



United States Department of the Interior



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Memorandum

To: Project Case File

From: Matthew Varner, Fisheries and Riparian Resources Lead (AK931)
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Ben Stratton, Water Resources Lead (AK931)

Subject: Stream focused data collection in and around the Salmon River watershed in 2025 to guide fish passage issue resolution and support future stream reclamation planning at the Platinum mine site.

Background

The Salmon River watershed contains 195 unpatented federal mining claims (Figure 1). The northernmost 174 claims are on federal land administered and managed by the BLM as part of the Bay Planning Area. The remaining federal mining claims are located on the Togiak National Wildlife Refuge, which is managed by the U.S. Fish and Wildlife Service. Placer platinum was first discovered in the Salmon River in 1926 by a Yupik Eskimo from Chagvan Bay. Between the summer of 1927 and 1933, approximately 3,000 ounces of platinum was recovered by hand mining from the Salmon River. In 1935, the Olson brothers incorporated the Goodnews Bay Mining Company and began mining the placer deposits within the Salmon River and adjacent claims. In 1937, mechanical mining of the Salmon River and adjacent claims began, using a Yuba diesel electric dredge and two dragline sluice box operations. Between 1935 and 1976, the Goodnews Bay Mining Company produced over 600,000 ounces of platinum. Mining since that time has been largely focused on exploration with some production level mining from 2008-11 by XS Platinum. The mine site has been inactive since 2012, but recent discussions suggest that a new plan of operations may be forthcoming this fall.

The Salmon River watershed provides spawning habitat for anadromous fish including pink, silver, chum, sockeye, coho, and Chinook salmon, as well as providing home to resident fish species including slimy sculpin, Dolly Varden, and starry flounder (ADFG 2019). Sections of the Salmon River within the previously mined claim block have been identified as barriers to fish migration due to lack of surface flow from late spring through the fall. These

sections of the Salmon River block adult salmon migration to spawning areas, as well as juvenile outmigration. Very little is known about past efforts to restore stream connectivity or the mechanisms contributing to the dewatering of the river channel. Nonetheless, the conditions at Platinum on the Salmon River prohibit fish passage upstream and downstream at periods throughout the year with at least four reaches identified by BLM during past field visits (BLM 2020). That same report estimated that 31 miles of stream are seasonally inaccessible by migrating salmon. This situation is in violation of Alaska Statute 16.05.841, which requires fish passage.

Data Collection

On July 20, 2025, aquatic resources staff¹ from the Anchorage Field Office and Alaska State Office traveled to the community of Platinum for a weeklong data collection effort. To maximize efficiency, the staff split into two teams. Field data collection was driven by two study plans. One study plan (BLM 2025a) was focused on improving our understanding of sediment delivery and transport within the mined area of Salmon River. The other study plan (BLM 2025b) focused on data collected on minimally disturbed or reference streams within and adjacent to the Salmon River watershed to help guide the development of regional hydraulic geometry curves and design criteria for reclamation planning. Several sites identified in the latter study plan were visited by a lotic AIM sampling crew as part of a financial agreement between the BLM and the Alaska Department of Environmental Conservation (DEC)². The sampling crew was comprised of aquatic resources staff from the University of Alaska Anchorage, Alaska Center for Conservation Science via a contract with DEC.

¹ Matthew Varner, Ben Stratton, Robin Welling, Mason Phillips, and Peyton Edelbrock

² This agreement is supporting lotic AIM data collection within the Aklun and Kilbuck Mountains ecoregion which encompasses the Salmon River watershed. Lotic AIM data and supplemental information collected by DEC will help BLM develop regionally specific habitat condition objectives for rehabilitation projects and expand the scope of regional curve coverage beyond the Salmon River watershed.



Photograph 1. BLM fisheries biologists collecting cross section survey data on Smalls Creek to understand stream characteristics at minimally disturbed sites in the area.

