



*Alaska's Final 2002/2003
Integrated Water Quality Monitoring and
Assessment Report*
December 2003*

* On February 13, 2004 EPA approved Alaska's Category 5/Section 303(d) list of impaired waters as contained in this Report.

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Executive Summary and Background

State of Alaska Integrated Water Quality Monitoring and Assessment Report

The 2002/2003 Integrated Water Quality Monitoring and Assessment Report (Integrated Report) describes the nature, status and health of Alaska’s waters and identifies impaired waters in need of action to recover water quality. Waters are reported in one of five categories, and summarized in the following table:

305 (b)
Report

Listing Category	Category Definition	Identified Number of Waters in 2003 Integrated Report
1	Attaining standards for all designated uses. This category requires that all data and information show that waterbody is available for all uses. The Department expects that most of Alaska’s waters fall into this category and meet standards for all uses.	
2	Attaining some designated uses, and insufficient or no data and information to determine if remaining uses are attained. Includes waters that have been removed from Category 5.	1
3	Insufficient or no data and information to determine if any designated use is attained.	161
4	Impaired for one or more designated uses but not needing a TMDL:	
4a	TMDL has been completed.	16
4b	Expected to meet standards in a reasonable time.	8
4c	Not impaired by a pollutant.	None
5 303 (d) List	Impaired by pollutant(s) for one or more designated uses and requiring a TMDL.	48

The Integrated Report is submitted to the Environmental Protection Agency (EPA) to comply with the Federal Clean Water Act (CWA) Sections 305(b) (State Report on Water Quality) and 303(d) (Identification of Impaired Waters). EPA has approval authority over the Category 5 waters; those that are CWA Section 303(d) listed (impaired) waters.

Beginning this year, the CWA impaired waters list (“Section 303(d) list”) and the statewide water quality assessment report (“305(b) report”) are integrated into one report. In this report all waterbodies are grouped into one of five categories based on available information and the degree to which a waterbody attains water quality goals.

These new waterbody categories and their definitions also meet the need of the Alaska Clean Water Actions (ACWA) initiative for an approach to describe the status and health

of state waters and prioritize State actions for recovery. For waters that are not attaining water quality goals, a key purpose of the categories is to determine whether a Total Maximum Daily Load (TMDL) implementation plan for recovery is needed, another type of action (e.g., permit enforcement) will restore the waterbody, or if more information is required.

The Alaska Department of Environmental Conservation considers the Integrated Report to be an important tool for Alaskans to understand the health of our waters and identify actions Alaska can undertake to improve water quality in Alaska.

A Guide to Alaska's Integrated Report

There are three main sections to Alaska's Integrated Report:

- description and criteria for the five waterbody categories;
- description of Alaska's stewardship programs that describe Alaska's approach to water quality management; and
- appendices that present the waterbodies by category and other relevant information to the Integrated Report.

Waterbodies are presented in four of the five categories. No waterbodies are identified in Alaska for Category 1, the category for waters attaining standards for all uses. Alaska simply does not possess that required level of information for any one waterbody. The waterbody categories are presented in report appendices.

To more easily sort and find waterbodies within the appendices each waterbody is associated with one of three general regions in Alaska – Southeast, Southcentral, or the Interior. Within each category waterbodies are organized by region with Interior waters first, then Southcentral waters, and lastly Southeast.

The following abbreviations or notations are used consistently in the appendices:

- The “Region” column indicates which general region of Alaska the waterbody is located. Waterbodies that are identified as “IN” are located in Interior Alaska, “SC” waterbodies are located in Southcentral Alaska, and “SE” for Southeast Alaska waterbodies.
- The “AK ID Number” column is the Alaska waterbody specific identification number, such as “20402-409.” The first five numbers represent the USGS hydrologic (catalog) unit in which the waterbody is located. The last three numbers identify the type of waterbody: –001 numbers are rivers, creeks, or streams; –400 are lakes; –500 are bays (i.e., marine waters); –600 are estuaries; –700 are wetlands; and –800 are coastal waters (i.e., coastline).
- The “Waterbody” column is the waterbody name.
- The “Location” describes the area or locational information to help clarify where the waterbody is located.
- The “Area of Concern” column describes the specific area of the waterbody that is considered. Waterbodies with the “N/A” in the “Area of Concern” column means “not applicable” or “not available.”
- The “Water Quality Standard” column identifies the water quality standards as found in 18 AAC 70 for which there is concern. Also, for Clean Water Act Section 303(d) listed (Category 5) waterbodies, this column identifies the water quality standard(s) not attained in the waterbody.
- The “Pollutant Parameters” column identifies the pollutant(s) for which the waterbody is impaired or, for non-impaired waterbodies, the specific pollutant(s) of concern. For instance, a waterbody could be Section 303(d) listed as impaired from the “Residues” from the specific pollutant of bark and woody debris.
- The “Pollutant Sources” column identifies the source(s) of the pollutant(s).

Waterbodies that are in SHADED AREAS represent a change in waterbody status from the 1998 Section 303(d) list of impaired waters or are a new waterbody added to the Category 5/Section 303(d) list.

List of Acronyms

AAC – Alaska Administrative Code, i.e., state regulations

ACWA – Alaska Clean Water Actions

ATTF – Alaska Timber Task Force

AWQS – Alaska’s water quality standards in 18 AAC 70; the AWQS are available on the web at <http://www.state.ak.us/dec/title18/title18.htm#70>

BPJ – best professional judgment

BMPs -- Best Management Practices

CWA -- Clean Water Act

DO – dissolved oxygen

DRO – diesel range organics

IN – Interior (Alaska)

LTF – log transfer facility

MCL – maximum contaminate level

N/A – not applicable

NPDES – National Pollution Discharge Elimination System, point source permits under the CWA

NPS – nonpoint source, such as nonpoint source pollution

PS – point source

ROD – Record of Decision

SC – Southcentral (Alaska)

SE – Southeast (Alaska)

TMDL -- Total Maximum Daily Load

USFS – U.S. Forest Service

WQS – water quality standards

ZOD – zone of deposit, the provisions where DEC may authorize zones of deposit may be found under 18 AAC 70.210 in Alaska’s water quality standards

Assessment Methodology

Waterbody categories and criteria for placing waters in the categories

General Criteria

New

Waterbody Categories	Description
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-
- | | |
|---|---|
| 1 | Attaining all the water quality standards. Waterbodies are placed in this category if there are data to support a determination that the water quality standards are attained. These waters should be considered for future monitoring to determine if the water quality standard continues to be attained. |
| 2 | Attaining some of the designated uses and insufficient or no data and information is available to determine if the remaining uses are attained. Waterbodies are placed in this category if there are data and information to support a determination that some, but not all, uses are attained. Attainment status of the remaining uses is unknown because there is insufficient or no data or information. Monitoring should be scheduled for these waters to determine if the uses previously found to be in attainment remain in attainment, and to determine the attainment status of those uses for which data and information was previously insufficient to make a determination. |
| 3 | Insufficient or no data and information to determine if any designated use is attained. Waterbodies are placed in this category where the data or information to support an attainment determination for any use is not available. Gaining supplementary data and information, or scheduling monitoring should be pursued to assess the attainment status of these waters, as needed. |
| 4 | Impaired for one or more designated uses but does not require the development of a TMDL. <ul style="list-style-type: none">a. TMDL has been completed. Waterbodies are placed in this subcategory once all TMDL(s) are developed and approved by EPA that, when implemented, are expected to result in full attainment of the water quality standard. Where more than one pollutant is associated with the impairment of a waterbody, the waterbody will remain in Category 5 (Section 303(d) listed) until all TMDLs for each pollutant are completed and approved by EPA. Monitoring should be scheduled for these waters to verify that the water quality standard is met once the water quality management actions needed to achieve all TMDLs are implemented.b. Other pollution control requirements are reasonably expected to result in attainment of the water quality standard in the near future. Consistent with the Code of Federal Regulations 130.7(b)(I), (ii), and (iii), waters are placed in this subcategory where other pollution control requirements required by local, state, or federal authority are stringent enough to achieve any water quality standard (WQS) applicable to such waters. These requirements should be specifically applicable to the particular water quality problem. Monitoring will be scheduled for these |

**New
Waterbody
Categories**

Description

waters to verify that the water quality standard is attained as expected.

- c. **Impairment is not caused by a pollutant.** Waterbodies are placed in this subcategory if the impairment is not caused by a pollutant affecting water quality. These waterbodies should be considered for monitoring to confirm that there continues to be no pollutant-caused impairment and to support water quality management actions necessary to address the cause(s) of the impairment. ACWA will utilize this category to track waterbodies with non-pollutant impairments, such as degraded riparian habitat.

5 **The water quality standard is not attained.** The waterbody is impaired for one or more designated uses by a pollutant(s), and requires a TMDL or waterbody recovery plan to attain water quality standards. This category constitutes the Clean Water Act Section 303(d) list of waters impaired by a pollutant(s) for which one or more TMDL(s) are needed. A waterbody should be listed in this category if it is determined, in accordance with the state's assessment and listing methodology, that a pollutant has caused impairment.

- Please note: **Please see Appendix L for a full explanation of Alaska's criteria for attainment and impairment determinations for the residues criterion within Alaska's water quality standards (18 AAC 70).**

Category 1

Description of the category

Attaining all the water quality standards. Waterbodies are placed in this category if there is data to support a determination that the water quality standards and all of the uses are attained.

These waters should be considered for future monitoring to determine if the water quality standards continue to be attained.

Criteria for placing waters in this category

Waterbodies will be placed in this category when water quality data and information show that all uses are being attained.

Summary of the Waters in Category 1

The majority of Alaska's waters are not subject to human activity or stressors and are considered unimpaired. The Department expects that the majority of Alaska's waters fall into Category 1.

Category 2

Description of the category

Attaining some of the designated uses, and insufficient or no data and information is available to determine if the remaining uses are attained. Waterbodies are placed in this category if there is data and information to support a determination that some, but not all, uses are attained.

Attainment status of the remaining uses is unknown because there is insufficient or no data or information.

Monitoring should be scheduled for these waters to determine if the uses previously found to be in attainment remain in attainment and to determine the attainment status of those uses for which data and information was previously insufficient to make a determination.

Criteria for placing waters in this category

Alaska will place waterbodies in this category where data and information exist to support that a use is attained, but insufficient data or information exists to support a determination that other uses are attained. Waterbodies that had been previously identified as impaired but are now attaining a water quality standard will be placed in this category. Examples include water bodies that have a Total Maximum Daily Load (TMDL) implemented or have other pollution control requirements in place that support a determination that the water quality standard is attained.

For waters associated with residue discharges

A waterbody will be placed in Category 2 when a determination is made that the waterbody has met standards based on recent dive survey reports and that continued attainment has been documented.

A waterbody will be placed in Category 2 where a determination is made that the waterbody is attaining some uses or standards. Waterbodies with recent dive survey reports that demonstrate attainment with a 1.0 acre zone of deposit (ZOD) will be placed in Category 2. For waterbodies associated with residues discharges, if a facility is reporting one or less acre of continuous residue coverage the waterbody will be placed in Category 2.

A waterbody that was determined to be impaired from residues and Category 5/Section 303(d) listed that has adequately documented continuous coverage of residues which is less than 1.0 acres will be placed in Category 2.

Summary of the Waters in Category 2

Alaska has 16 waterbodies in Category 2.

Category 3

Description of the category

Insufficient or no data and information to determine if any designated use is attained. Waterbodies are placed in this category where the data or information to support an attainment determination for any use is not available.

Developing supplementary data and information or scheduling monitoring should be done to assess the attainment status of these waters, as needed.

Criteria for placing waters in this category

Alaska's water resources include, for example, more than three million lakes greater than five acres in size, 365,000 miles of rivers and streams, over 174,000,000 acres of freshwater wetlands, and 36,000 miles of coastal shoreline. Hence, Alaska has a large number of waterbodies for which insufficient, inadequate, or little to no data or information exists to support attainment or impairment determinations. The Department expects that the majority of these waters would be in Category 1 (i.e., waters attaining standards for all uses), if sufficient resources existed to assess them. Category 3 includes waters formerly known as "open files" and waters nominated for assessment through ACWA. Actions that trigger opening a file can include nomination from the public, a public complaint, a newspaper report or more rigorous information, such as water quality reports or assessments. These waters will be placed in Category 3. DEC maintains files on some of these waterbodies and these are the waterbodies shown in Appendix C. in this report.

For waterbodies associated with residue discharges

A waterbody will be placed in Category 3 if there is an active facility with an authorized ZOD for residues that has a dive survey report that shows a first-time exceedance of a one-acre threshold but less than 1.5 acres of continuous residues coverage (for LTFs), or less than 1.5 acres of seafood waste deposits measuring greater than 0.5 inch in depth.

The use of Category 3 for this class of waterbodies is based upon a number of factors:

1. **Permits Establish Limits, not Water Quality Standards.** The fixed one acre zone of deposit used for previous impairment determinations is a permit limit and not a water quality standard. Alaska's zone of deposit regulations (18 AAC 70.210 ZONES OF DEPOSIT.) allows the deposition of substances on the bottom of marine waters within limits set by the department. However, the standards must be met at every point outside the zone of deposit. Permits use the water quality standards as a basis for setting effluent "limits" or for allowing flexibility from the water quality standards.

DEC specifies the criteria that can be exceeded in a permit, short-term variance or a certification. If a discharger is granted a zone of deposit within a permit, the permittee can only exceed the criteria that have been identified in their permit, certification or short-term variance.

In the log transfer facility (LTF) General Permits, exceeding the one-acre continuous-cover threshold triggers the requirement to develop a remediation plan. For waterbodies associated with a seafood or log transfer facility the impairment threshold is greater than 1.5 acres (i.e., the water is then Category 5/Section 303(d) listed).

2. Confidence of Dive Survey Information. While EPA's NPDES individual permits contained protocols for dive surveys at LTFs, it appears that dive methods were not implemented consistently. As well, NPDES permits included no method for calculation of bark area, which often was overestimated. These inconsistencies compared to current protocols in the General Permits raise the issue of the reliability of dive survey information that resulted in previous listing decisions, and make it difficult to track trends in actual bark accumulation patterns. For instance, a 1997 dive survey on bark residues that resulted in the 1998 impairment determination and Section 303(d) listing reported the presence of measurable bark or trace coverage. The reported 9.5-acre bark footprint was based upon plots with measurable bark rather than continuous-cover bark.

The dive survey requirements contained in Seafood GPs are based upon seafood waste residue dispersal patterns and seafloor monitoring. The lack of a perimeter dive survey requirement leads to uncertainty in the impairment determination similar to LTFs.

3. Uncertainty in Current Approved Method and Acreage Calculations of Dive Survey Reports. DEC has often noted that the current required method of acreage calculation is not used correctly. As part of the dive survey review DEC re-calculates continuous cover based upon dive survey reports. For facilities Section 303(d) listed in 1998 DEC calculations indicate that five of the seven 2002 dive survey reports for these facilities overstated the extent of continuous cover. Of all the reports reviewed to date since the inception of the two LTF General Permits, only one report understated the extent of continuous cover. Because of this uncertainty, and by using an impairment threshold of 1.5 acres of continuous coverage, DEC is confident that impairment decisions truly reflect actual impairment.

4. Natural Reduction of Residues Deposits. Dive survey reports for LTFs that transferred little or no timber volume over a number of years often showed considerable reduction in the areal extent of continuous coverage. The reduction is likely due to natural sedimentation and/or current dispersement. For example, the ZOD in Corner Bay declined from 1.2 acres in 1996 to 0.6 acre in 2001. No logs were transferred during this period, and no active remediation occurred.

If a Category 3 waterbody in this 2003 Integrated Report documents through a dive survey that the continuous residue coverage (LTFs) or residue greater than 0.5 inch depth (seafood processing facilities) exceeds 1.5 acres, the waterbody will be listed in Category 5/Section 303(d) listed in the next Section 303(d) list.

- If a waterbody has an approved LTF remediation plan and is meeting the milestones set out in the plan, and the continuous residues coverage is reported to be between 1.0 and 1.5 acres, the water will remain in Category 3.
- If a seafood processor is operating under a Compliance Order and is meeting milestones, and the seafood wastes greater than 0.5 inch in depth are reported to be between 1.0 and 1.5 acres, the waterbody will remain Category 3.
- If no remediation plan has been received and approved by DEC on a Category 3 waterbody associated with an LTF that requires the facility submit a remediation plan the waterbody will be Category 5/Section 303(d) listed in the next Section 303(d) list. For

Category 3 waters associated with an LTF and required to submit a remediation plan, a remediation plan must be submitted to DEC and approved prior to the next report for a water to be considered for placement in Category 4(b).

- For seafood discharges, if there is no Compliance Order, and/or if the seafood facility is not meeting the milestones in an existing Compliance Order, then the waterbody will be Category 5/Section 303(d) listed where there is greater than 1.5 acres of residue greater than 0.5 inch in depth.

As of 2003, there is only one log transfer facility currently reporting continuous cover of bark residues between 1.0 and 1.5 acres. The most recent dive survey for this facility reported 1.4 acres of continuous cover, 0.4 acres over the one-acre threshold. Since this waterbody was determined to be impaired in 1998, this waterbody will remain in Category 5 and is Section 303(d) listed in 2003.

Please see Appendix L for additional information on Alaska's criteria for attainment and impairment determinations for the residues standard.

Summary of the Waters in Category 3

There are 161 waters in Category 3 for which some limited information is available. A list of these waters can be found in Appendix C.

Category 4

Category 4 waters are waterbodies determined to be impaired but not needing a TMDL. They are divided into three sub-categories.

Description of category 4a

TMDL Completed. An impaired water that was previously listed in Category 5/Section 303(d) but has had a TMDL completed and approved by EPA. Waterbodies are placed in this subcategory once all TMDL(s) are developed and approved by EPA that, when implemented, are expected to result in full attainment of the water quality standards. Where more than one pollutant is associated with the impairment of a waterbody, the waterbody will remain in Category 5 (Section 303(d) listed) until TMDLs for each pollutant are completed and approved by EPA.

Monitoring should be scheduled for these waters to verify that the water quality standards are met once the water quality management actions needed to achieve all TMDLs are implemented.

Criteria for placing waters in category 4a

The key criterion for this category is a completed and approved TMDL.

Summary of the Waters in Category 4a

Alaska has 16 waterbodies in Category 4a.

Description of category 4b

Other pollution control requirements are reasonably expected to result in attainment of the water quality standard in the near future. Consistent with the Code of Federal Regulations 130.7(b)(I), (ii), and (iii), waters are placed in this subcategory when other pollution control requirements required by local, state, or federal authority are stringent enough to achieve any water quality

standards (WQS) applicable to such waters. These requirements should be specifically applicable to the particular water quality problem.

Monitoring should be scheduled for these waters to verify that the water quality standards are attained as expected.

Criteria for placing waters in category 4b

“Other pollution controls” are a requirement where there are stringent enough controls and assurances that the waterbody is expected to meet standards in the near future. Examples include:

- An approved state or federal Record of Decision (ROD) such as one associated with a state or federally approved contaminated site cleanup action.
- permitted facilities with an approved remediation plan, such as a log transfer facility;
- NPDES permitted facilities with TMDL-type controls incorporated into the permit;
- A water-quality based permit with controls or assurances that water quality goals will be met; or
- Restoration, remediation, or recovery measures or plans with stringent enough controls and assurances to attain water quality goals within a reasonable time.

There are key factors that must be considered prior to placing a waterbody in Category 4b:

- the need for pollution controls or measures;
- whether requirements and controls are stringent enough and there is confidence that standards are expected to be met in a reasonable time; and
- assurances that the requirements and controls will be implemented in the near future.

Determining whether to place a waterbody in Category 4b requires the application of best professional judgment and agency enforcement discretion. This includes discussion and analysis of a variety of factors including pollutant characteristics (for instance, consideration of the magnitude, frequency, and duration of the pollution event(s)), pollutant sources, size of the waterbody, the stringency of the requirements or assurances, and the degree of recovery response required.

For waterbodies associated with residue discharges

A waterbody will be placed in Category 4b if: LTF dive survey reports document there are greater than 1.5 acres of continuous residues coverage; a determination is made that the water is impaired; and there is an approved remediation plan under the LTF General Permits or an individual state wastewater discharge permit. Waterbodies that are under EPA compliance orders for seafood residue violations may also be considered for placement in Category 4b.

The requirements for preparing and submitting Remediation Plans, taken from DEC’s Certificates of Reasonable Assurance for the two LTF General Permits are found in the document titled “GUIDANCE FOR PREPARING REMEDIATION PLANS UNDER ALASKA’S GENERAL PERMITS FOR LOG TRANSFER FACILITIES”. A brief summary of the requirements follows.

- If existing continuous bark and wood debris cover exceeds both one acre and a thickness of ten centimeters at any point, an operator must submit a Remediation Plan to DEC within 120 days, unless the Department grants additional time.
- A proposed Remediation Plan must evaluate historical and future log transfer processes and volumes; environmental impacts of existing deposits of bark and wood debris and the environmental impacts of methods to reduce continuous coverage; and methods to reduce continuous bark coverage, including alternative methods of log transfer and transport, operational practices, technically feasible methods and costs of removing bark, and other methods.
- The Remediation Plan must identify a set of feasible, reasonable, and effective measures to reduce continuous bark cover to both less than one acre and ten centimeters at any point.
- If removal of bark is proposed, the Remediation Plan must specify areas, methods, volume, and timing of removal; and method of disposal of removed material, including practices to assure meeting water quality standards; and the cost of removal by the proposed methods and alternatives considered.
- The plan must include a performance schedule and performance measures for the implementation of the Plan.
- The plan may describe measures that can be implemented in phases, with continued bark monitoring surveys and with future modification of the Remediation Plan based upon progress in reducing the continuous coverage.
- DEC will approve, approve with modification, or deny a proposed Remediation Plan within 90 days of receipt.
- An approved Remediation Plan constitutes an enforceable condition of the General Permit.

There is no requirement in the LTF General Permits for EPA approval of the remediation plan. EPA requires that the LTF operator update the Pollution Prevention Plan to outline additional controls that will be implemented to reduce or eliminate additional residues accumulation. The revised Pollution Prevention Plan will not include measures intended to reduce the current bark accumulation to less than 1.0 acre.

The objective of remediation planning is to implement the most appropriate site-specific treatment with the goal of reducing the extent of continuous residues coverage to less than 1.0 acre.

Please see Appendix L for additional information on Alaska's criteria for attainment and impairment determinations for the residues standard.

Summary of the Waters in Category 4b

Alaska has eight waterbodies in Category 4b. These waterbodies are shown in Appendix E.

Description of category 4c

Impairment is not caused by a pollutant. Waterbodies are placed in this subcategory if the impairment is not caused by a pollutant affecting water quality.

These waterbodies should be considered for monitoring to confirm that there continues to be no pollutant-caused impairment and to support water quality management actions necessary to

address the cause(s) of the impairment. Alaska's resource agencies will utilize this category to track waterbodies with non-pollutant impairments, such as degraded riparian habitat.

Criteria for placing waters in category 4c

Currently there are no specific criteria or standards adopted by Alaska by which to identify any non-water quality related impairments. State Clean Water Actions priority rankings identify priority aquatic habitat or water quantity waters for action but these waters are not referred to as *impaired*.

Summary of the Waters in Category 4c

Alaska is in the process of applying specific criteria to identify non-water quality related impairments. There are currently no waterbodies identified for this Category.

Category 5

Description of the category

Impaired by pollutant(s) for one or more designated uses and requiring a Total Maximum Daily Load (TMDL). These are Alaska's impaired waters not attaining Alaska's Water Quality Standards (18 AAC 70) and Clean Water Act Section 303(d) listed.

Criteria for placing waters in this category:

Section 303(d) requires a list of impaired waterbodies that are not expected to meet standards without additional controls. Many Section 303(d) designated waters have not undergone comprehensive water quality assessments to determine the extent of water quality impairment or whether existing controls are adequate to achieve the standards. DEC closely scrutinizes waterbodies to determine if suspected water quality violations were thoroughly investigated and documented. This approach is designed to prevent the listing of waterbodies with inconclusive or circumstantial data and/or based on observation alone.

According to Section 303(d) of the Federal Clean Water Act and EPA's implementing regulations, Section 303(d) designated waters include impaired surface waters that do not **or are** not anticipated to meet applicable water quality standards solely through the implementation of existing technology-based or similar controls by the next Section 303(d) listing cycle (currently every two years). In Alaska, these waterbodies are priority ranked based on the severity of the pollution, the feasibility of implementing a waterbody recovery plan, and other factors. The development of a Total Maximum Daily Load (TMDL), or equivalent waterbody recovery plan, for these waterbodies is scheduled eight to thirteen years into the future.

A TMDL describes the process and steps to be taken to restore an impaired waterbody to a condition that meets the water quality standards for the pollutant parameters indicated. A waterbody recovery plan may include a TMDL, described in accordance with Section 303(d)(4)(A) of the Clean Water Act, to include effluent limitations based on TMDL wasteload allocations from point sources and/or load allocations from nonpoint sources.

"Impaired" Waterbodies

Impaired waterbodies are surface waters with documentation of actual or imminent persistent exceedances of water quality criteria, and/or adverse impacts to designated uses, as defined in the state's water quality standards. Designation of a waterbody as "impaired" does not necessarily indicate that the entire waterbody is affected. In most cases only a segment of the waterbody is affected.

When possible, the assessment process identifies the specific segment that is impaired and the corresponding pollutant parameters of concern.

The term "persistent" is key to help determine if a surface waterbody is impaired. Determining "persistent" exceedances of water quality standards is a waterbody-specific decision that requires the application of best professional judgment. This includes discussion and analysis of a variety of factors including pollutant characteristics (for instance, consideration of the magnitude, frequency, and duration of the pollution event(s)), pollutant sources, size of the waterbody, and the degree of remediation response required.

Impairment determinations must be based on credible data. "Credible data" means scientifically valid chemical, physical, or biological monitoring data collected under a scientifically accepted sampling and analysis plan, including quality control and quality assurance procedures that are consistent with Alaska's water quality standards in 18 AAC 70.

The following guidelines are used by DEC to determine if a waterbody is impaired:

1. water quality monitoring data that documents persistent exceedances of a criterion or criteria established in Alaska's water quality standards (18 AAC 70);
2. issuance of a notice of violation or other enforcement action definitively linked to a persistent water quality violation that does not result in adequate corrective measures;
3. photographs or videos with appropriate documentation definitively linked to persistent exceedances of water quality standards;
4. documented persistent presence of residues (floating solids, debris, sludge, deposits, foam, scum) on or in the water, on the bottom, or on adjoining shorelines;
5. documentation such as a report or study within the last five (5) years that concludes designated uses are adversely affected by pollutant conditions; or
6. documentation from a resource agency or other credible source where the use of "best professional judgment" (BPJ) is applied to credible data. BPJ is used to determine if a waterbody has persistent exceedances of water quality standards, or has designated uses that are adversely affected by pollutant sources.

Such best professional judgment determinations:

- should preferably be made by more than one professional and at the agency level
- must be made by a professional knowledgeable in the relevant field of expertise and generally based on that person's experience and all the information reasonably available at the time.
- should be based on the best available scientific data and information
- best professional judgment recommendations from outside the department must be affirmed by DEC
- must be subject to management level review
- available data and basis for the decision should be documented.

Alaska's Approach for Impaired (Category 5) Waters

Alaska's process for the "listing" of an individual waterbody to Section 303(d) designation begins with a review of existing and new information for open files within the Department.

These waters may be brought to the attention of DEC by Department staff, other state and federal agencies, municipalities, Native organizations and tribes, industry, and the concerned public.

DEC staff initially will evaluate available information about a waterbody to determine the presence of pollutants and/or persistent exceedances of water quality standards or impacts to the designated uses and the degree to which water quality standards are attained. This process constitutes a DEC desk audit, may involve preliminary field review and the collection of water quality monitoring data, and should result in one of the following:

- Credible data and information indicates that the waterbody may be impaired and that existing controls may be inadequate to attain or maintain standards in a reasonable time. The waterbody is placed on the Category 5 Section 303(d) waterbody list. Where needed, Section 303(d) waterbodies are scheduled for comprehensive water quality assessments.
- Credible data and information indicates that the waterbody may be impaired and that existing controls are adequate to attain or maintain standards in a reasonable time. The waterbody is placed on the Category 4b waterbody list. Category 4b waters are tracked and monitored until standards are achieved.
- Credible data and information on a waterbody indicates the waterbody is not impaired. The waterbody is placed on the Category 1, 2, or 3 waterbody lists. Category 1, 2, and 3 waters require no further action but may be reconsidered at any time.

A completed water quality assessment on a Category 5 Section 303(d) waterbody confirms the extent of impairment to water quality and/or designated uses. A comprehensive assessment requires the identification of pollution sources and corresponding pollutant parameters and should result in one of the following:

- Assessment indicates the waterbody is impaired and that existing controls are inadequate to achieve water quality standards in a reasonable time. Category 5 Section 303(d) waterbodies require a TMDL or equivalent waterbody recovery plan.
- Assessment indicates the waterbody is impaired but confirms existing controls are adequate to achieve standards in a reasonable time. The waterbody is placed on the Category 4b list.
- Assessment indicates that the waterbody is not impaired. The waterbody is placed in Category 1, 2, or 3.

Section 303(d) listed waterbodies are currently scheduled for TMDL development or waterbody recovery plan, now and out to year 2008. The TMDL schedule, and the criteria for developing the schedule, can be found in Appendix I.

For waterbodies determined to be impaired from residues

A waterbody will be listed in Category 5 and Section 303(d) listed when a determination is made that the water is impaired by residues. Category 5 waters require a TMDL or other measures to ensure attainment of the water quality standards within a reasonable time period.

For waters associated with a log transfer facility and subject to either of EPA General Permits and bark residues exceed one acre, these facilities are required to submit a remediation plan to DEC for approval to bring the facility into compliance with the one acre permitted threshold. Facilities operating under either of the General Permits are subject to the “Guidance for Preparing Remediation Plans under General Permits for Log Transfer Facilities (January 2002)”

(copies are available from DEC or on DEC's Division of Air and Water Quality web pages at: <http://www.state.ak.us/dec/dawq/waterpermits/index.htm>).

In the LTF General Permits, exceeding the one-acre continuous-cover threshold triggers the requirement to develop a remediation plan.

A waterbody will be placed in Category 5 if there are more than 1.5 acres of continuous residues coverage (LTFs) or more than a 1.5 acre area of seafood wastes at greater than 0.5 inch depth based on an authorized ZOD and two consecutive dive surveys, unless DEC has approved a remediation plan (LTFs) or remediation at a seafood processing facility. Exemptions would include waterbodies where ZODs were authorized at greater than 1.5 acres in accordance with 18 AAC 70.210.

- For waterbodies with active discharges, such as those associated with a seafood or log transfer facility, the impairment standard is greater than 1.5 acres of continuous coverage (i.e., the waterbody is then Category 5/Section 303(d) listed), the impairment threshold is 1.5 acres.
- A waterbody will be placed in Category 5 where there is no active discharge to the water but where the last known dive survey reported more than 1.0 acre of continuous residues coverage (LTFs) on the marine seafloor.
- A waterbody will be placed in Category 5 if there are more than 1.5 acres of continuous residues coverage and greater than 10 cm. at any one point (LTFs) or more than a 1.5 acre area of seafood wastes at greater than 0.5 inch depth based on an authorized ZOD and **two** consecutive dive surveys, unless DEC has approved a remediation plan (LTFs) or natural attenuation (seafood processing facility) under DEC's 401 Certificate of Reasonable Assurance under the NPDES General Permits for LTFs. Exemptions would include waterbodies where ZODs were authorized at greater than 1.5 acres. A waterbody will be placed in Category 5 when a submitter has failed to implement an approved remediation plan (LTF) according to its schedule.
- Legacy sites (such as a facility issued discharge authorization prior to the development of the two LTF General Permits, or a facility where no ZOD was issued) that are reporting over one acre of continuous residue coverage may be considered for Category 5/Section 303(d) listing.
- A facility operating under either of the LTF General Permits that is reporting continuous coverage of residues over 1.5 acres and has failed to submit a remediation plan, or has submitted a remediation plan but is failing to implement its remediation plan, or not meeting milestones set forth in an approved remediation plan, will be considered for Category 5/Section 303(d) listing.

