Alaska's
Final
2008 Integrated Water Quality Monitoring and Assessment Report

April 1, 2008

Alaska
Department of Environmental Conservation

Table of Contents

Section **Page**

1 Introduction 1

The Purpose of the 2008 Integrated Water Quality Assessment Report 1

2 Description of Categories and Overview of Assessment Methodology and Results 8

General Assessment Methods 8
Categories and Assessments 10
Criteria Used to Classify a Waterbody as Category 5 17
Specific Considerations for Waters Considered Impaired from Turbidity 20
Specific Considerations for Waters Considered Impaired from Residues.....23
Removing (De-listing) Waterbodies from the Category 5/Section 303(d) List.....24

APPENDIX A Waterbody Categories 2 through 5 27

APPENDIX B Waterbodies Removed From Section 303(d) List.....82

APPENDIX C TMDL Schedule and Factors 86

APPENDIX D Logic Flow Diagram 89

APPENDIX E List of Alaska's Category 5/Section 303(d) Impaired Waters.....90

APPENDIX F Alaska's Water Quality Management Programs 93

APPENDIX G Alaska's Interpretation of the Residues Criterion within Alaska's Water Quality Standards (18 AAC 70) Regarding Attainment and Impairment Determinations 116

APPENDIX H Alaska Clean Water Actions (ACWA) Priority Ranks 129

List of Tables

Table Page

Table F-1 Designated Uses of Alaska's Freshwater and Marine Waterbodies 93

Table F-2 Estimated Wetland Acreage.....113

Table F-3 Wetland Assessment Activity.....115

List of Figures

Figure **Page**

Figure D-1 Logic Flow Diagram for Making Category Determinations.....89

List of Abbreviations and Acronyms

ACWA	Alaska Clean Water Actions
DEC	Alaska Department of Environmental Conservation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CWA	Clean Water Act
CWS	community water system
DMR	Discharge Monitoring Report
DWPP	Drinking Water Protection Program
EPA	U.S. Environmental Protection Agency
LTF	log transfer facility
MCL	maximum contaminant level
MSGP	Multi-source General Permit
NPDES	National Pollutant Discharge Elimination System
NTNCWS	non-transient, non-community water system
ONRW	Outstanding National Resource Waters
PWS	public water system
PWSS	public water system supervision
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
ROD	Record of Decision

SDWA	Safe Drinking Water Act
STORET	short for STOrage and RETrieval, an EPA environmental database
TAH	total aromatic hydrocarbon
TAqH	total aqueous hydrocarbon
TMDL	total maximum daily load
TNCWS	transient non-community water system
UIC	underground injection control
USACE	U.S. Army Corps of Engineers
WPMP	Wellhead Protection Management Plan

1 Introduction

The Purpose of the 2008 Integrated Water Quality Assessment Report

The Clean Water Act (CWA) mandates that each state develop a program to monitor and report on the quality of its surface and groundwaters and prepare a report describing the status of its water quality. The U.S. Environmental Protection Agency (EPA) then compiles and summarizes the information and sends this information in a report to Congress. The process for developing information on the quality of the nation's water resources is contained in several sections of the CWA: Section 305(b) requires that the quality of all waterbodies be characterized; Section 303(d) requires that states list any waterbodies that do not meet water quality standards. The EPA has recommended that the Section 305(b) reports and the Section 303(d) list of impaired waters be integrated into a single, comprehensive monitoring and assessment report, the *Integrated Water Quality Monitoring and Assessment Report* (Integrated Report).

This integrated approach allows each state to identify any water quality problems, develop remediation plans and, ultimately, achieve water quality standards in all of its waters. The Alaska Department of Environmental Conservation (DEC) considers this Integrated Report an important tool for understanding the health of Alaska's waters and for identifying actions that can be taken to improve water quality in Alaska. This water quality information is just one component that contributes to the efforts and priorities under Alaska's Clean Water Actions (ACWA) initiative, a much broader and more comprehensive assessment that includes water quality, water quantity and aquatic habitat. A more detailed description of the ACWA initiative and its process for assessing information and establishing waterbody priorities is available in Section 2 and Appendix F.

The statewide water quality assessment describes whether the existing condition of Alaska's waterbodies is sufficient to maintain multiple designated uses of that waterbody. Alaska's water quality standards designate seven uses for fresh waters (drinking water; agriculture; aquaculture; industrial; contact recreation; non-contact recreation; and growth and propagation of fish, shellfish, other aquatic life, and wildlife) and seven uses for marine waters (aquaculture; seafood processing; industrial; contact recreation; non-contact recreation; growth and propagation of fish, shellfish; other aquatic life and wildlife; and harvesting raw mollusks or other raw aquatic life for human consumption). Sources of information that DEC uses to develop the water quality assessments include *monitoring data* (e.g., water testing), *professional knowledge*, and *evaluations* such as those provided by water resource managers, fish and wildlife biologists, and aquatic biologists.

This Integrated Report fulfills Alaska's requirement in Section 305(b) of the CWA that each state provide the EPA a comprehensive report of water quality by providing a comprehensive evaluation of the status and health of each waterbody in the State of Alaska and by describing the programs by which the state is maintaining or improving the quality of Alaska's waters.

In addition, this report describes the process by which waterbodies are evaluated to determine if they attain water quality standards or are impaired (polluted). Part of this process includes classifying each waterbody according to five categories, depending on their health; determining which waterbodies need further action; scheduling when each impaired waterbody will be addressed; involving the public in determining how water quality will be addressed; and then determining how waterbodies are removed from the impaired waterbody list.

Background on the DEC's water quality programs can be found in Appendix F.

Assessment Results

Alaska is rich in water quantity, water quality, and aquatic resources, with almost half of the total surface waters of the United States located within the state. Because of Alaska's size, sparse population, and its remote character, the vast majority of Alaska's water resources are in pristine condition. More than 99.9% of Alaska's waters are considered unimpaired. With more than 3 million lakes, 714,004 miles of streams and rivers, 36,000 miles of coastline, and approximately 176,863,000 acres of freshwater and tidal wetlands, less than 0.1% of Alaska's vast water resources have been identified as impaired. Historically, Alaska's water quality assessments focused on areas with known or suspected water quality impairments.

Surface freshwater supplies three-fourths 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 more than 15,000 salmon streams, an important resource for Alaskans and the world. Alaska also has the greatest groundwater resources of any state.

Alaska is sparsely populated with approximately 670,000 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 2005-2006 U.S. census showed the population increases in the majority of the areas of the state with the Matanuska-Susitna Valley and Southeast Fairbanks census area being the largest growth. Almost 50% of the state's population lives in the Municipality of Anchorage. The other major population center is 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 has been impaired. Historically and for this 2008 Report, 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 the interior of 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 source of impairment within the state.

Atlas -- Topic	Value
State population	670,053[1]
State surface area (square miles)	656,425
Total miles of rivers and streams	714,004
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	44,000
Acres of freshwater wetlands	174,683,900
Acres of tidal wetlands	2,180,500

Categorization of Waterbodies

Generally, waterbodies are categorized by usage and the degree to which water quality goals are attained. There are five categories to which a waterbody can be assigned:

- **Category 1.** All the water quality standards for all designated uses are attained.
- **Category 2.** Some of the water quality standards for the designated uses are attained, but data and information to determine if the water quality standards for the remaining uses are attained are insufficient or absent.
- **Category 3.** Data or information is insufficient to determine that the water quality standards for any of the designated uses are attained.
- **Category 4.** The waterbody is determined to be impaired but does not need a Total Maximum Daily Load (TMDL).
    - **Category 4a**. Impaired waters with an established and EPA-approved TMDL.

[1] US Census Bureau 2006 estimate, Oct. 2007

- **Category 4b**. Impaired waters with established "other pollution control requirements" to meet water quality standards.
- **Category 4c**. Impaired waters that fail to meet a water quality standard which is not caused by a pollutant, but instead is caused by other types of pollution.

- **Category 5.** Water quality standards for one or more designated uses are not attained and the waterbody requires a TMDL or recovery plan. Category 5 waters are the Section 303(d) list of impaired waters.

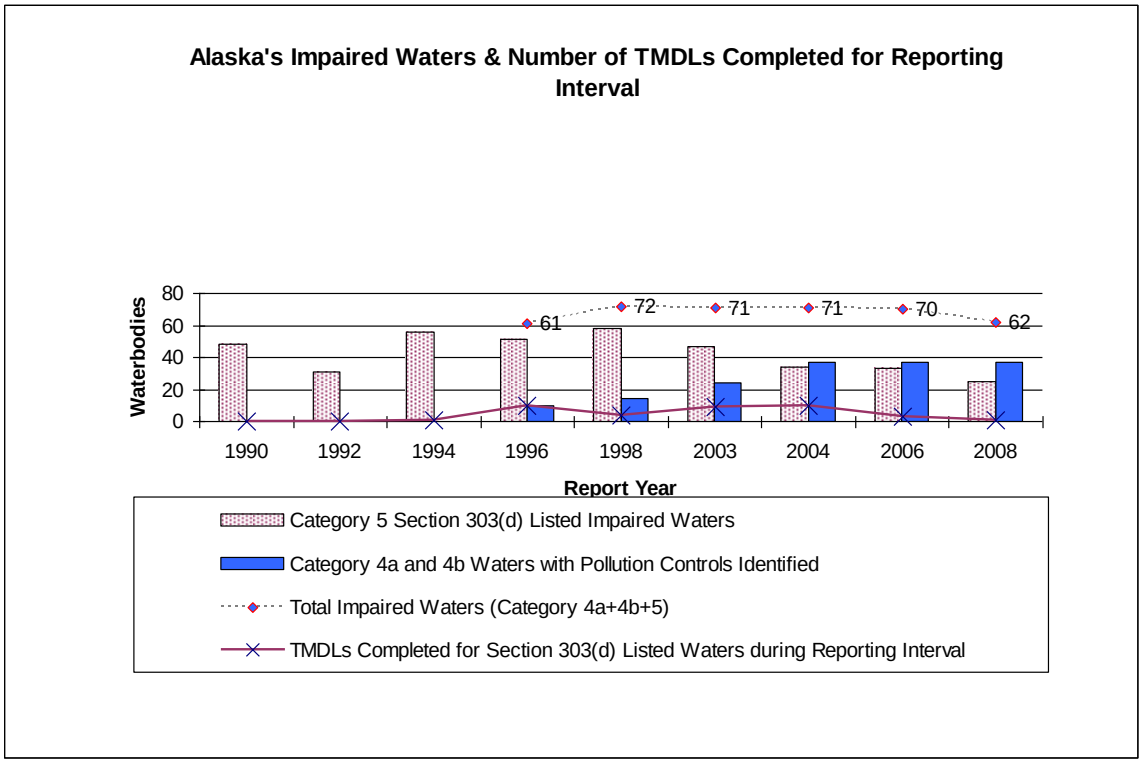
The following table summarizes the results, by waterbody category of the evaluation of existing and readily available water quality data and information reviewed for this 2008 Draft Integrated Report.

Category	Number of Waterbodies In Each Category
1	Majority of Alaskan Waters
2	33
3	297
4a	31
4b	6
4c	0
5	25

Alaska's Approach to Impaired Waterbodies

Alaska's process for "listing" an individual waterbody for Section 303(d) designation begins with an internal review of existing and new information 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. In addition to the water quality standards, there are specific criteria for evaluation and listing of waterbodies associated with residue discharges from log transfer or seafood processing facilities. Also, there is new section describing the methodology for determining turbidity impairment.

Once a waterbody has been placed on the Section 303(d) list, a TMDL recovery plan will be developed, unless data obtained subsequent to the listing indicates that the waterbody is no longer impaired or other measures are undertaken to restore the waterbody. State of Alaska waterbodies on the Section 303(d) list are scheduled for a TMDL or waterbody recovery plan to be developed between now and 2012. Specific criteria are available for delisting of impaired waterbodies. When a TMDL or waterbody recovery plan is developed, a public process is initiated in which the public is notified of the document and can comment on it.



Significant Changes from Alaska's 2006 Integrated Water Quality Assessment Report

- Eight waters are removed from the 2006 Category 5/Section 303(d) list of impaired waters:
  - Cheney Lake has been removed from the Section 303(d) list and placed in Category 2 since recent monitoring shows the water attaining the fecal coliform bacteria criterion.
  - Pederson Hill Creek has a completed and final TMDL for fecal coliform bacteria on this water and is being submitted it to EPA for approval. If EPA does not approve this TMDL Pederson Hill Creek will moved back to Category 5 and Section 303(d) listed.
  - St. Paul Island Lagoon is attaining the petroleum products standard and the water quality impairment no longer exists.
  - Hobart Bay, Twelvemile Arm, and Schulze Cove, associated with log transfer and/or log storage from timber harvest activities, had dive surveys and assessments completed in 2007 and are now attaining the residues standard and the water quality impairments no longer exist.
  - Thorne Bay has an approved TMDL for the LTF area and is moved to Category 4a.
  - Kenai River has been moved to Category 4b since it has controls in place to meet the recommended rationale for Category 4b waters.

- Tongass Narrows 2, previously in Category 4b in Alaska's 2006 Integrated Report, is now placed in Category 2 since it is attaining the residues water quality criterion and the water quality impairment no longer exists.

- Eagle River Flats, previously in Category 4b in Alaska's 2006 Integrated Report, is now placed in Category 2 since it is attaining the toxics water quality criterion and the water quality impairment no longer exists.

- Sawmill Creek, previously in Category 4b in Alaska's 2006 Integrated Report, is now placed in Category 2 since it is attaining standards the residues criterion and the water quality impairment no longer exists.

- There is new listing and assessment methodology proposed for the turbidity pollutant and no impairment determinations were made in this 2008 report based on this new methodology. This new listing and assessment methodology proposed for the turbidity pollutant is not a change to the turbidity criterion within Alaska's water quality standards (in 18 AAC 70) but is an aide in implementing the criterion when making water quality attainment or impairment determinations

- Other broader changes include the following:

  - Eleven new waterbodies are reported in Category 3 since additional waters were added to DEC's water quality assessment database (ADB) and there are now 297 Category 3 waterbodies.
  - Updates to narratives were completed where necessary based on existing and readily available information. Updates to Category 4a waterbody narratives were completed where a TMDL was developed.
  - ACWA waterbody priority rankings are included in the report Appendix H.
  - Updates were made to some of the water quality management program narratives found in Appendix F.

Public Process Overview

DEC has an open, on-going solicitation for water quality data and information. DEC coordinates a continuous state resource agency effort to solicit Alaska Clean Water Actions waterbody nominations and this information is incorporated into this Report. During the preparation and development of Alaska's 2008 Integrated Report, DEC actively solicited readily available and existing water quality data and information which would be used for preparation of the 2008 Integrated Report.

DEC posted a public notice solicitation for existing and readily available water quality data and information from September 13 to October 17, 2007. As part of this public notice DEC set a data cut-off date of October 17, 2007 as the last day DEC could consider data and water quality to be considered for inclusion in Alaska's 2008 Integrated Report. Alaska

received information on one waterbody. A 30-day public review and comment of this draft Report was provided from February 28 to March 3, 2008.

DEC considered public comments on the public notice draft of the report and made necessary changes to this final report. A responsiveness summary on the public comments received on the draft Report has been prepared.

2 Description of Categories and Overview of Assessment Methodology and Results

This section of the Integrated Report describes the process the State of Alaska uses to evaluate the nature, health, and status of waterbodies. This process includes: categorizing waterbodies into five categories, depending on their health; determining which waterbodies need further action; scheduling when each polluted or impaired waterbody will be addressed, and involving the public in the determining how waterbodies will be addressed (see Figure D-1, Logic Flow Diagram for Making Category Determinations in Appendix D.). Waterbodies that are found to be impaired or polluted under the 303 (d) processes may require conducting and implementing a TMDL evaluation. A TMDL or waterbody recovery plan describes the process and steps to restore an impaired waterbody to a condition that meets the water quality standards for the pollutants indicated.

Section 303(d) requires a list of impaired waterbodies that are not expected to meet standards without additional controls. Many Section 303(d) listed 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 or persistent exceedances of water quality standards have been thoroughly investigated and documented. DEC uses this approach to prevent the listing of waterbodies with inconclusive or circumstantial data and/or based on observation alone.

As stated previously, surface water quality has been impaired in specific localized parts of Alaska. Historically and for this 2008 Report, 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 the interior of 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 source of impairment within the state.

General Assessment Methods

DEC actively solicits all existing and readily available water quality data and information in accordance federal EPA guidance**.** This includes, but is not limited to waters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions. These organizations and groups are solicited for research they may be conducting or reporting. University researchers, the United States Department of Agriculture, the National Oceanic and Atmospheric Administration, the United States Geological Survey, and the United States Fish and Wildlife Service are examples of such sources of field data.

DEC actively accepts and solicits water quality data and information on a continuous basis. Additionally, formal public notice is made every two years soliciting such information as part of the development of the Integrated Report.

DEC considers and evaluates data and information from a wide range of sources, such as those listed below:

- previous reports prepared to satisfy CWA Sections 305(b), 303(d) and 314 and any updates
- reports of ambient water quality data including state ambient water quality monitoring programs, complaint investigations, etc., from the public and other readily available data sources (e.g., STORET (an EPA environmental database), USGS, research reports, etc.), and data and information provided in public comments
- reports of dilution calculations or predictive models
- water quality management plans
- Superfund (contaminated sites) Records of Decision
- Safe Drinking Water Act source water assessments

In addition to these conventional sources of data DEC also considers water quality data and information from citizen volunteer monitoring networks.

General Considerations for All Waterbody Categories

DEC will consider the following when evaluating a water for the Section 303(d) list of impaired waters (Category 5), when removing a water from the impaired waters list, or in making an attainment determination.

Data Quality Considerations

DEC will review data considering whether typical elements of a quality assurance project plan (QAPP) is submitted for water quality data and information. A QAPP checklist for sampling, QA project plan review checklist, and elements of a good QAPP can be found on DEC's web site at http://www.dec.state.ak.us/water/wqapp/wqapp_index.htm.

Water quality data and information collected and submitted without a QAPP, or using a QAPP with weak confidence, will not be relied on to make an impairment determination.

Such data and information may only be considered as ancillary information to support an attainment or impairment determination.

Data Quantity Considerations

Adequate data quantity is necessary to make well-grounded attainment and impairment decisions. Assessments based on larger sample sets are preferred since they are more likely to yield accurate conclusions than assessments based on smaller sample sets.

Enough data or information should be available to indicate that standards are or are not exceeded, or uses are or are not impaired, and that such measurements are representative of the waterbody.

Categories and Assessments

Category 1

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

Criteria Used to Classify a Waterbody as Category 1

The majority of Alaska's waters are not subject to man-caused stressors and are considered unimpaired. DEC expects that 99.9% of Alaska's waters can be classified as Category 1, however there are no specific waters identified in this category.

Category 2

Waterbodies are placed in this category if some of the water quality standards for the designated uses are attained.

Category 2 - Attaining Some Uses

Waterbodies are placed in this category if there is data and information to support a determination that some, but not all, uses are attained and if the attainment status for the remaining uses is unknown because there is insufficient or no data or information. These waters are presumed to be attaining all uses. 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. There are 33 waterbodies identified for placement in Category 2 and are shown in Appendix A.

Criteria Used to Classify a Waterbody as Category 2

Waterbodies that have been previously identified as impaired but that are now attaining a water quality standard are placed in this category. Examples of such waters are those that have implemented a TMDL or other pollution controls or recent monitoring data that support a determination that the water quality standard is attained.

Waterbodies associated with residue discharges are also placed in Category 2 if recent dive survey reports show that water quality standards are attained and have continued to be attained.

Waterbodies that were determined to be impaired from residues and listed as Category 5 but have a documented continuous coverage of residues of less than 1.0 acre are also placed in Category 2 and are shown in Appendix A.

Category 3

Waterbodies are placed in Category 3 if data or information are insufficient to determine that the water quality standards for any of the designated uses are attained.

Eleven new waterbodies have been identified for placement in Category 3 from the last Integrated Report for a total of 297 Category 3 waterbodies. Category 3 waterbodies are shown in Appendix A.

Criteria Used to Classify Waterbodies as Category 3

Alaska's water resources include more than three million lakes larger than five acres in size, 365,000 miles of rivers and streams, more than 174,000,000 acres or 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. (DEC 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 DEC formerly called "open files" and waters nominated for assessment through the Alaska's Clean Water Actions (ACWA) process of Alaska's three resource agencies (Environmental Conservation, Fish and Game, and Natural Resources). 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. Such waters would be placed in Category 3. Quite a number of these waters lack any kind of definitive water quality data or information, or such information is scant, spotty, or out-dated, to determine whether water uses are being attained or impaired. Many of these waters have been brought to the attention of Alaska's state resource agencies for suspected pollution or water quantity or fish habitat impairment. DEC maintains files on some of these waterbodies. The information is available upon request.

The ACWA Process

Under ACWA, cooperating agencies have developed a waterbody nomination and ranking process, using established criteria, that prioritizes assessment, stewardship, and corrective action needs for polluted waters and waters at risk of pollution, waters with habitat degradation, or water quantity problems. These criteria include the statutory criteria as

well as severity of pollution and uses to be made of the waters, per the Clean Water Act § 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 ("ACWA Priority Rank"). Waterbodies for which the data are not sufficient enough to suggest current or anticipated problems are tracked for further "data collection or monitoring." Other waterbodies for which sufficient and credible data are available and that suggest that a current water quality, water quantity, or aquatic habitat problem exists or that future problems are likely, are subject to additional analyses to evaluate agency stewardship effectiveness and to determine the persistence of exceeded standards or regulations violations. A number of these waterbodies are tracked as "at-risk" or "recovery." Ranking the waterbodies and assigning a relative priority is a way for agencies to focus resources on the most important priorities.

There are two important points to remember in regards to ACWA and the categorization or listing of waters in the Integrated Report:

- The listing decisions use a different process than the ACWA prioritization and ranking described here. However, an impairment listing is considered in the ACWA prioritization, and most waters that are listed as impaired under Categories 5 and 4 are ranked as high priority in ACWA. In other words, the Integrated Report plays a role in the ACWA prioritization process. ACWA does <u>not</u> drive the listing decision; it just provides information management and helps with identifying and implementing actions that will remove impairments.
- One component in the ACWA process is a sufficient and credible information analysis, this analysis is <u>only</u> used for ACWA prioritization for further action. This analysis does not determine whether there is enough data for a use attainment decision. The criteria used for use attainment and listing decisions are discussed under the "Overview of the Approach and Criteria for Impaired Waterbodies" section of this report.

Description of Ranking Criteria

The ACWA ranking criteria include an identical set of six common factors (allocation (refers to the extent to which the water has been obligated for various uses), condition, protection, future use, present use, and value) applied broadly across each of three components:

- Water quantity;
- Water quality; and
- Aquatic habitat.

Each factor is assigned a high (5), medium (3) or lower (1) rating for each of the components.

Application of the Ranking Criteria

Agency staff review readily available information and data related to a given waterbody and assign a factor-rating using their best professional judgment for each factor. The agency with statutory or regulatory authority over the water resource component is responsible for assessing that component. The Alaska Department of Natural Resources hydrologists provide factor-ratings for water quantity, whereas biologists in the Alaska Department of Fish and Game provide aquatic habitat factor ratings, and DEC provides water quality ratings. Numeric thresholds are established and each waterbody is assigned a high, medium, or lower priority. Note: the ACWA rankings shown in this Report represent the highest ranking for the waterbody for the Water Quality, Water Quantity, or Aquatic Habitat component. More detailed information on the ranking process is available online at http://www.dec.state.ak.us/water/acwa/acwa_ranking.htm

ACWA is a process to:

- Determine if waterbodies are adequately protected;
- Identify and prioritize waterbodies-at-risk for additional protection action;
- Identify and prioritize waterbodies needing recovery for restoration or remediation action.

In the **Nomination Phase** individual waterbodies nominated by the public and agencies are reviewed and entered into the ACWA database (or returned to the nominator for additional information).

In the **Analysis Phase** each waterbody is analyzed to determine:

- Whether existing stewardship programs are adequate to maintain and protect the waterbody;
- Whether available data is sufficient to determine the existence or extent of a current or potential problem.

The analysis phase directs waterbodies to three possible actions categories:

- Waterbodies that are adequately protected;
- Waterbodies requiring additional data; and
- Waterbodies that require additional protection or recovery.

In this analysis phase a successfully nominated waterbody will undergo a series of determinations using established criteria to assess the adequacy and credibility of the associated data available for the waterbody. This step is called a "sufficient and credible data review." Tables are used to assist in the review of the rigor of the data and information associated with each water and to score each water and these can be reviewed at http://www.dec.state.ak.us/water/acwa/pdfs/su.pdf.

In scoring waters for sufficient and credible data, three categories are considered "Data Content," "Data Coverage," and "Data Quality." Parameters addressed under "Data Content" evaluate how sufficiently and completely the information contained in the submission describes the nature and extent of the identified issue. Parameters addressed

under "Data Coverage" or "Data Quality" evaluates the quality of the information provided and how rigorous it is.

"Data Content" scoring considers the basis for the assessment of use attainment, the land use information available for the water, information on the expected reference condition, information on the source(s) of pollution, and the availability of photographs showing the condition of the water.

"Data Coverage" scoring considers the number of locations and seasonal information available.

"Data Quality" scoring considers whether the information had adequate quality assurance and quality control, whether sampling protocols were documented, and how relevant and current the information is.

Also part of the ACWA process is a determination regarding the adequacy of existing stewardship programs currently in place to protect and maintain the waterbody and if any specific recovery actions are required. Off ramps are provided that assure appropriate attention including use of routine stewardship programs and healthy waterbodies nominated specifically for monitoring.

Waterbodies-at-risk and waterbodies needing recovery are addressed in the **Action Phase** by:

- Prioritizing individual waterbodies for action;
- Identifying and implementing protection or recovery actions;
- Evaluating the success of protection/recovery actions and directing the waterbody for additional information, continued monitoring or additional protection/recovery actions.

During all phases, additional data needs may be identified, sending the waterbody to the data collection track.

Nearly all of the Category 3 waters shown here in this Integrated Report have gone through the sufficient and credible data step in the ACWA process. A small number of waters at any given time are placed in a "pending" status until the water quality information and data associated with the water undergo a sufficient and credible data review step.

The ACWA priority ranks can be found in Appendix H.

Category 4

Category 4 waters have been determined to be impaired but do not need a TMDL. Category 4 waters are divided into three sub-categories:

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 the EPA.

Waterbodies are placed in this category when a TMDL is developed and approved by EPA such that, when implemented, full attainment of the water quality standards is expected for the specific impairment for which the TMDL was developed. If the waterbody has any other impairment then it may also show in Category 5 (Section 303(d) listed) until a TMDL is developed and approved for that impairment.

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.

There are 31 waterbodies identified for placement in Category 4a and are shown in Appendix A.

Criteria Used to Classify a Waterbody as Category 4a

Category 4a. The key criterion for this category is a completed and approved TMDL.

Category 4b – Other Pollution Control Requirements are Reasonably Expected to Result in Attainment of the Water Quality Standard in a Reasonable Period of Time

Consistent with the Code of Federal Regulations (CFR) 130.7(b)(I), (ii), and (iii), waters are placed in this category when other pollution control requirements required by a local, state, or federal authority are stringent enough to achieve any water quality standards 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.

There are six waterbodies identified for placement in Category 4b and are shown in Appendix A.

Criteria Used to Classify a Waterbody as Category 4b

- **Category 4b.** "Other pollution controls" are required if the controls and assurances are sufficiently stringent that the waterbody is expected to meet standards in a reasonable time period. Examples of other pollution controls include:

  - An approved state or federal Record of Decision (ROD) associated with a state or federally approved contaminated site cleanup action;
  - A permitted facility, such as a log transfer facility, with an approved remediation plan and reporting more than 1.5 acres of continuous residue coverage;

- 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 controls and assurances that are sufficiently stringent to assure that water quality goals will be attained within a reasonable time period.