All eleven of the sites identified in the regional curve study plan were visited with ten sites selected for cross section and longitudinal profile surveys, substrate measurements, and photographic data collection. One site was omitted since it was downstream of a mining related water withdrawal (historic) and was incised. An additional three sites were sampled on a branch of Smalls Creek, in an adjacent watershed north of Salmon River. These sites were considered to be in reference conditions, had drainage areas within the range identified in the study plan, and were readily accessible making them good candidates for field sampling. On the last field day, the two teams jointly visited most of the mined tributaries to the Salmon River as well as several dry sections of the mainstem river. The intent of the tributary site visits was to qualitatively document conditions, rehabilitation needs, resources on site, etc that would complement LiDAR data expected this fall/winter. Surveyed cross sections, substrate measurements, and slope data were collected in a previously mined section of the Salmon River as part of the sediment delivery and transport study. Most of the information collected according to that study plan was obtained during an earlier field visit with mining compliance staff which allowed the team more time to explore the dry reaches on the mainstem during the July visit.

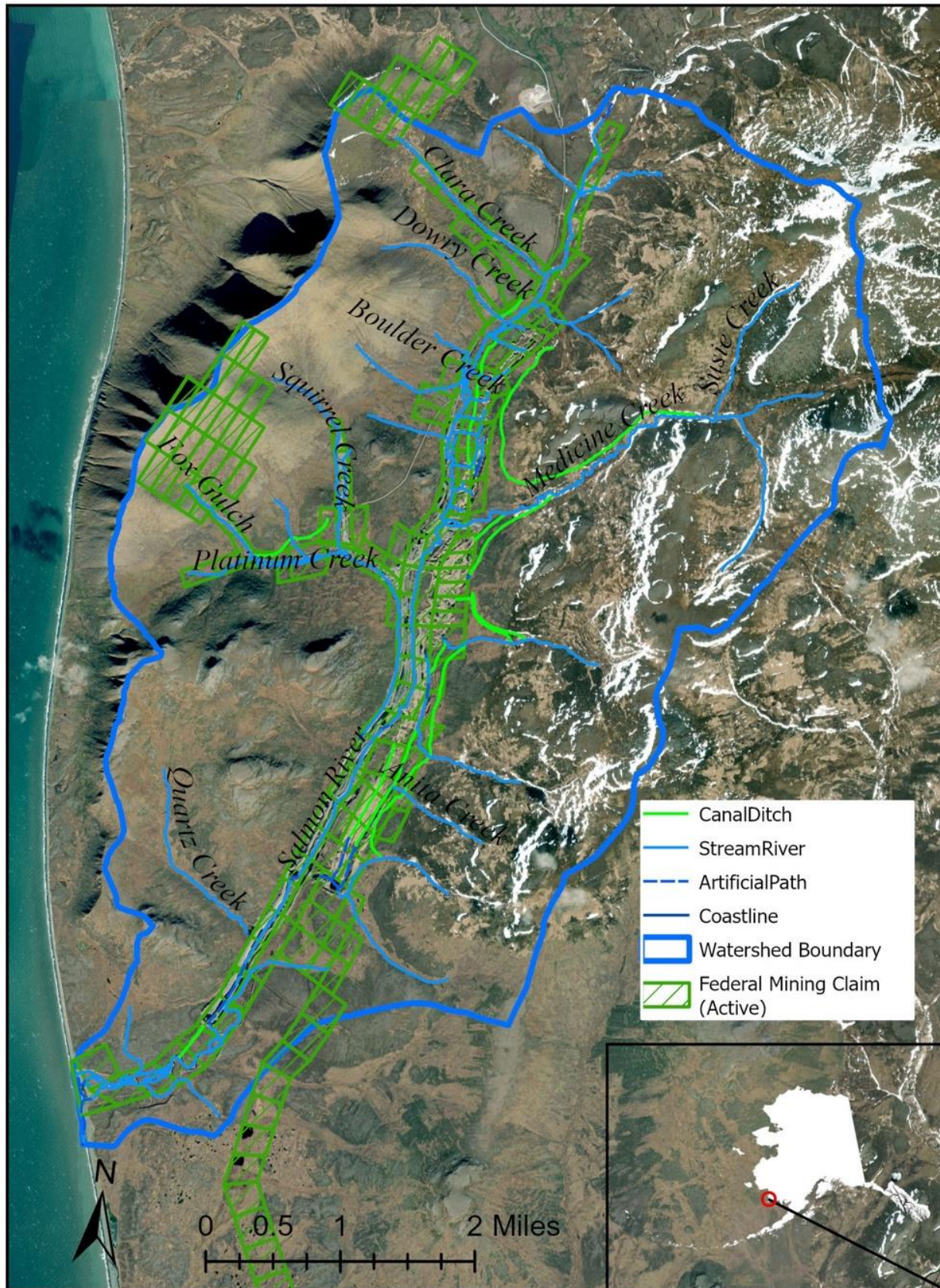


Figure 1. Salmon River Watershed including major streams and mining claims

Study Plan Related Data Analysis

All of the collected information was entered into spreadsheet tools like RiverMorph prior to departing from Platinum or was electronically collected using BLM AK RIPFISH Survey123 forms and is accessible through the BLM's internal AK RIPFISH webservice. Further analysis of the sediment transport and regional curve data is planned for this fall/winter with results compiled in summary memorandums or Open File Reports. General observations from the tributaries and dry reach site visits are noted below. An attached map shows where each of the photographs included in this memorandum were taken.

Tributary Specific Observations

Juvenile fish were noted in most tributaries that are perennially connected to the Salmon River. Fish species in the watershed include all five salmon species, Dolly Varden, and slimy sculpin. Most small tributaries are included in ADFG's Freshwater Fish Inventory or Anadromous Waters Catalog as providing habitat for juvenile Coho salmon, Dolly Varden, and slimy sculpin. These datasets can be explored through an interactive [mapper](#) and are updated annually based on ongoing fish inventory work across the state.