If DEC approves a remediation plan on a Category 5/Section 303(d) listed waterbody that is reporting over 1.5 acres of continuous coverage of bark on the bottom prior to the next Section 303(d) list, the waterbody will be placed in Category 4(b) in the next Section 303(d) list.

For all Category 5 waterbodies, the operator will have to document through two consecutive annual dive surveys that the residues in excess of the permit threshold are declining in size from 1.5 acres or under to less than 1.0 acre through active or natural attenuation. If the ZOD is not declining in size, DEC will initiate permit modification or TMDL development.

The basis for a greater than 1.5 acres of continuous coverage impairment standard for log transfer and seafood processing facilities with ZODs is based on several factors:

- **Permits Establish Limits, not Water Quality Standards.** The fixed one acre zone of deposit used for previous impairment determinations is a permit limit and not a water quality standard. Alaska’s zone of deposit regulations (18 AAC 70.210 ZONES OF DEPOSIT.) allows the deposition of substances on the bottom of marine waters within limits set by the department. However, the standards must be met at every point outside the zone of deposit. Permits use the water quality standards as a basis for setting effluent “limits” or for allowing flexibility from the water quality standards.

DEC specifies the criteria that can be exceeded in a permit, short-term variance or a certification. If a discharger is granted a zone of deposit within a permit, the permittee can only exceed the criteria that have been identified in their permit, certification or short-term variance.

- **Confidence of Dive Survey Information.** While EPA’s NPDES individual permits contained protocols for dive surveys at LTFs, it appears that dive methods were not implemented consistently. As well, NPDES permits included no method for calculation of bark area, which often was overestimated. These inconsistencies compared to current protocols in the General Permits raise the issue of the reliability of dive survey information that resulted in previous listing decisions, and make it difficult to track trends in actual bark accumulation patterns. For instance, a 1997 dive survey on bark residues that resulted in the 1998 impairment determination and Section 303(d) listing reported the presence of measurable bark or trace coverage. The reported 9.5-acre bark footprint was based upon plots with measurable bark rather than continuous-cover bark.

The dive survey requirements contained in Seafood GPs are based upon seafood waste residue dispersal patterns and seafloor monitoring. The lack of a perimeter dive survey requirement leads to uncertainty in the impairment determination similar to LTFs.

- **Uncertainty in Current Approved Method and Acreage Calculations of Dive Survey Reports.** DEC has often noted that the current required method of acreage calculation is not used correctly. As part of the dive survey review DEC re-calculates continuous cover based upon dive survey reports. For facilities Section 303(d) listed in 1998 DEC calculations indicate that five of the seven 2002 dive survey reports for these facilities overstated the extent of continuous cover. Of all the reports reviewed to date since the inception of the two LTF General Permits only one report understated the extent of continuous cover. Because of this uncertainty, and by using an impairment threshold of 1.5 acres of continuous coverage, DEC is confident that impairment decisions truly reflect actual impairment.
- **Natural Reduction of Residues Deposits.** Dive survey reports for LTFs that transferred little or no timber volume over a number of years often showed considerable reduction in the areal extent of continuous coverage. The reduction was likely due to natural sedimentation and/or current dispersement. For example, the ZOD in Corner Bay declined from 1.2 acres in 1996 to 0.6 acre in 2001. No logs were transferred during this period, and no active remediation occurred.

The level of timber harvest is significantly lower than in the past. Reduced loading associated with reduced volume transferred is likely to act to reduce continuous cover accumulation over time. Limited research to determine the effect of transfer method and volume transferred on bark accumulation has established a weak statistical correlation between volumes transferred and bark accumulation. A similar correlation has not been established for the transfer method.

- A 1.0 Acre ZOD Threshold and a 1.5 acre Impairment Standard. There is clear and pervasive language within the LTF Guidelines that establishes the one acre zone of deposit standard as a *threshold standard for clean-up*, and not an impairment standard *per se*.
- Impacts to the Biological Community. There is a recognition, history and general acceptance of zone of deposits for dischargers of residues to the marine environment in Alaska. The hearing officer findings, for instance, from the LTF adjudication of the DEC proposed 401 certifications of the two federal General Permits found that the discharge of bark and wood debris sited and operated in conformity with the permit will have limited and localized impacts on the benthic community within the project area. The hearing officer also asserted that such discharges would have no discernable effect on the benthic environment as a whole in the geographic area covered by the General Permits. Patchy and discontinuous bark residue deposition on the bottom is authorized under the LTF General Permits. Additionally, there is an antidegradation finding made for each LTF facility permit.

It is recognized that excessive residue coverage over 1.5 acres, that is continuous and in excessive depth accumulations, can have adverse impacts. Facilities that are operating under permit conditions with ZODs are accepted as not adversely affecting the biological community or causing irreparable harm.

Specific considerations related to permitted ZODs (both seafood and LTF)

The current definition of a project area-wide ZOD in the General Permit for Log Transfer Facilities (LTFs) retains the one acre continuous coverage threshold and does not affect pre-existing impairment decisions for waterbodies associated with log transfer facilities. In other words, DEC is not proposing to re-categorize all waterbodies previously determined to be impaired for residue associated with log transfer facilities simply because the size of the ZOD has been expanded and now authorizes bark deposition over a greater area.

For waterbodies associated with log transfer facilities or seafood processing, dive survey protocols and reporting must be in accordance with the requirements contained in the appropriate permits.

For facilities where DEC has received a Notification or Notice of Intent to Operate under a General Permit, DEC will make its categorization decision after evaluating the sufficiency and credibility of the dive survey data on file.

Summary of the Waters in Category 5

There are 48 waterbodies identified as impaired in Category 5 and Section 303(d) listed.

De-listing of waterbodies from the Category 5/Section 303(d) list

Once a waterbody has been placed on the Section 303(d) list there are a number of instances under which a waterbody may be removed from the Section 303(d) list (also known as "de-listing"):

- More recent and accurate data that shows the water quality standards are being attained;
- Attainment of applicable water quality standard(s);
- Flaws in the original analysis that led to the original listing or listed area;
- New procedures or revised listing criteria -- i.e., because of these, the listed waterbody no longer meets the criteria for listing;

- New standards -- the water quality standard for which the waterbody was listed has been revised, and the water does not meet the criteria for listing;
- Application of sufficiently stringent pollution requirements -- such as incorporation of TMDL-type controls into the NPDES permit or controls such as those applied by a clean-up or remediation plan with assurance that the water quality standard(s) will be met within a reasonable time period;
- Development of a Total Maximum Daily Load (TMDL) or equivalent waterbody plan; or
- Development of “other pollution controls” which assure water quality standards are attained in a reasonable time as described for Category 4b waterbodies.

The following conditions supportive of a de-listing determination apply:

- There should be a demonstration of “good cause,” i.e. an explanation of why, or on what basis, the water was originally listed and the same for why now it is appropriate to de-list the water or redefine the listed area.
- An administrative record and documentation supporting the recommended determination is needed, such as, the need for public discussion or notice over a de-listing determination.
- When considering a de-listing, and in the determination to remove a waterbody from the Section 303(d) list, the level of data to support a de-listing determination and burden of proof shall be no greater than was used in the initial listing determination.
- The proposed delisting is public noticed and public comment is sought.
- A de-listing determination is subject to approval by the U.S. Environmental Protection Agency.

De-listing of waterbodies from the Category 5/Section 303(d) list determined to be impaired from residues.

The following de-listing protocols will be applied to all waterbodies regardless if there is an active discharge on-site.

For waterbodies currently Section 303(d) listed and determined to be impaired for residues based upon two or more dive surveys:

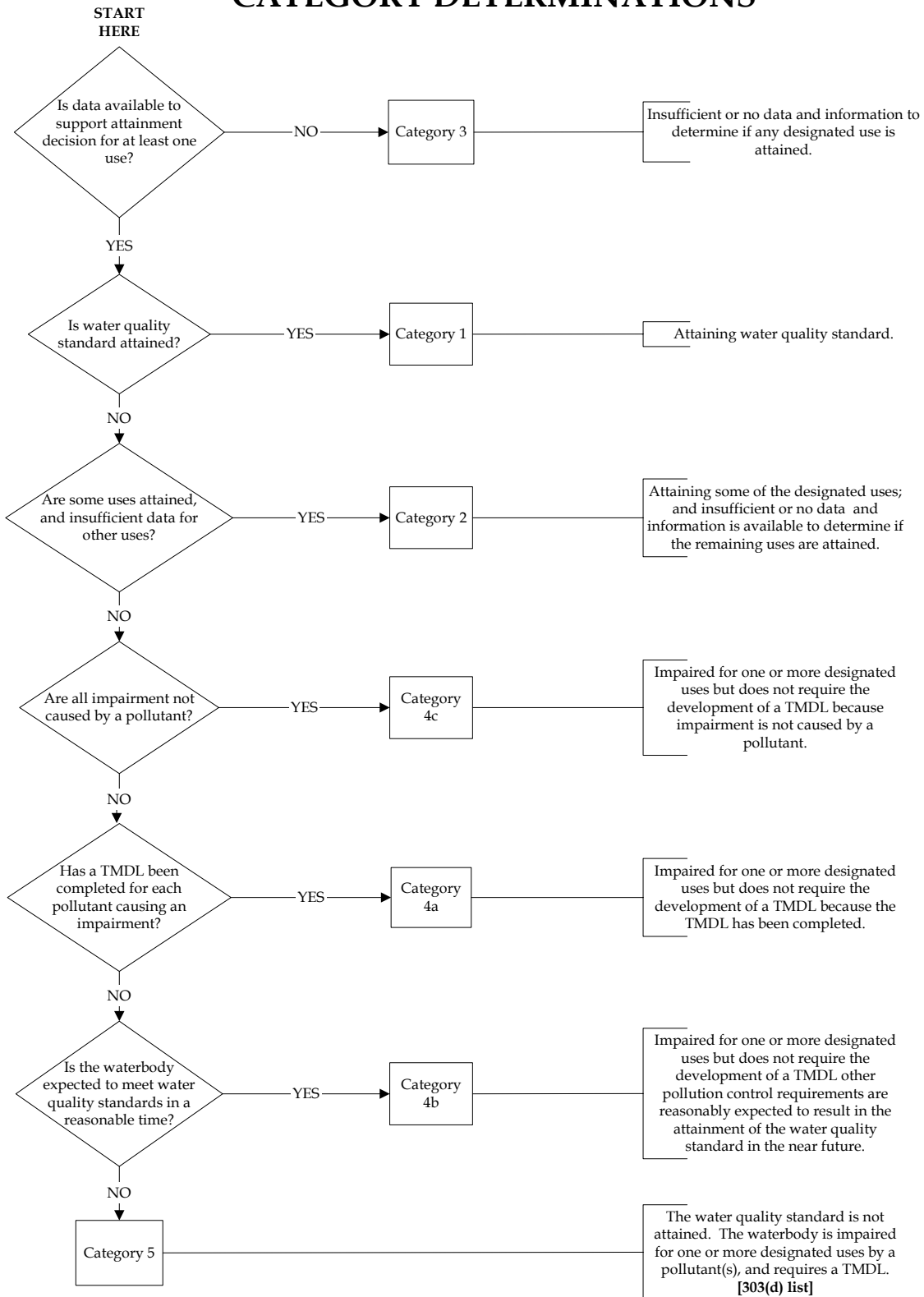
DEC will require two consecutive dive surveys documenting that continuous residues coverage (LTFs) or areal extent of seafood wastes greater than 0.5 inch depth is no more than 1.0 acre prior to being eligible for removal from Category 5 and placement in either Category 1 or 2.

For waterbodies previously Section 303(d) listed and determined to be impaired for residues based upon one dive survey or best professional judgment:

DEC will require one dive survey documenting that continuous cover (LTFs) or areal extent of seafood wastes greater than 0.5 inch depth is no more than 1.0 acre prior to being eligible for removal from Category 5 and placement in Category 1 or 2. Placement in Category 1 or 2 will depend on the information available.

For inactive log transfer facilities (i.e., DEC has not received a Notification or Notice of Intent to Operate) that have greater than one acre of continuous coverage of residues on the marine bottom and are Category 5/Section 303(d) listed, an approved TMDL or remediation plan is required prior to being eligible for de-listing and placement in Category 4a or 4b.

LOGIC FLOW DIAGRAM FOR MAKING CATEGORY DETERMINATIONS



Stewardship Programs

Overview

Alaska is rich in water quantity, water quality and aquatic resources. Almost half of the total surface waters of the United States are located in Alaska. The vast majority of Alaska's water resources are in pristine condition due to Alaska's size, sparse population, and the remote character of the state.

Surface freshwater supplies three quarter's of the state's water needs for industry, agriculture, mining, fish processing, and public water use, and is used for about half of Alaska's domestic water supply. Alaska's surface waters include over 15,000 salmon streams – an important resource to Alaskans and the world. Alaska has the greatest groundwater resources of any state and the primary use of groundwater is for most domestic needs.

Alaska is sparsely populated by approximately 635,000 residents (approximately one resident per square mile). Urban development is concentrated in a few main population centers, with the majority of people living in Southcentral Alaska. The 1990-2000 US Census showed the population increase in the Matanuska-Susitna Valley was 49.5% (the fastest growing area in Alaska), compared with an Alaskan increase of 14% and a national average increase of 1.2%. The Matanuska-Susitna Borough's growth ranked 86th in the nation. Nearly one-half of the state's population lives in the Municipality of Anchorage. Other major population centers include Fairbanks in the state's 'interior' and Juneau, the state capital, in southeast Alaska. Beyond these major population centers, communities tend to be small and generally not connected by roads. As Alaska's population grows and Alaska's natural resource base economy expands, an increasing number of Alaska's waters, especially in urban areas, face the threat of degradation.

In specific localized parts of Alaska, surface water quality is impaired from several types of sources. In urban settings (cities, towns, and villages), waters are predominantly impaired from sediment, turbidity, and fecal coliform bacteria contamination from urban and stormwater runoff. Other sources of impairment are sediment and turbidity from mining activities in Interior Alaska, residues from seafood processing facilities in the coastal zone, contaminated military sites in Southcentral and southwestern Alaska, and bark and wood residues from timber processing and transfer facilities in coastal southeast Alaska. Petroleum products, such as oil spills or fuel leaks, are also a significant source of impairment within the state.

Atlas -- Topic	Value
State population	634,892
State surface area (square miles)	656,425
Total miles of rivers and streams	365,000
Number of lakes/reservoirs/ponds	3,000,000+
Acres of lakes/reservoirs/ponds	12,787,200
Square miles of estuaries	3,331
Miles of coastal shoreline	36,000
Acres of freshwater wetlands	174,683,900
Acres of tidal wetlands	2,180,500

Alaska's Water Quality Standards

The protection of surface and groundwaters occurs primarily through the development, adoption, and implementation of the water quality standards. The standards specify the degree of degradation that may not be exceeded in a state waterbody as a result of human actions. The

most recent Alaska Water Quality Standards were adopted in May 1999. Another revision was proposed in August 2002, primarily to make the regulations easier to use. DEC expects to adopt the new revisions sometime in June 2003.

The Alaska Water Quality Standards designate specific uses for which water quality must be protected, and specifies the pollutant limits, or criteria, necessary to protect designated uses. There are seven designated uses for fresh waters, and seven designated uses for marine waters specified in state standards. By default, waterbodies in Alaska are protected for all designated uses. The few waterbodies that have had some uses removed are listed in the water quality standards.

The seven (7) freshwater uses are: drinking water; agriculture; aquaculture; industrial; contact recreation; non-contact recreation; and growth and propagation of fish, shellfish, other aquatic life, and wildlife. The seven (7) marine water uses are: aquaculture; seafood processing; industrial; contact recreation; non-contact recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife; and harvesting for consumption of raw mollusks or other raw aquatic life.

For each of the 14 freshwater and marine uses, the state standards specify criteria for a variety of parameters or pollutants. The criteria are both numeric and descriptive. The pollutant parameters are fecal coliform bacteria, dissolved oxygen, pH, turbidity, temperature, dissolved inorganic substances, sediment, toxic substances, color, petroleum hydrocarbons, radioactivity, total residual chlorine, and residues (floating solids, foam, debris, deposits). In the federal Clean Water Act Section 305(b) and Section 303(d) assessment process, waterbodies are compared to the criteria for these parameters to determine if persistent exceedances of water quality violations occur, and if so into which status category waterbodies are listed.

Wetlands are considered “waters of the state” in Alaska’s water quality standards (18 AAC 70) and consequently Alaska’s water quality standards apply to wetlands. Alaska does not have any wetland-specific water quality standards; furthermore, there are neither numeric nor narrative criteria that are specific to wetlands.

The water quality standards adopt the state primary drinking water maximum contaminant levels (MCLs) by reference as of May 1999. Since the Alaska Drinking Water Program has been given primacy by EPA, the state MCLs are in full compliance with the National Primary Drinking Water Regulations contaminant limits. The water quality standards are being revised to adopt new disinfection by-products (i.e. bromate, chlorite, and haloacetic acids) which were adopted into the state drinking water standards in 1999.

The water quality standards also contain provisions for antidegradation, and mixing zones, short-term variances, and “zones of deposit” where a water quality standard may be exceeded under certain permit conditions, and carcinogenic risk levels for chemical contaminants. The antidegradation regulation is identical to federal law and requires protection of high quality waters such as waters of a national or state park, wildlife refuge, or a water of exceptional recreational or ecological significance.

Triennial Review of the Water Quality Standards

In 2003, Alaska will start a triennial review of the water quality standards. Several issues affecting standards used to determine and manage impaired waterbodies are on the draft workplan for this review. Other topics may be added to those below based on public input. The three most frequently listed standards -- residue/debris, bacteria and petroleum hydrocarbons -- for Category 5 (Section 303(d)) impaired waterbodies list are likely topics for review and can be reviewed at <http://www.state.ak.us/dec/dawq/wqs/documents/triennial.htm>

The first six topics are DEC priorities. The remainder are not listed in priority order.

Residue Standard and Zones of Deposit

The narrative criteria for residues implies a zero discharge of debris such as log bark, seafood wastes or clean fill. However, the Water Quality Standards (WQS) also allow the permitted discharge of residues/debris within limited areas in marine waters called Zones of Deposit (ZOD). Department practice has been to routinely certify that the water quality standards allow the permitted discharge of clean fill (residue/debris) to fresh water areas and wetlands. Some waterbodies are impaired by residues and require cleanup plans and Total Maximum Daily Load (TMDL) allocations. Some facilities have discharged residues for ten years or more. For these waterbodies, the debris may have covered the bottom substrate and smothered the original benthic aquatic life. Some debris may contain toxic substances. Some debris is biodegradable or may provide a suitable substrate for new benthic communities over time. This topic review would look at the design and application of ZODs in permits, as well as the appropriate application of the residue standard and ZODs in TMDL determinations.

Groundwater Standards

The current Water Quality Standards apply to groundwater, even though the standards were written for the purpose of protecting surface water uses. Under the current regulations groundwater is protected for the aquaculture use by applying aquatic life criteria, even though aquatic life does not exist in groundwater. Since aquatic life criteria are frequently more stringent than drinking water maximum contaminant levels, criteria meant to protect nonexistent aquatic life become the effective groundwater standard. The WQS do not address issues such as mixing zones or points of compliance in ground water.

Arsenic Drinking Water Criteria

DEC plans on evaluating the statewide impact of new arsenic drinking water criteria established by EPA. DEC will identify geographic regions with high natural background levels, as well as recommendations regarding implementation issues for ambient waters and public education.

Petroleum Hydrocarbon Criteria

The analytical methods designated for measuring total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH) were updated in the 2002 WQS revisions. However, the appropriate application of the TAH and TAqH standard has also become an issue. The standard was the subject of a recent adjudicatory hearing regarding the application of the TAH and TAqH criteria to a water-oil separator. DEC has also received public requests to review this standard based on more recent scientific research that indicates that aquatic life may be sensitive to lower levels of petroleum hydrocarbons.

Treatment Works

A treatment works is a body of water that is used for treating wastewater or solids prior to discharging to the environment. Examples would include sewage lagoons and mine tailings impoundments. Treatment works are exempt from meeting WQS under 18 AAC 70.010(c). Generally, treatment works are constructed facilities involving dams, dikes, ditches and other water control features, but they may also involve modification or diversion of a natural water body. Clarifying the treatment works provisions may include procedures for evaluating existing uses, alternatives, and social and economic factors that would justify a modification of a state water.

Mixing Zones

Possible issues affecting the mixing zone provisions in 18 AAC 70.240-270 include:

- Spawning areas prohibition- some pollutants do not have adverse effects on spawning. For example, fecal coliform is a human health indicator considered irrelevant to spawning beds, yet a mixing zone for fecal coliform is not allowed.
- Timing restrictions - Many aquatic life criteria depend on whether eggs and early stages of fish are present. Mixing zone limits could be varied to be more restrictive during critical seasons and less restrictive at other times of the year.
- Multiple mixing zones for different parameters in one discharge.
- Mixing zones in groundwater - The velocity, dilution, size, monitoring well locations, and point of compliance should be considered for mixing zones in groundwater.

Antidegradation Policy Implementation Plan

In Alaska, many waterbodies have natural water quality that is better than the criteria set by the Water Quality Standards. In such cases, a discharge may meet Water Quality Standards, but still cause some degradation of the water body. In 1996, Alaska adopted an antidegradation policy in 18 AAC 70.015. However, EPA also requires DEC to develop an Antidegradation Policy Implementation Plan. The Plan would specify the procedures and criteria used to determine when waters are degraded by discharges or nonpoint sources of pollution, and what social and economic benefit to the state would be necessary to justify any degradation. The plan would also have procedures for nomination and designation of Outstanding National Resource Waters (ONRW), which allows special protection for a waterbody. The Plan may be developed as regulatory guidance, adopted in regulation, or some combination of the two.

Dissolved Inorganic Substances/Total Dissolved Solids (TDS) Aquatic Life Criteria

A recent research study on *Salmon as a Bioassay Model for TDS* (Stekoll, et. al.) indicates that early stages of fish eggs are sensitive to relatively low levels of dissolved inorganic substances. The State and EPA have discussed the 1999 state TDS criterion and agreed that a re-evaluation of TDS criteria will be necessary following the final report of the study in Spring 2003.

Bacteria Criteria

In 1986, EPA published *Ambient Water Quality Criteria for Bacteria* in which they recommended the use of *E. coli* and enterococci rather than fecal coliforms as indicators for human pathogens. In March 1999, EPA released its Beach Action Plan. In this plan, EPA committed to develop a policy to facilitate state adoption of the recommended water quality criteria. In May 2002 the EPA released a final draft of the Bacteria Criteria Implementation Guidance. EPA expects states to adopt the 1986 recommended bacteria criteria by April 2004, or EPA will promulgate federal criteria for states under the Clean Water Act.

Alaskan Fish Consumption Values

The Department of Fish and Game (DF&G) has estimated that fish consumption rates for some Alaskans may be up to 10 times the EPA 1980 default values used in current Water Quality Standards. However, the fish intake varies widely from village to village. In 2000, EPA developed a new methodology for calculating human health criteria using a fish consumption rate of 17.5 grams/day in place of the 6.5 grams/day value used since 1980. In December 2002, EPA published updated human health criteria based on the new methodology. This topic would consider what fish consumption value protects human health in Alaska and whether some areas of the state need additional consideration.

Ballast Water

The Department of Fish and Game (DF&G) approved an Aquatic Nuisance Species Management Plan in October 2002. Nonindigenous species can be carried in ship ballast water brought from foreign ports or other states. Some of these species can cause economic and ecological harm.

Washington, Oregon and California have state regulations requiring deep-ocean ballast water exchange by shipping vessels. Currently, the U.S. Coast Guard only has voluntary standards. DF&G and DEC may develop recommendations for ballast water statutes and regulations.

Methylmercury Human Health Criteria

The EPA published human health criteria for methylmercury in January 2001. Methylmercury is the toxic form of mercury in water that can enter into fish and humans. The new criteria were based on fish tissue concentrations, but did not include definitive guidance on how to calculate the maximum water concentration limit. EPA has promised implementation guidance before requiring states to adopt the new methylmercury criteria. The EPA 2000 Human Health Methodology, used to calculate the methylmercury criteria, requires an assessment of exposure to mercury from air, as well as exposure from fish and water consumption in order to set the appropriate water quality criteria. Alaskan fish consumption rates and recent studies of fish tissue samples in Alaska will also affect development of methylmercury criteria.

Human Health Criteria for Carcinogens

In 1992, EPA promulgated human health criteria for carcinogens for the State of Alaska under the National Toxics Rule (NTR). The NTR criteria use the EPA's 1980 human health methodology. In November 2000 EPA published a new methodology for calculating human health criteria. In December 2002, the EPA published recommended criteria for human health, most of which are carcinogens, using the 2000 EPA methodology. DEC may review and consider adopting the updated carcinogenic criteria after which EPA would withdraw federal standards for Alaska from the NTR.

Sediment Criteria

Based on a preliminary investigation of sediment criteria frameworks, the Contaminated Sites (CS) Program will likely use sediment quality guidelines (SQGs) for cleanup decisions. CS is interested in applying a tiered approach to contaminated sediment assessment. The first tier is generally a comparison between field chemical concentrations and a screening level SQG. If SQG are exceeded, the second tier uses toxicity testing and/or fate & transport models to further evaluate site-specific conditions. In this framework, actual sediment criteria are site specific. DEC may adopt SQGs and/or narrative criteria in the Water Quality Standards to regulated contaminated sediments affecting water quality.

Short Term Variances for Forest Practices

The Department of Natural Resources (DNR) Forest Practices Regulations provide a 48-hour temporary variance from the antidegradation policy of the Water Quality Standards where effects are localized and reparable. This provision is generally used for routine road construction activities, such as culvert and bridge installations. DEC may consider a change to the WQS short-term variance regulations in 18 AAC 70.200 to be consistent with DNR.

Dissolved Oxygen Criteria

The existing dissolved oxygen (DO) standard specifically mentions naturally depressed DO conditions for some designated uses, but not for others. In another section of the regulations (18 AAC 70.235) natural conditions can be considered for any water quality criteria. This has caused some confusion. Naturally occurring, seasonal or semi-permanently depressed DO is a common occurrence in some waterbodies. EPA has recently published new regional marine DO criteria for the East Coast. DEC may consider studying whether the EPA criteria can be adapted to Alaskan environments.

Other Discussion Topics

Nutrient Criteria - Cook Inlet Ecoregion Only

Preliminary nutrient studies have been done on several lakes in the Cook Inlet ecoregion, which includes the Anchorage area, the Matanuska-Susitna valley, and the western half of the Kenai Peninsula. This ecoregion is the most likely to be impacted by nutrients from urban and agricultural runoff. More study will be necessary before there is sufficient data to characterize lakes in the area and adopt numeric nutrient criteria. Narrative criteria to address nutrient problems were adopted in the 2002 WQS revisions.

Biocriteria

Biocriteria describe the overall health of a waterbody through biological assessments. The presence, condition, numbers, and types of fish, insects, algae, plants, and other organisms provide information about the disturbance or pollution levels of specific bodies of water. DEC's Division of Air & Water Quality is working on a long-term plan for developing scientifically defensible biocriteria for Alaska. The effort will cover multiple ecoregions of the State. It involves baseline water quality monitoring and biological surveys. The necessary knowledge base for numeric biocriteria may not be available for at least ten years. DEC may consider narrative biocriteria into the water quality standards until numeric criteria can be determined.

Alaska's Clean Water Actions (ACWA)

Alaska's Approach to Water Resources Management

The Alaska Department of Environmental Conservation (DEC) participates in the implementation of the Alaska's Clean Water Actions (ACWA) policy, initiated in 1999. Through the ACWA process, the Departments of Environmental Conservation, Natural Resources, Fish and Game, and the Governor's Office, Division of Governmental Coordination work together to focus state and federal resources on the waters of greatest need, addressing issues of water quality, water quantity, and aquatic habitat.

Cooperating agencies have developed a waterbody nomination and ranking process which prioritizes stewardship and corrective action for waters at risk of pollution, and polluted waters, according to established criteria. These criteria include the statutory criteria, severity of pollution and uses to be made of the waters, per the Clean Water Act (CWA) § 303(d)(1)(A).

The ACWA ranking criteria were developed to assign a numeric value to a successfully nominated waterbody, resulting in a relative priority ranking. Some waterbodies may have insufficient data to suggest a current or anticipated problem, and are tracked for further "data collection or monitoring." Other waterbodies with sufficient and credible data to suggest that a current water quality, water quantity, or aquatic habitat problem exists, or that future problems are likely, will be subject to additional analyses that evaluate stewardship effectiveness and to determine the persistence of standards or regulations violations. A number of these waterbodies are tracked as "at-risk" or "recovery." A means to rank the waterbodies and assign a relative priority provides a method for agencies to focus resources on the most important priorities.

Description of Ranking Criteria

The ACWA Ranking Criteria consist of four tables. Each table represents one of four components for each evaluated waterbody, including:

- Water Quantity
- Water Quality
- Aquatic Habitat
- Additional Considerations

The “Additional Considerations” component addresses those waterbody issues that transcend water quality, water quantity and aquatic habitat, and are determined to require special consideration or additional weighting. The severity of pollution and uses to be made of the waters, per the Clean Water Act (CWA) § 303(d)(1)(A) are factored into the rankings for polluted waterbodies. Each ranking component includes from 4-5 factors. Each factor is assigned a high (5), medium (3) and low (1) rating. The ranking criteria were designed to be simply applied and broadly measurable.

Application of the Ranking Criteria

Professional agency staff review available information and data at hand related to a given waterbody and assign a factor-rating based upon available data and their best professional judgment for each factor. In many instances, the agency most knowledgeable and familiar with the data will likely be responsible for an individual component. For instance, Alaska Department of Natural Resources hydrologists might be assigned the responsibility for assigning factor-ratings for water quantity, whereas biologists within Alaska Department of Fish and Game might be assigned the responsibility for making aquatic habitat factor ratings, or DEC might be assigned the responsibility for making drinking waters source ratings under the Additional Considerations component. Alternatively, each resource agency may have professional staff available to assign factor-ratings for each component. Differences between agencies’ assigned scores are resolved through consensus (or averaging) and a combined agency score is assigned for the specific waterbody component.

Waterbodies are ranked in descending order of their “cumulative component total” and each waterbody is assigned a high, medium or low priority.

Funding Priorities

Funding to support these ACWA efforts may come from various state agencies, through which requests for proposals (RFPs) are publicly solicited on a competitive basis: Department of Environmental Conservation, Department of Natural Resources, Department of Fish & Game, Department of Commerce & Economic Development, and Office of the Governor/Division of Governmental Coordination. Each of these funding sources has a unique set of obligations and conditions for use.

In 2003, a single, integrated RFP process that captures the requirements associated with each of the potential funding sources was developed. The consolidated RFP process is expected to reduce the burden on applicants by providing a “one-stop shopping” approach to their funding search. It is also expected to facilitate the project evaluation and award process of the agencies, by providing, in one process, the ability to optimally match projects with the best funding source, and provide all of the information required to make the funding awards. Project evaluations and matches to funding sources will be accomplished by an interagency team representing all of the resource management and funding source agencies.

Alaska Water Monitoring and Assessment Strategy

The Water Quality Programs has begun development of a comprehensive water quality monitoring and assessment strategy to guide its efforts to assess, track, prioritize for corrective or restorative action, and report on the condition of Alaska’s waters. The strategy will integrate ACWA policy direction and provide information that can guide state efforts to ensure that the Water Quality Standards meet Alaska’s needs. The strategy will include the ten program elements which the Environmental Protection Agency has recommended in its March 2003 Elements of a State Water Monitoring and Assessment Program guidance document (<http://www.epa.gov.owow/monitoring/repguide.html>).

