



Little Susitna River

Petroleum Hydrocarbon and Turbidity Impairment

November 2018

The Little Susitna River is located in southcentral Alaska in the Matanuska-Susitna Borough (see Figure 1). The river supports popular king salmon and silver salmon sport fisheries.

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Petroleum Hydrocarbon Impairment

Petroleum hydrocarbons above water quality standards have the potential to negatively affect aquatic organisms.

From 2007–2012 and again in 2014, the Alaska Department of Environmental Conservation (DEC) sampled water in the lower Little Susitna River during the king salmon (May – June) and silver salmon fisheries (July – September).

- Water sampling was conducted at sampling sites distributed upstream to several miles downstream of the Public Use Facility (PUF) boat launch.
- The water sampling results show petroleum hydrocarbon exceedances, primarily in August, coinciding with greater use of motorized boats.
- Petroleum hydrocarbon concentrations greater than the state-allowed limit were found in 8.5 river miles.
- Surveys of boat use by motor type (carbureted 2-stroke, direct fuel injected 2-stroke, and 4-stroke) and horsepower were conducted at the PUF boat launch. This information was used in evaluating the water sampling results.
- The source of the petroleum hydrocarbons is from motorized boats.

Turbidity Impairment

Turbidity measures the cloudiness of the water and estimates the concentration of particles. While some turbidity occurs naturally, excess turbidity can have numerous adverse effects on aquatic life and other water uses by decreasing the light penetration for plants, decreasing the visibility of prey and predators for fish, and hiding navigation hazards for boats.

From 2007–2011, DEC conducted turbidity water quality sampling in the lower Little Susitna River during the king salmon (May – June) and silver salmon (July – August) fisheries.

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DEC's Water Quality
Reports:
<http://dec.alaska.gov/water/wqsar/reports.html>

Alaska Water Quality
Standards, Chapter 70:
<https://dec.alaska.gov/com/mish/regulations/index.htm>

- Using water sampling equipment that stays in the river for long periods of time, DEC recorded turbidity values every hour during the study and calculated 24-hour average turbidity values.
- Because some amount of turbidity occurs naturally, a baseline turbidity level (called a natural condition) was determined by using a comparable reference site located upstream of motorized boating and other significant human activities. Downstream turbidity values were then compared to the natural condition and with the Alaska water quality standards.
- The baseline turbidity measurement also records natural events that may cause higher turbidity levels, such as heavy rainfall. Higher levels that might be recorded downstream from natural events are able to be compared to the same event occurring upstream.
- Turbidity values greater than the state water quality standards were found in 8.5 river miles.
- Surveys of boat use by motor type and horsepower were conducted at the PUF boat launch. This information was used in evaluating the water sampling results.
- Turbidity levels are higher in the Little Susitna River when motorized boats are present.

Conclusions

- Because fishing regulations to reduce petroleum hydrocarbons in the Little Susitna River went into effect in 2017, DEC is proposing to list the river as threatened for petroleum hydrocarbons until additional data confirms that the regulations are effective.
- Based on the sampling results and analyses, DEC is proposing to include the lower Little Susitna River on the state's list of impaired waterbodies for turbidity.
- The same river miles are affected by both petroleum hydrocarbons and turbidity: 7.5 river miles downstream of the Little Susitna River PUF boat launch to approximately 1 river mile upstream of the PUF boat launch for a total of 8.5 affected river miles.
- Timing of the impairment is during the peak activity of the salmon fisheries and associated high motorized boat use.
 - Petroleum Hydrocarbons — August (silver salmon fishery)
 - Turbidity — late May/June (king salmon fishery), late July/August (silver salmon fishery)

What's Next?

- DEC is continuing a clean boating education campaign with resources and tools to assist boaters on ways to improve the river's water quality.
- Starting January 1, 2017, the Alaska Board of Fisheries restricted fishing from boats to 4-stroke or direct fuel injected 2-stroke motors only. Reducing the number of carbureted 2-stroke motors is expected to improve water quality.
- DEC is committed to analyzing options to reduce turbidity and will plan to re-sample the water quality to look for improvements.

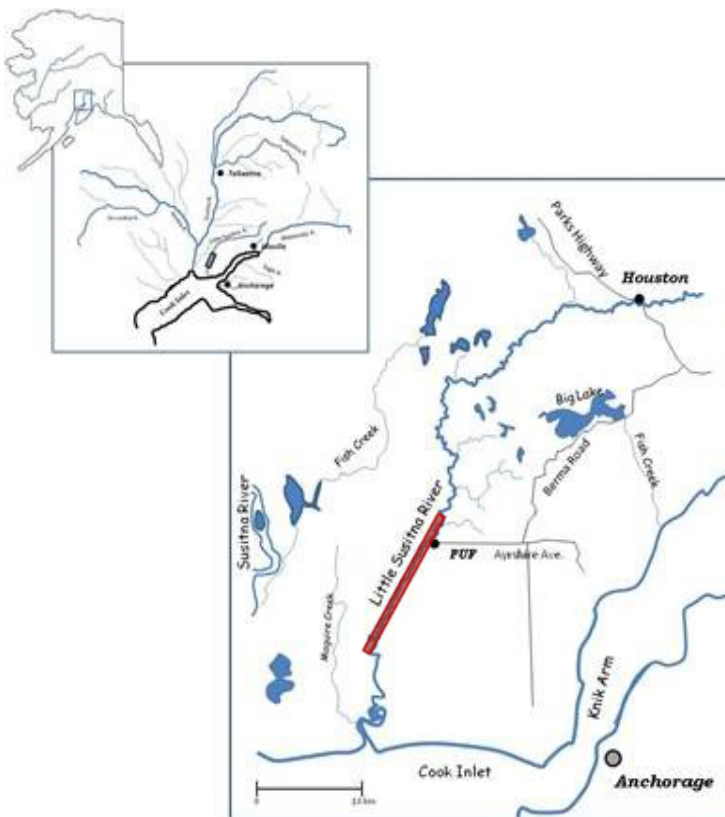


Figure 1. Location of the Little Susitna River in south-central Alaska with a red triangle identifying the area of water quality concern upstream and downstream of the State operated Public Use Facility.