Waterbody Field Report

Lena Cove Beach, Auke Recreation Area Beach, and Sandy Beach
Juneau, Alaska

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Abstract

Southeast Alaska Watershed Coalition (SAWC) and the Alaska Department of Environmental Conservation (DEC) conducted marine pathogen monitoring at three Juneau recreational beaches between May 21 and September 3, 2025, collecting 16 sets of water samples for enterococci and fecal coliform bacteria analysis. Microbial source tracking (MST) samples were collected once during the recreational season at each beach location and analyzed for avian, human, canine, and ruminant DNA markers. Additionally, for each location and sampling event, in situ water quality parameter measurements were taken including air and water temperature, pH and turbidity.

No exceedances of the Alaska water quality standards (WQS) were reported for contact recreation, but the most stringent WQS for consumption of raw aquatic life was exceeded at Lena Cove Beach. MST analysis reported no DNA markers for selected host species at any of the three monitored beaches. Results suggest no significant sources of bacterial contamination for contact recreation. A second recreation season is planned for May – September 2026.

Figure 1. Sandy Beach bacteria monitoring on May 12, 2025.

[1] Southeast Alaska Watershed Coalition sample collection, funded by DEC from an EPA pass-through grant.
[2] Department of Environmental Conservation, Division of Water, Water Quality, Nonpoint Source Pollution.

Basic Waterbody Information

Table 1. Basic Waterbody Information

Assessment Unit ID	AK_M_1030107_015	AK_M_1030107_002	AK_M_1030106_006
EPA ID	AK717551	AK118287	AK577033
Assessment Unit Name	Juneau - Lena Cove Beach	Juneau - Auke Recreation Area Beach	Juneau - Sandy Beach
Latitude, Longitude	58.393226, -134.750935	58.37815, -134.71912	58.273983, -134.380767
Location description	Located by Lena Beach picnic area day use shelters	Located on the northwest side of Auke Bay by day use shelters and campground	Located SE of Douglas Harbor Boat Marina by Savikko Park
Hydrologic unit code 10	1901030107		1901030106
Water Type	Marine Beach		
Area sampled	Point sample representing 1.16 miles of coastline	Point sample representing 0.95 miles of coastline	Point sample representing 0.21 miles of coastline
Time of year sampled	May 21 – September 3, 2025		

Water Quality Evaluation

Background

Lena Cove, Auke Recreation Area, and Sandy beach are three recreational beaches in Juneau, AK, a community of approximately 31,500 located on Gastineau Channel in the Inside Passage north of Douglas Island. SAWC staff assisted DEC in updating the previous Beaches Environmental Assessment and Coast Health (BEACH) survey of Juneau recreation beaches, and these beaches were identified as Tier 1[3] priorities to be sampled during the 2025-26 recreational seasons. Local residents use these areas for boating, dog walking, swimming, fishing, and general recreation. Juneau has three wastewater treatment facilities with permitted discharge into the nearby waterways (Auke Bay, Mendenhall River and Gastineau Channel), a state ferry terminal and dock, cruise ship berths along the downtown pier, several small boat harbors, and an international airport (Figure 2). Potential sources of bacteria include the city wastewater treatment facilities, onsite septic systems and marine outfalls, landfill, stormwater drain outfalls, small boat harbors, commercial vessel dock,

[3] The Alaska Beach Program uses a tiered monitoring approach that addresses bacteria testing at recreational marine water beaches based on the nature, extent and frequency of recreational use by the public, the proximity of recreational waters to known point and nonpoint sources of pollution, and the effect of storm events. Tier 1 are the highest priority beaches due to high risk of bacteria in the marine water and/or high public use of the beach.

cruise ship, ferry, and barge passages, wildlife, and pet feces, and untreated human waste (e.g. associated with camping).

Lena Cove Beach is an U.S. Forest Service (USFS) Recreational Area located about 16 miles northwest of Juneau. Residential development has increased public usage and the density of on-site septic systems at this beach. Septic drain fields were designed to handle human waste effectively, but there is still potential for development to impact near-shore water quality. The beach is popular for hiking, dog-walking, picnicking, and swimming and is serviced with a picnic area and pit toilet facilities. Picnic Creek runs down the beach, after flowing through a fish passage, attracting wildlife when salmon return annually to the creek to spawn.