The dichotomy of limited financial and abundant water resources create a challenge for Alaska, which is greater than anywhere else in the country. Little ambient water quality information is available other than that developed through a percentage of our Nonpoint Source Pollution Program's Section 319 Clean Water Act grant program, and water body specific monitoring and assessment projects funded or implemented by various state, local, federal agencies, tribes, and citizen groups. For example, in the summer of 2002 Alaska completed a survey of the Southcentral Alaska coastline through a grant funded by EPA's Environmental Monitoring and Assessment Program. A Southeast Alaska coastal survey is planned for the summer of 2004. Further surveys will be dependent upon funding.

Nonpoint Source Pollution Program

Since much of Alaska is undeveloped and relatively pristine, the primary emphasis of the nonpoint source pollution strategy is prevention. In populated areas, however, many waterbodies, including important salmon streams, have been degraded and are in need of restoration. Waterbody restoration plans are developed and implemented where water quality is either impaired. Restoration strategies for polluted waterbodies consider the entire watershed and include measures to control the sources of pollution to prevent future degradation. Restoration activities are designed to achieve a water quality condition appropriate to the specific site.

Nine Key Elements

Alaska's Nonpoint Source Pollution Program incorporates nine key elements that the U.S. Environmental Protection Agency (EPA) has identified for all states, that are needed for an effective program. These are:

1. Explicit short- and long-term goals, objectives, and strategies to protect surface and groundwater.
2. Strong working partnerships and linkages with appropriate state, tribal, regional and local entities (including conservation districts), private sector groups, citizens' groups, and federal agencies.
3. A balanced approach that emphasizes both statewide and on-the-ground management of individual watersheds and waterbodies where waters are impaired.
4. The program abates known water quality impairments from nonpoint source pollution and prevents significant threats to water quality from present and future activities.
5. Identifies waters and their watersheds impaired by nonpoint source pollution and identifies important unimpaired waters that are threatened or otherwise at risk. Included is a process to progressively address these identified waters by conducting more detailed watershed assessments and developing watershed/waterbody implementation plans, and then by implementing those plans.
6. The program reviews, upgrades, and implements all program components and establishes flexible, targeted, and iterative approaches to achieve and maintain beneficial uses of water. This includes: a) a mix of water quality-based and/or technology-based programs; and b) a mix of regulatory, non-regulatory, financial and technical assistance as needed to achieve and maintain beneficial uses of water.
7. The program identifies federal lands and activities that are not managed consistently with nonpoint source program objectives.
8. The program is managed efficiently and effectively, including necessary financial management.

9. The program is periodically reviewed and evaluated using environmental and functional measures of success, and sources of nonpoint source pollution are assessed and its management program revised at least every five years.

These elements are integrated with the Alaska's Clean Water Actions policy, in Alaska's Nonpoint Source Pollution Program. General sources of nonpoint source pollution that are addressed in Alaska's NPS program include:

- Urban and community development
- Forest Practices
- Harbors and Marinas
- Hydromodification
- Mining
- Agriculture
- Wetlands Classification and management
- Stormwater (can also be considered and managed as a point source of pollution)

Maintaining good water quality can only be achieved when all sources of pollution are taken into consideration, resources are used on the highest priorities and people work together to prevent pollution and achieve clean water goals. The Nonpoint Source Pollution Program, through its implementation of ACWA, focuses on the various sources of nonpoint pollution. Integration of the nine key program elements listed above ensure priority stewardship and prevention, monitoring, and when necessary, restoration.

Point Source Pollution Program

DEC's overall approach to water quality management of point source pollution at the 600-plus permitted facilities and activities statewide is to prioritize efforts on facilities and activities that pose higher risks to people or the environment and direct staff resources toward work that optimizes on-site wastewater treatment and discharge. An integral, "behind-the-scenes" effort is a multi-year, system-wide modernization of the permitting process so that staff spends most of their time as environmental problem solvers. Four broad categories of effort are underway:

1. DEC has not been delegated "primacy" (i.e., prime authority to administer the program) by EPA for the National Pollutant Discharge Elimination System (NPDES) permits for point sources of pollution in Alaska. However, Alaska is exploring primacy of the NPDES program from EPA. Staff resources focus on facilities and activities with a higher risk to human health or the environment through DEC certification of NPDES permits for all large-volume, major dischargers; use of general permits that streamline the review of lower risk projects; and prioritizing field inspections through a risk-based scoring model. DEC also works on municipal waste treatment facilities not permitted by EPA but nevertheless important to human health in smaller Alaskan communities.
2. A field presence is emphasized to determine a facility's compliance with effluent limits and operational conditions designed to protect water quality. As important, knowledgeable staff provides on-site assistance to facility operators to optimize their site-specific wastewater treatment and release. The field inspections require knowledge about a wide variety of local conditions. On-site assistance coupled with routine verification of monitoring records, yields incremental improvements in the ambient water quality.

3. Trained and technically competent staff are accessible, through various telecommunication tools that bridge Alaskan-sized distances, to permittees and their consultants to provide technical assistance. Department staff act as a resource and clearinghouse of successful wastewater treatment/discharge practices across the state.
4. Modernization of the permitting process also facilitates discharger compliance through streamlined application and reporting, permit conditions focused on cost-effective practices gleaned from statewide experience and consistent attention across industry sectors to pollutants of concern. A modern data system is also an analytical tool to support improvements to other aspects the DEC's Water Quality program, such as improvements to Alaska's Water Quality Standards.

The department's overall goal with respect to point source pollution in Alaska is to protect and improve ambient water quality through a focused effort that tackles the higher-risk discharges and seeks to make steady, incremental and cost-effective improvements to wastewater treatment and release practices.

Domestic Wastewater

The Domestic Wastewater component's focus is primarily towards onsite wastewater systems (septic systems), wastewater lagoons, and underground injection control (UIC) wells (specifically, Class V injection wells). The goal of this component is to ensure that domestic wastewater (septage and sewage) is properly treated, stored, handled, and ultimately disposed of in a safe and sanitary manner to provide adequate public health protection and minimize environmental degradation to the surface of the land or groundwater. Domestic wastewater treatment and disposal is not a designated primacy program, with the exception of the underground injection control Program portion. Currently, Alaska does not have primacy for UIC Program, Section 1422, activities which includes the Class V injection wells.

The department reviews engineered plans for the design and construction of domestic wastewater treatment, storage, and disposal facilities. Staff also review discharge-monitoring reports (DMRs) for those treated effluent discharges to the surface of the land or into the ground that may affect the groundwater. Staff in the Drinking Water Protection group use data from the Domestic Wastewater component for creating maps showing the location of septic systems, and identified UIC wells, wastewater treatment systems, and sewage lagoons when completing PWS source water assessments.

Stormwater

Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall and snow events that often contain pollutants in quantities that could adversely affect water quality.

Stormwater 401 Certifications and State Regulations

Under the NPDES program, the state of Alaska does not have permitting and enforcement authority. However, pursuant to Section 401 of the CWA the state of Alaska certifies EPA's Multi-sector General Permit (MSGP) and Construction General Permit (CGP). This is commonly known as "401 Certification." Any conditions placed on projects by the state are shown in both permits as "Conditions Applicable to Specific States, Indian Country Lands or Territories", and must be adhered to by permittees. According to 18 AAC 72.600, engineering plans should be submitted to DEC for review and approval and this requirement is a condition in the state's certification of the EPA permit.

Phase II of the EPA NPDES Stormwater regulations will affect development and construction sectors in Alaska. Local government will also be affected in Fairbanks. DEC is assisting EPA in coordinating and organizing training and outreach to enable compliance with new requirements.

Drinking Water

DEC's Drinking Water Program consists of three distinct and interrelated components: Drinking Water; Domestic Wastewater (described previously); and Drinking Water Protection (combined public water system (PWS) Source Water Assessments, Wellhead Protection, and Groundwater Protection and Management).

Drinking Water

The Drinking Water component, also known as the Public Water System Supervision (PWSS) Program, focuses on the federally regulated and state regulated public water systems (PWS). PWS are those systems that provide drinking water to a group of individuals and does not include single family homes or duplexes with their own private wells. There are approximately 3,500 public water systems in the State of Alaska; 1,577 federally regulated and 1,923 state regulated. This is an approximate number because the "inventory" of PWS is dynamic. Some systems are seasonal, and shut down for 6 months of the year, and many systems are slowly going out of business, and disbanding, or are consolidated into larger systems. Additionally, the greatest uncertainty in the number of PWS in the state is associated with the state-regulated systems. Many of these systems have never obtained construction or operation approval, and therefore, the state has incomplete inventory information about the system until a complaint is received or they are "discovered" through a field investigation or routine site visit.

Both the State of Alaska and the federal government have a classification system for PWS regardless of the source of drinking water, whether groundwater or surface waters. The federal classification for PWS consists of the following: Community Water Systems (CWS), Non-transient Non-community Water Systems (NTNCWS), and Transient Non-community Water Systems (TNCWS). The State of Alaska has a similar classification for PWS that includes the basic groups as described by the U.S. EPA. This classification consists of Class A systems (both CWS and NTNCWS), Class B systems (TNCWS), and Class C systems (state regulated systems, no federal classification scheme). From the March 25, 2002 inventory; there are 635 Class A PWS (440 are CWS and 195 NTNCWS) and 942 Class B PWS (TNCWS).

Alaska is a primacy state for drinking water, and has direct oversight of PWS within the State. The State is required to complete the timely development or adoption of federal drinking water rules as well as the implementation of the state Drinking Water Program to meet the intent and requirements of the Safe Drinking Water Act (SDWA) and subsequent federal rules.

The PWSS Program does not "create," "measure," or "develop" data. It collects compliance monitoring data, operator reports, and third party sanitary survey inspector reports that are sent directly to the Drink Water/Wastewater Program by DEC-certified labs, PWS owners or operators, and DEC-certified inspectors, respectively, on a routine basis. Staff review and either approve or disapprove the engineered plans for PWS treatment, storage, and distribution systems. The program ensures that PWS produce "treated" water that meets the standards set by federal rules and state regulations for the regulated drinking water contaminants. The program receives, stores, and uses PWS monitoring compliance data for the regulated drinking water contaminants as well specific rule requirements, to ensure public health protection for the customers provided drinking water from a PWS. The program ensures that PWS are in compliance with SDWA requirements, federal rules, and state regulations.

All PWS location data for Alaska's federally regulated PWS was provided to U.S. EPA approximately two years ago. All routine data for the federally regulated PWS is reported to U.S. EPA during monthly data transfers. This information includes: PWS inventory, source type, population served, latitude and longitude of treatment system and source intake, compliance monitoring, enforcement actions, and operator reports. Additionally, all state PWSS

Programs are required to submit to U.S. EPA a PWS compliance report on a calendar year basis. These reports started with the calendar year 1996 report. The annual compliance report is submitted to U.S. EPA by July 1st of each year for the previous calendar year.

Drinking Water Protection

The Drinking Water Protection component of the statewide DW/WW Program ultimately focuses on the assessment and protection of groundwater and surface water supplies used by PWS for drinking water purposes. U.S. EPA approved Alaska's Drinking Water Protection Program, April 4, 2000. It is a combined PWS source water assessment, wellhead protection, and groundwater protection and management program with a focus on drinking water produced and distributed by PWS.

The department began completing source water assessments of the surface water and groundwater sources used by the federally regulated PWS for drinking water supplies in calendar year 2002. As of December 23, 2002, DWPP staff and third-party contractors have completed 634 PWS source water assessments. Thirteen source water assessments were completed in calendar year 2000; 158 PWS assessments were completed in calendar year 2001, and 463 PWS assessments have been completed so far in calendar year 2002.

PWS source water assessments are completed for systems using surface water or groundwater sources for their drinking water. When completing a PWS source water assessment, both the actual (known) and potential (possible and probable) sources of contamination of any of the regulated drinking water contaminants are reviewed. The six basic groups of regulated drinking water contaminants include Bacteria and Viruses, Metals, Nitrate and Nitrite, Synthetic Organic Chemicals (SOCs), Other Organic Chemicals (SOCs/OOCs), and Volatile Organic Chemicals (VOCs). For surface waters used as a drinking water supply by a PWS, the protection area is delineated in lateral distances from the source upgradient from the intake in the following intervals: 1000 feet, 1 mile, and the entire watershed. Groundwater sources are delineated and assessed for the different regulated contaminated groups using time-of-travel (TOT) in respect to several months, 2-year, 5-year, and 10-year TOT.

This program acquired databases from the other DEC programs, EPA, BLM, U.S. Forest Service, and purchased a commercial database. This data was incorporated into one master database for completing the PWS source water assessment project. Maps of delineated protection areas for each PWS are created using GIS ArcView 3.2 and 8.1, which is linked to a MS Access database that contains the contaminant inventory identification and location data for the complete State of Alaska. The contaminant source inventory database is "static" and was last updated in July 2002. The PWS source water assessment data and completed PWS assessment reports are not available to the public and is also not being routinely released to other state or federal agencies. The data is being treated as a Homeland Security Issue, as it is in many other states.

Additional "assessment-types" of activities completed by DWPP component staff include the Girdwood Basin, Glacier Creek Watershed Hydrologic Assessment and Basin Characterization completed in June 2002. This is a big picture overview of the Girdwood Basin which contains 11 PWS (4- Class A and 7- Class B systems) using 13 sources for their drinking water. The primary purpose of the basin characterizations is to better allow the documentation of the drinking water resource for long term planning and management of this resource.

If a PWS provides drinking water that meets all the health-based standards set by the SDWA, and on a consistent and adequate basis, then good public health protection is established for the customers served by that PWS. All of the activities completed in the Drinking Water, Domestic Wastewater, and Drinking Water Protection programs support the overall goal of ensuring that

PWS provide both a safe and adequate supply of drinking water to the residents and visitors to the State of Alaska.

Vulnerability assessments for groundwater and surface waters serving as sources of public drinking water will require periodic updating if they are to keep pace with development and serve as an ongoing basis for community-based drinking water protection efforts. It is estimated that assessments will be updated every five years.

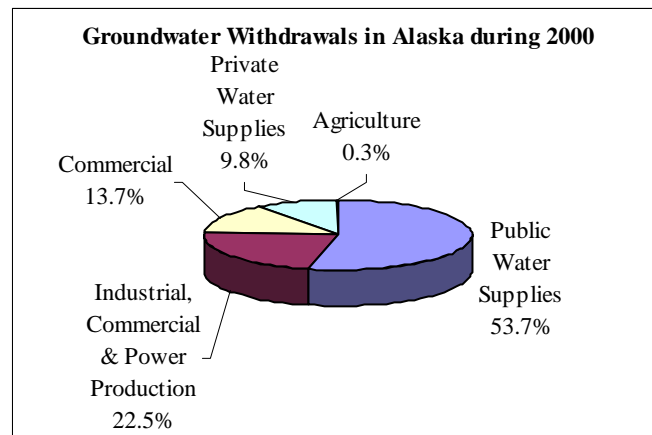
Vulnerability assessments for public water supplies can serve as a foundation to comprehensive management and protection of Alaska's groundwater resources, including future domestic water supplies and water needed to support commercial and industrial growth. Information gathered and generated during the initial years of the assessment program for public water supplies can be used in the future to enhance the protection of lakes, rivers, and streams in populated areas by validating or improving on 'Total Maximum Daily Loads' (TMDLs) used to issue permits to discharge wastes. They can also be used to establish TMDLs to manage the discharge of wastes to aquifers; identify critical 'sole source' aquifers; identify any areas of declining groundwater levels; and perform 'unified watershed assessments' statewide.

Groundwater

Alaska's groundwater resources may be among the greatest in the nation. However, very few of Alaska's aquifers have been studied (or even located) and little water quality data is available.

Groundwater is a source of drinking water for about 50 percent of Alaska's population, and 90 percent of the state's rural residents. Eighty-seven percent of Alaska's 3,500 public drinking

water systems are groundwater-supplied. A small number of public water systems (e.g., Anchorage and several southeastern communities) serve a large number of people from primarily surface water sources. Ninety percent of the private drinking water supplies are groundwater. Of the 275 million gallons of water used each day for domestic, commercial, industrial, and agricultural purposes in Alaska, roughly 23 percent is derived from aquifers.



Where is it? Groundwater is available in most areas of Alaska, except where permafrost is very deep in the northern part of the state. Southcentral and interior Alaska have the greatest dependence on ground-water. Arctic, western, and southeastern Alaska makes more frequent use of streams, rivers, lakes, and rainwater catchments. The largest groundwater withdrawals occur in the Anchorage and Fairbanks areas, and to a lesser extent, the Matanuska-Susitna and Kenai Peninsula Boroughs in the Southcentral portion of the state.

Most of Alaska's aquifers consist of unconsolidated materials derived from glaciers, rivers, and streams. Producing aquifers are typically unconfined (i.e., not protected by a layer of clay or silt), and the depth to groundwater ranges from a few feet to over 400 feet statewide.

How good is the water? Although water quality data is sparse, most of the state's groundwater is suitable for domestic, agriculture, aquaculture, commercial, and industrial uses with moderate or minimal treatment. Naturally occurring iron, manganese, and arsenic are the most common

treatment problems in groundwater systems. Fuel storage and wastewater disposal, primarily from onsite (septic) systems, are common threats to groundwater quality statewide. Additionally, a range of other activities either have, or have the potential to, affect groundwater quality (e.g., nonpoint pollution in urban areas, natural resource extraction activities in remote locations, and a wide range of potential point sources of pollution). Approximately 2,165 leaking underground storage tanks have been identified across the State so far. Roughly 50 percent of those identified tanks may affect groundwater quality. Another 2,781 contaminated sites have been identified that may affect groundwater quality. These contaminated sites include seven Superfund sites and 13 RCRA-permitted sites where clean-ups are currently under way.

Cost of Contamination: *The* cost to clean up (remediate) contaminated groundwater can be staggering. US EPA estimates that the average cost to remediate a Superfund or “CERCLA” (the Comprehensive Environmental Responses Compensation and Liability Act of 1980) or RCRA (Resource Conservation and Recovery Act) site ranges from \$1 to \$3 million. In addition to clean-ups at CERCLA and RCRA sites, numerous underground storage tanks have been removed in Alaska, particularly in the last few years. Of the 2,781 identified contaminated sites, about 867 pose a threat to groundwater. Of those, only 150 have been cleaned-up to date. Estimates of the present and potential costs of remediation of contaminated Alaskan groundwater have not been compiled.

Efforts to Protect Groundwater: *Protection* of Alaska’s groundwater is largely accomplished through the regulation of contaminated sites, storage tanks, spill response, and specific waste disposal activities under state and federal programs. DEC manages several programs that contribute to the protection of groundwater, including the Contaminated Sites, Storage Tank, Prevention & Emergency Response, Industry Preparedness & Pipeline, Solid Waste, Pesticides, Water & Wastewater, Drinking Water Protection, Water Quality Protection, and Community Assistance & Information programs. US EPA’s Underground Injection Control Program, and a number of other important EPA programs, can also have a significant impact on groundwater quality in Alaska.

Wetlands

The State of Alaska includes 63% of the nation's wetland ecosystems (Status of Alaska Wetlands, U.S. Fish and Wildlife Service, Hall, Frayer and Wilen 1994). Activities in these wetlands and their associated waters (hereafter "wetlands") are regulated under federal and state law, and local ordinances because these ecosystems have been shown to perform vital and valuable physical, chemical, and biological functions. Alaska’s wetlands function to support the state's diverse human communities, fish and wildlife populations, water resources, and economy.

In addition to being valuable, Alaska’s wetlands are highly variable. They include salt and freshwater areas influenced by tides, temperate rain forests, bogs, moist and wet tundra, extensive rivers and streams, large river deltas, and vast areas of black spruce forested wetland.

Wetlands are considered “waters of the state” in Alaska’s water quality standards (18 AAC 70) and consequently Alaska’s water quality standards apply to wetlands. Alaska does not have any wetland-specific water quality standards; furthermore there are neither numerics nor narrative criteria that are specific to wetlands.

Wetland Trends

Alaska has 174,683,900 acres of wetlands comprising approximately 43% of the surface area of the state of which less than 2% have been developed. By comparison, the entire remainder of the U.S. contains 103,000,000 acres of wetlands, comprising approximately 5% of the surface area. About half of all Colonial-era wetland acreage in the lower 48 states has been converted to

agriculture, development, or other land uses. In urbanized and developed areas of Alaska, such as Anchorage, over 50% of the wetlands have been developed. Although there is no statistically reliable data on statewide wetland losses, the U.S. Fish and Wildlife Service estimates that Alaska had lost 200,000 acres, or less than one percent of the state's original wetland acreage (Dahl 1990). Additionally, significant percentages of wetlands in other urbanized areas in Alaska including Juneau, Fairbanks, the Matanuska Susitna Valley, and the North Slope have been lost or impacted. Because there is a strong correlation between waterbodies and that are listed as impaired by DEC and areas where wetlands have been impacted or developed, wetlands need restoration, and mitigation associated with development and/or protection. Specifically, wetland functions need to be maintained to enhance or protect water quality for drinking water, spawning, and other uses. The following chart provides a summary of the estimated wetland acreage based on the U.S. Fish and Wildlife National Wetlands Inventory (Hall *et al.* 1994).

Alaska's Wetlands by Major Category with Common Examples		Estimated Acres
Wetland Category*	Common Examples	
Palustrine	All non tidal wetlands: muskegs, bogs, forested wetlands, tundra	61,785,400
Lacustrine	Lakes	10,718,000
Estuarine	Bays, Salt Marshes, Beaches	2,131,900
Marine Intertidal	Ocean shoreline	48,600
	Total Wetlands	174,683,900**

* Based on the Cowardin Classification of Wetlands and Deepwater Habitat (Cowardin et al. 1979).

** These estimates are based on the 1994 US Fish and Wildlife Service publication: Status of Alaska Wetlands by Hall, Frayer and Wilen (Hall *et.al.* 1994).

Wetlands Management and Functional Assessment

As the lead state agency for wetland issues, DEC has developed a strategy for managing wetlands that consists of the following major activities, A) permitting and inspections, B) developing a functional assessment and classification system using the Hydrogeomorphic Approach (HGM), and C) assisting local government and Tribal organizations.

Permitting and inspections: DEC participates in managing and protection of wetlands by reviewing the U.S. Army Corps of Engineers dredge and fill permits under the authority of Section 401 of the Clean Water Act. This review assures that construction and other activities do not exceed Alaskan Water Quality Standards. For the past three years DEC has reviewed U.S. Army Corps of Engineer dredge and fill permits using a risk based priority system. Over 1500 permits are reviewed annually.

For nearly ninety percent of the projects that are reviewed DEC waives its right to certify the permit. Approximately ten percent are certified with or without stipulations that assure that the project will meet Alaska Water Quality Standards.

Functional Assessment and Classification using the Hydrogeomorphic Approach (HGM): To ensure that Alaska's wetlands are managed wisely, wetland professionals and policy makers need a regionally based, scientifically valid, consistent, and efficient, rapid functional assessment tool. DEC recognized that an assessment tool was needed to be developed to help managers and users recognize and distinguish between naturally variable conditions and changes in the functioning of Alaska's wetlands that result from human activities. In response to this need, in 1996 DEC initiated a broad-based, statewide effort to develop a functional assessment approach

for Alaskan wetlands. It is called the Hydrogeomorphic Approach (HGM). HGM was selected by DEC and several other cooperating agencies and organizations because it offers a relatively rapid, efficient, and reference-based method of assessment that allows users to recognize human-induced changes in the functions of wetland ecosystems (Brinson 1993, Brinson *et al.* 1995).

A Memorandum of Understanding (MOU) signed by eleven agencies established a cooperative approach among federal and state agencies to develop and use HGM for assessing wetlands with the intent of improving wetland management and regulatory decision-making in Alaska. The Interagency MOU committed the signatory agencies to cooperatively develop a common scientific platform using the HGM Approach and Guidebooks (hereafter “Guidebook”) to assess wetland functions. The Guidebooks are expected to be useful to local, state, and federal agencies in watershed management and planning.

Guidebooks are currently being developed where the majority of wetland permitting and planning activity occurs. A total of six Guidebooks, within four regions are anticipated. The list of areas, Guidebooks, and anticipated completion dates for the Guidebooks follows:

Wetland Assessment Guidebooks		
Regions Covered by Guidebooks	Wetland classes	Time Frame
1. Interior	Flats	May 1999 (Completed)
2. Cook Inlet Basin (Including Kenai River Watershed)	Slope/Flats Complexes	Spring 2002 (Completed)
3. Coastal Southeast and Southcentral	Riverine/River Proximal	June 2003 (Completed)
4. Near Shore Ecosystems of Southeast and Southcentral	Tidal Fringe	(In Progress)
5. Lower Cook Inlet Basin (Including Kenai River Watershed)	Riverine	(In Progress)
6. Arctic Coastal Plain	Flats	(Not Initiated)

Assistance to Local Government and Native Organizations: DEC provides statewide technical assistance to local government for permitting issues and wetland planning. Three local governments have delegated authority from the U.S. Army Corps of Engineers to manage their wetlands. Several other communities are proposing new planning, such as the Ketchikan Gateway Borough and the City of Wrangell. DEC is also assisting the City and Borough of Juneau in developing a Wetlands Mitigation Bank and the Sealaska Native Corporation with developing a private mitigation bank.

Tribal Organization Assistance with Wetland Management

DEC assists Tribal organizations with wetland and watershed planning. DEC helps develop wetlands work plans and uses HGM as the functional assessment method to be used as a scientific foundation for their wetlands plan.

APPENDIX A. - Category 1 Waterbodies
- Attaining standards for all designated uses

Alaska's 2002/2003

Integrated Water Quality Monitoring and Assessment Report
Category 1 Waterbodies – Attaining standards for all designated uses

Alaska has no waters identified for Category 1. Identification of a Category 1 water would require comprehensive water quality data and information for all uses on a water. This category requires that all data and information show that waterbody is available for all uses. The Department expects that most of Alaska's waters fall into this category and meet standards for all uses

APPENDIX B. - Category 2 Waterbodies

<u>Alaska's 2002/2003</u>								
<u>Integrated Water Quality Monitoring and Assessment Report</u>								
Category 2 Waterbodies – attaining some uses but insufficient or no data and information to determine if remaining uses are attained								
<u>Reg- ion</u>	<u>Category</u>	<u>AK ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 2	40505-401	Harding Lake	Fairbanks	N/A	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
<p>Harding Lake occurred on the 1998 Section 303(d) list and is de-listed in 2003. Harding Lake first appeared on Alaska's Section 303(d) list in 1994. In compiling the 1994 list, data was reviewed from studies conducted in 1974, 1986, 1987, 1988, and 1994. Virtually all data showed Harding Lake was consistently meeting the Fecal Coliform WQS during each of these sampling efforts. However, one sample collected in 1986 showed a high level of fecal coliform (>60 colonies/100 ml). Although the geometric mean of 29 samples taken during the 1986 study was meeting WQS (15.7 colonies/100 ml), a recent graduate student study of Harding Lake suggested the lake may not be meeting the standard due to extensive recreational use. Due to this concern, the Department decided that “based on the limited sample results and high population density using on-site wastewater disposal systems, it is likely that additional monitoring will show the waterbody to be water quality limited for fecal coliform” and decided to “list as threatened for fecal coliform.” Harding Lake continued to be listed in 1996 and 1998 listings because no more information was available. DEC conducted additional monitoring and data analysis in 1999. Data collected in FY 1999, 2000, and 2001 through an approved QA plan showed 83% non-detects and no exceedances of Alaska's water quality standards (AWQS) (18 AAC 70) for fecal coliform bacteria of <20FC/100ml. These results were consistent with samples collected in 1987, 1988, and 1994 that also showed Harding Lake attaining water quality standards. A Sampling Report prepared by the Alaska Department of Natural Resources' Division of Land, Mining and Water (DOLMW) and DEC, and previous studies by DEC shows this information.</p> <p>In summary, the initial listing relied on one sample event and a concern that increased recreational use of the lake was causing suspected additional fecal coliform inputs to the lake. In reviewing the initial listing, it is clear that the one high sample result was an inconsistent outlier and should not have led to listing Harding Lake as impaired. The recent sampling shows water quality standards are being achieved and the recreational use of the lake is not causing violations as initially suspected. The new level of information showing Harding Lake should be de-listed is a much stronger body of evidence than that used for the original listing determination. Based on these findings Harding Lake is removed from Alaska's Section 303(d) list of impaired waters.</p>								
IN	Category 2	60402-601	Nearshore Beaufort Lagoons	Sag River to Simpson Lagoon	N/A	Temperature, Dissolved Inorganic Substances	Temperature, Salinity	Causeway
<p>Nearshore Beaufort Lagoons was placed on the 1996 Section 303(d) list for temperature and salinity. In 1998 the waterbody was de-listed and moved to Tier III for tracking and monitoring. Various study reports and information from the EPA Alaska Operations Office indicated that the hydrology and water quality (temperature and salinity) of the Nearshore Beaufort Sea was affected by the causeways and was suspected to have adverse effects to anadromous fish in 1996. Mitigation to correct problems with water quality and fish passage were agreed upon in the <u>Negotiated Settlement Agreement for Endicott and West Dock Causeways</u> between the U.S. Army Corps of Engineers and the permit holders (Public Notice 91-1). This mitigation, described more specifically in permit modification FF 820562 consisted of additional breaching at both West Dock and Endicott causeways. Breaching construction was finished in Fall 1995. The North Slope Borough requires water quality monitoring of the waterbody as a condition to conduct oil and gas operations adjacent and within the waterbody. Nearshore Beaufort Lagoon monitoring for temperature and salinity is performed on an annual basis during the ice-free periods as required by the North Slope Borough. A draft report titled "Hydrographic Monitoring of New Beaches in West Dock and Endicott Causeways" (Fechhelm, Robert, 1998) provides encouraging post-monitoring results covering two years. The findings suggest stability or improvement to salinity and temperature conditions surrounding the causeways as a result of the expanded breaching. New data and information transmitted to DEC and EPA in 2002 supports that this waterbody is attaining some of its uses. Post-causeway monitoring studies have demonstrated that there is no biological impact and that water quality is within State standards. Based on this new information the waterbody is placed in Category 2.</p>								

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Category 2 Waterbodies – attaining some uses but insufficient or no data and information to determine if remaining uses are attained

<u>Reg- ion</u>	<u>Category</u>	<u>AK ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SC	Category 2	30102-605	Captain's Bay	Unalaska Island	N/A	Residues	Settleable Solids	Seafood Processing
This waterbody was placed on the 1994 Section 303d list for settleable solids. Data used for the 1994 list indicated that the established zone of deposit for the discharger was being exceeded. Monitoring data evaluated by the DEC has resulted in the conclusion that the discharger is currently meeting zone of deposit requirements. This waterbody has been de-listed since 1998.								
SC	Category 2	30204-023	Eskimo Creek	King Salmon	N/A	Petroleum Hydrocarbons, Oil & Grease Toxic & Other Deleterious Organic and Inorganic Substances	Petroleum Products, Diesel Range Organics (DRO) Tri-chloroethene (TCE)	Landfill, Fuel Storage
This waterbody is attaining standards. This waterbody was initially placed on the 1996 Section 303(d) list based on information provided by the EPA's Comprehensive Environmental Response Compensation Liability Act (CERCLA) group. Seeps from a dump adjacent to Eskimo Creek led to potential stream water contamination by metals, pesticides, and petroleum hydrocarbons and the waterbody was listed for these parameters in 1996. Current information suggests removing metals and pesticides as a pollutant parameter since no analytical tests support these constituents as contaminants of concern, and this segment of Eskimo Creek to be placed under the 2003 Category 2. The primary sources of petroleum hydrocarbons and trichloroethene (TCE) from aboveground storage tanks and dry wells have been removed. A final ROD was signed by DEC in December 2002. Future activities based on the ROD include: continued operation of the water treatment system; annual monitoring of groundwater (A-Aquifer and B-Aquifer), surface water, and sediment; and a 5-year review. Zone 2 (east side of Eskimo Creek) has a revised Feasibility Study conducted in 2000, a Proposed Plan completed in April 2002. Therefore the waterbody is placed in Category 2 since water quality standards are attained.								
SC	Category 2	30203-001	King Salmon Creek	King Salmon	N/A	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Landfill, Military
This waterbody occurred on the 1996 Section 303(d) list for petroleum hydrocarbons, metals and pesticides. Monthly influent and effluent samples are analyzed for all potential contaminants of concern. Based on the extensive sampling program, there have been no surface water quality standard exceedances at this site therefore the waterbody is placed in Category 2.								
SE	Category 2	10302-802	Corner Bay	Tenakee Inlet, Baranof Island	N/A	Residues	Bark & Woody Debris	Log transfer facility
This waterbody was placed on the 1998 Section 303(d) list for debris. At that time, dive survey information from May 1996 demonstrated an exceedance of the interim intertidal threshold bark accumulation level (as per the ATTF Log Transfer Facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) at 1.18 acres of bottom coverage. Dive survey reports from June 2002 of 0.1 acres and from July 2001 of 0.6 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 2	10202-601	Hamilton Bay	Kake	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
This waterbody was placed on the 1996 Section 303(d) list for debris. Past dive surveys had indicated that excessive bark existed on the bottom of Hamilton Bay as a result of logging operations on Kupreanof Island that use the Hamilton Bay log transfer facility. Dive survey reports from June 2002 of 0.6 acres and from September 2000 of 0.6 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								

