of flow augmentation diluent will increase the difficulty in properly analyzing and characterizing all toxic constituents of TAPC wastewater. The more flow diluent used, the more difficult analytical wastewater work will become pollutants having higher practical quantification limits in analytical tests.

2 Issues Related to Acute and Chronic Whole Effluent Toxicity (WET)

2.1 Failure to Provide Legally Enforceable Final Effluent Limitations for Whole Effluent Toxicity

Commentors object to EPA's failure to include effluent limitations for whole effluent toxicity as legally enforceable effluent limits in the permit. As the draft permit is written, TAPC may discharge an effluent exhibiting any level of both acute and chronic toxicity without being subject to violation. TAPC's only vulnerability under the draft permit is the requirement to conduct additional toxicity testing on an accelerated schedule over an eight week period and the requirement to initiate and complete a Toxicity Reduction Evaluation (TRE) and Toxicity Identification Evaluation (TIE) procedure under certain conditions.

The Draft Permit should be amended to require legally enforceable limits placed in the effluent limit table for whole effluent toxicity that can subject TAPC to penalties for violation. The acute limit at the wastewater discharge should be 1 TU_a. The chronic limit at the wastewater discharge should be equal to 1 TU_c if there is no mixing zone; if there is a mixing zone, then the limit should be set in chronic toxic units that will ensure that there will be no chronic toxicity at the border of the mixing zone.

2.2 Deficiencies on the Frequency and Type of WET Testing Conducted and the Species Used

The Draft Permit should not relax the frequency of required chronic testing provided in the 1991 permit from quarterly to annual. The Draft Permit should not relax the required frequency provided in the 1991 permit for accelerated testing after an acute or chronic toxicity trigger is exceeded from 8 consecutive weekly tests to 4 tests over an 8 week period.

Commenters believe TAPC should more accurately gage the toxicity of the actual effluent by doing at least half of the acute and chronic tests using "dynamic" test methods rather than "static" tests. Commentors assert that dynamic tests will more accurately depict the toxicity of the effluent in question. The Draft Permit should require TAPC to conduct at least half of both the required acute and chronic tests as dynamic tests with dilution series conducted at the refinery site. This requirement is important given the volatility of some of the pollutants in the discharge and the potential of the static tests to allow diminished toxic potency occurring as a result of storage, handling and transport to a remote laboratory.

Finally, at least half of the acute whole effluent toxicity tests done at the refinery with the dynamic tests suggested above (or with static tests) should be done with indigenous juvenile salmonids. Availability of this test species should not be a problem if just one of the two tests annually required are specified to use this species. We note the strong suggestions of the WET provisions of the Alaska Water Quality Standards:

> "The department will require that the testing use sensitive and biologically important life stages of indigenous species, as the department considers necessary and feasible to protect aquatic life fully."[39]

Acute testing only with rainbow trout as a fresh water species, as provided by the Draft Permit, doesn't comply with the plain meaning of the rule requirement as its applies to Cook Inlet. An ADEC interpretation that excludes indigenous species from all acute testing at this site cannot comply with the fundamental rule. A permit decision that disallows all indigenous species for acute whole effluent toxicity testing constitutes an abuse of agency discretion and fundamental abdication of ADEC's responsibility to enforce this rule.

2.3 WET Testing During Contingent Upset Events, Non-Characteristic Flows and Use of Chemical Additive Agents

The Draft Permit should be specifically amended to require that samples taking during non-routine and/or upset discharges under provision III.A be subjected to both acute and chronic whole effluent toxicity static tests. This provision should be inserted to eliminate any possibility that TAPC would fail to analyze the effluent in this manner.

In addition, routine samples taken for whole effluent toxicity evaluation should reflect the influence and presence of any chemical additives, such as anti-scaling and anti-corrosion agents, that may be used by the refinery or that may otherwise have an influence on the wastewater effluent.

Finally, the Draft Permit should be amended to recognize that cessation of PM system flow into the 001A wastewater treatment system (caused, for example, by pump or other PM system mechanical failure) should be specifically identified as a "non routine" event under Section III.A that triggers the need for sample collection, whole effluent toxicity testing and compliance testing for effluent limitations.

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[39] 18 AAC 70.030.