Auke Recreation Area is also a USFS Recreational Area located 14 miles northwest of Juneau, just past the ferry terminal. Auke Recreation Area is one of the most popular beaches around Juneau and is equipped with several picnic shelters, fire rings, and pit toilet facilities. The beach is adjacent to the Auke Village USFS campground. A residential development serviced by on-site septic systems borders the southern end of the beach. The Auke Bay Wastewater Treatment Facility and Auke Bay Harbor lie 2.5 miles to the west.

Sandy Beach is part of the City and Borough of Juneau Savikko Park located 3.5 miles southwest of Juneau on Douglas Island, near Douglas Harbor and Treadwell Mine Historic Site and Trail. The beach is popular for a wide variety of recreational activities including dog-walking, picnicking, swimming, and camping, and is equipped with several picnic shelters, playground, volleyball courts, baseball fields, a covered stage/pavilion, and public restrooms.

Figure 2. Overview map of Juneau beach sampling locations and potential sources of bacteria.

Objectives

The objectives for this project are to:

1. Monitor selected public-use marine beaches for fecal indicator organisms (i.e., fecal coliform and enterococci bacteria) during periods of high recreational use.
2. Notify the public when indicator organisms exceed recreational criteria in Alaska Water Quality Standards (WQS)[4].

Quality Assurance Review

SAWC field staff adhered to protocols and standard operating procedures (SOPs) as defined by the quality assurance project plan (QAPP). In 2025 a total of 16 sampling events were scheduled and successfully collected and delivered to Admiralty Environmental for a completeness total of 100%. All holding times and temperatures were within acceptable range and no discrepancies, errors, data qualifiers, or QC flags were reported. Calibration/verification was performed prior to and following each event on the Hach turbidimeter, and pre-sampling calibration and post-sampling verification was performed on the Hanna handheld for each event as per the manufacturer's recommendation. Calibration logs and verification records were completed for the monitoring program. One rotating duplicate sample for enterococci and fecal coliform was collected from one of the monitoring locations for each sampling day, and all results were below or at low magnitude values for bacteria. Relative percentage difference values for duplicate samples were all within acceptable limits per the QAPP. The QAPP design of 80% completeness goal was met in this project at 100% and the data is usable[5]. A total of 16 sampling events is scheduled for a second recreation season monitoring from May to September in 2026.

Methods

Three Tier 1 beaches were monitored between May 21 and September 3, 2025 (Table 1, and Figure 2). SAWC and DEC prepared the QAPP, communication plan, and community listserv database. SAWC established a contract with DEC-approved Admiralty Environmental laboratory in Juneau to perform bacteria analyses on collected water samples.

Following Standard Operating Procedures for bacteria sampling collection, field staff collected a weekly single grab sample of marine water from each beach in laboratory-provided containers, plus one rotating duplicate sample, for enterococci (ASTM D6503- 99) and fecal coliform (SM 9222D) analyses. A calibrated Hach turbidimeter was used to measure turbidity at each site, and a calibrated Hanna handheld unit was used to measure in situ water temperature, pH, and air temperature. Site-specific Survey 123 sanitary surveys using modified EPA Marine Sanitary Surveys were completed at each beach for every sampling event.

[4] 18 AAC 70(14)(B)(i) Water Quality Standards amended as of August 9, 2025. Appendix A highlights applicable criteria.

[5] A completed Quality Assurance Checklist for the 2025 Juneau beaches monitoring season is available from DEC upon request.

All beach bacteria samples were packed into a laboratory-supplied cooler with blue ice packs to maintain a temperature range between 4.0 and 10.0 °C, and hand-delivered to Admiralty Environmental within the analytical method requisite of a 6-hour holding time, allowing two hours for laboratory staff to prepare and initiate the analyses. Grab samples were also collected on August 20, 2025, from each location and submitted to LuminUltra labs for MST analysis for avian, human, canine, and ruminant DNA markers. Samples were field processed using a field filtration kit provided by LuminUltra, extending the holding time and negating the issue of delivering samples overnight.

Results

Bacteria Data

All sample results were below WQS[6] for enterococci, and most results were below the WQS for fecal coliform (Table 2, Figures 3 - 6). No recreational advisories or public notices of beach bacteria pollution were issued during the recreational season.