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<u>Reg- ion</u>	<u>Category</u>	<u>AK ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 2	10202-006	Hammer Slough	Mitkof Island	N/A	Sediment	Sediment	Urban Runoff, Gravel Mining
This waterbody was Section 303(d) listed in 1994 and removed from the Section 303(d) list in 1996 and placed on Tier III in 1996 and 1998. DEC staff has coordinated best management practices (BMP) implementation for the waterbody from the responsible parties that have resulted in the waterbody attaining water quality standards. The water quality data in the file supports that the waterbody is no longer impaired. DEC staff inspected the Slough in April 2000 and confirmed that BMP implementation has been accomplished and effective in controlling sedimentation and have recommended that this waterbody requires no further action and should be placed in Category 2.								
SE	Category 2	10202-801	Point McCartney	Kupreanof Island, Kake	N/A	Residues	Bark & Woody Debris	Log transfer facility
This waterbody was Section 303(d) listed for residues in 1998. At that time, dive survey information documented an exceedance of the interim intertidal threshold bark accumulation level (as per the Log Transfer Facility Siting, Construction, Operation, and Monitoring\Reporting Guidelines, October 21, 1985) from February 2001 at 1.2 acres of bottom coverage. A dive survey report from March 2002 documents 1.0 acres bottom coverage and another from November 2002 of 0.52 acres validate that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 2	10202-602	Rowan Bay	Kuiu Island	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
This waterbody was placed on the 1996 Section 303(d) list for debris (bark debris from deposition at a log transfer facility (LTF)). Past dive surveys have shown an exceedance of the interim intertidal threshold bark accumulation level (as per Log transfer facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985). Dive survey reports from May 2002 of 0.8 acres and from June 2001 of 0.6 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 2	10202-802	Saginaw Bay	Kuiu Island	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
Dive survey information from 2001 documented a significant exceedance of the interim intertidal threshold bark accumulation level (as per Log Transfer Facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) at 1.7 acres of bottom coverage. A dive survey report from May 2002 documents 0.7 acres bottom coverage and validates that that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 2	10203-502	Saint. John Baptist Bay	Baranof Island	N/A	Residues	Bark & Woody Debris	Log transfer facility
Dive survey information from September 2000 documented a significant exceedance of the interim intertidal threshold bark accumulation level (as per the ATTF Log Transfer Facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) at 1.32 acres of bottom coverage. A dive survey report from June 2002 documents 0.2 acres bottom coverage and validates that that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 2	10203-803	Salt Lake Bay	Port Frederick, Chichagof Island	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
This waterbody was placed on the 1998 Section 303(d) list for debris. Dive survey information from October 1991 demonstrated an exceedance of the interim intertidal threshold bark accumulation level (as per Log Transfer Facility Siting, Construction, Operation, and Monitoring\Reporting Guidelines, October 21, 1985) at 1.16 acres of bottom coverage. Dive survey reports from May 2002 of 0.1 acres and from March 2000 of 0.3 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								

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Integrated Water Quality Monitoring and Assessment Report

Category 2 Waterbodies – attaining some uses but insufficient or no data and information to determine if remaining uses are attained

<u>Reg- ion</u>	<u>Category</u>	<u>AK ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 2	10103-802	Tolstoi Bay	NW Bight of Tolstoi Bay, Prince of Wales Island	N/A	Residues	Bark & Woody Debris	Log Storage Area
Tolstoi Bay has been on the Section 303(d) list since 1998 for non-attainment of the Residues standard for bark and woody debris. A dive survey report from June 1994 for this area (known as Tolstoi Bay 2) reported 1.82 acres of bottom coverage from debris. 0.8 acre of marine bottom beneath this log storage area, however a March 2003 dive survey report shows 0.7 acre of bark on the bottom and therefore the waterbody is removed from the Category 5/Section 303(d) list and moved to Category 2.								
SE	Category 2	10203-804	West Port Frederick	Chichagof Island	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
This waterbody was placed on the 1998 Section 303(d) list for debris. Dive survey information from April 1995 demonstrated an exceedance of the interim intertidal threshold bark accumulation level (as per Log transfer facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) at 1.35 acres of bottom coverage. Dive survey reports from April 2001 of 0.3 acres and from March 2000 of 0.3 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 2	10203-018	Wrinkleneck Creek Swan Lake	Sitka	N/A	Residues	Solid Waste	Urban
This waterbody was placed on the 1996 Section 303(d) list for residues from trash and urban debris. The Swan Lake Watershed Recovery Strategy and Total Maximum Daily Load (TMDL) have been completed (January 2000) and approved by DEC and EPA (May 2000). In the Spring of 2002 the City and Borough of Sitka (CBS) completed the 3 rd annual Swan Lake Cleanup. Three years prior to that volunteers collected over 6600 pounds of trash and debris. Each year the amount collected has been lower than previous years. This cleanup will continue to be an annual event in coordination with a citywide spring clean up. The success of these efforts reflects the community's commitment and the approach of the Swan Lake Watershed Recovery Strategy. CBS believes the actions to date support moving the Swan Lake watershed to Category 2. Swan Lake watershed has an implemented waterbody recovery plan and an approved TMDL, including annual cleanups and monitoring. CBS has provided the documentation confirming that they are implementing the TMDL and are meeting water quality standards. DEC has concurred that the waterbody is attaining standards and placed the waterbody in Category 2.								

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APPENDIX C. -- Category 3 Waterbodies

<p>Alaska's 2002/2003 Integrated and Water Quality Monitoring Report Category 3 Waterbodies – Waters for which there is Insufficient or no data and information to determine if any designated use is attained</p>
<p>NOTE: The DEC has limited information on the following waters to make an attainment or impairment determination.</p>

Region	AK ID #	Waterbody	HUC
SC	AK-20301-004	Anchor River	19020301
IN	AK-50104-008	Anvil Creek	19050104
SE	AK-10301-501	Auke Bay	19010301
SE	AK-10301-403	Auke Lake	19010301
SE	AK-10301-801	Auke Nu Cove	19010301
SE	AK-10301-008	Auke Nu Creek	19030301
SC	AK-30203-002	Bear Creek	19030203
SC	AK-20302-007	Beaver Creek	19020302
SC	AK-30102-608	Beaver Inlet	19030102
SC	AK-20701-406	Beaver Lake	19020701
SC	AK-20701-701	Bell Flats	19020701
SC	AK-20301-601	Beluga Slough	19020301
SC	AK-20301-006	Bidarka Creek	19020301
SC	AK-20505-401	Big Lake	19020505
IN	AK-40507-402	Birch Lake	19040507
SE	AK-10103-023	Black Bear Creek	19010103
IN	AK-40504-401	Bolio Lake	19040504
IN	AK-50404-002	Bons Creek	19050404
SE	AK-10101-001	Bradfield River	19010101
SC	AK-20301-007	Bridge Creek	19020301
SC	AK-20504-001	Cache Creek	19020504
SE	AK-10102-003	Carlanna Creek	19010102
SC	AK-20201-501	Cedar Bay	19020201
SC	AK-20301-501	China Poot Bay	19020301
SC	AK-20503-001	Clear Creek	19020503
IN	AK-40503-001	Clearwater Creek	19040503
IN	AK-40504-402	Clearwater Lake	19040504
IN	AK-60402-401	Colleen Lake	19060402
IN	AK-60303-001	Colville River/Umiat Lake	19060303
SC	AK-20401-408	Connors Lake	19020401
SC	AK-20401-601	Cook Inlet	19020401
SC	AK-20104-001	Copper River	19020104
SE	AK-10203-501	Crab Bay	19010203
SC	AK-20701-402	Dark Lake	19020701
SC	AK-20301-002	Deep Creek	19020301
SC	AK-20301-008	Diamond Creek	19020301

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Region	AK ID #	Waterbody	HUC
SE	AK-10103-007	Dog Salmon Creek	19010103
SE	AK-10103-001	Dora Bay	19010103
IN	AK-50104-007	East Fork Solomon River	19050104
SC	AK-20402-402	Eklutna River	19020402
SE	AK-10203-805	Elfin Cove	19010203
SE	AK-10103-005	Fire Cove	19010103
SC	AK-20302-401	Fire Lake	19020302
SE	AK-10203-006	Freshwater Creek	19010203
SC	AK-20301-009	Fritz Creek	19020301
SC	AK-20302-006	Funny River	19020302
SE	AK-10301-802	Gastineau Channel	19010301
SC	AK-20701-605	Gibson Cove	19020701
SC	AK-20401-409	Goose Lake	19020401
SE	AK-10204-001	Greens Creek	19010204
SE	AK-10202-001	Gunnuk Creek	19010202
SC	AK-20301-502	Halibut Cove	19020301
SE	AK-10103-008	Harris River	19010103
SE	AK-10103-009	Hatchery Creek	19010103
SE	AK-10204-501	Hawk Inlet	19010204
SE	AK-10102-004	Herring Bay Creek	19010102
SC	AK-20401-410	Hidden Lake	19020401
SE	AK-10102-005	Hoadley Creek	19010102
IN	AK-40608-001	Hogatza River	19040608
SC	AK-20701-405	Horseshoe/Island Lakes	19020701
IN	AK-40205-401	Hospital Lake	19040205
SC	AK-30206-401	Iliamna Lake	19030206
IN	AK-40703-001	Illinois Creek	19040703
SE	AK-10203-007	Indian River	19010203
SE	AK-10301-009	Johnson Creek	19010301
SC	AK-20401-405	Jones Lake	19020401
SC	AK-20302-003	Juneau Creek	19020302
SC	AK-30502-001	Kanektok River	19030502
SC	AK-20302-005	Kenai River	19020302
SE	AK-10102-006	Ketchikan Creek	19010102
SE	AK-10103-003	Kitkun Bay	19010103
SE	AK-10303-001	Klehini / Chilkat River	19010303
SC	AK-20701-001	Kodiak Landfill Creek	19020701
IN	AK-50403-601	Kotzebue Estuary	19050403
IN	AK-50301-401	Kotzebue Lagoon	19050301
IN	AK-60401-001	Kuparuk River	19060401
SE	AK-10103-803	Lab Bay	19010103
SC	AK-30205-401	Lake Clark	19030205
SE	AK-10301-012	Lake Creek	19010103
SC	AK-20501-401	Lake Louise	19020501
IN	AK-60402-402	Lake McDermott	19060402

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Region	AK ID #	Waterbody	HUC
SC	AK-20401-404	Lake Otis	19020401
SC	AK-20701-404	Lilly Lake	19020701
SE	AK-10301-007	Little Auke Creek	19010301
SC	AK-20401-413	Little Campbell Lake	19020401
SE	AK-10303-602	Lutak Inlet	19010303
SE	AK-10102-002	Margaret Creek	19010102
SC	AK-20202-601	McClure Bay	19020202
SC	AK-20201-402	McKinley Lake	19020201
SC	AK-20301-010	McNeil Creek	19020301
SC	AK-20401-411	Meadow Lake	19020401
SE	AK-10301-006	Mendenhall River	19010301
SC	AK-20302-001	Mills Creek	19020202
IN	AK-40404-001	Minook Creek	19040404
SC	AK-20401-401	Mirror Lake	19020401
SC	AK-20701-403	Mission Lake	19020701
SC	AK-10301-002	Montana Creek	19010301
IN	AK-40508-001	Montana Creek	19040508
IN	AK-40507-001	Moose Creek	19040507
SE	AK-10303-401	Mosquito Lake	19010303
SC	AK-30502-002	Nilumat Creek	19030502
SC	AK-20301-005	Ninilchik River	19020301
IN	AK-50104-003	Nome River	19050104
SE	AK-10301-401	North Twin Lakes	19010301
SC	AK-30304-002	Nushagak River	19030304
SE	AK-10401-001	Ophir Creek	19010401
SC	AK-20201-801	Orca Inlet	19020201
SE	AK-10203-004	Pavlof River	19010203
SC	AK-20401-001	Peters Creek	19020401
SC	AK-20301-503	Peterson Bay	19020301
SE	AK-10301-010	Peterson Creek	19010301
IN	AK-40507-002	Pile Driver Slough	19040507
IN	AK-50104-801	Port Clarence	19050104
SC	AK-20201-602	Port Valdez	19020201
SC	AK-20701-401	Potato Patch Lake	19020701
IN	AK-40507-401	Quartz Lake	19040507
SC	AK-20401-007	Rabbit Creek	19020401
SC	AK-30501-001	Red Devil Creek	19030501
SC	AK-20302-002	Resurrection Creek	19020302
IN	AK-60402-001	Sagavanirktok River	19060402
SE	AK-10301-011	Salmon Creek	19010301
SC	AK-20301-602	Seldovia Bay	19020301
SE	AK-10102-001	Shoal Creek	19010102
SE	AK-10102-603	Shoemaker Bay	19010102
IN	AK-50104-006	Shovel Creek	19050104
IN	AK-50104-004	Sinuk River	19050104

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Region	AK ID #	Waterbody	HUC
SE	AK-10203-807	Sitka Channel	19010203
SE	AK-10203-806	Sitka Sound	19010203
SE	AK-10401-002	Situk River	19010401
SC	AK-20202-801	Sleepy Bay	19020202
IN	AK-50104-002	Snake River	19050104
SC	AK-20302-004	Soldotna Creek	19020302
IN	AK-50104-001	Solomon River	19050104
SE	AK-10301-402	South Twin Lakes	19010301
SC	AK-20301-003	Stariski Creek	19020301
SC	AK-20401-406	Sundi Lake	19020401
SE	AK-10203-809	Sunshine Cove	19010203
IN	AK-50101-001	Suqitughneq River	19050101
SC	AK-30103-001	Sweeper Creek	19030103
SC	AK-20503-002	Talkeetna River	19020503
SE	AK-10103-603	Thorne River Estuary	19010103
IN	AK-50104-005	Tisuk River	19050104
SE	AK-10103-501	Tolstoi Bay Watershed	19010103
SE	AK-10102-801	Tongass Narrows	19010102
IN	AK-50101-401	Troutman Lake	19050101
SE	AK-10203-003	Turnaround Creek	19010203
SC	AK-20201-802	Two Moon Bay	19020201
SC	AK-30102-401	Unalaska Lake	19030102
IN	AK-40506-401	Unnamed Lake (Chena Hot Springs Rd.)	19040506
SC	AK-20401-407	Upper Fire Lake	19020401
SC	AK-20402-401	Walby Lake	19020402
SC	AK-20505-002	Wasilla Creek	19020505
SC	AK-20505-402	Wasilla Lake	19020505
SE	AK-10103-004	Whale Passage	19010103
SC	AK-20505-003	Willow Creek	19020505
SE	AK-10103-006	Winter Harbor	19010103
SC	AK-20701-802	Womens Bay	19020701
SC	AK-30304-001	Wood River	19030304
SC	AK-20301-001	Woodard Creek	19020301
SE	AK-10202-803	Wrangell Narrows	19010202
SE	AK-10204-002	Zinc Creek	19010204

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APPENDIX D. – Category 4a Waterbodies

<u>Alaska's 2002/2003</u>								
<u>Integrated Water Quality Monitoring and Assessment Report</u>								
Category 4a Waterbodies – Impaired but not needing a TMDL, TMDL has been completed								
<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 4a	40402-001	Birch Creek Drainage:- Upper Birch Creek; Eagle Creek; Golddust Creek	North of Fairbanks	N/A	Turbidity	Turbidity	Placer Mining
Birch Creek had been Section 303(d) listed since 1992 for turbidity as a result of placer mining activity within the drainage. A TMDL was developed and finalized on October 10, 1996. In 1998 Birch Creek was removed from the Section 303(d) list and consequently the waterbody remains in Category 4a for 2003 since a TMDL has been developed on this waterbody.								
IN	Category 4a	40506-009	Garrison Slough	Eielson Air Force Base	N/A	Toxic & Other Deleterious Organic and Inorganic Substances	Polychlorinated biphenyls (PCBs)	Military Base/ Operations
Garrison Slough was placed on the 1996 Section 303(d) list for polychlorinated biphenyls (PCBs) and de-listed in 1998. Information indicating sediment and fish samples from the slough contained elevated levels of PCBs. Eielson AFB has dredged, removed, and capped contaminated soils and slough sediments. The TMDL was finalized on September 27, 1996. The TMDL analysis showed that the remedial actions would result in attaining water quality standards. This water remains on Category 4a.								
SC	Category 4a	30102-604	Akutan Harbor	Akutan Island	N/A	Residues Dissolved Gas	Settleable Solids Low Dissolved Oxygen	Seafood Processing/ Waste
Akutan Harbor was originally on the 1996 Section 303(d) list and the associated NPDES permit for this area was finalized in the spring of 1996. The waterbody was removed from the Section 303(d) list in 1998 and remains in Category 4a for 2003. The seafood processing facility located in Akutan Harbor is currently under a consent decree that requires a 12% BOD5 reduction in addition to the limitations in the NPDES permit. The associated revised NPDES permit has discharge limits consistent with a TMDL.								
SC	Category 4a	19020-001	Eagle River	Eagle River	N/A	Toxic & Other Deleterious Organic and Inorganic Substances	Ammonia Metals	Wastewater Treatment Facility
Eagle River is unique because the waterbody was never Section 303(d) listed however a TMDL for ammonia and metals was completed by EPA on April 12, 1995 on the waterbody for the wastewater treatment facility that discharges to the river.								
SC	Category 4a	20401-412	Hood/Spenard Lake	Anchorage	N/A	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff, Industrial
This waterbody was previously on the 1996 Section 303(d) list and is placed in Category 4a for fecal coliform because a TMDL for fecal coliform was developed and finalized on September 30, 1997. This waterbody will also remain on the Category 5 Section 303(d) list for dissolved oxygen. A DEC water quality assessment for this waterbody considered four other pollutants of concern -- petroleum, nitrates, lead, & ammonia -- however, the data indicated that there were no persistent violations of these parameters.								
SC	Category 4a	20402-409	Jewel Lake	Anchorage	N/A	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff, Land Development
Jewel Lake has been on the Section 303(d) list since 1994 for fecal coliform bacteria. A TMDL was developed and finalized on September 30, 1997. Consequently the waterbody is placed in Category 4a.								

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Category 4a Waterbodies – Impaired but not needing a TMDL, TMDL has been completed

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SC	Category 4a	30101-601	King Cove	King Cove	N/A	Residues	Seafood Waste Residue	Seafood Processing/ Waste
King Cove was originally on the 1996 Section 303(d) list for residues. On October 10, 1998 EPA completed a total maximum daily load (TMDL) for King Cove and a NPDES permit is under development. Information provided by the Aleutians East Borough and verified by DEC staff included citizen complaints, photographs, and other information to indicate that persistent exceedances of seafood residues were from seafood processing activity operating adjacent to the waterbody. The water remains in Category 4a since a TMDL was developed.								
SC	Category 4a	20505-409	Lake Lucille	Wasilla	N/A	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff
This waterbody has been on the Section 303(d) list for dissolved gas (low DO) and nutrients since 1994. Since a TMDL was completed and approved by EPA (March 2002) for Lake Lucille the waterbody is removed from the Section 303(d) list and moved to Category 4a.								
SC	Category 4a	30102-603	South Unalaska Bay	Unalaska Island	N/A	Residues	Seafood Waste Residues	Seafood Processing Waste
This waterbody was on the 1994 Section 303d list for both settleable solids and dissolved oxygen. EPA developed and approved a TMDL in 1994, and is in the process of issuing revised seafood processing permits to implement TMDL controls. Seafood processors discharging into South Unalaska Bay have already begun implementing TMDL controls. South Unalaska Bay will be tracked and monitored by DEC and/or EPA to ensure that waterbody recovery continues and the seafood processors are fully implementing their revised permit requirements.								
SC	Category 4a	30102-607	Udagak Bay	Unalaska Island	N/A	Residues	Settleable solids	Seafood Processing Waste
This waterbody has been on the Section 303(d) list for seafood waste (settleable solids) since 1994. A near shore floating pollock processor has discharged seafood waste into Udagak Bay. Due to the poor flushing action in Udagak Bay, two piles of fish waste have accumulated at the bottom of the bay. This resulted in a violation of the water quality standards since the seafood general NPDES permit issued in 1989 did not provide for a zone of deposit. Enforcement action has been taken against the same seafood processors for waste that had accumulated on the shoreline, and for floating solids on the receiving water. Because of the discharge of fish meal effluent the dissolved oxygen content of the waterbody may also be affected. There is one floating seafood processor discharging to this water body. The seafood waste residues (waste pile) are decreasing due to better utilization of the fish product. A total maximum daily load (TMDL) was completed for Udagak Bay on September 30, 1998 and waterbody was removed from the Section 303(d) list in 1998. Since a TMDL has been completed for Udagak Bay the waterbody is placed in Category 4a.								
SE	Category 4a	10301-005	Duck Creek	Juneau	N/A	Dissolved Gas Residues Toxic & Other Deleterious Organic and Inorganic Substances Fecal Coliform Bacteria Turbidity	Low Dissolved Oxygen, Debris, Iron, Fecal Coliform, and Turbidity	Urban Runoff, Landfill, Road Runoff, Land Development
Duck Creek was on the Section 303(d) list for dissolved gas (low DO), residues (debris), metals, fecal coliform, turbidity, since 1994. Since TMDLs have been completed for all pollutants (turbidity in 1999, fecal coliform bacteria and residues in 2000, and dissolved oxygen and iron in 2001) Duck Creek is removed from the Section 303(d) list and moved to Category 4a.								

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Category 4a Waterbodies – Impaired but not needing a TMDL, TMDL has been completed

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 4a	10203-005	Granite Creek	Sitka	N/A	Turbidity Sediment	Turbidity, Sediment	Gravel Mining
Granite Creek was placed on the 1996 Section 303(d) list for turbidity and sediment. Information shows that the lower 1.5 miles of the creek is impaired from sediment and turbidity. Since a TMDL was completed for Granite Creek and approved by EPA, dated September 30 2002, it is removed from the Section 303(d) list and moved to Category 4a.								
SE	Category 4a	10203-601- 001	Herring Cove of Silver Bay	Sitka	102 acres	Residues	Bark & Woody Debris	Log Storage from former Pulp Mill Operations
On September 27, 1999 a TMDL was completed for residues for this segment of Silver Bay. Since a TMDL has been completed for the Herring Cove segment of Silver Bay, the Herring Cove segment of Silver Bay is removed from the Section 303(d) list.								
SE	Category 4a	10301-001	Lemon Creek	Juneau	N/A	Turbidity Sediment	Turbidity, Sediment	Urban Runoff, Gravel Mining
This waterbody was placed on the 1996 Section 303(d) list for turbidity, sediment, and with concerns for habitat modification. A waterbody recovery plan that included a TMDL was prepared for this waterbody during Summer 1995. The EPA approved the TMDL. Waterbody recovery plan implementation began during Fall 1995.								
SE	Category 4a	10203-601	Silver Bay	Sitka	6.5 acres	Residues Toxic & Other Deleterious Organic and Inorganic Substances	Pulp Residues, Logs, Bark & Woody Debris, Sediment Toxicity due to Wood Decomposition By-products	Industrial, Historical Pulp Mill Activity
Silver Bay has been on the Section 303(d) list since 1994 for non-attainment of the Residues, Toxic & Other Deleterious Organic and Inorganic Substances, and Dissolved Gas standards for sludge (residues), toxic substances, and dissolved gas (low DO) since 1994. Based on information presented in a report titled <u>Final Expanded Site Inspection Report, Alaska Pulp Corporation, Sitka, Alaska, Feb. 1995</u> , water quality violations were substantiated. Discharges from the mill ceased in March 1993. Based on a June 1993 Water Quality Assessment, the pollutant parameters of concern were sludge and dissolved oxygen. A contaminated site Remedial Investigation/Feasibility Study for Silver Bay was contracted by Alaska Pulp Company from July 1996 to February 1999. A Record of Decision by DEC was issued in 1999. The remedial action objective identified by the ROD was natural recovery, with long-term monitoring. A Total Maximum Daily Load has been developed for Silver Bay, addressing residues, sediment toxicity, and dissolved oxygen. Wasteload allocations have been developed for residues and sediment toxicity. Monitoring data show that Silver Bay is no longer impaired for dissolved oxygen (DO) for surface waters or in the water column. Although DO levels below the limits of the WQS have been observed in deep water between Sawmill Cove and Herring Cove, there appears to be no correlation between these levels and the presence of wood waste, and no current source of DO depression is known. Therefore, it is determined that Silver Bay is no longer impaired for dissolved oxygen and the DO pollutant parameter is removed from the Silver Bay listing. On September 27, 1999 a TMDL was completed for residues for the Herring Cove segment of Silver Bay. In 2003 a TMDL has been completed for Silver Bay for residues and sediment toxicity. Since TMDLs have been completed for all of the listed area of Silver Bay and pollutant parameters it is removed from the Section 303(d) and moved to Category 4a.								
SE	Category 4a	10301-017	Vanderbilt Creek	Juneau	N/A	Turbidity Residues Sediment	Turbidity, Debris, Sediment	Urban Runoff
This waterbody was placed on the 1996 Section 303(d) list for turbidity, debris, sediment, and with concerns for habitat modification. There is insufficient information in the file to correlate habitat modification with effects to designated uses. A waterbody recovery plan that included a TMDL was prepared during Summer 1995. EPA approved the TMDL. Implementation of the waterbody recovery plan began during the Fall 1995								

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APPENDIX E. – Category 4b Waterbodies

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Category 4b Waterbodies – Impaired but not needing a TMDL but expected to meet standards in a reasonable time

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 4b	50404-001	Red Dog Creek - Ikalukrok Creek	Near Red Dog Operation	N/A	Dissolved Inorganic Substances	Total Dissolved Solids	Mining

EPA approved DEC’s reclassification of the uses of Red Dog and Ikalukrok Creeks for industrial water supply in February 2002. EPA approved a site specific criterion for zinc in July 1998. The facility was issued a water quality-based permit and is an existing control that will bring the waterbody into compliance with applicable water quality standards (fresh water industrial water supply) for TDS, cadmium, lead, selenium, and the site specific standard for zinc. Accordingly, Red Dog/Ikalukrok Creeks does not require 303(d) listing

SC	Category 4b	20302-601	Eagle River Flats (60 acres)	Fort Richardson	N/A	Toxic & Other Deleterious Organic and Inorganic Substances	White Phosphorus, Munitions Residues	Military Base Operations
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An EPA consultant, CH2M Hill prepared a report, Eagle River Flats - Comprehensive Evaluation Report, July 1994. This report is a detailed environmental assessment that qualifies as a waterbody assessment. The report presents water quality data and other information on the relationship between white phosphorous (from artillery shell residue) and its lethal effect on waterfowl in the Eagle River Flats area. A Record of Decision was signed on September 30, 1998 so this water is placed in Category 4b. Approximately sixty (60) acres were identified as contaminated and requiring treatment. Remediation activities occurred in 1998-2001. During each field season, six pumping systems were placed into the contaminated ponds and operated to drain the water from the ponds. Draining the ponds allows the sediments to dry out and cause the white phosphorus to oxidize and no longer be a threat to the waterfowl. Results of the field activities to date show a dramatic decrease in white phosphorus concentrations in over half the total acreage identified as contaminated. Active treatment will continue for two more field seasons. The ROD has a five-year and 20 year goal and the US Army nearly met the five-year goal.

SC	Category 4b	N/A	Exxon Valdez Waterbodies	Prince William Sound/Alaska Peninsula	N/A	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Exxon Valdez Crude Oil Spill
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Exxon Valdez Beaches have never been Section 303(d) listed as impaired. The Exxon Valdez affected beaches and adjacent marine waters were not placed on the Section 303(d) list because a TMDL process would duplicate efforts of the Exxon Valdez Trustee Council and restoration projects specified in the Exxon Valdez Restoration Plan. The restoration plan, which includes the phases of injury assessment, restoration, replacement, enhancement of natural resources, and acquisition of equivalent resources, provides long-term guidance for restoring the natural resources and shorelines injured by the oil spill. Assessment activities funded through approved restoration funds will continue to track and monitor recovery of the natural resources impacted by the oil spill.

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Alaska's 2002/2003

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Category 4b Waterbodies – Impaired but not needing a TMDL but expected to meet standards in a reasonable time

<u>Region</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SC	Category 4b	30204-001	Naknek River	King Salmon	N/A	Petroleum Hydrocarbons, Oil & Grease Toxic & Other Deleterious Organic and Inorganic Substances	Petroleum Products, TCE	Inactive, closed Landfill, Fuel Storage

Naknek River was on the Section 303(d) list in 1996 and removed from the Section 303(d) list in 1998 since there are other pollution control requirements in place. The waterbody will remain in Category 4b in 2003. This waterbody was placed on the 1996 Section 303(d) list as a waterbody that was not expected to meet water quality standards because of pollutant sources coming from tributary waterbodies (Eskimo Creek, King Salmon Creek, and Red Fox Creek). During the 1998 and 2000 303(d) list evaluations, this waterbody met the water quality standards but needed additional monitoring and tracking. Samples were collected from the Naknek River at various locations over the years for laboratory analysis; no results were detected above state and federal regulatory levels. In December 1998, a sheen was observed on the Naknek River bank adjacent to the King Salmon Morale, Welfare, and Recreation Marina. The primary contaminant sources (a drum storage area and underground storage tanks) were removed. Initial site inspections and limited sampling was performed in 1999 and 2000, a preliminary investigation was conducted in 2001, and further investigation and contaminated soil remediation in 2002. Approximately 400 cubic yards of petroleum contaminated soil remains on site. Based on funding requests further soil removal will occur in late 2002 or the 2003 field season. Continued groundwater, surface water, and sediment monitoring will continue at the marina to evaluate remedial efforts and attenuation processes. In addition to the marina site, other potential contaminant sources exist on the Naknek River.

SE	Category 4b	10103-031	Fubar Creek	Prince of Wales Island	N/A	Sediment	Sediment	Timber Harvest
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Fubar Creek was never Section 303(d) listed because the U.S. Forest Service (USFS) provided documentation that a decision was made to defer timber harvest in the watershed. In a January 1995 letter to DEC the USFS deferred timber harvest plans in the Fubar Creek Drainage. No significant commercial harvest activity has occurred in the watershed since that time. The Fubar Creek watershed is not considered for entry during the next 10 yr. timber sale planning cycle. The Craig Ranger District was actively engaged in watershed restoration in the Fubar watershed in the last 10 years. Restoration activities included vegetative stabilization of landslide areas that deliver sediment to Fubar Creek, and a 2nd growth thinning program to restore the structure and function of riparian timber stands. A comprehensive hydrologic condition assessment for the Harris River Basin (including the Fubar watershed) is scheduled for completion in 2003. A road condition survey (RCS) is a key part of the assessment project. The RCS will be used to identify road storage and decommissioning opportunities that will help reduce long-term sediment inputs and restore access to fish habitat in the Harris River watershed. This watershed-based assessment will also help to guide and prioritize additional restoration activities proposed in the Fubar Creek sub-watershed. Channel condition monitoring (a cooperative project with the PNW Research Station) has been conducted for a number of years in Fubar Creek. Monitoring will continue to assess trends in geomorphic indicators and to determine progress toward channel equilibrium. Fubar Creek still exhibits signs of instability and active channel aggradation, especially in the lower gradient flood plain reach at the Klawock Highway crossing. The Craig District Hydrologist recently proposed to study stream channel reconstruction options in the lower reach of Fubar Creek. This project could result in reduced road maintenance problems at the highway crossing and provide a foundation for future structural fish habitat improvements in this degraded reach of Fubar Creek. The passive and active restoration and monitoring activities outlined above provide reasonable assurance that water quality and fish habitat goals are attainable in Fubar Creek in the foreseeable future.