3 Required Best Management Practices Contained in the Draft Permit are Inadequate; More Specific Measures Must be Incorporated in the Draft Permit

3.1 Tesoro's Existing BMP Plans for Spill Control and Countermeasures are Inadequate as Referenced in the Draft Permit

The Draft Permit references two existing plans and a safety manual and incorporates the provisions of these plans into the permit.[40] One of these existing plans is the "Tesoro Refinery Spill Prevention Control & Countermeasure Plan," dated January 15, 1998 and which was found by the reviewer in the EPA Region 10 file. Aspects of this TRSPCC Plan do not provide adequate specificity or enforceability as outlined below.

TRSPCC Plan requirements for drainage from diked areas around bulk storage tanks specifies the following:

> "Storm water from diked areas of this facility is not discharged directly into any open waterways. If a discharge becomes necessary, the water will be inspected prior to discharge to assure that the discharge is in compliance with applicable water quality standards. Adequate logs will be maintained."[41]

This BMP is inadequate because the testing methodology and specific effluent standards for a direct discharge of water from diked areas for storage tanks is not specified in an enforceable manner. The paragraph does not indicate what methods will be used or what standards will apply to such a direct discharge to Cook Inlet. Moreover, the plan elements do not indicate the criteria to be used to decide when "a discharge becomes necessary" on whether storm water will go to the refinery's wastewater treatment system or to direct discharge to Cook Inlet.

TRSPCC Plan elements on buried pipe installations and standards and practices to ensure use of protective technologies, such as protective wrapping, coating and cathodic provision, are inadequate. The plan only states:

> "Tesoro has adopted this recommendation to the extent practical for the facility."[42]

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[40] Draft Permit, Section II.D.3(a), Page 15.

[41] Tesoro Refinery Spill Prevention Control & Countermeasure Plan, January 15, 1998, Section 2(iii), Page 14-15.

[42] Ibid, TRSPCC Plan, Section 3(I), Page 18.

This plan element cannot be enforced because of its vague and indeterminate nature. This plan element needs to be specifically stated as to which pipe installations will be protected in the manner outlined in the applicable regulations, recordkeeping to support the inspection requirements and specifically-stated inclusion criteria that can be objectively measured and enforced. Under this vague language, TAPC would be free, for example, to only provide such protections for newly installed piping at the facility, leaving many piping systems unprotected in the best management plan.

The TRSPCC Plan (ADEC Plan #9724-CP-6188 for TAPC) does not contain adequate plan elements on secondary containment lining for dikes, berms and other spill control areas. The plan relies on bentonite lining, but specifies no specific standard on how such bentonite liners are to be installed, tested and maintained. There is no apparent consideration of alternatives to bentonite lining which may be less susceptible to breach by spilled materials, through cracks and gaps and subsequent groundwater intrusion. Plan elements should specifically countenance alternative control technologies for lining containment areas, criteria for selection and other measurable and enforceable program elements. In addition, the TRSPCC plan proposes to take until the year 2009 to provide secondary container liners for all tank storage containment areas at the facility. This is an unacceptably long delay with no apparent justification provided for such a long compliance schedule.

TAPC Plan documents providing the spill history at this facility show repeated spills from leaking seal boxes, seal pots, oily water sewers, sewer hubs and other oily wastewater collection and conveyance systems. Such leaks apparently caused the large groundwater contamination problem which is presently under remediation. Despite this negative operational spill experience, there are no elements provided in the TRSPCC Plan designed to address spill prevention from these refinery components. For example, there are no plans or technology for secondary containment, inspection schedules, technology upgrades or other measures designed to prevent spills and leaks from this category of refinery wastewater equipment. This crucial failing in the BMP spill containment plans is unacceptable.

All additional Best Management Practices that may be added to the permit as a result of this comment must be written in such a way so that the effectiveness of each of the plan elements can be specifically monitored, recorded and enforced.

3.2 The Draft Permit Doesn't Contain Best Management Plans for Operation and Maintenance of Wastewater Treatment Equipment

The Draft Permit contains no requirement for specific Best Management Plans

governing inspection, maintenance and operations of wastewater treatment equipment at the plant site. The Draft Permit should be amended to specifically require Best Management Plans in this area that are specific and enforceable.