Key factors that must be considered before placing a waterbody in Category 4b are as follows:

- the need for pollution controls or measures;
- whether requirements and controls are sufficiently stringent that standards can be expected to be met in a reasonable time period; and
- assurances that the requirements and controls will be implemented in a reasonable time period.

Placing a water in Category 4b requires EPA approval and the development of a Category 4b rationale that must address the following six elements:

1. Identification of impaired segment and statement of problem causing the impairment;
2. Description of pollution controls and how they will achieve water quality standards;
3. An estimate or projection of the time when water quality standards will be met;
4. Schedule of implementing pollution controls;
5. Monitoring plan to track effectiveness of pollution controls; and
6. Commitment to revise pollution controls as necessary.

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.

Waterbodies associated with residue discharges also would be placed in Category 4b if two or more dive survey reports from log transfer facilities document there are more than 1.5 acres of continuous residues coverage and there is an approved remediation plan under the Log Transfer Facility General Permit or under an individual state wastewater discharge permit (see Appendix G. on Remediation Plans). Waterbodies that are under EPA compliance orders for seafood residue violations may also be considered for placement in Category 4b if compliance with the order ensures that the water will attain the residues water quality standard in a reasonable time period.

Category 4c - Impairment is not Caused by a Pollutant

Waterbodies are placed in this category if the impairment is not caused by a pollutant affecting water quality, e.g., degraded riparian habitat.

These waterbodies should be considered for monitoring to confirm no pollutant-caused impairment is present and to support water quality management actions necessary to address the cause(s) of the impairment.

There are no Category 4c waterbodies identified, however Alaska's resource agencies will utilize this category in the future to track waterbodies with non-pollutant impairments.

Criteria Used to Classify a Waterbody as Category 4c

- **Category 4c.** Currently there are no specific criteria or standards adopted by Alaska by which to identify any non-water quality related impairments. Alaska Clean Water Actions priority rankings identify priority aquatic habitat or water quantity waters for action, but these waters are not referred to as *impaired* since they are not water quality impaired **.**

Category 5 – Impaired Waterbodies Section 303(d) Listed

Waterbodies are placed in Category 5 if the water quality standard(s) are not attained, i.e., the waterbody is impaired for one or more designated uses by a pollutant(s) and requires a TMDL or waterbody recovery plan to attain Alaska's water quality standards (18 AAC 70).

There are 25 waterbodies identified for placement in Category 5 and Section 303(d) listed as impaired and that are shown in Appendix A.

Criteria Used to Classify a Waterbody as Category 5

This category constitutes the Clean Water Act Section 303(d) list of waters impaired by a pollutant(s) for which one or more TMDLs are needed. A waterbody is listed in this category if it is determined, in accordance with Alaska's assessment and listing methodology, that a pollutant has caused impairment. 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. 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 TMDL or equivalent waterbody recovery plan for these waterbodies is scheduled eight to thirteen years into the future from the time they are first listed in Section 303(d).

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 determining 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. Parameter specific listing methodologies will be developed in the future.

DEC makes impairment determinations 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. Water quality data and information that is less than five years is preferred. In certain instances, data and information over five years old may be considered in an impairment determination only if it is carefully scrutinized, reviewed, and validated as credible.

DEC uses the following guidelines 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 years that concludes designated uses are adversely affected by pollutant conditions;

6. Documentation from a resource agency or other credible source where the use of best professional judgment is applied to credible data. Best professional judgment is used to determine if a waterbody persistently exceeds water quality standards or has designated uses that are adversely affected by pollutant sources; or

7. Listing methodology developed.

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 be 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; must be subject to management level review.

Best professional judgment recommendations from outside the department must be affirmed by DEC and available data and basis for the decision should be documented.

Alaska's process for "listing" an individual waterbody to Section 303(d) designation begins with an internal review of existing and new information for ACWA nominated waters or former "open files." 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. In the development of the Integrated Report DEC solicits the public for existing and readily available water quality data and information.

DEC staff initially 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 and may involve a 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 period. 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 period. If a water goes though the Category 4b process and meets those requirements, then the waterbody may be placed in Category 4b. . 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 in Category 1 or 2. Category 1 and 2 waters typically require no further action but may be reconsidered at any time should new water quality data or information become available.

Not all Section 303(d) designated waters have 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 observations alone.

A completed water quality assessment of 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 the pollution source and pollutant causing the impairment and should result in one of the following:

- The assessment indicates the waterbody is impaired and that existing controls are inadequate to achieve water quality standards in a reasonable time period. Category 5 Section 303(d) waterbodies require a TMDL or equivalent waterbody recovery plan.

- The assessment indicates the waterbody is impaired but confirms existing controls are adequate to achieve standards in a reasonable time period. The waterbody is placed on the Category 4b list.

- The assessment indicates that the waterbody is not impaired. The waterbody is placed in Category 1, or 2 .

Section 303(d) listed waterbodies are currently scheduled for TMDL development or waterbody recovery plan, now and out to year 2012. The TMDL schedule and the criteria for developing the schedule can be found in Appendix C.

Specific Considerations for Waters Considered Impaired from Turbidity

The following is new listing and assessment methodology for the turbidity pollutant. No impairment determinations were made in this 2008 report based on this new methodology. This new listing and assessment methodology proposed for the turbidity pollutant is not a change to the turbidity criterion within Alaska's water quality standards (in 18 AAC 70) but is an aide in implementing the criterion when making water quality attainment or impairment determinations

Parameter-Specific Criteria

Alaska uses the following methodology to evaluate waterbodies for the turbidity criterion specified in 18 AAC 70.020(b)(12) and (24.).

Natural Conditions

The natural condition must first be established when considering data in an impairment decision. This is because within five of the seven water uses protected from turbidity the term "above natural conditions" is key to the criteria specified. Turbidity data collected without an established natural condition shall not be considered in any impairment determination. Many of Alaska's waters have naturally occurring turbid flows, especially glacially-fed and/or tidally influenced waters, and care must be taken to effectively establish a natural condition for reference.

Establishing a Reference Condition

Alaska recognizes that the variability in turbidity among sites and over time can make it quite difficult to determine a natural or background level for any specified level of discharge.

A concurrent or an "upstream, downstream" approach is preferred. The approach entails sampling for reference condition to establish natural conditions and then a comparison of measurements taken upstream (control/natural conditions) and downstream (treated/impacted) of a particular pollutant source, with the presumption that any increase in turbidity is due to the source or activity. Upstream readings are taken to establish the natural conditions. Readings should be taken upstream of any suspected exceedances of the criteria and of any man-induced point or nonpoint sources of turbidity.

When it may not be feasible to establish an upstream reference condition, then a "paired watershed" approach may be considered. Finding a nearby similar water of similar hydrology, morphology, aspect, etc., must be identified. The upstream/downstream sampling approach in the water is the preferred method and data using this method may be weighted greater than a paired watershed approach.

Samples taken to establish reference (natural background) conditions must collected at approximately the same time, and during the same flows, as when samples are taken for suspected exceedances.

Since turbidity can be influenced by natural phenomenon such as storm events, sampling during or immediately after high flow or storm events should be avoided; also low flow, dry-period sampling should be avoided. Any turbidity data taken during such events are to be discounted. An exception to this is when it is suspected that exceedances and impairment is persistently occurring at low flow or high flow storm events and suspected to be a result of man-induced activities. It such instances the preferred approach is to gather data at a wide range of flow events. Natural background must be established in these instances.

Visual Turbidity Observations

While elevated visual turbidity observations may often be noted and signal criteria exceedances, Alaska does not make impairment determinations, and consequent Section 303(d) listing based on visual turbidity observations alone. Visual observations often trigger suspected criteria exceedances, such instances are then confirmed with in-water NTU sampling and compared to an established reference condition. Documented visual turbidity that may indicate criteria exceedances are only considered as possibly ancillary to criteria exceedances and an attainment or impairment determination.

Minimum Data Requirements and Analysis

Current data (i.e., less that 5 years old) is generally used although some documentation or data over five years old may be relevant. Older data is generally given less significance when reviewing information in an impairment determination.

Collection of ≥ 20 samples (excluding samples taken to establish reference ((natural background) conditions) over at least three sampling events at least one week apart to establish persistent exceedances of the water quality criterion. As noted earlier, samples taken should be reasonably distributed so as not to bias any one sampling event. Samples taken to establish reference (natural background) conditions must be collected at approximately the same time, and during the same flows, as when the exceedances samples are taken. Sampling also is generally obtained for at least two seasons. If more than 10% of the samples exceed the water quality criteria then the waterbody will be considered for the Section 303(d) list (Category 5 water). Outliers will be fully scrutinized and in certain instances discounting them may be justified, such as in a clear storm event situation. Outliers will be viewed in "totality" of the entire dataset. An impairment determination will not be based on outliers alone.

The preferred method for establishing turbidity impairment is to employ the use of continuous sampling data loggers which are capable of recording large data sets. In these instances, statistical analysis, such as those described in natural conditions other guidance documents may be used.

Prior to a final Section 303(d) listing decision, Alaska reviews the data for the basic concepts employed in any listing including persistence, duration and magnitude. Other tools (e.g., enforcement, permit limitations) should be evaluated as to whether they can effectively reduce the exceedances.

DEC has developed The Alaska Natural Conditions Tool Spreadsheet that provides a statistical spreadsheet for calculating a natural condition based criteria. The guide and spreadsheet tool is available at:
http://www.dec.state.ak.us/water/wqsar/wqs/NaturalConditions.html.

Removing a Water from the Section 303(d) for Turbidity

Alaska's current listing methodology dictates that in order to remove a water from the Section 303(d) list that the level of data to support a determination (to remove the water) and burden of proof shall be no greater than used in the initial Section 303(d) listing determination. Consequently, the above criteria, such as minimum number of samples, shall apply to waters listed for turbidity under these criteria.

For a water previously (on the 2006 or earlier Section 303(d) list) listed for turbidity based on visual turbidity observations and best professional judgment, a determination to remove the water from the Section 303(d) list may be based on visual turbidity observations and best professional judgment alone.

Specific Considerations for Waters Considered Impaired from Residues

NOTE: This section on specific considerations for waters impaired by residues and must be read in conjunction with Appendix G in this Report (i.e., *Alaska's Interpretation of the Residues Criterion with Alaska's Water Quality Standards (18 AAC 70) Regarding Attainment and Impairment Determinations*). Seafood processing facilities and log transfer facilities in Alaska are typically issued a "zone of deposit" (also known as ZOD) in such a facility's permit for the residues discharges. Exceedance of a permitted ZOD is not equivalent to impairment, but rather, exceedance of 1.5 acres of continuous residues coverage is the impairment standard.

For Category 5/Section 303(d) listed waters associated with a permitted facility, if the areal extent of continuous cover is not declining in size, DEC will initiate permit modification or TMDL development.

Seafood Processing Facilities

A waterbody associated with a seafood processor with a current ZOD authorization with two or more dive survey reports that document more than a 1.5 acre area of seafood waste will be placed in Category 5. Exceptions would include waterbodies where ZODs were authorized at greater than 1.5 acres, or when the facility is subject to an administrative action (such as a Compliance Order or Consent Order by Decree for residues) to assure attainment of water quality standards. In the latter instance the waterbody may be considered for placement in Category 4b. Waterbodies with legacy sites seafood piles (no current dischargers) that are determined to be over one acre of continuous residue coverage may be considered for Category 5/Section 303(d) listing since these were permitted when the current 1.5 impairment standard was not adopted and the one acre impairment standard was in effect.

Log Transfer Facilities

A waterbody associated with a LTF with a current ZOD authorization will be placed in Category 5 if two or more consecutive dive survey reports documents there are more than 1.5 acres of continuous residues coverage and greater than 10 cm. at any one point unless DEC has approved a remediation plan for that waterbody. A waterbody will be placed in Category 5 when a permittee has failed to implement an approved remediation plan (LTF) according to its schedule. Exceptions would include waterbodies where ZODs were authorized at greater than 1.5 acres and these will be considered on a case-by-case basis.

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). Moving a Category 5/Section 303(d) water to Category 4b requires EPA approval.

A waterbody associated with a facility operating under either of the LTF General Permits that is reporting continuous coverage of residues over 1.5 acres and where the permittee failed to submit a remediation plan, or has submitted a remediation plan but is failing to implement the remediation plan, or is not meeting milestones set forth in the approved remediation plan, will be considered for Category 5/Section 303(d) listing.

A waterbody associated with an LTF where there is no currently permitted or active discharge to the water, but where the last known dive survey reported more than 1.5 acres of continuous residues coverage on the marine seafloor, will be placed on the Category5/Section 303(d) list.

Removal of Waterbodies from the Category 5/Section 303(d) List Determined to be Impaired from Residues

The following protocols will be applied to all waterbodies associated with a permitted facility and Category 5/Section 303(d) listed for residues regardless of an active discharge on-site.

- In addition to consideration of the continuous residues coverage standard of 1.5 acres DEC may consider biological assessment information, such as sediment profile imaging, in a determination to remove a water on the Section 303(d) list for residues.

- For waterbodies Section 303(d) listed after 1998 and determined to be impaired for residues based upon <u>two</u> or more dive surveys:

  > DEC will require two consecutive dive surveys documenting that continuous residues coverage is no more than 1.5 acres before the waterbody is eligible for removal from Category 5/Section 303(d) list and for placement in either Category 1 or 2.

- For waterbodies Section 303(d) listed in 1998 or earlier (based on 1.0 acre) and determined to be impaired for residues based upon <u>one</u> dive survey or best professional judgment:

  > DEC will require one dive survey documenting that continuous residues coverage is no more than 1.0 acre before the waterbody is eligible for removal from Category 5/Section 303(d) list and placement in Category 1 or 2.

Removing (De-listing) Waterbodies from the Category 5/Section 303(d) List

Although 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:

- More recent and accurate data shows the applicable water quality standard(s) is being met;
- More sophisticated water quality modeling demonstrates that the applicable water quality standard(s) is met;
- Flaws in the original analysis of data and information led to the water being incorrectly listed;
- Revised listing criteria negate the criteria for listing;
- The water quality standard for which the waterbody was listed has been revised and the water does not meet the criteria for listing;
- Sufficiently stringent requirements such as incorporation of TMDL-type controls into the NPDES permit or controls such as those applied by a cleanup or remediation plan with assurance that the water quality standard(s) will be met within a reasonable time period have been applied;
- A TMDL or equivalent waterbody plan has been developed (if a TMDL is developed then the water is placed in Category 4a; if an equivalent waterbody recovery plan is developed then the water is placed in Category 4b);
- "Other pollution controls" that assure water quality standards are attained are developed in a reasonable time period (as described for Category 4b waterbodies); or
- Other relevant information that that supports the decision not include the water on the Section 303(d) list.

The following conditions support a determination to remove a water from the Category 5/Section 303(d) list. Such a determination is ultimately subject to approval by the EPA.:

- There is a demonstration of "good cause," i.e., an explanation of why, or on what basis, the water was originally listed and why it is now appropriate to remove the listed water or redefine the listed area.
- An administrative record and documentation supporting the recommended determination is needed.
- A public notice of the proposed de-listing is published and public comment is sought. Typically the Integrated Report acts as the vehicle for public noticing and comment. In special instances, a public meeting could be held in the community closest to the waterbody in question.

- When considering a determination to remove a waterbody from the Section 303(d) list, the level of data to support a determination and burden of proof shall be no greater than was used in the initial listing determination.

APPENDIX A Waterbody Categories 2 through 5

The following appendices describe the waterbodies that have been placed in Categories 2 through 5. No waterbodies in Alaska have been identified as Category 1 because the state does not possess that level of information for any one waterbody.

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, followed by Southcentral, and Southeast waters.

Unless otherwise stated in the narrative associated with a waterbody in one of the categories there has been no determination made on the effects to any designated use(s) for that waterbody.

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

- The "Region" column indicates in 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 South-central Alaska; and "SE" indicates 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 name of the waterbody.

- The "Location" describes the area or provides location information to clarify where the waterbody is located.

- The "Area of Concern" column describes the specific area of the waterbody that is considered. "N/A" in the "Area of Concern" column means either "not applicable" or "not available."

- The "Water Quality Standard" column identifies the water quality standard as found in 18 AAC 70 that is being measured. This column also identifies the water quality standard(s) not attained in the waterbody if the water is a Clean Water Act Section 303(d) listed (Category 5) waterbody.

- The "Pollutant Parameters" column identifies the specific 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 for the "Residues" standard from the specific pollutant parameter of bark and woody debris.

- The "Pollutant Sources" column identifies the source(s) of the pollutant(s).

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
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 was de-listed on February 13, 2004. 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 bacteria WQS during each of these sampling efforts. However, one sample collected in 1986 showed a high level of fecal coliform bacteria (>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 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 bacteria." 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. 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 bacteria 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. Later sampling showed 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 the findings Harding Lake was removed from Alaska's Section 303(d) list of impaired waters in the 2002/2003 Report.

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
IN	**Category 2**	**60402-601**	**Nearshore Beaufort Lagoons**	**Sag River to Simpson Lagoon**	**N/A**	**Temperature, Dissolved Inorganic Substances**	**Temperature, Salinity**	**Causeway**

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 agreed upon in the Negotiated Settlement Agreement for Endicott and West Dock Causeways 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. Data and information transmitted to DEC and EPA in 2002 supports that this waterbody is attaining the temperature and dissolved inorganic substances water quality standards. Post-causeway monitoring studies have demonstrated that there is no biological impact and that water quality is within state standards. Based on this information the waterbody was placed in Category 2 in 2003.

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
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 303(d) 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 meeting zone of deposit requirements. This waterbody was removed from the Section 303(d) list in 1998.								
SC	**Category 2**	**20401-403**	**Cheney Lake**	**Anchorage**	**N/A**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff, Storm Drainage**
Cheney Lake was placed on the 1994 Section 303(d) list for non-attainment of the fecal coliform bacteria standard. Water quality data collected by the Municipality of Anchorage from 1991-1994 indicated that the fecal coliform bacteria criterion was exceeded in almost every month of monitoring. However, in 2006 DEC conducted extensive water quality monitoring in Cheney Lake. The 2006 data shows fecal coliform bacteria levels met state water quality standards the vast majority of the time and when levels exceeded state standards DEC believes the higher levels are from natural conditions. Cheney Lake is currently meeting SWQS for two reasons: 1) Municipality's (and US Fish & Wildlife Service) campaign to reduce the goose populations in Anchorage (due to increased number of geese/aircraft incidences including a Military air crash with numerous fatalities blamed on waterfowl), and 2) a successful public awareness campaign educating pet owners on the benefits and owner's responsibilities of picking up after their pets, i.e., "Scoop the Poop" campaign. As a result of this recent monitoring Cheney Lake has been removed from the Section 303(d) list and placed in Category 2.								
SC	**Category 2** **ACWA:** **Lower**	**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**

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
This waterbody was placed on the 1996 Section 303(d) list for white phosphorus. 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 was 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 allowed the sediments to dry out and caused the white phosphorus to oxidize and no longer be a threat to the waterfowl. Field activities resulted in a dramatic decrease in white phosphorus concentrations in over half the total acreage identified as contaminated. By 2004 over 75 percent of the contaminated areas have been addressed. The remaining area was treated in 2005, and was the last year for active treatment. The Army will then be in the long term monitoring phase to ensure that the remedial action will meet the long term goal of reducing duck mortality to levels identified in the Record of Decision. Additional pumping of water from the ponds and drying of white phosphorus contaminated sediments occurred in 2007. DEC's Contaminated Sites section summary on Eagle River Flats can be viewed at http://www.dec.state.ak.us/spar/csp/search/csites_report.asp?Reckey=199721X204805 . DEC considers the Army to have met the milestones in the ROD and mortality is considered to be at levels typical for the species in this area. This water was removed from Category 4b in 2008.								
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, former USTs, former Dry Wells (injection wells), Military**
Eskimo Creek 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) or "Superfund" group. Seeps from a fuel storage area, former dry wells, and 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. Later information suggested removing metals and pesticides as a pollutant parameter since no analytical tests support these constituents as contaminants of concern, and placement of this segment of Eskimo Creek in Category 2. The primary sources of petroleum hydrocarbons and trichloroethene (TCE) from aboveground storage tanks and dry wells have been removed. A final ROD for Groundwater Zone 1 was signed by DEC and Air Force in November/December 2000. A final ROD for Groundwater Zone 2, and a Zone 2 Addendum were signed by DEC in December 2002 and 2003, and by the Air Force in December 2003. Future activities based on the RODs include: removal of extruding surface drums and debris, and recontouring and revegetation of the landfill cover; continued operation, maintenance, and monitoring of the biovent systems; monitored natural attenuation of the groundwater; groundwater modeling; continued operation of the water treatment system; annual monitoring of groundwater (A-Aquifer and B-Aquifer) and surface water; implement and maintain institutional controls; and 5-year reviews. The waterbody was placed in Category 2 since water quality standards are attained for petroleum hydrocarbons and TCE and DRO in 2002/2003.								

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
SC	**Category 2**	**20701-502**	**Kazakof Bay**	**Afognak Island**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log transfer facility**
This waterbody was placed on the 1998 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. A dive survey report of March 2004 documented 0.20 acre of continuous residue coverage and therefore the water was removed from Category 5 (Section 303(d) list) and placed in Category 2 in 2004.								
SC	**Category 2**	**30203-001**	**King Salmon Creek**	**King Salmon**	**N/A**	**Petroleum Hydrocarbons, Oil & Grease**	**Petroleum Products**	**Landfill, Military, unknown drum contents**
This waterbody was placed 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. A final record of decision (ROD) for Groundwater Zone 3 was signed by DEC and Air Force in April 2000. Future activities required by the record of decision (ROD) include: landfill cover inspection and maintenance; continued operation of the water treatment system; annual monitoring of groundwater (A-Aquifer and B-Aquifer) and surface water; maintain institutional controls; and a 5-year review. Based on the extensive sampling program, there have been no surface water quality standard exceedances at this site therefore the waterbody was placed in Category 2 in 2002/2003.								
SC	**Category 2**	**20701-501**	**Lookout Cove**	**Afognak Island**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log Transfer Facility**
Lookout Cove was previously placed on the 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 2002 reported 1.2 acres of continuous residues coverage and 2003 dive survey information reported 0.7 acre of continuous bottom coverage. These dive surveys document that the residues coverage is under the 1.5 acres impairment standard for residues and therefore the waterbody was removed from the Category5/Section 303(d) list and placed in Category 2 in 2004.								

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
SC	**Category 2**	**30204-001**	**Naknek River**	**King Salmon**	**N/A**	**Petroleum Hydrocarbons, Oil & Grease Toxic & Other Deleterious Organic and Inorganic Substances**	**Petroleum Products, TCE**	**Landfill, Fuel Storage, former marina, Military**
Naknek River was Section 303(d) listed in 1996 and not expected to meet water quality standards because of pollutant sources coming from tributary waterbodies (Eskimo Creek, King Salmon Creek, and Red Fox Creek). In 1998 Naknek River was removed from the Section 303(d) list since there were other pollution control requirements in place. The primary contaminant sources (a drum storage area and underground storage tanks) were removed prior to 1988. In 1998, and later in 2000, it was determined that this waterbody 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, oil sheen was observed on the Naknek River bank adjacent to the King Salmon Morale, Welfare, and Recreation Marina. In 1999 a final record of decision (ROD) was signed by DEC and Air Force for a groundwater area located approximately one half mile downstream from the main runway at the King Salmon Airport that includes approximately 3,000 feet of the Naknek River's north shore. Future activities identified in the ROD included: passive product recovery system operation and maintenance; annual monitoring of groundwater and surface water; landfill cover inspection and maintenance; implementing and maintaining institutional controls; and a 5-year review. Between September 2002 and January 2003 approximately 1,100 cubic yards of petroleum contaminated soil was removed. Groundwater, surface water, and sediment monitoring will continue at the marina to evaluate remedial efforts and attenuation processes. No seep or sheen has been observed following the source removal action. Naknek River was placed in Category 2 in 2004.								
IN	**Category 2**	**50404-001**	**Red Dog Creek - Ikalukrok Creek**	**Near Red Dog Operation**	**N/A**	**Dissolved Inorganic Substances**	**Total Dissolved Solids**	**Mining**

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
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 total dissolved solids (TDS), cadmium, lead, selenium, and the site specific standard for zinc. A site-specific criterion for TDS was developed and approved by EPA on April 21, 2006. In the 1998 Integrated Report Red Dog and Ikalukrok Creeks was placed in Category 4b, however with the development of the reclassification, the water-quality based permit, and the site specific criterion for zinc and TDS, and both Red Dog/Ikalukrok Creeks meet 1500 mg/L SSC for TDS, they are in attainment of water quality standards and therefore placed in Category 2 in 2006.								

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
SC	**Category 2**	**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), Benzene and Trichloroethene (TCE)**	**Landfill, Fire Training Areas, Military**

Red Fox Creek was Section 303(d) listed in 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) or "Superfund" group showed that the waterbody was water quality impaired from 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 included 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. Surface water and sediment sample data from 1997; based on the 5 year old data, showed that Red Fox Creek did not meet 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 biovent system to more adequately treat the contamination; the conversion occurred in late 2002. No surface water quality criteria were exceeded in 2002 and 2003. Future activities as required by the ROD for this specific site include: continued operation and maintenance of biovent system; monitored natural attenuation of the groundwater; annual groundwater, surface water, and sediment sampling; implement and maintain institutional controls; and 5-year review. This water was removed from Category 5 (Section 303(d) list) and placed in Category 2 in 2002/2003.

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
SC	**Category 2**	**30104-601**	**Saint Paul Island Lagoon**	**St. Paul Harbor, St. Paul Island**	**N/A**	**Petroleum Hydrocarbons, Oil & Grease**	**Petroleum Products**	**Leaking Above Ground Storage Tanks**

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
This segment of Saint Paul Island Lagoon was placed on the 2002/2003 Section 303(d) list for the petroleum hydrocarbons, oil & grease standard for petroleum products. An oil sheen was observed on the water on a daily basis. 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 threatened uncontaminated wetlands to the west and northwest. The areal extent of contamination was estimated at 10,000 square feet. Leaking above ground storage tanks and diesel seepage were on-going into the lagoon from as early as the 1980's. Controls implemented have controlled the sheen and therefore this water is removed from the Section 303(d) list in 2008.								

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
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 acre and from July 2001 of 0.6 acre bottom coverage document that this water is compliant with standards. This water was removed from the Category 5 (Section 303(d) list) in 2002/2003.								
SE	**Category 2**	**10204-801**	**Cube Cove**	**NW Admiralty Island**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log transfer facility**
Cube Cove on Admiralty Island in Southeast Alaska was first placed on Alaska's Section 303(d) list in 1998 as impaired for residues from log transfer facility (LTF) operations. Cube Cove remained on the subsequent 2002/2003 Section 303(d) list. The 1998 Section 303(d) listing criteria required only one dive survey documenting an exceedance 1.0 acre of continuous coverage bark residues. A January 1998 dive survey documented 9.5 acres of continuous coverage bark on the marine bottom. Subsequent dive surveys document that the Cube Cove LTF has a trend of reduced continuous coverage bark residues. Dive surveys document: 1.35 acres in April 2001 and 1.2 acres in December 2002. A February 2004 dive survey documented 0.9 acre of continuous bark residue coverage and therefore Cube Cove was removed from the Category 5/Section 303(d) list and moved to Category 2 in 2004.								
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 September 2000 of 0.6 bottom coverage and the June 2002 of 0.6 acre document that this water is compliant with standards. This water was removed from the Category 5 (Section 303(d) list) in 2002/2003.								