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Alaska's 2002/2003

Integrated Water Quality Monitoring and Assessment Report

Category 4b Waterbodies – Impaired but not needing a TMDL but expected to meet standards in a reasonable time

<u>Region</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 4b	10301-003	Sawmill Creek	Haines	N/A	Residues	Debris	Urban Runoff

This waterbody was placed on the 1996 Section 303(d) list for debris. Some debris removal work, in addition to a culvert replacement and re-seeding was completed in 1997. Additional debris removal work remains. There is snow removal problems and highway and maintenance debris. Plans call for moving the stream away from the highway/street in two areas and constructing a dike in another. Plans also call for establishing vegetative buffers, swales, and matting to improve filtration of run-off entering the stream. This waterbody remains in Category 4b for additional monitoring and tracking pending additional debris removal work.

SE	Category 4b	10102-801-001	Tongass Narrows 1	Tongass Narrows, Eastern Channel, SE of Thomas Basin	N/A	Residues	Seafood Residues, Seafood Processing Wastes	Seafood Processing Facility
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This waterbody segment is placed in Category 4b for residues. The seafood processing facility exceeded its one acre zone of deposit standard for residues associated with its discharge permit and is under compliance order from the U.S. Environmental Protection Agency for non-compliance with its waste discharge limitations. Additionally the facility has discharged seafood sludge, deposits, debris, scum, floating solids, oily wastes or foam, which alone, or in combination with other substances cause a film, sheen emulsion or scum on the surface of the water. Since this facility is under compliance order the waterbody segment is placed in Category 4b.

SE	Category 4b	10102-802-002	Tongass Narrows 2	Tongass Narrows, Eastern Channel, SE of Thomas Basin	N/A	Residues	Seafood Residues, Seafood Processing Wastes	Seafood Processing Facility
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This waterbody segment is placed in Category 4b for residues. The seafood processing facility exceeded its one acre zone of deposit standard for residues associated with its discharge permit and is under compliance order from the U.S. Environmental Protection Agency for non-compliance with its waste discharge limitations. Additionally the facility has discharged seafood sludge, deposits, debris, scum, floating solids, oily wastes or foam, which alone, or in combination with other substances cause a film, sheen emulsion or scum on the surface of the water. Since this facility is under compliance order the waterbody segment is placed in Category 4b.

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APPENDIX F. – Category 5/Section 303(d) Listed Waterbodies

<u>Alaska's 2002/2003</u>								
<u>Integrated Water Quality Monitoring and Assessment Report</u>								
Category 5 Waterbodies – Impaired by pollutant(s) for one or more designated uses and requiring a TMDL CWA Section 303(d) Listed								
<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 5 Section 303(d) listed	40501- 001	Cabin Creek	Nabesna	1.5 miles	Toxic & Other Deleterious Organic and Inorganic Substances	Manganese, Arsenic, Iron, Copper & Cadmium	Mining
<p>This waterbody was included on the 1996 303(d) list for manganese from the Nabesna Mine site - a patented mining claim area located within the Wrangell St. Elias National Preserve. The U.S. Geological Survey and National Park Service completed the field sampling component of an environmental geochemical site characterization study at the Nabesna Mine in 1997 (results published in USGS PP 1616). National Park Service and DEC staff visited the mine site and waterbody in June 1997 to discuss specifics of a waterbody recovery plan with the owner of the Nabesna Mine property. Acidic mill tailings located below the millsite (and situated on private and National Park Service managed lands), compromise the water quality of Cabin Creek. Elevated metal levels are detected periodically in the Cabin Creek drainage within the one mile reach below the tailings. Recovery plan objectives include re-construction of the existing historic drainage ditches around the tailings to divert stormwater and seasonal snow melt run-off away from (bypass) the tailings and capping the tailings if suitable material is available on site. Recovery plan ditching and material source assessment phases will commence in 2003 with subsequent waterbody recovery analysis - therefore the water shall remain on the 2003 Category 5 Section 303(d) list.</p>								
IN	Category 5 Section 303(d) listed	20502-101	Caribou Creek	Denali National Park	16.1 miles	Turbidity	Turbidity	Mining
<p>Caribou Creek was included on the 1994 Section 303(d) list for turbidity from past mining activity within Denali National Park Preserve (Kantishna Mining District). DEC staff conducted a helicopter tour of the watershed in June 1997 with the National Park Service to ascertain the degree of past mining activity in, and adjacent to, the waterbody. Miles of the waterbody were extensively placer mined. The waterbody lost its sinuosity along segments of the upper half of the watershed. The National Park Service will draft a waterbody recovery plan obtaining title to private mining claims; the priority for the watershed is to continue the process to obtain title to private mining claims. The National Park Service will draft a waterbody recovery plan after it obtains title to private mining claims. Since the mining claim acquisition process may take at least 3 to 5 more years, development of a waterbody recovery plan will not begin until the acquisition process is near completion. Consequently, this waterbody will remain on the 2003 Section 303(d) list for non-attainment of the Turbidity standard.</p>								

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Alaska's 2002/2003

Integrated Water Quality Monitoring and Assessment Report

Category 5 Waterbodies – Impaired by pollutant(s) for one or more designated uses and requiring a TMDL CWA Section 303(d) Listed

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 5 Section 303(d) listed	40506- 007	Chena River	Fairbanks	15 miles	Petroleum Hydrocarb ons, Oil & Grease Sediment	Petroleum Products, Sediment	Urban Runoff
Chena River has been on the Section 303(d) list since 1990 for turbidity and sediment. A State Division of Mining memorandum dated March 5, 1996 provided information indicating that turbidity and sedimentation was the result of a one-time placer mining settling pond failure that was repaired and therefore recommended dropping turbidity and sediment parameters from placer mining sources. DEC staff in Fairbanks verified this. There is insufficient information on file on the effects to any designated use from habitat modification. The is some information on file that petroleum products spills have reached the waterbody; best professional judgment from DEC staff in Fairbanks is to list waterbody for petroleum products. This river flows directly through the City of Fairbanks and past several known areas of groundwater contamination. The area has permeable soils and shallow groundwater that readily interact with surface water. Untreated groundwater at depth adjacent to the river is contaminated with benzene at levels below safe Drinking Water Act levels. A portion of the Chena River upriver from the City of Fairbanks was studied extensively during a CERCLA investigation of contaminated sites on Fort Wainwright. A number of exceedances of surface water and sediment criteria considered protective of aquatic life were found in a section of the river that passes the West Quartermaster's Fueling System. A Record of Decision was signed March 26, 1999 which included a Chena River Aquatic Assessment Program designed to determine whether actual impacts to the Chena River existed, assess their significance, and measure changes over time. Subsequent information determined that there are measurable impacts, but that those impacts do not indicate substantial ecological risk. Data is being further evaluated to determine the significance of the information, and the Assessment will continue including data collection as part of remediation efforts.								
IN	Category 5Section 303(d) listed	40506-002	Chena Slough	Fairbanks	13 miles	Petroleum Hydrocarb ons, Oil & Grease Sediment	Petroleum Products, Sediment	Urban Runoff, Septic Tanks
This waterbody has been on the Section 303(d) list for non-attainment of the Petroleum Hydrocarbons, Oil & Grease and Sediment standards for petroleum products and sediment since 1994. Information presented in the 1994 Statewide Water Quality Assessment survey indicated that a petroleum product problem does exist and is affecting water quality. File assessment information indicates nonpoint source problems result from surface water run-off, road construction, site clearing, and de-watering activities from gravel operations. Based on best professional judgment of DEC staff this waterbody was listed for petroleum products.								
IN	Category 5 Section 303(d) listed	40402- 010	Crooked Creek Bonanza Crooked Deadwood Ketchem Mammoth Mastodon Porcupine	North of Fairbanks	77 miles	Turbidity	Turbidity	Placer Mining
Crooked Creek watershed has been on the Section 303(d) list since 1992 for non-attainment of the Turbidity standard. A water quality assessment was completed in August 1995. Based on the completed assessment the Crooked Creek watershed remains a Category 5 water.								
IN	Category 5 Section 303(d) listed	40509- 001	Goldstream Creek	Fairbanks	70 miles	Turbidity	Turbidity	Placer Mining
Goldstream Creek has been on the Section 303(d) list since 1992 for non-attainment of the Turbidity standard. A waterbody assessment was completed that confirmed the pollutant, pollutant source, and determined that existing controls were sufficient to address the turbidity issue and that a formal TMDL was not needed. A waterbody recovery plan was prepared and submitted to EPA for technical review. No further determination has been made on this waterbody since the 1996 Section 303(d) listing. Continued monitoring is needed to ensure that existing controls are attaining water quality standards.								

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Alaska's 2002/2003

Integrated Water Quality Monitoring and Assessment Report

Category 5 Waterbodies – Impaired by pollutant(s) for one or more designated uses and requiring a TMDL CWA Section 303(d) Listed

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 5 Section 303(d) listed	40506- 003	Noyes Slough	Fairbanks	7 miles	Sediment, Petroleum Hydrocarb ons, Oil & Grease Residues	Sediment, Petroleum Products, Debris	Urban Runoff
This waterbody has been on the Section 303(d) list for non-attainment of the Sediment, Petroleum Hydrocarbons, Oil & Grease, and Residues standards for sediment, petroleum products and debris since 1994. Numerous water quality violations have been reported. These violations are a result of debris dumped into the slough. Urban run-off is also a problem. Snow dumps from the removal of snow from city streets and parking lots located adjacent to the slough contain oil, grease, litter, anti-freeze, and salts. Melting snow carries these pollutants into the waterbody.								
IN	Category 5 Section 303(d) listed	40510- 101	Slate Creek	Denali National Park	2.5 miles	Turbidity	Turbidity	Mining
Slate Creek has been on the Section 303(d) list since 1994 for non-attainment of the Turbidity standard. This waterbody was included on the 303(d) list for turbidity from past mining activity within Denali National Park and Preserve (Kantishna Mining District). National Park Service (NPS) and DEC staff field inspected the antimony mine area (at the creek headwaters) in June 1997 to discuss specifics of the NPS waterbody recovery plan. Recovery plan implementation began in August 1997 and into the second field season (2002). The recovery plan includes restoration objectives for four acres of disturbed upland and stream channel areas in the vicinity of the old antimony mine site. Restoration objectives include placement of fill over the exposed antimony ore body, reconfiguration of the stream channel, increasing the pH of acidic soils, and revegetation of disturbed soils with willow and alder seedlings. Full implementation of the recovery plan will address any water quality issues of the waterbody. Review of the recovery plan is needed prior to moving this water to Category 4b.								
SC	Category 5 Section 303(d) listed	20401- 004	Campbell Creek	Anchorage	10 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
Campbell Creek has been on the Section 303(d) list since 1990 for non-attainment of the Fecal Coliform Bacteria standard. The Campbell Creek water quality assessment completed in June 1994 identified several parameters of concern, i.e., temperature, turbidity, zinc, and lead, but concluded that Campbell Creek was water quality limited for fecal coliform only.								
SC	Category 5 Section 303(d) listed	20401- 402	Campbell Lake	Anchorage	25 acres	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
Campbell Lake has been on the Section 303(d) list since 1990 for non-attainment of the Fecal Coliform Bacteria standard. The Campbell Creek water quality assessment, completed in June 1994, included an assessment of Campbell Lake. The assessment identified several parameters of concern, i.e., fecal coliform, lead and zinc, but concluded that Campbell Lake was water quality limited for fecal coliform only.								
SC	Category 5 Section 303(d) listed	20401- 403	Cheney Lake	Anchorage	640 acres	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff, Storm Drainage
Cheney Lake was placed on the 1994 Section 303(d) list for non-attainment of the Fecal Coliform Bacteria standard. No additional information has been evaluated by DEC since then. The Municipality of Anchorage's 1991-1994 data indicates that the fecal coliform criterion was exceeded in almost every month of monitoring.								

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SC	Category 5 Section 303(d) listed	20401- 003	Chester Creek	Anchorage	4.1 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff, Industrial
Chester Creek has been on the Section 303(d) list since 1990 for non-attainment of the Fecal Coliform Bacteria standard. In April 1993, a water quality assessment was completed on the Chester Creek drainage which identified several parameters of concern for Chester Creek, but the assessment concluded that the waterbody is water quality limited for fecal coliform only.								
SC	Category 5 Section 303(d) listed	30101- 801	Cold Bay	Cold Bay	0.01 acre	Petroleum Hydrocarb ons, Oil & Grease	Petroleum Products	Military, Fuel Storage
Cold Bay was placed on the 1998 Section 303(d) list for non-attainment of the Petroleum Hydrocarbons, Oil & Grease standard for petroleum products. Enough evidence exists to indicate that water quality violations occurred on a persistent (though intermittent) basis. Assessments are partially completed. This is a high priority project for the US Army Corps of Engineers (USACE), so they will complete an assessment and recovery plan. A release investigation of the seep found high a level of diesel range organics (DRO) in beach soils (over 10,000 ppm) and petroleum contamination in sediments below the high tide line. Four feet of free product was found in a monitoring well in the bluff. Seep (oil mixed with water) is weeping out intermittently along 100-300 feet of bluff. In the summer of 2002 the USACE used a pilot test to evaluate several passive and active technologies for recovering product before it would reach the waters of Cold Bay. The results of this test are being used to develop a feasibility study to determine the best solution for the beach seeps. The feasibility study is scheduled to be completed in 2003 with a remedial design following. Options that are being evaluated are: Dual Phase Extraction along Beach; Dual Phase Extraction Along Bluff; Free Product Extraction; Extraction, Treatment, and Upgradient ReInjection; Source Removal and Thermal Treatment and; Product Capture with an Interceptor Trench or Horizontal Well. The selected design should be implemented in 2004.								
SC	Category 5 Section 303(d) listed	20505- 001	Cottonwood Creek	Wasilla	Entire 13 miles	Residues	Foam & Debris	Urban Runoff, Urban Development
Cottonwood Creek (13 miles) is 2003 Section 303(d) listed for non-attainment of the Residues standard for foam and debris. DEC has received numerous complaints about foam in Cottonwood Creek and was observed in the creek in 1998, 2000, 2001 and 2002; it is a recurring problem, with no existing controls to address it. DEC staff has personally observed this problem and has photo-documentation. Cottonwood Creek has many houses with septic systems along it, although the origin of the foam is unknown. The Alaska Department of Fish and Game and others has also noted problems and has substantial documentation on Cottonwood Creek. ADF&G fish pathology reports on Cottonwood Creek for 1995, 1997, and 2001 document some moribund and dead sockeye salmon smolts in the creek with eroded fins and white patches on their bodies. A pathogenic bacteria was seen on the gills of some fish in large numbers. The report states that "this condition is often associated with poor water quality conditions" when discussing some of the findings. The 2001 report shows water temperatures 10-17 degrees C. Based on this body of information and documentation Cottonwood Creek (13 miles) is Section 303(d) listed for non-attainment of the Residues standard for foam and debris.								
SC	Category 5 Section 303(d) listed	30401- 601	Dutch Harbor	Unalaska Island	0.5 acre	Petroleum Hydrocarb ons, Oil & Grease	Petroleum Products	Industrial, Urban Runoff
This waterbody was placed on the 1994 Section 303(d) list for non-attainment of the Petroleum Hydrocarbons, Oil & Grease standard for petroleum products. The August 25, 1994 Water Quality Assessment for Greater Unalaska Bay determined the waterbody was impacted by petroleum products. A more specific waterbody assessment for Dutch Harbor is needed to validate the water quality issues and determine whether additional controls are necessary.								

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SC	Category 5 Section 303(d) listed	30203- 001	Egegik River	Egegik	1 acre	Petroleum Hydrocarb ons, Oil & Grease	Petroleum Products	Spills, Fuel Tanks, Under- ground Fuel Tanks
<p>This waterbody is placed on the 2003 Section 303(d) list for non-attainment of the Petroleum Hydrocarbons, Oil & Grease for petroleum products. There are at least three major sources for contamination that migrated into the groundwater and through soils into the Egegik River: the former locations of two 10,000 gallon gasoline tanks, an unlined diesel tank farm, and the underground threaded-coupling pipeline from the tank farm on the bluff that leaked gasoline in April 2001. The area used to house fuel tanks and was filled from a barge in the river, and very extensive contamination is suspected. Site characterization has not been completed. It is believed that the old fuel tanks were in place and active from the 1960's through the 1990's and continues to be a problem. The river inundates the soils behind the seawall (which are contaminated) regularly when the tide comes up. The monthly high tides usually breach the seawall and flood the area landslide. Fuel reaches the water from the April 2001 gasoline spill. This is a continuous occurrence. It appears that the groundwaters are hydrologically connected to the river and that the fuels will continue to migrate to the river. Photo documentation shows petroleum daylighting into the river and sheen on the water. The problem is likely to remain chronic unless the contaminated soils are excavated and free product recovery is completed.</p>								
SC	Category 5 Section 303(d) listed	20201- 401	Eyak Lake	Cordova	50 feet of shore-line	Petroleum Hydrocarb ons, Oil & Grease	Petroleum Products, Petroleum Contamination , Sheen	Above Ground Storage Tanks, Spills
<p>This waterbody is placed on the 2003 Section 303(d) list for non-attainment of the Petroleum Hydrocarbons, Oil & Grease standard for petroleum products. DEC staff and photo documentation confirm an active petroleum seep which creates a persistent petroleum sheen from shoreline soils at the Cordova Electric Power plant site on Eyak Lake. The site has been there since the 1960's with contamination evident for many years. Although the utility attempted to deal with the contamination and controlled the spread of the sheen from other parts of the lake with sorbent booms, there remains a persistent sheen on the lake near shore to the site. It is not anticipated that the sheen will disappear in the near future, nor that existing control measures will remove the sheen.</p>								
SC	Category 5 Section 303(d) listed	20401- 005	Fish Creek	Anchorage	6.4 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
<p>Fish Creek has been on the Section 303(d) list since 1990 for non-attainment of the Fecal Coliform Bacteria standard and the Turbidity standard. A 1995 waterbody assessment concluded the waterbody was impaired only for fecal coliform.</p>								
SC	Category 5 Section 303(d) listed	20401- 006	Furrow Creek	Anchorage	5.3 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
<p>This waterbody was placed on the 1990 Section 303(d) list and remains on the 2003 Section 303(d) list for non-attainment of the Fecal Coliform Bacteria standard. Based on Municipality of Anchorage water quality monitoring data, the levels of fecal coliform exceed the designated use criteria for drinking water, primary contact recreation, and occasionally for secondary contact recreation. The source of the fecal coliform is presumed to be human-caused from urban runoff sources.</p>								

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SC	Category 5 Section 303(d) listed	20401- 412	Hood/Spennard Lake	Anchorage	307 acres	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff, Industrial
Hood/Spennard Lake has been on the Section 303(d) list since 1994 for non-attainment of the Dissolved Gas standard for low dissolved oxygen (DO). A TMDL was developed for fecal coliform bacteria and was finalized on September 30, 1997 and the waterbody occurs as a Category 4b water for fecal coliform but remains on Section 303(d) list (Category 5) for dissolved gas (i.e., dissolved oxygen). Although the waterbody was originally placed on the 1996 Section 303(d) list for fecal coliform, lead, nitrates, and phosphates, DEC's current water quality assessment for this waterbody showed that Lake Hood need only be listed for low DO. The assessment also considered four other pollutants of concern other than fecal coliform and DO – petroleum, nitrates, lead, & ammonia. However, the data indicated that there are no persistent violations of these parameters.								
SC	Category 5 Section 303(d) listed	30102- 602	Illiuliuk Bay/Harbor	Dutch Harbor	1.4 acres	Petroleum Hydrocarb ons, Oil & Grease	Petroleum Products	Urban Runoff
This waterbody was placed on the 1990 Section 303(d) list and remains on the 2003 Section 303(d) list for non-attainment of the Petroleum Hydrocarbons, Oil & Grease standard for petroleum products. An EPA August 1994 Water Quality Assessment for Greater Unalaska Bay which included Illiuliuk Harbor/Bay concluded that Illiuliuk Harbor/Bay is impacted by intermittent spills for petroleum products and chronic sewage runoff and that existing controls can resolve the problems. Anchorage DEC staff indicates the waterbody is regularly affected by petroleum spills and that until the controls resolves the petroleum spills/seeps problem, the waterbody should remain 303(d) listed.								
SC	Category 5 Section 303(d) listed	20701- 502	Kazakof Bay	Afognak Island	2.0 acres of marine bottom adjacent to the log transfer facility	Residues	Bark & Woody Debris	Log transfer facility
This waterbody was placed on the 1998 Section 303(d) list and this waterbody remains on the 2003 Section 303(d) list for non-attainment of the Residues standard for bark and woody debris. Dive survey information for this log transfer facility (known as Kazakof Bay 1) document an exceedance of the interim intertidal threshold bark accumulation level (as per Log Transfer Facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) at 1.2 acres in February 2000 of bottom coverage and 3.0 acres in February 2001. 2.0 acres of marine bottom adjacent to the log transfer facility is listed as impaired.								
SC	Category 5 Section 303(d) listed	20401- 017	Little Campbell Creek	Anchorage	8.3 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
Little Campbell Creek has been on the Section 303(d) list since 1990 for non-attainment of the Fecal Coliform Bacteria standard. The water quality assessment for the Campbell Creek Drainage indicates that Little Campbell Lake is impaired only for fecal coliform.								
SC	Category 5 Section 303(d) listed	20401- 024	Little Rabbit Creek	Anchorage	6.2 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
Little Rabbit Creek was placed on the 1994 Section 303(d) list for non-attainment of the Fecal Coliform Bacteria standard. The source of the fecal coliform exceedances (whether human-caused or caused by non-human sources such as wildlife), has also been an open question with this waterbody. Determining the source of the fecal coliform is best resolved by the more detailed waterbody assessment process. A waterbody assessment will provide more definitive information on the source of the fecal coliform exceedances that can serve as the basis for a waterbody recovery plan - if needed as determined by the waterbody assessment.								

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SC	Category 5 Section 303(d) listed	20401- 018	Little Survival Creek	Anchorage	3.0 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
<p>Little Survival Creek was placed on the 1994 Section 303(d) list for non-attainment of the Fecal Coliform Bacteria standard. The source of the fecal coliform exceedances (whether human-caused or caused by non-human sources such as wildlife) is an open question with this waterbody. Determining the source of the fecal coliform is best resolved by the more detailed waterbody assessment process. A waterbody assessment will provide more definitive information on the sources of the fecal coliform exceedances, and can serve as the basis for a waterbody recovery plan, if needed.</p>								
SC	Category 5 Section 303(d) listed	20701- 501	Lookout Cove	Afognak Island	0.5acres	Residues	Bark & Woody Debris	Log Transfer Facility
<p>Lookout Cove is placed on the 2003 Section 303(d) list for non-attainment of the Residues standard for bark and woody debris. Dive survey information for this log transfer facility from November 2001 documented an exceedance of the interim intertidal threshold bark accumulation level (as per Log Transfer Facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) and at 2.1 acres of bottom coverage in November 2001, 0.9 acres in March 2001, and 1.5 acres in November 2001. 0.2 acres of marine bottom adjacent to the log transfer facility is listed as impaired.</p>								
SC	Category 5 Section 303(d) listed	20402- 001	Matanuska River	Palmer	½ mile	Residues	Debris	Landfill
<p>This segment of the Matanuska River is placed on the 2003 Section 303(d) list for non-attainment of the Residues standard for debris. There is an active open dump located on and in the Matanuska River just north of Eagle Drive in Palmer. Numerous derailed railroad cars are visible in the river and riparian area. The main site of concern is the active dump. Visible contents of the dump at the time of the inspection were a minimum of 20 vehicles, household refuse and items, fuel cans, possible 55-gallon drums with unknown contents, grass cuttings, and just overall scrap metal and other debris. Debris continues in the river and riparian area upstream for approximately 1/2 mile. River channels run through and next to the dump at all times of the year. Visible sheens are also observed in the river. This open dump is not only an immediate threat to the surface water quality of the Matanuska River, but is within the Drinking Water Protection Area for a minimum of three public water systems.</p>								
SC	Category 5 Section 303(d) listed	30101- 602	Popof Strait	East Aleutians Borough	5 miles	Residues	Seafood Waste Residue	Seafood Processor
<p>Popof Strait has been on the Section 303(d) list since 1996 for non-attainment of the Residues standard from seafood waste residues and remains on the Section 2003 Section 303(d) list. Information provided by the Aleutians East Borough, and verified by DEC staff, included citizen complaints, photographs, and other information to indicate that persistent exceedances of "seafood residue" occur from a seafood processor operating adjacent to the waterbody. The seafood processing facility located in Sand Point has installed a fish meal plant which eliminates the discharge of solid wastes to Popof Strait. The company is presently under a consent decree covering this facility (as well as the one in Akutan) where there is a BOD5 limit for the Sand Point facility</p>								

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SC	Category 5	30204-002	Red Fox Creek	King Salmon	N/A	Petroleum Hydrocarbons , Oil & Grease, Toxic & Other Deleterious Organic and Inorganic Substances	Petroleum Products, Diesel Range Organics (DRO) and Trichloroethene (TCE)	Landfill, Fire Training Areas, Military

Red Fox Creek has been on the Section 303(d) list since 1994 for non-attainment of the Petroleum Hydrocarbons and Oil and Grease standard for petroleum hydrocarbons and the Toxic and Other Deleterious Organic and Inorganic Substances standard for metals. Information provided by EPA's Comprehensive Environmental Response Compensation Liability Act (CERCLA) group show that the waterbody is water quality-limited for petroleum hydrocarbons and trichloroethene (TCE). Consequently, the metals parameter was dropped from this listing. Water quality assessment studies were completed for the waterbody and a remediation plan has been implemented. Red Fox Creek formerly consisted of a small stream prior to the airport runway constructed in the 1940s. It is currently a losing stream with minimal flow that enters the groundwater system as it intersects the runway. Red Fox Creek does not directly impact the Naknek River. Contaminants of concern include diesel range organics (DRO), gasoline range organics (GRO), and benzene in surface water, and DRO, GRO, benzene, toluene, tetrachloroethene, and poly aromatic hydrocarbons (PAHs) in sediment. Most recent surface water and sediment sample data are from 1997; based on the 5 year old data Red Fox Creek does not meet the water quality standards and was placed in Category 5. The 1997 remedial actions included the secondary source removal and treatment of the contaminated soil in on-facility biocells. The 1998 remedial actions included the installation of an air sparging and soil vapor extraction system. The treatment system had been intermittently and seasonally operated from 1999. The 2001 groundwater samples reveal DRO, GRO, TCE, and benzene above groundwater cleanup levels. During the Remedial Process Optimization Phase II meetings in 2002 which included participants from EPA, DEC, Air Force, Pacific Air Forces, Air Force Center for Environmental Excellence, and consultants, based on system's operational data it was agreed that the system should be converted into a bioventing system to more adequately treat the contamination; the conversion occurred in late 2002. The 2002 monitoring results were anticipated in early 2003. A Record of Decision is expected to be final in late 2003.

SC	Category 5 Section 303(d) listed	30102-409	Red Lake Anton Road Ponds	Kodiak	2.0 acres	Toxic & Other Deleterious Organic and Inorganic Substances	Metals	Urban Runoff
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Red Lake Anton Road Ponds were placed on the 1994 Section 303(d) list for non-attainment of the Toxic & Other Deleterious Organic and Inorganic Substances standard for metal. Based on a 1992 memorandum released by DEC-Kodiak Field Office, Red Lake lies less than 200 feet from a Navy Landfill. This landfill was constructed without a liner or leachate collection system. Landfill waste, which may include solvents, paints, used oils, and contaminated fuel, occasionally leaches into Red Lake and two other small ponds near Anton Road. These two ponds are highly colored by bright orange-red iron precipitates caused by the oxidation of the leachate. Lake sediment samples were found to contain 8.6% iron. Chemical pollutants were documented at low levels in the lake and in the bottom sediments. DEC staff reviewed four recent reports (from 1996 & 1997). The data presented in the reports is the best available to the department and DEC concluded that: (1) Red Lake clearly appears to have exceedances of water quality standards for iron and manganese due to human actions, (2) there are no existing controls in place to ensure that the water quality standards will be met within the next two years, (3) the reports did not present any information showing levels of iron and manganese in groundwater above the landfill; so there is no information showing that the abandoned landfill is not the source of these metals, and (4) although there were other parameters of concern observed in previous sampling, the available information indicates that Red Lake should only be listed for manganese and iron. Consequently, the waterbody will not be listed for the debris or petroleum products pollutant parameters in 2002.