BMPs for wastewater treatment equipment should include provisions for maintaining an inventory of spare parts for equipment, backup procedures for dealing with pump failures, minimum freeboard requirements for lagoons, tank overfilling precautions and countermeasures, requirements on the disposal of sludge removed from lagoons and ponds and inspection and recordkeeping requirements. Requirements for lagoons should ensure these facilities with a minimum amount of volumetric capacity to maintain adequate treatment residence times and a requirement for cleanout of sediment when this volumetric capacity reaches certain thresholds.

BMPs for wastewater equipment should also emphasize pollution prevention practices and measures designed to reduce the occurrences of upsets and excessive effluents. The wastewater equipment BMPs should specifically state the minimum operating effectiveness and/or horsepower of aeration devices to be maintained in aeration lagoons.

BMPs on the wastewater treatment system should included an inspection, monitoring and recordkeeping requirement concerning breach in cooling water heat transfer systems to ensure that corrosion or other degradation processes do not allow non-contact cooling water to become contaminated with process flows and products.

The best management plan should require covering of API separators and diffused air flotation units in order to control air pollution from these units and to prevent wind borne release of foam or aerosals that can be deposited outside of containment areas and contribute to site stormwater contamination.

Finally, there is no best management plan for management of the effect of wet weather flows and unusual precipitation events on wastewater equipment, including wastewater lagoons. In addition there is no information on any effects that icing may have on wastewater lagoons which are not aerated or in slack areas of aerated lagoons. For example, there is no information on whether icing conditions may increase effluents of total aromatic hydrocarbons when icing conditions reduce lagoon air stripping and fugitive air emissions.

3.3 The Draft Permit Does Not Specify Best Management Practices on Operation of the PM Groundwater Remediation System

Review of the pollutant content of PM groundwater remediation effluent indicates significant variability of the total aromatic hydrocarbon pollutant content of this waste

stream. The likely cause of this variability will be the relative adjustment of the vertical position of the submersible well pump intake vs. the current position of the light petroleum liquid layer at the top of the saturated groundwater zone. If continued pumping results in a change in the position of the groundwater saturation zone so that the groundwater intake breaches or comes near to the light petroleum liquid layer, significant additional petroleum hydrocarbons will become entrained in the PM groundwater effluent flow.

The Draft Permit should be amended to require a Best Management Plan for inspection, monitoring and vertical placement adjustment of each submersible pump (both for groundwater and for recovered petroleum product streams) in each PM system well in order to reduce potential contaminants in the PM system flow and to maximize potential recoveries on light petroleum hydrocarbons to recovery systems and not to PM groundwater effluent systems.

3.4 No Best Management Practices Have Been Proposed for Management of Sludges, Stockpiles, Sediments and Other Materials

EPA should specifically amend the Draft Permit to require Best Management Practices for handling, storage and disposal of sludges, stockpiles, petroleum coke, sediments and other materials. Facilities for containment, storage and transfer of petroleum sludges and wastewater lagoon sediments should be described in detail. Each petroleum refinery sludge should be characterized as a hazardous waste or non-hazardous industrial waste. Opportunities for pollution prevention by reintroducing sludges into coking processes if available should be described.

Recovered sulfur piles from recovery units should be managed in such a way that air and water pollution from this source is controlled. Similar requirements should govern petroleum coke piles, lagoon sediment management and other solid waste management.

3.5 Best Management Practices on the Control of Persistent and/or Bioaccumulative Toxicants and Multi-Media Transfer to the Aqueous Phase

Petroleum refineries are proven sources of persistent and bioaccumulative toxicants which can contaminate surface waters. As mentioned previously, mercury is frequently found in refinery wastewater effluents and refineries operate potential sources

of chlorinated dibenzo dioxins/furans. Refineries are also sources of PAH compounds of considerable water pollution potential.

The Draft Permit should incorporate a mercury control best management practice plan. Under such a plan, the TAPC should be required to periodically test the mercury content of crude sources used for refinery input to determine the potential of a given source of crude to cause mercury problems at TAPC. A mass balance should be done at least once for mercury flows at the refinery to determine the fate of any mercury that is introduced to the facility through. crude oil. The mass balance study would determine what percentage of the mercury input ends up each of the following locations:

refinery products
discharge through combustion of refinery fuel gas in heaters and boilers
discharge through any combustion of residual oils that may occur at the site
discharge and/or entrainment in sulfur recovery systems
discharge from cracking catalyst regeneration
discharge from sludge incinerators
offsite transfer of waste sludges, lagoon sediment, etc.

