

# MEMORANDUM

State of Alaska  
Department of Fish and Game  
Habitat Section

TO: Ron Benkert  
Southcentral Regional Supervisor

DATE: September 17, 2024

SUBJECT: Johnson River Fish Survey

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Alaska Department of Fish and Game (ADF&G) Habitat Biologists Beth Evers and Josh Brekken conducted three days of field surveys in and near the Johnson River valley between August 12<sup>th</sup> and 14<sup>th</sup>. Mineral exploration is currently being conducted in the area by Contango Ore (Johnson Tract Project). The purpose of the trip was to conduct fish sampling in water bodies near potential road corridors associated with the prospect, collect samples at monitoring sites, and to make general observations about fish and aquatic habitat in the area. This trip was originally planned for the week of August 5<sup>th</sup>, but heavy rains that started on August 4<sup>th</sup> created high-water levels that were impractical for sampling. Water levels had returned to normal by August 11<sup>th</sup> and flows in the Johnson River during our visit were approximately 550 cfs.

We used a Smith-Root LR-24 backpack electrofisher to survey water bodies in the Johnson River watershed. This included walking portions of the preferred route for a planned exploration portal road and a potential runway expansion area. Electrofishing was conducted by wading upstream from the proposed road route, zigzagging between banks and sampling various habitat types, with an emphasis on cover (e.g., large wood, undercut banks, overhanging vegetation). A minimum reach length of 40 bankfull channel widths was surveyed at electrofishing sites.

Each day, the crew walked portions of the proposed road route between camp and a potential portal site near Ore Creek. Creeks and drainages identified by road engineers were assessed for fish presence and fish passage requirements in 2023. Based on these surveys and further refinement of the road route planning, Contango Ore requested we target 12 stream crossings to survey for fish in 2024. An additional 11 sites were surveyed opportunistically as ADF&G walked the route. In total, 23 sites were surveyed in 19 different drainages in 2024. Some of the sites were surveyed for the first time and some were sites that were first surveyed in 2023 and re-surveyed for confirmation. Dolly Varden were captured in 8 of the surveyed waterbodies and juvenile coho salmon were captured in one of the drainages. The coho salmon were captured in a tributary of the Johnson River which will be crossed by the proposed runway extension. This site is about 4 miles upstream of the previously known extent of salmon distribution in the Johnson River watershed. The results have been submitted and accepted for inclusion in the Anadromous Water Catalog. No fish were captured in 11 of the drainages at the proposed road route or airport extension. After these two seasons of surveys, ADF&G has enough information to assess stream crossings from a permitting perspective for the proposed portal road and runway expansion. Results are shown in Table 1.