Alaska's bacteria recreation water quality criteria state that for enterococci, in a 30-day period the geometric mean may not exceed 35 CFU/100 ml, and not more than 10% of samples may exceed 130 CFU/100 ml, and that for the most stringent fecal coliform criteria 'harvesting for consumption of raw mollusks or other raw aquatic life'[7], the seasonal geometric mean of samples may not exceed 14 CFU/100 ml, and not more than 10% of the samples may exceed 31 CFU/100 ml.

There were no WQS exceedances (enterococci) for the recreation criteria at the three monitored beaches. The fecal coliform seasonal geometric mean of 14 CFU/100 ml was not exceeded at any of the three beaches. The fecal coliform criteria where not more than 10% of the samples may exceed 31 CFU/100 ml was exceeded at Lena Cove Beach (a total of 2 out of 16 samples on 5-28-25 (150 CFU/100ml) and 9-3-25 (44 cfu/100ml).

[6] 18 AAC 70(14)(D) Water Quality Standards amended as of August 9, 2025.

[7] 18 AAC 70(14)(B)(i) Water Recreation, Contact Recreation, and 18 AAC 70(14)(D) Harvesting for Consumption of Raw Mollusks and Other Raw Aquatic Life; Water Quality Standards amended as of August 9, 2025.

Table 2. 2025 Bacteria analytical summary (exceedances in red)

Analyte	Site	Individual Criteria[8]	% of Samples Exceeding Threshold	30-day Geometric Mean Criteria	Maximum 30-day Geomean Result
Enterococci (MPN/100 mL)	Lena Cove Beach	130 MPN/100ml	0%	35 MPN/100ml	10.66
	Auke Recreation Area Beach		0%		11.63
	Sandy Beach		0%		16.23
Analyte	**Site**	**Individual Criteria**	**% of Samples Exceeding Individual Criteria**	**Seasonal Geometric Mean Criteria**	**Seasonal Geometric Mean Result**
Fecal Coliform (CFU/100 mL)	Lena Cove Beach	31 CFU/100ml	**12.5%**	14 CFU/100ml	5.17
	Auke Recreation Area Beach		6.25%		2.90
	Sandy Beach		6.25%		3.75