Best management practices for persistent and bioaccumulative toxicants like mercury and chlorinated dibenzo-dioxins/furans must also recognize multi-media transfer and deposition of these materials. Elements of a BMP plan for these pollutants should include characterization and control of stack emissions from all combustion and catalyst regeneration sources, as well as modeling of deposition of these airborne toxicants in lagoons and in Cook Inlet.

Each anti-scaling, anti-corrosion and biocide agent proposed for use by the plant should be evaluated for persistence and bioaccumulative effects before such use is allowed at the site. Final effluents should be tested and evaluated for any toxic presence of these materials or toxic degradation products that may occur from their use at the site.

4. Issues Associated with TAPC Site Stormwater

Although some stormwater within diked and bermed areas at the facility can be channeled through the wastewater treatment process, other stormwater run-off generated at various locations on site does not receive treatment. Because such sources likely discharge physical and chemical pollutants to Cook Inlet, the facility must obtain an stormwater discharge permit pursuant to 40 CFR 122.26(a) & 122.26(b)(14).

Neither TAPC's 1995 application, nor their 1999 amended application, addressed all stormwater outfalls present at the TAPC site. Section 7.1 of this comment cites TAPC documents which indicate that stormwater in certain diked and bermed areas will be discharged to Cook Inlet without going through the wastewater treatment system under certain circumstances which are not stated. Commentors hold that EPA may not issue the Draft Permit until TAPC submits a complete application showing all stormwater outfalls, the potential pollutent effluents from these outfalls, analytical work on stormwater samples, conditions and testing requirements under which stormwater from dike and berm controlled areas will be discharged to Cook Inlet and other narrative information on this issue.

5. Commentors Position on TAPC's Mixing Zone Application and ADEC Review of this Application

Commentors make the following summary criticisms of the Mixing Zone Application and supporting materials.

First, the risk assessment in support of the application considers potential bioconcentration of wastewater toxic constituents, but fails to consider bioaccumulation and summarily dismisses biomagnification. The report claims that bioaccumulation factors are not available for the chemical toxicants reviewed.[43] A recent EPA review apparently considers that elevated tissue concentrations of certain PCBs, cadmium, methylmercury and dieldrin are presently occurring in some predator species in Cook Inlet.[44] The empirical evidence of these fish with tissue concentrations of health concern contradicts TAPC/Parametrix claims that somehow bioaccumulation and biomagnification don't occur in Cook Inlet or are otherwise not significant.

Second, no analytical work was done for chlorinated dibenzo-dioxin toxic equivalents on the wastewater discharge from TAPC. No evaluation was done of any dioxin toxic equivalents from residual effluents from reformer catalyst regeneration operations. Except for chromium, analytical work to determine effluents of nearly all of the other toxic metals in EPA's toxic pollutants assay list had only a single sample analyzed. This minimal level of analytical work weakens the power of the exposure assessment techniques and risk characterization methods to properly comply with the risk assessment requirement in the regulations and diminishes public confidence in the

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[43] Mixing Zone Determination and Risk Assessment for Tesoro Alaska's Nikiski Refinery Facility in Cook Inlet, Alaska, Revision 1, Parametrix, Inc. Section 2.2.2.2, Page 11.

[44] Cook Inlet Contaminant Study, Preliminary Findings, Jeff Bigler, EPA, Washington DC (Unfinished study) (Available from Greg Kellogg, EPA, Anchorage, AK)

predicted results.

Third, the Parametrix risk assessment relied upon an assumption that total aromatic hydrocarbon compounds were never detected in effluent 001A, when this presumption has been clearly indicated to be wrong using TAPC's own analytical data for benzene, toluene, xylene and ethybenzene.

Fourth, Parametrix used an uncharacteristically high discharge rate of 750 gallons per minute (over 1,000,000 gallons per day) to model the sensitivity of the PLUMES model results to high tide conditions.[45] A larger volume discharge with a higher initial velocity rate might be expected to have a greater dilution capability because of the energetics of near field mixing from the large effluent flow and higher discharge velocity. This condition cannot be considered the worst dilution case for purposes of testing the sensitivity of the model to low vs. high tide height conditions. Parametrix went on to use only low tide mixing heights for further analytical work, thus introducing uncertainty into the analysis. Parametrix never considered the possibility that PM flow would not flow through 001A, leaving low flow volumes, low plume energetic mixing characteristics and relatively high mass loadings and the potential for this condition to violate water quality standards. Unfortunately, a failure of a pumping system or other aspects of the PM system could realistically bring this circumstance about. No consideration was given to acute lethality in the mixing zone and compliance with acute limits at the edge of the mixing zone under these discharge circumstances.

