Attachment 2 – Responses to USACE 20220401 Inquiries



Peak Gold, LLC Responses to USACE April 1, 2022, Information Request Letter

US Army Corps of Engineers (USACE) Question 1. The EPA is concerned about potential secondary (indirect) impacts on water quality of streams and rivers draining the project site from construction and use of the two proposed gravel access roads. The EPA has learned from direct observation and review of published literature that gravel roads may become sources of sediment for aquatic areas, especially if those roads are poorly designed, poorly constructed, constructed without following Best Management Practices to reduce erosion, not well maintained and/or subject to heavy use.

Roads contribute sediment to streams by mass wasting events as well as more steady and subtle surface erosion of the road prism and subsequent transport of material to nearby channels. Road prism integrity; coarseness of the aggregate stability of ditches, back cuts, and fill slopes; and distance between cross drains are important road design and construction factors of gravel road construction relevant to gravel road design and construction relevant to preventing roads from becoming major sources of sediment. Timely maintenance to maintain structural integrity and minimize deep rutting can be important to suppressing rates of road decay and erosion, especially for roads under heavy use. Traffic can press gravel into the subgrade or break it down, making the road more susceptible to erosion. Increased sediment production from heavy traffic can persist even after traffic has ceased. A large proportion of the eroded sediment introduced to streams from gravel roads is typically finer than two millimeters and excessive amounts of this fine-grained material is harmful to fish and to water quality.

If authorized, how would Peak Gold, LLC design, construct, and maintain the proposed gravel access roads to suppress erosion of the roads and subsequent sedimentation of nearby aquatic areas to the maximum extent practicable? What contingencies are planned to remedy sections of roads that become erosive or develop the potential to become erosive? What monitoring would occur to determine whether such contingencies should be implemented.

Peak Gold, LLC (Peak Gold) Response 1:

No streams are being crossed by the Manh Choh Twin Road or the Manh Choh Site Access Road and shown in the figures of Appendix 1. Neither road crosses a perennial, intermittent or ephemeral stream. No access roads to any gravel pits, lay down areas, or mine facility cross a stream.

Peak Gold actively worked to address potential secondary impacts on water quality from gravel access roads into the project design, construction, and maintenance. The design, construction, monitoring, and maintenance will together minimize impacts to nearby aquatic areas. Road design and construction will minimize risk of erosion. Roads were routed specifically to avoid



impacts to wetlands and other water bodies. Monitoring with Alaska Certified Erosion and Sediment Control Lead qualified personnel will ensure any potential issues are identified and addressed promptly. Contingencies such as grading, material pickup, and implementation of new BMPs are available to address potential erosive conditions if required.

Design

The project incorporated erosion and sedimentation controls into the project design. The roads were routed specifically to avoid impacts to wetlands and other waterbodies. Road side slopes, material composition, and design features have been specifically designed to minimize erosion from the road prism.

Erosion and sedimentation are also actively managed throughout Alaska by the Alaska Pollutant Discharge Elimination System (APDES) permit system (Multi-Sector General Permit for Storm Water Discharges (MSGP) Permit AKR60000 and General Permit for Discharges from Large and Small Construction Activities (CGP) Permit AKR100000) and Storm Water Pollution Prevention Plans (SWPPP). The Manh Choh's exploration project currently operates under MSGP Permit AKR60000 Authorization Number AKR06GA93. The project will apply for a CGP for construction, and an MSGP for operation. The existing SWPPP will be amended and implemented for the Project's mining activities and will include potential pollutant sources, storm water control measures (e.g., storm water retention basins, ditch check dams, interception and diversion ditches, water bars, brush berms, surface grading), schedules and procedures for monitoring, with associated maps and figures. These plans will be prepared and implemented to control erosion and sedimentation during construction activities.

Construction

During construction activities, Peak Gold plans to suppress erosion and sedimentation by selecting these Best Management Practices (BMPs) in accordance with the CGP Permit AKR100000 required SWPPP. The CGP SWPPP has not been developed at this time; however, it will be developed and implemented before construction activities begin at the Manh Choh Mine, Site Road, and Twin Road.

- Stormwater Pollution Prevention Plan
 - Best Management Practices (BMPs) will be used to limit erosion and reduce sediment in precipitation runoff from Project facilities and disturbed areas during construction, operations, and reclamation.
 - Specific BMPs include, but will not be limited to:
 - Erosion and sediment control structures such as diversions (e.g., runoff interceptor trenches, check dams, or swales), siltation or filter berms, filter or silt fences, straw waddles, filter strips, sediment barriers, and/or sediment basins;



- Collection and conveyance structures, such as rock lined ditches and/or swales;
- Vegetative soil stabilization practices such as seeding, mulching, and/or brush layering and matting;
- Non-vegetative soil stabilization practices such as rock and gravel mulches, jute and/or synthetic netting;
- Slope stabilization practices such as slope shaping, and the use of retaining structures and riprap; and
- Infiltration systems such as infiltration trenches and/or basins.
- Following construction activities, areas such as cut and fill slopes and embankments and growth media/cover stockpiles will be seeded as soon as practicable and safe. Concurrent reclamation will be maximized to the extent practicable to accelerate revegetation of disturbed areas. All sediment and erosion control measures will be routinely inspected, and maintenance/repairs performed, as needed.
- Dust
 - Implement dust control management measures to minimize the presence of fugitive dust, including:
 - Minimizing vehicular traffic and limiting vehicle speeds on haul roads, as much as practicable.
 - Applying water for dust suppression.
- Vegetation
 - Ground disturbing activities are minimized, and disturbed areas are re-vegetated with seed recommended for the region by Alaska Department of Natural Resources (ADNR)'s A Revegetation Manual for Alaska (ADNR 2008);
 - Equipment will be cleaned prior to entering and exiting the Tetlin Hills portion of the project site to minimize spread of vegetative materials;
 - Erosion and sediment control materials would be from locally produced products to minimize potential importation of new propagules from outside Alaska.
 - Ore hauling trucks will be limited to the Twin Road (covered road-legal highway trucks) and the Site Road (non-road legal mine trucks).
- Traffic
 - Speed limits will be based on site- specific safety requirements and will be set based on factors such as ramp slopes, ramp widths, and curve radius.
 - Prior to ground disturbance associated with the Twin Road, the project would coordinate with Tetlin to establish appropriate traffic controls.
 - Public access control points will be established where pre-existing roads and trails enter the active mining areas to ensure public safety is maintained. These control points will be at the Project boundary and will consist of a combination of signs warning of the active mining and other physical barriers to restrict access.



Maintenance

The project plans to suppress erosion and sedimentation by selecting these BMPs.

- **D**ust
 - Implement dust control management measures to minimize the presence of fugitive dust, including:
 - Applying water or chemical dust suppressant to haul roads and disturbed area where appropriate.
- Stormwater Pollution Prevention Plan
 - o BMPs will be maintained in accordance with each specified schedule in the SWPPP.

Monitoring

The site is monitored and managed using qualified personnel that have Alaska Certified Erosion and Sediment Control Lead (CESCL) certification. CESCL certification requires passing an initial two-day (16-hour) training class with one-day (8-hour) refresher training required every three years (<u>https://www.ak-cescl.com</u>). Monitoring by CESCL qualified personnel (CGP Permit AKR100000, Appendix C, Qualified Person) will ensure any potential issues are identified and addressed promptly.

The site will be inspected daily by staff with CESCL qualifications. Appropriate corrective actions will be undertaken immediately if problems with drainage, sediment, or containment are noted during inspection of access roads or mine site.

Throughout the life of the project, staff will monitor the gravel roads for evidence of erosion and sedimentation. Through the established stormwater permitting process, there will be a defined boundary that no material or sediment can leave the site. Staff will monitor this boundary. If erosion or sedimentation is noticed, then remediation will take place.

Contingencies

Staff will conduct monitoring to note erosion or sedimentation. If any is found, the remediation will be designed to fit the specific site and problem. Potential solutions may include grading, material pickup, and implementation of new BMPs.

Tetlin Village Road Dust

The Tetlin Village Road is a non-public private gravel road that provides access to Tetlin Village from Alaska Highway 2. With the construction of the Twin Road, the Tetlin Village Road will not be used by any Manh Choh Project traffic. Fugitive dust from the Village's private traffic will be similar to that of the pre-Manh Choh Project. However, should wetlands be impacted by significant fugitive dust from the Tetlin Village Road use, discussions with the Native Village of



Tetlin (property owner) will be conducted to determine what actions should be taken and implemented.



USACE Question 2. The EPA also has concerns about the potential impacts to natural drainage patterns from the proposed construction of the two new gravel access roads. The EPA indicates that the applicant has not clearly identified the design and number of culverts that would be needed to maintain the existing hydrologic regime of the waters crossed by the roads. They also cite that the application does not refer to any contingencies for repair or emergency activities that may be needed within regulated aquatic environments.

If authorized, how would Peak Gold, LLC design, construct and maintain stream and wetland crossings for the proposed gravel access roads so that natural drainage patterns would be maintained. What contingencies are planned to address aquatic resource crossings if they impede flows or otherwise alter natural drainage patterns? What monitoring would occur to determine whether contingencies should be implemented?

Peak Gold Response 2:

The Manh Choh Twin Road and the Site Access Road do not cross any perennial, intermittent or ephemeral streams as demonstrated in the §404 Permit Application Supplemental Information submitted with the §404 Permit Application on December 31, 2021 shown on sheets 1 through 31 of Appendix 1. No access roads to material pits, lay down areas, or other mine components requires a road crossing a stream.

On the Manh Choh Twin Road, culverts are planned for 60 swales to maintain natural drainage patterns and hydrologic connection. The culvert locations were selected by a hydraulic engineer to ensure cross culvert natural drainage will continue. Culvert typicals are supplied in §404 Permit Application Supplemental Information sheet drawing 32 of 36 found in Appendix 1. Also see Alaska Department of Fish and Game's (ADF&G) Fish Habitat Permit FH22-III-0019 issued on January 14, 2022, and amended on February 11, 2022 (Appendix 2) for culvert locations (Appendix 3).

The Manh Choh Site Access Road is designed to pass two haul trucks with outside safety berms on slopes to meet Mine Safety and Health Administration (MSHA) standards. The mine access road has also been designed to meet grade and width requirements for the proposed off road haul trucks. Road typicals are shown on §404 Permit Application Supplemental Information sheets 33 and 34 of 36 found in Appendix 1. The Site Access Road is located on side hill slopes and then ridge tops. Surface drainage patterns will be maintained by the road placement (in uplands, above streams or wetland swales downhill) and use of road ditches and cross drainage flow culverts. No streams will be crossed or affected by this construction. Natural drainage patterns will be maintained by placing culverts in the Manh Choh Site Access Road route based on a hydraulic engineer investigation. All culvert sites will be located and constructed to ensure proper placement for cross surface drainage patterns. Culvert typicals are supplied in §404 Permit Application Supplemental Information, sheet 32 of 36 found in Appendix 1.



No plans or design locations for culverts were submitted in the USACE permit application because cross drainage structures require a permit from USACE (if in Waters of the United States (WOTUS)) and ADF&G (if in fish streams), neither of which apply for the Manh Choh Roads.

The Manh Choh Mine is located on a ridge; hydrologic surface flow will not be interrupted by excavating mine pits or placing roads on the ridge. At the mine site, drainage collection ditches will be placed below the pits and waste rock to contain surface water flow and ensure discharge to proper drainages. Mine contact water must be contained and treated for discharge. Surface flow will not connect from the mine downstream to surface drainage. All surface water flow off the mine area will go into sediment ponds and infiltration galleries to protect surface water quality below the mine site. A Drainage Ditch section is shown in §404 Permit Application Supplemental Information, sheet 36 of 36 found in Appendix 1.

The mine footprint including roads was minimized by not having mill facilities on site. No oreprocessing mill, tailings disposal facility, or facility-sized power plant and associated infrastructure are planned.

Multiple access routes to the mine site were studied in detail. A proposed route across the Tok River was studied and rejected. One reason for rejection was to maintain intact riverbank and riparian zones along the Tok River. It was deemed unacceptable to route the access road across a flowing stream and potentially introduce sediment in runoff. Access routes were selected that avoided stream and flowing water crossings while minimizing fill in wetlands.

Storm and surface water will be managed and monitored at the Project (mine and access roads) using personnel that are CESCL qualified. The access road and mine site will be inspected daily by CESCL qualified personnel. Inspections will reveal ponding on the upslope side of roads or culverts, erosion, or excessive sedimentation. Corrective actions will be undertaken immediately if problems are noted at culverts, if there is excessive erosion, sedimentation, or water flow drainage changes deviating from the norm on access roads or at the mine.

Solutions to address swale crossing locations or drainage issues can include cleaning culvert inlets and outlets, cleaning of sediment basins, stabilizing sediment or cuts with mulch, rock, riprap, vegetation, or mats, repairing sediment barriers, surface grade changes, replacing failed culverts or structures. Road maintenance and proper surface water management is critical to the operation of the Project. The Project depends on the ability to move ore from the mine to a processing facility on stable, safe, operational roads. All noted repairs and deficiencies will be scheduled and addressed by the Peak Gold Operations & Maintenance staff.

Maintenance and Contingencies are also discussed in Peak Gold Response #1.

Peak Gold will maintain a list of all State and Federal Permits in the Environmental Office. The list will detail permit numbers, permit conditions, monitoring requirements, renewal dates, and responsible agency. A current contact, phone number, and email will be maintained as a BMP.



USACE Question 3. The EPA is concerned that there has been neither any quantification of functional loss from the proposed impacts to aquatic resources nor any quantification of functional gain from the proposed compensatory mitigation. Further, they assert that, "The proposed mitigation does not appear to provide sufficient offset of the proposed impacts to WOTUS." (see p.8 of the EPA letter).

Application of standardized, region-specific, rapid procedures for estimating the functions and values of wetlands and streams greatly improves the feasibility of and justification for debit and credit accounting for projects permitted by the USACE. The 2008 Mitigation Rule and related policies have compelled the USACE to place greater reliance on functions assessments and/or condition assessments to quantify debits and credits instead of mainly using dimensional quantifications of wetland area and/or stream length for determining the extent of proposed impact and the appropriateness of the proposed compensatory mitigation. Further, quantification via functions/condition assessment enables the USACE to make a specific accounting for the effects of time lag, risk and ecological significance upon the amount of credits awarded for proposed compensatory mitigation. Time lag is the delay between the onset of the proposed impacts and the realization of the full benefits of the proposed compensatory mitigation.

How would Peak Gold, LLC quantify the proposed functional loss from the proposed impacts and the functional lift from the proposed compensatory mitigation? How would the results of these analyses be used to determine whether the proposed compensatory mitigation would sufficiently offset the proposed aquatic resource impacts? Alternatively, in lieu of demonstrating that the mitigation would offset the proposed impacts, how would Peak Gold, LLC demonstrate that the proposed mitigation would serve the aquatic resource needs of the watershed?

The Alaska District hereby suggests that you utilize an appropriate methodology, such as the Stream Quantification Tool for Interior Alaska (SQT-INT), to assess the anticipated functional gain from the proposed compensatory mitigation. The SQT was developed for single thread, wadable streams in non-glacial alluvial and colluvial valleys in the Alaskan Interior. Appropriate use of this tool would clarify the anticipated functional lift, lead to the identification of performance standards to assess mitigation success and help determine whether the proposed compensation is commensurate with the proposed impacts and/or serve the aquatic resource needs of the watershed.

Assessing functional loss expected from the proposed wetland impacts with a quantitative method such as the Wetland Ecosystems Services Protocol for Interior Alaska (WESPAK-INT) could provide insights that may benefit future assessments in the project vicinity. At the very least, a qualitative functions assessment predicated upon best professional judgement would clarify the anticipated functional loss and help determine whether the proposed compensation is commensurate with the proposed impacts.



In accordance with the 2008 Mitigation Rule, Peak Gold, LLC must either demonstrate that the proposed compensatory mitigation would sufficiently offset the proposed aquatic resource impacts or demonstrate that it would serve the aquatic resource needs of the watershed. The basis for authorization of out-of- kind compensatory mitigation must be documented in the administrative record.

Unfortunately, direct comparison of the results of a wetland assessment with those of a stream assessment is not possible given the inherent differences in the ways that wetlands and streams function in the landscape. Nonetheless, some comparisons may be made qualitatively. For instance, the aquatic connectivity of the wetlands in the project vicinity would be compromised as a result of the proposed construction, mining activity and reduced wetland area whereas the aquatic connectivity of the streams that would be improved by the proposed compensatory mitigation; how would overall aquatic connectivity of the watershed be affected as a result?

Out-of-kind compensatory mitigation may be authorized if it would measurably and sustainably improve aquatic resources in a watershed. The improvement should at least partly compensate for historical, ongoing and/or potential impacts to aquatic resource conditions. If Peak Gold is not able to demonstrate that the mitigation would sufficiently offset the proposed impacts, then how would it demonstrate that the mitigation would improve aquatic resources in ways that would address historical, ongoing and/or potential water resource degradation in the watershed?

Peak Gold Response 3:

Detailed investigation of potential Permittee Responsible Mitigation (PRM) sites was undertaken in and outside of the impacted watershed. The three proposed PRM projects restore and enhance higher value wetlands and improve and expand potential fish bearing stream habitat and their associated floodplains near the project, thus benefiting the aquatic resources of the watershed and sufficiently compensating for the unavoidable loss of aquatic resources due to project impacts.