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
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. 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. The water was placed in Category 2 in 2002/2003.								
SE	**Category 2**	**10201-801**	**Hobart Bay**	**Mainland, SE Stephens Passage**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log transfer facility**
Hobart Bay was Section 303(d) listed in 1998 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) 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 2.3 acres of bottom coverage. 1.3 acres of marine bottom adjacent to the log transfer facility was listed as impaired. A 2007 dive survey documented that the LTF and log storage area contained no continuous coverage by bark debris and only a few small patches of discontinuous coverage by bark debris. The December 2007 dive survey and assessment documents that this facility is attaining water quality standards and the water is removed from the Section 303(d) in 2008.								
SE	**Category 2**	**10103-502**	**Klawock Inlet**	**Klawock Island, W. Prince of Wales Island**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log transfer facility**
The area just off the dock and log transfer area Klawock Inlet was Section 303(d) listed in 2002/2003 for non-attainment of the residues standard for bark and woody debris. A dive survey conducted in February 2004 documented 1.0 acres of continuous residues coverage and a subsequent dive survey report in November 2004 documents continuous residues coverage at 0.5 acre. Two consecutive dive survey reports document that continuous residue coverage is under the 1.5 acre impairment standard and therefore this waterbody was removed from the Category 5/Section 303(d) list in 2006.								
SE	**Category 2**	**10202-801**	**Point Macartney**	**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 acre bottom coverage and another from November 2002 of 0.52 acre validate that this water is compliant with standards. This water was removed from the Category 5 (Section 303(d) list) in 2002/2003.								

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
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 acre and from June 2001 of 0.6 acre bottom coverage document that this water is compliant with standards. This water was removed from the Category 5 (Section 303(d) list) in 2002/2003.								
SE	**Category 2**	**10202-802**	**Saginaw Bay**	**Kuiu Island**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log Transfer Facility**
This waterbody was placed on the Section 303(d) list for excessive residues associated with an LTF. 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 acre bottom coverage and validates that that this water is compliant with standards. This water was removed from the Category 5 (Section 303(d) list) in 2002/2003.								
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. Saint John Baptist was considered for Category 5/Section 303(d) listing but during the 2002/2003 Integrated Report development process but the facility came into compliance with the residues impairment standard. A dive survey report from June 2002 documented 0.2 acre bottom coverage and validates that that this water is compliant with the residues standard.								
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 acre and from March 2000 of 0.3 acre bottom coverage document that this water is compliant with standards. This water was removed from the Category 5 (Section 303(d) list) in 2002/2003.								

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
SE	**Category 2**	**10303-006**	**Sawmill Creek**	**Haines**	**N/A**	**Residues**	**Debris**	**Urban Runoff**
This waterbody was never Section 303(d) listed for debris but placed in Category 4b in 1996. Some debris removal work, in addition to a culvert replacement and re-seeding was completed in 1997. There was highway and maintenance debris. Plans called for moving the stream away from the highway/street in two areas and constructing a dike in another. Plans also called for establishing vegetative buffers, swales, and matting to improve filtration of run-off entering the stream. Priority actions for this water includes: design and implement an interagency watershed assessment and a recovery plan; establish water quality monitoring objectives and implement water quality monitoring plan; work with city of Haines to review and develop stormwater plans in accordance with EPA and DEC requirements. The Takshanuk Watershed Council is currently monitoring the health of Sawmill Creek through benthic macroinvertebrate sampling and fish trapping. The Takshanuk Watershed Council received an ACWA NPS Water Quality grant to conduct a watershed assessment and associated monitoring strategy on Sawmill Creek. The project proposed to remove debris and car bodies from the creek, stabilize and revegetate the stream banks and conduct a physical watershed assessment. The project will also research available sources for historical information and data for Sawmill Creek and work with local agency partners to determine additional water quality and habitat data needs for the watershed. An extensive residues clean-up was undertaken in 2006 and 2007 with the removal of 27,000 pounds of scrap metal, additional 33 bags of trash. The bulk of the "debris" was removed in 2007 was from legacy activities; abandoned vehicles used for stream-bank stabilization. Control measures are in place to prevent similar activities from occurring in the future (state and federal laws), however, more importantly, public acceptance of using abandoned vehicles for stream-bank stabilization is no longer tolerated. The City Borough of Haines police department also enforces such types of illegal disposal practices. Spring Clean up events are an annual occurrence within the City of Haines. DEC does not have the resources to document litter trends in areas outside of Juneau. DEC relies on the best professional judgment from state and federal agencies, and credible information from the local watershed group (Takshanuk Watershed Council) to establish whether or not the creek meets water quality standards for debris. The majority of debris within the creek, for which the water was placed in Category 4b originally for, has been removed and that any remaining or future debris/residues problems are not unlike that of any other urban Alaskan waterway and are being addressed by the City of Haines. Consequently it has been determined that the waterbody meets the residues criterion and the waterbody is moved from Category 4b to Category 2 in 2008.								
SE	**Category 2**	**10203-801**	**Schulze Cove**	**Fish Bay, Baranof Island**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log Storage Area**
This section of Schulze Cove was Section 303(d) listed in 1998 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). Historically, log storage activities severely impacted Schulze Cove. A December 2007 dive survey and assessment documents that this facility is attaining water quality standards and is removed from the Section 303(d) list in 2008. The 2007 dive assessment work used a parallel pattern to survey the site and consisted of 17 transects at 300 foot spacing intervals. The sample point frequency was at 300 foot intervals using visual survey methods. The survey documented that the log storage area contained no continuous coverage by bark debris, and 25.02 acres of discontinuous coverage by bark debris. The 2007 dive survey and assessment documents that this facility is attaining water quality standards and is removed from the Section 303(d) list in 2008.								
SE	**Category 2**	**10103-602**	**Thorne Bay**	**Prince of Wales Island**	**N/A**	**Residues**	**Bark & Wood Debris**	**Historical Log Transfer Facility**

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
. The Thorne Bay historical marine log transfer facility (LTF), which consisted of both a near shore log transfer area and an associated log storage area (LSA), was Section 303(d) listed in 1994 for non-attainment of the residues standard for bark and wood debris. Log transfer and storage activities began in 1962 and caused the accumulation of woody debris on the bottom of the head of Thorne Bay. Log transfer and storage activities ended in 2000 and the operator, the U.S. Forest Service, maintains no plan to resume them; all equipment and facilities have been removed. A key feature of the recovery of the former log transfer and storage area is the Thorne River which empties into the bay and deposits sediments onto a large sand and gravel delta where they mix with debris and aid in biological recovery. **The Log Storage Area**: Dive surveys of the LSA conducted in July 2001 and June 2002 documented 1.1 acres of bark and wood debris on the marine bottom. Dive surveys in 2003 and 2005 detailed the benthic health of 161 acres of the former LSA finding: 1) bark debris is mostly decomposed to small fragments and is mixed with natural sediments; 2) the bottom is biologically recovered, exhibiting mostly mature "Stage III" biological communities; and 3) the site is an "extremely healthy coastal embayment." DEC determined, based on the detailed benthic assessment, the residues standard is met in the former LSA and removed it from the Section 303(d) list and placed it in Category 2 in 2004. As of the 2008 Integrated Report the LSA remains in Category 2 with no known impairments. **The Log Transfer Facility**: Dive surveys conducted in 1988 and 1990 documented approximately 55 acres of bark accumulation in the LTF. Dive surveys of the LTF conducted in July 2001 and June 2002 documented 2.6 and 1.1 acres, respectively, of bark and wood debris on the marine bottom. An April 2004 dive survey of the LTF documented 6.5 acres of bark and woody debris. The former LTF remained on the Section 303(d) list for a defined area of approximately 35 acres between the LTF shoreline and the boundary of the former log storage area established in the 2003-2005 benthic assessment. A December 2007 dive survey documented a reduced area of impaired marine bottom of only 7.5 acres and the rest of the previous area of impairment as meeting the residues criterion and attaining water quality standards. This suggests that biological recovery is proceeding and is well advanced within the area associated with the LTF. A residues TMDL for the Thorne Bay LTF was completed and approved by EPA on May 8, 2007. With the completed TMDL, the LTF is removed from the Section 303(d) list and placed in Category 4a in 2008 an approved TMDL for residues.								
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 had 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 was removed from the Category 5/Section 303(d) list and moved to Category 2 in 2002/2003.								

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
SE	**Category 2**	**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**
This waterbody segment was placed in Category 4b for residues in 2002/2003. The seafood processing facility exceeded its one acre zone of deposit standard for residues associated with its discharge permit and was issued a compliance order/consent decree 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. A 2005 dive survey reported a reduction of 0.31 acre from the 2004 survey and a total acreage of 1.22 and compliance with the residues impairment standard. Additionally, EPA's Region 10 compliance unit reported that the seafood processing facility's pile size is now 0.5 acre and the facility is in compliance with the consent decree and their NPDES permit. Consequently, Tongass Narrows 1was moved from Category 4b to Category 2 in 2006.								
SE	**Category 2**	**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**
This waterbody segment was placed in Category 4b for residues in 2002/2003. Previously, the seafood processing facility exceeded its one acre zone of deposit standard for residues associated with its discharge permit and was under compliance order from the U.S. Environmental Protection Agency for non-compliance with its waste discharge limitations. Additionally the facility had 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.. EPA conducted a compliance inspection of this facility in the Fall of 2006. Reports from this compliance inspection found that the ZOD is now less than 1.0 acre at 0.5 acre and the facility is compliant with the Consent Decree and their NPDES permit. This waterbody segment is now meeting water quality standards and moved from Category 4b to Category 2 in 2008.								
SE	**Category 2**	**10103-801**	**Twelvemile Arm**	**Prince of Wales Island**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log Storage Area**

Category 2 Waterbodies

Alaska's 2008
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

Region	*Category*	*AK ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Previous Impairing Pollutant Parameters*	*Previous Impairing Pollutant Sources*
Twelvemile Arm had 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 conducted in 1997 revealed 100% coverage along an 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. The log storage site is inactive and between 1998 and 2007 no assessments of the marine bottom or dive surveys had been completed since a 1998 survey. A December 2007 dive survey and assessment documents that this facility is meeting the residues criterion and attaining water quality standards and is removed from the Section 303(d) list in 2008. The 2007 survey documented that the log storage area contained no continuous coverage by bark debris and a only a few small patches of discontinuous cover by bark debris. The using "Plan View Video" and dive survey methods quantified the extent and type of both continuous and discontinuous coverage as 0.00 acres of bark debris. The 2007 dive survey and assessment documents that this facility is meeting the residues criterion and attaining water quality standards and is removed from the Section 303(d) list in 2008.								
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 acre and from March 2000 of 0.3 acre bottom coverage document that this water is compliant with standards and the water was removed from the Section 303(d) list in 2002/2003.								
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 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 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 in 2002/2003.								

Category 3 Waterbodies

Alaska's 2008
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

NOTE:

- The DEC has limited information on the following waters to make an attainment or impairment determination. Data is available upon request.
- **Regions** are abbreviated as IN – Interior, SE – Southeast, and SC – Southcentral.
- Within the Alaska waterbody identification number (**WBID** #), the first five numbers indicate in which USGS hydrologic catalog unit (i.e., "HUC") the waterbody is located.
- **CU** is the USGS hydrologic catalog unit number.

Region	Waterbody Name	WBID	CU
SC	Anchor River	AK-20301-004	19020301
IN	Anvil Creek	AK-50104-008	19050104
SE	Auke Bay	AK-10301-501	19010301
SE	Auke Creek	AK-10301-007	19010301
SE	Auke Lake	AK-10301-403	19010301
SE	Auke Nu Cove	AK-10301-801	19010301
SE	Auke Nu Creek	AK-10301-008	19030301
SC	Barabara Creek	AK-20301-017	19020301
SC	Beach @ Bluff Point	AK-20301-801	19020301
SE	Beach @ Douglas Harbor boat ramp	AK-10301-803	19010301
SC	Beach @ Homer Spit	AK-20301-802	19020301
SC	Beach @ Kanakanak (Dillingham)	AK-30304-801	19030304
SC	Beach @ Kenai	AK-20302-801	19020302
SC	Beach @ King Salmon	AK-30204-003	19030204
SC	Beach @ Kvichak Bay (Naknek)	AK-30204-801	19030204
SE	Beach @ Letnikof Cove	AK-10303-802	19010303
SE	Beach @ Lutak Inlet	AK-10303-801	19010303
SC	Beach @ Naknek River	AK-30204-004	19030204
SE	Beach @ Petroglyph Beach (Wrangell)	AK-10202-805	19010202
SC	Beach @ Point Woronzof (Anchorage)	AK-20401-801	19020401
SE	Beach @ Portage Cove Boat Harbor (Haines)	AK-10303-803	19010303
SE	Beach @ Sandy Beach (Douglas)	AK-10301-805	19010301
SE	Beach @ Sandy Beach Park (Petersburg)	AK-10202-806	19020202
SC	Beach @ Sang Point (Dillingham)	AK-30304-803	19030304
SC	Beach @ Scandinavian Beach (Dillingham)	AK-30304-802	19030304
IN	Beach @ West Beach (Nome)	AK-50104-802	19050104

SE	Beach @ Wrangell	AK-10202-804	19010202
SC	Bear Cove	AK-20301-506	19020301
SC	Bear Creek (Becharof)	AK-30203-002	19030203
IN	Bear Creek (Hogatza)	AK-40608-002	19040608
SC	Bear Creek (Homer)	AK-20301-021	19020301
SC	Bear Creek (Hope)	AK-20302-010	19020302
IN	Bear Creek (Salchaket Slough)	AK-40507-006	19040507
SC	Beaver Creek	AK-20302-007	19020302
SC	Beaver Inlet	AK-30102-608	19030102
SC	Beaver Lake	AK-20701-406	19020701
SC	Bell Flats	AK-20701-701	19020701
SC	Beluga Lake	AK-20301-401	19020301
SC	Beluga Slough	AK-20301-028	19020301
SC	Benny Creek	AK-20301-020	19020301
SE	Berners Bay	AK-10301-502	19010301
SC	Bidarka Creek	AK-20301-006	19020301
SC	Birch Creek (Talkeetna)	AK-20505-009	19020503
IN	Birch Lake	AK-40507-402	19040507
SE	Black Bear Creek	AK-10103-023	19010103
SC	Bodenburg Creek	AK-20402-003	19020402
IN	Bolio Lake	AK-40504-401	19040504
IN	Bons Creek	AK-50404-002	19050404
SE	Bradfield River	AK-10101-001	19010101
SC	Bridge Creek	AK-20301-027	19020301
SC	Busch Creek	AK-20501-001	19020501
SC	Buskin Lake	AK-20701-407	19020701
SC	Buskin River	AK-20701-002	19020701
SC	Cache Creek	AK-20504-001	19020504
SC	California Creek	AK-20401-415	19020401
IN	Camp Creek (Nulato)	AK-40705-002	19040705
SC	Captain's Bay	AK-30102-605	19030102
SE	Carlanna Creek	AK-10102-003	19010102
SC	Cedar Bay	AK-20201-501	19020201
IN	Chatanika River	AK-40509-002	19040509
SC	China Poot Bay	AK-20301-601	19020301
SC	China Poot Creek	AK-20301-013	19020301
SC	Clear Creek (Seward)	AK-20202-002	19020202
SC	Clear Creek (Talkeetna area)	AK-20503-001	19020503
IN	Clearwater Creek	AK-40503-001	19040503
IN	Clearwater Lake	AK-40503-402	19040503
IN	Colleen Lake	AK-60402-401	19060402
IN	Colville River/Umiat Lake	AK-60303-001	19060303
SC	Conners Lake	AK-20401-408	19020401
SC	Cook Inlet (upper)	AK-20401-601	19020401
SC	Copper River	AK-20104-001	19020104
SC	Cottonwood Lake	AK-20505-403	19020505
SE	Crab Bay	AK-10203-503	19010203
SC	Crow Creek	AK-20401-008	19020401
SC	Dark Lake	AK-20701-402	19020701

SC	Deep Creek	AK-20301-002	19020301
SC	Delong Lake	AK-20401-423	19020401
SC	Deshka River	AL-20505-009	19020505
SC	Diamond Creek	AK-20301-008	19020301
SC	Dog Fish Bay (Koyuktolik Bay)	AK-20301-018	19020301
SE	Dog Salmon Creek	AK-10103-007	19010103
SE	Dora Bay	AK-10103-501	19010103
SE	Dora Lake	AK-10103-401	19010103
SC	East Creek	AK-20301-019	19020301
SC	Edmonds Lake	AK-20401-424	19020401
SC	Eklutna River	AK-20402-403	19020402
SC	Eldred Passage	AK-20301-501	19020301
SE	Elfin Cove	AK-10203-805	19010203
SC	English Bay River	AK-20301-014	19020301
SC	Eyak River	AK-20201-001	19020201
SC	Falls Creek	AK-20302-101	19030302
SC	Finger Lake	AK-20505-404	19020505
SE	Fire Cove	AK-10102-005	19010102
SC	Fire Lake	AK-20302-401	19020302
SC	Fish Creek (Knik)	AK-20505-005	19020505
IN	Fortymile River	AK-40104-001	19040104
IN	Fourth of July Creek	AK-40401-001	19040401
SC	Fox Creek	AK-20301-012	19020301
SE	Freshwater Creek	AK-10203-006	19010203
SC	Fritz Creek	AK-20301-009	19020301
SC	Funny River	AK-20302-006	19020302
SE	Gastineau Channel	AK-10301-802	19010301
SE	Gastineau Channel, Harris and Aurora Harbors	AK-10301-804	19010301
SC	Gibson Cove	AK-20701-605	19020701
SC	Glacier Creek (Girdwood)	AK-20401-414	19020401
IN	Glacier Creek (Kantishna Hills)	AK-40510-002	19040510
SC	Goodnews River	AK-30502-004	19030502
SC	Goose Bay	AK-20505-501	19020505
SC	Goose Creek	AK-20505-008	19020505
SC	Goose Lake	AK-20401-409	19020401
SE	Greens Creek	AK-10204-001	19010204
SC	Gulkana River	AK-20102-001	19020102
SE	Gunnuk Creek	AK-10202-001	19010202
SC	Halibut Cove	AK-20301-502	19020301
SE	Harris River	AK-10103-008	19010103
SE	Hatchery Creek	AK-10103-009	19010103
SE	Hawk Inlet	AK-10204-501	19010204
SE	Herring Bay Creek	AK-10102-004	19010102
SC	Hidden Lake	AK-20401-410	19020401
SE	Hoadley Creek	AK-10102-007	19010102
IN	Hogatza River	AK-40608-001	19040608
SC	Homer Harbor	AK-20301-505	19020301
SC	Horseshoe/Island Lakes	AK-20701-405	19020701
IN	Hospital Lake	AK-40205-401	19040205

SC	Iliamna Lake	AK-30206-401	19030206
IN	Illinois Creek	AK-40703-001	19040703
SE	Indian River	AK-10203-007	19010203
SC	Jakolof Bay	AK-20301-011	19020301
SC	Jim Creek	AK-20402-004	19020402
SC	Jim Lake	AK-20402-402	19020402
SE	Johnson Creek	AK-10301-009	19010301
SC	Jones Lake	AK-20401-405	19020401
SC	Juneau Creek	AK-20302-003	19020302
SC	Kachemak Bay	AK-20301-504	19020301
SC	Kalmbach Lake	AK-20505-410	19020505
SC	Kanektok River	AK-30502-001	19030502
IN	Kantishna River	AK-40510-001	19040510
SC	Kasilof River	AK-20301-015	19020301
SC	Kaskanak Creek	AK-30206-001	19030206
SE	Ketchikan Creek	AK-10102-006	19010102
SE	Kitkun Bay	AK-10103-003	19010103
SE	Klehini / Chilkat River	AK-10303-001	19010303
SC	Klutina River	AK-20102-001	19020102
IN	Kobuk River	AK-50304-001	19050304
SC	Kodiak Landfill Creek	AK-20701-001	19020701
SC	Koktuli River - North Fork	AK-30302-001	19030302
IN	Kotzebue Lagoon	AK-50301-601	19050301
IN	Kuparuk River	AK-60401-001	19060401
SC	Kuskokwim River	AK-30502-003	19030502
SE	Lab (Labouchere) Bay	AK-10103-803	19010103
SC	Lake Clark	AK-30205-401	19030205
SE	Lake Creek	AK-10301-012	19010103
SC	Lake Hideaway	AK-20401-413	19020401
SC	Lake Louise	AK-20501-401	19020501
IN	Lake McDermott	AK-60402-402	19060402
SC	Lake Otis	AK-20401-404	19020401
IN	Lignite Creek	AK-40508-002	19040508
SC	Lilly Lake	AK-20701-404	19020701
SC	Little Campbell Lake	AK-20401-413	19020401
IN	Little Creek, south fork (Nome)	AK-50104-009	19050104
SC	Little Susitna River	AK-20505-004	19020505
SC	Little Tutka Bay	AK-20301-510	19020301
SC	Lost and Found Lake	AK-20301-402	19030301
SC	Lost Harbor	AK-30102-501	19030102
SC	Lower Fire Lake	AK-20401-422	19020401
SC	Lower Talarik Creek	AK-30206-002	19030206
SE	Lutak Inlet	AK-10303-602	19010303
SC	Mallard Bay	AK-20301-508	19020301
SE	Margaret Bay	AK-10102-501	19010102
SE	Margaret Creek	AK-10102-002	19010102
SC	Mariner Creek	AK-20301-026	19020301
SC	McClure Bay	AK-20202-601	19020202
IN	McDonald Creek (Salchaket Slough)	AK-40507-005	19040507

SE	McKenzie Inlet	AK-10103-002	19010103
SC	McKinley Lake	AK-20201-402	19020201
SC	McNeil Creek	AK-20301-010	19020301
SC	McRoberts Creek	AK-20402-005	19020402
SC	Meadow Creek	AK-20505-006	19020505
SC	Meadow Lake	AK-20401-411	19020401
SC	Memory Lake	AK-20505-405	19020505
SE	Mendenhall River	AK-10301-006	19010301
SC	Mills Creek	AK-20302-001	19020202
IN	Minook Creek	AK-40404-001	19040404
SC	Mirror Lake	AK-20401-401	19020401
SC	Mission Lake	AK-20701-403	19020701
SE	Montana Creek (Juneau)	AK-10301-002	19010301
IN	Montana Creek (Talkeetna)	AK-40508-001	19040508
IN	Moose Creek	AK-40507-001	19040507
SC	Moose River	AK-20302-009	19020302
SE	Mosquito Lake	AK-10303-401	19010303
SC	Mud Bay (Homer)	AK-20301-520	19020301
SC	Mulchatna River	AK-30302-003	19030302
SC	Nahodka Creek	AK-20301-022	19020301
SC	Nancy Lake	AK-20505-406	19020505
SE	Nataga Creek	AK-10303-003	19010303
IN	Nearshore Beaufort Lagoon	AK-60402-601	19060402
SC	Neptune Bay	AK-20301-507	19020301
SC	Nilumat Creek	AK-30502-002	19030502
SC	Ninilchik River	AK-20301-005	19020301
IN	Nome River	AK-50104-003	19050104
SE	North Twin Lakes	AK-10301-401	19010301
SC	Nushagak River	AK-30304-002	19030304
SE	One Mile Creek	AK-10303-002	19010303
SE	Ophir Creek	AK-10401-001	19010401
SC	Orca Inlet	AK-20201-801	19020201
SC	Palmer Creek (Homer)	AK-20301-023	19020301
SC	Passage Canal (Whittier Harbor)	AK-20202-501	19020202
SE	Pavlof River	AK-10203-004	19010203
SC	Paxson Lake	AK-20102-401	19020102
SC	Peters Creek	AK-20401-001	19020401
SC	Peterson Bay	AK-20301-503	19020301
SE	Peterson Creek	AK-10301-010	19010301
IN	Pile Driver Slough	AK-40507-002	19040507
IN	Port Clarence	AK-50104-801	19050104
SC	Port Valdez	AK-20201-602	19020201
SC	Port Valdez Small Boat Harbor	AK-20201-603	19020201
SC	Potato Patch Lake	AK-20701-401	19020701
SC	Potter Creek	AK-20401-021	19020401
SC	Quartz Creek	AK-20302-008	19020302
IN	Quartz Lake	AK-40507-401	19040507
SC	Rabbit Creek	AK-20401-007	19020401
SC	Red Devil Creek	AK-30501-001	19030501

SC	Resurrection Creek	AK-20302-002	19020302
SC	Rice Creek	AK-20301-024	19020301
SC	Robe Lake	AK-20201-403	19020101
IN	Rogge Creek	AK-40505-001	19040505
SC	Ruby Creek	AK-20301-025	19020301
SC	Russian Creek	AK-20701-003	19020701
IN	Sagavanirktok River	AK-60402-001	19060402
SC	Saint Paul Harbor	AK-20701-503	19020701
SE	Salmon Creek (Juneau)	AK-10301-011	19010301
SC	Salmon River (Kinegnak)	AK-30502-005	19030502
SE	Sawmill Creek (Sitka)	AK-10203-008	19010203
SE	Schoenbar Creek	AK-10102-007	19010102
SC	Seldovia Bay	AK-20301-509	19020301
IN	Sheenjek River	AK-40205-001	19040205
IN	Shaw Creek	AK-40507-003	19040507
SE	Shoal Cove	AK-10102-501	19010102
SE	Shoal Creek	AK-10102-001	19010102
SE	Shoemaker Bay	AK-10202-501	19010202
IN	Shovel Creek	AK-50104-006	19050104
IN	Sinuk River	AK-50104-004	19050104
SE	Sitka Harbor	AK-10203-501	19010203
SE	Sitka Sound	AK-10203-504	19010203
SE	Situk River	AK-10401-002	19010401
SE	Skagway River	AK-10303-005	19030303
SC	Slikok Creek	AK-20302-010	19020302
IN	Snake River	AK-50104-002	19050104
SC	Soldotna Creek	AK-20302-004	19020302
IN	Solomon River	AK-50104-001	19050104
IN	Solomon River, East Fork	AK-50104-007	19050104
SC	South Fork Koktuli River	AK-30302-002	19030302
SE	South Twin Lakes	AK-10301-402	19010301
SC	Spring Creek	AK-20505-010	19020505
SC	Stariski Creek	AK-20301-003	19020301
SC	Sundi Lake	AK-20401-406	19020401
SE	Sunshine Cove	AK-10203-809	19010203
SC	Sunshine Creek	AK-20503-003	19020503
IN	Suqitughneq River	AK-50101-001	19050101
SC	Susitna River	AK-20505-007	19020505
SC	Sweeper Cove	AK-30103-501	19030103
SC	Sweeper Creek	AK-30103-001	19030103
SE	Taku River	AK-10301-018	19030101
SC	Talkeetna River	AK-20503-002	19020503
IN	Tanana River	AK-40507-003	19040506
SE	Thorne River Estuary	AK-10103-603	19010103
IN	Tisuk River	AK-50104-005	19050104
SE	Tongass Narrows	AK-10102-801	19010102
SC	Town Lake	AK-20102-402	19020102
IN	Troutman Lake	AK-50101-401	19050101
SE	Turnaround Creek	AK-10203-003	19010203