Clara Creek

This small tributary is located in headwaters of the Salmon River and originates from the east slope of Red Mountain. Most of its length exhibits signs of past mining with vegetated overburden straddling the creek. Despite the history of mining the creek has developed small vegetated bankfull benches (small floodplain features) and riffle-pool sequences. Small areas of bank erosion were noted as well as barrels and other mining debris. Overburden in this watershed could be a useful source of growth medium for large scale habitat rehabilitation in other areas of the Salmon River basin. No one noted major areas requiring intervention to provide for continued habitat recovery, although the encroachment from the overburden in the valley bottom does limit full floodplain function of the creek.



Photograph 2. Clara Creek (upstream view). The creek is confined by overburden (right side of photo) and tailings (left side).

Dowry Creek

This creek is located in the adjacent watershed to Clara Creek and is similarly sized. It also originates on Red Mountain and has an obvious history of mining. Like Clara Creek, Dowry Creek has also recovered well since mining ceased in the area; however, there are areas of major erosion, incision, and braiding. Dowry Creek could benefit from the removal of encroaching overburden and mined material, as well as some streambank stabilization measures. The road stream crossing, a corrugated metal pipe set just below stream grade, is undersized and susceptible to washing out.



Photograph 3. Dowry Creek (downstream view) where the stream is actively eroding overburden piled next to the creek.



Photograph 4. Dowry Creek (upstream view) where the channel is braided, a planform typical of placer mined streams that have not been reclaimed or recovered from disturbance



Photograph 5. Undersized culvert on Dowry Creek (downstream view). Note enlarged channel and sediment deposition upstream of culvert.

Boulder Creek

Like Clara and Dowry creeks, Boulder Creek originates on the east slope of Red Mountain. This small stream had no apparent evidence of past mining such as tailing or overburden, however we only explored a short stretch of this creek near the road. The access road and associated culvert were creating backwater conditions and pooling upslope of the culvert.



Photograph 6. Boulder Creek where the channel is ponded upstream of the road crossing, likely indicating it may be undersized.

Last Chance Creek

Like Boulder Creek, this small stream that drains from the east side of Red Mountain didn't have obvious signs of human impact beyond the area near the road.