The PRM projects follow the watershed approach, §404 sequencing, and flexibility outlined by EPA and USACE in their June 15, 2018, Memorandum of Agreement on Mitigation for Wetlands in Alaska. The wetland impacts at the Manh Choh project site total 5.2 acres. Black spruce wetlands total 3.8 acres and were found along the Manh Choh Twin Road corridor. The remaining 1.4 acres included one swale along the Twin Road corridor and impacts within the mine site at the top of the hill. Additionally, the mine site impacts an 80-foot non-RPW seep that emerges and then re-infiltrates. Although technically a stream, functionally this feature is equivalent to a Slope-HGM wetland.



Functional Assessments are typically used in Alaska to determine credits needed to offset unavoidable impacts to wetlands and waters. The Manh Choh project is in an area where neither mitigation bank credits, nor in-lieu fees entities are available. Therefore, to provide mitigation for the project, permittee-responsible mitigation (PRM) was proposed, based on the steps outlined in the USACE 2008 Mitigation Rule.

As noted in the PRM plan submitted to USACE with the §404 permit application on December 31, 2021, options for PRM in the area are limited. No opportunities for creation of wetlands and/or ponds were identified.

Three PRM project sites are proposed for mitigation. Rather than creation of aquatic resources, the projects involve replacement of existing poorly functioning culverts with correctly engineered culverts. This will ensure connectivity through the culverts whenever flow is present, and limit ponding and sedimentation near the culverts.

Through their many years of Alaska-based wetland delineation, functional, assessment, permitting, and mitigation experience, the Stantec team has found that a rough hierarchy exists in functional scores, with the highest scores typically found in Riverine and Slope HGM wetlands due to stream inlets and outlets with the ability to export nutrients, the presence of and fluctuation of surface water, and the diversity of vegetation providing better productivity and habitat values. Depressional and Flat HGM wetlands, especially those without inlets and outlets, perform fewer functions and typically score lower than Slope and Riverine HGM wetlands.

ALASKA WETLANDS ASSESSMENT METHOD

The Alaska Wetland Assessment Method (AKWAM) functional assessments (Appendix 4) were used to evaluate functional losses and gains from the proposed project and the PRM sites. For credits, after the AKWAM score was determined, the credits were adjusted due to minor risk factor (1.25) using the 2018 Alaska District: Credit Debit Methodology. The risk of these projects was determined to be low; if an initial culvert replacement fails to meet project goals and/or standards, the short- and long-term management of the project would involve rehabilitating or reconstructing the culverts until the project has met standards.

Function Lost in Impacted Wetlands

As shown in the project Preliminary Jurisdictional Determination report and the Section 404 permit application, the majority of impacted wetlands are classified as Flat HGM and occur along the Manh Choh Twin Road (3.8 acres). These wetlands are already degraded due to proximity to the existing Tetlin Village Road and the long-term impacts of the 1990 fire. Road maintenance, fire breaks, and the clearing of burned wood after the fire have degraded adjacent wetlands. The black spruce wetlands impacted by the Twin Road are likely drying out due to changes in the

Peak Gold Response to USACE



flooding regime/location of flooding of the Tanana and Tok Rivers, but also due to the 1990 fire. During the two seasons of wetland work, the soils in all wetlands sampled along this road corridor were not saturated nor had water tables. Hydrology was based on secondary indicators, with the compact silt soils showing gleyed coloring. Because there are no streams flowing into or out of the impacted spruce wetlands, functional scores are lower than the Slope and Riverine HGM wetlands proposed for functional lift in the mitigation plan.

The evaluation of the Flat HGM wetlands impacted by the project resulted in a functional score of 0.325 multiplied by the number of acres (3.8) = 1.235 debits.

Wetlands impacted near the mine site are primarily Slope HGM and total 1.4 acres. These exist at the very top of watersheds and are higher value than the Flat HGM wetlands impacted. Impacts from the project occur at the top of the wetlands, no fragmentation will occur.

The evaluation of the Slope HGM wetlands impacted by the project resulted in a functional score of 0.65 multiplied by the number of acres (1.4) = 0.91 debits.

In total, to off-set the wetland impacts of the project, the PRM sites would need a functional lift equal to or greater than 2.145.

Functions Gained in PRM Wetlands

As shown in the AKWAM evaluation, the proposed PRM Area 1 and 2 projects improve the functionality of Slope and Riverine HGM wetlands adjacent to streams impacted by existing culverts near the proposed project area. Replacing the culverts will improve the hydrologic connectivity of the wetlands and reduce sedimentation, improving functions including nutrient cycling, sediment stabilization and removal, water storage, and aquatic and terrestrial habitat support. Alaska Department of Fish and Game (ADF&G) approves of the culvert replacement, and also states in the Fish Habitat Permit FH22-III-0019 (Appendix 2) that slimy sculpin may be present in the intermittent stream that is hindered by the inadequate culverts at the lower mitigation site.

<u>PRM Area 1</u>

At PRM Area 1 the stream channel will improve with culvert replacements. Culvert replacement provides opportunity for expanded fish (if present) and aquatic species habitat upstream for at least 1,000ft. On the upstream side of the road, ponding and sediment load will be reduced. Downstream regular stream flow will be established for up to 900 feet or more. Wetlands adjacent to the steam (15acres) will receive additional nutrient contributions, surface and subsurface water, while maintaining hydrophytic vegetation/habitat communities and reducing the encroachment of upland and invasive plant species. Proper culverts will also reduce the



chance that in high water events stream water overtops the roadway, which would wash additional sediment into the wetland.

The evaluation of the Riverine HGM wetlands functionally improved (lift) by the project is determined by evaluating the present condition upstream and downstream, then determining the functional lift after PRM is completed for both upstream and downstream wetlands.

Upstream 5 acres improves from a functional score of 0.622 to 0.633. Difference between current and future condition-Delta = 0.01 Adjusted Delta = 0.01/1.25 = 0.008 Credits = 5 acres*.008 = 0.044

Downstream 15 acres improves from a functional score of 0.533 to 0.677 Difference between current and future condition Delta = 0.14 Adjusted Delta = 0.14/1.25 = 0.112 Credits = 15 acres*0.112 = 1.73

Total credits generated = 1.777 at PRM area 1.

<u>PRM Area 2</u>

At PRM Area 2 the culvert replacement and upgrades will allow continued flow downstream to the tributaries of Tetlin Lake. This will reduce ponding and sedimentation upstream that has impacted approximately 0.15 acres. Aufeis forms at this location due to the slope of the wetland and the ponding of the water at the roadway. Aufeis contributes to the erosion of the site and sedimentation downstream.

With properly sized culvert(s) in place the upstream wetlands will revegetate into a more natural state. Downstream, sediment loads will be reduced over the length of the 3,000 feet to the tributary below. With less sediment, this small channel will stabilize. Wetland vegetation in the swale will recover/regrow.

The evaluation of the Slope HGM wetlands functionally improved (lift) by the project is determined by evaluating the present condition upstream and downstream, then determining the functional lift after PRM is completed for both upstream and downstream wetlands.

Upstream 0.5 acres improves from a functional score of 0.6375 to 0.7 Delta = 0.0625 Adjusted Delta = 0.0625/1.25 = 0.05 Credits = 0.5 acres*.05 = 0.025

Downstream 1.5 acres improves from a functional score of 0.5375 to 0.6625 Delta = 0.125

Peak Gold Response to USACE



Adjusted Delta = 0.125/1.25 = 0.1 Credits = 1.5 acres*0.1 = 0.15

Total credits generated = 0.175 at PRM area 2.

<u>PRM Area 3</u>

The PRM Area 3 location was chosen based on comments from residents of Tetlin Village. Sun Lake, which is northwest of Tetlin Village, hosts resident fish. The culvert under the access road flows to Tetlin River, however, the culvert is perched so during low water fish passage is difficult or impossible. The residents rely on fish for subsistence; this project would increase access for fish to Sun Lake, improving/expanding fish habitat. Resident fish harvested by the community include pike, whitefish, arctic grayling, northern sucker, and burbot. Some or all of these species may use Sun Lake and its outlet during parts of their life cycle.

The Alaska Department of Fish and Game maintains the Fish Passage Inventory Database for many streams along the road system in Alaska. Culverts are graded based on numerous factors; however, the three critical variables are stream gradient, outfall height, and constriction ratio.

The culvert was evaluated based on the site visit and review of the photographs below. As a low gradient stream, an improved culvert will not change the gradient, however, the new culvert will be embedded, and have a more natural substrate. The perched outfall will no longer be an obstacle to fish passage and the constriction ratio, currently estimated at 0.5:1, will improve with a properly sized culvert.

Neither AKWAM nor the SQT captures the importance of providing proper fish passage through culverts, nor the expanded habitat available to fish. For the three areas proposed in the PRM plan, PRM Area 3 is qualitatively the most important for fish, other aquatic species, and for the residents of Tetlin Village.

At PRM Area 3 the stream channel will improve with culvert replacements. Culvert replacement would provide perennial access for fish and aquatic species to the 68-acre Sun Lake. Wetland fringe around Sun Lake (up to 10.3 acres) will provide habitat for fish and other aquatic species.

A Fish Habitat Permit will be applied for the culvert replacement project at PRM Area 3 from the ADF&G, and work will not begin until the permit is issued.

No wetlands are functionally lifted upstream or downstream; downstream wetlands receive water perennially from the Tetlin River.

As recommended by USACE in their April 1, 2022 letter (in response to USFWS floodplain comments), Peak Gold will design and construct the stream crossings to not only convey typical

Peak Gold Response to USACE



flows as well as large flood flows (e.g., 100- year event), but also utilize a stream simulation approach to support aquatic organisms within and immediately adjacent to the crossing as much as practicable. Such an approach will include establishing channel conditions within and adjacent to the crossing that are laterally and vertically stable, support a self-sustaining low-flow channel, include elements that provide hydraulic roughness as well as habitat, and facilitate water dispersal over a floodplain during high flow events.

Overall Gain for the Watershed

Peak Gold's three PRM projects restore and rehabilitate higher value wetlands and waters near the project impacts resulting in an expected net benefit to the watershed and aquatic resources. The PRM plan provides a benefit to the watershed while adequately compensating for project impacts.

The three PRM sites (Appendix 5) were selected because they exhibit some or all of the problems identified by EPA as stated in USACE Question 1, paragraph 2 for gravel roads. The Tetlin Village Road receives minimal maintenance outside of snowplowing. The roadbed is reduced to fine silts over the course of the summer. With culvert replacement the roadbed at these locations will be removed and replaced with better materials. Culverts will be properly imbedded into the substrate to allow fish passage if present. The reconstruction of the roadbed, drainage ditches, and culvert replacement will all be done to elevate issues at the wetland crossings, many noted in the EPA comments above.

Wetland losses for the project total 2.145 debits. Credits through functional lift in higher value wetlands total 1.952 (Table 1). Although the proposed credits do not quite match the debits, additional improvements to subsistence use fisheries, reduced environmental pollution from roadbed erosion, and community safety were not captured by the functional assessment tool but are arguably just as valuable as the functions that were measured.



PRM Area	AKWAM Wetland Credits
PRM Area 1	1.777
PRM Area 2	0.175
PRM Area 3	NA
Total	1.952

Table 1. AKWAM Credit-Debit Summary

STREAM QUANTIFICATION TOOL

As suggested by the USACE, Stream Quantification Tool (SQT) and Debit Calculator (V1.0) User Manual, for the Alaskan Interior, June 2021 (<u>https://stream-mechanics.com/wpcontent/uploads/2021/06/AK-SQT-v1 FINAL User-Manual 20210521.pdf</u>) was used to determine functionality of existing stream reaches and for predicting the proposed conditions. Results using the SQT method are:

PRM Area 1

This project lowers and enlarges the culverts to ensure upstream and downstream connectivity whenever flow is present. This will provide improvements to the Functional Category "Hydraulics." The current hydraulics in the culverts when flow is present are "Functioning at Risk" with a score of 0.38. The PRM project improves flow dynamics for approximately 450 feet, and results in a Category score of 1.00 "Functioning."

PRM Area 2

The only metric expected to change in the SQT is "Concentrated Flow Points." By removing the sediment source from erosion caused by aufeis formation, concentrated flow points in the reach is being reduced from 1 to 0. This results in a Functional Lift of 0.10 to the Hydrology Functional Category of the SQT. Because other Functional Categories are not expected to change from the culvert replacement, they were not evaluated. The improvement to the stream from the culvert replacement is calculated at 1.3 Functional Feet.

PRM Area 3

This project embeds and enlarges a perched, constricted culvert to ensure upstream and downstream connectivity. This will provide improvements to the Functional Category

Peak Gold Response to USACE



"Hydraulics" for the portion of stream upstream from the culvert (approximately 150 feet). The current hydraulics for the reach upstream from the culvert is "Functioning at Risk" with a score of 0.63. The PRM project improves flow dynamics, resulting in a Category score of 1.00 "Functioning." The "Biology" function may also improve, although we did not try to measure this in the SQT due to a lack of available data. Based on the improvement to the "Hydraulics" function, the SQT shows a mitigation yield of 10.5 function feet of lift.

PRM Area	Function Feet of Lift
PRM Area 1	54.0
PRM Area 2	1.3
PRM Area 3	10.5
Total	65.8

Table 2. SQT Mitigation Yield Summary

The PRM plan combines uplift to higher value wetlands and provides lift to at minimum one fish bearing stream. The PRM plan adequately mitigates the unavoidable impacts of the project, while providing a benefit to the watershed.



USACE Question 4. The USFWS is concerned that there is no proposed means to maintain floodplain integrity and connectivity at the stream crossings for the proposed gravel access roads or at the culvert replacements for the proposed compensatory mitigation. Floodplain integrity and connectivity is typically maintained at stream crossings by the installation of channel-spanning bridges or appropriately designed culverts. Roadway-stream crossings must optimize longitudinal (upstream-downstream) connectivity, groundwater connectivity as well as floodplain connectivity to create a functional passageway for aquatic organisms at a variety of flows. If bridging a stream is not feasible, then installing a culvert that mimics stream reach characteristics is the best means for providing connectivity.

How would Peak Gold, LLC maintain floodplain integrity and connectivity at the proposed crossing structures for the new gravel access roads? Is Peak Gold LLC planning to re-establish floodplain integrity and connectivity at the stream crossings targeted for improvement via the proposed compensatory mitigation. If so, then how would this be accomplished?

The Alaska District hereby suggests that you design and construct stream crossing that not only convey typical flows as well as large flood flows (e.g., 100- year event), but also utilize a stream simulation approach to support aquatic organisms within and immediately adjacent to the crossing as much as practicable. Such an approach should include establishing channel conditions within and adjacent to the crossing that are laterally and vertically stable, support a self-sustaining low-flow channel, include elements that provide hydraulic roughness as well as habitat, and facilitate water dispersal over a floodplain during high flow events. See guidance for accomplishing these objectives at the following:

https://www.fws.gov/alaska-culvert-design-guidelines

https://www.fs.fed.us/eng/pubs/pdf/StreamSimulation/hi res/%20FullDoc.pdf

Peak Gold Response 4:

No streams are being crossed by the Manh Choh Twin Road or the Manh Choh Site Access Road as shown on the figures of Attachment 1. Neither road crosses a perennial, intermittent or ephemeral stream. No access roads to any gravel pits, lay down areas, or mine facility cross a stream.

Cross drainage structures will be placed in the Manh Choh Twin Road, and culverts updated on the Tetlin Native Village Road to maintain floodplain integrity. The ADF&G has issued Fish Habitat Permits for the replacement of a culvert battery in the Tetlin Village Road and the installation of culverts on the Manh Choh Twin Road, Permit FH22-III-0019 issued on January 14, 2022, and amended on February 11, 2022 (Appendix 2). The culverts shall be constructed, operated, and maintained for the life of the structures to ensure fish passage. Any obstruction to the passage of Peak Gold Response to USACE



fish (e.g., perched culvert outwash gravels and or excessive water velocities) shall be restored to the satisfaction of the Habitat Section. Plans exist to ensure cross drainage takes place on the Manh Choh Twin Road. Culvert locations and design for the Manh Choh Twin Road and Tetlin Native Village Road have been included with this response.

Culverts updates on the Tetlin Native Village Road are part of the compensatory mitigation plan. The Alaska Department of Fish and Game has issued Fish Habitat Permits for the replacement of a culvert battery in the Tetlin Village Road, Permit FH22-III-0019 issued on January 14, 2022, and amended on February 11, 2022 (Appendix 2). The culverts shall be constructed, operated, and maintained for the life of the structures to ensure fish passage. Any obstruction to the passage of fish (e.g., perched culvert outwash gravels and or excessive water velocities) shall be restored to the satisfaction of the ADF&G Habitat Section.

Peak Gold will maintain floodplain integrity and connectivity at proposed crossing on the new gravel roads by locating culverts based on a hydraulic engineer investigation to ensure proper location for flood flow and surface drainage. Culvert typicals are supplied in §404 Permit Application Supplemental Information, sheet drawing 32 of 36 (Appendix 1). Also see ADF&G Permits for culvert locations on the Manh Choh Twin Road (Appendix 3).

Peak Gold will maintain floodplain integrity and connectivity at the stream crossings targeted for improvement via the proposed compensatory mitigation plan by lowering the current perched culverts. The culverts will be lowered and bedded. The culverts will be replaced in their entirety to provide expected flow rates for this drainage. A hydraulic engineer will be engaged to ensure the culverts are properly sized and installed at correct elevations.