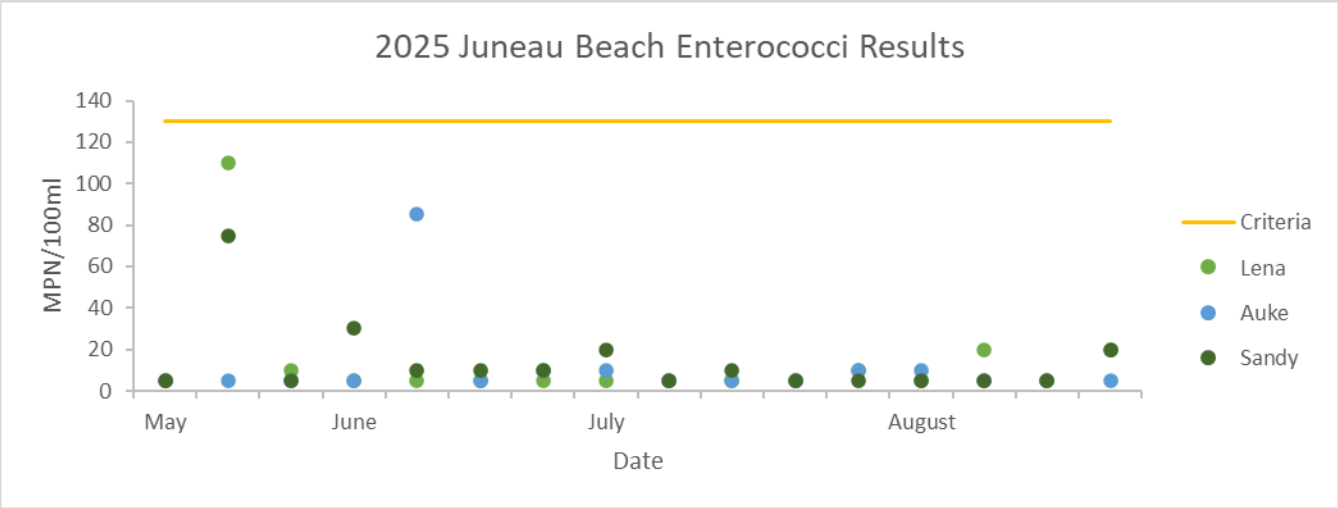

Figure 3. 2025 Enterococci analytical results

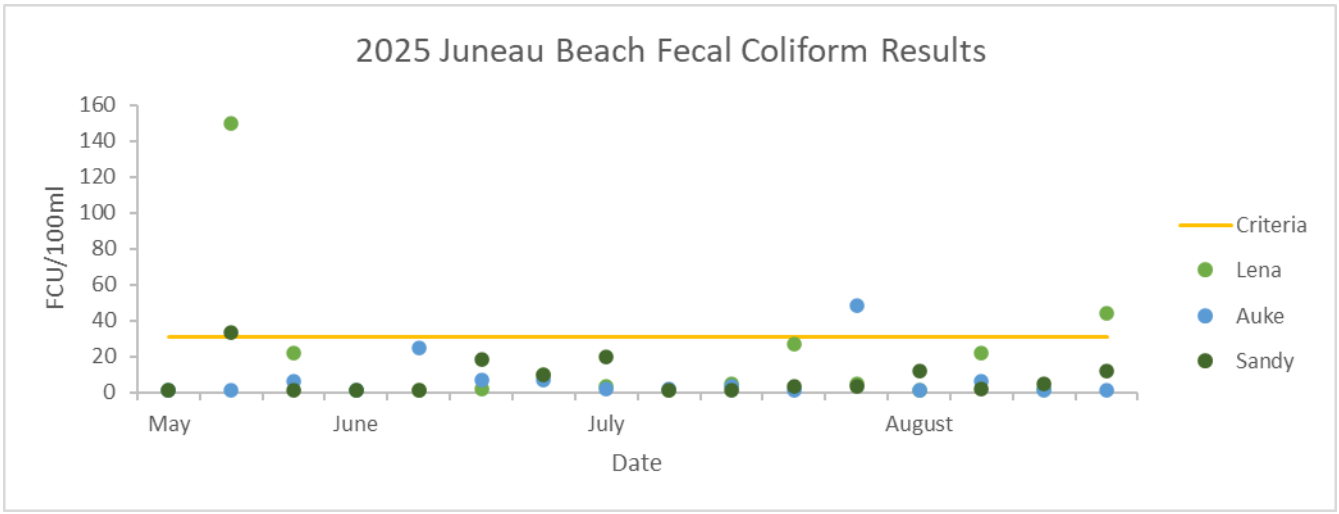

Figure 4. 2025 Fecal coliform analytical results

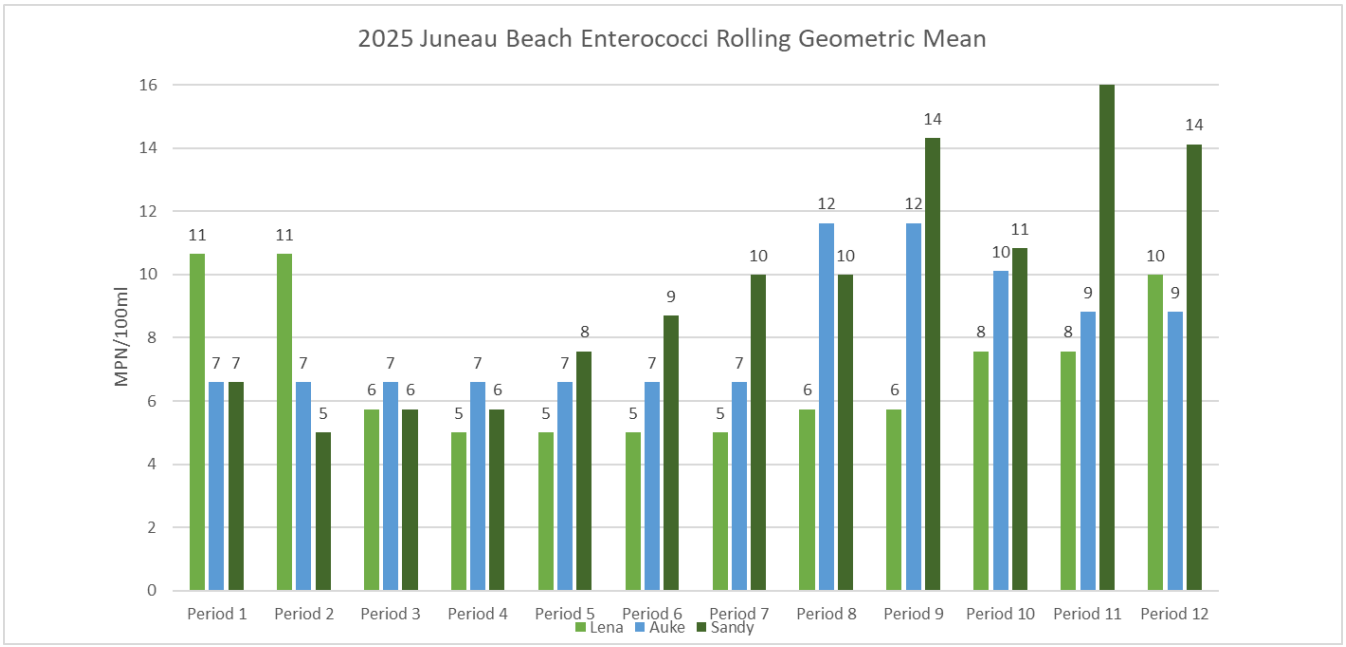

Figure 5. 2025 Enterococci rolling geometric mean within 30-day periods. Criteria of a 30-day period geometric mean may not exceed 35 CFU/100 ml. Period date ranges are detailed in Appendix B on Table B4.

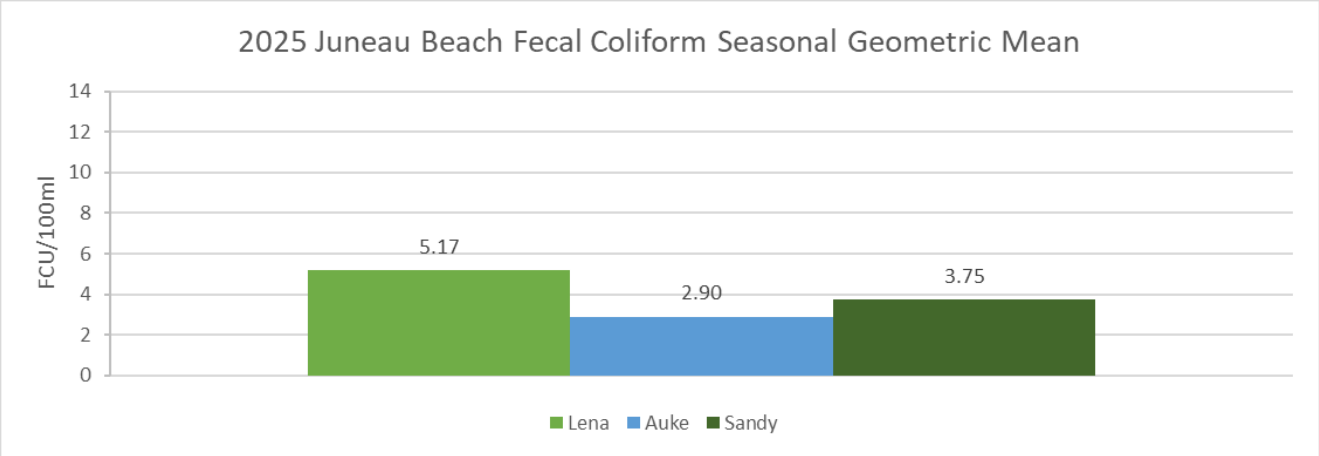

Figure 6. 2025 Fecal coliform seasonal geometric mean. Criteria of the seasonal geometric mean of samples may not exceed 14 CFU/100 ml.

In Situ Data

SAWC field staff completed sanitary surveys and collected in situ parameters (air and water temperature, pH and turbidity) at each beach location at every sampling event. In situ water quality measurements associated with sampling events did not indicate concerns with air and water temperature, pH, and turbidity across sites (Table 3). Air and water temperature varied seasonally as expected. The pH values reasonably ranged from 7.65 to 8.72 as is typical in marine water. Turbidity was generally low with increased turbidity measurements observed during increased precipitation and stormwater runoff. Project data including in situ measurements and sanitary survey results can be obtained from DEC Southeast staff in Juneau, AK.