Photograph 7. Last Chance Creek

Squirrel Creek

The middle and lower sections of Squirrel Creek showed signs of mining including past and more recent activity by XS Platinum prior to their operation shutting down in the early 2010s. The creek alignment is currently perched above the valley floor in one section (see Photographs 9 and 10) with a berm of material temporarily preventing the creek from shifting to the east along the access trail. We did not survey the valley to quantify the elevation of the creek in relation to the valley bottom but those data should be available from LiDAR information anticipated for delivery to BLM in early 2026. The lower most section of Squirrel Creek is significantly confined by overburden that has revegetated but areas of erosion are evident. Squirrel Creek joins Platinum Creek at the mine camp and is inaccessible by fish due to large berms of mine tailings along the Salmon River.

Potential future treatment actions in this watershed include:

- 1) filling low areas with excess tailings from along the Salmon River to create a more natural valley shape (e.g., Squirrel Creek needs to be in the valley bottom with accessible and properly sloped floodplains), and
- 2) spreading the piles of overburden to enhance the growth medium of rocky areas.
- 3) Replacing the culvert on a mine camp road with one that is designed to allow fish passage.

These potential treatments would greatly improve stream stability and allow the stream to continue its recovery. Reconnecting Platinum Creek to the Salmon River would allow fish species to use both Platinum and Squirrel creeks.



Photograph 8. Upstream view of Squirrel Creek illustrating the creek's perched position in the valley. The area on the right side of the image is several feet lower than the creek elevation. The berm between the creek and the valley bottom is showing signs of erosion and may eventually allow the creek to shift to the east.



Photograph 9. Downstream view of Squirrel Creek with staff standing on the berm of material currently maintaining the perched stream position.

Dry Gulch

This small stream drains off the southeast side of Red Mountain and is a tributary of Platinum Creek. It has signs of past disturbance with large piles of overburden along the creek. This stream is currently inaccessible by fish due to tailing barriers along the Salmon River that block the entire Platinum Creek drainage to fish.



Photograph 10. Upstream view of Dry Gulch

Platinum Creek

Platinum Creek begins along the foothills of Red Mountain and is one of the larger Salmon River tributaries. As previously noted, this stream is blocked off from fish access by mine tailings along the Salmon River but could provide high quality habitat to various life stages of salmon if access was restored. Upper Platinum Creek (upstream of Fox Gulch) appears to be in reference condition. Downstream of its confluence with Fox Gulch, overburden and tailings confine Platinum Creek on both sides limiting floodplain development. Banks and adjacent slopes are generally stable and well vegetated. The reach immediately below the confluence of Fox Gulch is among the least confined and most dynamic. Near its historic confluence with the Salmon River and the present-day site of XS Platinum tailing processing facilities, the stream flows through an area that was heavily altered by dredging. It is multi-threaded and ponded, and shows limited signs of natural recovery toward a more typical channel pattern. The channelized reach below this is fully disconnected from the Salmon River.



Photograph 11. Upstream view of Platinum Creek valley where tailing piles confine the stream and limit floodplain development.



Photograph 12. Lower Platinum Creek showing accessible and well vegetated floodplain benches.



Photograph 13. Downstream view of Platinum Creek showing a confined section with no floodplain and bank erosion.



Photograph 14. Upstream view of the middle portion of Platinum Creek.



Photograph 15. Area of Platinum Creek immediately downstream of the confluence with Fox Gulch. Fox Gulch shows significant residual impacts from past mining.



Photograph 16. Fox Gulch (right) joining Platinum Creek (left).



Photograph 17. Upper Platinum Creek



Photograph 18. Upper Platinum Creek with well-connected and vegetated floodplains and a mix of pools and riffles. This upper section is likely in reference condition and worth additional surveys.

Fox Gulch

This stream drains off of the southeast side of Red Mountain and is the uppermost tributary to Platinum Creek. Extensive residual mining impacts are evident throughout its length with limited floodplain development, braided channel conditions and very little woody riparian vegetation in contrast to upper Platinum Creek. This headwater stream likely contributes excessive sediment delivery to Platinum Creek and should be considered for more in-depth assessments in the future.