Floodplain integrity will not be interrupted by the construction of the Manh Choh Twin Road or repairs in the Tetlin Village Road. The access roads are located on flats with the roads crossing one wetland swale and other non-wetland features. No floodplains will be affected by this construction as there are no streams being crossed. Surface drainage patterns will be maintained by the use of adequately sized culverting. On the Manh Choh Twin Road culverts are planned for 60 swales to maintain natural drainage and flood patterns and hydrologic connection. The culvert locations were selected by a hydraulic engineer to ensure cross culvert natural drainage will continue. Culvert typicals are supplied in §404 Permit Application Supplemental Information, sheet drawing 32 of 36 (Appendix 1). Also see ADF&G Permits for culvert locations (Appendix 3).

New gravel roads have been designed to carry projected loads at safe grades while avoiding and minimizing wetland fill as practicable. The Manh Choh Twin Road is planned adjacent to the existing Tetlin Village Road to reduce wetland impacts and maintain safety for the Native People of Tetlin by having a separate travel corridor. Floodplain integrity will be ensured by regular inspections of all culverts on all roads and ensuring sediment has not built up in outlets or inlets, Maintenance will be performed to keep all culverts in working condition. If it is determined



another culvert is required based on ponding on the upslope side corrective action will be undertaken.

Storm water is monitored and managed at the Project (mine and roads) using qualified personnel having CESCL certification (<u>https://www.ak-cescl.com</u>). The site will be inspected daily by staff with CESCL qualifications. Appropriate corrective actions will be undertaken immediately if problems with drainage, sediment, or containment are noted during inspection of access roads or mine site.

Wetland vegetation will be left intact outside of the culvert crossing footprint for hydraulic roughness should there be a high flow event. Peak Gold is not going to restrict surface flow or affect floodplain integrity with this road design. The swales will be culverted with minimal Flat HGM wetlands filled. This design supports the existing aquatics in the one wetland swale.

Bridging of swales is not practicable for dry, short, and shallow crossings. Culvert batteries are adequate for swales. There is no stream flow in any swale being crossed. The swales are depressional remnant features. The culverts are designed and will be placed for the projected high flow event maintaining connectivity. An Alaska Registered Professional Engineer will evaluate the crossing design and stamp the plans.

Floodplain integrity will not be interrupted by the construction of the Manh Choh Site Access Road. The access road is located on hill slopes and ridge tops. No floodplains will be affected by this construction as there are no streams crossed. Surface drainage patterns will be maintained by the placement of strategically located culverts. The culvert locations will be selected by a hydraulic engineer to ensure the cross culvert maintain flood flow. Culvert typicals are supplied in §404 Permit Application Supplemental Information submitted sheet drawing 32 of 36 (Appendix 1). No plans or designs for culverts were submitted because cross drainage structures do not require a permit from USACE or ADF&G when placed in uplands.

The proposed road has been designed to avoid wetlands and streams. The Manh Choh Twin Road and Manh Choh Site Access Road will be constructed of local material capable of handling daily traffic. The proposed fill has undergone testing for suitability and load capability. Analysis has confirmed the proposed road construction material is clean fill and adequate for the proposed task. Building the road with competent clean fill will ensure road prism stability.



Appendix 1

§404 Permit Application Supplemental Information

Sheets 1 through 36





Stream

9 15 14 13 12 11 16 17

22

Waterbody

Wetland

Contour Data: 5m IFSAR

0 150 300	600 Keet		
1 inch = 400 feet	1:4,800		
Applicant: Peak Gold, LLC			
File No.: POA-			
Waterway: Tanana River			
Proposed Activity: Manh Choh Mine			
See Supplement Table 15-1 for Public Land Survey Data			
Lat.: 63.3206	Long.: -142.7952		
Sheet: 2 of 31	December 2021		







Contour Data: 5m IFSAR

See Supplement Table 15-1 for Public Land Survey DataLat.:63.3002Long.:-142.7742Sheet:5 of 31December 2021



Contour	Data:	5m	IFSAR









Fill Footprint

- Project Component
- Wetland or Water Impact

[_] Wetland Study Area Wetlands and Waters

- Stream
- Katerbody
- Wetland

Contour Data: 5m IFSAR

0 150 300	600 Feet w⊲⊖r∈	
1 inch = 400 feet	1:4,800 ¥	
Applicant: Peak Gold, LLC		
File No.: POA-		
Waterway: Tanana River		
Proposed Activity: Manh Choh Mine		
See Supplement Table 15-1 for Public Land Survey Data		
Lat.: 63.273	Long.: -142.7685	
Sheet: 8 of 31	December 2021	





Fill Footprint Project Component Wetland Study Area Wetlands and Waters Stream Waterbody

Wetland

Contour Data: 5m IFSAR

0 150 300	600 Feet	
1 inch = 400 feet	1:4,800 s	
Applicant: Peak Gold, LLC		
File No.: POA-		
Waterway: Tanana River		
Proposed Activity: Manh Choh Mine		
See Supplement Table 15-1 for Public Land Survey Data		
Lat.: 63.2641	Long.: -142.7526	
Sheet: 9 of 31	December 2021	



Contour Data: 5m IFSAR

22

See Supplement Table 15-1 for Public Land Survey Data Lat.: 63.2551 Long.: Sheet: 10 of 31 December 2021

-142.7477
















Fill Footprint

Project Component Wetland Study Area

[_] Wetlands and Waters

Stream

Waterbody



Contour Data: 5m IFSAR

0	150	300	600 Feet					
	1 inch =	400 feet	1:4,800	W Q F E				
Applic	ant: Peak	Gold, LLC						
File N	File No.: POA-							
Waterway: Tanana River								
Proposed Activity: Manh Choh Mine								
See S	See Supplement Table 15-1 for Public Land Survey Data							
Lat .:	63.236		Long.: -142.	8252				
Sheet	17 of 31		December 202	21				













Wetland

Contour Data: 5m IFSAR

21

Proposed Activity: Mann Ch	on Mine							
See Supplement Table 15-1 for Public Land Survey Data								
Lat.: 63.2002	Long.: -142.8624							
Sheet: 23 of 31	December 2021							





















Applicant. Peak Gold LLC.							
File No.: POA-	File No.: POA-						
Waterway: Tanana River							
Proposed Activity: Manh Choh Mine							
Fairbanks Meridian See Supplement							
Lat.: 63.2866 N	Long.: 142.7696 W						
Sheet: 32 of 36	December 2021						





Mine Pit Cross Section



Drainage Ditch Cross Section





Appendix 2

Alaska Department of Fish and Game

Fish Habitat Permits

FH22-III-0019

FH22-III-0019-Amendment 1





Department of Fish and Game HABITAT SECTION Fairbanks Regional Office

> 1300 College Road Fairbanks, AK 99701-1151 Main: 907.459.7289 Fax: 907.459.7303

FISH HABITAT PERMIT FH22-III-0019

ISSUED: January 14, 2022 EXPIRES: Life of Structures

Bartly Kleven Peak Gold, LLC PO Box 73726 Fairbanks, AK 99707-3726

RE: Culvert Installations Unnamed stream Section 5, T17N, R14E, CRM Location: 63.2832 N, 142.7683 W

Dear Bartly Kleven:

Pursuant to AS 16.05.841 (Fishway Act), the Alaska Department of Fish and Game (ADF&G) Habitat Section has reviewed your proposal to install a battery of three culverts along Manh Choh Twin Road for water management. This proposal was received on December 31, 2021.

Project Description

The proposed Manh Choh Project is located approximately ten miles southeast of Tok, Alaska in the Tetlin Hills. The 5.4-mile Manh Choh Twin Road will be constructed to eliminate the co-use of mine and village traffic along the existing Tetlin Village Road. A battery of three culverts will be installed at this location to provide water management.

Fishway Act

This unnamed stream is likely seasonally connected to the Tok River and therefore may support resident fish species such as slimy sculpin. Your project as proposed is not anticipated to obstruct the free passage of fish.

In accordance with AS 16.05.841, your project is approved subject to the project description and permit terms, with the following stipulation:

Peak Gold, LLC FH22-III-0019

The culverts shall be constructed, operated, and maintained for the life of the structures to
ensure fish passage. Any obstruction to the passage of fish (e.g., perched culvert, outwash
gravels, and/ or excessive water velocities) shall be restored to the satisfaction of the Habitat
Section. The Habitat Section shall be notified, and its approval granted before any instream
culvert maintenance activities occur.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.841 and must be retained on site during project activities. Please be advised that this determination applies only to activities regulated by the Habitat Section of ADF&G; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other permits; state, federal, or local. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. For any activity that significantly deviates from the approved plan, you shall notify the ADF&G Habitat Section and obtain written approval in the form of a permit amendment before beginning the activity. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G Habitat Section. Therefore, it is recommended that you consult the Habitat Section before considering any deviation from the approved plan.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

Peak Gold, LLC FH22-III-0019

Please direct questions about this permit to Habitat Biologist Olivia Edwards at 907-459-7326 or olivia.edwards@alaska.gov.

Sincerely, Doug Vincent-Lang Commissioner

By: A

Audra L. J. Brase Fairbanks Regional Supervisor

ecc: AI Ott, ADF&G Habitat, Fairbanks Andy Gryska, ADF&G SF, Fairbanks Brandy Baker, ADF&G SF, Delta Junction Permit Coordinator, ADF&G SF Fairbanks Mining, ADNR Fairbanks Gillian O'Doherty, ADF&G SF, Anchorage Tim Pilon, ADEC, Fairbanks Bob Henszey, USFWS, Fairbanks Ellen Lyons, USACE, Fairbanks AWT, Northern Detachment, Fairbanks Ashlee Adoko, ADNR OPMP

one/AB

Department of Fish and Game





HABITAT SECTION Fairbanks Regional Office

1300 College Road Fairbanks, AK 99701-1151 Main: 907.459.7289 Fax: 907.459.7303

FISH HABITAT PERMIT FH22-III-0019 – AMENDMENT 1

ISSUED: February 11, 2022 EXPIRES: Life of Structures

Bartly Kleven Peak Gold, LLC PO Box 73726 Fairbanks, AK 99707-3726

RE: Culvert Installations Unnamed stream Section 5, T17N, R14E, CRM Location: 63.2832 N, 142.7683 W

Dear Bartly Kleven:

Pursuant to AS 16.05.841 (Fishway Act), the Alaska Department of Fish and Game (ADF&G) Habitat Section has reviewed your proposal to replace a battery of three culverts on the Tetlin Village Road for water management. This amendment request was received by phone on February 3, 2022.

Project Description

Peak Gold, LLC will replace a battery of three perched 24-inch diameter culverts on the existing Tetlin Village Road with three 30-inch diameter culverts as part of the Manh Choh Project. The proposed Manh Choh Project is located approximately ten miles southeast of Tok, Alaska in the Tetlin Hills. The original permit was for installation of three 30-inch culverts on the proposed 5.4-mile Manh Choh Twin Road which will be constructed to eliminate the co-use of mine and village traffic along the existing Tetlin Village Road. This amendment approves the replacement of the nearby Tetlin Village Road culverts.

Fishway Act

This unnamed stream is likely seasonally connected to the Tok River and therefore may support resident fish species such as slimy sculpin. Your project as proposed is not anticipated to obstruct the free passage of fish.

In accordance with AS 16.05.841, your project is approved subject to the project description and permit terms, with the following stipulation:

 The culverts shall be constructed, operated, and maintained for the life of the structures to ensure fish passage. Any obstruction to the passage of fish (e.g., perched culvert, outwash gravels, and/ or excessive water velocities) shall be restored to the satisfaction of the Habitat Section. The Habitat Section shall be notified, and its approval granted before any instream culvert maintenance activities occur.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.841 and must be retained on site during project activities. Please be advised that this determination applies only to activities regulated by the Habitat Section of ADF&G; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other permits; state, federal, or local. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. For any activity that significantly deviates from the approved plan, you shall notify the ADF&G Habitat Section and obtain written approval in the form of a permit amendment before beginning the activity. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G Habitat Section. Therefore, it is recommended that you consult the Habitat Section before considering any deviation from the approved plan.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or

Peak Gold, LLC FH22-III-0019-A1

property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

Please direct questions about this permit to Habitat Biologist Olivia Edwards at 907-459-7326 or olivia.edwards@alaska.gov.

Sincerely, Doug Vincent-Lang Commissioner

By: Audra L. J. Brase Fairbanks Regional Supervisor

ecc: Al Ott, ADF&G Habitat, Fairbanks Andy Gryska, ADF&G SF, Fairbanks Brandy Baker, ADF&G SF, Delta Junction Permit Coordinator, ADF&G SF Jeanette Brena, Boreal Services, Anchorage Fairbanks Mining, ADNR Fairbanks Gillian O'Doherty, ADF&G SF, Anchorage Tim Pilon, ADEC, Fairbanks Bob Henszey, USFWS, Fairbanks Ellen Lyons, USACE, Fairbanks AWT, Northern Detachment, Fairbanks Ashlee Adoko, ADNR OPMP

one/AB



Appendix 3

Culvert Locations

Peak Gold Response to USACE



Camp Pad

Culverts

Note: map for conceptual use only. Map made by Rose Hart (SLR) on behalf of Peak Gold and BES.