SC	Tuxedni Bay	AK-20602-601	19020602
SC	Twitter Creek	AK-20301-016	19020301
SC	Two Moon Bay	AK-20201-802	19020201
SC	Ugashik River	AK-30202-001	19030202
SC	Unalaska Lake	AK-30102-401	19030102
SC	Unnamed Creek (City of Kenai)	AK-20302-012	19020302
IN	Unnamed Lake (Chena Hot Springs Rd.)	AK-40506-401	19040506
SC	Upper Bonnie Lake	AK-20402-404	19020402
SC	Upper Fire Lake	AK-20401-407	19020401
SC	Upper Talarik Creek	AK-30206-003	19030206
SC	Walby Lake	AK-20402-401	19020402
SC	Wasilla Creek	AK-20505-002	19020505
SC	Wasilla Lake	AK-20505-402	19020505
SE	Whale Passage	AK-10103-004	19010103
SC	Whittier Creek	AK-20202-001	19020202
SC	Willow Creek	AK-20505-003	19020505
SE	Winter Harbor	AK-10103-006	19010103
SC	Womens Bay	AK-20701-802	19020701
SC	Wood River	AK-30304-001	19030304
SC	Woodard Creek	AK-20301-001	19020301
SE	Wrangell Narrows	AK-10202-803	19010202
IN	Wulik River	AK-50404-003	19050404
IN	Yukon River (at Galena)	AK-40705-001	19040705
SE	Zinc Creek	AK-10204-002	19010204

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
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 since a TMDL has been developed on this waterbody. Priority actions for this water include: continued NPDES inspections to monitor reduction of discharges from active mine sites, particularly during storm events; continued implementation of reclamation activities in key areas to address high priority nonpoint source problems; and monitoring at key sites in the drainage to determine the extent of water quality improvements.								
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), a TMDL was developed in 1996, and the water was removed from the Section 303(d) list in 1998. Sediment and fish samples from the slough contained elevated levels of PCBs. The source of the PCBs was traced to a drainage ditch. Eielson AFB vacuum dredged and removed the upper 18 - 24 inches of soil in the drainage ditch leading into Garrison Slough. Excavation in the drainage ditch extended downward until either groundwater was encountered or field screening results indicated PCB concentrations less than 10 milligrams per kilogram. A 180-foot section of Garrison Slough was not excavated due to discovering an unexploded ordinance. PCBs are known to remain in the slough sediments above DEC's cleanup levels. An additional munitions sweep was conducted in the spring of 2007 which ensured no further unexploded ordinances existed. There has also been a significant change in the flow through the slough resulting in sediment build up. This should result in any remaining PCB's becoming unaccessible. Some sediment profiling was conducted in Spring 2007 and additional testing is anticipated next year. Fish tissue sampling has also occurred. Effectiveness of clean up actions will be evaluated in accordance with the 5 year Record of Decision review. The TMDL was finalized on September 27, 1996 and the waterbody was moved to Category 4a in 1998. The TMDL analysis showed that the remedial actions would result in attaining water quality standards.								
SC	**Category 4a**	**30102-604**	**Akutan Harbor**	**Akutan Island**	**N/A**	**Residues** **Dissolved Gas**	**Settleable Solids** **Low Dissolved Oxygen**	**Seafood Processing/ Waste**

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
Akutan Harbor was originally on the 1994 Section 303(d) list for residues and dissolved gas. EPA issued a TMDL for Akutan Harbor on February 12, 1995. EPA finalized the associated NPDES permit for this area in the spring of 1996. The waterbody was removed from the Section 303(d) list in 1998 and remains in Category 4a. 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**	**20401-004**	**Campbell Creek**	**Anchorage**	**10 miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
Campbell Creek was listed on the Section 303(d) list in 1990 for non-attainment of the fecal coliform bacteria standard. The Campbell Creek water quality assessment completed in June 1994 investigated several parameters of concern, i.e., temperature, turbidity, zinc, and lead, but concluded that Campbell Creek was water quality limited for fecal coliform bacteria only. Water quality sampling was conducted in 2005. A TMDL was developed for fecal coliform bacteria and approved by EPA on June 15, 2006.								
SC	**Category 4a**	**20401-402**	**Campbell Lake**	**Anchorage**	**125 acres**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
Campbell Lake was placed on the Section 303(d) list in 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 investigated several parameters of concern, i.e., fecal coliform bacteria, lead and zinc, but concluded that Campbell Lake was water quality limited only for fecal coliform bacteria. Water quality sampling was conducted in 2005. A TMDL was developed for fecal coliform bacteria and approved by EPA on June 15, 2006.								
SC	**Category 4a**	**20401-003**	**Chester Creek**	**Anchorage**	**4.1 miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff, Industrial**
Chester Creek was placed on the Section 303(d) list in 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 only for fecal coliform bacteria. A TMDL for fecal coliform bacteria was developed and approved by EPA (dated May 2005).								
SC	**Category 4a**	**19020-001**	**Eagle River**	**Eagle River**	**N/A**	**Toxic & Other Deleterious Organic and Inorganic Substances**	**Ammonia** **Metals**	**Wastewater Treatment Facility**
Although Eagle River was never Section 303(d) listed, a TMDL for ammonia and metals was completed by EPA on April 12, 1995 on the waterbody to support the NPDES permit for the wastewater treatment facility that discharges to the river.								

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 4a**	**20401-005**	**Fish Creek**	**Anchorage**	**6.4 miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
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 Fish Creek was impaired only for fecal coliform bacteria. A TMDL for fecal coliform bacteria was developed and approved by EPA in March 2004.								
SC	**Category 4a**	**20401-006**	**Furrow Creek**	**Anchorage**	**5.3 miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
This waterbody was placed on the 1990 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 bacteria exceed the designated use criteria for drinking water, primary contact recreation, and occasionally for secondary contact recreation. The source of the fecal coliform bacteria is presumed to be human-caused from urban runoff sources. A TMDL for fecal coliform bacteria was developed and approved by EPA in March 2004.								
SC	**Category 4a**	**20401-412**	**Hood/Spenard Lake**	**Anchorage**	**N/A**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff, Industrial**
Hood/Spenard Lake Section 303(d) listed in 1996 for fecal coliform bacteria and placed in Category 4a because a TMDL for fecal coliform bacteria was developed and finalized on September 30, 1997. This waterbody will remain on the Category 5 Section 303(d) list for low 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 Bacteria**	**Urban Runoff, Land Development**
Jewel Lake was Section 303(d) list in 1994 for fecal coliform bacteria. A TMDL was developed and finalized on September 30, 1997. Jewel Lake was removed from the Section 303(d) list in 1998.								
SC	**Category 4a**	**30101-501**	**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 TMDL for King Cove and the water was removed from the Section 303(d) list in 1998. The original listing was based on historical information provided by the Aleutians East Borough and verified by DEC staff which included citizen complaints, photographs, and other information to indicate that persistent exceedences of seafood residues were from seafood processing activity operating adjacent to the waterbody. The water remains in Category 4a since a TMDL was developed.								

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 4a**	**20505-409**	**Lake Lucille**	**Wasilla**	**N/A**	**Dissolved Gas**	**Low Dissolved Oxygen**	**Urban Runoff**
This waterbody was Section 303(d) list for dissolved gas (low DO) and nutrients in 1994. A TMDL was completed and approved by EPA (March 2002) for Lake Lucille the waterbody was removed from the Section 303(d) list in 2002/2003. Priority actions for this water includes: complete development of TMDL implementation plan and continue education on nonpoint source pollution controls; and work with technical team to determine WQ sampling plan to monitor nutrients and DO levels. Water quality data collected by DEC in 2004, 2005, and 2006 indicate DO levels within Alaska water quality standards ranges during open water seasons, but below water quality standards ranges during times of ice cover.								
SC	**Category 4a**	**20401-017**	**Little Campbell Creek**	**Anchorage**	**8.3 miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
Little Campbell Creek was Section 303(d) list in 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 bacteria. A TMDL for fecal coliform bacteria was developed and approved by EPA in March 2004.								
SC	**Category 4a**	**20401-024**	**Little Rabbit Creek**	**Anchorage**	**6.2 miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
Little Rabbit Creek was placed on the 1994 Section 303(d) list for non-attainment of the fecal coliform bacteria standard. A TMDL for fecal coliform bacteria was developed and approved by EPA in March 2004 .								
SC	**Category 4a**	**20401-018**	**Little Survival Creek**	**Anchorage**	**3.0 miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
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 bacteria exceedances has been identified as both human-caused and also non-human sources, such as wildlife. A TMDL for fecal coliform bacteria was developed and approved by EPA in March 2004 .								
SC	**Category 4a**	**20401-020**	**Ship Creek Glenn Hwy. Bridge. Down to Mouth**	**Anchorage**	**Glenn Hwy. Bridge. Down to Mouth**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
A TMDL for the fecal coliform bacteria impairment on Ship Creek was developed and approved by EPA in March 2004. Ship Creek remains Category 5/Section 303(d) listed from a petroleum product impairment.								
SC	**Category 4a**	**30102-603**	**South Unalaska Bay**	**Unalaska Island**	**N/A**	**Residues, Low Dissolved Oxygen (BOD5)**	**Seafood Waste Residues, Dissolved Gas**	**Seafood Processing Waste**

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
This waterbody was on the 1994 Section 303d list for both settleable solids and dissolved oxygen. EPA issued the TMDLs on February 12, 1995 and revised seafood processing permits to implement TMDL controls. The water was removed from the Section 303(d) list in 1996. Seafood processors discharging into South Unalaska Bay have been implementing TMDL controls. South Unalaska Bay are 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 was listed on the Section 303(d) list for seafood waste (settleable solids) in 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. 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.								
SC	**Category 4a**	**20401-419**	**University Lake**	**Anchorage**	**10 acres**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
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 which includes University Lake, completed in April 1993, determined that the waterbody was impaired for only fecal coliform bacteria. A TMDL for fecal coliform bacteria was developed and approved by EPA (dated May 2005).								

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 4a**	**20401-421**	**Westchester Lagoon**	**Anchorage**	**30 acres**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff**
Westchester Lagoon was Section 303(d) listed in 1990 for non-attainment of the fecal coliform bacteria standard. The Chester Creek Drainage Water Quality Assessment (which also included Westchester Lagoon), from April 1993, indicated Westchester Lagoon was impaired only for fecal coliform bacteria. A TMDL for fecal coliform bacteria was developed and approved by EPA (dated May 2005).								
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 Bacteria, and Turbidity**	**Urban Runoff, Landfill, Road Runoff, Land Development**
Duck Creek was Section 303(d) listed for dissolved gas [low dissolved oxygen (DO)], residues (debris), metals, fecal coliform bacteria, and turbidity in 1994. TMDLs were completed for all pollutants (turbidity in 1999, fecal coliform bacteria and residues in 2000, and dissolved oxygen and iron in 2001) and Duck Creek was removed from the Section 303(d) list and placed in Category 4a in 2002/2003. Priority actions identified for this water include: implement the Duck Creek Management Plan and actions to address loadings identified in TMDLs; conduct monitoring program to determine if recovery actions are improving water quality; maintain stream flow to provide fish rearing habitat in the stream, dilute pollutants, and prevent salt water intrusion; and work with City and Borough of Juneau and others to ensure adequate stormwater permitting practices and controls are implemented to restore water quality. A 2006 final report on monitoring has been received. The specific goals of this project included: (1) to document existing water quality conditions in Duck Creek and make comparisons to historic data, (2) to use water quality data for Duck Creek to differentiate natural versus anthropogenic inputs, (3) to assess the impacts of road salt on roads in the Mendenhall Valley on the water quality to Duck Creek, and (3) to use water quality data for Duck Creek to aid in assessments of various restoration efforts both finished and underway on Duck Creek. Conclusions from the report found: Duck Creek continues to suffer from low in-stream flow, except for during large precipitation events; dissolved oxygen levels continue to regularly fall below state standards for aquatic life; pH values were centered near and at times below the state water quality standard of 6.5 for aquatic life, at least during the morning sampling events conducted for this study (variations in pH are expected based on time of day and amount of sunlight); large amounts of iron floc were noted at all sites; construction of wetland habitat and channelization of the stream above Nancy Street is expected to improve fish and wildlife habitat, reduce turbidity and iron levels, and raise pH and DO in the future, however, short-term impacts of the construction included major surges in turbidity and total suspended solids (TSS) immediately downstream of the construction area.								

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
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 showed 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 was removed from the Section 303(d) list and moved to Category 4a in 2002/2003. Priority actions for this water includes: implement actions identified in the Granite Creek TMDL Watershed Recovery Strategy and Action Plan (March 2002). Granite Creek has been monitored for turbidity and TSS as part of the TMDL Implementation Plan through ACWA grants for the past 3 years or so. The turbidity in Granite Creek has improved significantly since implementing BMP controls at the gravel mining operations, establishing and enforcing a stream setback, re-contouring the road and creating vegetated ditches and also stopping operations if there is a certain amount of rain in a set time period. The City and Borough of Sitka is doing a good job keeping on top of new developments in the area too to make sure they are in compliance with the TMDL.								
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**
The Herring Cove segment of Silver Bay has been Section 303(d) listed since 1994. On September 27, 1999 a TMDL was completed for residues for this segment of Silver Bay. The Herring Cove segment of Silver Bay was removed from the Section 303(d) list in 2002/2003.								
SE	**Category 4a**	**10301-004**	**Jordan Creek**	**Juneau**	**3 miles from tide-water up-stream**	**Residues**	**Debris**	**Land Development, Road Runoff**
A TMDL was developed and approved by EPA for residues on Jordan Creek and is dated May 2005. Since Jordan Creek has an approved TMDL for residues Jordan Creek was removed from the Section 303(d) and moved to Category 4a for residues. Jordan Creek remains Category 5/Section 303(d) listed for dissolved gas and sediment.								

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SE	**Category 4a**	**10301-001**	**Lemon Creek**	**Juneau**	**N/A**	**Turbidity Sediment**	**Turbidity, Sediment**	**Urban Runoff, Gravel Mining**

This waterbody was placed on the 1990 Section 303(d) list for turbidity, sediment, and with concerns for habitat modification. A waterbody recovery plan that included a TMDL was prepared and approved for this waterbody in the Fall of 1995 and Lemon Creek removed from the Section 303(d) list in 1996. Waterbody recovery plan implementation began during Fall 1995. The University of Alaska-Southeast has secured grant funds for a sediment assessment. This assessment will defined natural nonpoint source sediment concentrations within Lemon Creek, where active glacial processes contribute to sediment problems. A paired watershed study was conducted from May 2002 through June 2003 to ascertain the roles of glacier processes on watershed sediment discharge. This study concluded that in systems substantially influenced by glacier and mass wasting processes, the traditional TSS-Q (total suspended sediment-stream discharge) relationship is not particularly meaningful because some of the most pronounced sediment events are associated with processes that are not well correlated with stream discharge. Analysis of the collected data is continuing in order to provide additional insights into the erosion processes in Lemon and Gold Creeks. With this information, more realistic expectations and best management practices can be used for evaluating human-caused sediment in Lemon Creek. This project's results will also assist with flood control and bank stabilization projects proposed for Lemon Creek. Other priority actions for this water include: implement control actions and monitoring as recommended in TMDL document; and form a joint interagency-landowner group to determine implementation of TMDL control measures.

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SE	**Category 4a**	**10301-014**	**Pederson Hill Creek**	**Juneau**	**Lower two miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Septic Tanks**
Pederson Hill Creek was Section 303(d) listed in 1990 for non-attainment of the fecal coliform bacteria standard from certain areas of failing on-site septic systems. Fecal coliform bacteria contamination was well documented since 1985, with values as high as 2400 FC/100 ml reported in 1991. Monitoring was conducted from November, 2005-summer of 2006 and found that fecal coliform bacteria levels continue to exceed water quality standards at least on some sites during parts of the year. A TMDL was developed in 2007. Pederson Hill Creek has a completed and final TMDL for fecal coliform bacteria on this water and was being submitted it to EPA for approval. .								
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 was Section 303(d) listed in 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 (dissolved oxygen). A report titled Final Expanded Site Inspection Report, Alaska Pulp Corporation, Sitka, Alaska, Feb. 1995 substantiated water quality exceedences. Discharges from the mill ceased in March 1993. Based on a June 1993 Water Quality Assessment, the pollutant parameters of concern was 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. DEC issued a Record of Decision in 1999. The remedial action objective identified by the ROD was natural recovery, with long-term monitoring. A TMDL was developed for Silver Bay in 2003, with wasteload allocations for residues and sediment toxicity. Monitoring data show that Silver Bay is no longer impaired for dissolved oxygen (DO). 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, the DO pollutant parameter was removed from the Silver Bay listing and no TMDL will be developed for DO. In 1999 a TMDL was completed for residues for the Herring Cove segment of Silver Bay. A TMDL for residues and sediment toxicity was completed in 2003. Based in the 2003 TMDL, Silver Bay was removed from the Section 303(d) list and placed in Category 4a of the Integrated Report.								

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SE	**Category 4a**	**10103-602**	**Thorne Bay**	**Prince of Wales Island**	**7.5 acres**	**Residues**	**Bark & Wood Debris**	**Historical Log Transfer Facility**

The Thorne Bay historical marine log transfer facility (LTF), which consisted of both a near shore log transfer area and an associated log storage area (LSA), was Section 303(d) listed in 1994 for non-attainment of the residues standard for bark and wood debris. Log transfer and storage activities began in 1962 and caused the accumulation of woody debris on the bottom of the head of Thorne Bay. Log transfer and storage activities ended in 2000 and the operator, the U.S. Forest Service, maintains no plan to resume them; all equipment and facilities have been removed. A key feature of the recovery of the former log transfer and storage area is the Thorne River which empties into the bay and deposits sediments onto a large sand and gravel delta where they mix with debris and aid in biological recovery. **The Log Storage Area**: Dive surveys of the LSA conducted in July 2001 and June 2002 documented 1.1 acres of bark and wood debris on the marine bottom. Dive surveys in 2003 and 2005 detailed the benthic health of 161 acres of the former LSA finding: 1) bark debris is mostly decomposed to small fragments and is mixed with natural sediments; 2) the bottom is biologically recovered, exhibiting mostly mature "Stage III" biological communities; and 3) the site is an "extremely healthy coastal embayment." DEC determined, based on the detailed benthic assessment, the residues standard is met in the former LSA and removed it from the Section 303(d) list and placed it in Category 2 in 2004. As of the 2008 Integrated Report the LSA remains in Category 2 with no known impairments. **The Log Transfer Facility**: Dive surveys conducted in 1988 and 1990 documented approximately 55 acres of bark accumulation in the LTF. Dive surveys of the LTF conducted in July 2001 and June 2002 documented 2.6 and 1.1 acres, respectively, of bark and wood debris on the marine bottom. An April 2004 dive survey of the LTF documented 6.5 acres of bark and woody debris. The former LTF remained on the Section 303(d) list for a defined area of approximately 35 acres between the LTF shoreline and the boundary of the former log storage area established in the 2003-2005 benthic assessment. A December 2007 dive survey documented a reduced area of impaired marine bottom of only 7.5 acres and the rest of the previous area of impairment as meeting the residues criterion and attaining water quality standards. This suggests that biological recovery is proceeding and is well advanced within the area associated with the LTF. A residues TMDL for the Thorne Bay LTF was completed and approved by EPA on May 8, 2007. With the completed TMDL, the LTF is removed from the Section 303(d) list and placed in Category 4a in 2008 an approved TMDL for residues.

SE	**Category 4a**	**10301-017**	**Vanderbilt Creek**	**Juneau**	**N/A**	**Turbidity Residues Sediment**	**Turbidity, Debris, Sediment**	**Urban Runoff**

This waterbody was placed on the 1990 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 on September 27, 1995 and Vanderbilt Creek removed from the Section 303(d) list in 1996. Implementation of the waterbody recovery plan began during the Fall 1995. A local nonprofit group has secured grant funds to remove debris from Vanderbilt Creek using a youth group. The project will also improve public education and stream stewardship through promotion and implementation of a Stream Cleanup Day. Priority actions for this water includes: implement control actions and monitoring as recommended in TMDL document. The Juneau Watershed Partnership has received ACWA grant funds to complete the following in 2007: evaluate actions and update recovery plan, develop a water quality monitoring strategy, and a stream clean up.

Category 4a Waterbodies

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SE	**Category 4a**	**10102-601**	**Ward Cove**	**Ketchikan**	**250 acres**	**Residues Dissolved Gas**	**Pulp Residues, Logs, Bark & Woody Debris, Low Dissolved Oxygen**	**Industrial**

Ward Cove has been Section 303(d) listed since 1990. The waterbody was listed for non-attainment of the residues and dissolved gas standards from pulp residues, logs, bark and woody debris, and low dissolved oxygen (DO) 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. Studies indicated that bottom sediments and accumulations of wood debris 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 showed 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. The seafood processing facility which had contributed to DO depressions has ceased discharging and no new sources or residues from this source are present. A surface dissolved oxygen TMDL for Ward Cove was issued by EPA on May 5, 1994 while the pulp mill was still discharging. Since discharges have ceased surface water DO has been meeting water quality standards for quite some time but Ward Cove remains Category 5/Section 303(d) listed for non-attainment of the dissolved gas standard for DO below the pinocline (at depth, i.e., for deeper waters). The toxicity in Ward Cove was more closely reviewed and more accurately described as "sediment toxicity" from pulp residues, logs, and bark and woody debris operations. An 80 acre area of concern was removed from the Section 303(d) listing for sediment toxicity and placed in Category 4b since DEC and EPA have determined that the approved and final Record of Decision of the Superfund clean-up for the "Ketchikan Pulp Company, Marine Operable Unit, Ketchikan, Alaska" (March 29, 2000) are adequate "other pollution controls" for sediment toxicity in Ward Cove. Three acres have been dredged in the "area of concern" in addition to thin capping of approximately 30 acres of the marine bottom. A TMDL for residues and dissolved oxygen was developed and approved by EPA on May 15, 2007. Consequently, Ward Cove is placed in Category 4a for residues and dissolved gas (DO).

Category 4b Waterbodies

Alaska's 2008

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 period

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
IN	**Category 4b**	**40501-001**	**Cabin Creek**	**Nabesna**	**1.5 miles**	**Toxic & Other Deleterious Organic and Inorganic Substances**	**Manganese, Arsenic, Iron, Copper & Cadmium**	**Mining**
This waterbody was Section 303(d) listed in 1996 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 1619). 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 mill site (and situated on private and National Park Service managed lands), compromise the water quality of Cabin Creek. Elevated metal levels were 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. The Park Service contracted the development of an Approval Memorandum (February 2000), a Final Engineering Evaluation/Cost Analysis (November 2000), and the development of a Draft Surface Water Flow Mitigation Plan for the Nabesna Mine Tailings. In 2002/2003 arsenic, iron, copper and cadmium were added to the listing. The NPS implemented the Draft Surface Water Flow Mitigation Plan in the field season of 2004 and re-directed surface water flows away from the tailings to minimize introduction of metals into Cabin Creek. Visual observations by the NPS indicate that the water flow mitigation work has intercepted 80% of the water that previously flowed across the tailings. Water quality monitoring was conducted during spring run-off in May 2007. The volume of water flowing across the tailings was substantially diminished which resulted in lower volumes of water carrying dissolved metals. Additional water quality sampling is planned in 2008 to validate the effectiveness of the on-the-ground- controls. Cabin Creek meets the Category 4b criteria and was removed from Category 5 (Section 303(d) list) in 2004. A Category 4b rationale has been developed and on record and available upon request.								
SC	**Category 4b**	**20302-005**	**Kenai River (lower)**	**Kenai**	**Slikok Creek (river mile 19.0) to the mouth (RM 0.0)**	**Petroleum Hydrocar-bons**	**Total Aromatic Hydrocarbons (TAH)**	**Motorized Watercraft**

Category 4b Waterbodies

Alaska's 2008

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 period

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
Kenai River was Section 303(d) listed in 2006 for petroleum hydrocarbons [total aromatic hydrocarbons (TAH)].Beginning in 2000 and continuing through 2006, DEC received water quality data that showed excursions of our petroleum hydrocarbon standard for TAH during the month of July. Exceedances in early July have not been seen, there is limited data for that time period and it is suspected that exceedances could occur as early as July 1st based on: the arrival of the second run of king salmon, allowed fishing methods, potential for high fishing pressure over the July 4th weekend, low water levels, and the potential for high numbers of motorboats on the river. A water quality study conducted by DEC in 2003 confirmed the source of the petroleum hydrocarbon pollution was from motorboats. Sampling also indicated no petroleum was detected in the river in May, low levels in June, exceedances in July, low levels in August (early) and no contamination in September. The Kenai Watershed Forum (KWF) has provided DEC with water quality data collected semi-annually on the main stem of the Kenai River from Kenai Lake to the mouth. Sampling has occurred in April and July of each year from 2000 thru 2006. No petroleum hydrocarbon contamination has been detected in the river in April, exceedances of state TAH standards were found each July in the lower river. Data from the Kenaitze Tribe collected in July 2006 and 2007 shows hydrocarbon twice the standard (approximately 20 µg/l). Documented exceedances of the petroleum hydrocarbon water quality standard during the month of July required that the Lower Kenai River be placed on the Section 303(d) list (Category 5) as (seasonally) impaired (in July) in the 2006 Integrated Report. Actions taken subsequently by the AK Department of Fish and Game and Department of Natural Resources require all outboard engines used in the Kenai River Special Management Area (KRSMA) to be either 4-stroke or direct fuel injection 2-stroke motors. These actions will result in the Kenai attaining waterbody standards; the Kenai River is moved to Category 4b in the 2008 report. DEC will monitor water quality in the river. It is anticipated that the Kenai River will be moved to Category 2 in the 2010 Integrated Report.								
SC	**Category 4b**	**N/A**	**Exxon Valdez Beaches**	**Prince William Sound - Alaska Peninsula**	**23 beaches**	**Petroleum Hydrocar-bons, Oil & Grease**	**Petroleum Products**	**Exxon Valdez Crude Oil Spill**
Exxon Valdez Beaches were Section 303(d) listed as impaired in 1990. The 23 Exxon Valdez affected beaches and adjacent marine waters were later placed in Category 4b because it was believed that a TMDL process would duplicate efforts of the Exxon Valdez Trustee Council and restoration projects specified in the Exxon Valdez Restoration Plan. Among the projects funded by the council is a project which will refine the area where oil remains. The project, *Assessment of the Areal Distribution and Amount of Lingering Oil in Prince William Sound and the Gulf of Alaska (conducted by Short et al)* will produce maps showing the probability of lingering oil. A second project funded, *Factors Responsible for Limiting the Degradation Rate of Exxon Valdez Oil in Prince William Sound Beaches-Submitted under the BAA*, should provide an overall understanding of the fate and transport and provide guidance as to how to accelerate the disappearance of lingering oil present in the subsurface (conducted by Boufadel). This combination of work will assist DEC to more clearly identify the nonpoint source loadings that still occur and to continue to ensure the Council works toward meeting water quality standards. The *Assessment of the Areal Distribution and Amount of Lingering Oil* report will be completed in 2009; the *Factors Responsible for Limiting the Degradation Rate of Exxon Valdez Oil* study will be completed in 2010. The results from the second report should provide a roadmap for identifying when water quality standards may be met. A Category 4b rationale has been developed and on record and available upon request. Consequently, the Exxon Valdez beaches have been placed in Category 4b								
SE	**Category 4b**	**10203-808**	**East Port Frederick**	**NE Chichagof Island**	**0.4 acres**	**Residues**	**Bark & Woody Debris**	**Log transfer facility**

Category 4b Waterbodies

Alaska's 2008

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 period

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
East Port Frederick was Section 303(d) listed 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). The operator submitted a remediation plan which DEC approved on March 14, 2005. The approved remediation plan contains adequate institutional controls to minimize future accumulation of bark and wood waste on the bottom and will result in reducing continuous cover to less than 1.5 acres within a reasonable period of time. EPA approved removing East Port Frederick from the Section 303(d) list as part of Alaska's 2004 Integrated Report. A 2007 (August 23rd) bark monitoring survey report documented a reduction of 0.19 acres of the continuous coverage area. A Category 4b rationale has been developed and on record and available upon request.								