Table 1. Proposed Road Route Survey Results - 2024

ADF&G Waypoint	Crossing/Culvert ID	Latitude	Longitude	Fish Obs. (species and fork lengths (mm))	Notes
149	RWY-Beaver	60.092047	-152.909884	CO - 54, 58, 59 DV - 60, 58, 56, 55, 63, 62, 56	Large substrate, series of small beaver ponds held with small (1-2 feet high) beaver dams, clear water, overhanging vegetation of willow and alder
150	RWY-Beaver	60.091541	-152.910057	DV - 88	Same stream as above – survey upstream of beaver dam in pond
151	RWY-Beaver	60.091409	-152.910008	DV - 100	Same stream as above – survey upstream of beaver dam impoundment (flowing water)
152	RWY-Reverse Creek	60.091462	-152.906489	no fish	scant flow of water, sand/silt substrate, 2-3' wide channel/path, overhanging vegetation
171	C01-002	60.091086	-152.922216	no fish	no water, channel path (swale) but well vegetated
172	added site	60.093265	-152.932048	no effort, sampled upstream	braided channel (multiple channels), gravel/sand substrate, variable width, 2 to 20' wide in places, recently drained beaver pond area
173	added site	60.093169	-152.931964	DV - 42, 35, 56, 63	multiple channels in area/former beaver pond
174	added site	60.093188	-152.931516	DV - 116	multiple channels in area/former beaver pond
175	added site	60.093121	-152.932211	DV - 42, 40	multiple channels in area/former beaver pond
176	added site	60.093214	-152.932408	DV - 48	multiple channels in area/former beaver pond
177	added site	60.093282	-152.932910	DV - 38	multiple channels in area/former beaver pond
178	added site	60.093441	-152.934050	no effort, sample upstream	small channel (3-4' wide) with clear water
179	added site	60.093388	-152.934140	DV - 30, 46	small channel (3-4' wide) with clear water
180	added site	60.093548	-152.934248	DV - 72	small channel (4' wide), overhanging vegetation (alders)
191	C10-100	60.092061	-152.947791	no fish	intermittent water in pools/depressions, obvious flow path, large substrate (cobble to sand), mostly dry, thickly vegetated with alder and willow, likely sees water during higher flow periods
192	C10-101	60.092166	-152.947421	no fish	trickle of water, heavily vegetated (willow/alder), gravel/cobble substrate
257	C11-100	60.092290	-152.949710	no fish	Continuous flow, but not much water, channel somewhat indistinct, sheetflow close to mouth/confluence with Dbl. Gl. Creek
254	C08-100	60.093420	-152.943010	no fish	No water, wide/spread-out channel path, heavily vegetated (alder/willow completely overhanging), gravel/silt substrate
193	C12-010	60.093689	-152.951366	no fish	no water but sign of recent water (wet sand), cobble substrate, probably overflow channel for Dbl. Gl. Creek during higher water, sparse vegetation in channel (river beauty) and bordered by alder/willow
194	C15-100	60.097087	-152.952897	no fish	Area was flooded (1-2' depth) recently (green, upland vegetation and flowers under water), standing water in the brushes - low-lying area abutting hillside, appears to have flooded during recent high water, no active connection to flowing water during site investigation
195	added point	60.102607	-152.963769	no effort	Appears to be good spawning habitat in mainstem channel
196	C19-010	60.102345	-152.959294	no fish	dry channel, vegetated (herbaceous and willow sp.), defined channel with some evidence of recent flow, cobble/organic substrate
197	added point	60.102936	-152.965279	Didn't fish/on opposite side of river channel	Point is on opposite side of the river from the mouth of a clear water stream with good flow (~20 cfs), gravel/cobble substrate, possibly spring fed or groundwater expression channel of Johnson River. Did not cross river to survey. Possible spawning habitat (gravel substrate).
198	C22-010	60.105505	-152.962195	no fish	no water, heavily vegetated (willow/alder), slight swale, large substrate
199	C24-010	60.108084	-152.964004	no fish	some standing water, little to no flow, large substrate, heavily vegetated (alder/willow)

Points 173-175 are upstream of Point 172 but separate forks from each other.

Points 172-180 are in streams that coalesce into one stream in a formerly ponded area (beaver).

Points 178-179 are in the same stream.

Points 149-151 are in the same stream.

Two aquatic study sites were established in the Johnson River watershed in 2023, one in the mainstem Johnson River and one in Kona Creek (tributary to Johnson River). These sites were revisited, and replicate samples and water quality data were collected using the same methods as used in 2023. Water quality data (2023 and 2024) from the aquatic studies sites is shown in Table 2.

Table 2. Water Quality Results from Aquatic Studies Sites

Site	Temperature (°C)	Conductivity (mS/cm <sup>2</sup> )	Dissolved Oxygen (mg/L)	pH	Turbidity (NTU)
2023					
Johnson River	2.27	36	14.5	6.82	58.8
Kona Creek	7.45	47	12.76	7.16	7.25
2024					
Johnson River	2.23	33	11.72	6.55	93.12
Kona Creek	6.41	34	11.35	6.86	3.51

Periphyton, aquatic benthic macroinvertebrate, sediment, and whole fish (Dolly Varden) samples were collected at both aquatic studies sites. Periphyton samples were collected using methods described in Parker (2017). Macroinvertebrates samples were collected using a Hess Sampler (diameter of 33.1 cm and 243 µm mesh size). Five (5) replicate samples were collected from riffle habitat at each site. A sediment sample was collected at each site by scooping fine sediments from pool habitat. Dolly Varden were collected at each site using baited minnow traps. Fifteen (15) Dolly Varden were collected and retained from the Johnson River site and ten fish were collected and retained from the Kona Creek site. All samples were collected on the same day (August 13) except for the Dolly Varden which were collected over a two day period (August 13 and 14). All samples have been shipped and received at their respective analysis locations.

Additionally, effort was made during the trip to locate potential spawning habitat in the Johnson River utilized by anadromous Dolly Varden or by salmon species. Two specific locations with appropriate gravel size, water depth, and current velocities were identified in the upper Johnson River (Table 1) and more general reaches with were identified as areas of potential spawning habitat. These areas will be revisited and investigated in October when adult Dolly Varden are expected to be spawning in the region.