Peak Gold, LLC - Manh Choh Project Culvert Summary Table

NO. ROAD ALIGNENT Tation 24" 39" UT RT LATTURE LONGTURE 35 Tetin Wilage Road 11:17 40" 1.621.89" 1.621.70" 63.228717 1-42.740003 36 Tetin Wilage Road 109:59 60" 1.633.44" 1.633.89" 63.22817 1-42.74003 37 Tetin Wilage Road 129:49 50" 1.643.24" 1.643.24" 63.228766 -42.76603 40 Tetin Wilage Road 138-82 66" 1.688.87" 1.683.33" 63.22096 -42.77620 41 Tetin Wilage Road 138-82 66" 1.688.87" 1.633.33" 63.22096 -42.77637 42 Tetin Wilage Road 173-42 74" 1.632.85" 1.633.33" 63.229361 -42.77637 43 Tetin Wilage Road 138-54 60" 1.634.83" 1.634.83" 1.634.84" 1.632.85" 63.29968 -42.77534 45 Tetin Wilage Road 139-54" 1.634.83" 1.648.44" 1.632.85"	PIPF			SIZE / L	ENGTH	INVERT E	INVERT ELEVATION		ATION		
Image Road 11+17 46' 1,621.20' 62.53769 -1.62.740003 36 Tetlin Village Road 44.49 50' 1,625.42' 1,625.85' 63.28376 -1.42.74003 37 Tetlin Village Road 83.95.8 54' 1,633.44' 1,633.44' 1,633.44' 1,633.44' 1,633.44' 1,633.44' 1,643.20'' 1,643.20'' 1,643.20'' 1,643.20'' 1,643.20'' 1,643.20'' 1,643.20''' 1,643.20''' 1,643.20''' 1,643.20''' 1,643.20'''' 1,633.20''''' 1,42.776032 40 Tetlin Village Road 138+36' 66''' 1,638.80'' 1,633.20''' 1,62.276''''''''''''''''''''''''''''''''''	NO.	ROAD ALIGNMENT	STATION	24"	30"	LT			LONGITUDE		
55 Tetlin Village Road 1417 46 1,621.89 1,621.70 63.5278 -1.42.246048 37 Tetlin Village Road 83+58 54' 1,623.44' 1,635.94' 63.26781 -1.42.766928 38 Tetlin Village Road 120949 50' 1,644.07' 1,643.14' 63.275761 -1.42.766928 30 Tetlin Village Road 138+32 66' 1,638.97' 1,639.33' 63.28998 -1.42.767817 41 Tetlin Village Road 179+17 7 1,633.50' 1,635.81' 63.29999 -1.42.770517 42 Tetlin Village Road 177+12 7 1,633.50' 1,635.81' 63.29999 -1.42.770544 43 Tetlin Village Road 177+10 58' 1,633.62' 1,633.25' 63.29628 -1.42.770544 44 Tetlin Village Road 138+56 58' 1,633.62' 1,633.74' 63.296724 -1.42.77054 45 Tetlin Village Road 138+56 58' 1,623.62'' 63.29778 -42.772598						<u> </u>				(Degrees N)	(Degrees W)
36 Tetlin Village Road 83+58 50' 1,625,42' 1,625,43' 63.26954 -1.42.762924 38 Tetlin Village Road 109+99 60' 1,641,61' 1,641,31' 63.25754 -1.42.766923 39 Tetlin Village Road 138+28 60' 1,638,30' 1,633,35' 63.28093 -1.42.767802 40 Tetlin Village Road 138+36 60' 1,638,31' 1.632,32' 63.23996 -1.42.767802 41 Tetlin Village Road 173+37 58' 1.653,83' 1.633,83' 63.23966 -1.42.770142 43 Tetlin Village Road 179+10 58' 1.653,85' 1.633,84' 63.23966 -1.42.770142 44 Tetlin Village Road 139+50 58' 1.633,64' 63.23966 -1.42.771454 45 Tetlin Village Road 139+50 58' 1.633,64' 63.23968 -42.771454 46 Tetlin Village Road 109+00 54' 1.633,45' 1.632,45' 63.32986 -42.772498 47 Tetlin Village Road 20+05 56' 1.633,45' 1.632,45'	35	Tetlin Village Road	11+17	46'		1,621.89'	1,621.70'	63.253769	-142.744003		
37 Tetlin Village Road 83-85 54' 1,633.44' 1,635.94' 632.55' 1.42.76284 38 Tetlin Village Road 124.99' 50' 1,643.07' 1,643.04' 632.75761 1.42.766802 39 Tetlin Village Road 138.93 66' 1,638.87' 1.639.33' 632.89301 1.42.767802 41 Tetlin Village Road 138.93 66' 1,638.81' 1.639.33' 632.89398 1.42.767802 42 Tetlin Village Road 179.47 1,635.81' 1.633.39' 63.239469 -142.77054 44 Tetlin Village Road 179.40 1,632.85' 1,633.30' 63.239461 -142.77054 45 Tetlin Village Road 138.95 60' 1,634.27' 1,633.44' 63.239461 -142.771450 46 Tetlin Village Road 139.400' 58' 1,633.52' 1,633.74' 63.329780 -142.771450 47 Tetlin Village Road 1.697.95' 1,633.44' 1,623.64' 63.33793 -142.77584 48 Tetlin Village Road 204.95' 56' 1,633.44' 1,623.44'	36	Tetlin Village Road	44+99	50'		1,625.42'	1,625.85'	63.262817	-142.746048		
38 Tetlin Village Road 124499 60 1,641.61* 1,641.61* 16,641.37* 632,7561 1.42,76605 40 Tetlin Village Road 138432 66* 1,633.80* 1,633.93* 632.8293 1.42,76750 41 Tetlin Village Road 138436 66* 1,633.81* 1,632.82* 632.8293 1.42,76750 42 Tetlin Village Road 137437 85* 1,635.82* 1,633.39* 63.229380 -142.770142 43 Tetlin Village Road 137472 78* 1,632.85* 1,633.39* 63.292980 -142.770554 45 Tetlin Village Road 138456 60* 1,644.27* 1,633.64* 63.292980 -142.770544 46 Tetlin Village Road 138450 58* 1,633.64* 1,632.85* 63.292980 -142.770484 47 Tetlin Village Road 196437 52* 1,632.45* 1,632.85* 63.292930 -142.770484 48 Tetlin Village Road 201407 56* 1,622.49* 1,632.43* 63.304289 -142.770484 51 Tetlin Village Road 221446 </td <td>37</td> <td>Tetlin Village Road</td> <td>83+58</td> <td>54'</td> <td></td> <td>1,633.44'</td> <td>1,635.94'</td> <td>63.269554</td> <td>-142.762924</td>	37	Tetlin Village Road	83+58	54'		1,633.44'	1,635.94'	63.269554	-142.762924		
39 Tetlin Village Road 124/96 50' 1,643.07' 1,643.07' 1,643.07' 1,643.07' 1,643.07' 1,633.37' 63.282001 -1.42.766302 41 Tetlin Village Road 138+32 66' 1,633.87' 1,633.37' 63.282901 -1.42.76512 42 Tetlin Village Road 177+12 74' 1,633.50' 1,635.81' 63.29290 -1.42.77054 44 Tetlin Village Road 177+12 74' 1,633.62' 1,633.64' 63.29463 -1.42.77054 45 Tetlin Village Road 128+56 60' 1,634.32' 1,633.64' 63.29463 -1.42.77054 46 Tetlin Village Road 196+35 52' 1,632.42' 1,633.74' 63.39628 -1.42.77049 50 Tetlin Village Road 201+20' 50' 1,633.52' 1,633.74' 63.39028 -1.42.77049 51 Tetlin Village Road 201+20' 50' 1,623.64' 63.30138 1.42.77039 52 Tetlin Village Road 201+20' 50'	38	Tetlin Village Road	109+99	60'		1,641.61'	1,641.33'	63.275761	-142.766602		
d0 Tetlin Village Road 138+28 66 1,638.80' 1,639.33' 63.282901 -142.76748' 41 Tetlin Village Road 138+36 66' 1,538.81' 1,639.29' 63.282986 -142.767512 43 Tetlin Village Road 177-12 74' 1.633.25' 1,633.39' 63.282980 -142.770554 44 Tetlin Village Road 177-12 74' 1.633.25' 1,633.39' 63.294661 -142.770554 45 Tetlin Village Road 188+56 60' 1,634.27' 1,633.25' 65.294661 -142.771454 46 Tetlin Village Road 189+50 58' 1,632.45' 1,632.87' 63.290528 -142.773454 47 Tetlin Village Road 201+20' 50' 1,631.45' 1,632.87' 63.300439 -142.77387 51 Tetlin Village Road 220+0' 50' 1,627.93' 1,626.70' 63.304439 -142.77439 52 Tetlin Village Road 221+5' 50' 1,622.93' 1,622.72' 63.301439	39	Tetlin Village Road	124+99	50'		1,643.07'	1,643.24'	63.279606	-142.766953		
14 Tetlin Village Road 138+32 66 1,638,77 1,639,33 63,22293 -142,75702 33 Tetlin Village Road 173+37 58' 1,635,50' 1,635,81' 63,229283 -142,775702 44 Tetlin Village Road 177+12 74' 1,535,50' 1,633,81' 63,239463 -142,770564 45 Tetlin Village Road 189+50 58' 1,633,85' 1,633,82' 63,239463 -142,771530 47 Tetlin Village Road 189+50 58' 1,633,52' 1,633,74' 65,2396421 -142,771844 48 Tetlin Village Road 196+00 54' 1,633,52' 1,633,40' 63,2396421 -142,772934 50 Tetlin Village Road 204+75 56' 1,631,45' 1,631,40' 63,304639 -142,774551 51 Tetlin Village Road 220+01 56' 1,622,99' 1,626,43' 63,304749 -142,774551 53 Tetlin Village Road 224+0 56' 1,622,99' 1,626,43' 63,301638	40	Tetlin Village Road	138+28		66'	1,638.80'	1,639.35'	63.283001	-142.767487		
42 Tetlin Village Road 138+36 66 1,638.81' 1,638.29' 63.29286 -1.42.77511 44 Tetlin Village Road 177+12 74' 1,632.85' 1,633.39' 63.29286 -142.77054 45 Tetlin Village Road 139-56 60' 1,633.57' 1,633.50' 63.292680 -142.77054 48 Tetlin Village Road 139-50 58' 1,633.52' 1,633.57' 63.296283 -142.77148 48 Tetlin Village Road 196-00 54' 1,633.52' 1,633.52' 63.29638' -142.771590 50 Tetlin Village Road 201-20' 1,631.45' 1,632.45' 63.29637' 1,42.77384 51 Tetlin Village Road 201-20' 56' 1,42.738' 1,623.12''' 63.30439''' 1,42.77380''' 52 Tetlin Village Road 224-5'' 56' 1,623.29''' 1,623.12''' 63.30439''''' 1,42.77390'''' 54 Tetlin Village Road 243+06 50'' 1,628.29'''''''''''''''''''''''''''''''''''	41	Tetlin Village Road	138+32		66'	1,638.77'	1,639.33'	63.282993	-142.767502		
3 Tertin Vilage Road 173-37 58' 1,635.50' 1,635.81' 66.3291690 -142.770542 44 Tertin Vilage Road 177-12 74' 1,634.32' 1,634.84' 65.3291660 -142.770565 45 Tertin Vilage Road 138-56 60' 1,634.32' 1,633.35' 63.29663 -142.771453 48 Tertin Vilage Road 139-50 58' 1,633.66' 1,632.45' 65.329663 -142.771444 49 Tertin Vilage Road 204-00 54' 1,633.64' 1,632.45' 65.329663 -142.77384 50 Tertin Vilage Road 204-75 56' 1,631.45' 1,631.42' 63.304259 -142.77371 51 Tertin Vilage Road 221-75 56' 1,626.32' 63.304259 -142.775772 53 Tertin Vilage Road 234-75 56' 1,628.39' 1,626.72' 63.30129' -142.775772 54 Tertin Vilage Road 234-75 56' 1,628.39' 1,626.72' 63.30129' -142.775772	42	Tetlin Village Road	138+36		66'	1,638.81'	1,639.29'	63.282986	-142.767517		
44 Tetlin Village Road 177+12 74' 1,632.85' 1,633.34' 63.292960 1.442.77056 45 Tetlin Village Road 138+56 60' 1,633.42' 1,633.84' 63.294663 1.442.770566 48 Tetlin Village Road 190+00 54' 1,633.52' 1,633.74' 63.296403 1.427.71354 49 Tetlin Village Road 190+37 52' 1,633.45' 1,633.87' 63.298044 1.42.772594 50 Tetlin Village Road 201+20 50' 1,627.99' 1,626.43' 63.300285 1.42.773054 51 Tetlin Village Road 221+66 58' 1,627.38' 1,626.70' 63.304749 -142.778051 53 Tetlin Village Road 221+66 58' 1,622.89' 1,626.70' 63.304749 -142.778051 54 Tetlin Village Road 224+61 50' 1,622.89' 1,626.70' 63.304749 -142.778031 55 Tetlin Village Road 244+71 50' 1,622.80' 63.311639 -142.778031	43	Tetlin Village Road	173+37	58'		1,635.50'	1,635.81'	63.291969	-142.770142		
45 Tetlin Village Road 1329:46 1,634.32'' 1,634.32'' 1,633.50'' 62.293461 -142.77056 44 Tetlin Village Road 189:50 58'' 1,633.52'' 1,633.50'' 62.296421 -142.771530 48 Tetlin Village Road 190:00 54'' 1,633.52'' 1,633.74'' 63.296021 -142.771345 48 Tetlin Village Road 200:70 52'' 1,631.95'' 1,631.85'' 63.298041 -142.772588 50 Tetlin Village Road 200:75 55'' 1,631.95'' 1,652.87'' 63.300439 -142.773087 51 Tetlin Village Road 220:01 55'' 1,627.98'' 1,626.70'' 63.300767 -142.775938 53 Tetlin Village Road 232:475 56'' 1,628.39'' 1,626.70'' 63.310329 -142.775938 54 Tetlin Village Road 243:42 50'' 1,628.29'' 1,634.42'' 1,629.68'' 63.311639 -142.779038 55 Tetlin Village Road 249:44' 1,629.44'' 1,629.68'' 63.311639 -142.779038 56 Tetlin Village Road </td <td>44</td> <td>Tetlin Village Road</td> <td>177+12</td> <td>74'</td> <td></td> <td>1,632.85'</td> <td>1,633.39'</td> <td>63.292980</td> <td>-142.770554</td>	44	Tetlin Village Road	177+12	74'		1,632.85'	1,633.39'	63.292980	-142.770554		
46 Tetlin Village Road 183+56 60' 1,634.27' 1,633.26' 1,633.28' 62.2946.63 1.142.771350 47 Tetlin Village Road 199400 54' 1,633.25' 1,632.27' 62.39264.21 1.42.771450 48 Tetlin Village Road 196477 52' 1,632.45' 1,632.27' 62.390370 -142.772594 50 Tetlin Village Road 204+57 56' 1,627.99' 1,526.43' 63.304749 -142.773693 51 Tetlin Village Road 221+46 58' 1,627.39' 1,526.43'' 63.304749 -142.773775 53 Tetlin Village Road 222+46 58' 1,627.38'' 1,627.7'' 63.307767 142.773775 54 Tetlin Village Road 249+21 50' 1,628.39'' 1,629.15'' 63.310329 -142.779708 55 Tetlin Village Road 249+24 1,629.14'' 1,629.64'' 63.310329 -142.77938 58 Tetlin Village Road 249+46 4'' 1,629.14'' 1,629.61'' 63.310329 -142.77938 59 Tetlin Village Road 249+21	45	Tetlin Village Road	179+00	58'		1,634.33'	1,634.84'	63.293461	-142.770966		
47 Tetlin Village Road 189+50 58' 1.633.66' 1.633.52' 1.633.52' 1.633.52' 1.633.52' 1.633.52' 1.632.45' 63.29041 1.42.771484 49 Tetlin Village Road 201+20 50' 1.631.45' 1.632.45' 63.29030 -1.42.772394 51 Tetlin Village Road 204+57 56' 1.631.45' 1.627.39' 1.626.70' 63.30425 -1.42.77397 53 Tetlin Village Road 221+40 56' 1.627.38' 1.626.72' 63.30439 -1.42.77398 54 Tetlin Village Road 232+75 56' 1.628.49' 1.629.64' 63.311638 -1.42.779398 55 Tetlin Village Road 248+21 50' 1.628.49' 1.629.44' 1.629.44' 1.629.44' 1.628.42' 63.311638 -1.42.779388 56 Tetlin Village Road 249+46 48' 1.629.51' 1.628.42' 63.311638 -1.42.779388 57 Tetlin Village Road 281+89 52' 1.634.42' 1.624.23' 63.320202 -1.42.763384 50 Tetlin Village Road 211+28'	46	Tetlin Village Road	183+56	60'		1,634.27'	1,633.50'	63.294663	-142.771530		
48 Tetin Village Road 190+00 54' 1.633.25' 1.633.25' 1.633.25' 1.632.45' 1.626.43' 63.304739 1.427.77368' 52 Tetlin Village Road 221+46 58' 1.627.38' 1.626.72' 63.304739 1.427.77378' 54 Tetlin Village Road 243+08 50' 1.628.29' 1.629.15' 63.310329 1.427.77308' 55 Tetlin Village Road 248+21 50' 1.629.51' 1.628.45' 63.31638' 63.31638' 1.427.77308' 58 Tetlin Village Road 266+50 48' 1.623.61' 1.628.45' 63.32678' 1.427.742812' 50 Tetlin Village Road 10+11 44' 1.624.62' 1.624.64'' 63.25	47	Tetlin Village Road	189+50	58'		1,633.66'	1,632.85'	63.296288	-142.771454		
49 Tetin Village Road 196-37 52' 1.632.45' 1.632.45' 63.28008 -142.772584 50 Tetin Village Road 201+20 50' 1.631.95' 1.631.95' 1.632.42' 63.30028' -142.772584 51 Tetin Village Road 220+01 56' 1.627.38' 1.626.70' 63.30439 -142.774591 53 Tetin Village Road 232+75 56' 1.628.39' 1.629.15' 63.307678 -142.77578 54 Tetin Village Road 248+21 50' 1.628.29' 1.629.15' 63.311638 -142.77938 55 Tetin Village Road 249+46 48' 1.629.41' 1.629.68' 63.311638 -142.77938 57 Tetin Village Road 249+46 48' 1.629.51' 1.633.43' 63.32020 -142.782350 58 Tetin Village Road 211+2 42' 1.642.60' 1.623.40' 63.253773 -142.743256 61 Tetin Village Road 10+11 44' 1.622.50' 1.624.40' 63.253773	48	Tetlin Village Road	190+00	54'		1,633.52'	1,633.74'	63.296421	-142.771484		
50 Tetlin Village Road 201+20 50° 1,631.45° 1,631.42° 63.209270 1-42.772934 51 Tetlin Village Road 220+01 56° 1,627.99° 1,626.43° 63.300285 -142.773895 52 Tetlin Village Road 221+46 58° 1,627.28° 1,626.72° 63.300786 -142.774939 54 Tetlin Village Road 223+75 55° 1,628.29° 1,629.68° 63.311638 -142.777908 55 Tetlin Village Road 248+21 50° 1,629.44° 1,629.68° 63.311638 -142.779388 57 Tetlin Village Road 248+21 50° 1,624.41° 1,629.68° 63.311638 -142.779388 58 Tetlin Village Road 266+50 48° 1,633.04° 1,634.23° 63.320020 -142.782356 60 Tetlin Village Road 11+28 42° 1,624.05° 1,624.00° 63.255176 -142.744385 61 Tetlin Village Road 10+11 44° 1,625.581 1,625.60° 63.255116 -142.746436 62 Manh Choh Twin Road 10+24° 1,624.0	49	Tetlin Village Road	196+37	52'		1,632.45'	1,632.87'	63.298084	-142.772598		
51 Tetlin Village Road 204+57 56' 1,621.45' 1,622.2'' 63.304285 1+42.773087 52 Tetlin Village Road 221+46 58' 1,627.38' 1,626.43'' 63.304359 -142.774399 54 Tetlin Village Road 232+75 56' 1,628.39' 1,626.12'' 63.304749 -142.777772 55 Tetlin Village Road 243+06 50' 1,628.42'' 1,629.15'' 63.310229 -142.779038 56 Tetlin Village Road 248+04 48'' 1,629.51'' 1,632.43'' 63.311939 -142.779388 57 Tetlin Village Road 264+05 48'' 1,634.42'' 1,644.23'' 63.316399 -142.782136 58 Tetlin Village Road 281+89 52' 1,634.42'' 1,644.23'' 63.325378 -142.74385 61 Tetlin Village Road 10+11 44'' 1,622.60'' 63.255778 -142.744812 63 Manh Choh Twin Road 38+99 46'' 1,625.61'' 1,624.62'' 1,624.24'' 1,642.44''' 1,642.74''' 1,642.74''' 1,642.74''' 1,642.74''' 1	50	Tetlin Village Road	201+20	50'		1,631.95'	1,632.40'	63.299370	-142.772934		
52 Tetlin Village Road 220+01 56' 1,627.39' 1,626.73' 63.304749 -142.774551 53 Tetlin Village Road 232+75 56' 1,628.39' 1,626.72' 63.304749 -142.774572 55 Tetlin Village Road 243+08 50' 1,628.29' 1,629.63'' 63.310329 -142.779708 56 Tetlin Village Road 249+46 48' 1,629.51' 1,629.44'' 63.3110339 -142.779388 57 Tetlin Village Road 226+50 48'' 1,639.04'' 1,634.23'' 63.320020 -142.782356 60 Tetlin Village Road 11+28 42'' 1,624.05'' 1,624.20'' 63.253778 -142.74385 61 Tetlin Village Road 10+11 44'' 1,622.50'' 1,624.00'' 63.253773 -142.74385 62 Manh Choh Twin Road 138+59 46'' 1,625.61'' 1,624.00'' 63.252811 -142.744385 63 Manh Choh Twin Road 105+18 56'' 1,624.61'' 1,625.61'' 63.262421 -142.766063 64 Manh Choh Twin Road 105+18	51	Tetlin Village Road	204+57	56'		1,631.45'	1,631.22'	63.300285	-142.773087		