Category 4b Waterbodies

Alaska's 2008

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 period

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SE	**Category 4b**	**10103-031**	**Fubar Creek**	**Prince of Wales Island**	**N/A**	**Sediment**	**Sediment**	**Timber Harvest**
In 1993, the Fubar Creek watershed experienced multiple landslides during heavy rain. This erosion, due to timer harvests in previous years, added more sediment to the creek than could be washed downstream. This large influx of sediment negatively impacted the ability of the creek to sustain anadromous fish populations. The waterbody was placed in Category 4b in 1996. No significant commercial harvest activity has occurred within the watershed since the USFS deferred the timber harvest in 1995 and the Fubar Creek watershed was not considered for entry during the next 10 year timber sale planning cycle. A comprehensive hydrologic condition assessment of the Harris River Basin was completed in 2003. It included a road condition survey that identified 1.2 miles of old logging road that were placed in storage in 2006. Channel condition monitoring was conducted for a number of years in Fubar Creek. Monitoring assessed trends in geomorphic indicators to determine progress toward channel equilibrium. The watershed-based assessment and the Channel condition monitoring helped to guide and prioritize restoration activities in the Fubar Creek sub-watershed. The Craig Ranger District has actively restored vegetation to stabilize landslide areas and the modified the structure and function of riparian timber stands to prevent further sediment input. In 2006 and 2007 USDA restored ~5500 feet of creek by removing large quantities of sediment from the creek bed, reconstructing the channel, and reestablishing large wood jams and pools to enhance anadromous fish habitat and spawning. Completion of the 2006 work allowed the first perennial flows under the highway bridge in the 13 years since the 1993 landslides. The last phase of active restoration will be replacement of the flood plain overflow culverts on the Hydaburg Highway in summer 2008. Monitoring of restoration efforts to restore the anadromous fish habitat included measurement of pool and channel morphology, smolt counts, and observations of adult spawning activity in the restored channel. Monitoring results will be published in 2008. A Category 4b rationale has been developed and on record and available upon request. With completion of initial Fubar restoration project monitoring in 2008 it is anticipated that Fubar Creek will be moved to Category 2 in the 2010 Integrated Report.								
SE	**Category 4b**	**10102-601**	**Ward Cove**	**Ketchikan**	**80 acres**	**Toxic & Other Deleterious Organic and Inorganic Substances – Sediment Toxicity**	**Pulp Residues, Logs, Bark & Woody Debris, Sediment Toxicity due to Wood Decomposition By-products**	**Industrial**
DEC and EPA have determined that the approved and final Record of Decision of the Superfund clean-up for the "Ketchikan Pulp Company, Marine Operable Unit, Ketchikan, Alaska" (March 29, 2000) are adequate "other pollution controls" for sediment toxicity in Ward Cove. Three acres have been dredged in the "area of concern" in addition to thin capping of approximately 30 acres of the marine bottom. A Category 4b rationale has been developed and on record and available upon request. Consequently, Ward Cove is removed from the Category 5/Section 303(d) list for sediment toxicity. A Category 4b rationale has been developed and on record and available upon request.								

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
IN	**Category 5 Section 303(d) listed**	**20502-101**	**Caribou Creek**	**Denali National Park**	**16.1 miles**	**Turbidity**	**Turbidity**	**Mining**

Caribou Creek was included on the 1994 Section 303(d) list for turbidity from past mining activity within Denali National Park and Preserve. Miles of the waterbody had been extensively placer mined. The waterbody lost its sinuosity along segments of the upper half of the watershed. Currently there is no active mining on Caribou Creek and current National Park Service (NPS) policy will not permit future placer mining. Upper Caribou Creek was visited once by DEC and NPS staff in 2006 for a general site review. NPS staff visited twice in the 2007 field season for waterbody recovery plan/ restoration plan development purposes by NPS and contract restoration personnel. Seven cross sections were established for floodplain design purposes, and for before and after topographic monitoring. Channel locations and sinuosity were GPS surveyed, and water discharge measurements were taken. A draft recovery plan is in preparation to reconstruct the floodplain, rebuild the channel(s), and provide for more natural overbank flooding and deposition. The re-construction will be followed up with a revegetation effort. If funding becomes available, work is to begin in 2009 and continue, if necessary, in 2010.

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
IN	**Category 5 Section 303(d) listed**	**40506-007**	**Chena River**	**Fairbanks**	**15 miles**	**Petroleum Hydrocarbons, Oil & Grease Sediment**	**Petroleum Products, Sediment**	**Urban Runoff**
Chena River was Section 303(d) listed since 1990 for turbidity and sediment. There has been no determination made on the effects to any designated use. An State of Alaska, Department of Natural Resources, 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 some information on file that petroleum products spills have reached the waterbody; best professional judgment from DEC staff in Fairbanks recommended listing the 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. DEC is currently reviewing water quality data collected in 2005 and 2007 to determine if a TMDL is necessary.								
IN	**Category 5 Section 303(d) listed**	**40506-002**	**Chena Slough**	**Fairbanks**	**13 miles**	**Petroleum Hydrocarbons, Oil & Grease Sediment**	**Petroleum Products, Sediment**	**Urban Runoff**
This waterbody was Section 303(d) listed for non-attainment of the petroleum hydrocarbons, oil & grease and sediment standards for petroleum products and sediment in 1994. Information presented in the 1994 Statewide Water Quality Assessment survey indicated that a petroleum product problem existed 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. DEC is currently reviewing water quality assessment data collected in 2005 and 2007 to determine if a TMDL is needed on this waterbody.								
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**

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
Crooked Creek watershed was Section 303(d) listed in 1992 for non-attainment of the turbidity standard. A water quality assessment was completed in August 1995. Monitoring conducted in the early-90's documented major improvements in water quality. The assessment called for the development of a waterbody recovery plan to restore and maintain habitat quality however, to date, such a plan has not been developed. The assessment concluded that water quality impacts can be adequately controlled under the existing regulatory programs and that the imposition of additional regulatory or other controls through a ―TMDL Strategy is not necessary to achieve water quality standards and maintain beneficial uses. However, the assessment concludes that Crooked Creek remain Section 303(d) listed until there is reasonable assurance that water quality standards will be met and that beneficial uses will be maintained. Based on the completed assessment the Crooked Creek watershed remains Category 5 water. DEC staff visited the Crooked Creek watershed in 2007. DEC staff will be working with federal and state agencies to collect water quality data and assess the current condition.								

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
IN	**Category 5 Section 303(d) listed**	**40509-001**	**Goldstream Creek**	**Fairbanks**	**70 miles**	**Turbidity**	**Turbidity**	**Placer Mining**
Goldstream Creek was Section 303(d) listed in 1992 for non-attainment of the turbidity water quality standard. A waterbody assessment was completed that confirmed the pollutant and pollutant source. This assessment determined that existing controls were sufficient to address the turbidity issue and that a formal TMDL was not needed. Nevertheless, the water quality assessment was prepared and submitted to EPA for technical review for Goldstream Creek (dated September 30, 1994) that contains a Management Plan Development section (Appendix E) and a Pollution Control Strategy in the assessment. 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 making progress towards attaining water quality standards.								
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**
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. DEC completed a debris assessment in 2007; this data is being used to complete a debris TMDL that should be finalized in spring 2008. Water quality data collected in 2005 and 2007 is currently being reviewed to determine if a TMDL is necessary for the oil & grease and hydrocarbon impairments.								

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
IN	**Category 5 Section 303(d) listed**	**40510-101**	**Slate Creek**	**Denali National Park**	**2.5 miles**	**Turbidity**	**Turbidity**	**Mining**

Slate Creek was Section 303(d) listed in 1994 for non-attainment of the turbidity water quality standard due to placer mining activities. Currently there is no active mining on Slate Creek and current National Park Service (NPS) policy will not permit future placer mining. A recovery plan implementation began in August 1997 through 2002. The recovery plan included restoration objectives for 4 acres of disturbed upland and stream channel areas in the vicinity of the old antimony mine site. Objectives included placement of fill over 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. Slate Creek was visited by DEC staff and NPS staff in 2006 for a general site review of the recovery plan implementation that was completed in 2002. The 2006 site visit revealed that the recovery plan was not successful and had many areas where the implements were no longer performing their function properly. NPS staff visited Slate Creek twice in the 2007 field season for an amended recovery plan development purposes by NPS and contract personnel. Concept plans have been developed to address the surface and groundwater drainage for erosion control and acidic (AMD) mitigation. If funding becomes available, work will begin in 2008 and possibly continue in 2009.

SC	**Category 5 Section 303(d) listed**	**20505-401**	**Big Lake**	**Wasilla**	**1,250 acres**	**Petroleum Hydrocarbons**	**Total Aromatic Hydrocarbons (TAH)**	**Motorized watercraft**

Big Lake was Section 303(d) listed in 2006 for non-attainment of the petroleum hydrocarbons (TAH) water quality standard. DEC collected water quality information at Big Lake beginning in the open water months in 2004 and again in open water months of 2005. Sampling was conducted in the water column at multiple sites for petroleum, fecal coliform bacteria, nutrients, dissolved oxygen, pH, temperature, turbidity, conductivity, and salinity. Sampling results indicated water quality criteria were met for these parameters with the exception of petroleum hydrocarbons (TAH). Sampling sites in areas that received heavier use by motorized watercraft consistently exceeded the WQS for petroleum hydrocarbons (TAH) both summers. WQS In 2004, the TAH concentration inside the swimming area at the North Shore State Recreation Area was 47 µg/L. TAH samples were collected at multiple sites, depths and amounts of motorized lake usage. TAH concentrations are likely influenced by a combination of good weather and time of season. The sample events that coincided with the higher mean air temperatures are likely also prime recreational dates based on the increased motorized watercraft usage at these times. Specifically, the areas of impairment is an estimated 1,250 acres and are seasonal in nature, i.e., from May 15 to September 15, and are the east basin, including the traffic lane between the east and west basins and these specific areas in the east basin: heavily used areas; harbors and marinas; launch areas; and traffic lanes, except for the areas north of Long Island. Sampling was conducted outside the specific areas designated above and exceedances were not seen in these other areas. The two reports which support this impairment listing are: "Big Lake and Lake Lucille Water Quality Monitoring Final Report (September 2, 2004)" prepared by Oasis Env., Inc. for DEC; and "Big Lake Water Quality Monitoring Report (June 15, 2006)" prepared by Oasis Env., Inc. for DEC. Exceedances were not seen at the 5 meter depth, which was the deepest depth sampled. Although there was no water quality sampling below 5m in depth it is considered unlikely that petroleum contaminated sediment is a concern. Given the close correlation observed between levels of petroleum and the extent of motorized watercraft use, DEC believes the source of petroleum is solely motorized watercraft and specifically in the water column. These documented exceedances of the Petroleum Hydrocarbon WQS required that Big Lake was placed on the Section 303(d) list (Category 5) as impaired in the 2006 Report.

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 5 Section 303(d) listed**	**30101-503**	**Cold Bay**	**King Cove, Alaska Peninsula**	**0.01 acre**	**Petroleum Hydrocarbons, 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. The USACE has completed all necessary site characterization. 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 were used to develop a feasibility study to determine the best solution for the beach seeps. The feasibility study was completed in 2003. The proposed plan and decision documents (Record of Decision) were signed. The USACE agreed to dig and treat petroleum contaminated soil to 15 feet. Contaminated soil below 15 feet to undergo insitu treatment. Soil excavation and treatment were conducted in 2006. For the drum disposal and beach seep area a two phased approach was selected. In the summer of 2006 soil fifteen feet below ground surface and above was excavated and thermally treated. In the 2007 field season the Corps of Engineers installed bioventing and additional soil vapor extraction (SVE) wells to continue remediating the area. The amount of contamination discharging to the beach decreased markedly. DEC's Contaminated Sites program reports that the petroleum sheen is getting smaller every time inspections are made on site. In the spring of 2007 one had to look pretty hard to find it. The sheen seems to maximize in the spring hence spring 2008 site inspections are proposed. Bioventing and upgrades to the SVE/HVE (high vacuum extraction) were installed summer of 2007 and operations have started. More will be known after receiving and reviewing an update in the winter of 2007-8 on the system and the rate of biodegradation.								
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) was Section 303(d) listed for non-attainment of the residues standard for foam and debris in 2002/2003. DEC has received numerous complaints about foam in Cottonwood Creek and foam was observed in the creek in 1998, 2000, 2001 and 2002; it is a recurring problem, with no existing controls to address it. Through grant funds, an intensive water quality evaluation was conducted on Cottonwood Creek beginning in September 2004 and continuing through June 2006 for a TMDL assessment. Water quality sampling conducted in 2004 – 2005 indicated that the foam present in Cottonwood Creek is most likely naturally occurring. However, hydrologic changes within the watershed may be influencing the amount and timing of the foam. Water quality sampling in 2006 focused on determining the extent of fecal coliform bacteria and temperature exceedances discovered during the sampling for foam. Additional bacteria and temperature sampling is scheduled for 2007/2008 to determine potential sources and stretches of possible impairment. Data will be used to develop a recovery plan.								
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**

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
This waterbody was Section 303(d) listed in 1994 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. Existing data compilation was completed in 2006. Initial field sampling event conducted in April 2007 included water column and sediment samples for BTEX, PAH & TOC. A follow-up sample event was conducted in September 2007. These sampling events and data may lead to the development of a TMDL.								
SC	**Category 5 Section 303(d) listed**	**30203-001**	**Egegik River**	**Egegik**	**0.25 mile**	**Petroleum Hydrocarbons, Oil & Grease**	**Petroleum Products**	**Spills, Fuel Tanks, Under-ground Fuel Tanks**
This waterbody was Section 303(d) listed for non-attainment of the petroleum hydrocarbons, oil & grease for petroleum products in 2002/2003. 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.								
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**
This waterbody was placed on the 2002/2003 Section 303(d) list for non-attainment of the petroleum hydrocarbons, oil & grease standard for petroleum products. Remedial actions at the Cordova Electric Power Plant on Eyak Lake, including a groundwater pump-and-treat system and passive product collection, have been effective at eliminating sheen on the surface of the Lake, which was last observed in 2005. Groundwater treatment and monitoring is anticipated to continue at this site in the future. 2005 and 2006 two water quality studies were completed on the lake. These studies have warranted that additional sampling is required prior to the development of a TMDL.								

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 5 Section 303(d) listed**	**20401-412**	**Hood/Spenard Lake**	**Anchorage**	**307 acres**	**Dissolved Gas**	**Low Dissolved Oxygen**	**Urban Runoff, Industrial**
Hood/Spenard Lake was originally Section 303(d) listed in 1990 and in1992 for non-attainment of the fecal coliform bacteria standard and in 2002/2003 for low dissolved oxygen (DO). The waterbody was also placed on the 1992 Section 303(d) list for fecal coliform bacteria, lead, nitrates, and phosphates. A TMDL was developed for fecal coliform bacteria in 1997 and the waterbody remains on the Section 303(d) list (Category 5) only for dissolved gas (i.e., low dissolved oxygen). A later DEC water quality assessment also assessed the four other pollutants of concern of petroleum, nitrates, lead, and ammonia. However, the data indicated that there are no persistent violations of these parameters. Priority actions identified for this water includes: Ted Stevens Anchorage International Airport (TSAIA) shunting away much of the storm water from the tarmac and installation of retention ponds to treat storm water coming from the parking lots; future construction to improve drainage in the area; track ongoing stormwater rerouting projects and water quality sampling being done by TSAIA; and conduct monitoring of nutrients and storm water BMP effectiveness. TSAIA submitted and DEC approved a waterbody recovery plan for this waterbody(s). Recovery plan has two components: 1) a reduction in the amount and placement of urea, more glycol recovery and 2) diverting glycol and nutrient contaminated storm water away from the waterbody.								
SC	**Category 5 Section 303(d) listed**	**30102-602**	**Iliuliuk Bay/Harbor**	**Dutch Harbor**	**1.4 acres**	**Petroleum Hydrocarbons, Oil & Grease**	**Petroleum Products**	**Urban Runoff**
This waterbody was Section 303(d) listed in 1990 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 Iliuliuk Harbor/Bay concluded that Iliuliuk Harbor/Bay is impacted by intermittent spills for petroleum products and chronic sewage runoff. 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 Category 5/303(d) listed. TMDL existing data compilation completed in 2006. Initial field sampling event conducted in April 2007 included water column and sediment samples for BTEX, PAH & TOC. A follow-up sample event occurred in September 2007. Anticipate petroleum TMDL development or removing for Section 303(d) list by June 30, 2009.								

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 5 Section 303(d) listed**	**20402-001**	**Matanuska River**	**Palmer**	**½ mile**	**Residues**	**Debris**	**Landfill**
This segment of the Matanuska River was placed on the 2002/2003 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 have been 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. In August 2004 the DEC conducted a site assessment study characterizing and quantifying the debris, mapping the site, and conducting surface water, sediment and soil samples. No hazardous or petroleum contamination was discovered. After characterizing the debris, the study developed options for possible debris removal. In subsequent meetings with involved parties, in March 2005 the Army Corps of Engineers issued a jurisdictional declaration that the railroad cars that are below ordinary high water serve as bank stabilization material. As such, these items are no longer in violation of WQS. However, the remaining debris on the slope above OHW has a potential of entering the water column and the upper layers are not considered bank stabilization material. The Alaska Railroad Corporation (ARRC) as the property owner is working with DEC Solid Waste staff on developing a plan with goals and a timeline delineating the ARRC's commitment to cleaning up the site.								
SC	**Category 5 Section 303(d) listed**	**30101-502**	**Popof Strait**	**East Aleutians Borough**	**5 miles**	**Residues**	**Seafood Waste Residue**	**Seafood Processor**
Popof Strait was Section 303(d) listed in 1996 for non-attainment of the residues standard from seafood waste residues. 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 reduces the discharge of solid wastes to Popof Strait. The company is presently under a consent decree for BOD5 covering this facility (as well as the one in Akutan) where there is a BOD5 limit for the Sand Point facility. An April 2000 dive survey report documents 3.0 acres of residues in excess of the permitted facility's authorized one acre zone of deposit. There is no more recent dive survey information than the 2000 dive survey.								

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
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**

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 reports from 1996 and 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 in a reasonable time period, (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.

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 5 Section 303(d) listed**	**20401-020**	**Ship Creek Glenn Hwy. Bridge. Down to Mouth**	**Anchorage**	**11 miles, Glenn Hwy. Bridge. Down to Mouth**	**Petroleum Hydrocarbons, Oil & Grease**	**Petroleum Products**	**Urban Runoff**

This segment of Ship Creek was Section 303(d) listed in 1990 for non-attainment of the petroleum hydrocarbons, oil & grease standards. Based on the fecal coliform bacteria 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. In 1992 fecal coliform bacteria was added to the Section 303(d) listing an impairing pollutant. The final fecal coliform bacteria TMDL was approved by EPA in May 2004. Ship Creek remains Section 303(d) listed for petroleum product impairment. EPA currently has a consent decree with the Alaska Railroad Corporation Terminal Reserve which involves water quality monitoring for petroleum. The results of these studies will assist DEC in determining the next best recovery actions for Ship Creek including the possible development of a TMDL or similar recovery plan. Sampling was conducted in 2005 and 2006 as part of the consent decree.

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SE	**Category 5 Section 303(d) listed**	**10301-004**	**Jordan Creek**	**Juneau**	**3 miles from tide-water up-stream**	**Sediment, Dissolved Gas**	**Sediment, Low Dissolved Oxygen**	**Land Development, Road Runoff**

Jordan Creek was Section 303(d) listed in 1998 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. More recent observations note a problem with iron floc that was not present 10 years ago; however there is no hard iron data that might document iron exceedances. 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. The University of Alaska-Southeast has secured grant funds to identify potential pollutant sources in the watershed. A suite of water quality parameters and pollutants including sediment, pH, dissolved oxygen, and turbidity were sampled between August 2005 and June 2006. Findings are summarized in the report: "Watershed Protection and Recovery for Jordan Creek, Juneau, AK" (Nagorski, Hood, Hoferkamp, Neal & Hudson, July 2006). Results will be used to assess the effectiveness of current pollution control practices, identify sources, and provide information to establish TMDLs for Jordan Creek. A TMDL was developed and approved by EPA for residues on Jordan Creek and is dated May 2005. Since Jordan Creek has an approved TMDL for residues Jordan Creek is removed from the Section 303(d) and moved to Category 4a for residues. Jordan Creek remains Category 5/Section 303(d) listed for dissolved gas and sediment.

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 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. The Forest Service (in cooperation with EPA and DEC) is currently conducting in depth turbidity monitoring and aquatic habitat condition assessments to determine the validity of the impaired water body listing for this watershed. If the assessment indicates that the water body was erroneously listed, the water body will be moved to Category 2. If water quality or habitat impairments are identified in the assessment, restoration plans to establish pollution control requirements will be developed. It is anticipated that this waterbody will be moved to either Category 4b or Category 2 in the 2010 Integrated Report.

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
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 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 (not finalized to date) on Klag Bay titled "Klag Bay Study" prepared by the U.S. Fish and Wildlife Service indicated 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**	**10203-001**	**Nakwasina River**	**Baranof Island, Sitka**	**8 miles**	**Sediment, Turbidity**	**Sediment, Turbidity**	**Timber Harvest**
Nakwasina River was placed on the 1998 Section 303(d) listed 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. The Forest Service (in cooperation with EPA and DEC) is currently conducting in depth turbidity monitoring and aquatic habitat condition assessments to determine the validity of the impaired water body listing for this watershed. If the assessment indicates that the water body was erroneously listed, the water body will be moved to Category 2. If water quality or habitat impairments are identified in the assessment, restoration plans to establish pollution control requirements will be developed. It is anticipated that this waterbody will be moved to either Category 4b or Category 2 in the 2010 Integrated Report.								

Category 5/Section 303(d) Listed Waterbodies

Alaska's 2008

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

Region	*Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SE	**Category 5 Section 303(d) listed**	**10303-004**	**Pullen Creek (Lower Mile)**	**Skagway**	**Lower mile of Pullen Creek**	**Toxic & Other Deleterious Organic and Inorganic Substances**	**Metals**	**Industrial**
Pullen Creek has been on the Section 303(d) list since 1990 for non-attainment of the toxic & other deleterious organic and inorganic substances standard for metals. The lower mile of Pullen Creek was previously Section 303(d) listed with the Skagway Harbor listing but was segmented out into its own listing in the 2006 report. A local non-profit group has secured grant funds for performing an environmental assessment on the creek, collecting baseline monitoring data on water quality, flow and sedimentation data, and development of an action strategy for Pullen Creek. Assessment results found no elevated levels of toxics found in water column. Elevated levels of lead, zinc and barium found on stream bottom sediments and adjoining banks. Stream banks are very stable but elevated levels of metals are found near railroad transport areas where ore was transported in the past. Further investigation on the elevated levels needed. There will be a review of data on sediment toxicity and DEC will continue holding discussions with DEC's contaminated sites program and decide how to incorporate them into this project.								
SE	**Category 5 Section 303(d) listed**	**10303-601**	**Skagway Harbor**	**Skagway**	**1.0 acre**	**Toxic & Other Deleterious Organic and Inorganic Substances**	**Metals**	**Industrial**
Skagway Harbor has been on the Section 303(d) list since 1990 for non-attainment of the toxic & other deleterious organic and inorganic substances standard for metals. A 1984 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. The lower mile of Pullen Creek was previously Section 303(d) listed with the Skagway Harbor listing but was segmented out into its own listing in the 2006 report. TMDL development is beginning and is anticipated to be developed by June 30, 2009. Some steps identified include data gaps need to be identified and DEC may acquire contractor assistance in evaluating data and determining data gaps and a technical approach.								

APPENDIX B Waterbodies Removed From Section 303(d) List

Section 303(d) Listed Waterbodies in 2006 Removed from the List in 2008

Waterbodies Removed from Section 303(d)List

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

Section 303(d) Listed Waterbodies in 2006 Removed from the List in 2008

Region	*New Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 2**	**20401-403**	**Cheney Lake**	**Anchorage**	**N/A**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Urban Runoff, Storm Drainage**

REASON FOR REMOVAL: No impairment exists, attaining water quality standards.

Cheney Lake was placed on the 1994 Section 303(d) list for non-attainment of the fecal coliform bacteria standard. Water quality data collected by the Municipality of Anchorage from 1991-1994 indicated that the fecal coliform bacteria criterion was exceeded in almost every month of monitoring. However, in 2006 DEC conducted extensive water quality monitoring in Cheney Lake. The 2006 data shows fecal coliform bacteria levels met state water quality standards the vast majority of the time and when levels exceeded state standards DEC believes the higher levels are from natural conditions. Cheney Lake is currently meeting SWQS for two reasons: 1) Municipality's (and US Fish & Wildlife Service) campaign to reduce the goose populations in Anchorage (due to increased number of geese/aircraft incidences including a Military air crash with numerous fatalities blamed on waterfowl), and 2) a successful public awareness campaign educating pet owners on the benefits and owner's responsibilities of picking up after their pets, i.e., "Scoop the Poop" campaign. As a result of this recent monitoring Cheney Lake has been removed from the Section 303(d) list and placed in Category 2.

B. WATERBODIES REMOVED FORM THE SECTION 303(d) LIST

Waterbodies Removed from Section 303(d)List

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

Section 303(d) Listed Waterbodies in 2006 Removed from the List in 2008

Region	*New Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
SC	**Category 4b**	**20302-005**	**Kenai River (lower)**	**Kenai**	**Slikok Creek (river mile 19.0) to the mouth (RM 0.0)**	**Petroleum Hydrocar-bons**	**Total Aromatic Hydrocarbon s (TAH)**	**Motorized Watercraft**
REASON FOR REMOVAL: There are other pollution controls identified to attain the petroleum hydrocarbon water quality standard and the waterbody is moved to Category 4b.								
Actions taken subsequently by the AK Department of Fish and Game and Department of Natural Resources require all outboard engines used in the Kenai River Special Management Area (KRSMA) to be either 4-stroke or direct fuel injection 2-stroke motors. These actions will result in the Kenai attaining waterbody standards; the Kenai River is moved to Category 4b in the 2008 report.								
SC	**Category 2**	**30104-601**	**Saint Paul Island Lagoon**	**St. Paul Harbor, St. Paul Island**	**N/A**	**Petroleum Hydrocarbons, Oil & Grease**	**Petroleum Products**	**Leaking Above Ground Storage Tanks**
REASON FOR REMOVAL: No impairment exists, now meeting the petroleum hydrocarbon criterion and attaining water quality standards.								
This segment of Saint Paul Island Lagoon was placed on the 2002/2003 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 and diesel seepage were evident into the lagoon from as early as the 1980's. There was a sheen on the water daily. This water was considered for 303(d) listing in 1998 but listing was deferred under assurances of clean-up. Clean-up controls have been determined to be effective since there is no longer visible sheening. Therefore this water is placed in Category 2 in 2008.								
SE	**Category 2**	**10201-801**	**Hobart Bay**	**Mainland, SE Stephens Passage**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log transfer facility**
REASON FOR REMOVAL: No impairment exists, now meeting the residues criterion and attaining water quality standards.								
Hobart Bay was Section 303(d) listed in 1998 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) 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 2.3 acres of bottom coverage. 1.3 acres of marine bottom adjacent to the log transfer facility was listed as impaired. A 2007 dive survey documented that the LTF and log storage area contained no continuous coverage by bark debris and only a few small patches of discontinuous coverage by bark debris. The 2007 dive survey and assessment documents that this facility is attaining water quality standards and the water is removed from the Section 303(d) in 2008.								
SE	**Category 4a**	**10301-014**	**Pederson Hill Creek**	**Juneau**	**Lower two miles**	**Fecal Coliform Bacteria**	**Fecal Coliform Bacteria**	**Septic Tanks**
REASON FOR REMOVAL: TMDL developed and approved for fecal coliform bacteria.								