Fifth, the Parametix assessment for aquatic life exposure assessment didn't consider any acute effects at all from organic chemical exposures from the effluent, apparently with the permission of the ADEC.[46] As mentioned previously in the effluent limitation section of this comment, such exposures may be toxic to embryonic salmon at aqueous concentrations below current Alaska Water Quality Standards.

Sixth, the Parametrix assessment ignored the toxicity in both human and aquatic species for metabolites of high molecular weight PAH compounds, including those PAH compounds that may be subject to metabolic activation.

Seventh, the Parametrix application[47] for TAPC submitted data showing that total recoverable metals in Cook Inlet were above the EPA water quality criteria for certain

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[45] Ibid, Mixing Zone Determination, Parametrix, Inc., Section 3.3.3, page 26.

[46] Ibid, Mixing Zone Determination, Parametrix, Inc., Section 4.1.2, Page 30.

[47] Mixing Zone Application for Tesoro Alaska's Nikiski Refinery Facility, Parametrix, Inc., September 1998, Table 2, Page 5.

toxic metals, but neither the application, nor the aquatic life assessment, nor the risk assessment determined the effect of these parameters on the total exposure assessment and cumulative risk. As a result, incremental exposure was not considered in concert with exposure from pre-existing background water contamination to determine the cumulative risk from aqueous exposure to TAPC's effluent. The data[48] showed the following:

	Ag	As	Cd	Cu	Ni	Pb	Se	Zn	Hg (ng/l)
Anchorage Study Results for Total Dissolved Metals	0.297	19.9	0.467	**30.1**	**17.3**	4.97	<7.2	**940**	**96.6**
US EPA Water Quality Criteria	0.92	36	9.3	2.9	8.3	8.5	70	86	0.025

As can be seen from the table, test results in bold show parts of the Cook Inlet water column already exceed water quality criteria for copper, nickel, zinc and mercury. The effect of this pre-existing contamination has never been modelled or tested in the context of effects on acute or chronic whole effluent toxicity.

Moreover, the Parametrix application did not provide information on the PAH concentrations in the Cook Inlet water column and show how these pre-existing ambient concentrations would combine with discharged effluents to affect the exposure assessment, ecological risk and human health risk. This would mean that the application is incomplete and not approvable under 18 AAC 70.245 rules for mixing zone applications given the amounts of PAH found in wastewater effluent and the need to determine cumulative risk from both effluent and ambient water quality conditions.

The Parametrix application again makes the unsupportable claim that total aromatic hydrocarbon concentrations in the combined 001A and PM effluent are below the detection limit.[49]

6 ADEC Must Provide a Certification in Order for EPA to Apply Mixing Zones in the Calculation of Allowable Water Quality-Based Permissible Effluent Limitations

[48] Parametrix cited the Anchorage Water and Wastewater Treatment Facility study of 3 control stations in the Cook Inlet from Kennetic Laboratories, Inc. Monitoring Program Annual Report for November, 1992 to October 1993.

[49] Ibid, Parametrix Application, Page 12.

ADEC must provide a State Certification pursuant to 33 USC §1341 and 18 AAC 15.130 through 15.180 of the EPA-issued NPDES Permit to authorize EPA to use a mixing zone when setting water quality-based effluent limitations for the final permit. A failure of ADEC to provide certification in this manner necessarily requires that EPA enforce all provisions of the Alaska Water Quality Standards in the final effluent discharge without the use of a mixing zone.