53 Tetlin Village Road 221+46 58' 1,627.32' 1,626.70' 63.30749 1-42.774390 54 Tetlin Village Road 223+75 56' 1,628.29' 1,629.44' 1,629.64' 63.310329 -142.777908 55 Tetlin Village Road 248+21 50' 1,628.29' 1,629.64' 63.311638 -142.779388 58 Tetlin Village Road 248+64 48' 1,629.64' 1,624.61' 63.311639 -142.782135 59 Tetlin Village Road 266+50 48' 1,634.42' 1,624.32' 63.310202 -142.782135 50 Tetlin Village Road 11+28 42' 1,622.60' 1,623.40' 63.255783 -142.743256 61 Tetlin Village Road 10+11 44' 1,622.50' 1,622.40' 63.255186 -142.746325 62 Manh Choh Twin Road 11+02 46' 1,624.26' 1,625.80' 63.262714 -142.766326 63 Manh Choh Twin Road 139+96 50' 1,626.16' 1,625.39' 63.262714 -142.766326 64 Manh Choh Twin Road 139+95	52	Tetlin Village Road	220+01	56'		1,627.99'	1,626.43'	63.304359	-142.774551		
54 Tetlin Village Road 232+75 56' 1,628.39' 1,628.72' 63.307678 1-42.777708 55 Tetlin Village Road 248+21 50' 1,629.44' 1,629.64' 63.311638 1-42.777908 56 Tetlin Village Road 248+21 50' 1,629.44' 1,629.64' 63.311638 1-42.779088 57 Tetlin Village Road 266+50 48' 1,639.04' 1,638.42' 63.316399 1-42.782135 59 Tetlin Village Road 281+89 52' 1,634.42' 1,634.23' 63.32020 1-42.785736 60 Tetlin Village Road 10+11 44' 1,622.50' 1,622.40' 63.255116 1.42.748726 61 Tetlin Village Road 10+11 44' 1,622.50' 1,624.00' 63.255116 1.42.746120 62 Manh Choh Twin Road 38+99 46' 1,625.81' 1,625.60' 63.265141 1.42.746302 63 Manh Choh Twin Road 105+18 56' 1,641.58' 1,641.27' 63.27274 1.42.766032 64 Manh Choh Twin Road 105+18 56'	53	Tetlin Village Road	221+46	58'		1,627.38'	1,626.70'	63.304749	-142.774399		
55 Tetlin Village Road 243+08 50' 1,622,9' 1,622,91' 63.311329 1.42,777938 56 Tetlin Village Road 248+21 50' 1,629,44' 1,629,64' 63.311393 -142,77938 57 Tetlin Village Road 266+50 48' 1,633,04' 1,634,62' 63.311393 -142,77938 59 Tetlin Village Road 281+89 52' 1,634,42' 1,634,62' 63.320202 -142,78236 60 Tetlin Village Road 11+28 42' 1,622,60' 1,622,40' 63.25378 -142,744325 61 Tetlin Village Road 10+11 44' 1,622,50' 1,622,40' 63.253773 -142,744325 62 Manh Choh Twin Road 38+99 46' 1,624,62' 1,625,53' 63.262714 -142,746326 63 Manh Choh Twin Road 39+56 50' 1,626,16' 1,625,53' 63.262742 -142,76649 64 Manh Choh Twin Road 115+51 46' 1,634,62' 1,632,53' 63.27544 -142,76304 65 Manh Choh Twin Road 115+51 46' <t< td=""><td>54</td><td>Tetlin Village Road</td><td>232+75</td><td>56'</td><td></td><td>1,628.39'</td><td>1,626.72'</td><td>63.307678</td><td>-142.775772</td></t<>	54	Tetlin Village Road	232+75	56'		1,628.39'	1,626.72'	63.307678	-142.775772		
56 Tetlin Village Road 248+21 50' 1,629,44' 1,629,63' 63.311638 -142.779038 57 Tetlin Village Road 266+50 48' 1,629,04' 1,638,85' 63.311639 -142.779038 59 Tetlin Village Road 281+89 52' 1,634,42' 1,634,23' 63.320202 -142.782135 60 Tetlin Village Road 11+28 42' 1,624,05' 1,622,40' 63.253778 -142.744355 61 Tetlin Village Road 11+02 46' 1,625,60' 1,622,40' 63.253773 -142.744355 62 Manh Choh Twin Road 11+02 46' 1,625,60' 1,625,60' 63.262589 -142.746170 64 Manh Choh Twin Road 77+86 58' 1,634,62' 1,662,63' 63.262589 -142.76302 65 Manh Choh Twin Road 105+18 56' 1,642,43' 1,642,63' 63.262787 -142.766304 66 Manh Choh Twin Road 119+75 46' 1,643,43' 1,642,13' 63.279730 <	55	Tetlin Village Road	243+08	50'		1,628.29'	1,629.15'	63.310329	-142.777908		
57 Tetlin Village Road 249+46 48' 1,629.51' 1,629.61' 63.311399 -142.779388 58 Tetlin Village Road 266+50 48' 1,639.04' 1,638.85' 63.3116399 -142.785736 59 Tetlin Village Road 11+28 42' 1,624.05' 1,623.90' 63.253788 -142.785736 60 Tetlin Village Road 10+11 44' 1,622.60' 1,622.40' 63.253778 -142.743256 61 Tetlin Village Road 10+11 44' 1,622.61' 1,622.40' 63.255785 -142.744812 63 Manh Choh Twin Road 38+99 46' 1,625.81' 1,625.60' 63.262589 -142.764700 64 Manh Choh Twin Road 175+85 50' 1,641.68' 1,642.61' 1,632.714 -142.764302 65 Manh Choh Twin Road 115+51 46' 1,642.42' 1,642.63' 63.275730 -142.766494 67 Manh Choh Twin Road 115+51 46' 1,643.462' 1,642.18' 63.275744 -142.766403 68 Manh Choh Twin Road 1139+94 46' <td>56</td> <td>Tetlin Village Road</td> <td>248+21</td> <td>50'</td> <td></td> <td>1,629.44'</td> <td>1,629.68'</td> <td>63.311638</td> <td>-142.779038</td>	56	Tetlin Village Road	248+21	50'		1,629.44'	1,629.68'	63.311638	-142.779038		
58 Tetlin Village Road 266+50 48' 1,632.42' 1,632.42' 6.3.316399 -1.42.782135 59 Tetlin Village Road 281+89 52' 1,634.42' 1,623.90' 63.253788 -1.42.743256 60 Tetlin Village Road 10+11 44' 1,622.05' 1,622.40' 63.253773 -1.42.743256 61 Manh Choh Twin Road 39+99 46' 1,622.51' 1,625.38' 63.265289 -1.42.744312 63 Manh Choh Twin Road 39+56 50' 1,626.16' 1,625.38' 63.265241 -1.42.746302 64 Manh Choh Twin Road 105+18 56' 1,641.58' 1,642.63' 1,627.63' 63.269421 -1.42.766302 65 Manh Choh Twin Road 105+18 56' 1,642.86' 1,642.63' 63.278477 -1.42.766409 66 Manh Choh Twin Road 133+94 46' 1,638.44' 1,638.01' 63.283210 -1.42.767304 69 Manh Choh Twin Road 134+93 46' 1,638.39' 1,638.41' <td>57</td> <td>Tetlin Village Road</td> <td>249+46</td> <td>48'</td> <td></td> <td>1,629.51'</td> <td>1,629.61'</td> <td>63.311939</td> <td>-142.779388</td>	57	Tetlin Village Road	249+46	48'		1,629.51'	1,629.61'	63.311939	-142.779388		
59 Tetlin Village Road 281+89 52' 1,634.42' 1,634.23' 63.32020 -1.42.785736 60 Tetlin Village Road 11+28 42' 1,624.05' 1,623.00' 63.253778 -142.74358 61 Tetlin Village Road 10+11 44' 1,622.50' 1,624.00' 63.255116 -142.743812 62 Manh Choh Twin Road 38+99 46' 1,624.26' 1,624.00' 63.255116 -142.74812 63 Manh Choh Twin Road 38+99 46' 1,624.62' 1,625.61' 63.265274 -142.763092 64 Manh Choh Twin Road 105+18 56' 1,641.82' 1,642.12'' 63.278477 -142.766493 66 Manh Choh Twin Road 119+75 46' 1,642.47' 1,642.13'' 63.278477 -142.768043 67 Manh Choh Twin Road 133+94 46' 1,638.44'' 1,642.13'' 63.283211 -142.768043 70 Manh Choh Twin Road 134+93 46'' 1,638.39'' 1,638.41'' 63.283201	58	Tetlin Village Road	266+50	48'		1,639.04'	1,638.85'	63.316399	-142.782135		
60 Tetlin Village Road 11+28 42' 1,624.05' 1,623.90' 63.253788 -142.744385 61 Tetlin Village Road 10+11 44' 1,622.05' 1,622.40' 63.255116 -142.743256 62 Manh Choh Twin Road 38+99 46' 1,624.26' 1,625.61' 63.255116 -142.748120 63 Manh Choh Twin Road 39+56 50' 1,624.62' 1,625.33' 63.265124 -142.746308 64 Manh Choh Twin Road 105+18 56' 1,641.58' 1,642.63' 63.269421 -142.766499 66 Manh Choh Twin Road 115+51 46' 1,642.36' 1,642.63' 63.278477 -142.76649 67 Manh Choh Twin Road 113+95 46' 1,638.39' 1,638.21' -142.76302 68 Manh Choh Twin Road 133+94 46' 1,638.39' 1,638.21' -142.76802 70 Manh Choh Twin Road 134+93 46' 1,638.39' 1,638.41' -142.76868 73 Manh Choh Twi	59	Tetlin Village Road	281+89	52'		1,634.42'	1,634.23'	63.320202	-142.785736		
61 Tetlin Village Road 10+11 44' 1,622.50' 1,622.40' 632.53773 -142.743256 62 Manh Choh Twin Road 11+02 46' 1,624.60' 1,622.60' 63.255116 -142.744312 63 Manh Choh Twin Road 38+99 46' 1,625.81' 1,625.60' 63.265289 -142.746170 64 Manh Choh Twin Road 77+86 58' 1,634.62' 1,635.39' 63.262714 -142.746302 65 Manh Choh Twin Road 105+18 56' 1,641.58' 1,642.63' 63.275730 -142.766403 67 Manh Choh Twin Road 113+55 46' 1,642.36' 1,642.63' 63.28311 -142.766403 68 Manh Choh Twin Road 133+98 46' 1,638.39' 1,638.41' 63.283121 -142.76625 70 Manh Choh Twin Road 134+93 46' 1,638.39' 1,638.41' 63.283123 -142.767868 71 Manh Choh Twin Road 134+93 46' 1,638.43' 1,638.41' 63.292934 <t< td=""><td>60</td><td>Tetlin Village Road</td><td>11+28</td><td>42'</td><td></td><td>1,624.05'</td><td>1,623.90'</td><td>63.253788</td><td>-142.744385</td></t<>	60	Tetlin Village Road	11+28	42'		1,624.05'	1,623.90'	63.253788	-142.744385		
62 Manh Choh Twin Road 11402 46' 1,622,81' 1,626,00' 63,255116 -1,42,744812 63 Manh Choh Twin Road 38+99 46' 1,625,11' 1,625,60' 63,262589 -1,42,746170 64 Manh Choh Twin Road 39+56 50' 1,626,12' 1,625,33' 63,269421 -1,42,763082 65 Manh Choh Twin Road 105+18 56' 1,641,58' 1,642,63' 63,278477 -1,42,766403 66 Manh Choh Twin Road 119+75 46' 1,642,47' 1,642,63' 63,278477 -1,42,768125 70 Manh Choh Twin Road 133+94 46' 1,638,44' 1,638,01' 63,283211 -1,42,768125 71 Manh Choh Twin Road 134+92 46' 1,638,39' 1,638,40' 63,283230 -1,42,776825 72 Manh Choh Twin Road 134+92 46' 1,638,39' 1,638,40' 63,283421 -1,42,776826 73 Manh Choh Twin Road 134+93 46' 1,634,53' 1,638,40' 63,283421	61	Tetlin Village Road	10+11	44'		1,622.50'	1,622.40'	63.253773	-142.743256		
63 Manh Choh Twin Road 38+99 46' 1,625.11' 1,625.60' 63.262589 -1,42.746170 64 Manh Choh Twin Road 39+56 50' 1,626.16' 1,625.31' 63.262734 -1,42.746308 65 Manh Choh Twin Road 105+18 56' 1,641.52' 1,642.63' 63.269421 -1,42.766409 66 Manh Choh Twin Road 105+18 56' 1,642.36' 1,642.63' 63.278477 -1,42.766403 68 Manh Choh Twin Road 119+75 46' 1,638.44' 1,642.63' 63.28321 -1,42.768403 69 Manh Choh Twin Road 133+94 46' 1,638.34' 1,638.01' 63.28321 -1,42.768250 70 Manh Choh Twin Road 134+93 46' 1,638.39' 1,638.40' 63.283421 -1,42.768250 71 Manh Choh Twin Road 134+93 46' 1,638.50' 1,638.40' 63.291390 -1,42.76250 72 Manh Choh Twin Road 171+80 50' 1,634.35' 1,634.40' 63.292934	62	Manh Choh Twin Road	11+02	46'		1,624.26'	1,624.00'	63.255116	-142.744812		
64 Manh Choh Twin Road 39+56 50' 1,626.16' 1,625.38' 63.262714 -142.746368 65 Manh Choh Twin Road 77+86 58' 1,644.62' 1,633.39' 63.269421 -142.766302 66 Manh Choh Twin Road 105+18 56' 1,641.62' 1,642.63' 63.278477 -142.766403 68 Manh Choh Twin Road 119+75 46' 1,642.46' 1,642.18' 63.278477 -142.767304 69 Manh Choh Twin Road 133+94 46' 1,638.44' 1,638.17' 63.283211 -142.768265 70 Manh Choh Twin Road 133+98 46' 1,638.39' 1,638.40' 63.28321 -142.768265 71 Manh Choh Twin Road 134+93 46' 1,638.39' 1,638.40' 63.28321 -142.768265 73 Manh Choh Twin Road 134+93 46' 1,634.53' 1,638.40' 63.283421 -142.76203 74 Manh Choh Twin Road 178+80 50' 1,634.53' 1,633.81' 63.29360 <t< td=""><td>63</td><td>Manh Choh Twin Road</td><td>38+99</td><td>46'</td><td></td><td>1,625.81'</td><td>1,625.60'</td><td>63.262589</td><td>-142.746170</td></t<>	63	Manh Choh Twin Road	38+99	46'		1,625.81'	1,625.60'	63.262589	-142.746170		
65 Manh Choh Twin Road 77+86 58' 1,634.62' 1,635.39' 63.269421 -142.763092 66 Manh Choh Twin Road 105+18 56' 1,641.58' 1,642.61' 63.275470 -142.766403 67 Manh Choh Twin Road 115+51 46' 1,642.61' 1,642.18' 63.275470 -142.766403 68 Manh Choh Twin Road 113+75 46' 1,642.47' 1,642.18' 63.278477 -142.768040 69 Manh Choh Twin Road 133+94 46' 1,638.44' 1,638.01' 63.283121 -142.768257 70 Manh Choh Twin Road 134+02 46' 1,638.39' 1,638.40' 63.283120 -142.768250 71 Manh Choh Twin Road 134+02 46' 1,638.50' 1,638.41' 63.283421 -142.768261 73 Manh Choh Twin Road 178+03 46' 1,634.35' 1,634.91' 63.29346 -142.770523 74 Manh Choh Twin Road 171+80 50' 1,634.35' 1,634.91' 63.293460 -142.771301 75 Manh Choh Twin Road 178+44 46' <td>64</td> <td>Manh Choh Twin Road</td> <td>39+56</td> <td>50'</td> <td></td> <td>1,626.16'</td> <td>1,625.38'</td> <td>63.262714</td> <td>-142.746368</td>	64	Manh Choh Twin Road	39+56	50'		1,626.16'	1,625.38'	63.262714	-142.746368		
66Manh Choh Twin Road105+1856'1,641.58'1,641.27'63.275730-142.76643967Manh Choh Twin Road115+5146'1,642.36'1,642.63'63.278477-142.76640368Manh Choh Twin Road119+7546'1,642.47'1,642.18'63.278474-142.7630469Manh Choh Twin Road133+9446'1,638.44'1,638.01'63.283112-142.76826570Manh Choh Twin Road133+9846'1,638.39'1,638.40'63.28320-142.76826571Manh Choh Twin Road134+0246'1,638.39'1,638.40'63.28320-142.76826572Manh Choh Twin Road184+1346'1,634.53'1,634.91'63.28320-142.76826573Manh Choh Twin Road178+9350'1,634.53'1,634.91'63.292934-142.77052374Manh Choh Twin Road178+9552'1,634.35'1,634.61'63.29396-142.77194275Manh Choh Twin Road178+9446'1,633.73'1,633.33'63.294670-142.77194277Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.296366-142.77184279Manh Choh Twin Road184+6146'1,632.84'1,631.70'63.298166-142.77184579Manh Choh Twin Road190+9648'1,632.04'1,631.61'63.209366-142.77184579Manh Choh Twin Road190+9648'1,632.04'1,631.61'	65	Manh Choh Twin Road	77+86	58'		1,634.62'	1,635.39'	63.269421	-142.763092		
67 Manh Choh Twin Road 115+51 46' 1,642.3c' 1,642.63' 63.278477 -142.766403 68 Manh Choh Twin Road 133+94 46' 1,638.44' 1,638.01' 63.278271 -142.767304 69 Manh Choh Twin Road 133+94 46' 1,638.44' 1,638.01' 63.283211 -142.768265 70 Manh Choh Twin Road 133+98 46' 1,638.39' 1,638.40' 63.283230 -142.768250 71 Manh Choh Twin Road 134+93 46' 1,638.39' 1,638.40' 63.283230 -142.768250 72 Manh Choh Twin Road 134+93 46' 1,634.53' 1,634.91' 63.291950 -142.770523 74 Manh Choh Twin Road 171+80 50' 1,634.35' 1,633.33' 63.292934 -142.771301 75 Manh Choh Twin Road 178+44 46' 1,633.73' 1,634.16' 63.293366 -142.771301 76 Manh Choh Twin Road 184+30 52' 1,632.62' 1,632.00' 63.296569 -142.771866 78 Manh Choh Twin Road 196+03 48' </td <td>66</td> <td>Manh Choh Twin Road</td> <td>105+18</td> <td>56'</td> <td></td> <td>1,641.58'</td> <td>1,641.27'</td> <td>63.275730</td> <td>-142.766449</td>	66	Manh Choh Twin Road	105+18	56'		1,641.58'	1,641.27'	63.275730	-142.766449		
68Manh Choh Twin Road119+7546'1,642.47'1,642.18'63.279564-142.76730469Manh Choh Twin Road133+9446'1,638.44'1,638.01'63.283211-142.76826570Manh Choh Twin Road133+9846'1,638.39'1,638.27'63.28320-142.76826571Manh Choh Twin Road134+0246'1,638.50'1,638.24'63.28320-142.76826572Manh Choh Twin Road134+0346'1,638.50'1,638.44'63.283421-142.76786873Manh Choh Twin Road184+1346'1,634.53'1,638.64'63.29234-142.77052374Manh Choh Twin Road171+8050'1,633.37'1,633.34'63.29234-142.77192075Manh Choh Twin Road178+4446'1,633.37'1,633.33'63.294670-142.77194276Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.29269-142.77186678Manh Choh Twin Road184+6146'1,632.86'1,632.65'63.29362-142.77186679Manh Choh Twin Road190+9648'1,632.06'1,631.63'63.30482-142.77848179Manh Choh Twin Road199+9648'1,632.06'1,631.63'63.30428-142.77848181Manh Choh Twin Road199+4048'1,632.06'1,627.07'63.304783-142.77848182Manh Choh Twin Road216+4246'1,627.23'1,627.67' <td< td=""><td>67</td><td>Manh Choh Twin Road</td><td>115+51</td><td>46'</td><td></td><td>1,642.36'</td><td>1,642.63'</td><td>63.278477</td><td>-142.766403</td></td<>	67	Manh Choh Twin Road	115+51	46'		1,642.36'	1,642.63'	63.278477	-142.766403		
69Manh Choh Twin Road133+9446'1,638.44'1,638.01'63.283211-142.76826570Manh Choh Twin Road133+9846'1,638.39'1,638.27'63.283192-142.76812771Manh Choh Twin Road134+0246'1,638.39'1,638.40'63.28320-142.76826772Manh Choh Twin Road134+9346'1,634.53'1,638.24'63.28320-142.76786873Manh Choh Twin Road134+9346'1,634.53'1,634.91'63.291950-142.77052374Manh Choh Twin Road171+8050'1,634.35'1,634.16'63.29396-142.77030075Manh Choh Twin Road173+5952'1,633.87'1,634.16'63.296269-142.77130176Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.296269-142.77186678Manh Choh Twin Road184+6146'1,632.62'1,632.55'63.29636-142.77186179Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.290362-142.77184680Manh Choh Twin Road190+9648'1,632.18'1,631.63'63.209362-142.7734681Manh Choh Twin Road190+9648'1,622.00'1,631.63'63.300282-142.7734682Manh Choh Twin Road190+9648'1,622.00'1,631.63'63.300486-142.7748483Manh Choh Twin Road214+9650'1,627.36'1,627.67' <t< td=""><td>68</td><td>Manh Choh Twin Road</td><td>119+75</td><td>46'</td><td></td><td>1,642.47'</td><td>1,642.18'</td><td>63.279564</td><td>-142.767304</td></t<>	68	Manh Choh Twin Road	119+75	46'		1,642.47'	1,642.18'	63.279564	-142.767304		