B. WATERBODIES REMOVED FORM THE SECTION 303(d) LIST

Waterbodies Removed from Section 303(d)List

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

Section 303(d) Listed Waterbodies in 2006 Removed from the List in 2008

Region	*New Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
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. Fecal coliform bacteria contamination was well documented since 1985, with values as high as 2400 FC/100 ml reported in 1991. Monitoring was conducted from November, 2005-summer of 2006 and found that fecal coliform bacteria levels continue to exceed water quality standards at least on some sites during parts of the year. Pederson Hill Creek has a completed and final TMDL for fecal coliform bacteria and is being submitted it to EPA for approval. If EPA does not approve this TMDL Pedersen Hill Creek will moved back to Category 5 and Section 303(d) listed in Alaska's final 2008 report.								
SE	**Category 2**	**10203-801**	**Schulze Cove**	**Fish Bay, Baranof Island**	**N/A**	**Residues**	**Bark & Woody Debris**	**Log Storage Area**
REASON FOR REMOVAL: No impairment exists, now meeting the residues criterion and attaining water quality standards.								
This section of Schulze Cove was Section 303(d) listed in 1998 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). Historically, log storage activities severely impacted Schulze Cove. A December 2007 dive survey and assessment documents that this facility is attaining water quality standards and is removed from the Section 303(d) list in 2008. The 2007 dive assessment work used a parallel pattern to survey the site and consisted of 17 transects at 300 foot spacing intervals. The sample point frequency was at 300 foot intervals using visual survey methods. The survey documented that the log storage area contained no continuous coverage by bark debris, and 25.02 acres of discontinuous coverage by bark debris. The 2007 dive survey and assessment documents that this facility is attaining water quality standards and is removed from the Section 303(d) list in 2008.								
SE	**Category 4a**	**10103-602**	**Thorne Bay**	**Prince of Wales Island**	**7.5 acres**	**Residues**	**Bark & Wood Debris**	**Historical Log Transfer Facility**
REASON FOR REMOVAL: TMDL developed and approved for residues.								
The Thorne Bay historical marine log transfer facility (LTF), which consisted of both a near shore log transfer area and an associated log storage area (LSA), was Section 303(d) listed in 1994 for non-attainment of the residues standard for bark and wood debris. Log transfer and storage activities began in 1962 and caused the accumulation of woody debris on the bottom of the head of Thorne Bay. Log transfer and storage activities ended in 2000 and the operator, the U.S. Forest Service, maintains no plan to resume them; all equipment and facilities have been removed. A key feature of the recovery of the former log transfer and storage area is the Thorne River which empties into the bay and deposits sediments onto a large sand and gravel delta where they mix with debris and aid in biological recovery. **The Log Transfer Facility**: Dive surveys conducted in 1988 and 1990 documented approximately 55 acres of bark accumulation in the LTF. Dive surveys of the LTF conducted in July 2001 and June 2002 documented 2.6 and 1.1 acres, respectively, of bark and wood debris on the marine bottom. An April 2004 dive survey of the LTF documented 6.5 acres of bark and woody debris. The former LTF remained on the Section 303(d) list for a defined area of approximately 35 acres between the LTF shoreline and the boundary of the former log storage area established in the 2003-2005 benthic assessment. A December 2007 dive survey documented a reduced area of impaired marine bottom of only 7.5 acres and the rest of the previous area of impairment as meeting the residues criterion and attaining water quality standards. This suggests that biological recovery is proceeding and is well advanced within the area associated with the LTF. A residues TMDL for the Thorne Bay LTF was completed and approved by EPA on May 8, 2007. With the completed TMDL, the LTF is removed from the Section 303(d) list and placed in Category 4a in 2008 an approved TMDL for residues.								
SE	**Category 2 ACWA: High**	**10103-801**	**Twelvemile Arm**	**Prince of Wales Island**	**marine bottom beneath this log storage area**	**Residues**	**Bark & Woody Debris**	**Log Storage Area**
REASON FOR REMOVAL: No impairment exists, now meeting the residues criterion and attaining water quality standards.								

B. WATERBODIES REMOVED FORM THE SECTION 303(d) LIST

Waterbodies Removed from Section 303(d)List

Alaska's 2008

Integrated Water Quality Monitoring and Assessment Report

Section 303(d) Listed Waterbodies in 2006 Removed from the List in 2008

Region	*New Category*	*Alaska ID Number*	*Waterbody*	*Location*	*Area of Concern*	*Water Quality Standard*	*Pollutant Parameters*	*Pollutant Sources*
Twelvemile Arm had 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 conducted in 1997 revealed 100% coverage along an 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.. The 2007 survey documented that the log storage area contained no continuous coverage by bark debris and a only a few small patches of discontinuous cover by bark debris. The using "Plan View Video" and dive survey methods quantified the extent and type of both continuous and discontinuous coverage as 0.00 acres of bark debris. The 2007 dive survey and assessment documents that this facility is meeting the residues criterion and attaining water quality standards and moved to Category 2 in 2008.								

APPENDIX C TMDL Schedule and Factors

Alaska TMDL Completion Date Schedule (Revised 10/07)
NOTE: The years shown are from July 1 to June 30 and it is expected that for any given year the TMDL will be completed by June 30th of the year in which the waterbody is shown. During TMDL development, it may be determined that a TMDL is not needed if the waterbody has recovered or adequate restoration actions are ongoing

Completion date	Southeast	Southcentral	Interior/North Slope
June 2008			Noyes Slough (debris)
June 2009	Jordan Creek (Sediment) (Dissolved Gas/DO)	Matanuska River	Eyak Lake
			Chena River
			Chena Slough
June 2010	Katlian River	Cold Bay	Goldstream Creek
	Nakwasina River	Dutch Harbor	Noyes Slough (sediment, petroleum hydrocarbons)
	Skagway Harbor	Hood/Spenard Lake	
	Pullen Creek	Iliuliuk Bay/Harbor	
June 2011	Klag Bay	Big Lake	Caribou Creek
		Cottonwood Creek	Slate Creek
		Egegik River	
		Ship Creek (Petroleum)	
June 2012		Popof Strait	Crooked Creek Watershed
		Red Lake / Anton Pond	

Factors Considered in Alaska's 2008 TMDL Schedule Revision

All of Alaska's Category 5 Section 303(d) listed waters for the 2008 Integrated Water Quality Monitoring and Assessment Report are scheduled for TMDL (Total Maximum Daily Load) development between 2008 and 2012. Any Section 303(d) listed waters that is 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.

C. TMDL SCHEDULE AND FACTORS

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 a reasonable time period 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. 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 Alaska's 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.

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.

C. TMDL SCHEDULE AND FACTORS

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

APPENDIX D Logic Flow Diagram

Logic Flow Diagram for Making Category Determinations

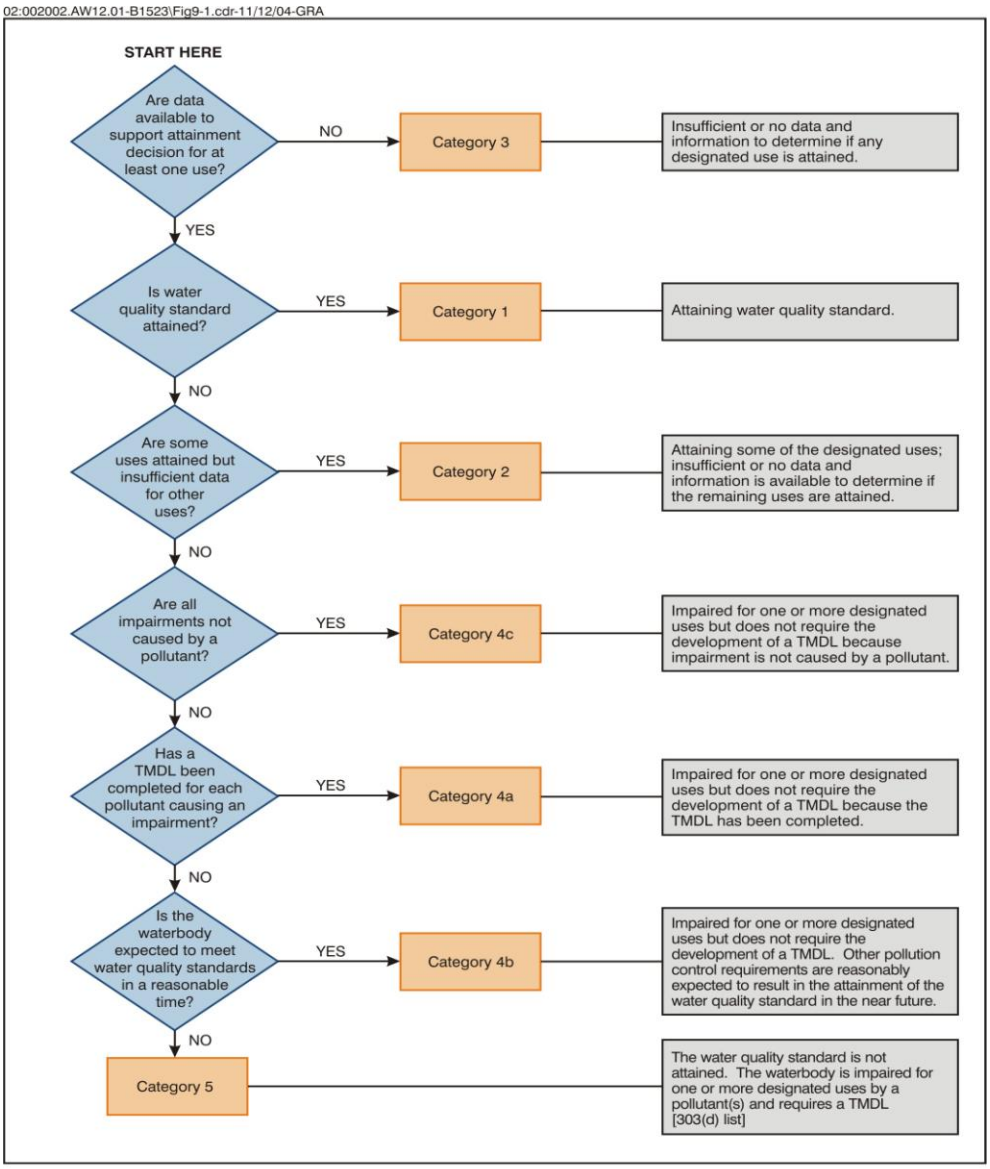


Figure D-1 Logic Flow Diagram for Making Category Determinations

APPENDIX E List of Alaska's Category 5/Section 303(d) Impaired Waters

NOTE: This appendix is an abbreviated and alphabetical list by Alaska regions of the Category 5/Section 303(d) list of impaired waters. The waters are listed alphabetically by region: Interior, Southcentral, and Southeast.

#	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	20502-101	Caribou Creek	Denali National Park	16.1 miles	Turbidity	Turbidity	Mining
2	IN	Category 5 Section 303(d) listed	40506-007	Chena River	Fairbanks	15 miles	Petroleum Hydrocarbons, Oil & Grease Sediment	Petroleum Products, Sediment	Urban Runoff
3	IN	Category 5 Section 303(d) listed	40506-002	Chena Slough	Fairbanks	13 miles	Petroleum Hydrocarbons, Oil & Grease Sediment	Petroleum Products, Sediment	Urban Runoff,
4	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
5	IN	Category 5 Section 303(d) listed	40509-001	Goldstream Creek	Fairbanks	70 miles	Turbidity	Turbidity	Placer Mining
6	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
7	IN	Category 5 Section 303(d) listed	40510-101	Slate Creek	Denali National Park	2.5 miles	Turbidity	Turbidity	Mining

E. CATEGORY 5/SECTION 303(d) LIST OF IMPAIRED WATERS

#	Region	Category	Alaska ID Number	Waterbody	Location	Area of Concern	Water Quality Standard	Pollutant Parameters	Pollutant Sources
8	SC	Category 5 Section 303(d) listed	20505-401	Big Lake	Wasilla	1,250 acres	Petroleum Hydrocarbons	Total Aromatic Hydrocarbons (TAH)	Motorized Watercraft
9	SC	Category 5 Section 303(d) listed	30101-503	Cold Bay	King Cove, Alaska Peninsula	0.01 acre	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Military, Fuel Storage
10	SC	Category 5 Section 303(d) listed	20505-001	Cottonwood Creek	Wasilla	Entire 13 miles	Residues	Foam & Debris	Urban Runoff, Urban Development
11	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
12	SC	Category 5 Section 303(d) listed	30203-001	Egegik River	Egegik	0.25 mile	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Spills, Fuel Tanks, Under-ground Fuel Tanks
13	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
14	SC	Category 5 Section 303(d) listed	20401-412	Hood/Spenard Lake	Anchorage	307 acres	Dissolved Gas	Low Dissolved Oxygen	Urban Runoff, Industrial
15	SC	Category 5 Section 303(d) listed	30102-602	Iliuliuk Bay/Harbor	Dutch Harbor	1.4 acres	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Urban Runoff
16	SC	Category 5 Section 303(d) listed	20402-001	Matanuska River	Palmer	½ mile	Residues	Debris	Landfill
17	SC	Category 5 Section 303(d) listed	30101-502	Popof Strait	East Aleutians Borough	5 miles	Residues	Seafood Waste Residue	Seafood Processor

E. CATEGORY 5/SECTION 303(d) LIST OF IMPAIRED WATERS

#	Region	Category	Alaska ID Number	Waterbody	Location	Area of Concern	Water Quality Standard	Pollutant Parameters	Pollutant Sources
18	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
19	SC	Category 5 Section 303(d) listed	20401-020	Ship Creek Glenn Hwy. Bridge. Down to Mouth	Anchorage	11 miles, Glenn Hwy. Bridge. Down to Mouth	Petroleum Hydrocarbons, Oil & Grease	Petroleum Products	Urban Runoff
20	SE	Category 5 Section 303(d) listed	10301-004	Jordan Creek	Juneau	3 miles from tide-water up-stream	Sediment Dissolved Gas	Sediment, Low Dissolved Oxygen	Land Develop-ment, Road Runoff
21	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
22	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
23	SE	Category 5 Section 303(d) listed	10203-001	Nakwasina River	Baranof Island, Sitka	8 miles	Sediment Turbidity	Sediment Turbidity	Timber Harvest
24	SE	Category 5 Section 303(d) listed	10303-004	Pullen Creek (Lower Mile)	Skagway	Lower mile of Pullen Creek	Toxic & Other Deleterious Organic and Inorganic Substances	Metals	Industrial
25	SE	Category 5 Section 303(d) listed	10303-601	Skagway Harbor	Skagway	1.0 acre	Toxic & Other Deleterious Organic and Inorganic Substances	Metals	Industrial

APPENDIX F Alaska's Water Quality Management Programs

Alaska's Water Quality Standards

The protection of surface and groundwater 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 revised as of December 26, 2006 .

Alaska's water quality standards (18 Alaska Administrative Code [AAC]) designate specific uses for which water quality must be protected. State standards specify seven designated uses for fresh waters and seven designated uses for marine waters. Table F-1 summarizes these uses.

Table F-1 Designated Uses of Alaska's Freshwater and Marine Waterbodies

Designated Use	Freshwater	Marine
Drinking water	√	
Agriculture	√	
Aquaculture	√	√
Industrial	√	√
Contact Recreation	√	√
Non-contact Recreation	√	√
Growth and Propagation of Fish, Shellfish, Other Aquatic Life, Wildlife	√	√
Seafood Processing		√
Harvesting Raw Mollusks or Other Aquatic Life		√

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.

Although Alaska does not have any wetland-specific water quality standards and there are neither numeric nor narrative criteria that are specific to wetlands, Alaska's water quality standards consider wetlands as "waters of the state" and, consequently, Alaska's water quality standards apply to wetlands.

State standards specify the pollutant limits, or criteria, necessary to protect the designated uses for a variety of parameters or pollutants for each of the 14 freshwater and marine uses. The pollutants for which standards are required are:

1 Color
2 Fecal coliform bacteria,
3 Dissolved Oxygen
4 Dissolved Inorganic Substances
5 Petroleum Hydrocarbons, oil and grease
6 pH
7 Radioactivity,
8 Residues (floating solids, foam, debris, deposits).
9 Sediment
10 Temperature,
11 Toxic substances,
12 Turbidity

In the federal Clean Water Act Section 305(b) assessment process, waterbodies are compared to the standards for these parameters to determine if persistent exceedances of water quality violations occur.

The water quality standards adopt the state primary drinking water maximum contaminant levels (MCLs) in the Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances (18 AAC 70.020(b)(11)). Since the Alaska Drinking Water Program was given primacy by the EPA, the state MCLs have been in full compliance with the National Primary Drinking Water Regulations contaminant limits.

Alaska's water quality standards also contain provisions for antidegradation, mixing zones, natural conditions, short-term variances, "zones of deposit" (ZODs)—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.

Every three years, DEC conducts a comprehensive review of the water quality standards in 18 AAC 70. The triennial review is a federal Clean Water Act requirement that helps set pollution limits for Alaska's waters by integrating the most current science and technology. Further information on the triennial review can be found at http://www.state.ak.us/dec/water/wqsar/trireview/trireview.htm

Alaska's Clean Water Actions (ACWA)

Alaska's Approach to Water Resources Management

DEC participates in the implementation of the Alaska Clean Water Actions (ACWA) policy, which was initiated in 1999. Through the ACWA process, the Departments of Environmental Conservation, Natural Resources, and Fish and Game work together to focus state and federal resources on the waters of greatest need, addressing issues of water quality, water quantity, and aquatic habitat. Background information on the ACWA can be found online at: http://www.state.ak.us/dec/water/acwa/acwa_index.htm.

Cooperating agencies have developed a waterbody nomination and ranking process, using established criteria, that prioritizes assessment, stewardship, and corrective action needs for polluted waters and waters at risk of pollution. These criteria include the statutory criteria as well as severity of pollution and uses to be made of the waters, per the Clean Water Act § 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 ("ACWA Priority Rank"). Waterbodies for which the data are not sufficient enough to suggest a current or anticipated problem are tracked for further "data collection or monitoring." Other waterbodies for which sufficient and credible data are available and that suggest that a current water quality, water quantity, or aquatic habitat problem exists or that future problems are likely, are subject to additional analyses to evaluate agency stewardship effectiveness and to determine the persistence of exceeded standards or regulations violations. A number of these waterbodies are tracked as "at-risk" or "recovery." Ranking the waterbodies and assigning a relative priority is a way for agencies to focus resources on the most important priorities.

Description of Ranking Criteria

The ACWA ranking criteria include an identical set of six common factors (allocation (refers to the extent to which the water has been obligated for various uses), condition, protection, future use, present use, and value) applied broadly across each of three components:

- Water quantity;
- Water quality; and
- Aquatic habitat.

Each factor is assigned a high (5), medium (3) and lower (1) rating for each of the components.

Application of the Ranking Criteria

Professional agency staff review readily available information and data related to a given waterbody and assign a factor-rating using their best professional judgment for each factor. The agency most knowledgeable and familiar with the data is responsible for an individual component. For instance, Alaska Department of Natural Resources hydrologists are assigned the responsibility for providing factor-ratings for water quantity, whereas biologists in the Alaska Department of Fish and Game are assigned the responsibility for providing aquatic habitat factor ratings, and DEC is assigned the responsibility for making water quality ratings. Waterbodies are ranked in descending order of their assigned ranking score. Numeric thresholds are established and each waterbody is assigned a high, medium, or lower priority. More detailed information on the ranking process is available online at http://www.dec.state.ak.us/water/acwa/acwa_ranking.htm

Funding Priorities

Funding to support these ACWA identified high-priority protection and restoration efforts may come from various state agencies such as the Department of Environmental Conservation, the Department of Natural Resources, and the Department of Fish and Game, through which requests for proposals are publicly solicited on a competitive basis. Each of these funding sources has a unique set of obligations and conditions for use.

A single, integrated solicitation process that captures the requirements associated with each of the potential funding sources was developed in 2003. The consolidated solicitation process reduces the burden on applicants by providing a "one-stop shopping" approach to their funding search. It facilitates 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 are accomplished by an interagency team representing all of the resource management and funding source agencies.

ACWA Priority Actions

ACWA priority water actions (the needed actions on the ACWA-priority waters) were identified in 2007 for 31 of Alaska's waters, and grant funds were targeted for these waters. Nineteen projects were funded for actions from July 2007 to June 2008. Actions were developed for these waterbodies, and these actions can be reviewed online at:

http://www.dec.state.ak.us/water/acwa/acwa%20grant/downloads/App%20D%20ACWA%20FY07%20ACWA%20Priority%20Water%20Actions.xls

Alaska Water Monitoring and Assessment Strategy

The Department of Environmental Conservation developed a long term Water Quality Monitoring and Assessment Strategy (Strategy) to guide its stewardship of Alaska's marine and fresh waters, which was completed in June 2005. The complete document is available for review at:
http://www.dec.state.ak.us/water/wqsar/monitoring/DEC_monitoring_strategy_final_2005.pdf

The Strategy is intended to meet the federal expectations for state water quality stewardship activities enumerated in the Clean Water Act in a manner influenced by Alaska unique needs and challenges. The Strategy integrates policy and program elements embodied in the Alaska Clean Water Actions Policy (ACWA), and EPA's Consolidated Assessment and Listing Methodology and Elements of a state Water Monitoring Program documents. These two major policies define from state and federal perspectives, specific objectives for the Strategy. The purpose of this document is: to serve as a framework for Alaska resource agency decisions required for assessing and monitoring Alaska's water resources; to support protection and restoration decisions; and serve as a roadmap for improving state, federal, local, tribal and public capabilities and performance over time for monitoring the status and trends of Alaska's water resources.

The Strategy focuses on what can be done with available financial resources due to the abundance of Alaska's water resources. Because of this abundance Alaska must prioritize how limited state resources should be applied in monitoring and assessing its water resources. The Strategy touches on waterbody level monitoring through ACWA and ambient analysis through Alaska's Environmental Monitoring and Assessment Program.

The Monitoring Strategy is organized around ten elements which must be addressed to ensure that monitoring and assessment activities are conducted on a rational basis and in a manner which ensures that information is of good quality and is accessible for resource management decisions. The ten elements which the Strategy addresses are:

Monitoring Program Strategy
Monitoring Objectives
Monitoring Design
Core and Supplemental Water Quality Indicators
Quality Assurance
Data Management
Data Analysis/Assessment
Reporting
Programmatic Evaluation
General Support and Infrastructure Analysis

The Water Quality Monitoring Strategy enables DEC to revise monitoring programs based on emerging needs. For example, the monitoring programs can be adapted to evaluate the impact of global changes on Alaska waters. DEC recognizes that sources external to Alaska may impact water quality. Information or direction from Alaska Climate Change Task Force (http://www.climatechange.alaska.gov/) can also be incorporated future waterbody assessments and listing methodologies. The Task Force has direct responsibility for a host of climate change impacts including the assessment of warming estuaries and fresh water habitat which support fisheries. The Task Force also intends to seek funding for an ocean acidification research and monitoring plan.

In 2006, the Environmental Protection Agency (EPA) Region 10 completed a review and accepted DEC's Strategy.

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 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 have been identified by the EPA as necessary for an effective restoration program.

- *Explicit short- and long-term goals, objectives, and strategies to protect surface and groundwater.*
- *Strong working partnerships and links to appropriate state, tribal, regional, and local entities (including conservation districts), private sector groups, citizens' groups, and federal agencies.*
- *A balanced approach that emphasizes both statewide nonpoint source programs and on-the-ground management of watersheds where waters are impaired and threatened.*
- *Abatement of known water quality impairments resulting from nonpoint source pollution and prevention of significant threats to water quality from present and future activities.*

- *Identification of waters and watersheds impaired by nonpoint source pollution and important unimpaired waters that are threatened or otherwise at risk. Alaska's Nonpoint Source Water Pollution Program includes a process of progressively addressing these waters by conducting more detailed watershed assessments, developing watershed/waterbody implementation plans, and then implementing those plans.*

- *Review, upgrading, and implementation of all program components and establishment of flexible, targeted, and iterative approaches to achieve and maintain beneficial uses of water, including a) a mix of water quality-based and/or technology-based programs b) a mix of regulatory, non-regulatory, financial, and technical assistance as needed to achieve and maintain beneficial uses of water and c) incorporates or cross references existing baseline requirements established by other relevant federal or state laws.*

- *Identification of federal lands management and activities that are not managed consistently with the objectives of Alaska's nonpoint source program.*

- *Efficient and effective program management, including necessary financial management.*

- *Periodic review and evaluation using environmental and functional measures of success: sources of nonpoint source pollution are assessed and the management program is revised at least every five years.*

These nine key elements have been incorporated and integrated with Alaska's Clean Water Actions policy in the Alaska Nonpoint Source Water Pollution Control Strategy. Alaska's Nonpoint Source Water Pollution Control Strategy can be found at http://www.dec.state.ak.us/water/wnpspc/pdfs/2007_NPSStrategy.pdf. General sources of nonpoint source pollution that are addressed include:

- Urban and community development;

- Forest practices;

- Harbors and marinas;

- Hydromodification;

- Mining;

- Agriculture;

- Wetlands classification and management; and

- Road, Highways, and Bridges.

Maintaining good water quality can only be achieved when all sources of pollution are considered, resources are used for the highest priorities, and people work together to prevent pollution and achieve clean water goals. Integration of the nine key program elements listed above with the Alaska's Clean Water Actions priorities ensures that stewardship and prevention, monitoring and, when necessary, restoration actions are implemented.

Coastal Nonpoint Source Pollution

Within Alaska's Nonpoint Water Pollution Control Strategies are the state's strategies to implement the *Alaska Coastal Clean Water Plan,* Public Review Draft, August 1995, and the requirements of the Coastal Zone Act Reauthorization Amendments (CZARA) ("Section 6217"). .

The majority of the CZARA Section 6217 management measures are implemented through state programs and authorities in existence, such as: the state certification of federal permits and activities that Water Quality Standards will be met; fish habitat protection, water rights appropriations; the Alaska Coastal and Harbor Design Procedures Manual; Harbor Management Agreements; the Forest Resources and Practices Act; and regulations, and erosion and sediment control plans for dam construction. This ensures appropriate protection occurs while efficiently using resources.

BEACH Grant Program

The goal of the Alaska BEACH Grant Program is to provide funding that helps Alaskan communities monitor Alaska's marine beaches for fecal pollution.

DEC surveyed Alaska's coastal communities and found that some beaches may be more likely to have a higher level of bacteria contamination than others. To learn more about the extent of possible sources of the presence of fecal coliform bacteria or enterococci bacteria, DEC has entered into an agreement or Memorandum of Understanding (MOU) with several coastal communities that will be able to apply for BEACH Grant funding. These cooperating communities will work with DEC for water quality monitoring, community notification and training.

The BEACH Act of 2000

The BEACH Act was signed into law in October 2000 in response to concerns that people were becoming ill after visiting local shores/beaches, especially when they came into direct contact with the water during recreational activities. Environmental Protection Agency

(EPA) awards grants to state and tribal authorities to assist with the implementation of beach water monitoring and advisory notification programs. More information on EPA's Beach program can be found at http://www.epa.gov/beaches/

Alaska's BEACH Grant

The Alaska Department of Environmental Conservation (DEC), with the assistance of interested organizations and the general public, has developed a beach monitoring program to evaluate the possible risk to recreational beach users in Alaska. By notifying the public in the event that a sample exceeds the allowable levels, this program will help prevent illnesses that could result from exposure to contaminated beach water.

Identifying Alaskan Beaches

Alaska Department of Environmental Conservation's Beach Grant Program defines a beach as "any shoreline where recreational activities may bring a person into complete or partial body contact with marine water." NOTE: This definition may include sections of a shoreline that do not appear to look like a sandy beach.