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SC	Category 5 Section 303(d) listed	30104- 601	Saint Paul Island Lagoon	St. Paul Harbor, St. Paul Island	0.23 acre	Petroleum Hydrocarb ons, Oil & Grease	Petroleum Products	Leaking Above Ground Storage Tanks
<p>This segment of Saint Paul Island Lagoon is placed on the 2003 Section 303(d) list for the Petroleum Hydrocarbons, Oil & Grease standard for petroleum products. The pollutant source was a seal processing plant built in 1918 and demolished in 1988 when the commercial seal harvesting ended. Diesel contamination was thought to have been from spillage during fuel handling. An area, approximately 120 feet by 120 feet showed evidence of diesel contamination and extended from the surface to groundwater at 3 to 5 feet. Groundwater movement from the contaminated area threatens uncontaminated wetlands to the west and northwest. The areal extent of contamination was estimated at 10,000 square feet. Leaking above ground storage tanks, diesel seepage, are on-going into the lagoon from as early as the 1980's. There is sheen on the water daily. This water was considered for 303(d) listing in 1998 but listing was deferred under assurances of clean-up. The sheen still persists in spite of these efforts, therefore this 2.3 acre area of St. Paul Island Lagoon are Section 303(d) listed as impaired.</p>								
SC	Category 5 Section 303(d) listed	20401- 020	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Anchorage	Glenn Hwy. Bridge. Down to Mouth	Fecal Coliform Bacteria Petroleum Hydrocarb ons, Oil & Grease	Fecal Coliform, Petroleum Products	Urban Runoff
<p>This segment of Ship Creek was placed on the 1990 Section 303(d) list and is listed for non-attainment of the Fecal Coliform Bacteria and Petroleum Hydrocarbons, Oil & Grease standards. Based on the fecal coliform monitoring data from 1989-1994 provided by the Municipality of Anchorage the water quality criteria for drinking water and contact recreation were exceeded at various times. Petroleum products floating on ground water are moving from the site towards Ship Creek that threatens the waterbody. A report completed for DEC indicates that the macroinvertebrate community is altered/degraded. The waterbody assessment is very nearly completed by DEC and appears to validate finding WQS exceedances of fecal coliform and petroleum products. Since 1994, Ship Creek was on the Section 303(d) list of impaired waterbodies for fecal coliform (1992) and petroleum hydrocarbons (1992). Fecal coliform counts are highest during breakup and runoff events and lowest during winter baseflow. The MOA's Bioassessment of Select Streams at Anchorage, AK: 2000 Data Report reported Ship Creek with a "poor" rating for macroinvertebrate communities.</p>								
SC	Category 5 Section 303(d) listed	20401- 419	University Lake	Anchorage	10 acres	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
<p>University Lake has been on the Section 303(d) list since 1990 for non-attainment of the Fecal Coliform Bacteria standard. The Chester Creek Drainage Water Quality Assessment, completed in April 1993, determined that the waterbody was impaired for only fecal coliform.</p>								
SC	Category 5 Section 303(d) listed	20401- 421	Westchester Lagoon	Anchorage	30 acres	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
<p>Westchester Lagoon has been on the Section 303(d) list since 1990 for non-attainment of the Fecal Coliform Bacteria standard. The Chester Creek Drainage Water Quality Assessment, April 1993, indicated Westchester Lagoon was impaired only for fecal coliform, however, there are water quality concerns related to iron, turbidity and petroleum products.</p>								

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SE	Category 5 Section 303(d) listed	10204- 801	Cube Cove	NW Admiralty Island	0.4 acres	Residues	Bark & Woody Debris	Log transfer facility
Cube Cove remains on the 2003 Section 303(d) list for non-attainment of the Residues standard for bark and woody debris. Cube Cove was Section 303(d) listed in 1998. Dive survey information document a significant exceedance of the interim intertidal threshold bark accumulation level (as per the ATTF Log Transfer Facility <u>Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985</u>) at 1.7 acres of bottom coverage in April 2001 and 1.4 acres in April 2002. 0.4 acres of marine bottom adjacent to the log transfer facility is listed as impaired.								
SE	Category 5 Section 303(d) listed	10203- 808	East Port Frederick	NE Chichagof Island	1.5 acres	Residues	Bark & Woody Debris	Log transfer facility
East Port Frederick is placed on the 2003 Section 303(d) list for non-attainment of the Residues standard for bark and woody debris. Dive survey information documents a significant exceedance of the interim intertidal threshold bark accumulation level (as per the ATTF Log Transfer Facility <u>Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985</u>) at 2.9 acres in March 2000, 4.8 acres in April 2001 and 3.5 acres of bottom coverage in December 2002. 2.5 acres of marine bottom adjacent to the log transfer facility is listed as impaired.								
SE	Category 5 Section 303(d) listed	10201- 801	Hobart Bay	Mainland, SE Stephens Passage	1.3 acres of marine bottom adjacent to the log transfer facility	Residues	Bark & Woody Debris	Log transfer facility
Hobart Bay was Section 303(d) listed in 1998 and remains on the 2003 Section 303(d) list for non-attainment of the Residues standard for bark and woody debris. Dive survey information from May 1996 (log transfer facility known as Hobart Bay 3) documents a significant exceedance of the interim intertidal threshold bark accumulation level (as per the ATTF Log transfer facility <u>Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985</u>) at 2.3 acres of bottom coverage. 1.3 acres of marine bottom adjacent to the log transfer facility is listed as impaired.								
SE	Category 5 Section 303(d) listed	10301- 004	Jordan Creek	Juneau	3 miles from tide-water up-stream	Sediment, Residues, Dissolved Gas	Sediment, Debris, Low Dissolved Oxygen	Land Development, Road Runoff
Jordan Creek was Section 303(d) listed in 1998 and remains on the 2003 Section 303(d) list for non-attainment of the Sediment, Residues and Dissolved Gas standards for sediment, debris, and low dissolved oxygen (DO). Coho salmon have dropped from an average of 250 adult returns to 54 in 1996 and 18 in 1997. It was one of the most productive small streams in Juneau and Southeast Alaska for coho salmon but has experienced a rapid decline. There are serious sediment problems in the stream with poor survival of salmon eggs and low oxygen readings in the substrate that are in violation of water quality standards. The stream is largely spring fed and cannot transport large volumes of sediment like higher gradient systems. The headwaters of the stream are manipulated with ditches replacing more productive habitat and with ponds filled in. There is a problem with iron floc that was not present 10 years ago. The stream corridor is under rapid development and the lower section of the creek regularly goes dry. Macroinvertebrate bioassessment sampling shows the stream has low diversity and experienced declines over the 1994 to 1996 period.								

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Integrated Water Quality Monitoring and Assessment Report

Category 5 Waterbodies – Impaired by pollutant(s) for one or more designated uses and requiring a TMDL CWA Section 303(d) Listed

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 5 Section 303(d) listed	10203- 002	Katlian River	N. of Sitka, Baranof Island	4.5 miles	Sediment, Turbidity	Sediment, Turbidity	Timber Harvest
Katlian River was Section 303(d) listed as impaired in 1998 and remains on the 2003 Section 303(d) list for non-attainment of the Sediment and Turbidity standards. Past land use activities have created a number of concerns for water quality, and fish habitat. The harvest of riparian timber and location and lack of maintenance of the road system created the following concerns: decreased channel stability, landslides and small slope failures, increased sediment levels, loss of aquatic habitat, siltation of holding pools for migrating salmon, and alteration of watershed hydrology. Watershed effects resulted in use impairment for aquatic life.								
SE	Category 5 Section 303(d) listed	10203- 602	Klag Bay	West Chichagof Island	1.25 acres	Toxic & Other Deleterious Organic and Inorganic Substances	Metals	Mining
Klag Bay was placed on the 1996 Section 303(d) list, and remains on the 2003 Section 303(d) list, for non-attainment of the Toxic & Other Deleterious Organic and Inorganic Substances standard for metals. Past mining resulted in the deposition of large amounts of tailings in Klag Bay. A draft 1985 report on Klag Bay titled "Klag Bay Study" prepared by the U.S. Fish and Wildlife Service indicate high levels of metals from tailings are leaching into the bay. Contaminants are mercury, arsenic, cobalt, copper, and lead, silver. These metals caused abnormalities in numerous blue mussels. These abnormalities are considered an impairment of a designated use. A 1998 preliminary assessment confirmed lead, silver, arsenic and mercury in the intertidal sediments above NOAA screening benchmarks.								
SE	Category 5 Section 303(d) listed	10103- 502	Klawock Inlet	Klawock Island, W. Prince of Wales Island	2.5 acres	Residues	Bark & Woody Debris	Log transfer facility
The area just off the dock and log transfer area Klawock Inlet is placed on the 2003 Section 303(d) list for non-attainment of the Residues standard for bark and woody debris. Dive survey information documents a significant exceedance of the interim intertidal threshold bark accumulation level (as per the ATTF Log Transfer Facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) at 4.8 acres in April 2001 and 3.5 acres of bottom coverage in December 2002. 2.5 acres of marine bottom adjacent to the log transfer facility is listed as impaired.								
SE	Category 5 Section 303(d) listed	10203- 001	Nakwasina River	Baranof Island, Sitka	8 miles	Sediment, Turbidity	Sediment, Turbidity	Timber Harvest
Nakwasina River remains on the 2003 Section 303(d) list for non-attainment of the Sediment and Turbidity standards. Past land use activities have created a number of concerns for water quality and fish habitat. The harvest of riparian timber and location and lack of maintenance of the road system created the following concerns: decreased channel stability, landslides and small slope failures, increased sediment levels, loss of aquatic habitat, siltation of holding pools for migrating salmon, and alteration of watershed hydrology. Watershed effects resulted in use impairment for aquatic life.								
SE	Category 5 Section 303(d) listed	10301- 014	Pederson Hill Creek	Juneau	Lower two miles	Fecal Coliform Bacteria	Fecal Coliform	Septic Tanks
Pederson Hill Creek has been on the Section 303(d) list since 1990 for non-attainment of the Fecal Coliform Bacteria standard from certain areas of failing on-site septic systems. Coliform bacteria contamination was well documented since 1985, with values as high as 2400 FC/100ml reported in 1991. A thorough survey and routine periodic updates with monitoring is needed.								

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Category 5 Waterbodies – Impaired by pollutant(s) for one or more designated uses and requiring a TMDL CWA Section 303(d) Listed

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 5 Section 303(d) listed	10203- 801	Schulze Cove	Fish Bay, Baranof Island	Marine Bottom Beneath This Log Storage Area	Residues	Bark & Woody Debris	Log Storage Area
<p>This section of Schulze Cove was Section 303(d) listed in 1998 and remains on the 2003 Section 303(d) list for non-attainment of the residues standard for bark and woody debris. The Schulze Cove log storage area covers the whole Cove. Review of US Fish and Wildlife Service video documentation and dive report (September 1995 report on dives from July 27 & 29, 1995, several transects) revealed extensive bark deposition (> one acre & > than 10 cm). Log storage activities severely impacted Schulze Cove. The bottom of the Cove is completely barren of life.</p>								
SE	Category 5 Section 303(d) listed	10303- 601	Skagway Harbor Pullen Creek (Lower Mile)	Skagway	Acre; & Lower mile of Pullen Creek	Toxic & Other Deleterious Organic and Inorganic Substances	Metals	Industrial
<p>Skagway Harbor and Pullen Creek were on the Section 303(d) list since 1990 for non-attainment of the Toxic & Other Deleterious Organic and Inorganic Substances standard for metals. No additional information was evaluated by DEC since then. An undated draft report from the U.S. Fish and Wildlife Service titled Trace Metals Contamination at an Ore Loading Facility in Skagway, Alaska indicated that trace metals contamination are due to an ore loading facility in Skagway. Elevated levels of lead, zinc, cadmium, copper, and mercury in marine sediments were found to exceed the values of the control area. Additionally, infauna found in the marine sediments were much reduced and diversity was correlated with the concentration of lead and zinc in the sediment; an adverse effect to the aquatic life designated use.</p>								
SE	Category 5 Section 303(d) listed	10103- 602	Thorne Bay	Prince of Wales Island	marine bottom beneath the log storage areas	Residues	Bark & Woody Debris	Log Transfer Facility
<p>Thorne Bay has been on the Section 303(d) list since 1994 for non-attainment of the Residues standard for bark and woody debris. Excess debris from log transfer facility activities, including log storage, accumulated on the bottom of Thorne Bay. A July 2001 dive survey report documented 2.6 acres of bark and woody debris on the bottom associated with the log transfer facility. An additional dive survey is planned for 2003 that will document any additional debris associated with the log storage areas in the bay.</p>								
SE	Category 5 Section 303(d) listed	10103- 801	Twelvemile Arm	Prince of Wales Island	marine bottom beneath this log storage area	Residues	Bark & Woody Debris	Log Storage Area
<p>Twelvemile Arm has been on the Section 303(d) list since 1998 for non-attainment of the Residues standard for bark and woody debris. Review of US Fish and Wildlife Service video documentation and a dive transect reveals 100% coverage along entire transect, and numerous sections exceeding 10 cm thickness, i.e., extensive bark deposition (> one acre & > than 10 cm). Log storage activities were at the head of the Arm in a shallow area lacking sufficient flushing capability.</p>								

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**Category 5 Waterbodies – Impaired by pollutant(s) for one or more designated uses and requiring a TMDL
CWA Section 303(d) Listed**

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 5 Section 303(d) listed	10102- 601	Ward Cove	Ketchikan	2.5 acres	Residues Dissolved Gas Toxic & Other Deleterious Organic and Inorganic Substances	Pulp Residues, Logs, Bark & Woody Debris, Low Dissolved Oxygen, Sediment Toxicity due to Wood Decomposition By-products	Industrial

Ward Cove has been Section 303(d) listed since 1990. The waterbody is listed for non-attainment of the Residues, Dissolved Gas, and Toxic & Other Deleterious Organic and Inorganic Substances standards for pulp residues, logs, bark and woody debris, low dissolved oxygen (DO), and sediment toxicity from historical discharges and associated activity from the Ketchikan Pulp Company pulp mill operations. Since the pulp mill wastewater discharges ceased in 1997, color was removed from the listing. Recent studies indicated that bottom sediments and accumulations of wood debris generate hazardous substances as they decompose which are toxic to benthic organisms, and contribute to seasonal depressions in dissolved oxygen in Ward Cove. Discharge monitoring reports (DMRs) as required by timber processing discharge permits from 1995 to 2000 show severe dissolved oxygen depressions at certain times and locations during stratification of the waterbody in late summer and fall. The deeper layer of water more than 5 to 10 meters was below Alaska water quality criteria for dissolved oxygen. This is further evidence of an ongoing dissolved oxygen deficit in Ward Cove. A Total Maximum Daily Load is under development for Ward Cove. Wasteload allocations will address residues, sediment toxicity, and DO.

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APPENDIX G. -- Section 303(d) Listed Waterbodies in 1998 Removed from the List in 2002/2003

Notes: Two waterbodies, or “listings,” were completely dropped from this report from the July 2002 draft report: (1) **Thorne Bay West** was shown as a waterbody segment of Thorne Bay in the 2002 draft. It was thought that the U.S. Forest Service was developing a remediation plan; since the plan was not developed or received the segment is dropped however Thorne Bay itself remains Section 303(d) listed in Category 5. (2) **Buskin Beach Pond** – the issues surrounding this 1998 Section 303(d) listing were resolved and, more importantly, the waterbody no longer exists and the waterbody would not show in any category.

<u>Alaska's 2002/2003</u>								
<u>Integrated Water Quality Monitoring and Assessment Report Section 303(d) Listed Waterbodies in 1998 Removed from the List in 2003</u>								
<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 2	10302-802	Corner Bay	Tenakee Inlet, Baranof Island	N/A	Residues	Bark and Woody Debris	Log transfer facility
This waterbody is attaining standards and is moved to Category 2. This waterbody was placed on the 1998 Section 303(d) list for debris. At that time, dive survey information from May 1996 demonstrated an exceedance of the interim intertidal threshold bark accumulation level (as per the ATTF Log Transfer Facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) at 1.18 acres of bottom coverage. Dive survey reports from June 2002 of 0.1 acres and from July 2001 of 0.6 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 4a	10301-005	Duck Creek	Juneau	N/A	Dissolved Gas Residues Toxic & Other Deleterious Organic and Inorganic Substances, Fecal Coliform Bacteria, Turbidity	Low Dissolved Oxygen, Debris, Iron, Fecal Coliform, and Turbidity	Urban Runoff, Landfill, Road Runoff, Land Develop ment
TMDLs have been completed on Duck Creek for all pollutants and therefore the water is removed from the 303(d) list. This waterbody has been previously on the Section 303(d) list for dissolved gas (low DO), residues (debris), metals, fecal coliform, turbidity, petroleum aromatic hydrocarbons, and habitat modification since 1994. Since TMDLs have been completed for all pollutants (turbidity in 1999, fecal coliform bacteria and residues (debris) in 2000, and dissolved oxygen and iron in 2001) Duck Creek is removed from the Section 303(d) list moved to Category 4a .								
SE	Category 4a	10203-005	Granite Creek	Sitka	N/A	Residues	Turbidity, Sediment	Gravel Mining
A TMDL has been development for Granite Creek. This waterbody was placed on the 1996 Section 303(d) list for turbidity and sediment. Information shows that the lower 1.5 miles of the creek is impaired from sediment and turbidity. Since a TMDL has been completed for Granite Creek it is removed from the Section 303(d) list and moved to Category 4a. EPA approved the Granite Creek TMDL on September 30, 2002.								

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Alaska's 2002/2003

**Integrated Water Quality Monitoring and Assessment Report Section 303(d) Listed Waterbodies in 1998
Removed from the List in 2003**

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 2	10202-601	Hamilton Bay	Kake	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
This waterbody is attaining standards and is moved to Category 2. This waterbody was placed on the 1996 Section 303(d) list for debris. Past dive surveys had indicated that excessive bark existed on the bottom of Hamilton Bay as a result of logging operations on Kupreanof Island that use the Hamilton Bay log transfer facility. Dive survey reports from June 2002 of 0.6 acres and from September 2000 of 0.6 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 4a	10203-601-001	Herring Cove of Silver Bay	Sitka	102 acres	Residues	Bark & Woody Debris	Log Storage from former Pulp Mills Operations
On September 27, 1999 a TMDL for residues was completed for this waterbody segment of the Silver Bay area and this waterbody segment is moved to Category 4a.								
SE	Category 2	10202-801	Point McCartney	Kupreanof Island, Kake	N/A	Residues	Bark & Woody Debris	Log transfer facility
This waterbody was Section 303(d) listed for residues in 1998. At that time, dive survey information documented an exceedance of the interim intertidal threshold bark accumulation level (as per the Log Transfer Facility Siting, Construction, Operation, and Monitoring\Reporting Guidelines, October 21, 1985) from February 2001 at 1.2 acres of bottom coverage. A dive survey report from March 2002 documents 1.0 acres bottom coverage and another from November 2002 of 0.52 acres validate that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 2	10202-602	Rowan Bay	Kuiu Island	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
This waterbody was placed on the 1996 Section 303(d) list for debris (bark debris from deposition at a log transfer facility (LTF)). Past dive surveys have shown an exceedance of the interim intertidal threshold bark accumulation level (as per Log transfer facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985). Dive survey reports from May 2002 of 0.8 acres and from June 2001 of 0.6 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								
SE	Category 2	10103-802	Tolstoi Bay	NW Bight of Tolstoi Bay, Prince of Wales Island	N/A	Residues	Bark & Woody Debris	Log Storage Area
Tolstoi Bay has been on the Section 303(d) list since 1998 for non-attainment of the Residues standard for bark and woody debris. A dive survey report from June 1994 for this area (known as Tolstoi Bay 2) reported 1.82 acres of bottom coverage from debris. 0.8 acre of marine bottom beneath this log storage area, however a March 2003 dive survey report shows 0.7 acre of bark on the bottom and therefore the waterbody is removed from the Category 5/Section 303(d) list and moved to Category 2.								
SE	Category 2	10203-803	Salt Lake Bay	Port Frederick, Chichagof Island	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
This waterbody is attaining standards and is moved to Category 2. This waterbody was placed on the 1998 Section 303(d) list for debris. Dive survey information from October 1991 demonstrated an exceedance of the interim intertidal threshold bark accumulation level (as per Log Transfer Facility Siting, Construction, Operation, and Monitoring\Reporting Guidelines, October 21, 1985) at 1.16 acres of bottom coverage. Dive survey reports from May 2002 of 0.1 acres and from March 2000 of 0.3 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.								

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<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SE	Category 4a	10203-601	Silver Bay	Sitka	6.5 acres	Residues, Toxic & Other Deleterious Organic and Inorganic Substances	Pulp Residues, Logs, Bark & Woody Debris, Sediment Toxicity due to Wood Decomposition By-products	Industrial , Historical Pulp Mill Activity
<p>Silver Bay has been on the Section 303(d) list since 1994 for non-attainment of the Residues, Toxic & Other Deleterious Organic and Inorganic Substances, and Dissolved Gas standards for sludge (residues), toxic substances, and dissolved gas (low DO) since 1994. Based on information presented in a report titled Final Expanded Site Inspection Report, Alaska Pulp Corporation, Sitka, Alaska, Feb. 1995, water quality violations were substantiated. Discharges from the mill ceased in March 1993. Based on a June 1993 Water Quality Assessment, the pollutant parameters of concern were sludge and dissolved oxygen. A contaminated site Remedial Investigation/Feasibility Study for Silver Bay was contracted by Alaska Pulp Company from July 1996 to February 1999. A Record of Decision by DEC was issued in 1999. The remedial action objective identified by the ROD was: natural recovery, with long-term monitoring. A Total Maximum Daily Load has been developed for Silver Bay, addressing residues, sediment toxicity, and dissolved oxygen. Wasteload allocations have been developed for residues and sediment toxicity. Monitoring data show that Silver Bay is no longer impaired for dissolved oxygen (DO) for surface waters or in the water column. Although DO levels below the limits of the WQS have been observed in deep water between Sawmill Cove and Herring Cove, there appears to be no correlation between these levels and the presence of wood waste, and no current source of DO depression is known. Therefore, it is determined that Silver Bay is no longer impaired for dissolved oxygen and the DO pollutant parameter is removed from the Silver Bay listing. On September 27, 1999 a TMDL was completed for residues for the Herring Cove segment of Silver Bay. In 2003 a TMDL has been completed for Silver Bay for residues and sediment toxicity. Since TMDLs have been completed for all of the listed area of Silver Bay and pollutant parameters it is removed from the Section 303(d) and moved to Category 4a.</p>								
SE	Category 2	10203-804	West Port Frederick	Chichagof Island	N/A	Residues	Bark & Woody Debris	Log Transfer Facility
<p>This waterbody is attaining standards and is moved to Category 2. This waterbody was placed on the 1998 Section 303(d) list for debris. Dive survey information from April 1995 demonstrated an exceedance of the interim intertidal threshold bark accumulation level (as per Log Transfer Facility Siting, Construction, Operation and Monitoring\Reporting Guidelines, October 21, 1985) at 1.35 acres of bottom coverage. Dive survey reports from April 2001 of 0.3 acres and from March 2000 of 0.3 acres bottom coverage document that this water is compliant with standards and the water is removed from the Section 303(d) list.</p>								
SE	Category 2	10203-018	Wrinkleneck Creek, Swan Lake	Sitka	N/A	Residues	Solid Waste	Urban
<p>This waterbody is attaining standards and is moved to Category 2. This waterbody was placed on the 1996 Section 303(d) list for residues from trash and urban debris. The Swan Lake Watershed Recovery Strategy and Total Maximum Daily Load (TMDL) have been completed (January 2000) and approved by DEC and EPA (May 2000). In the Spring of 2002 the City and Borough of Sitka (CBS) completed the 3rd annual Swan Lake Cleanup. Three years prior to that volunteers collected over 6600 pounds of trash and debris. Each year the amount collected has been lower than previous years. This cleanup will continue to be an annual event in coordination with a citywide spring clean up. The success of these efforts reflects the community's commitment and the approach of the Swan Lake Watershed Recovery Strategy. CBS believes the actions to date support moving the Swan Lake watershed to Category 2. Swan Lake watershed has an implemented waterbody recovery plan and an approved TMDL, including annual cleanups and monitoring. CBS has provided the documentation confirming that we are implementing the TMDL and are meeting water quality standards. DEC has concurred that the waterbody is attaining standards and is placed in Category 2.</p>								

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SC	N/A	20701-601	Buskin Beach Pond	Kodiak	N/A	Petroleum Hydrocarbon s, Oil & Grease	Petroleum Products	Military

The waterbody no longer exists therefore it is no longer categorized. This waterbody was placed on the 1998 Section 303(d) list for petroleum products. The site is located about four miles south the city of Kodiak on the coast of Womens Bay. The contaminated area was a low-lying estuarine-type area of Buskin Beach. The area was used by the military as a tar disposal area/dumping ground and, according to US Army Corps of Engineers (COE), it was approximately 600 feet long by 100 feet wide tapering to 2 feet at the head of the "estuary." During the fall of 2000 ,approximately 40,000 cubic yards of asphalt and fuel oil-contaminated material was excavated from the former U.S. Navy Asphalt Disposal Area (old Seebees batch plant). The material is planned to be used as a subbase for a road paving project with the DOT on Kodiak. Before removing the impacted soil there was an ephemeral pond in the valley. The asphalt material appeared to serve as a confining unit as drilling investigations indicated there was a vadose zone under the lake with unconfined groundwater at 12 - 14-feet below ground surface. Removing the asphalt material in effect removed the lake, which no longer forms, even during storm events.

SC	Category 4b	20302-601	Eagle River Flats (60 acres)	Fort Richardson	N/A	Toxic & Other Deleterious Organic and Inorganic Substances	White Phosphorus, Munitions Residues	Military Base Operation s
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An EPA consultant, CH2M Hill prepared a report, titled Eagle River Flats - Comprehensive Evaluation Report, July 1994. This report is a detailed environmental assessment that qualifies as a waterbody assessment. The report presented water quality data and other information on the relationship between white phosphorous (from artillery shell residue) and its lethal effect on waterfowl in the Eagle River Flats area. A Record of Decision was signed by DEC, EPA and the U.S. Army on September 30, 1998 so this water is placed in Category 4b. Approximately sixty (60) acres have been identified as being contaminated and requiring treatment. Remediation activities occurred in 1998-2001. During each field season, six pumping systems have been placed into the contaminated ponds and operated to drain the water from the ponds. Draining the ponds allows the sediments to dry out and cause the white phosphorus to oxidize and no longer be a threat to the waterfowl. Results of the field activities to date have shown a dramatic decrease in white phosphorus concentrations in over half the total acreage identified as being contaminated. Active treatment will continue for two more field seasons. The ROD has a five year and 20 year goal and the US Army nearly met the five year goal.

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<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
SC	Category 2	30204-023	Eskimo Creek	King Salmon	N/A	Petroleum Hydrocarbon s, Oil & Grease, Toxic & Other Deleterious Organic and Inorganic Substances	Petroleum Products, Diesel Range Organics (DRO) Trichloroethene (TCE)	Landfill, Fuel Storage
<p>This waterbody is attaining standards. This waterbody was initially placed on the 1996 Section 303(d) list based on information provided by the EPA's Comprehensive Environmental Response Compensation Liability Act (CERCLA) group. Seeps from a dump adjacent to Eskimo Creek led to potential stream water contamination by metals, pesticides, and petroleum hydrocarbons and the waterbody was listed for these parameters in 1996. Current information suggests removing metals and pesticides as a pollutant parameter since no analytical tests support these constituents as contaminants of concern, and this segment of Eskimo Creek to be placed under the 2003 Category 2. The primary sources of petroleum hydrocarbons and trichloroethene (TCE) from aboveground storage tanks and dry wells have been removed. A final ROD was signed by DEC in December 2002. Future activities based on the ROD include: continued operation of the water treatment system; annual monitoring of groundwater (A-Aquifer and B-Aquifer), surface water, and sediment; and a 5-year review. Zone 2 (east side of Eskimo Creek) has a revised Feasibility Study conducted in 2000, a Proposed Plan completed in April 2002. Therefore the waterbody is placed in Category 2 since water quality standards are attained.</p>								
SC	Category 2	30203-001	King Salmon Creek	King Salmon	N/A	Petroleum Hydrocarbon s, Oil & Grease	Petroleum Products	Landfill, Military
<p>This waterbody is attaining standards. This waterbody was placed on the 1996 Tier II Section 303(d) list for petroleum hydrocarbons, metals and pesticides, and is now placed Category 2 since there are now no surface water quality standard exceedances at this site. The site has been the subject of a U.S. Air Force clean-up action. The A-Aquifer has had detections of petroleum hydrocarbons, metals, and pesticides. This aquifer daylight at the toe of the South Barrel Bluff which is directly adjacent to King Salmon Creek on the southern end, and is buffered from the creek on the northern portion by a wetland. Due to the amount of drums suspected in the Barrel Bluffs and unfeasibility of a total removal of the drums, the bluffs were recontoured for minimal surface water runoff and erosion control, exposed drums and contaminated soil removed, ground surface capped and revegetated. A water treatment system was installed in 1998 to remediate the daylighting A-Aquifer water; the system is continuously operated. Monthly influent and effluent samples are analyzed for all potential contaminants of concern. Based on the extensive sampling program, there have been no surface water quality standard exceedances at this site. North and South Bluff documents supporting the acceptable water quality data include: Post Closure Monitoring Reports (monitoring began in 1996 and has occurred at a rate of 1 to 3 sampling events per year); 2000 ROD for Final Remedial Action; 1999 Statistical Analysis of Sampling Events, Revision of Post-Closure Monitoring Plan; 1996 / 1997 Human Food Chain, Aquatic Biota, and Wetlands Evaluations; and 1995 Remedial Investigation / Feasibility Study and Human Health Risk Assessment. This waterbody and the adjacent bluff areas are presently being addressed through the Final ROD and the Three Party Agreement between DEC, EPA and the Air Force. The selected remedy includes: institutional controls (land-use restrictions and site access), bluff inspection and maintenance, continued operation, maintenance, and monthly influent and effluent sampling of the South Bluff treatment system, and contaminant monitoring at both Bluffs.</p>								
SC	Category 4a	20505-409	Lake Lucille	Wasilla	N/A	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff
<p>A TMDL has been completed on Lake Lucille. This waterbody has been on the Section 303(d) list for dissolved gas (low DO) and nutrients since 1994. Since a TMDL has been completed and approved by EPA (March 2002) for Lake Lucille it is removed from the Section 303(d) list and moved to Category 4a.</p>								

LEGEND: IN = Interior Alaska, SC = Southcentral Alaska, SE = Southeast Alaska; N/A = "not applicable" or "not available;" "20402-409" are the Alaska waterbody identification numbers, the first five numbers indicate which USGS catalog unit the waterbody is located in. **SHADED AREAS** represent a change in waterbody status from the 1998 list.

Alaska's 2002/2003

**Integrated Water Quality Monitoring and Assessment Report Section 303(d) Listed Waterbodies in 1998
Removed from the List in 2003**

<u>Reg ion</u>	<u>Category</u>	<u>Alaska ID Number</u>	<u>Waterbody</u>	<u>Location</u>	<u>Area of Concern</u>	<u>Water Quality Standard</u>	<u>Pollutant Parameters</u>	<u>Pollutant Sources</u>
IN	Category 2	40505-401	Harding Lake	Fairbanks	N/A	Fecal Coliform Bacteria	Fecal Coliform Bacteria	Urban Runoff

Harding Lake was placed on the 1998 Section 303(d) list and is de-listed in 2003. Harding Lake first appeared on Alaska's Section 303(d) list in 1994. The initial listing relied on one sample event and a concern that increased recreational use of the lake was causing suspected additional fecal coliform inputs to the lake. In reviewing the initial listing, it is clear that the one high sample result was an inconsistent outlier and should not have led to listing Harding Lake as impaired. The recent sampling shows water quality standards are being achieved and the recreational use of the lake is not causing violations as initially suspected and therefore the waterbody is placed in Category 2.

LEGEND: IN = Interior Alaska, SC = Southcentral Alaska, SE = Southeast Alaska; N/A = “not applicable” or “not available;” “20402-409” are the Alaska waterbody identification numbers, the first five numbers indicate which USGS catalog unit the waterbody is located in. **SHADED AREAS** represent a change in waterbody status from the 1998 list.

APPENDIX H. – Crosswalk Table: Tiers to Categories

The Relationship of Alaska's Former Polluted Waterbody Tiers to the New Integrated Report Categories

Former Alaska Tier	Tier Description	Integrated Report Categories	Category Description
Tiers I and II (Alaska's Section 303(d) list)	303(d) listed water quality-limited (impaired) waterbodies which now require TMDLs or waterbody recovery plans; TMDL or recovery plan not implemented to date.	Category 5 waters	The water quality standard is not attained. The AU is impaired for one or more designated uses by a pollutant(s), and <u>requires a TMDL</u> . Section 303(d) listed.
Tier III	Water quality-limited waterbodies not section 303(d) listed which will be tracked and monitored Water quality-limited waterbodies which have implemented waterbody recovery plans (such as approved TMDLs that are in the process of being implemented through permits or other control mechanisms).	Category 4 a, b, or c waters	Impaired for one or more designated uses but <u>does not require the development of a TMDL</u> . TMDL has been completed. Other pollution control requirements are reasonably expected to result in the attainment of the water quality standard in the near future. Impairment is not caused by a pollutant.
Tier IV and Open files	Waterbodies that require no further action (Tier IV)	Category 2 waters	Attaining some of the designated uses; and insufficient or no data and information is available to determine if the remaining uses are attained.
Tier IV and Open files	Waterbodies that require no further action (Tier IV)	Category 1 or 2 water	Attaining the water quality standard.
Open Files	Waters which have been determined to need no further actions required. Waters which may need follow-up, investigation, monitoring, etc.	Category 3 waters	Insufficient or no data and information to determine if any designated use is attained.

APPENDIX I. – TMDL Schedule and Factors

Alaska TMDL Completion Date Schedule (Revised 5/03)			
	Southeast	Southcentral	Interior/North Slope
2003	Silver Bay	Chester Creek	
	Ward Cove	Fish Creek	
		Furrow Creek	
		Little Campbell Creek	
		Little Rabbit Creek	
		Little Survival Creek	
		Ship Creek	
2004	Jordan Creek	University Lake	
	Katlian River	Westchester Lagoon	
	Nakwasina River		
	Thorne Bay		
2005	Hobart Bay	Campbell Creek	Chena River
	Schulze Cove	Campbell Lake	Chena Slough
	Skagway Harbor/Pullen Creek	Cottonwood Creek	Goldstream Creek
	Twelvemile Arm	Matanuska River	Noyes Slough
2006	Lookout Cove	Cheney Lake	Crooked Creek Watershed
	Popof Strait	Dutch Harbor	Eyak Lake
	Cube Cove	Egegik River	
	Pederson Hill Creek	Illiuliuk Bay/Harbor	
		Saint Paul Island Lagoon	
2007	East Port Frederick	Cold Bay	Caribou Creek Nat Park
	Klag Bay	Hood/Spenard Lake	Slate Creek Nat Park
	Tolstoi Bay	Kazakof Bay	
2008	Klawock Inlet	Red Lake / Anton Pond	Cabin Creek
		Red Fox Creek	

Factors Considered in Alaska's 2002/2003 TMDL Schedule Revision

All of Alaska's Category 5 Section 303(d) listed waters for the 2002/2003 Integrated Water Quality Monitoring and Assessment Report are scheduled for TMDL (Total Maximum Daily Load) development between 2003 and 2008. The Section 303(d) listed waters that are impaired from an active log transfer facility will be subject to a remediation plan in an enforceable permit to meet the water quality goals of the waterbody. The TMDLs for these waterbodies are scheduled based on DEC's consideration of the factors listed below. These factors are not

necessarily listed by priority and may be used in conjunction with one another and/or combined with other project management decisions.