*Table 3. 2025 In situ measurement summary****

Analyte	Site	Mean	Median	Range
Air Temperature (°C)	Lena Cove Beach	14.17	14.75	8.8 – 17.3
	Auke Recreation Area Beach	13.94	13.50	9.9 – 18.3
	Sandy Beach	13.26	12.95	9.1 – 18.3
Water Temperature (°C)	Lena Cove Beach	13.29	13.65	8.4 - 16.6
	Auke Recreation Area Beach	12.54	12.80	1.5 – 16.3
	Sandy Beach	11.54	11.75	8.4 – 13.9
pH	Lena Cove Beach	8.18	8.15	7.65 - 8.51
	Auke Recreation Area Beach	8.25	8.22	8.06 - 8.72
	Sandy Beach	8.14	8.12	8.00 - 8.49
Turbidity (NTU)	Lena Cove Beach	8.56	2.27	1.11 – 89.70
	Auke Recreation Area Beach	12.88	11.78	2.04 - 31.60
	Sandy Beach	7.28	5.83	2.00 – 18.35

***Water Quality Standards for Marine Water Uses amended as of August 9, 2025 (18 AAC 70(18), (22) and

(24)).
Temperature: May not exceed 15° C.
pH: May not be less than 6.5 or greater than 8.5 and may not vary more than 0.2 pH unit outside of the naturally occurring range.
Turbidity: May not exceed 25 nephelometric turbidity units (NTU).

MST Data

MST analysis collected on August 20 revealed no detectable avian, human, dog, or ruminant (e.g., deer) DNA markers at the three monitored beaches of Lena Cove Beach, Auke Recreation Area Beach, Sandy Beach (Table 4).

Table 4. 2025 MST analytical results

Site	Bacteroidetes	Result [8]
Lena Cove Beach	Human	ND
	Canine	ND
	Bird	ND
	Ruminant	ND
Auke Recreation Area Beach	Human	ND
	Canine	ND
	Bird	ND
	Ruminant	ND
Sandy Beach	Human	ND
	Canine	ND
	Bird	ND
	Ruminant	ND

Outreach

SAWC and DEC developed a communication plan and prepared a radio advertisement that ran several times a week to provide general Beach Program information throughout May and June 2025. The Alaska Beach Program website has a specific Juneau webpage highlighting an interactive map and data table with the most current beach sampling results, Frequently Asked Questions (FAQs), and supporting project documents. During the water sampling season, DEC shared beach sampling results through a stakeholder email listserv and updated DEC website results table and interactive map as soon as analytical data was received. Facebook posts and advisory beach signage were prepared for when the contact recreational criteria exceedances occurred, however, no advisories or beach advisory sign postings were necessary during the 2025 recreational season. SAWC shared Beach Program information via social media and flyers posted around town prior to the monitoring season and following the recreational season to share the monitoring program results summary, potential bacteria sources, and next steps.

Conclusion

SAWC staff successfully implemented the first of a two-year program for marine pathogen monitoring at three Juneau recreational beaches, and results indicated that contact recreational activities were not negatively affected by high bacteria loads; however, limits for the

harvesting of raw aquatic life for consumption were reached at one beach one time. MST analyses revealed no detectable avian, human, dog or ruminant DNA markers at any of the three monitored beaches. Potential sources of bacteria include the city wastewater treatment facilities, onsite septic systems and marine outfalls, landfill, stormwater drain outfalls, small boat harbors, commercial vessel dock, cruise ship, ferry, and barge passages, wildlife, and pet feces.

Recommended Next Steps

SAWC staff plan to replicate the 2025 beach monitoring effort during the 2026 recreation season. One minor change to the 2026 sampling schedule may be to choose sampling dates during all tide ranges, low through high tides.