Photograph 19. Upstream view of Fox Gulch from near its confluence with Platinum Creek.

Other Noteworthy Observations

Streams like Platinum Creek that are isolated from Salmon River by large berms of mine tailings and overburden should be further assessed to determine potential areas for surface reconnection. Basic reconnaissance during this site visit noted a couple areas that appeared to be major Platinum Creek/Salmon River connections as evidenced by surface flow expressions near the base of tailings.



Photograph 20. Significant expression of surface water emerging from the tailings that is likely from Platinum Creek.

LiDAR acquisition should greatly improve our understanding of the volume of tailings encroaching on Salmon River and future plans for reconnecting tributaries and intermittent stream sections. Many sections of the Salmon River have developed vegetated benches however the stream has far less sinuosity and has a steeper slope than what would be expected in a low gradient unconfined valley in the region.



Photograph 21. Typical conditions along the Salmon River showing the confinement created by the tailings and limited development of small, vegetated benches along the stream.



Photograph 22. Downstream view of Salmon River near the remains of an old dragline. This image shows the magnitude of mine tailings in contrast to the staff members standing in the distance.

Two dry sections of the Salmon River appeared to indicate the loss of surface flow laterally beneath/through the tailings. Ponded areas in the adjacent tailing areas along the dry reaches showed signs of stream flow that connected the upstream termination of stream flow and the downstream initiation of surface water in the main stream channel. These observations suggest that surface flow in the stream channel may be lost into the porous tailings and re-entering downstream. LiDAR data will allow staff to compare surface water elevations in the stream channel and adjacent ponded areas nested in the tailings. Potential tracer studies should also be considered to not only improve our understanding of tributary connectivity with the Salmon River, but also the dynamics of intermittent stream sections. These types of studies could greatly improve our understanding of flow dynamics through the tailings and help shape strategies for improving fish passage in the future.



Photograph 23. Dry section of Salmon River. Ponded areas in the tailings on the left side of the image were observed to have stream current that coincides with the loss and regain of surface flow in the mainstem of the Salmon River.



Photograph 24. Example of a ponded section in the tailings that is adjacent to a dry stream section and shows clear signs of stream flow emerging from the upstream end of the ponded area and exiting at the downstream end near where the mainstem Salmon River begins surface flows again.

Anadromous Waters Catalog

The section of Smalls River from its mouth to the area near the gravel pit is included in ADFG's Anadromous Waters Catalog (AWC) as coho (*Oncorhynchus kisutch*) and sockeye (*O. nerka*) rearing habitat; however adult chum (*Oncorhynchus keta*) and sockeye salmon were noted in several locations during geomorphic assessments. Chum salmon were noted well upstream of the current extent of anadromy described in the AWC. These observations will be shared with ADFG so that they can plan future fish surveys to update the catalog.



Photograph 25. Upper site on Smalls River where adult chum salmon were observed.

Next Steps

Although much was learned during the field visit in 2025, additional work is needed to improve our collective understanding of flow dynamics in and around the mine tailings along the Salmon River. After data collected in 2025 is summarized, the team will outline plans for 2026 to close remaining data gaps that are critical for fish passage and habitat rehabilitation planning.

Preliminary discussions by the project team identified the need for 1) AIM data collection within impacted sections and 2) a tracer study to understand how tributaries and the mainstem flow through mine tailings.

A follow-up meeting with partners and other stakeholders will be scheduled in the coming months to share observations, timelines for sharing additional information, and potential needs for FY26.