1. Severity and persistence of pollutant sources, water quality standards' (WQS) exceedances and/or impacts to the beneficial uses of the waterbody.
2. Significance of the waterbody in terms of public and resource values.
3. Degree of public, industry, and agency interest in accomplishing the TMDL so allocations and required controls or permit limits can be known.
4. Applicability of existing pollution controls, waterbody recovery plans, and NPDES discharge permits
5. Technical feasibility and difficulty of developing the TMDL. Some TMDLs require much more time and resources to develop than others do, and agency resources have annual limits of time available for TMDL development. Factors that increase the amount of time include: waterbodies with uncommon types of impairments for which model TMDLs are not available; TMDLs which require complex models and loading calculations; and TMDLs on waters with many stakeholders who will be significantly impacted by loading allocations.
6. Availability and accuracy of water quality information necessary for assessing the water and making loading determinations. TMDLs that have little data available are scheduled later so that essential data can be acquired.
7. Waters where pilot Best Management Practices (BMPs) or other controls are being implemented and monitored. TMDL development on these may be delayed so that improved loading allocations can be made based on the controls' performance.
8. Likelihood that proposed restoration efforts might occur in the near future that, if they occur, may make TMDL development unnecessary.
9. Stakeholder's development of plans that may satisfactorily substitute for (or supplement) a waterbody's TMDL. Examples include a contaminated site remediation plan or another agency's assessment and restoration plan. TMDL development may be scheduled to occur shortly after completion of such plans if they will include information that satisfies what is required in the TMDL.
10. If multiple TMDLs can be developed as part of a unified effort. These include TMDLs that address similar pollutants and approaches, waters in the same watershed or area, same stakeholders, and similar restoration actions. For example, many of the Anchorage area streams' TMDLs are scheduled to be completed at the same time for these reasons.

Terms that require explanation:

TMDL-A TMDL is a Total Maximum Daily Load plan. This plan is a 'pollution budget' designed to restore the health of a waterbody. A TMDL calculates the amount of a specific pollutant that a waterbody can receive and still maintain State Water Quality Standards.

WQS- The Alaska State Water Quality Standards are guides to help create programs that protect and restore water quality in Alaska. These programs include the impaired water body list and the non-point source pollution program. The Standards also help set the limits for state and federal discharge permits and clean-up standards for contaminated sites and landfills. (This definition should also appear on the WQS page; a link can be added here.)

TMDL loading allocations-A loading allocation is the amount of a pollutant allowed at any particular time as part of a plan (TMDL) for waterbody recovery.

NPDES Permits- National Pollution Discharge Elimination System are limits created for the amount of discharge a wastewater facility can send out into the environment and still maintain State Water Quality Standards.

APPENDIX J. - 13 Source Water Assessments by Source Type Completed in 2000

PWSID	Name	Class	Source	Population Served	Completed Date
214007.001	Alyeska Chalet Condo HOA	A	GW	60	10/18/2000
210710.001	ASD Girdwood Elementary	A	GW	0	10/20/2000
214277.001	Carrs Crow Creek	B	GW	0	11/28/2000
214251.001	Chair 5 Restaurant	B	GW	0	11/28/2000
213409.001	Double Musky Inn	B	GW	3	9/25/2000
214968.001	Girdwood Station Mall	B	GW	0	10/10/2000
215435.001	Glacier Ranger District	B	GW	10	10/11/2000
212267.001	Glacier Valley Water Company	A	GW	92	10/20/2000
212267.002	Glacier Valley Water Company	A	GW	0	10/20/2000
212364.001	Max's Bar and Grill	B	GW	2	10/19/2000
212021.001	MOA Alyeska Utilities	A	GW	1200	10/31/2000
212021.002	MOA Alyeska Utilities	A	GW	0	10/31/2000
214340.001	Seven Glaciers Restaurant	B	GW	0	10/9/2000

158 Source Water Assessments by Source Type Completed in 2001

PWSID	Name	Class	Source	Population Served	Completed Date
226876.001	A & W Windbreak Café	B	GW	0	10/11/2001
227513.001	AK State Elks Youth Camp	B	GW	2	9/28/2001
224395.001	Alaska R&R Laundry & RV Park	B	GW	4	10/20/2001
227288.001	Alaska Water Conditioning	B	GW	0	10/8/2001
226517.001	Alpine Inn	B	GW	0	9/28/2001
214544.001	Amazing Grace Lutheran Church	A	GW	0	12/7/2001
227701.001	American Legion Post 15	B	GW	3	9/28/2001
223420.001	American Legion Post 35	B	GW	0	10/12/2001
218516.001	Anchorage Bible Fellowship	B	GW	0	8/6/2001
215443.001	Anchorage Golf Course	B	GW	0	12/28/2001
211033.001	ASD O'Malley Elem	A	GW	0	11/28/2001
222084.001	Big Lake Baptist Church	B	GW	0	10/20/2001
223991.001	Big Lake Condos	B	GW	3	10/9/2001
224400.001	Big Lake Fire Hall	B	GW	0	10/20/2001
223828.001	Big Lake Laundromat	B	GW	0	10/20/2001
224832.001	Big Lake Library	B	GW	0	10/20/2001
220707.001	Big Lake Lodge	B	GW	2	10/20/2001
224963.001	Big Lake Motel	B	GW	2	10/9/2001
220545.001	Big Lake North	B	GW	0	10/20/2001
221151.001	Big Lake South	B	GW	25	10/9/2001
227633.001	Big Lake Super Store	B	GW	0	10/20/2001

PWSID	Name	Class	Source	Population Served	Completed Date
212178.001	BLM Anchorage District Office	A	GW	0	9/5/2001
212178.002	BLM Anchorage District Office	A	GW	0	9/5/2001
226062.001	Butte Fire Station #1	B	GW	0	9/28/2001
221541.001	Call of the Wild	B	GW	0	10/12/2001
224769.001	Camp La Da Sa	B	GW	8	10/9/2001
223959.001	Camp Marantha	B	GW	2	10/9/2001
218579.001	Campbell Creek Science Center	B	GW	10	8/15/2001
215663.001	Chapel By The Sea	B	GW	10	9/19/2001
217259.001	Chapel Of The Cross	B	GW	0	11/28/2001
225585.001	Char Dees	B	GW	0	10/20/2001
222288.001	Chepo's	B	GW	0	10/12/2001
227408.001	Daybreak Apartments	B	GW	21	9/28/2001
221240.001	Dead Dog Saloon B & S	B	GW	0	10/20/2001
226169.001	Delrois Bar	B	GW	0	9/28/2001
225203.001	Div of Parks Little Su #2	B	GW	0	1/9/2001
225199.001	Div of Parks Little Su Upper	B	GW	0	10/9/2001
225437.001	Div of Parks Willow Creek #2	B	GW	0	10/9/2001
225565.001	Div of Parks Willow Creek #3	B	GW	0	10/9/2001
221787.001	Div Parks Nancy Lake	B	GW	25	10/9/2001
221779.001	Div Parks South Rolly Lake	B	GW	25	10/9/2001
213019.001	Eklutna Gate	A	GW	45	9/14/2001
216643.001	Eklutna Historical Park	B	GW	8	9/17/2001
226533.001	Farm Loop Christian Center	B	GW	0	9/28/2001
222610.001	Fishers Y Complex	B	GW	3	10/20/2001
210320.001	Four Seasons Trailer Court	A	GW	620	12/4/2001
224735.001	Frontiersman	B	GW	0	10/12/2001
222783.001	G & G quick Store	B	GW	0	10/11/2001
221973.001	Glad Tidings Full Gospel	B	GW	4	10/12/2001
224696.001	Gospel Outreach Church	B	GW	0	10/12/2001
220503.001	Green Ridge Camper Park	B	GW	2	10/11/2001
225308.001	Hatcher View Business Park	B	GW	20	10/12/2001
213514.001	Hillside Baptist Church	B	GW	0	12/12/2001
225261.001	Hilltop Assembly of God	B	GW	1	10/9/2001
213548.001	Hilltop Ski Area	B	GW	0	9/19/2001
213548.002	Hilltop Ski Area	B	GW	0	9/19/2001
213548.003	Hilltop Ski Area	B	GW	0	9/19/2001
227393.001	Homestead RV Campground	B	GW	0	9/28/2001
224175.001	Homesteaders Community Club	B	GW	0	10/20/2001
221826.001	Houston Lodge	B	GW	2	10/9/2001
225639.001	Icworm RV Park	B	GW	0	10/20/2001
217267.001	Ikluat Gift Shop	B	GW	6	9/18/2001
220692.001	Islander Bar & Restaurant	B	GW	0	10/12/2001
227335.001	Kepler-Bradley Lakes	B	GW	0	9/28/2001
220189.001	Klondike Inn	B	GW	3	10/20/2001

PWSID	Name	Class	Source	Population Served	Completed Date
224670.001	Lake Lucille Lodge Best Western	B	GW	0	10/8/2001
213603.001	Lake O' The Hills East	A	GW	54	12/15/2001
213603.002	Lake O' The Hills East	A	GW	54	12/15/2001
223713.001	Lavern Griffin Youth Camp	B	GW	0	10/20/2001
227440.001	Lazy Mountain Church	B	GW	0	9/28/2001
223454.001	Little Beaver Camp Main Qtrs	B	GW	4	10/20/2001
224662.001	Little Millers	B	GW	0	10/12/2001
224913.001	Little Susitna CG Houston	B	GW	0	10/9/2001
227716.001	Manna Baptist Church	B	GW	5	9/28/2001
225105.001	Mat Su Evangelical Church	B	GW	0	10/12/2001
224379.001	Mat Su RV Park	B	GW	2	10/9/2001
226135.001	Matanuska Assembly of God	B	GW	4	9/28/2001
227643.001	Matanuska Fitness Center	B	GW	0	9/28/2001
227521.001	Matanuska Research Farm	B	GW	12	9/28/2001
225016.001	Mat-Su Cinema	B	GW	0	10/12/2001
225558.001	Mat-Su RV Laundry and Shower	B	GW	0	10/9/2001
227173.001	Meadow Valley S/D Add #1	B	GW	10	9/28/2001
222343.001	Meadowood Shopping Center	B	GW	0	10/20/2001
221347.001	Mid Valley Christian Center	B	GW	2	10/12/2001
225024.001	Mid Valley Senior Center	B	GW	0	10/20/2001
222351.001	Millers Market	B	GW	5	10/9/2001
210906.005	MOA Creekside Well #20	A	GW	0	12/14/2001
210906.002	MOA Eklutna Lake	A	SW	114909	2/16/2001
210906.009	MOA Huffman Well #31	A	GW	0	10/12/2001
210906.006	MOA Military Well #25	A	GW	0	7/15/2001
210906.024	MOA Municipality Well #11	A	GW	0	6/15/2001
210906.018	MOA Municipality Ship Creek	A	SW	0	2/8/2001
210906.023	MOA Municipality Well #10	A	GW	0	6/10/2001
210906.022	MOA Municipality Well #9	A	GW	0	9/17/2001
210906.027	MOA Service Well (large)	A	GW	0	11/5/2001
210906.026	MOA Service Well (small)	A	GW	0	11/5/2001
227262.001	Mom & Pops 4 Corners Plaza	B	GW	0	10/12/2001
227123.001	Mom & Pops 4 Corners Plaza (reserve)	B	GW	0	10/12/2001
224604.001	MSBSD Houston Jr/Sr High	A	GW	0	12/17/2001
225241.001	Museum of Alaska	B	GW	0	10/20/2001
227615.001	National Outdoor Leadership School	B	GW	10	9/28/2001
215867.001	New Grace Lutheran Church	B	GW	0	12/28/2001
226575.001	North Star Bible Camp	B	GW	0	10/9/2001
225894.001	North Star Speedway	B	GW	0	9/28/2001
225219.001	Nye Ford Repair Shop	B	GW	0	10/12/2001

PWSID	Name	Class	Source	Population Served	Completed Date
225058.001	Nye Ford Showroom	B	GW	0	10/12/2001
227599.001	Palmer Bus Facility	B	GW	0	9/28/2001
227424.001	Palmer Church of God, Inc.	B	GW	0	9/28/2001
227432.001	Palmer Church of Nazarene	B	GW	0	9/28/2001
227482.001	Palmer Golf Course Clubhouse	B	GW	0	9/28/2001
227555.001	Palmer Kingdom Hall	B	GW	0	9/28/2001
223129.001	Pilgrims Baptist Church Was.	B	GW	30	10/12/2001
220862.001	Pioneer Lodge	B	GW	0	10/9/2001
225678.001	Pizza Pro - Overlook	B	GW	0	10/12/2001
222686.001	Pole Lock Farm Bar & Motel	B	GW	0	9/28/2001
214730.001	Potter Creek Water Company	A	GW	200	11/16/2001
211342.001	Potter Section House	B	GW	6	10/8/2001
218108.001	Rabbit Creek Community Church	B	GW	5	9/11/2001
218554.001	Rabbit Creek Rifle Range	B	GW	0	9/5/2001
210435.001	Rangeview Trailer Court	A	GW	350	11/30/2001
227377.001	Rivers Edge Recreation Park	B	GW	0	9/28/2001
224515.001	Riverside Camper Park	B	GW	6	10/9/2001
223080.001	Roadside Inn	B	GW	0	10/20/2001
220642.001	Robin's Landing	B	GW	0	10/20/2001
220008.001	Rocky Lake Campground	B	GW	0	10/20/2001
227490.001	Ronda's Café - Butte	B	GW	4	9/28/2001
214471.001	Salvation Army South Anchorage	B	GW	0	9/21/2001
225697.001	Schwabenhof Restaurant	B	GW	0	10/12/2001
210702.001	Seventh Day Adventist School	A	GW	0	12/19/2001
223894.001	Silver Fox Inn	B	GW	0	10/20/2001
225647.001	South Port Marina	B	GW	4	10/9/2001
214023.001	Southside Church of God	B	GW	1	12/14/2001
223014.001	Speedway Inn	B	GW	2	10/9/2001
220901.001	Sully's Sourdough Inn	B	GW	0	10/20/2001
220626.001	Sunny's Café	B	GW	0	10/9/2001
226525.001	Sutton Café	B	GW	0	9/28/2001
226054.001	Sutton Fire Station	B	GW	0	9/28/2001
224272.001	Tanaina Elementary	A	GW	0	12/17/2001
225502.001	Tesoro-Parks	B	GW	0	10/20/2001
227663.001	The Laundry and Pioneer Pizza	B	GW	0	9/28/2001
227157.001	The Store	B	GW	0	9/28/2001
224345.001	Trinity Lutheran Church & Resource Center	B	GW	0	9/28/2001
223721.001	Tug Bar & Liqour Store	B	GW	0	10/9/2001
227682.001	Turner Commercial Development	B	GW	0	9/28/2001
212039.001	US Army Fort Richardson	A	SW	7000	2/8/2001

PWSID	Name	Class	Source	Population Served	Completed Date
220634.001	Valley Country Store & Motel	B	GW	0	10/12/2001
224531.001	Valley Country Store I	B	GW	0	10/12/2001
225331.001	Valley Motors	B	GW	0	10/5/2001
220171.001	Valley Polaris-Fishers Y	B	GW	0	10/20/2001
222767.001	Wasilla Bar Restaurant	B	GW	0	10/12/2001
225074.001	Wasilla Bumpus Softball Field	B	GW	0	10/11/2001
225384.001	Wasilla Seventh Day Adventist	B	GW	0	10/20/2001
224183.001	Willow Community Center	B	GW	0	10/9/2001
225123.001	Willow Creek	B	GW	0	10/9/2001
224955.001	Willow Island Resort	B	GW	4	10/9/2001
221672.001	Willow Trading Post	B	GW	0	10/9/2001
225653.001	Willow United Methodist	B	GW	0	10/9/2001
220684.001	Yukon Sourdough Road House	B	GW	2	10/20/2001

APPENDIX K. – Status of 1998 303(d) Listed Waterbodies with LTFs

Update On Status Of 1998 303(d) Listed Waterbodies With LTFs – May 2003											
FACILITY NAME	Operator	Facility Type	2000 Dive Date	Acres	2001 Dive Date	Acres	2002 Dive Date	Acres	2003 Dive Date	Acres	Waterbody Category
Corner Bay	USFS	LTF			Jul – 01	0.6	Jun – 02	0.1			2
Cube Cove	Shee Atika	LTF	Apr - 00	10+	No Transfer Activity		Apr – 02	1.4			5
Hamilton Bay	USFS	LTF	Sep – 00	0.6	No Transfer Activity		Jun – 02	0.6			2
Kazakof Bay	Koncor Forest Products	LTF	Feb – 00	1.2	Feb – 01	3	None Received to Date				5
Point McCartney	Sealaska	LTF	Mar - 00	0.2	Feb – 01	1.2	Mar - 02	1*			2
Rowan Bay	USFS	LTF	Sep – 00	3.9	Jun – 01	0.6	May – 02	0.8			2
Saginaw Bay	USFS	LTF			Jun – 01	1.7	May – 02	0.7			2
Salt Lake Bay	USFS	LTF	Sep – 00	0.3	No Transfer Activity		May – 02	0.1			2
West Port Frederick	Sealaska	LTF	Mar – 00	0.3	Apr – 01	0.3	No Transfer Activity				2
Tolstoi Bay – old Ketchikan Pulp Co. Site	None	LS	No Transfer Activity		No Transfer Activity		No Transfer Activity		Mar - 03	0.7	2
Hobart Bay	None	LTF	No Transfer Activity		No Transfer Activity		No Transfer Activity				5

Update On Status Of 1998 303(d) Listed Waterbodies With LTFs – May 2003

FACILITY NAME	Operator	Facility Type	2000 Dive Date	Acres	2001 Dive Date	Acres	2002 Dive Date	Acres	2003 Dive Date	Acres	Waterbody Category
Thorne Bay – old Ketchikan Pulp Co. Log Transfer Areas + LTF	None	LTF/LSA	No Transfer Activity		No Transfer Activity		No Transfer Activity				5
Schulze Cove – old Alaska Pulp Corp. Log Storage Area	None	LSA	No Transfer Activity		No Transfer Activity		No Transfer Activity				5
Twelvemile Arm – LTF relocated from this site	None	LTF	No Transfer Activity		No Transfer Activity		No Transfer Activity				5
*This dive report documents continuous cover bark at –60’ MLLW. Dive not extended beyond –60’ MLLW per the permit requirement											
<i>ADDITIONAL FACILITIES REPORTING MORE THAN 1-ACRE SINCE PUBLICATION OF THE 1998 303(d) LIST</i>											
St. John Baptist Bay	USFS	LTF	Sep - 00	1.3	No Transfer Activity		Jun – 02	0.2			2
Klawock Island Dock	Sealaska	LTF	Feb – 00	0.9	Apr – 01	3.9	No Transfer Activity		Feb - 03	2.2	5
			Dec - 00	3.2	Apr – 01	3.1					
Long Island	Sealaska	LTF	Mar – 00	2.9	Apr – 01	4.8	Mar – 02	3.2			5
Thorne Bay West LTF	USFS	LTF	Jun – 00	2.6	No Transfer Activity		No Transfer Activity				5
Lookout Cove (Afognak)	Afognak Native Corp.	LTF	Mar – 00	0.9	Mar – 01	0.9	Nov – 02	1.5			5
					Nov – 01	2.1					

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As part of the annual dive survey report review conducted by DEC staff calculate the acreage of continuous bark coverage utilizing DEC's approved methodology. A number of report totals for continuous cover bark have been revised and are highlighted on this sheet. These numbers have been shaded in gray. Generally, the dive reports have a tendency to over-state the extent of continuous cover. Only one reported total was revised upwards.

APPENDIX L. – Residues Criteria

Alaska’s Criteria for Attainment and Impairment Determinations for the Residues Water Quality Standard

Alaska’s Residues Standard

Alaska’s water quality standard for *residues* is described in **18 AAC 70.020. PROTECTED WATER USE CLASSES AND SUBCLASSES; WATER QUALITY CRITERIA; WATER QUALITY TABLE:**

(2) MARINE WATER USES	RESIDUES Floating Solids, Debris, Sludge, Deposits, Foam, Scum, or Other Residues
(A) Water Supply (i) aquaculture	May not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use. May not cause detrimental effects on established water supply treatment levels.
(A) Water Supply (ii) seafood processing	May not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use; cause a film, sheen, or discoloration on the surface of the water or adjoining shoreline; cause leaching of toxic or deleterious substances; or cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines.
(A) Water Supply (iii) industrial	May not, alone or in combination with other substances or wastes, make the water unfit or unsafe for the use.
(B) Water Recreation (i) contact recreation	Same as (2)(A)(ii).
(B) Water Recreation (ii) secondary recreation	Same as (2)(A)(ii).
(C) Growth and Propagation of Fish, Shellfish Other Aquatic Life, and Wildlife	May not, alone or in combination with other substances or wastes, make the water unfit or unsafe, for the use, or cause acute or chronic problem levels as determined by bioassay or other appropriate methods. May not, alone or in combination with other substances, cause a film, sheen, or discoloration on the surface of the water or adjoining shorelines; cause leaching of toxic or deleterious substances; or cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines.
(D) Harvesting for Consumption of Raw Mollusks or Other Raw Aquatic Life	May not make the water unfit or unsafe for the use; cause a film, sheen, or discoloration on the surface of the water or adjoining shoreline; cause leaching of toxic or deleterious substances; or cause a sludge, solid, or emulsion to be deposited beneath or upon the surface of the water, within the water column, on the bottom, or upon adjoining shorelines.

The application of the water quality standard for residues for permitted facilities is established through the implementation of the narrative criteria (above) in concert with the zone of deposit provisions (below) also within the water quality standards.

The water quality criteria for residues are narrative criteria with several provisions that are subject to interpretation. As such, it is overly simplistic to characterize the residues standard as “zero discharge”. The first sentence of the criteria for most uses provides that residues “[m]ay

not, alone or in combination with other substances or wastes, make the water unfit or unsafe, **for the use...**” [emphasis added] This is a “use-based” criterion – meaning, a use impairment determination must be made to trigger a water quality violation or a significant non-compliance situation.

The second sentence within the narrative criteria for some uses states that residues “may not cause a sludge, solid, or emulsion to be deposited” on the surface, bottom, or shoreline. This prohibition against deposits is the most restrictive provision of the residue criteria. But it is not treated as a zero discharge standard in all instances. For example, DEC permits zones of deposit under 18 AAC 70.210; mixing zones under 18 AAC 70.240-.270; and variances under 18 AAC 70.200.

In addition, DEC recognizes an implied *de minimus* exception to the “no deposit” criterion, so that a person skipping a stone or cleaning a fish is not considered to be in violation of state law. To date, DEC has not written any guidance about the scope of that *de minimus* category, but rather implements it on an *ad hoc* basis. EPA and the courts have long recognized the inherent authority of agencies to exempt *de minimus* activities from the coverage of the law. *See, e.g., Ober v. Whitman*, 243 F.3d 1190, 1194-95 (9th Cir. 2001). DEC asserts and exercises such authority in its interpretation and implementation of the residues standard. A use impairment determination based on a narrative water quality criterion is subject to an analysis and a determination by DEC.

The residue standard applies to any residue discharge (whether permitted or unpermitted), however, one of the most prevalent applications of the residues standard is to *permitted* discharges of residues in marine waters from seafood processing and log transfer facilities, and the authorization of zones of deposit for these permits.

Alaska has an explicit provision within its water quality standards that allows for the authorization of zones of deposits (ZOD) for residues in **18 AAC 70. 210. ZONES OF DEPOSIT:**

18 AAC 70.210. ZONES OF DEPOSIT. (a) *The department will, in its discretion, issue or certify a permit that allows deposit of substances on the bottom of marine waters within limits set by the department. The water quality criteria of 18 AAC 70.020(b) and the antidegradation requirement of 18 AAC 70.015 may be exceeded in a zone of deposit. However, the standards must be met at every point outside the zone of deposit. In no case may the water quality standards be violated in the water column outside the zone of deposit by any action, including leaching from, or suspension of, deposited materials. Limits of deposit will be defined in a short-term variance issued under 18 AAC 70.200 or a permit issued or certified under 18 AAC 15.*

(b) In deciding whether to allow a zone of deposit, the department will consider, to the extent the department determines to be appropriate,

- (1) alternatives that would eliminate, or reduce, any adverse effects of the deposit;*
- (2) the potential direct and indirect impacts on human health;*
- (3) the potential impacts on aquatic life and other wildlife, including the potential for bioaccumulation and persistence;*
- (4) the potential impacts on other uses of the waterbody;*
- (5) the expected duration of the deposit and any adverse effects; and*
- (6) the potential transport of pollutants by biological, physical, and chemical processes.*

(c) The department will, in its discretion, require an applicant to provide information that the department considers necessary to adequately assess (b)(1)-(6) of this section. In all cases, the

burden of proof for providing the required information is on the person seeking to establish a zone of deposit. (Eff. 11/1/97, Register 143)

This section states, in part, “(t)he department will, in its discretion, issue or certify a permit that allows the deposition of substances on the bottom of marine waters within limits set by the department.” The zone of deposit section allows the water quality criteria of 18.70.020 and the antidegradation policy of 18 AAC 70.015 to be exceeded in a zone of deposit.

Section 40 CFR Part 131.13 of the federal Water Quality Standards regulation authorizes states to have policies, including variances and zones of deposit, in their water quality standards that generally affect the application and implementation of state water quality standards. The rationale for allowing zones of deposits or variances from water quality standards is for a state to maintain standards that are ultimately attainable. By maintaining the standard rather than changing it, the state would assure further progress is made in improving water quality. With the variance provision or zone of deposit provision federal NPDES and State permits may be written such that reasonable progress is made toward attaining the standards without violating Section 402(a)(1) of the Clean Water Act.

An authorized zone of deposit is fairly equivalent to a mixing zone (which are also authorized in some cases for discharge permits) in that it is an area permitted to temporarily exceed the residue standard in a limited area which does not significantly degrade the quality of the waterbody as a whole or the designated uses. Permitted ZODs should be able to recover after discharges cease through biodegradation and/or recolonization of any lingering residues on the marine bottom. It is not necessarily the solids themselves that are the problem, but the smothering of the benthic community. DEC would not permit a residue discharge that resulted in a permanently sterile bottom substrate due to toxic contaminants.

It should be noted that the residues water quality standard was identified as a high priority for a forthcoming Triennial Review of the water quality standards. Any outcomes from that review that could result in actual changes to the criterion and possibly affect this residues policy and result in changes to the criteria for the waterbody categories.

History of the One-Acre Threshold

In 1985 Governor Sheffield convened the Alaska Timber Task Force to develop a common set of log transfer facility criteria. The Task Force created a Technical Subcommittee that was comprised of stakeholders including the U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Army Corps of Engineers, Governor’s Office, Alaska Department of Environmental Conservation, Alaska Department of Natural Resources – Division of Forestry, Alaska Department of Fish and Game – Habitat Division, United Fisherman of Alaska, representatives of the timber industry, a member of the public-at-large, and Sealaska Native Corporation. This group produced the document known as the 1985 Log Transfer Facility Siting, Construction, Operation and Monitoring / Reporting Guidelines more commonly know as the “LTF Guidelines.”

It is within this document that the interim intertidal and submarine bark accumulation threshold of one-acre was established. The document states that “An interim guideline for threshold bark accumulation levels and cleanup when exceeding those levels is being used due to a lack of information. Technical data is needed to evaluate practicable threshold accumulation levels and to evaluate technical feasibility of various options for managing accumulation, such as removal or other control procedures.” (C6. Bark Accumulation: Discussion: paragraph 2). Specifically, guideline C6 states:

The regulatory agency(ies) will impose an interim intertidal and submarine threshold bark accumulation level. When accumulations exceed the threshold level, cleanup – if any – will occur at the discretion of the permitting agency(ies). The interim threshold bark accumulation level is described as 100% coverage exceeding both 1 acre in size and a thickness greater than 10 cm (3.9 inches) at any point.

The LTF guidelines include recommended criteria for selecting the location for future LTFs. The siting criteria were designed, in part, to reduce bark accumulation of LTFs. The log transfer facility Guidelines Committee identified the one-acre figure as an “interim threshold bark accumulation level” until additional research could be completed. The discussion section in the guidelines states:

Through siting, transfer system selection and solid waste management, the amount of bark lost and accumulating in intertidal and submarine areas is prevented or significantly diminished. Bark accumulation is still expected to occur in some areas promoting the need for this guideline.

The Technical Subcommittee was tasked with developing LTF guidelines that “would be beneficial for all parties involved in the permitting, construction and operation of log transfer facilities to have a common set of criteria (guidelines) from which to work when *designing* (*emphasis added*) facilities and reviewing permit applications for these facilities.” (Introduction, page 1, paragraph 3). The section titled The Use of Guidelines (page 2, paragraph 2) states that “The guidelines are comprehensive and may apply to any site being evaluated for LTF permits.” It was never the intent of the Technical Subcommittee for agencies to retroactively apply this threshold to existing facilities since they were located and constructed prior to adoption of the guidelines and there was no anticipated permit workload associated with existing facilities. Some of these facilities had been in operation for 20 years prior to the development of siting guidelines without any permit limits on marine accumulation. Although additional research was not completed as planned, the use of the interim one-acre threshold level has continued to be used routinely in most log transfer and seafood discharge permits.

Background on General Permits for Log Transfer Facilities

In March 2000, EPA issued two General Permits (GPs) for log transfer facilities (LTFs). DEC certified the EPA permits, and adopted them as State General Permits; DEC implements the State GPs separately from the EPA GPs. The State issues a written authorization to the LTF owner to operate under the applicable GP after finding that the authorization is consistent with the Antidegradation Policy (18 AAC 70.015) of the Alaska Water Quality Standards. The State also approves a project area wide Zone of Deposit (18 AAC 70.210) following an assessment of the information provided by the applicant.

One of the GPs (AK-G70-0000), referred to as "pre-1985," applies to shore-based LTFs that received a Section 404 permit from the Corps of Engineers prior to October 22, 1985 and never received an individual NPDES permit. The original Section 404 permits never established any limits on the discharge of bark and wood waste into the marine environment. The pre-'85 GP modifies the terms of the Section 404 permits and for the first time established a permit threshold of 1-acre for continuous cover bark accumulation for these facilities. The original 404 permits now comply with all relevant sections of the Clean Water Act. A 1-acre threshold, instead of a 1-acre permit limit, for continuous cover bark was incorporated into the permit because it was known that some pre-'85 facilities had continuous cover bark deposits greater than 1 acre. The GP requires these facilities to complete remediation planning and plan implementation.

The other GP, called the “post-1985” GP (AK-G70-1000), applies to the following classes of LTFs.

- A. New LTFs that have not received individual NPDES permits.
- B. LTFs that have current individual NPDES permits and choose to seek coverage under the GP.
- C. LTFs that have individual NPDES permits that have expired or have been administratively extended by EPA, and that wish to continue or resume operation.
- D. Offshore LTFs and offshore log storage areas that existed either before or after 1985, and that wish to continue or resume operation.

Individual NPDES wastewater discharge permits issued prior to the adoption of the two GPs contained a fixed one-acre (not to exceed 10 cm at any point) zone of deposit authorized by DEC.