70Manh Choh Twin Road133+9846'1,638.39'1,638.27'63.283192-142.76812771Manh Choh Twin Road134+0246'1,638.39'1,638.40'63.283230-142.76825072Manh Choh Twin Road134+9346'1,638.50'1,638.24'63.283421-142.76786873Manh Choh Twin Road168+1346'1,634.53'1,634.91'63.29190-142.77052374Manh Choh Twin Road171+8050'1,633.83'1,634.61'63.29234-142.77092075Manh Choh Twin Road178+4446'1,633.73'1,633.33'63.294670-142.77130176Manh Choh Twin Road178+4446'1,632.62'1,632.56'63.296269-142.77186677Manh Choh Twin Road184+3052'1,632.62'1,632.56'63.296360-142.77186678Manh Choh Twin Road184+6146'1,632.64'1,632.65'63.298362-142.77186179Manh Choh Twin Road190+9648'1,632.04'1,631.63'63.300282-142.77348181Manh Choh Twin Road199+4048'1,622.04'1,631.63'63.300282-142.77348382Manh Choh Twin Road216+4246'1,627.23'1,627.67'63.304783-142.77484183Manh Choh Twin Road216+4246'1,628.81'1,627.67'63.310494-142.77484184Manh Choh Twin Road216+4246'1,628.81'1,627.67' </td <td>69</td> <td>Manh Choh Twin Road</td> <td>133+94</td> <td></td> <td>46'</td> <td>1,638.44'</td> <td>1,638.01'</td> <td>63.283211</td> <td>-142.768265</td>	69	Manh Choh Twin Road	133+94		46'	1,638.44'	1,638.01'	63.283211	-142.768265		
71Manh Choh Twin Road134+0246'1,638.39'1,638.40'63.283230-142.76825072Manh Choh Twin Road134+9346'1,638.50'1,638.24'63.283421-142.76786873Manh Choh Twin Road168+1346'1,634.53'1,634.91'63.291950-142.77052374Manh Choh Twin Road171+8050'1,634.35'1,633.86'63.29234-142.77092075Manh Choh Twin Road173+5952'1,633.87'1,633.31'63.294670-142.77194276Manh Choh Twin Road178+4446'1,632.62'1,632.00'63.296269-142.77186678Manh Choh Twin Road184+5146'1,632.64'1,632.56'63.29816-142.77188179Manh Choh Twin Road190+9648'1,632.04'1,631.64'63.299362-142.77348180Manh Choh Twin Road199+9048'1,632.04'1,631.64'63.299362-142.77348181Manh Choh Twin Road199+4048'1,632.04'1,631.63'63.300282-142.77348382Manh Choh Twin Road216+4246'1,627.36'1,627.67'63.304783-142.77484184Manh Choh Twin Road226+4246'1,628.08'1,627.71'63.304783-142.77484184Manh Choh Twin Road226+4246'1,628.08'1,627.46'63.310494-142.7769485Manh Choh Twin Road226+4246'1,628.08'1,627.45' <td>70</td> <td>Manh Choh Twin Road</td> <td>133+98</td> <td></td> <td>46'</td> <td>1,638.39'</td> <td>1,638.27'</td> <td>63.283192</td> <td>-142.768127</td>	70	Manh Choh Twin Road	133+98		46'	1,638.39'	1,638.27'	63.283192	-142.768127		
72Manh Choh Twin Road134+9346'1,638.50'1,638.24'63.283421-142.76786873Manh Choh Twin Road168+1346'1,634.53'1,634.91'63.291950-142.77052374Manh Choh Twin Road171+8050'1,633.85'1,633.86'63.292934-142.77092075Manh Choh Twin Road173+5952'1,633.87'1,633.33'63.294670-142.77190276Manh Choh Twin Road178+4446'1,632.73'1,633.33'63.294670-142.77194277Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.296269-142.77186678Manh Choh Twin Road184+6146'1,632.86'1,632.56'63.299362-142.77186679Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.298016-142.77294980Manh Choh Twin Road190+9648'1,632.04'1,631.61'63.309362-142.7734681Manh Choh Twin Road190+9648'1,632.04'1,631.61'63.309362-142.7734882Manh Choh Twin Road190+9648'1,622.04'1,631.61'63.300282-142.7734883Manh Choh Twin Road190+9648'1,622.04'1,627.05'63.304386-142.7734884Manh Choh Twin Road210+9246'1,627.35'1,627.61'63.304386-142.7734885Manh Choh Twin Road216+4246'1,628.87'1,627.61'	71	Manh Choh Twin Road	134+02		46'	1,638.39'	1,638.40'	63.283230	-142.768250		
73Manh Choh Twin Road168+1346'1,634.53'1,634.91'63.291950-142.77052374Manh Choh Twin Road171+8050'1,634.35'1,633.86'63.292934-142.77092075Manh Choh Twin Road173+5952'1,633.87'1,634.16'63.29396-142.77130176Manh Choh Twin Road178+4446'1,633.73'1,633.33'63.294670-142.77194277Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.296269-142.77186678Manh Choh Twin Road184+6146'1,632.86'1,632.56'63.296356-142.77188179Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.298016-142.77294980Manh Choh Twin Road196+0348'1,632.04'1,631.84'63.299362-142.7734681Manh Choh Twin Road199+4048'1,632.04'1,631.63'63.300282-142.77348382Manh Choh Twin Road214+9650'1,627.36'1,627.09'63.304783-142.77496383Manh Choh Twin Road216+4246'1,627.23'1,627.67'63.304783-142.7769484Manh Choh Twin Road227+1246'1,628.87'1,627.46'63.310494-142.7768485Manh Choh Twin Road239+8646'1,628.87'1,628.44'63.311890-142.77790886Manh Choh Twin Road245+2446'1,628.87'1,628.44' <td>72</td> <td>Manh Choh Twin Road</td> <td>134+93</td> <td>46'</td> <td></td> <td>1,638.50'</td> <td>1,638.24'</td> <td>63.283421</td> <td>-142.767868</td>	72	Manh Choh Twin Road	134+93	46'		1,638.50'	1,638.24'	63.283421	-142.767868		
74Manh Choh Twin Road171+8050'1,634.35'1,633.86'63.29234-142.77092075Manh Choh Twin Road173+5952'1,633.87'1,634.16'63.293396-142.77130176Manh Choh Twin Road178+4446'1,633.73'1,633.33'63.294670-142.77194277Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.296269-142.77186678Manh Choh Twin Road184+6146'1,632.86'1,632.56'63.298366-142.77188179Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.298016-142.77294980Manh Choh Twin Road196+0348'1,632.04'1,631.84'63.299362-142.77348681Manh Choh Twin Road199+4048'1,632.00'1,631.63'63.300282-142.77348382Manh Choh Twin Road214+9650'1,627.36'1,627.09'63.304386-142.77496383Manh Choh Twin Road216+4246'1,627.36'1,627.71'63.304783-142.7769484Manh Choh Twin Road227+1246'1,628.87'1,627.86'63.310494-142.7798886Manh Choh Twin Road239+8646'1,628.87'1,628.44'63.311890-142.7798886Manh Choh Twin Road245+2446'1,629.07'1,628.44'63.311890-142.7798487Manh Choh Twin Road246+4946'1,629.07'1,628.44'	73	Manh Choh Twin Road	168+13	46'		1,634.53'	1,634.91'	63.291950	-142.770523		
75Manh Choh Twin Road173+5952'1,633.87'1,634.16'63.293396-142.77130176Manh Choh Twin Road178+4446'1,633.73'1,633.33'63.294670-142.77194277Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.296269-142.77186678Manh Choh Twin Road184+6146'1,632.62'1,632.56'63.296356-142.77188179Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.298016-142.77294980Manh Choh Twin Road196+0348'1,632.04'1,631.84'63.299362-142.77348381Manh Choh Twin Road199+4048'1,632.00'1,631.63'63.300282-142.77348382Manh Choh Twin Road214+9650'1,627.36'1,627.09'63.304386-142.77496383Manh Choh Twin Road216+4246'1,628.08'1,627.71'63.307514-142.7769484Manh Choh Twin Road227+1246'1,628.08'1,627.71'63.310494-142.77688685Manh Choh Twin Road239+8646'1,628.87'1,628.44'63.310494-142.77790886Manh Choh Twin Road245+2446'1,629.07'1,629.47'63.311890-142.77824487Manh Choh Twin Road246+4946'1,639.03'1,638.68'63.310292-142.77824488Manh Choh Twin Road263+0748'1,639.03'1,638.68'<	74	Manh Choh Twin Road	171+80	50'		1,634.35'	1,633.86'	63.292934	-142.770920		
76Manh Choh Twin Road178+4446'1,633.73'1,633.33'63.294670-142.77194277Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.296269-142.77186678Manh Choh Twin Road184+6146'1,632.86'1,632.56'63.296356-142.77188179Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.298016-142.77294980Manh Choh Twin Road196+0348'1,632.18'1,631.84'63.299362-142.77348681Manh Choh Twin Road199+4048'1,632.00'1,631.63'63.300282-142.77348382Manh Choh Twin Road214+9650'1,627.36'1,627.09'63.304366-142.77496383Manh Choh Twin Road216+4246'1,628.08'1,627.71'63.307514-142.77694684Manh Choh Twin Road227+1246'1,628.08'1,627.71'63.310494-142.77698685Manh Choh Twin Road239+8646'1,628.18'1,627.86'63.310494-142.77790886Manh Choh Twin Road245+2446'1,628.71'1,628.44'63.311890-142.77824487Manh Choh Twin Road246+4946'1,629.07'1,629.47'63.312199-142.77824488Manh Choh Twin Road263+0748'1,639.03'1,638.68'63.316429-142.78179089Manh Choh Twin Road263+0748'1,639.03'1,632.90'	75	Manh Choh Twin Road	173+59	52'		1,633.87'	1,634.16'	63.293396	-142.771301		
77Manh Choh Twin Road184+3052'1,632.62'1,632.00'63.296269-142.77186678Manh Choh Twin Road184+6146'1,632.86'1,632.56'63.296356-142.77188179Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.298016-142.77294980Manh Choh Twin Road196+0348'1,632.18'1,631.84'63.299362-142.77346681Manh Choh Twin Road199+4048'1,632.00'1,631.63'63.300282-142.77348382Manh Choh Twin Road214+9650'1,627.36'1,627.09'63.304386-142.77496383Manh Choh Twin Road216+4246'1,628.08'1,627.71'63.307514-142.7769484Manh Choh Twin Road227+1246'1,628.08'1,627.86'63.310494-142.77688685Manh Choh Twin Road239+8646'1,628.18'1,627.86'63.310494-142.77790886Manh Choh Twin Road245+2446'1,629.07'1,628.44'63.311890-142.77824487Manh Choh Twin Road246+4946'1,629.07'1,629.47'63.312199-142.77824488Manh Choh Twin Road263+0748'1,639.03'1,638.68'63.316429-142.781790889Manh Choh Twin Road277+6446'1,633.16'1,632.90'63.320274-142.784164	76	Manh Choh Twin Road	178+44	46'		1,633.73'	1,633.33'	63.294670	-142.771942		
78Manh Choh Twin Road184+6146'1,632.86'1,632.56'63.296356-142.77188179Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.298016-142.77294980Manh Choh Twin Road196+0348'1,632.18'1,631.84'63.299362-142.77348681Manh Choh Twin Road199+4048'1,632.00'1,631.63'63.300282-142.77348382Manh Choh Twin Road214+9650'1,627.36'1,627.09'63.304386-142.77496383Manh Choh Twin Road216+4246'1,627.23'1,627.67'63.304783-142.77484184Manh Choh Twin Road227+1246'1,628.08'1,627.71'63.307514-142.7769485Manh Choh Twin Road239+8646'1,628.18'1,627.86'63.310494-142.77688686Manh Choh Twin Road245+2446'1,629.07'1,628.44'63.311890-142.77790887Manh Choh Twin Road246+4946'1,639.03'1,638.68'63.316429-142.77824488Manh Choh Twin Road263+0748'1,639.03'1,638.68'63.316429-142.77841689Manh Choh Twin Road277+6446'1,633.16'1,632.90'63.320274-142.784164	77	Manh Choh Twin Road	184+30	52'		1,632.62'	1,632.00'	63.296269	-142.771866		
79Manh Choh Twin Road190+9648'1,632.04'1,631.70'63.298016-142.77294980Manh Choh Twin Road196+0348'1,632.18'1,631.84'63.299362-142.7734681Manh Choh Twin Road199+4048'1,632.00'1,631.63'63.300282-142.77348382Manh Choh Twin Road214+9650'1,627.36'1,627.09'63.304386-142.77496383Manh Choh Twin Road216+4246'1,627.23'1,627.67'63.304783-142.77496384Manh Choh Twin Road227+1246'1,628.08'1,627.71'63.307514-142.7769485Manh Choh Twin Road239+8646'1,628.18'1,627.86'63.310494-142.7790886Manh Choh Twin Road245+2446'1,629.07'1,628.44'63.311890-142.7790887Manh Choh Twin Road246+4946'1,639.03'1,638.68'63.316429-142.77824488Manh Choh Twin Road263+0748'1,639.03'1,638.68'63.316429-142.7817989Manh Choh Twin Road277+6446'1,633.16'1,632.90'63.320274-142.784164	78	Manh Choh Twin Road	184+61	46'		1,632.86'	1,632.56'	63.296356	-142.771881		
80 Manh Choh Twin Road 196+03 48' 1,632.18' 1,631.84' 63.299362 -142.773346 81 Manh Choh Twin Road 199+40 48' 1,632.00' 1,631.63' 63.300282 -142.773483 82 Manh Choh Twin Road 214+96 50' 1,627.36' 1,627.09' 63.304386 -142.774963 83 Manh Choh Twin Road 216+42 46' 1,627.23' 1,627.67' 63.304783 -142.774963 84 Manh Choh Twin Road 227+12 46' 1,628.08' 1,627.71' 63.304783 -142.77694 85 Manh Choh Twin Road 239+86 46' 1,628.18' 1,627.86' 63.310494 -142.776986 86 Manh Choh Twin Road 245+24 46' 1,628.87' 1,628.44' 63.311890 -142.77908 87 Manh Choh Twin Road 246+49 46' 1,629.07' 1,629.47' 63.312199 -142.778244 88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429	79	Manh Choh Twin Road	190+96	48'		1,632.04'	1,631.70'	63.298016	-142.772949		
81 Manh Choh Twin Road 199+40 48' 1,632.00' 1,631.63' 63.300282 -142.773483 82 Manh Choh Twin Road 214+96 50' 1,627.36' 1,627.09' 63.304386 -142.774963 83 Manh Choh Twin Road 216+42 46' 1,627.23' 1,627.67' 63.304783 -142.77694 84 Manh Choh Twin Road 227+12 46' 1,628.08' 1,627.71' 63.307514 -142.776794 85 Manh Choh Twin Road 239+86 46' 1,628.08' 1,627.86' 63.310494 -142.776886 86 Manh Choh Twin Road 245+24 46' 1,628.07' 1,628.44' 63.311890 -142.777908 87 Manh Choh Twin Road 246+49 46' 1,629.07' 1,629.47' 63.312199 -142.778244 88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429 -142.781799 89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274	80	Manh Choh Twin Road	196+03	48'		1,632.18'	1,631.84'	63.299362	-142.773346		
82 Manh Choh Twin Road 214+96 50' 1,627.36' 1,627.09' 63.304386 -142.774963 83 Manh Choh Twin Road 216+42 46' 1,627.23' 1,627.67' 63.304386 -142.774963 84 Manh Choh Twin Road 227+12 46' 1,628.08' 1,627.71' 63.307514 -142.776794 85 Manh Choh Twin Road 239+86 46' 1,628.08' 1,627.86' 63.310494 -142.776794 86 Manh Choh Twin Road 245+24 46' 1,628.87' 1,628.44' 63.311890 -142.777908 87 Manh Choh Twin Road 246+49 46' 1,629.07' 1,629.47' 63.312199 -142.778244 88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429 -142.781799 89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274 -142.784164	81	Manh Choh Twin Road	199+40	48'		1,632.00'	1,631.63'	63.300282	-142.773483		
83 Manh Choh Twin Road 216+42 46' 1,627.23' 1,627.67' 63.304783 -142.774841 84 Manh Choh Twin Road 227+12 46' 1,628.08' 1,627.71' 63.307514 -142.776794 85 Manh Choh Twin Road 239+86 46' 1,628.18' 1,627.86' 63.310494 -142.776886 86 Manh Choh Twin Road 245+24 46' 1,628.87' 1,628.44' 63.311890 -142.776908 87 Manh Choh Twin Road 246+49 46' 1,629.07' 1,629.47' 63.312199 -142.778244 88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429 -142.781799 89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274 -142.784164	82	Manh Choh Twin Road	214+96	50'		1,627.36'	1,627.09'	63.304386	-142.774963		
84 Manh Choh Twin Road 227+12 46' 1,628.08' 1,627.71' 63.307514 -142.776794 85 Manh Choh Twin Road 239+86 46' 1,628.18' 1,627.86' 63.310494 -142.776886 86 Manh Choh Twin Road 245+24 46' 1,628.87' 1,628.44' 63.311890 -142.777908 87 Manh Choh Twin Road 246+49 46' 1,629.07' 1,629.47' 63.312199 -142.778244 88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429 -142.781799 89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274 -142.784164	83	Manh Choh Twin Road	216+42	46'		1,627.23'	1,627.67'	63.304783	-142.774841		
85 Manh Choh Twin Road 239+86 46' 1,628.18' 1,627.86' 63.310494 -142.776886 86 Manh Choh Twin Road 245+24 46' 1,628.87' 1,628.44' 63.311890 -142.777908 87 Manh Choh Twin Road 246+49 46' 1,629.07' 1,629.47' 63.312199 -142.778244 88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429 -142.781799 89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274 -142.784164	84	Manh Choh Twin Road	227+12	46'		1,628.08'	1,627.71'	63.307514	-142.776794		
86 Manh Choh Twin Road 245+24 46' 1,628.87' 1,628.44' 63.311890 -142.777908 87 Manh Choh Twin Road 246+49 46' 1,629.07' 1,629.47' 63.312199 -142.778244 88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429 -142.781799 89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274 -142.784164	85	Manh Choh Twin Road	239+86	46'		1,628.18'	1,627.86'	63.310494	-142.776886		
87 Manh Choh Twin Road 246+49 46' 1,629.07' 1,629.47' 63.312199 -142.778244 88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429 -142.778244 89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274 -142.784164	86	Manh Choh Twin Road	245+24	46'		1,628.87'	1,628.44'	63.311890	-142.777908		
88 Manh Choh Twin Road 263+07 48' 1,639.03' 1,638.68' 63.316429 -142.781799 89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274 -142.784164	87	Manh Choh Twin Road	246+49	46'		1,629.07'	1,629.47'	63.312199	-142.778244		
89 Manh Choh Twin Road 277+64 46' 1,633.16' 1,632.90' 63.320274 -142.784164	88	Manh Choh Twin Road	263+07	48'		1,639.03'	1,638.68'	63.316429	-142.781799		
	89	Manh Choh Twin Road	277+64	46'		1,633.16'	1,632.90'	63.320274	-142.784164		