EPA may not substitute its own discretionary decision to allow a mixing zone in the circumstance where ADEC has not provided a certification as the State of Alaska's rules specifically reserve the certification process to ADEC unless a waiver is issued:

> "(a) A person may not undertake a federally licensed or permitted activity requiring certification under 33 U.S.C. 1341 (commonly known as section 401 of the Clean Water Act) without first applying for and obtaining certification from the department under this section unless, after application, the department waives its right to certify under 33 U.S.C. 1341(a)..."[50]

Alaska's proclivity to specifically reserve this right to itself without an implicit delegation of authority to EPA to approve a mixing zone was previously acknowledged in an EPA guidance memorandum.[51]

7 Comment Addressing Comprehensive Objection Concerning Invocation of Required Non-Degradation Review and Anti-Backsliding Review

Notwithstanding all other comments provided herein, Commentors object to all effluent increases provided in the Draft Permit over and above the level of effluents inherent in the August, 1984 permit on the basis of non-degradation concerns. Permit modification and re-issuance proceedings in 1985 and 1991 did not properly recognize fundamental non-degradation and anti-backsliding policy objections that should have been recognized by both EPA Region 10 and ADEC. Neither of these proceedings properly recognized aspects of the effluent increases granted as invoking required anti-backsliding and non-degradation review. There wasn't adequate mention of these aspects in the public notice and the applications inherent with these changes did not contain required reviews and demonstrations that must be made to authorize the effluent increases which occurred.

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[50] 18 AAC 15.180.

[51] August 6, 1996 Memorandum from Robert Perciasepe, Assistant Administrator to Water Program Directors, Regions I-X, Page 2.

8 EPA's Paper on Cook Inlet NPDES Dischargers and Beluga Whales

EPA has published a paper concerning Beluga Whales and potential effects of NPDES effluents on these whales found in the Cook Inlet.[52] This paper is a modest effort to review available information about the health effects of chemical contaminants on Beluga Whales and about ambient water quality in Cook Inlet. However, the paper is not a sufficient review and analysis basis to draw conclusions about the effects of 5 NPDES dischargers on the Beluga Whales of Cook Inlet.

For example, the paper does not provide a comprehensive exposure assessment model for Beluga Whale toxicant uptake. There is no risk assessment for morbidity and mortality from exposure to both environmental carcinogens and non-carcinogenic environmental toxicants. The paper notes that there has been no analytical work on PAH in Beluga Whale tissues, notwithstanding the importance of this pollutant in the Cook Inlet and the potential for discharge of this class of chemical toxicants.

While the paper attempts to characterize some of the data available on existing toxicant-related ambient water quality, it is quite clear that this data is limited and non-comprehensive. There is no effort in the paper to review and/or provide comprehensive toxic effluent inventories from all Cook Inlet sources, including the potential for contamination of the water column by re-entrainment of contaminated sediments in the Inlet or a complete discussion of the potential of contaminated sediments to contribute to exposure pathways and biomagnification food routes leading to the Cook Inlet Beluga Whales.

While the paper discusses "mitigating factors" that attempt to paint an image that the industrial and municipal dischargers in question have minimal impact on Beluga Whales and other aquatic species, these mitigating factors do not address long term buildup of environmental contaminants in the Cook Inlet as a result of toxicant fluxes between water column and sediments. In addition, the paper does not address the consequence of relying on mixing zones to disperse persistent and bioaccumulative chemical toxicants that likely bioconcentrate, bioaccumulate and biomagnify in larger regions of the Cook Inlet beyond the specified mixing zones of the 5 dischargers in question.

To conclude, the paper presents useful information but cannot serve as the basis of a determination of environmental health protection for Beluga Whale populations or as a decision-making guide for policy-makers and organizations to reduce the likelihood of

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[52] The Cooke Inlet Beluga Whale, Its Life Cycle and Potential Impacts from Five NPDES Dischargers, EPA Region 10, February, 2000.

morbidity and mortality in the Cook Inlet Beluga Whale population.

9. Any Final Permit Issued by EPA Region 10 and Any Certification Issued by ADEC Should Include a Delayed Effective Date of at Least 30 Days After the Date the Public is Notified of a Final Action

Commentors request that both EPA Region 10 and ADEC delay the effective date of any final actions taken on either the permit or the State of Alaska certification for a period of at least 30 days following notice to the public that either agency has taken a final action.

On behalf of all of the organizations joining this comment, Commentors request that both EPA and ADEC publish a formal responsiveness document as part of their respective decisions that specifically answers each and every comment made by the public in these proceedings. In addition, Commentors request formal service of the final decisions of EPA, ADEC and the Office of Management and Budget to:

Cook Inlet Keeper
Attn. Robert Shavelson
P.O. Box 3269
Homer, AK 99603

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