Appendix A. 18 AAC 70(14) Water Quality Standards amended as of August 9, 2025

Water Quality Standards for Designated Uses	
POLLUTANT & WATER USE	**CRITERIA**
(14) BACTERIA, FOR MARINE WATER USES, (see note 1)	
(A) Water Supply (i) aquaculture	For products normally cooked, the geometric mean of samples taken in a 30-day period may not exceed 200 fecal coliform/100 ml, and not more than 10% of the samples may exceed 400 fecal coliform/100 ml. For products not normally cooked, the geometric mean of samples taken in a 30-day period may not exceed 20 fecal coliform/100 ml, and not more than 10% of the samples may exceed 40 fecal coliform/100 ml.
(A) Water Supply (ii) seafood processing	In a 30-day period, the geometric mean of samples may not exceed 20 fecal coliform/100 ml, and not more than 10% of the samples may exceed 40 fecal coliform/100 ml.
(A) Water Supply (iii) industrial	Where worker contact is present, the geometric mean of samples taken in a 30-day period may not exceed 200 fecal coliform/100 ml, and not more than 10% of the samples may exceed 400 fecal coliform/100 ml.
(B) Water Recreation (i) contact recreation	In a 30-day period, the geometric mean of samples may not exceed 35 enterococci CFU/100 ml, and not more than 10% of the samples may exceed a statistical threshold value (STV) of 130 enterococci CFU/100 ml.
(B) Water Recreation (ii) secondary recreation	In a 30-day period, the geometric mean of samples may not exceed 200 fecal coliform/100ml, and not more than 10% of the samples may exceed 400 fecal coliform/100ml.
(C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife	Not applicable.
(D) Harvesting for Consumption of Raw Mollusks or Other Raw Aquatic Life	The geometric mean of samples may not exceed 14 fecal coliform/100 ml; and not more than 10% of the samples may exceed; - 43 MPN per 100 ml for a five-tube decimal dilution test; - 49 MPN per 100 ml for a three-tube decimal dilution test; - 28 MPN per 100 ml for a twelve-tube single dilution test; - 31 CFU per 100 ml for a membrane filtration test (see note 14).

Appendix B – 2025 Juneau Beaches Bacteria Results

Table B1. 2025 Fecal coliform analytical results

Sample Date	Lena Cove Beach[21]	Auke Recreation Area Beach	Sandy Beach
5/21/2025	ND	ND	ND
5/28/2025	**150**	ND	**33**
6/5/2025	22	6	ND
6/11/2025	ND	ND	ND
6/18/2025	ND	25	ND
6/25/2025	2	7	18
7/1/2025	10	7	10
7/9/2025	3	2	20
7/16/2025	ND	2	ND
7/24/2025	5	3	ND
7/30/2025	27	ND	3
8/6/2025	5	**48**	3
8/13/2025	ND	1	12
8/20/2025	22	6	2
8/27/2025	2	1	5
9/2/2025	**44**	1	12

Table B2. 2025 Enterococci analytical results

Sample Date	Lena Cove Beach[22]	Auke Recreation Area Beach	Sandy Beach
5/21/2025	ND	ND	ND
5/28/2025	110	ND	75
6/5/2025	10	ND	ND
6/11/2025	ND	ND	30
6/18/2025	ND	85	10
6/25/2025	ND	ND	10
7/1/2025	ND	10	10
7/9/2025	ND	10	20
7/16/2025	ND	ND	ND
7/24/2025	ND	ND	10
7/30/2025	ND	ND	ND
8/6/2025	10	10	ND
8/13/2025	ND	10	ND
8/20/2025	20	ND	ND
8/27/2025	ND	ND	ND
9/3/2025	20	ND	20

[21] Non-detect (ND) is reported by the analytical laboratory as <2.0 FCU/100ml.

[22] Non-detect (ND) is reported by the analytical laboratory as <10 MPN/100ml.

Table B3. 2025 Fecal coliform seasonal geometric mean

Site	5/21/2025 to 9/3/2025
Lena Cove Beach	5.17[23]
Auke Recreation Area Beach	2.90
Sandy Beach	3.75

Table B4. 2025 Enterococci 30-day rolling geometric mean

Date Range	Period	Lena Cove Beach[24]	Auke Recreation Area Beach	Sandy Beach
05-19-2025 to 06-18-2025	1	11	7	7
05-26-2025 to 06-25-2025	2	11	7	5
06-01-2025 to 07-01-2025	3	6	7	6
06-09-2025 to 07-09-2025	4	5	7	6
06-16-2025 to 07-16-2025	5	5	7	8
06-24-2025 to 07-24-2025	6	5	7	9
06-30-2025 to 07-30-2025	7	5	7	10
07-07-2025 to 08-06-2025	8	6	12	10
07-14-2025 to 08-13-2025	9	6	12	14
07-21-2025 to 08-20-2025	10	8	10	11
07-28-2025 to 08-27-2025	11	8	9	16
08-04-2025 to 09-03-2025	12	10	9	14

[23] When a sample result was non-detect, ½ the Practical Quantitation Limit of fecal coliform (2.0 FC/100ml) was used to calculate the seasonal geometric mean.

[24] When a sample result was non-detect, ½ the Practical Quantitation Limit of enterococci (10 MPN/100ml) was used to calculate the rolling geometric mean.

Appendix C. Select Field Photos

Lena Cove Beach

Auke Recreation Area Beach

Sandy Beach