Notes:

1. Culverts located in the upland Manh Choh Site Road are excluded from this table.

2. Tetlin Village Road culverts may also need to be replaced to allow water to flow through both embankments (Manh Choh Twin Road and Tetlin Village Road).



Appendix 4

Wetland Assessment Data Forms

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and	ADOT&PF #:	/lanh Choh		2.	Assessment Area #	(s): Flat Disturbance
3. Evaluation date: 5. Purpose of evalu Wetland/v Mitigation	Mo. <u>4</u> Day <u>1</u> Jation: waterbody poten wetlands; post-	8 Yr. <u>22</u> tially affected b construction	4. Evaluato y a proposed	r(s) and affiliation: Zach Baer, PWS - Stante Project Mitigation wetlands; pre-con	ec	
6. Wetland location	(s):					
Legal: T №	N or S (circle one	e); R E or	W; S	; and TN or S; RE or W;	S;	Meridian
Approx. station	ning or milepos	ts or pertinent	project con	nponent:		
Lat/long:			Dat	um: _ <u>NAD 83</u> Nearest community: _ [_]	ōk, AK	
Watershed: _		_ (smallest nan	ned stream),	tributary of Ecore	egion (from USCOE 20	007):
7. Identifying numb	ers of related d	ata: wetland d	etermination	forms See PJD photos		
GPS waypoint # _		_ other				
Map (#) showing Briefly describe t	AA: he features tha	t define the lin	ely follow the nits of the A	user's manual instructions for identifying the a A (e.g., tributary, wetland/upland boundary, ex	AA) xtreme low tide elevati	on):
9. Assessment area Acreage of the AA M 10. Classification of	t (AA) size : <u>50</u> INUS the part th f Wetland and V	acro at is waterbody Vaterbody in t	es (visually e that will be s he Wetland A	stimated) oracres (measure separately assessed using the waterbody form	ed) n: acre	s of <u>wetland</u> in AA
Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA	Abbreviations: Cowardin Classes: Forested Wetland (FO), Scrub-Shrub Wetland (SS),	HGM Class (Brinson)	% of AA
PSS4	В		30	Emergent Wetland (EM), Moss-lichen Wetland (ML), Aquatic Bed (AB),	Flat	100
PSS1/4	В		30	Unvegetated (UN)		
PSS1/FO4	В		20	Permanent/Perennial (P/P),		
PFO4	В		10	Seasonal/Intermittent (S/I), Temporary/Ephemeral/Saturated (T/E)		
PSS1	В		10	Modifiers: Excavated (X), Impounded		
Farmed (F), Artificial	(A), Beaver-mod	dified (B) of similar wetla	nds within th	e same 6 th level hydrologic unit subregion.	HGM Classes: Ri Depressional (D), S	verine (R), Slope (S), Flat (F),

see definitions in user's manual): (Circle one) Unknown Rare Common

Abundant

What information sources did you use for this estimate?

Lacustrine Fringe (LF)

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA							
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed					
AA is in a natural state	low disturbance	low disturbance	moderate disturbance					
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance					
AA is substantially disturbed	high disturbance	high disturbance	high disturbance					

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating
≥3 classes; or 2 classes if 1 is forested	Н
2 classes; or 1 class if forested	М
1 class, and humans do not prevent establishment of additional classes	М
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

ist species)	D	S	species:
cies)	D	S	species:
ies)	D	S	species:

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

				-			
Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- ____ observations of abundant wildlife #s or high species diversity (during any period)
- _____abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ____ presence of extremely limiting habitat features not available in the surrounding area
- _____ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods
 ____ little to no wildlife sign
- _____ sparse adjacent upland food sources
- _____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ____ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X upland food sources exist in moderate quantity
- ____ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)				Hi	gh						1	Mode	erate					Lo	w	
Class cover distribution (all vegetated classes)	Even Uneven				Even				Uneven				Even							
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	٩	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
<i>Low</i> disturbance at AA (see #12i & 12ii)	Е	Е	Е	Н	Е	Е	н	н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	Н	М	L	L
High disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)										
Evidence of wildlife use (i)	Exceptional	High	Moderate	Low							
Substantial	1E	H	.8H	.7M							
Moderate	.9H	.7M	.5M	.3L							
Minimal	.6M	.4M	.2L	.1L							

iv. Final Score and Rating: 0.7 M Enter on the summary page on the General Wildlife Support row.

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	nal / Intermitt	tent	Temporary / Ephemeral			
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor	
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L	
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L	
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L	

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y N If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?
 Y N If yes, reduce the score in 14C.i. by 0.1:______ (If no, do not change the score.)

iii. Final Score and Rating: <u>NA</u> Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that fleed or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: ______ acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: _______ feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D ______ feet X A ______ acres = ______ acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub _____% plus the additional % of the flooded wetland that is hummocky _____% = ____% of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding		>5 acre-feet			1 to 5 acre-feet			<1 acre-foot		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%	
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L	
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L	

ii. Final Score and Rating: <u>NA</u> Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are \geq 10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Y N Comments:

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)
i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant toxicants at levels such that other functions are sediments, nutrients, or toxicants such that other input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains no or restricted outlet 1H .8H .7M .5M .5M .4M 3L .2L AA contains unrestricted outlet .9H 7M .6M .4M .4M 3L 2L .1L

ii. Final Score and Rating: <u>NA</u> Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA						
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral				
≥ 65%	1H	.9H	.7M				
35-64%	.7M	.6M	.5M				
< 35%	.3L	.2L	.1L				

ii. Final Score and Rating: <u>NA</u> Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	General Wildlife Habitat Rating (14B.iii.)						
Rating (14C.iii.)	E/H	М	L				
E/H	Н	Н	М				
М	Н	М	М				
L	М	M	L				
NA	М	M	L				

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α		Vegetat	ed com	ponent :	>5 acres	s	Vegetated component 1-5 acres				Vegetated component <1 acre							
В	Hi	gh	Мос	lerate	L	ow	Hi	gh	Mod	erate	Lo	w	Hi	gh	Mod	erate	Lc	w
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.4

iv. Final Score and Rating: 0.4 M Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators	ii. Recharge Indicators (NA for fringe wetlands)
The AA is a slope wetland (HGM type)	Permeable substrate present without underlying impeding layer
Springs or seeps are known or observed	Wetland contains inlet but no outlet
Vegetation growing during dormant season	Stream is a known 'losing' stream; discharge decreases downstream
Wetland occurs at the toe of a natural slope	Other:
AA permanently flooded during dry periods	
Wetland contains an outlet, but no inlet	
Other:	

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM						
	P/P	S/I	T/E	None			
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L			
Permafrost Underlies Wetland or Insufficient Information Exists	NA						

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80- yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)			AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)			AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)			
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant	
Low disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L	
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L	
High disturbance at AA (from12.i. and <i>ii</i> .)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L	

ii. Final Score and Rating: 0.2 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	М	0.7	1.0		
C. General Fish Support		NA	NA		
D. Water Storage		NA	NA		
E. Sediment/Nutrient/Toxicant Removal		NA	NA		
F. Sediment/Shoreline Stabilization		NA	NA		
G. Production Export/Food Chain Support		0.4	1.0		
H. Groundwater Discharge/Recharge		NA	NA		
I. Uniqueness		0.2	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		1.3	4.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.325		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score ≥ 50% and 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. _____ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- ____ Score of 0.9 or 1 functional point for General Wildlife Support; or
- ____ Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- General Wildlife Support is 0.4 or lower: and
- General Fish Support score is 0.3 or lower; and
- If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ls not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category:	1	2	3	4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and	a ADOT&PF #:	Manh Choh		2	. Assessment Area #((s): Slope Impacts
3. Evaluation date: 5. Purpose of evalu	Mo. <u>4</u> Day <u>1</u>	8_Yr.22	4. Evaluator	r(s) and affiliation: Zach Baer, PWS - Stant	ec	
× Wetland/	waterbody poten	tiallv affected b	v a proposed	project Mitigation wetlands: pre-cor	struction	
Mitigation	wetlands; post-	construction	Other			
6. Wetland location	(s):					
Legal: ⊺ N	N or S (circle one	e); R E or	W; S	; and T N or S; R E or W;	S;	Meridian
Approx. station	ning or milepos	ts or pertinent	t project com	nponent:		
Lat/long:			Dat	um: <u>NAD 83</u> Nearest community: _	Tok, AK	
Watershed:		_ (smallest nan	ned stream), t	tributary of Ecor	egion (from USCOE 20	007):
7. Identifying numb	ers of related d	ata: wetland d	etermination	forms See PJD photos		
GPS waypoint # _		_ other		·		
Briefly describe t 8 Wetland size (tota	he features tha	t define the lin	nits of the A	A (e.g., tributary, wetland/upland boundary, e	xtreme low tide elevations	on):
 Assessment area Acreage of the AA M Classification or 	INUS the part th	acro nat is waterbody Vaterbody in t l	that will be s	eparately assessed using the waterbody forr	ed) n: acre:	s of <u>wetland</u> in AA
Class (Cowardin)	Water Regime	Modifier (if any; Cowardin)	% of AA	Abbreviations: Cowardin Classes: Forested Wetland (FO), Scrub-Shrub Wetland (SS),	HGM Class (Brinson)	% of AA
PSS1	B		30	Emergent Wetland (EM), Moss-lichen Wetland (ML), Aquatic Bed (AB),	Slope	100
PSS1/EM1	С		30	Unvegetated (UN) Water (Inundation) Regimes:		
PEM1/SS1	С		20	Permanent/Perennial (P/P),		
PFO4	В		15	Seasonal/Intermittent (S/I), Temporary/Ephemeral/Saturated (T/E)		
PEM1	С		5	Modifiers: Excavated (X), Impounded (I), Diked (D), Partly Drained (PD),		
Farmed (F), Artificial	(A), Beaver-mod	dified (B)			HGM Classes Pi	verine (R)
11. Estimated relati	ve abundance (of similar wetla	nds within the	e same 6 th level hydrologic unit subregion,	Depressional (D), S Lacustrine Fringe (I	Slope (S), Flat (F), L F)
(Circle one)	Unknown	Rare	Common	Abundant		

What information sources did you use for this estimate?

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA					
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed			
AA is in a natural state	low disturbance	low disturbance	moderate disturbance			
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance			
AA is substantially disturbed	high disturbance	high disturbance	high disturbance			

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating
≥3 classes; or 2 classes if 1 is forested	Н
2 classes; or 1 class if forested	М
1 class, and humans do not prevent establishment of additional classes	М
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species: _	
cies)	D	S	species: _	
ies)	D	S	species: _	

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L_____ Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- observations of abundant wildlife #s or high species diversity (during any period)
- Х abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods ___ little to no wildlife sign
- ____ sparse adjacent upland food sources
- ____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- observations of scattered wildlife groups or individuals or relatively few species during peak periods
- common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- upland food sources exist in moderate quantity
- interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent vegetated classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)		High					Moderate							Low						
Class cover distribution (all vegetated classes)	Even			Uneven			Even			Uneven				Even						
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	А	P/P	S/1	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	А	P/P	S/I	T/E	A
<i>Low</i> disturbance at AA (see #12i & 12ii)	E	Е	Е	Н	Е	Е	Н	Н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	Н	М	L	L
High disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

		Wildlife habitat features rating (ii)										
Evidence of wildlife use (i)	Exceptional	Exceptional High Moderate										
Substantial	1E	.9H	.8H	.7M								
Moderate	.9H	.7M	.5M	.3L								
Minimal	.6M	.4M	.2L	.1L								

iv. Final Score and Rating: 0.9 H Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating) i.

