



# NONPOINT SOURCE SUCCESS STORY

## Alaska

### Educating Boaters and Restricting Use of Older Boat Motors Reduces Hydrocarbon Pollution in Little Susitna River

#### Waterbody Improved

Water samples collected in the Little Susitna River showed elevated concentrations of total aromatic hydrocarbons (TAH) that exceeded state water quality standards (WQS) for freshwater fish and other aquatic life during the summer peak salmon fishing period. As a result, the Alaska Department of Environmental Conservation (DEC) placed 8.5 miles of the Little Susitna River on the state's 2014/2016 Clean Water Act (CWA) list of impaired waters for petroleum hydrocarbon pollution from motorized boat activity. A combination of boater education and restrictions on the use of older, two-stroke boat motors helped to reduce TAH levels. TAH levels now meet WQS. On the basis of the current data, Alaska expects to be able to delist the segment in 2022.

#### Problem

The Little Susitna River flows over 113 miles from the Talkeetna Mountains to the Cook Inlet near Anchorage in southcentral Alaska (Figure 1). The river supports a popular salmon sport fishery and serves as a recreation area. The river is easily accessible by road, resulting in large numbers of anglers during the summer. A public use facility (PUF) boat launch located approximately 25 miles upstream from Cook Inlet is the primary motorized boat access point to the lower Little Susitna River.

Concentrated motorized boat use on the lower Little Susitna River during the summer raised public and state agency concern over potential changes in water quality and effects to aquatic life, including salmon. In response to these concerns, and because elevated petroleum levels had been identified in a similar salmon fishery (the Kenai River), DEC initiated Little Susitna River water quality studies in 2007–2011. DEC conducted additional water quality studies in the summers of 2012 and 2014. Data showed that concentrated motorized boat use in the lower Little Susitna River resulted in elevated TAH concentrations that exceeded the impairment thresholds established in Alaska's WQS, where the 4-day (96-hour) average of TAH (duration threshold) exceeds 10 micrograms per liter ( $\mu\text{g}/\text{L}$ ) (magnitude threshold) more than once in a 3-year period (frequency threshold). As a result, DEC designated an 8.5-mile segment of the Little Susitna River (including 1 mile upstream and



Figure 1. The Little Susitna River is in southcentral Alaska.

7.5 miles downstream of the Little Susitna River PUF boat launch) as impaired for the month of August and placed it in Category 4(b) on Alaska's 2014/2016 Integrated Report. The source was listed as petroleum hydrocarbon pollution from motorized boat activity.

#### Story Highlights

During 2010–2017, DEC and an Alaska Clean Water Actions (ACWA) grantee, Cook Inletkeeper, coordinated a *Clean Boating on Little Su* public outreach campaign. Project partners added signage at the Little Susitna River PUF, conducted one-on-one conversations with people using the boat launch, advertised via radio and print media, and hosted educational

booths at local and regional boat and outdoorsman shows. They also distributed clean boating kits, which included an oil absorbent pad, a magnet with clean fueling tips, brochures on clean bilges/spill response/clean oil changes, and a fishing license holder containing a card listing clean boating practices.

Additionally, the Alaska Board of Fisheries implemented a new regulation effective January 2017 that prohibited fishing from a motorized boat on the Little Susitna River unless a four-stroke motor or a direct-fuel-injected two-stroke motor is used. Because carbureted two-stroke motors release unburned fuel into the air and water, DEC believed that reducing the portion of boats using these motors would significantly reduce TAH levels in the water, as demonstrated in motor restrictions that resulted in improved water quality on the Kenai River. The Little Susitna River PUF has a restricted access point with a staffed entrance booth (Figure 2). This design helps to regulate boat motor types being launched on the river. Signage placed at the boat launch reminds boaters of the regulation and the penalty (\$100 fine) for noncompliance.

## Results

DEC conducted follow-up water quality sampling in the lower Little Susitna River in August 2019 and August 2020. None of the 80 samples collected in 2019 and 2020 exceeded the WQS of 10 µg/L; the maximum TAH concentration measured was 6.41 µg/L in 2019 and 8.60 µg/L in 2020 (Table 1). The 96-hour average concentrations were below WQS and were less than expected based on the number of motorized boats operating. This suggests that the current regulation limiting the use of two-stroke motors and the *Clean Boating on Little Su* public outreach campaign have been effective at reducing TAH concentrations. As a result of these improvements, the TAH data show that the Little Susitna River is meeting WQS. On the basis of the current data, Alaska expects to be able to delist the segment in 2022.

## Partners and Funding

Multiple state agencies, including DEC, Alaska Department of Fish and Game, and Alaska Department of Natural Resources, have collaborated on efforts to assess and protect the water quality and fishery health



Figure 2. Little Susitna PUF boat launch area.

Table 1. August TAH values in the Little Susitna River (2010–2020).

Sampling period	Maximum value (µg/L)	# samples exceeding WQS <sup>1</sup>	Total # samples
August 2010	30.4	14	40
August 2014	38.72	51	285
August 2019	6.41	0	40
August 2020	8.60	0	40

<sup>1</sup> WQS = < 10 µg/L TAH

of the Little Susitna River. Over the past 15 years, DEC has invested more than \$700,000 in CWA section 319 funding in water quality assessment, data analysis and public outreach activities on the Little Susitna River. Local matching funds from community organizations and businesses have totaled over \$350,000. A variety of local partners have administered and managed CWA section 319 grants over the years, including Cook Inletkeeper, Mat-Su Conservation Services, and the Palmer Soil and Water Conservation District. In 2011–2012, DEC received \$173,700 (with \$62,587 nonfederal fund match) from the Alaska Sustainable Salmon Fund to support clean boating outreach and education activities. The Aquatic Restoration and Research Institute conducted monitoring and outreach work. Other supporters of the clean boating effort have included the Mat-Su Resource Conservation and Development Council, local businesses and community members.



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## For additional information contact:

**Laura Eldred**

Alaska Department of Environmental Conservation Manager,  
Nonpoint Source Water Pollution Prevention & Restoration Section  
907-376-1855 • [laura.eldred@alaska.gov](mailto:laura.eldred@alaska.gov)