Lastly, we conducted an aerial survey of Bear Creek to investigate stream conditions. During our site visit in early August, 2023 we observed a ~1.5 mile section of the creek that was dry. In August 2024 the entire length of the creek had flowing water with no dry or subsurface reaches. Turbidity was high and water clarity was poor and no fish were observed.

Citations:

*Bradley, P. T. 2017. Methods for Aquatic Life Monitoring at the Red Dog Mine Site. Alaska Department of Fish and Game. Technical Report No. 17-09. Fairbanks, Alaska.*



Photograph 1 – Mouth of Little Bear Creek (directly south of Bear Creek) and sediment plume in Tuxedni Channel from recent high water, August 12, 2024.



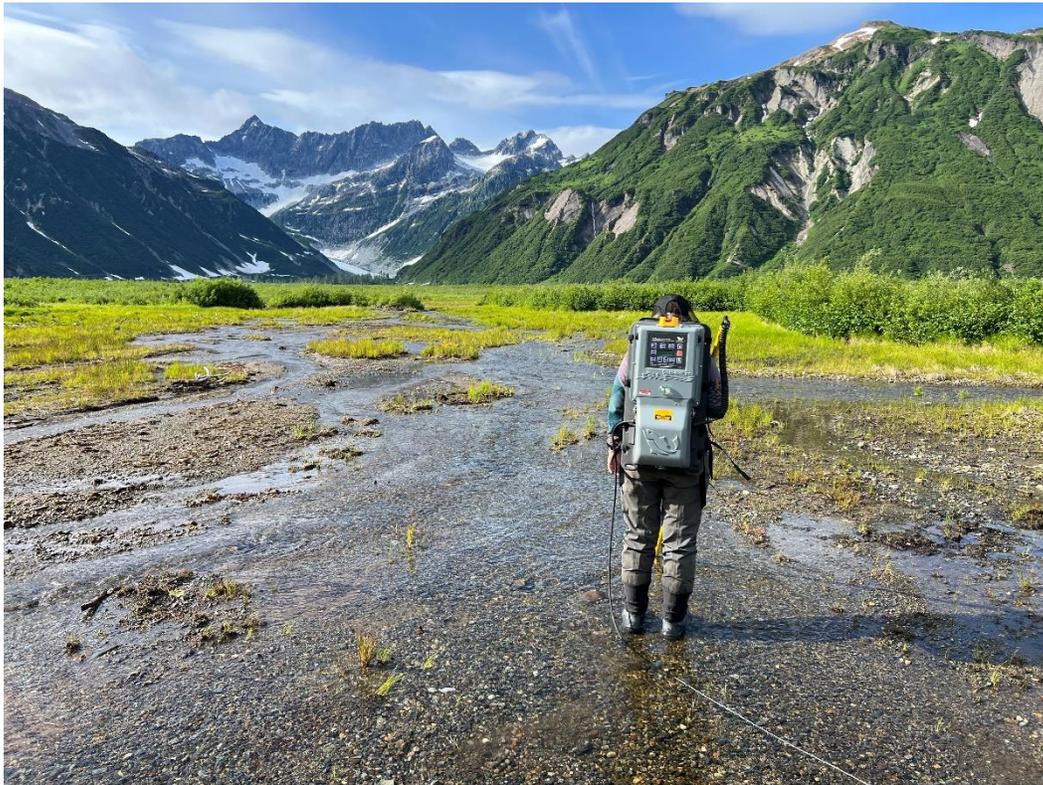
Photograph 2 – Johnson River Valley looking southeast near Bear Pass, August 12, 2024.



Photograph 3 – Juvenile coho salmon captured at RWY Beaver site (stream crossed by airport extension), August 12, 2024.



Photograph 4 – RWY Beaver site looking upstream, August 12, 2024.



Photograph 5 – Proposed road corridor stream crossings. Several fish-bearing (Dolly Varden) streams converge in a broad area (former beaver pond) just west of existing runway.



Photograph 6 – Dolly Varden and stream habitat just west of existing runway along proposed road corridor, August 12, 2024.



Photograph 7 – Collecting periphyton samples in the Johnson River, August 13, 2024.



Photograph 8 – Collecting macroinvertebrate samples in the Johnson River with Hess Sampler, August 13, 2024.



Photograph 9 – Setting minnow traps in the Johnson River, August 13, 2024.



Photograph 10 – Upper Johnson River showing proposed bridge crossing location, looking upstream, August 14, 2024.



Photograph 11 – Johnson River aquatic studies site, August 13, 2024.



Photograph 12 – Kona Creek aquatic studies site, August 13, 2024.