A Recreational Beach Survey was performed in 2003 to gather information from coastal communities about the recreational use of beaches in their area. The 60 responses that were received identified 203 recreational-use beaches as areas that were used for recreational purposes. These beaches were located in 53 coastal Alaskan communities.

Current status of the Alaska BEACH Program

DEC funds local communities and tribal governments to monitor and develop phases of the BEACH program through the ACWA/BEACH grant process. These communities began monitoring activities starting during the summer of 2007. Beginning in 2007 coastal communities began monitoring their. These communities (Dillingham, Haines, Juneau and Naknek) began monitoring their local recreational beaches for indicator bacteria Alaska's BEACH Grant Program provides support for communities to begin monitoring marine water quality adjacent to high-use beaches. These grants will be used to sample beach water for organisms (fecal coliforms and enterococci bacteria) that indicate the presence of fecal contamination.

Funding will be made available through the ACWA/BEACH Grant process to four additional communities (other than the four beginning monitoring activities during 2007) to begin the development phase of setting up a beach monitoring program next year. More information about this year's BEACH Grant solicitation can be found at http://www.dec.state.ak.us/water/wqsar/wqs/beach_solicit_specs.htm

Point Source Pollution Program

Overall Approach

DEC's point source pollution program covers more than 1,000 permitted facilities and activities throughout the state of Alaska. DEC's overall approach to water quality management is to focus staff resources on facilities and activities that pose higher risks to public health or the environment. A multi-year, system-wide modernization of the permitting process enables staff to spend more time as environmental problem solvers. Five broad categories of effort are under way:

Obtaining Primacy

DEC currently does not have "primacy" - prime authority - to administer the National Pollutant Discharge Elimination System (NPDES) wastewater permit program for point source discharges of pollution to waters of the United States. Instead, DEC certifies EPA issued NPDES permits. DEC also issues state individual and general permits for point source discharges that have not been issued a NPDES permit.

In November of 2004, DEC convened a permittee workgroup to evaluate the costs and benefits of state primacy for the NPDES program. In January 2005, the workgroup members recommended that the state seek primacy. Legislation passed during the 2005 Legislative session directed DEC to submit an application for NPDES primacy to EPA before July 1, 2006. The application was submitted to EPA on June 29, 2006. On August 1, 2006 EPA determined that the state's NPDES application was incomplete and provided a complete list of deficiencies to DEC on October 31, 2006. DEC is working with EPA to provide the requested information and resolve the deficiencies. The projected goal is to re-submit the primacy application to EPA in May 2008.

Improving Regulatory Oversight

Staff focus on improving and updating permits for facilities and activities that pose a higher risk to human health or the environment by working on federal NPDES individual permits for all large-volume, major dischargers, and by using new or renewed general permits that standardize the review of similar or lower risk projects. DEC also regulates domestic wastewater treatment facilities not permitted by the EPA but nevertheless need a discharge permit and are important to the human health in smaller Alaskan communities. Finally, DEC prioritizes facilities that are inspected on an annual basis through the use of a risk-based scoring and ranking model.

Enhancing Compliance

A facility's compliance with effluent limits and operational conditions designed to protect water quality is enhanced by on-site assistance by DEC staff, who have extensive knowledge about a wide variety of local conditions and waste treatment technology. Routine review of monitoring records submitted to DEC and follow-up as needed also yield incremental improvements in the ambient water quality.

Providing Technical Information

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 and to be a resource for information about successful wastewater treatment/discharge technology and practices.

Streamlining the Permitting Process

Streamlined application, fee payment, and electronic reporting; permit conditions that focus on cost-effective practices gleaned from statewide experience; and consistent attention across industry sectors on pollutants of concern facilitates compliance. Also, a modern data system provides an analytical tool to support improvements in other aspects of DEC's water quality program, e.g., 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 pollution control program focuses on on-site wastewater systems (septic systems), wastewater lagoons, and underground injection control (UIC) wells (specifically, Class V injection wells (Class V injection wells injection wells can pose a significant threat to ground water quality. Common examples in Alaska are sumps, drains, drywells, and drainfields that are used to dispose of septic tank effluent; storm water and snowmelt; motor vehicle waste fluids; equipment and shop floor wash water, and other commercial waste fluids. Common contaminants associated with injection wells including nutrients, bacteria, viruses, solvents, anti-freeze, used oil, and dissolved heavy metals, can potentially contaminate a groundwater aquifer that serves as a source of drinking water through a private or public water system well.), to ensure that domestic wastewater (septage and sewage) is properly treated, stored, handled, and disposed of in a safe and sanitary manner. The program seeks to provide adequate public health protection and minimize environmental degradation of the land and groundwater.

The department reviews engineered plans for the design and construction of domestic wastewater treatment, storage, and disposal facilities. Staff also reviews monitoring reports

for treated effluent discharges to the surface of the land or into the ground that may affect the groundwater. Data from the domestic wastewater program is used to create maps that show the location of septic systems, identified UIC wells, wastewater treatment systems, and sewage lagoons when completing public water system source water assessments for the drinking water protection program (see Drinking Water section below).

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. This runoff often contains pollutants in quantities that could adversely affect water quality.

The department's point source stormwater focus is twofold: stormwater that is subject to NPDES permitting requirements and stormwater handled by treatment and discharge systems.

Stormwater discharges that require an NPDES permit include discharges from constructions sites disturbing one or more acre of land, certain industrial facilities, and municipal separate stormwater sewer systems (MS4) in the Anchorage and Fairbanks areas. NPDES stormwater permits require proper site control and rainfall and snowmelt runoff management so that runoff does not come in contact with waste materials or pollutants and that it is properly treated before discharge. Since Alaska does not have primacy for the NPDES permit program, it administers the NPDES permits as state permits after it has certified them (18 AAC 15.120) and the department retains the right to enter, inspect, and sample permitted facilities.

Under 18 AAC 72.600, the department reviews and approves engineering plans for storm water treatment and discharge systems. The goal of this component is to ensure that permanent stormwater systems are designed and constructed to meet certain pollutant removal criteria.

Commercial Passenger Vessel Environmental Compliance Program

In 2001, the state passed an innovative pollution prevention law that applies to large (defined as 250+ passengers) as well as small passenger vessels (50 – 249 passengers) including some Alaska Marine Highway System vessels. The Commercial Passenger Vessel Environmental Compliance Program ("Cruise Ship Program") implements the law and ensures that cruise ships and ferries comply with wastewater effluent and visible emission standards. Effluent limits are set for both graywater (e.g. showers, dishwaters, etc.) and blackwater (e.g. toilet water).

There have been two changes to the original law. In 2004, the Legislature made changes to the law that applied to small passenger vessels. It allowed small passenger vessels to

implement Best Management Practices – such as only discharging while underway - to manage their wastewater discharge. In August 2006, the voters approved a citizen sponsored cruise ship ballot initiative. The new law requires that cruise ships obtain wastewater permits in order to discharge. It also requires that observers - Ocean Rangers – be placed onboard cruise vessels while in Alaska waters. The Cruise Ship Program is in the process of issuing a wastewater discharge general permit. The Department is also in the process of hiring a contractor to place Ocean Rangers on board ships during the 2008 cruise season.

The Cruise Ship Program also conducts scientific research to assess the impact of cruise ship wastewater on Alaska 's environment and may create additional standards if science and technology warrant. The state law also addresses the offloading and/or disposal of nonhazardous solid wastes (besides sewage) and hazardous wastes in Alaska. Vessel owner/operators are required to annually submit a description of the vessel nonhazardous and hazardous waste handling procedures and to report any deviations from the vessel plan to the Department. The Cruise Ship Program is supported by industry fees.

Drinking Water Program

The Drinking Water Program consists of four interrelated public water system (PWS) oversight components: Engineering, Field Operations and Implementation (PWS Compliance and Enforcement activities); Compliance and Technical Assistance (Drinking Water Protection, Alaska PWS Database, PWS Security and Emergency Response planning, and statewide PWS Compliance and Enforcement coordination); and Program Management and Administration.

Public Water System and Drinking Water Compliance
Field Operations and Implementation, Engineering, and Compliance and Technical Assistance staff primarily comprise the Drinking Water Program's compliance and enforcement group, i.e., the Public Water System Supervision (PWSS) Program. The Alaska PWSS Program focuses on the federally regulated public water systems... PWS are those systems that provide drinking water to 25 or more individuals and do not include single family homes or duplexes with their own private wells. There are approximately 1,595 federally regulated public water systems in the State of Alaska (October 1, 2007 inventory and this is an approximate number or a "snap shot" in time because the "inventory" of Alaska PWS is dynamic). Some systems are seasonal, shutting down for six to nine months of the year, many systems are slowly going out of business, disbanding, or being consolidated into larger systems, and many "new" small community-type systems are starting up in the areas of rapid growth, such as Alaska's Matanuska-Susitna Valley.

Both the State of Alaska and the federal government classify public water systems based upon population served and duration of operation regardless of the source of drinking

water, whether groundwater or surface water. The federal (EPA) classification for public water systems 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's classification of public water systems includes the EPA's basic groups**:** Class A systems comprise both CWS and NTNCWS and Class B systems comprise TNCWS. DEC's October 2007 inventory shows 695 Class A public water systems (444 are CWS and 251 NTNCWS) and 900 Class B public water systems (TNCWS).

Alaska is a primacy state for drinking water and has direct oversight of public water systems within the state. The state is required to complete the timely development or adoption of federal drinking water rules and implement the state Drinking Water (PWSS) Program to meet the intent and requirements of the Safe Drinking Water Act (SDWA), the SDWA Amendments of 1986 and 1996, and subsequent federal rules and drinking water initiatives.

The Alaska PWSS Program does not "create," "measure," or "develop" data. Rather, it collects PWS compliance monitoring data, operator reports, and sanitary survey inspector reports that are sent on a routine basis directly to the Drinking Water Program staff by DEC-certified labs, PWS owners or operators, and DEC-certified sanitary survey inspectors, respectively. Staff review and either approve or disapprove the engineered plans for public water system treatment, storage, and distribution systems. The program requires that public water systems 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 public water system compliance monitoring data for the regulated drinking water contaminants as well as any specific rule requirements to confirm that the health of the customers being served by a public water system is protected. The program requires that public water systems are in compliance with SDWA requirements, federal rules, and state regulations. If PWS are in noncompliance, Drinking Water Program staff take appropriate enforcement actions or may refer the PWS to EPA for enforcement.

All public water system location data for Alaska's federally regulated public water systems was provided to the EPA approximately three years ago. Alaska PWS locational data for treatment systems, wellhead (ground water source), and intake (surface water source) is routinely checked during the sanitary survey process and any changes in locational data are corrected in the PWS Safe Drinking Water Information System (SDWIS)-State database. All routine data for the federally regulated public water systems are reported to the EPA during monthly or quarterly data transfers. This information includes State of Alaska public water system inventory, source types, population served, latitude and longitude of new treatment systems and source intakes or updated information from existing systems, compliance monitoring data, enforcement actions, and operator reports. Additionally, all state PWSS Programs are required to submit to the EPA a public water system compliance report on a calendar year basis. These annual compliance reports started with the calendar

year 1996 report and are required to be submitted to the EPA by July 1 of each year for the previous calendar year unless designated otherwise by EPA.

Drinking Water Protection

The Drinking Water Protection (DWP) component of the statewide Drinking Water Program ultimately focuses on the assessment of water supplies used by public water systems for drinking water purposes and the protection of groundwater supplies used by public drinking water systems. Through an extensive public involvement process, Alaska developed Alaska's Drinking Water Protection Program – combined Source Water Assessments and Wellhead Protection Plans for PWS, which was approved by the EPA on April 4, 2000. The program combines PWS source water assessments and a Wellhead Protection Management Program, focusing on drinking water produced and distributed by public water systems using either surface water, ground water, or combined sources.

Statewide, the initial project to complete source water assessments of Alaska's public water systems is done. A total of 1,668 source water assessments were completed for 1,427 PWS. Currently, source water assessments for new PWS are being completed after the system is built and inventory information is documented in SDWIS/State. Since July 1, 2004, 28 new PWS source water assessments have been completed, as well as 81 PWS delineations, 56 contaminant source inventories, and 55 vulnerability analyses. The source water assessment process includes identifying source water (drinking water) protection areas; completing a contaminant source inventory of all potential and existing sources of regulated drinking water contaminants within the protection areas; and completing a vulnerability assessment based on the level of risk associated with identified potential and existing contaminant sources. The goal of completing PWS source water assessments is to identify and prioritize contaminant risks to public water supplies as a basis for protection efforts. These protection efforts will be largely undertaken at a local level, supported by the state through possible regulations, guidance documents, fact sheets, and Wellhead Protection Program activities.

During fiscal year 2004, an interactive CD-ROM was developed and produced for public water system owners, managers, operators, and communities to use to develop their Wellhead Protection Management Plans. The CD directs the users through the information entry process with easy-to-use methodology and easy-to-understand instructions. The end product is a written wellhead protection plan specifically designed for a particular public drinking water system or local community. The completed source water assessment report and the most recent sanitary survey are then added as appendices to the plan, resulting in a complete and comprehensive Wellhead Protection Management Plan (WPMP) for the system.

During fiscal years 2005 and 2006, DWP staff continued further development and implementation of a statewide voluntary Public Water System Wellhead Protection Program. To accomplish this goal, DWP staff assisted PWS owners and/or operators and

communities in developing Wellhead Protection Management Plans for their systems through the use of the interactive CD-ROM and completed public outreach through workshops and presentations on wellhead protection tools and strategies. Additionally, DWP staff assisted the Alaska Rural Water Association (ARWA) Source Water Protection Specialist in presenting joint workshops on both PWS Wellhead Protection and Source Water Protection planning. Community support is essential for an effective local Wellhead Protection Program. In the past two fiscal years, since July 1, 2004, Wellhead Protection CD-ROMs have been sent to 318 PWS using 389 sources for providing drinking water to their customers. As of August 2006, 19 formal Wellhead Protection Management Plans have been developed, and the information obtained from telephone surveys completed in July and August 2006, indicate that 54 PWS reportedly have developed and implemented a formal WPMP and 29 PWS have indicated they have informal protection strategies in place.

DWP staff continues to work toward identifying the communities that are currently implementing protection strategies. The communities that are implementing protection strategies will be recognized and may qualify for future incentives. In the meantime, DWP staff can focus their efforts on communities that do have protection strategies in place.

During the past year, the Drinking Water Protection Advisory Committee met on five occasions to develop recommendations for the Drinking Water Program to adopt in the future. A list of these recommendations can be reviewed on the Drinking Water Program website: http://www.dec.state.ak.us/eh/dw/DWP/WAC.htm

In addition, vulnerability assessments of public water supplies can serve as a foundation for comprehensive management and protection of Alaska's groundwater resources, as well as better assist a PWS owner using a groundwater source to achieve and maintain compliance with the Ground Water Rule, and support future commercial and industrial growth. Information gathered and generated during the initial years of the source water 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 the total maximum daily load (TMDL) values used to issue permits to discharge wastes. This information can also be used to establish TMDLs to manage the discharge of wastes to aquifers; identify critical sole-source aquifers used as a drinking water supply by a PWS; identify any areas of declining groundwater levels or groundwater quality; and perform unified watershed assessments statewide.

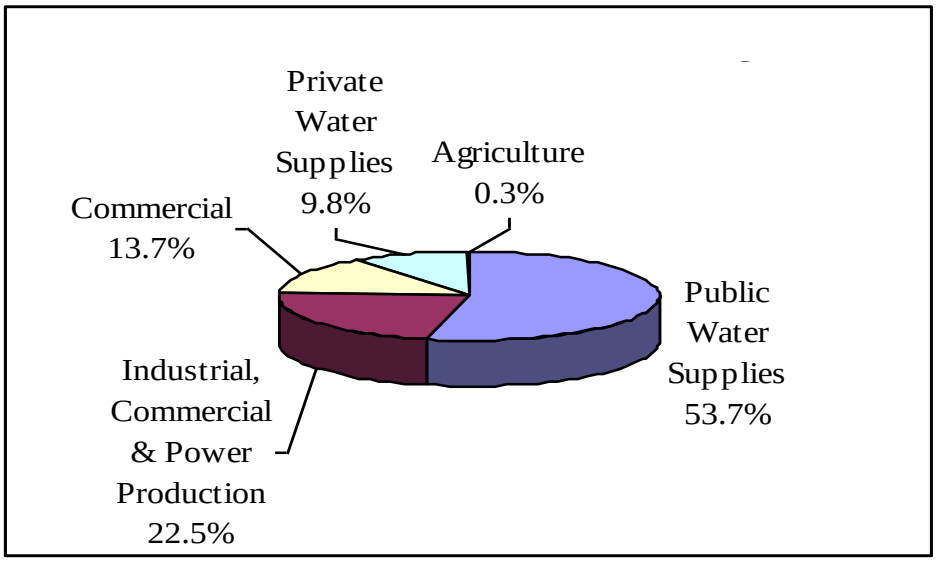
If a public water system provides drinking water that meets all the health-based standards set by the SDWA on a consistent and adequate basis, then good public health protection is established for the customers served by that public water system. All of the activities completed in the Drinking Water Program support the overall goal of requiring that public water systems provide both a safe and adequate supply of drinking water for the residents and visitors to the State of Alaska.

For more information on source water assessments, completed public water system source water assessment reports, and wellhead protection activities, see DEC's Source Water Assessment and Wellhead Protection web pages at http://www.dec.state.ak.us/eh/dw/DWP/complete.aspx

Groundwater Protection

Groundwater Importance: 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 limited water quality data is available.

Alaska is sparsely populated by approximately 670,000 residents (approximately one resident per square mile). Urban development is concentrated in a few main population centers, with the majority of people living in south-central Alaska. 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.

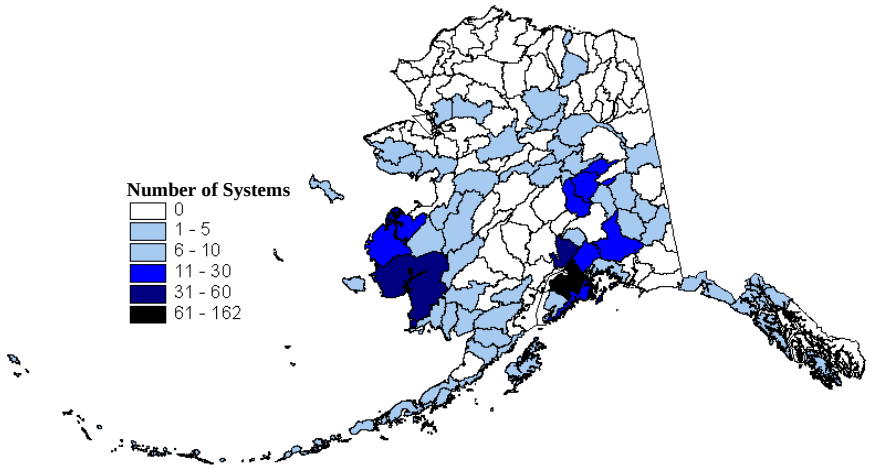


Groundwater is a source of drinking water for about 50 percent of Alaska's population, and 90 percent of the state's rural residents. Eighty-seven percent of Alaska's 1,546 public drinking water systems use a groundwater source. A small number of public water systems (e.g., Anchorage and several southeastern communities) serve a large number of people from primarily surface water sources. Ninety percent of the private drinking water supplies are groundwater. Of the approximately 330 million gallons of water used each day for

domestic, commercial, industrial, and agricultural purposes in Alaska, roughly 23 percent is derived from aquifers[2].

Groundwater Availability: 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 groundwater. Arctic, western, and southeastern Alaska make 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.

Distribution of community & nontransient/noncommunity public water systems in Alaska using groundwater



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.

[2] Based on an estimate provided by the Alaska Department of Natural Resources

Water Quality: 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. Storage and spills of fuel, along with wastewater disposal, primarily from onsite (septic) systems, are common threats to groundwater quality statewide. Additionally, a range of other activities either have potentially or actually affected 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). Prevention of human exposure to contaminated groundwater is a main focus of the department's program to remedy new and historic contamination, where leaking underground fuel tanks and other releases of oil and hazardous substances may have occurred. Efforts have been on-going since the late 1980s. Groundwater is known to be contaminated at 1,330 sites. Cleanup of groundwater is a lengthy process and is the biggest constraint to complete closure of contaminated sites. During the cleanup, primary efforts are to prevent use of the water for drinking and to monitor the status of contamination. Alaska's contaminated sites include seven Superfund sites where cleanups have been under way for a number of years.

Cost of Contamination: The cost to clean up (remediate) contaminated groundwater can be staggering. Costs can run into millions of dollars depending on site conditions. Installing and operating groundwater remediation equipment and long-term groundwater monitoring are common expenses during remediation. DWP staff and Alaska Rural Water Association (ARWA) staff are coordinating activities to provide education to communities to recognize the savings of preventing contamination from occurring in the first place.

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 at this time. The Alaska Department of Environmental Conservation (DEC) manages several programs that contribute to the protection of groundwater, including DEC's Contaminated Sites, Storage Tank, Prevention & Emergency Response, Industry Preparedness & Pipeline, Solid Waste, Pesticides, Drinking Water, Wastewater, Watershed Development, Water Quality Protection, and Community Assistance & Information programs. Additionally, ARWA staff and 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.

Division of Water: The Division of Water's, Water Quality Programs are focused primarily on surface water pollution although they are also protective of groundwater since surface water quality can have an impact on groundwater quality through infiltration and percolation. Division activities which protect groundwater quality include the industrial, domestic, and on-site domestic wastewater permitting programs; water quality protection, stewardship, and restoration projects implemented by the Division or funded through the

Alaska Clean Water Actions' grant program; and development of waterbody recovery plans and Total Maximum Daily Loads (TMDLs) assessments.

The Division of Water's Facilities Section funds the Village Safe Water Program which provides grants and engineering assistance to small communities for water and sewer projects. The Section administers the Alaska Clean Water Fund and the Alaska Drinking Water Fund which provide loans and engineering support for drinking water, wastewater (sewer), solid waste, and non-point source pollution projects, such as waterbody restoration and recovery. These loan programs are designed for cities, boroughs and qualified private utilities. The Alaska Municipal Water, Sewerage, and Solid Waste Matching Grant Program primarily assist the larger communities and boroughs in Alaska.

Drinking Water Program: Based upon 2004 PWS inventory data, there were 1,775 sources of drinking water that served 1,546 public drinking water systems (PWS) in the State of Alaska. Of these PWS, 618 were "Class A" systems (community and non-transient, non-community), and 931 "Class B" systems (transient, non-community). In July, 2004, the Drinking Water Program completed Source Water Assessments (SWAs) for each source of drinking water used by Alaska PWS. The SWAs established drinking water protection areas and vulnerability assessments of the risk to PWS from existing and potential sources of contamination. They serve as a foundation or "stepping stone" to comprehensive management and protection of Alaska's groundwater resources and have led to the development of the Alaska Drinking Water Protection Program, a voluntary program which provides tools, resources and assistance to PWS owners and operators in developing individual or community-based Drinking Water Protection Plans (DWPP). A DWPP identifies protection activities directed at existing or potential contaminant risks using the SWAs, establishes a strategy for implementing protection activities, and sets up an implementation schedule.

The SWAs will also be a crucial tool that the State will use to assist PWS in achieving compliance with the (EPA) Ground Water Rule, promulgated November 8, 2006. This Rule requires the State to conduct hydrogeologic sensitivity assessments to identify PWS using a groundwater source that are sensitive to contamination. The basics for these assessments were completed as part of Alaska's PWS SWAs vulnerability assessment.

Wetlands

The U.S. Fish and Wildlife, National Wetlands Inventory estimates that the State of Alaska includes 63% of the nation's wetland ecosystems. Activities in these wetlands and their associated waters 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. Table F-2 provides a summary of the estimated wetland acreage based on the U.S. Fish and Wildlife National Wetlands Inventory.

Table F-2 Estimated Wetland Acreage

Alaska's Wetlands by Major Category with Common Examples		
Wetland Category*	**Common Examples**	**Estimated Acres**
Palustrine	All non-tidal wetlands: muskegs, bogs, forested wetlands, tundra, open water	172,503,400
Estuarine	Bays, Salt Marshes, Beaches	2,131,900
Marine Intertidal	Ocean shoreline	48,600
Total Wetlands		**174,683,900**

* U.S. Fish and Wildlife Service - Cowardin Classification of Wetlands and Deepwater Habitat, 1979

Although Alaska does not have any wetland-specific water quality standards and there are neither numeric nor narrative criteria that are specific to wetlands, Alaska's water quality standards (18 AAC 70) consider wetlands as "waters of the state" and, consequently, Alaska's water quality standards apply to wetlands.

Wetland Trends

Alaska has 174,683,900 acres of wetlands comprising approximately 43% of the surface area of the state. 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. Although there is no statistically reliable data on statewide wetland losses, the U.S. Fish and Wildlife Service estimates that Alaska has lost 200,000 acres, or less than 1% of the state's original wetland acreage.

In urbanized and developed areas of Alaska, such as Anchorage, more than 50% of the wetlands have been developed. Significant percentages of wetlands in other urbanized areas including Juneau, Fairbanks, the Matansuka Susitna Valley and the North Slope, have been lost or impacted. Because there is a strong correlation between waterbodies that are listed as impaired by DEC and areas where wetlands have been impacted or developed, wetlands need restoration and mitigation of impacts 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.

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:

- Permitting and inspections,
- Using a functional assessment and classification system (the hydrogeomorphic approach), and
- Assisting local government and tribal organizations with wetland protection and mitigation efforts.

Permitting and Inspections

DEC participates in the management and protection of wetlands by reviewing and certifying the U.S. Army Corps of Engineers (USACE) dredge and fill permits under the authority of Section 401 of the Clean Water Act. This review and certification assures that construction and other activities do not exceed Alaska's water quality standards. The Alaska District of the USACE completes over 1,000 permit actions per year.

For the past three years DEC has reviewed individual USACE dredge and fill permits using a risk-based priority system. Under the risk-based priority system, DEC waived its right to certify permits for 50% of the projects that were reviewed. Approximately 50% were certified with or without stipulations that assure that the project will meet Alaska's water quality standards.

In addition, DEC reviews preconstruction notifications of USACE general permit verifications that do not require a 401 certification on a project-by-project basis.

Functional Assessment and Classification

To ensure that Alaska's wetlands are managed wisely, wetland professionals and policy makers need a regionally based, scientifically valid, consistent, and efficient functional assessment tool. DEC recognized that an assessment tool 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 and those 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. The hydrogeomorphic approach was selected by DEC and other cooperating agencies and organizations because it offers a rapid and reference-based method of assessment that allows users to recognize human-induced changes in the functions of wetland ecosystems. Guidebooks have been developed to implement the hydrogeomorphologic approach to assessment and management of wetlands in various regions of Alaska. A summary of the areas where the majority of wetland permitting and planning activity occurs or has occurred using the Guidebooks as assessment tools is presented in Table 8-2.

Table F-3 Wetland Assessment Activity

Regions Covered by Guidebooks	Wetland classes	Time Frame
Interior	Flats	Completed (1999)
Cook Inlet Basin (Including Kenai River Watershed)	Slope/Flats Complexes	Completed (2003)
Coastal Southeast and Southcentral	a.) Riverine b.) Slope River Proximal	Completed (2003)
Near Shore Ecosystems of Southeast and South-central	Tidal Fringe	(Initiated, discontinued until further notice)
Cook Inlet Basin (Including Kenai River Watershed)	Riverine	(Site data collected, discontinued until further notice)
Arctic Coastal Plain	Flats	(Not Initiated)

Assistance to Local Government and Native Organizations

DEC provides statewide technical assistance to local governments for permitting issues and wetland planning. Three local governments have delegated authority from the USACE to manage their wetlands. Several other communities (such as the Ketchikan Gateway Borough and the City of Wrangell) are proposing new planning. DEC is also assisting the City and Borough of Juneau in developing a Wetlands Mitigation Bank. In 2004, DEC, along with other federal agencies, successfully helped the Sealaska Native Corporation develop a private mitigation bank.