References

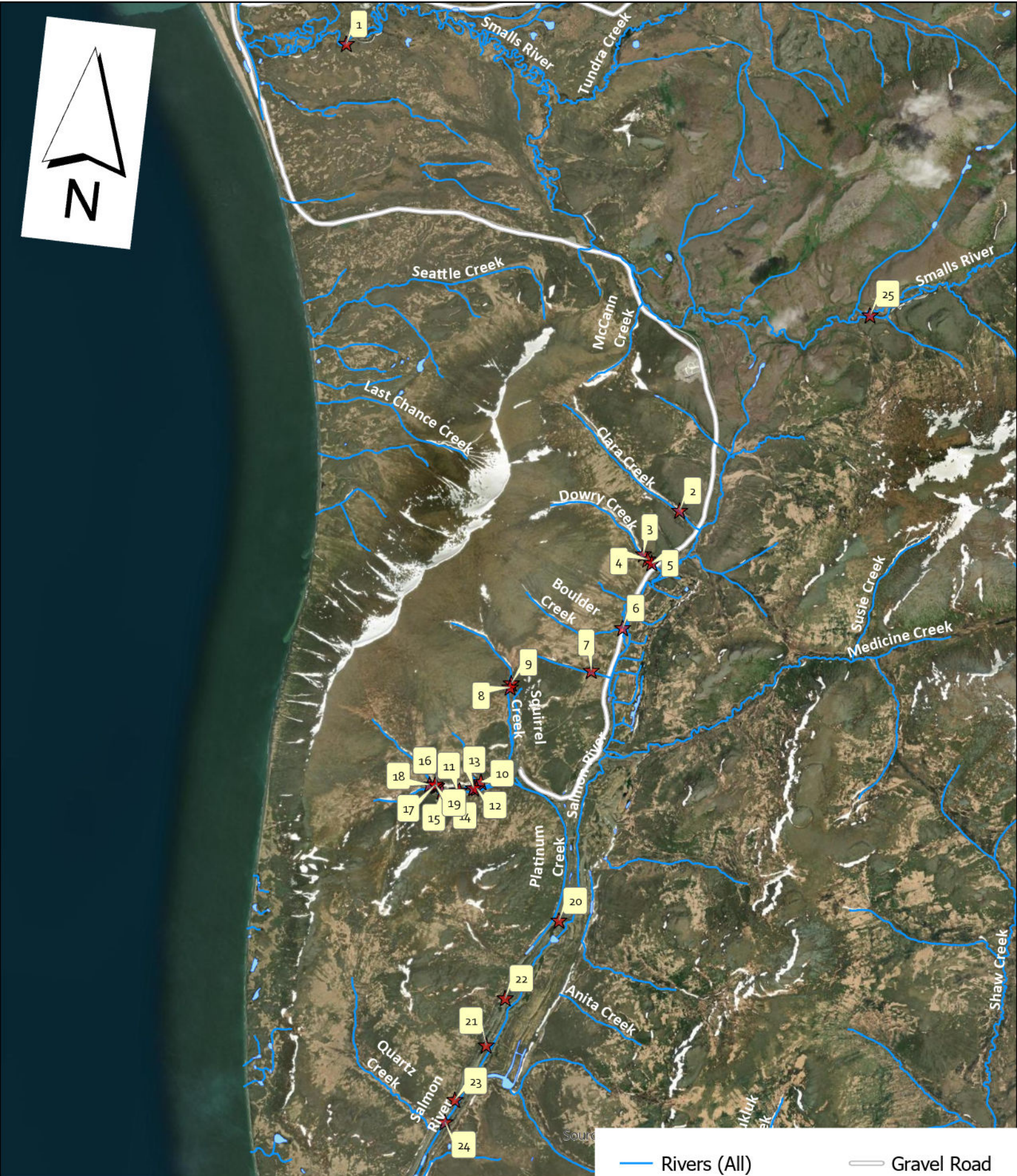
United States Department of the Interior Bureau of Land Management (BLM). 2020. Salmon River Fish Passage Project Whitepaper. BLM, Anchorage Field Office, Anchorage, AK.

2025a. Salmon River Data Collection for Sediment Supply and Transport Modeling Workplan. BLM, Anchorage Field Office, Anchorage, AK.

2025b. Regional Hydraulic Geometry Curve Development & Habitat Impact Assessments on the Salmon River. BLM, Alaska State Office, Anchorage, AK.

Attachment
Photograph location map (1p)

Salmon River Photograph Locations



- Rivers (All)
- Gravel Road
- ★ Photograph Locations

0 0.5 1
Miles