Bark monitoring is required annually for all permittees which transfer a total of 15 million board feet (mmbf) or more during the life of this permit, and which are located in water depths less than 60 feet at mean lower low water. The majority of LTFs operating under an individual or general NPDES permit are required to submit to DEC and EPA an annual dive survey report documenting the nature and extent of continuous and discontinuous bark residue accumulations at their sites. LTFs transferring under fifteen million board feet of timber volume are not required to conduct annual dive surveys, however a great majority of the LTFs are required to conduct annual dive surveys.

The two March 2000 EPA General Permits for LTFs are substantially different from previous individual permits in terms of the zones of deposits authorized under the permits. The General Permits adopted a “project area” zone of deposit, which recognizes and authorizes the deposition of bark residues in the project area. The project area is defined as the entire marine operating area of an LTF, either shore-based or offshore, including the following components: shore-based log transfer devices; shore-based log transfer, rafting, and storage areas; helicopter drop areas; vessel and barge loading and unloading areas; off-shore log storage areas not adjacent to a shore-based LTF; bulkheads, ramps, floating walkways, docks, pilings, dolphins, anchors, buoys and other marine appurtenances; and the marine water and ocean bottom underlying and connecting these features. The LTF operator identifies the size of the project area in the Notice of Intent or Notification. This project area usually coincides with the Department of Natural Resources tidelands lease area.

The State GPs also establish a one-acre “threshold” limit for continuous, or 100 percent, bark cover within the project area. If that threshold is exceeded, the operator is required to submit to DEC a “remediation plan,” intended to reduce continuous bark cover to less than one acre. DEC must approve the remediation plan, which becomes part of the operator’s State General Permit authorization. The purpose for establishing the project-area zone of deposit in the General Permits is to recognize that log rafting and log storage may occupy considerable area, and are expected to cause the accumulation of discontinuous bark (less than 100 percent cover) and trace bark (less than 10 percent cover). Discontinuous and trace bark are considered to have a minimal impact on marine organisms and habitat, and can occur without limit in the project area.

As a result of the 2002 adjudication of DEC’s 401 certification of the two EPA GPs, DEC cannot authorize facilities located on Section 303(d) impaired waterbodies to discharge under either of the general permits. A LTF in an impaired waterbody must obtain an individual State wastewater permit. As part of LTF permitting DEC conducts an anti-degradation review and finding and makes all findings required under the ZOD regulations or each facility applying for residue discharge authorization.

Application of Zones of Deposits for Residues to Seafood Processing Facilities

As described above, the one-acre zone of deposit in permits had its initial application through the log transfer facility guidelines for new facilities in the 1980s. EPA consequently adopted the one-acre threshold as a compliance limit in NPDES permits for log transfer facilities and EPA's NPDES General Permit for seafood processors (AK-G52-0000) in the mid 1990s.

In 2001, DEC again certified a zone of deposit of 1.0 acre when this EPA General Permit for nearshore and shore-based seafood processing facilities was renewed. Currently this General Permit authorizes approximately 235 processors. Historically, this seafood General Permit specified that nearshore and shore-based facilities implement a seafloor monitoring program to ensure compliance with the water quality standards for settleable residues in marine waters.

It should be noted that individual NPDES seafood permits have authorized residues deposits greater than the one-acre threshold found in the AK G52-0000 seafood general permit. For example, in the mid 1990s DEC issued a 401 certification for a two-acre ZOD for an outfall associated with a seafood processing facility, based upon the bathymetry of the bay. For seafood facilities with individual NPDES permits, a case-by-case determination of an acceptable zone of deposit size for residues has been the approach used since 1987.

The agencies have historically made a distinction between newly-permitted sites and existing permitted sites in arriving at an allowable ZOD size determination.

Reporting of Dive Survey Acreages

Previous reports of the actual acreage of bark coverage observed in dive surveys, and listed in Alaska's 1998 Section 303(d) report, could lead the public to believe that all reported continuous cover was a violation of permit conditions or of the Alaska's water quality standards. For example, an LTF with 3.1 acres of continuous bark coverage is actually 2.1 acres over the one-acre ZOD threshold for continuous bark coverage. Hence, the 1998 303(d) listing narrative might have stated that "dive survey information from November 1997 demonstrates a significant exceedance of the interim threshold bark accumulation level at 3.1 acres of bottom coverage."

In Alaska's 2002/2003 Integrated Report and in future listings, DEC will report dive survey acreages as "exceedances over the one acre ZOD threshold." For example, "the dive survey information from November 2001 demonstrates an exceedance of 2.1 acres above the permitted bark accumulation level of continuous bark coverage of 1.0 acres." This will more accurately portray actual exceedances over the permitted threshold.

Criteria for Waterbody Categories

DEC is not proposing to re-categorize waterbodies previously determined to be impaired for residues associated with log transfer facilities simply because the General Permits incorporate a project area zone of deposit. The basis for placing waters impaired by bark residues on the 303(d) list in 1998 was the one-acre zone of deposit established in individual NPDES permits. For LTFs in Alaska authorized under the new General Permits, the threshold limit for continuous-cover bark in the General Permits remains one acre. The project area zone of deposit effectively applies only to discontinuous and trace bark. The project area zone of deposit could be a basis for 303(d) listing only if significant deposits of bark and wood debris were documented outside of the project area.

For waterbodies associated with log transfer facilities or seafood processing, dive survey protocols and reporting should be in accordance with the requirements contained in the appropriate permits.

In making attainment determinations on waters associated with a log transfer facility and where DEC has received a Notification or Notice of Intent to Operate under a General Permit, DEC will make its categorization decision after evaluating the sufficiency and credibility of the dive survey data on file and required under the General Permits and the information provided in the Notice of Intent.

Category 1 Waterbody -- Category 1 waterbodies are waters attaining the water quality standard. Waterbodies are placed in this category if there is data to support a determination that the water quality standards and all of the uses are attained.

Waterbodies will be placed in this category when water quality data and information show that all uses are being attained.

Category 2 Waterbody -- Category 2 waterbodies are those waters that are attaining some designated uses, and insufficient or no data and information to determine if remaining uses are attained:

A waterbody will be placed in Category 2 where a determination is made that the waterbody is attaining some uses or standards. Waterbodies with recent dive survey reports and that demonstrate attainment with a 1.0 acre ZOD will be placed in Category 2. For waterbodies associated with residues discharges, if a facility is reporting one or less acre of continuous residue coverage the waterbody will be placed in Category 2.

A waterbody that was determined to be impaired from residues and Category 5/Section 303(d) listed that has adequately documented continuous coverage of residues which is under 1.0 acres will be placed in Category 2.

Category 3 Waterbody -- Category 3 waterbodies are waters where there is insufficient or no data and information to determine if any designated use is attained:

A waterbody will be placed in Category 3 if there is an active facility with an authorized ZOD for residues that has a dive survey report that shows a first-time exceedance of a one-acre threshold but less than 1.5 acres of continuous residues coverage (for LTFs), or less than 1.5 acres of seafood waste deposits measuring greater than 0.5 inch in depth.

The use of Category 3 for this class of waterbodies is based upon a number of factors:

1. **Permits Establish Limits, not Water Quality Standards.** The fixed one acre zone of deposit used for previous impairment determinations is a permit limit and not a water quality standard. Alaska's zone of deposit regulations (18 AAC 70.210 ZONES OF DEPOSIT.) allows the deposition of substances on the bottom of marine waters within limits set by the department. However, the standards must be met at every point outside the zone of deposit. Permits use the water quality standards as a basis for setting effluent "limits" or for allowing flexibility from the water quality standards. DEC specifies the criteria that can be exceeded in a permit, short-term variance or a certification. If a discharger is granted a zone of deposit within a permit, the permittee can only exceed the criteria that have been identified in their permit, certification or short-term variance. In the LTF General Permits, exceeding the one-acre continuous-cover threshold triggers the requirement to develop a remediation plan. For waterbodies associated with a seafood or log transfer facility the impairment threshold is greater than 1.5 acres (i.e., the water is then Category 5/Section 303(d) listed).
2. **Confidence of Dive Survey Information.** While EPA's NPDES individual permits contained protocols for dive surveys at LTFs, it appears that dive methods were not implemented consistently. As well, NPDES permits included no method for calculation of bark area, which often was

overestimated. . These inconsistencies compared to current protocols in the General Permits raise the issue of the reliability of dive survey information that resulted in previous listing decisions, and make it difficult to track trends in actual bark accumulation patterns. For instance, a 1997 dive survey on bark residues that resulted in the 1998 impairment determination and Section 303(d) listing reported the presence of measurable bark or trace coverage. The reported 9.5-acre bark footprint was based upon plots with measurable bark rather than continuous-cover bark.

The dive survey requirements contained in Seafood GPs are based upon seafood waste residue dispersal patterns and seafloor monitoring. The lack of a perimeter dive survey requirement leads to uncertainty in the impairment determination similar to LTFs.

3. **Uncertainty in Current Approved Method and Acreage Calculations of Dive Survey Reports.** DEC has often noted that the current required method of acreage calculation is not used correctly. As part of the dive survey review DEC re-calculates continuous cover based upon dive survey reports. For facilities Section 303(d) listed in 1998 DEC calculations indicate that five of the seven 2002 dive survey reports for these facilities overstated the extent of continuous cover. Of all the reports reviewed to date since the inception of the two LTF General Permits only one report understated the extent of continuous cover. Because of this uncertainty, and by using an impairment threshold of 1.5 acres of continuous coverage, DEC is confident that impairment decisions truly reflect actual impairment.
4. **Natural Reduction of Residues Deposits.** Dive survey reports for LTFs that transferred little or no timber volume over a number of years often showed considerable reduction in the areal extent of continuous coverage. The reduction is likely due to natural sedimentation and/or current dispersement. For example, the ZOD in Corner Bay declined from 1.2 acres in 1996 to 0.6 acre in 2001. No logs were transferred during this period, and no active remediation occurred.

The level of timber harvest is significantly lower than in the past. Reduced loading associated with reduced volume transferred is likely to act to reduce continuous cover accumulation over time. Limited research to determine the effect of transfer method and volume transferred on bark accumulation has established a weak statistical correlation between volumes transferred and bark accumulation. A similar correlation has not been established for the transfer method. As described above, the one-acre zone of deposit in permits had its initial application through the log transfer facility guidelines for new facilities in the 1980s. EPA consequently adopted the one-acre threshold as a compliance limit in NPDES permits for log transfer facilities and EPA's NPDES General Permit for seafood processors (AK-G52-0000) in the mid 1990s.

For waterbodies in Category 3 in the final 2003 Report:

If a Category 3 waterbody in this 2003 Integrated Report documents through a dive survey that the continuous residue coverage (LTFs) or residue greater than 0.5 inch depth (seafood processing facilities) exceeds 1.5 acres, the waterbody will be listed in Category 5/Section 303(d) listed in the next Section 303(d) list.

- If a waterbody has an approved LTF remediation plan and is meeting the milestones set out in the plan, and the continuous residues coverage is reported to be between 1.0 and 1.5 acres, the water will remain in Category 3.
- If a seafood processor is operating under a Compliance Order and is meeting milestones, and the seafood wastes greater than 0.5 inch in depth are reported to be between 1.0 and 1.5 acres, the waterbody will remain Category 3.

- If no remediation plan has been received and approved by DEC on a Category 3 waterbody associated with an LTF that requires the facility submit a remediation plan the waterbody will be Category 5/Section 303(d) listed in the next Section 303(d) list. For Category 3 waters associated with an LTF and required to submit a remediation plan, a remediation plan must be submitted to DEC and approved prior to the next report for a water to be considered for placement in Category 4(b).
- For seafood discharges, if there is no Compliance Order, and/or if the seafood facility is not meeting the milestones in an existing Compliance Order, then the waterbody will be Category 5/Section 303(d) listed where there is greater than 1.5 acres of residue greater than 0.5 inch in depth.

As of 2003, there is only one log transfer facility currently reporting continuous cover of bark residues between 1.0 and 1.5 acres. The most recent dive survey for this facility reported 1.4 acres of continuous cover, 0.4 acres over the one-acre threshold. Since this waterbody was determined to be impaired in 1998, this waterbody will remain in Category 5 and is Section 303(d) listed in 2003.

Category 4b Waterbody – Category 4b waterbodies are impaired waters but do not need TMDLs because there are other pollution controls in place and the waters are expected to attain water quality standards within a reasonable time period.

A waterbody will be placed in Category 4b if: LTF dive survey reports document there are greater than 1.5 acres of continuous residues coverage; a determination is made that the water is impaired; and there is an approved remediation plan under the LTF General Permits or an individual state wastewater discharge permit. Waterbodies that are under EPA compliance orders for seafood residue violations may also be considered for placement in Category 4b.

The requirements for preparing and submitting Remediation Plans, taken from DEC's Certificates of Reasonable Assurance for the two LTG General Permits are found in the document titled "**GUIDANCE FOR PREPARING REMEDIATION PLANS UNDER ALASKA'S GENERAL PERMITS FOR LOG TRANSFER FACILITIES**". A brief summary of the requirements follows.

- If existing continuous bark and wood debris cover exceeds both one acre and a thickness of ten centimeters at any point, an operator must submit a Remediation Plan to DEC within 120 days, unless the Department grants additional time.
- A proposed Remediation Plan must evaluate historical and future log transfer processes and volumes; environmental impacts of existing deposits of bark and wood debris and the environmental impacts of methods to reduce continuous coverage; and methods to reduce continuous bark coverage, including alternative methods of log transfer and transport, operational practices, technically feasible methods and costs of removing bark, and other methods.
- The Remediation Plan must identify a set of feasible, reasonable, and effective measures to reduce continuous bark cover to both less than one acre and ten centimeters at any point.
- If removal of bark is proposed, the Remediation Plan must specify areas, methods, volume, and timing of removal; and method of disposal of removed material, including practices to assure meeting water quality standards; and the cost of removal by the proposed methods and alternatives considered.

- The plan must include a performance schedule and performance measures for the implementation of the Plan.
- The plan may describe measures that can be implemented in phases, with continued bark monitoring surveys and with future modification of the Remediation Plan based upon progress in reducing the continuous coverage.
- DEC will approve, approve with modification, or deny a proposed Remediation Plan within 90 days of receipt.
- An approved Remediation Plan constitutes an enforceable condition of the General Permit.

There is no requirement in the LTF General Permits for EPA approval of the remediation plan. EPA requires that the LTF operator update the Pollution Prevention Plan to outline additional controls that will be implemented to reduce or eliminate additional residues accumulation. The revised Pollution Prevention Plan will not include measures intended to reduce the current bark accumulation to less than 1.0 acre.

The objective of remediation planning is to implement the most appropriate site-specific treatment with the goal of reducing the extent of continuous residues coverage to less than 1.0 acre.

Category 5 Waterbody – A waterbody will be listed in Category 5 and Section 303(d) listed when a determination is made that the water is impaired by residues. Category 5 waters require a TMDL.

Section 303(d) requires a list of impaired waterbodies that are not expected to meet standards without additional controls. Many Section 303(d) designated waters have not undergone comprehensive water quality assessments to determine either the extent of water quality impairment or whether existing controls are adequate to achieve the standards. DEC closely scrutinizes waterbodies to determine if suspected water quality violations were thoroughly investigated and documented. This approach is designed to prevent the listing of waterbodies with inconclusive or circumstantial data and/or observation alone.

- For waterbodies with active discharges, such as those associated with a seafood or log transfer facility, the impairment standard is greater than 1.5 acres of continuous coverage (i.e., the waterbody is then Category 5/Section 303(d) listed), the impairment threshold is 1.5 acres.
- A waterbody will be placed in Category 5 where there is no active discharge to the water but where the last known dive survey reported more than 1.0 acre of continuous residues coverage (LTFs) on the marine seafloor.
 - A waterbody will be placed in Category 5 if there are more than 1.5 acres of continuous residues coverage and greater than 10 cm. at any one point (LTFs) or more than a 1.5 acre area of seafood wastes at greater than 0.5 inch depth based on an authorized ZOD and two consecutive dive surveys, unless DEC has approved a remediation plan (LTFs) or natural attenuation (seafood processing facility) under DEC's 401 Certificate of Reasonable Assurance under the NPDES General Permits for LTFs. Exemptions would include waterbodies where ZODs were authorized at greater than 1.5 acres. A waterbody will be placed in Category 5 when a submitter has failed to implement an approved remediation plan (LTF) according to its schedule.

- Legacy sites (such as a facility issued discharge authorization prior to the development of the two LTF General Permits, or a facility where no ZOD was issued) that are reporting over one acre of continuous residue coverage may be considered for Category 5/Section 303(d) listing.
- A facility operating under either of the LTF General Permits that is reporting continuous coverage of residues over 1.5 acres and has failed to submit a remediation plan, or has submitted a remediation plan but is failing to implement its remediation plan, or not meeting milestones set forth in an approved remediation plan, will be considered for Category 5/Section 303(d) listing.

If DEC approves a remediation plan on a Category 5/Section 303(d) listed waterbody that is reporting over 1.5 acres of continuous coverage of bark on the bottom prior to the next Section 303(d) list, the waterbody will be placed in Category 4(b) in the next Section 303(d) list.

For all Category 5 waterbodies, the operator will have to document through two consecutive annual dive surveys that the residues in excess of the permit threshold are declining in size from 1.5 acres or under to less than 1.0 acre through active or natural attenuation. If the ZOD is not declining in size, DEC will initiate permit modification or TMDL development.

The basis for a greater than 1.5 acres of continuous coverage impairment standard for log transfer and seafood processing facilities with ZODs is based on several factors:

- **Permits Establish Limits, not Water Quality Standards.** The fixed one acre zone of deposit used for previous impairment determinations is a permit limit and not a water quality standard. Alaska’s zone of deposit regulations (18 AAC 70.210 ZONES OF DEPOSIT.) allows the deposition of substances on the bottom of marine waters within limits set by the department. However, the standards must be met at every point outside the zone of deposit. Permits use the water quality standards as a basis for setting effluent “limits” or for allowing flexibility from the water quality standards.

DEC specifies the criteria that can be exceeded in a permit, short-term variance or a certification. If a discharger is granted a zone of deposit within a permit, the permittee can only exceed the criteria that have been identified in their permit, certification or short-term variance.

- **Confidence of Dive Survey Information.** While EPA’s NPDES individual permits contained protocols for dive surveys at LTFs, it appears that dive methods were not implemented consistently. As well, NPDES permits included no method for calculation of bark area, which often was overestimated. These inconsistencies compared to current protocols in the General Permits raise the issue of the reliability of dive survey information that resulted in previous listing decisions, and make it difficult to track trends in actual bark accumulation patterns. For instance, a 1997 dive survey on bark residues that resulted in the 1998 impairment determination and Section 303(d) listing reported the presence of measurable bark or trace coverage. The reported 9.5-acre bark footprint was based upon plots with measurable bark rather than continuous-cover bark.

The **dive** survey requirements contained in Seafood GPs are based upon seafood waste residue dispersal patterns and seafloor monitoring. The lack of a perimeter dive survey requirement leads to uncertainty in the impairment determination similar to LTFs.

- **Uncertainty in Current Approved Method and Acreage Calculations of Dive Survey Reports** DEC has often noted that the current required method of acreage calculation is not

used correctly. As part of the dive survey review DEC re-calculates continuous cover based upon dive survey reports. For facilities Section 303(d) listed in 1998 DEC calculations indicate that five of the seven 2002 dive survey reports for these facilities overstated the extent of continuous cover. Of all the reports reviewed to date since the inception of the two LTF General Permits only one report understated the extent of continuous cover. Because of this uncertainty, and by using an impairment threshold of 1.5 acres of continuous coverage, DEC is confident that impairment decisions truly reflect actual impairment.

- **Natural Reduction of Residues Deposits.** Dive survey reports for LTFs that transferred little or no timber volume over a number of years often showed considerable reduction in the areal extent of continuous coverage. The reduction was likely due to natural sedimentation and/or current dispersement. For example, the ZOD in Corner Bay declined from 1.2 acres in 1996 to 0.6 acre in 2001. No logs were transferred during this period, and no active remediation occurred.

The level of timber harvest is significantly lower than in the past. Reduced loading associated with reduced volume transferred is likely to act to reduce continuous cover accumulation over time. Limited research to determine the effect of transfer method and volume transferred on bark accumulation has established a weak statistical correlation between volumes transferred and bark accumulation. A similar correlation has not been established for the transfer method.

- **A 1.0 Acre ZOD Threshold and a 1.5 acre Impairment Standard.** There is clear and pervasive language within the LTF Guidelines that establishes the one acre zone of deposit standard as a *threshold standard for clean-up*, and not an impairment standard *per se*.
- **Impacts to the Biological Community.** There is a recognition, history and general acceptance of zone of deposits for dischargers of residues to the marine environment in Alaska. The hearing officer findings, for instance, from the LTF adjudication of the DEC proposed 401 certifications of the two federal General Permits found that the discharge of bark and wood debris sited and operated in conformity with the permit will have limited and localized impacts on the benthic community within the project area. The hearing officer also asserted that such discharges would have no discernable effect on the benthic environment as a whole in the geographic area covered by the General Permits. Patchy and discontinuous bark residue deposition on the bottom is authorized under the LTF General Permits. Additionally, there is an antidegradation finding made for each LTF facility permit.

It is recognized that excessive residue coverage over 1.5 acres, that is continuous and in excessive depth accumulations, can have adverse impacts. Facilities that are operating under permit conditions with ZODs are accepted as not adversely affecting the biological community or causing irreparable harm.

In the LTF General Permits, exceeding the one-acre continuous-cover threshold triggers the requirement to develop a remediation plan.

De-listing of waterbodies determined to be impaired from residues

The following de-listing protocols will be applied to all waterbodies regardless if there is an active discharge on-site.

For waterbodies currently Section 303(d) listed and determined to be impaired for residues based upon two or more dive surveys:

DEC will require two consecutive dive surveys documenting that continuous residues coverage (LTFs) or areal extent of seafood wastes greater than 0.5 inch depth is no more

than 1.0 acre prior to being eligible for removal from Category 5 and placement in either Category 1 or 2.

For waterbodies previously Section 303(d) listed and determined to be impaired for residues based upon one dive survey or best professional judgment:

DEC will require one dive survey documenting that continuous cover (LTFs) or areal extent of seafood wastes greater than 0.5 inch depth is no more than 1.0 acre prior to being eligible for removal from Category 5 and placement in Category 1 or 2. Placement in Category 1 or 2 will depend on the information available.

For inactive log transfer facilities (i.e., DEC has not received a Notification or Notice of Intent to Operate) that have greater than one acre of continuous coverage of residues on the marine bottom and are Category 5/Section 303(d) listed, an approved TMDL or remediation plan is required prior to being eligible for de-listing and placement in Category 4a or 4b.

APPENDIX M. – Abbreviated Alaska’s Category 5/Section 303(d) List of Impaired Waters

By Region, alphabetically

#	Region	Category	Alaska ID Number	Waterbody	Location	Area of Concern	Water Quality Standard	Pollutant Parameters	Pollutant Sources
1	IN	Category 5 Section 303(d) listed	40501-001	Cabin Creek	Nabesna	1.5 miles	Toxic & Other Deleterious Organic and Inorganic Substances	Manganese, Arsenic, Iron, Copper & Cadmium	Mining
2	IN	Category 5 Section 303(d) listed	20502-101	Caribou Creek	Denali National Park	16.1 miles	Turbidity	Turbidity	Mining
3	IN	Category 5 Section 303(d) listed	40506-007	Chena River	Fairbanks	15 miles	Petroleum Hydrocarbons, Oil & Grease Sediment	Petroleum Products, Sediment	Urban Runoff
44	IN	Category 5 Section 303(d) listed	40506-002	Chena Slough	Fairbanks	13 miles	Petroleum Hydrocarbons, Oil & Grease Sediment	Petroleum Products, Sediment	Urban Runoff, Septic Tanks
5	IN	Category 5 Section 303(d) listed	40402-010	Crooked Creek Bonanza Crooked Deadwood Ketchem Mammoth Mastodon Porcupine	North of Fairbanks	77 miles	Turbidity	Turbidity	Placer Mining
6	IN	Category 5 Section 303(d) listed	40509-001	Goldstream Creek	Fairbanks	70 miles	Turbidity	Turbidity	Placer Mining
7	IN	Category 5 Section 303(d) listed	40506-003	Noyes Slough	Fairbanks	7 miles	Sediment Petroleum Hydrocarbons, Oil & Grease Residues	Sediment, Petroleum Products, Debris	Urban Runoff
8	IN	Category 5 Section 303(d) listed	40510-101	Slate Creek	Denali National Park	2.5 miles	Turbidity	Turbidity	Mining
9	SC	Category 5 Section 303(d) listed	20401-004	Campbell Creek	Anchorage	10 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff

#	Region	Category	Alaska ID Number	Waterbody	Location	Area of Concern	Water Quality Standard	Pollutant Parameters	Pollutant Sources
10	SC	Category 5 Section 303(d) listed	20401-402	Campbell Lake	Anchorage	25 acres	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
11	SC	Category 5 Section 303(d) listed	20401-403	Cheney Lake	Anchorage	640 acres	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff, Storm Drainage
12	SC	Category 5 Section 303(d) listed	20401-003	Chester Creek	Anchorage	4.1 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff, Industrial
13	SC	Category 5 Section 303(d) listed	30101-801	Cold Bay	Cold Bay	0.01 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Military, Fuel Storage
14	SC	Category 5 Section 303(d) listed	20505-001	Cottonwood Creek	Wasilla	Entire 13 miles	Residues	Foam & Debris	Urban Runoff, Urban Development
15	SC	Category 5 Section 303(d) listed	30401-601	Dutch Harbor	Unalaska Island	0.5 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Industrial, Urban Runoff
16	SC	Category 5 Section 303(d) listed	30203-001	Egegik River	Egegik	1 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Spills, Fuel Tanks, Underground Fuel Tanks
17	SC	Category 5 Section 303(d) listed	20201-401	Eyak Lake	Cordova	50 feet of shore-line	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products, Petroleum Contamination, Sheen	Above Ground Storage Tanks, Spills
18	SC	Category 5 Section 303(d) listed	20401-005	Fish Creek	Anchorage	6.4 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
19	SC	Category 5 Section 303(d) listed	20401-006	Furrow Creek	Anchorage	5.3 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
20	SC	Category 5 Section 303(d) listed	20401-412	Hood/Spenard Lake	Anchorage	307 acres	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff, Industrial

#	Region	Category	Alaska ID Number	Waterbody	Location	Area of Concern	Water Quality Standard	Pollutant Parameters	Pollutant Sources
21	SC	Category 5 Section 303(d) listed	30102-602	Illiuliuk Bay/Harbor	Dutch Harbor	1.4 acres	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Urban Runoff
22	SC	Category 5 Section 303(d) listed	20701-502	Kazakof Bay	Afognak Island	2.0 acres of marine bottom adjacent to the log transfer facility	Residues	Bark & Woody Debris	Log transfer facility
23	SC	Category 5 Section 303(d) listed	20401-017	Little Campbell Creek	Anchorage	8.3 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
24	SC	Category 5 Section 303(d) listed	20401-024	Little Rabbit Creek	Anchorage	6.2 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
25	SC	Category 5 Section 303(d) listed	20401-018	Little Survival Creek	Anchorage	3.0 miles	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
26	SC	Category 5 Section 303(d) listed	20701-501	Lookout Cove	Afognak Island	1.1 acres	Residues	Bark & Woody Debris	Log Transfer Facility
27	SC	Category 5 Section 303(d) listed	20402-001	Matanuska River	Palmer	½ mile	Residues	Debris	Landfill
28	SC	Category 5 Section 303(d) listed	30101-602	Popof Strait	East Aleutians Borough	5 miles	Residues	Seafood Waste Residue	Seafood Processor
29	SC	Category 5	30204-002	Red Fox Creek	King Salmon	N/A	Petroleum Hydrocarbons, Oil & Grease Toxic & Other Deleterious Organic and Inorganic Substances	Petroleum Products, Diesel Range Organics (DRO) and Trichloroethene (TCE)	Landfill, Fire Training Areas, Military
30	SC	Category 5 Section 303(d) listed	30102-409	Red Lake Anton Road Ponds	Kodiak	2.0 acres	Toxic & Other Deleterious Organic and Inorganic Substances	Metals	Urban Runoff

#	Region	Category	Alaska ID Number	Waterbody	Location	Area of Concern	Water Quality Standard	Pollutant Parameters	Pollutant Sources
31	SC	Category 5 Section 303(d) listed	30104-601	Saint Paul Island Lagoon	St. Paul Harbor, St. Paul Island	0.23 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Leaking Above Ground Storage Tanks
32	SC	Category 5 Section 303(d) listed	20401-020	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Anchorage	Glenn Hwy. Bridge. Down to Mouth	Fecal Coliform Bacteria Petroleum Hydrocarbons, Oil & Grease	Fecal Coliform, Petroleum Products	Urban Runoff
33	SC	Category 5 Section 303(d) listed	20401-419	University Lake	Anchorage	10 acres	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
34	SC	Category 5 Section 303(d) listed	20401-421	Westchester Lagoon	Anchorage	30 acres	Fecal Coliform Bacteria	Fecal Coliform	Urban Runoff
35	SE	Category 5 Section 303(d) listed	10204-801	Cube Cove	NW Admiralty Island	0.4 acres	Residues	Bark & Woody Debris	Log transfer facility
36	SE	Category 5 Section 303(d) listed	10203-808	East Port Frederick	NE Chichagof Island	1.5 acres	Residues	Bark & Woody Debris	Log transfer facility
37	SE	Category 5 Section 303(d) listed	10201-801	Hobart Bay	Mainland, SE Stephens Passage	1.3 acres of marine bottom adjacent to the log transfer facility	Residues	Bark & Woody Debris	Log transfer facility
38	SE	Category 5 Section 303(d) listed	10301-004	Jordan Creek	Juneau	3 miles from tide-water up-stream	Sediment Residues Dissolved Gas	Sediment, Debris, Low Dissolved Oxygen	Land Development, Road Runoff
39	SE	Category 5 Section 303(d) listed	10203-002	Katlian River	N. of Sitka, Baranof Island	4.5 miles	Sediment Turbidity	Sediment, Turbidity	Timber Harvest
40	SE	Category 5 Section 303(d) listed	10203-602	Klag Bay	West Chichagof Island	1.25 acres	Toxic & Other Deleterious Organic and Inorganic Substances	Metals	Mining

#	Region	Category	Alaska ID Number	Waterbody	Location	Area of Concern	Water Quality Standard	Pollutant Parameters	Pollutant Sources
41	SE	Category 5 Section 303(d) listed	10103-502	Klawock Inlet	Klawock Island, W. Prince of Wales Island	2.5 acres	Residues	Bark & Woody Debris	Log transfer facility
42	SE	Category 5 Section 303(d) listed	10203-001	Nakwasina River	Baranof Island, Sitka	8 miles	Sediment Turbidity	Sediment Turbidity	Timber Harvest
43	SE	Category 5 Section 303(d) listed	10301-014	Pederson Hill Creek	Juneau	Lower two miles	Fecal Coliform Bacteria	Fecal Coliform	Septic Tanks
44	SE	Category 5 Section 303(d) listed	10203-801	Schulze Cove	Fish Bay, Baranof Island	marine bottom beneath this log storage area	Residues	Bark & Woody Debris	Log Storage Area
45	SE	Category 5 Section 303(d) listed	10303-601	Skagway Harbor Pullen Creek (Lower Mile)	Skagway	Acre; & Lower mile of Pullen Creek	Toxic & Other Deleterious Organic and Inorganic Substances	Metals	Industrial
46	SE	Category 5 Section 303(d) listed	10103-602	Thorne Bay	Prince of Wales Island	marine bottom beneath the log storage areas	Residues	Bark & Woody Debris	Log Transfer Facility
47	SE	Category 5 Section 303(d) listed	10103-801	Twelvemile Arm	Prince of Wales Island	marine bottom beneath this log storage area	Residues	Bark & Woody Debris	Log Storage Area
48	SE	Category 5 Section 303(d) listed	10102-601	Ward Cove	Ketchikan	2.5 acres	Residues Dissolved Gas Toxic & Other Deleterious Organic and Inorganic Substances	Pulp Residues, Logs, Bark & Woody Debris, Low Dissolved Oxygen, Sediment Toxicity due to Wood Decomposition By-products	Industrial