Tribal Organization Assistance with Wetland Management

DEC assists tribal organizations with wetland and watershed planning and helps develop wetlands work plans with a sound scientific foundation, guided by the Wetland Assessment Guidebooks.

Wetland Mitigation Banking

DEC participated in developing Sealaska Inc's Southeast Alaska Regional Mitigation Banking Instrument. This is the first private Mitigation Bank in Alaska. The Banking instrument agreement is expected to be signed toward the end of 2006. Additionally, the Matanuska – Susitna Borough in collaboration with a private contractor has begun developing a mitigation bank for the Matanuska – Susitna Borough. DEC has participated in the initial meetings and provides technical assistance to the Mitigation Banking Review Team with the wetland functional assessment aspects of the bank.

APPENDIX G

Alaska's Interpretation of the Residues Criterion within Alaska's Water Quality Standards (18 AAC 70) Regarding Attainment and Impairment Determinations

RESIDUE CRITERIA

Alaska's water quality standard for *residues* is described in **18 AAC 70.020(b)**

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.**

Seafood processing facilities and log transfer facilities in Alaska are typically issued "zones of deposits" (also known as ZODs) in such a facility's permit for the residues discharges. Seafood processing facilities are generally issued a one acre ZOD and log transfer facilities are issued a "project area" ZOD. Additionally, it is important to recognize that exceedance of a ZOD is not equivalent to impairment, but rather, exceedance of 1.5 acres of continuous residues coverage is the impairment standard.

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 siting 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.

- New LTFs that have not received individual NPDES permits.
- LTFs that have current individual NPDES permits and choose to seek coverage under the GP.
- LTFs that have individual NPDES permits that have expired or have been administratively extended by EPA, and that wish to continue or resume operation.
- 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 operating annually 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 April 2004 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 final decision in the 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 on 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 for 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 Integrated Reports 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 acre." This will more accurately portray actual exceedances over the permitted threshold. 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 barks 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.

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 to continuous, discontinuous and trace bark. The project area zone of deposit could be a basis for Section 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 threshold for continuous coverage of residues 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 that is under 1.0 acre will be placed in Category 2.

Category 3 Waterbody -- 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. Alaska has generally reliable information and data on facilities that discharge residues due to dive survey reporting requirements associated with residues discharge permits.

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 or 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.

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 on the Section 303(d) list when a determination is made that the water is impaired by residues. Category 5 waters require that a TMDL, or other equivalent pollution controls, is developed to attain water quality standards.

Section 303(d) of the Clean Water Act requires a list of waterbodies that are not expected to meet water quality 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 observations alone.

For waterbodies with facilities that are permitted to discharge residues**,** such as a seafood processor or log transfer facility, the impairment standard is 1.5 acres of continuous cover. If two or more consecutive dive survey reports adequately documents the presence of 1.5 acres or more of continuous residue cover then the waterbody is Category 5/Section 303(d) listed.

A waterbody with a LTF with a current ZOD authorization will be placed in Category 5 if two or more consecutive dive survey reports documents there are more than 1.5 acres of continuous residues coverage and greater than 10 cm. at any one point unless DEC has approved a remediation plan for that waterbody. A waterbody will be placed in Category 5 when a submitter has failed to implement an approved remediation plan (LTF) according to its schedule. Exceptions may include waterbodies where ZODs were authorized at greater than 1.5 acres.

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.

A waterbody associated with a facility operating under either of the LTF General Permits that is reporting continuous coverage of residues over 1.5 acres and where the permittee failed to submit a remediation plan, or has submitted a remediation plan but is failing to implement the

remediation plan, or is not meeting milestones set forth in the approved remediation plan, will be considered for Category 5/Section 303(d) listing.

A waterbody associated with an LTF where there is no currently permitted or active discharge to the water, but where the last known dive survey reported more than 1.0 acres of continuous residues coverage on the marine seafloor, will be placed on the Category5/Section 303(d) list.

A waterbody associated with a seafood processor with a current ZOD authorization with two or more dive survey reports that document more than a 1.5 acre area of seafood waste will be placed in Category 5. Exemptions would include waterbodies where ZODs were authorized at greater than 1.5 acres. Waterbodies with legacy sites seafood piles (no current dischargers) that are determined to be over one acre of continuous residue coverage may be considered for Category 5/Section 303(d) listing.

For all Category 5/Section 303(d) waterbodies listed for residues after 1998 based on two dive surveys, the operator will have to document through two consecutive dive surveys that the areal extent of continuous cover residues has been reduced to less than 1.5 acres in order to be removed from the Category 5/Section 303(d) list. For all Category 5/Section 303(d) waterbodies listed for residues in 1998 or earlier, based on one acre and on one dive survey, the operator will have to document through one dive survey that the areal extent of continuous cover residues has been reduced to less than one acres in order to be removed from the Category 5/Section 303(d) list. If the areal extent of continuous cover 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 standard 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 areal extent of continuous bark coverage on the bottom of 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 Accumulation 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.

Removal of Waterbodies from the Category 5/Section 303(d) List Determined to be Impaired from Residues

The following protocols will be applied to all waterbodies associated with a permitted facility and Category 5/Section 303(d) listed for residues regardless of an active discharge on-site.

- For waterbodies Section 303(d) listed after 1998 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 is no more than 1.5 acres before the waterbody is eligible for removal from Category 5/Section 303(d) list and for placement in either Category 1 or 2.

- For waterbodies Section 303(d) listed in 1998 or earlier (based on 1.0 acre) 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 residues coverage is no more than 1.0 acre before the waterbody is eligible for removal from Category 5/Section 303(d) list and placement in Category 1 or 2.

- In addition to consideration of the continuous residues coverage standard of 1.5 acres DEC may consider biological assessment information, such as sediment profile imaging, in a determination to remove a water on the Section 303(d) list for residues.

APPENDIX H Alaska Clean Water Actions (ACWA) Priority Ranks

This table shows each agency's rank of the water[3] and the prevailing high rank (MAX). Da

Waterbody Name	DFG	DEC	DNR	MAX
Akutan Harbor	Lwr	High	Lwr	DEC High
Anchor Pt to Happy Valley Creek	Lwr	Lwr	Lwr	FG Lwr
Anchor River	High	High	Lwr	FG High
Anvil Creek	High	High	High	FG High
Auke Bay	Med	High	Lwr	FG Med
Auke Creek	High	High	Med	FG High
Auke Lake	Med	Lwr	Lwr	FG Med
Auke Nu Cove	High	High	Lwr	FG High
Auke Nu Creek	Med	Med	Lwr	FG Med
Barabara Creek	Lwr	Lwr	Lwr	DEC Lwr
Bear Cove	Lwr	Med	Lwr	DEC Med
Bear Creek (Becharof)	Med	Med	Lwr	FG Med
Bear Creek (Hogatza)	High	Lwr	Lwr	FG High
Bear Creek (Homer)	Lwr	Lwr	Med	DNR Med
Bear Creek (Hope)	Med	Lwr	Med	FG Med
Beaver Creek (Kenai)	Med	Lwr	Lwr	FG Med
Beaver Inlet	Lwr	Med	Lwr	FG Lwr
Beaver Lake	Med	Lwr	Lwr	FG Med
Bell Flats	Med	Med	Lwr	FG Med
Beluga Lake (Homer)	Lwr	Lwr	Med	DNR Med
Benny Creek	Lwr	Lwr	Lwr	DNR Lwr
Berners Bay	High	High	Lwr	FG High
Bidarka Creek	Lwr	Lwr	Med	FG Lwr
Big Lake	High	High	Lwr	FG High
Birch Creek (Talkeetna)	Med	Lwr	Med	FG Med
Birch Creek, Upper Drainage	Med	High	Lwr	DEC High
Birch Lake	Med	Med	Lwr	FG Med
Black Bear Creek	High	High	Med	FG High
Bodenburg Creek	Med	Lwr	Lwr	FG Med
Bolio Lake	Lwr	Lwr	Lwr	FG Lwr
Bons Creek	Med	Lwr	Med	FG Med
Bradfield River	High	Med	Lwr	FG High
Bridge Creek	Med	Lwr	High	FG Med
Cabin Creek	Lwr	Lwr	Lwr	DNR Lwr
Cache Creek	Med	Med	Med	FG Med
California Creek	Med	Med	Med	FG Med
Campbell Creek	High	High	Lwr	FG High
Campbell Lake	Med	High	Lwr	DEC High

[3] As of July 2007

Captains Bay	Lwr	Med	Lwr	DEC Med
Waterbody Name	**DFG**	**DEC**	**DNR**	**MAX**
Caribou Creek	Lwr	Lwr	Lwr	DNR Lwr
Carlanna Creek	High	High	Lwr	FG High
Cedar Bay	Lwr	Lwr	Lwr	DEC Lwr
Chatanika River	Med	Lwr	Lwr	FG Med
Chena River	High	High	Lwr	FG High
Chena Slough	Med	High	Lwr	DEC High
Cheney Lake	High	High	Lwr	FG High
Chester Creek	High	High	Lwr	FG High
Chilkat River	Lwr	Med	Lwr	FG Lwr
China Poot Bay	Lwr	Med	Lwr	DEC Med
China Poot Creek	Lwr	Med	Lwr	FG Lwr
Clear Creek	Lwr	Med	Med	DEC Med
Clearwater Creek	High	High	Lwr	FG High
Clearwater Lake	Lwr	Lwr	Lwr	FG Lwr
Cold Bay	Lwr	High	Lwr	DEC High
Colleen Lake	Lwr	Lwr	Lwr	DEC Lwr
Colville River/Umiat Lake	Lwr	Lwr	Lwr	FG Lwr
Connors Lake	Med	Med	Lwr	FG Med
Copper River	High	High	Lwr	FG High
Corner Bay	Lwr	Lwr	Lwr	FG Lwr
Cottonwood Creek	High	High	Lwr	FG High
Cottonwood Lake	High	Med	Lwr	FG High
Crab Bay	Lwr	Lwr	Lwr	FG Lwr
Crooked Creek	Med	High	Lwr	DEC High
Crow Creek	Med	High	Med	FG Med
Cube Cove	Lwr	High	Lwr	DEC High
Dark Lake	Med	Lwr	Lwr	FG Med
Deep Creek	Med	High	Lwr	FG Med
Diamond Creek	Lwr	Lwr	Lwr	DEC Lwr
Dog Salmon Creek	Med	Med	Lwr	FG Med
DogFish Bay (Koyuktolik Bay)	Lwr	Lwr	Lwr	DEC Lwr
Dora Bay	Lwr	High	Lwr	DEC High
Dora Lake	Med	Med	Lwr	FG Med
Duck Creek	Med	High	High	DEC High
Dutch Harbor	Lwr	High	Lwr	DEC High
Eagle River	Med	Lwr	Lwr	FG Med
Eagle River Flats	Lwr	Lwr	Lwr	FG Lwr
East Creek	Lwr	Lwr	Med	DNR Med
East Port Frederick	Lwr	High	Lwr	DEC High
Egegik River	Med	High	Lwr	DEC High
Eklutna River	Med	High	High	DNR High
Eldred Passage	Lwr	Lwr	Lwr	DEC Lwr
Elfin Cove	Med	High	Lwr	DEC High
English Bay River	Lwr	Lwr	Lwr	DNR Lwr
Eskimo Creek	Lwr	Lwr	Lwr	FG Lwr
Eyak Lake	Med	High	Lwr	DEC High

Falls Creek	Med	Lwr	Med	FG Med
Waterbody Name	**DFG**	**DEC**	**DNR**	**MAX**
Finger Lake	Lwr	Med	Lwr	DEC Med
Fire Cove	Lwr	High	Lwr	DEC High
Fire Lake	Lwr	Lwr	Lwr	FG Lwr
Fish Creek (Anchorage)	Med	High	High	DEC High
Fortymile	Med	Med	Med	FG Med
Fourth of July Creek	Lwr	Lwr	Lwr	FG Lwr
Fox River	High	Lwr	Lwr	FG High
Freshwater Creek	Med	Lwr	Lwr	FG Med
Fritz Creek	High	Lwr	High	FG High
Fubar Creek	Lwr	Lwr	Lwr	FG Lwr
Funny River	High	Lwr	Lwr	FG High
Furrow Creek	Lwr	High	Lwr	DEC High
Garrison Slough	Lwr	Lwr	Lwr	FG Lwr
Gastineau Channel	High	Med	Lwr	FG High
Gibson Cove	Lwr	Med	Lwr	FG Lwr
Glacier Creek	High	High	Lwr	FG High
Goldstream Creek	High	High	Lwr	FG High
Goodnews River	Med	Med	Lwr	FG Med
Goose Bay	Med	Lwr	Lwr	FG Med
Goose Creek	Lwr	Lwr	Med	FG Lwr
Goose Lake	Lwr	Med	Lwr	FG Lwr
Granite Creek	High	High	Lwr	FG High
Greens Creek	Lwr	Lwr	Lwr	FG Lwr
Gulkana River	Med	Med	Lwr	FG Med
Gunnuk Creek	Med	High	Lwr	FG Med
Halibut Cove	Med	High	Lwr	FG Med
Hamilton Bay	Lwr	Med	Lwr	DEC Med
Hammer Slough	Med	High	Lwr	DEC High
Harding Lake	Med	Lwr	Lwr	FG Med
Harris River	Lwr	Lwr	Lwr	DNR Lwr
Hatchery Creek	Med	High	Lwr	FG Med
Hawk Inlet	Med	Lwr	Lwr	FG Med
Herring Bay Creek	High	High	Med	FG High
Hideaway Lake	Lwr	Lwr	Med	DNR Med
Hoadley Creek	High	High	Lwr	FG High
Hobart Bay	Lwr	High	Lwr	DEC High
Hogatza River	Med	Med	Lwr	FG Med
Homer Harbor	Med	High	Lwr	FG Med
Hood/Spenard Lake	Lwr	High	Lwr	DEC High
Horseshoe/Island Lakes	Med	Med	Lwr	FG Med
Hospital Lake	Lwr	Lwr	Lwr	DNR Lwr
Iliamna Lake	Med	High	Lwr	FG Med
Illiuliuk Bay/Harbor	Lwr	High	Lwr	DEC High
Indian River	High	Lwr	High	DNR High
Jakolof Bay	Lwr	Med	Lwr	FG Lwr
Jewel Lake	Med	High	Lwr	FG Med

Jim Creek	High	High	Lwr	FG High
Waterbody Name	**DFG**	**DEC**	**DNR**	**MAX**
Jim Lake	High	Lwr	Lwr	FG High
Johnson Creek	Med	High	Med	FG Med
Jones Lake	Lwr	Lwr	Lwr	DNR Lwr
Jordan Creek	High	High	Lwr	FG High
Juneau Creek	Lwr	Med	Lwr	FG Lwr
Kachemak Bay	Lwr	Med	Lwr	DEC Med
Kalmbach Lake	Lwr	Lwr	Med	DNR Med
Kanektok River	Med	Med	Lwr	FG Med
Kantishna River	Lwr	Lwr	Lwr	FG Lwr
Kasilof River	High	High	Lwr	FG High
Kaskanak Creek	Lwr	Med	Lwr	FG Lwr
Katlian River	High	High	Lwr	FG High
Kazakof Bay	Lwr	High	Lwr	DEC High
Kenai River	High	High	Lwr	FG High
Ketchikan Creek	Med	High	Lwr	DEC High
King Cove	Lwr	Lwr	Lwr	FG Lwr
King Salmon Creek	Med	Lwr	Lwr	FG Med
Kitkun Bay	Lwr	High	Lwr	DEC High
Klag Bay	Lwr	Med	Lwr	DEC Med
Klawock Inlet	Lwr	High	Lwr	DEC High
Kobuk River	Lwr	High	High	DNR High
Kodiak Landfill Creek	Lwr	Lwr	Lwr	DNR Lwr
Koktuli River - North Fork	High	Med	Lwr	FG High
Kotzebue Lagoon	Lwr	Lwr	Lwr	DEC Lwr
Kuparuk River	High	Lwr	Lwr	FG High
Kuskokwim River	Lwr	Med	Lwr	DEC Med
Lab (Labouchere) Bay	Med	Lwr	Lwr	FG Med
Lake Clark	Lwr	High	Lwr	DEC High
Lake Creek	High	Lwr	Lwr	FG High
Lake Louise	Lwr	High	Lwr	DEC High
Lake Lucille	Lwr	High	Lwr	DEC High
Lake McDermott	Lwr	Lwr	Lwr	FG Lwr
Lake Otis	Med	Med	Lwr	FG Med
Lemon Creek	High	High	Lwr	FG High
Lilly Lake	Med	Lwr	Lwr	FG Med
Little Campbell Lake	Med	Lwr	Lwr	FG Med
Little Creek (South Fork, Nome)	Lwr	Med	Lwr	FG Lwr
Little Rabbit Creek	High	High	Lwr	FG High
Little Survival Creek	Med	High	Lwr	FG Med
Little Susitna River	High	High	Lwr	DEC High
Little Tutka Bay	Lwr	Lwr	Lwr	DEC Lwr
Lookout Cove	Lwr	High	Lwr	DEC High
Lost and Found Lake	Lwr	Lwr	Lwr	DEC Lwr
Lower Fire Lake	Lwr	Lwr	Med	FG Lwr
Lower Talarik	Med	Med	Lwr	FG Med
Lutak Inlet	Lwr	Lwr	Lwr	FG Lwr

Mallard Bay	Lwr	Med	Lwr	DEC Med
Waterbody Name	**DFG**	**DEC**	**DNR**	**MAX**
Margaret Bay	Lwr	Med	Lwr	DEC Med
Margaret Creek	Med	Med	Lwr	FG Med
Mariner Creek	Lwr	Lwr	Lwr	DEC Lwr
Matanuska River	Med	High	Lwr	DEC High
McClure Bay	Med	Lwr	Lwr	FG Med
McKinley Lake	Lwr	Lwr	Lwr	FG Lwr
McKinzie Inlet	Lwr	Med	Lwr	DEC Med
McNeil Creek	Med	Lwr	Med	FG Med
McRoberts Creek	Med	Lwr	Lwr	FG Med
Meadow Creek	Med	High	High	FG Med
Meadow Lake	Lwr	Lwr	Med	DNR Med
Memory Lake	Med	Med	Med	FG Med
Mendenhall River	Med	High	Lwr	DEC High
Mills Creek	Lwr	Med	Lwr	FG Lwr
Minook Creek	Lwr	Med	Lwr	FG Lwr
Mirror Lake	Lwr	Lwr	Med	FG Lwr
Mission Lake	Med	Lwr	Lwr	FG Med
Montana Creek (Juneau)	Med	High	Lwr	DEC High
Montana Creek (Talkeetna)	High	Lwr	Lwr	FG High
Moose Creek	Med	Lwr	Med	FG Med
Moose River	Med	Lwr	Med	FG Med
Mosquito Lake	High	High	Med	FG High
Mud Bay (Homer)	Lwr	Lwr	Lwr	FG Lwr
Mulchatna River	Lwr	Med	Lwr	FG Lwr
Nahodka Creek	Lwr	Lwr	High	DNR High
Naknek River	Lwr	Lwr	Lwr	FG Lwr
Nakwasina River	High	High	Lwr	FG High
Nancy Lake	High	High	Med	FG High
Nataga Creek	Med	Med	Lwr	FG Med
Nearshore Beaufort Lagoon	Lwr	Lwr	Lwr	FG Lwr
Neptune Bay	Lwr	Lwr	Lwr	DEC Lwr
Nilumat Creek	Lwr	Med	Lwr	FG Lwr
Ninilchik River	Med	High	Lwr	FG Med
Nome River	High	Med	Lwr	FG High
North Twin Lakes	Lwr	Med	Lwr	DEC Med
Noyes Slough	High	High	High	DNR High
Nushagak River	Med	High	Lwr	DEC High
One Mile Creek	High	High	Med	FG High
Ophir Creek	Med	High	Med	FG Med
Orca Inlet	Med	Med	Med	FG Med
Palmer Creek (Homer)	Lwr	Lwr	Med	DNR Med
Passage Canal (Whittier Harbor)	Lwr	Lwr	Lwr	FG Lwr
Pavlof River	Lwr	Lwr	Lwr	FG Lwr
Paxson Lake	Lwr	Lwr	Lwr	FG Lwr
Pederson Hill Creek	Lwr	High	Lwr	DEC High
Peters Creek	Med	Lwr	Lwr	FG Med

Peterson Bay	Med	High	Lwr	FG Med
Waterbody Name	**DFG**	**DEC**	**DNR**	**MAX**
Peterson Creek	High	High	Med	FG High
Pile-Driver Slough	Lwr	Lwr	Lwr	FG Lwr
Point McCartney	Lwr	Lwr	Lwr	FG Lwr
Popof Strait	Lwr	High	Lwr	DEC High
Port Clarence	Lwr	Lwr	Lwr	FG Lwr
Port Valdez	Lwr	Med	Med	DNR Med
Port Valdez Small Boat Harbor	Lwr	Lwr	Lwr	DEC Lwr
Potato Patch Lake	Med	Med	Lwr	FG Med
Potter Creek	Med	Lwr	Med	FG Med
Quartz Creek	High	High	Lwr	FG High
Quartz Lake	Lwr	Lwr	Lwr	FG Lwr
Rabbit Creek	Med	High	High	FG Med
Red Devil Creek	Lwr	Lwr	Lwr	DNR Lwr
Red Dog Creek	Lwr	Lwr	Lwr	FG Lwr
Red Fox Creek	Lwr	High	Lwr	DEC High
Red Lake-Anton Road Ponds	Lwr	High	Lwr	DEC High
Resurrection Creek	High	High	Lwr	FG High
Rice Creek	Lwr	Lwr	Med	DNR Med
Rogge Creek	Lwr	Lwr	Lwr	FG Lwr
Rowan Bay	Lwr	Lwr	Lwr	FG Lwr
Ruby Creek	Lwr	Lwr	Lwr	DNR Lwr
Sagavanirktok River	Med	Lwr	Lwr	FG Med
Saginaw Bay	Lwr	Lwr	Lwr	FG Lwr
Saint John Baptist Bay	Lwr	Lwr	Lwr	FG Lwr
Saint Paul Island Lagoon	Lwr	High	Lwr	DEC High
Salmon Creek	Med	High	Lwr	FG Med
Salt Lake Bay	Lwr	Lwr	Lwr	FG Lwr
Sawmill Creek (Haines)	High	High	Lwr	FG High
Schulze Cove	Lwr	High	Lwr	DEC High
Seldovia Bay	High	High	Lwr	FG High
Seldovia Bay (Harbor)	Lwr	Lwr	Lwr	DEC Lwr
Shaw Creek	High	High	Lwr	DEC High
Ship Creek-Glenn Hy. Bridge Down to Mouth	High	High	Lwr	FG High
Shoal Cove	Lwr	Lwr	Lwr	FG Lwr
Shoal Creek	Med	Med	Lwr	FG Med
Shoemaker Bay	Med	Lwr	Lwr	FG Med
Shovel Creek	Med	Lwr	Lwr	FG Med
Silver Bay	Lwr	High	Lwr	DEC High
Sinuk River	Med	Lwr	Lwr	FG Med
Sitka Harbor	Med	High	Lwr	FG Med
Situk River	Lwr	Lwr	Lwr	FG Lwr
Skagway Harbor	Lwr	High	Lwr	DEC High
Skagway River	High	Med	Lwr	FG High
Slate Creek	Lwr	Lwr	Lwr	DEC Lwr
Sleepy Bay	Med	Lwr	Lwr	FG Med
Slikok Creek	High	Med	Lwr	FG High

Snake River	Med	Lwr	Lwr	FG Med
Waterbody Name	**DFG**	**DEC**	**DNR**	**MAX**
Soldotna Creek	Lwr	Lwr	Lwr	FG Lwr
Solomon River	Med	Lwr	Lwr	FG Med
Solomon River, East Fork	High	Lwr	Lwr	FG High
South Fork Koktuli River	High	Med	Lwr	FG High
South Twin Lakes	Lwr	Lwr	Lwr	DEC Lwr
South Unalaska Bay	Med	High	Lwr	FG Med
Spring Creek	Lwr	Lwr	Lwr	FG Lwr
Stariski Creek	High	Lwr	Lwr	FG High
Sundi Lake	Med	Lwr	Med	FG Med
Sunshine Cove	Lwr	Lwr	Lwr	FG Lwr
Sunshine Creek	Lwr	Lwr	Lwr	FG Lwr
Suqitughneq River	Lwr	Lwr	Lwr	FG Lwr
Susitna River	Med	High	Lwr	FG Med
Sweeper Cove	Med	Lwr	Lwr	FG Med
Sweeper Creek	High	Lwr	Lwr	FG High
Taku River	Med	Lwr	Lwr	FG Med
Talkeetna River	Med	High	Lwr	DEC High
Tanana River	Lwr	Lwr	Lwr	FG Lwr
Thorne Bay	Lwr	High	Lwr	DEC High
Thorne River Estuary	Med	Lwr	Lwr	FG Med
Tisuk River	Med	Lwr	Lwr	FG Med
Tolstoi Bay	Lwr	High	Lwr	DEC High
Tongass Narrows	Lwr	High	Lwr	DEC High
Town (Trout) Lake	Lwr	Lwr	Med	FG Lwr
Troutman Lake	Lwr	Lwr	Lwr	DNR Lwr
Turnaround Creek	Med	Lwr	Lwr	FG Med
Tuxedni Bay	Lwr	Med	Lwr	DEC Med
Twelvemile Arm	Lwr	High	Lwr	DEC High
Twitter Creek	Lwr	Lwr	Lwr	FG Lwr
Two Moon Bay	Lwr	Med	Lwr	DEC Med
Udagak Bay	Lwr	Lwr	Lwr	FG Lwr
Unalaska Lake	Med	Lwr	High	FG Med
University Lake	Lwr	High	Lwr	DEC High
Unnamed Creek (City of Kenai)	Lwr	Lwr	Lwr	DEC Lwr
Unnamed Lake (Chena Hot Springs Rd.) Two Rvr Lodge	Lwr	Lwr	Lwr	DEC Lwr
Upper Bonnie Lake	Lwr	Lwr	Lwr	DEC Lwr
Upper Fire Lake	Lwr	Lwr	Med	FG Lwr
Upper Talarik	High	Med	Lwr	FG High
Vanderbilt Creek	Med	High	Lwr	FG Med
Walby Lake	Med	Lwr	Med	FG Med
Ward Cove	Lwr	High	Lwr	DEC High
Wasilla Creek	High	High	Lwr	FG High
Wasilla Lake	High	High	Lwr	FG High
West Port Frederick	Lwr	Lwr	Lwr	FG Lwr
Westchester Lagoon	Med	High	Lwr	FG Med
Whale Passage	Lwr	Med	Lwr	FG Lwr

H. ACWA PRIORITY RANKS

Whittier Creek	Med	Lwr	Med	FG Med
Waterbody Name	**DFG**	**DEC**	**DNR**	**MAX**
Willow Creek	High	High	Lwr	FG High
Winter Harbor	Lwr	Med	Lwr	DEC Med
Womens Bay	Lwr	Med	Lwr	DEC Med
Wood River	Med	High	Lwr	FG Med
Woodard Creek	Med	Med	Med	FG Med
Wrangell Narrows	Lwr	Med	Lwr	FG Lwr
Wrinkleneck Creek-Swan Lake	Lwr	High	Lwr	DEC High
Wulik River	Med	High	Med	FG Med
Yukon River	Lwr	Med	Lwr	DEC Med
Zinc Creek	Lwr	High	Lwr	DEC High