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	nal / Intermitt	tent	Tempo	Temporary / Ephemeral				
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor			
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L			
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L			
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L			

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y N If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y N If yes, reduce the score in 14C.i. by 0.1:______(If no, do not change the score.)

iii. Final Score and Rating: <u>NA</u> Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 10 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 0.5 ______ feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 0.5 feet X A 10 acres = 5 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub $\frac{80}{3}$ % plus the additional % of the flooded wetland that is hummocky 5 % = $\frac{85}{3}$ % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	~	>5 acre-fee	t		to 5 acre-fe	eet	<1 acre-foot		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are \geq 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Y N Comments:

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant toxicants at levels such that other functions are sediments, nutrients, or toxicants such that other input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains no or restricted outlet 1H .8H .7M .5M .5M .4M 3L .2L AA contains unrestricted outlet .9H .7M .6M .4M .4M 3L 21 .1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA							
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral					
<i>≥</i> 65%	1H	.9H	.7M					
35-64%	.7M	.6M	.5M					
< 35%	.3L	.2L	.1L					

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	Gener	al Wildlife Habitat Rati	ng (14B.iii.)
Rating (14C.iii.)	E/H	М	L
E/H	Н	Н	М
М	Н	М	М
L	M	М	L
NA	М	М	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α	Vegetated component >5 acres							Vegetated component 1-5 acres							Vegetated component <1 acre					
В	Hi	gh	Мос	lerate	L	ow	High		Moderate		Low		High		Moderate		Low			
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No		
P/P	1H	.7M	81	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L		
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L		
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L		

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.8

iv. Final Score and Rating: 0.8 H Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

×	i. Discharge Indicators	ii. Recharge Indicators (NA for fringe wetlands)
<u> </u>	The AA is a slope wetland (HGM type)	Permeable substrate present without underlying impeding layer
X	Springs or seeps are known or observed	Wetland contains inlet but no outlet
	Vegetation growing during dormant season	Stream is a known 'losing' stream; discharge decreases downstream
	Wetland occurs at the toe of a natural slope	Other:
	AA permanently flooded during dry periods	
	Wetland contains an outlet, but no inlet	
	Other:	

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	Duration of sa DISCHARGE	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM							
	P/P	S/I	T/E	None					
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L					
Permafrost Underlies Wetland or Insufficient Information Exists	NA								

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA co wetlar springs, yr-old) f OR a pla S1, S2, G	ontains irrep nd types [fer seeps, or m forested wef int associati \$1, or G2 by (Appendix	laceable ns, bogs, lature (>80- tland type] on listed as the AKNHP J)	AA does wetlan diver contains as S3 Ab	not contain in ad types and s rsity (#13) is l s plant associ 5, G3, S?, or G (NHP (Appen	rreplaceable structural high OR ation listed i? by the dix J)	AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)			
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant	
<i>Low</i> disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L	
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L	
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L	

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	н	0.9	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	М	0.7	1.0		
E. Sediment/Nutrient/Toxicant Removal	Н	0.9	1.0		
F. Sediment/Shoreline Stabilization	Н	0.9	1.0		
G. Production Export/Food Chain Support	н	0.8	1.0		
H. Groundwater Discharge/Recharge	М	0.7	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.2	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.65		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

____ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score ≥ 50% and 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- X Score of 0.9 or 1 functional point for General Wildlife Support; or
- ____ Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- General Wildlife Support is 0.4 or lower; and
- ____ General Fish Support score is 0.3 or lower; and
- ____ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- ____ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name an	d ADOT&PF #:	2. /	2. Assessment Area #(s): PRM1 - DS - Exist						
3. Evaluation date: 5. Purpose of eval X Wetland	Mo. <u>4</u> Day <u>1</u> uation: /waterbody poten n wetlands; post-	8 Yr. <u>22</u> tially affected b construction	4. Evaluator by a proposed	r (s) and affiliation: project Mit	Zach Baer, PV	VS - Stanteo ls; pre-cons	c truction		
6 Wetland location	n(s) [.]								
Legal: T	N or S (circle one	e); R E or	W; S	; and T	_ N or S; R	E or W; S	6	_;	Meridian
Approx. static	oning or milepos	ts or pertinent	t project com	nponent:					
Lat/long:			Dat	um: _ <u>NAD 83</u>	Nearest com	munity: <u>To</u>	ok, AK		
Watershed:		_ (smallest nan		Ecore	gion (from USC	OE 2007	7):		
7. Identifying numl GPS waypoint # Map (#) showing Briefly describe	bers of related d J AA: the features tha	ata: wetland d _ other (close t define the lin	etermination ely follow the nits of the A	forms See PJD user's manual instru A (e.g., tributary, we	uctions for ident	otos tifying the A bundary, ext	A) treme low tide e	elevation):
 9. Assessment are Acreage of the AA N 10. Classification of Class 	a (AA) size: 22 /IINUS the part th of Wetland and V Water	AA): acr at is waterbody Vaterbody in t Modifier	es (visually es / that will be s he Wetland A	stimated) or eparately assessed AA: Abbreviations	acres	(measured erbody form:	di)	_ acres o	of <u>wetland</u> in AA
(Cowardin)	Regime (Cowardin)	(if any; Cowardin)	% of AA	(FO), Scrub-Shru	es: Forested W b Wetland (SS)	/etland),	(Brinson)	% of AA
PSS1/EM1	C	•	90	Emergent Wetlar Wetland (ML), Ac	id (EM), Moss-I quatic Bed (AB)	lichen),	Riverine		100
PEM1	F		10	Unvegetated (UN	l)				
				Water (Inundation Permanent/Perer Seasonal/Intermi Temporary/Ephe	Water (Inundation) Regimes: Permanent/Perennial (P/P), Seasonal/Intermittent (S/I), Temporary/Ephemeral/Saturated (T/E)				
				Modifiers: Excav	vated (X), Impo	unded			
Farmed (F), Artificia 11. Estimated relat see definitions in us (Circle one) What information so	il (A), Beaver-mod ive abundance (er's manual): Unknown burces did you use	dified (B) of similar wetla Rare	nds within the Common	• (I), Diked (D), Pa e same 6 th level hyd Abundant	rtly Drained (PI	D), region,	HGM Classe Depressional Lacustrine Fr	s: River (D), Slo inge (LF	rine (R), pe (S), Flat (F),)

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA								
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed						
AA is in a natural state	low disturbance	low disturbance	moderate disturbance						
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance						
AA is substantially disturbed	high disturbance	high disturbance	high disturbance						

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating			
≥3 classes; or 2 classes if 1 is forested	H			
2 classes; or 1 class if forested	М			
1 class, and humans do not prevent establishment of additional classes	М			
1 class, and humans limit establishment of additional classes	L			

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species:	
ies)	D	S	species:	
es)	D	S	species:	

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- _ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- presence of extremely limiting habitat features not available in the surrounding area interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods
 ____ little to no wildlife sign
- _____ sparse adjacent upland food sources
- _____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ____ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ____ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ____ upland food sources exist in moderate quantity
- ____ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)		High							Moderate						Low					
Class cover distribution (all vegetated classes)		Even Uneven				Even Uneven					ven	Even								
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	s/I	T/E	A	P/P	S/I	T/E	А
<i>Low</i> disturbance at AA (see #12i & 12ii)	E	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	Н	М	M	L	Н	М	L	L
<i>High</i> disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)											
Evidence of wildlife use (i)	Exceptional	High	Moderate	Low								
Substantial	1E	.9H	.8H	.7M								
Moderate	.9H	.7M	.5M	.3L								
Minimal	.6M	.4M	.2L	.1L								

iv. Final Score and Rating: 0.8 H Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	nal / Intermitt	tent	Tempo	Temporary / Ephemeral			
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor		
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L		
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L		
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L		

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named atic life is not listed as impaired)? ar

If yes, reduce the score in 14C.i. by 0.1: 0.1 L (If no, do not change the score.) Υ Ν

b) Do	povio	s or invasive plant species or invasive	fish species (see	Appendices F and	G) occur in the AA?
Y	Ν	If yes, reduce the score in 14C.i. by 0.	1:	(If no, do	not change the score.)

iii. Final Score and Rating: 0.1 L Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

Rating i.,

Estimate the variation in the water volume stored in the wetland portion of the AA that experiences surface ponding or flooding during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 22 _____ acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, Call this D for depth: 1 and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 22 feet X A 1 acres = 22 _____ acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 90 % plus the additional % of the flooded wetland that is hummocky 0 % = 90 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	C	>5 acre-fee	t	1 to 5 acre-feet			<1 acre-foot		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H _____ Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Ν Comments: Y

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant toxicants at levels such that other functions are sediments, nutrients, or toxicants such that other input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains no or restricted outlet 1H .8H .7M .5M .5M .4M 3L 2L AA contains unrestricted outlet .9H .7M .6M .4M .4M 3L 21 .1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA							
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral					
<i>≥</i> 65%	1H	.9H	.7M					
35-64%	.7M	.6M	.5M					
< 35%	.3L	.2L	.1L					

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	General Wildlife Habitat Rating (14B.iii.)						
Rating (14C.iii.)	E/H	М	L				
E/H	Н	Н	М				
М	Ē	М	М				
L	M	М	L				
NA	M	М	L				

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α		Vegetat	ed com	ponent	>5 acre	s	Vegetated component 1-5 acres						Vegetated component <1 acre					
В	Hi	gh	Мос	lerate	L	ow	Hi	gh	Mod	erate	Lo	w	Hi	gh	Mod	erate	Lo	w
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.7

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

i. Dischar	ge Indicators
------------	---------------

- The AA is a slope wetland (HGM type)
- Springs or seeps are known or observed
- Vegetation growing during dormant season
- Wetland occurs at the toe of a natural slope
- AA permanently flooded during dry periods Wetland contains an outlet, but no inlet
- Other:

ii. Recharge Indicators (NA for fringe wetlands)

- X Permeable substrate present without underlying impeding layer
- Wetland contains inlet but no outlet
- X Stream is a known 'losing' stream; discharge decreases downstream
- _____ Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM							
	P/P	S/I	T/E	None				
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L				
Permafrost Underlies Wetland or Insufficient Information Exists	NA							

iv. Final Score and Rating: 0.4 M Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA co wetlar springs, yr-old) f OR a pla S1, S2, G	ontains irrep nd types [fer seeps, or m forested wef int associati \$1, or G2 by (Appendix	laceable ns, bogs, lature (>80- tland type] on listed as the AKNHP J)	AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)			AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)			
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	rare common abundant		rare	common	abundant	
<i>Low</i> disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L	
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L	
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L	

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____ Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	н	0.8	1.0		
C. General Fish Support	L	0.1	1.0		
D. Water Storage	н	0.9	1.0		
E. Sediment/Nutrient/Toxicant Removal	н	0.9	1.0		
F. Sediment/Shoreline Stabilization	М	0.7	1.0		
G. Production Export/Food Chain Support	н	0.7	1.0		
H. Groundwater Discharge/Recharge	М	0.4	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		4.8	9.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.53		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

____ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score ≥ 50% and 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- ____ Score of 0.9 or 1 functional point for General Wildlife Support; or
- ____ Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

 $\overline{\mathbf{X}}$ Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. _____ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- ____ General Wildlife Support is 0.4 or lower; and
- ____ General Fish Support score is 0.3 or lower; and
- ____ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name a	nd ADOT&PF #:_	2. As	2. Assessment Area #(s): PRM1 - DS - Restor				
 Evaluation date Purpose of eva X Wetland 	: Mo. <u>4</u> Day <u>1</u> Iluation: d/waterbody poten	Yr. <u>22</u>	4. Evaluato	r(s) and affiliation: Zach Baer, PWS	5 - Stantec pre-constru	ıction	
Mitigatio	on wetlands; post-	construction	Othe	r			
6. Wetland location	on(s):						
Legal: ⊤	N or S (circle one	e); R E or	W; S	; and T N or S; R	E or W; S _	;;	Meridian
Approx. stati	oning or milepos	sts or pertinen	t project cor	nponent:	v Tok	ΔK	
Lat/long:			Dat	tum: <u>NAD 83</u> Nearest commu	unity: <u>rok</u> ,		
watersned:		_ (smallest har	ned stream),	tributary of	Ecoregic	on (from USCOE 20)07):
7. Identifying num	bers of related d	lata: wetland d	letermination	forms See PJD photo	os		
GPS waypoint #		other					
Map (#) showin	g AA:	(clos	ely follow the	user's manual instructions for identify	/ing the AA)		
Briefly describe	e the features tha	t define the lir	nits of the A	A (e.g., tributary, wetland/upland bour	ndary, extre	me low tide elevation	on):
9. Assessment are Acreage of the AA 10. Classification Class (Cowardin)	ea (AA) size: 22 MINUS the part th of Wetland and V Water Regime	acr nat is waterbody Naterbody in t Modifier (if any;	es (visually e y that will be s he Wetland % of AA	AA: Abbreviations: Cowardin Classes: Forested Wetl Abbreviations: Cowardin Classes: Forested Wetl (50) Sorub Shrub Wetland (55)	measured) ody form: land	HGM Class (Brinson)	s of <u>wetland</u> in AA % of AA
	(Cowardin)	Cowardin)		Emergent Wetland (EM), Moss-lich	nen		100
PSSI/EIVII	С		90	Wetland (ML), Aquatic Bed (AB),	ł	Riverine	100
PEM1	F		10	Water (Inundation) Regimes:			
				Permanent/Perennial (P/P),			
				Seasonal/Intermittent (S/I), Temporary/Enhemeral/Saturated (*	T/F)		
				Modifiers: Excavated (X), Impound	ided		
				(I), Diked (D), Partly Drained (PD),			
Farmed (F), Artificiant 11. Estimated rela see definitions in us	al (A), Beaver-mo tive abundance (ser's manual):	dified (B) (of similar wetla	ands within th	e same 6 th level hydrologic unit subreç	ي ا ا gion,	HGM Classes: Riv Depressional (D), S Lacustrine Fringe (I	verine (R), Slope (S), Flat (F), L F)
(Circle one)	Unknown	Rare	Common	Abundant			
What information -		o for this patient	ata2	1			
what mornation s	ources ala you us	e for this estimate	ale (

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA						
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed				
AA is in a natural state	low disturbance	low disturbance	moderate disturbance				
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance				
AA is substantially disturbed	high disturbance	high disturbance	high disturbance				

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating					
≥3 classes; or 2 classes if 1 is forested	H					
2 classes; or 1 class if forested	М					
1 class, and humans do not prevent establishment of additional classes	М					
1 class, and humans limit establishment of additional classes	L					

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species:	
ies)	D	S	species:	
es)	D	S	species:	

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- _ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area
 - interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods
 ____ little to no wildlife sign
- _____ sparse adjacent upland food sources
- _____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ____ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ____ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ____ upland food sources exist in moderate quantity
- ____ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)		High								Moderate							Low			
Class cover distribution (all vegetated classes)		Even			Uneven			Even			Uneven				Even					
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	А
<i>Low</i> disturbance at AA (see #12i & 12ii)	Е	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	Н	М	L	L
High disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

		Wildlife habitat features rating (ii)													
Evidence of wildlife use (i)	Exceptional	High	Moderate	Low											
Substantial	1E	.9H	.8H	.7M											
Moderate	.9H	.7M	.5M	.3L											
Minimal	.6M	.4M	.2L	.1L											

iv. Final Score and Rating: 0.8 H Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	nal / Intermitt	ent	Temporary / Ephemeral			
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor	
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L	
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L	
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L	

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquation list of single is not listed as impaired)?

N If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do	poviou	s or invasive plant species or invasive	fish species (see Appendices	s F and G) occur in the AA?
Y	Ν	If yes, reduce the score in 14C.i. by 0.	1:(If no, do not change the score.)

iii. Final Score and Rating: 0.6 M Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: <u>22</u> acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: $\underline{1}_{\underline{1}}_{\underline{1}}$ feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 22 feet X A 1 acres = 22 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub <u>90</u>% plus the additional % of the flooded wetland that is hummocky $\underline{0}$ % = <u>90</u>% of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding		>5 acre-fee	t	11	to 5 acre-fe	et	<1 acre-foot			
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%	
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L	
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L	

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Water Storage row.

iii. Potential Property Protection

Are \geq 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Y N Comments:

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant toxicants at levels such that other functions are sediments, nutrients, or toxicants such that other input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains no or restricted outlet 1H .8H .7M .5M .5M .4M 3L 2L AA contains unrestricted outlet .9H .7M .6M .4M .4M 3L 21 .1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle NA here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA										
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral								
<i>≥</i> 65%	1H	.9H	.7M								
35-64%	.7M	.6M	.5M								
< 35%	.3L	.2L	.1L								

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	Genera	ral Wildlife Habitat Rating (14B.iii.)							
Rating (14C.iii.)	E/H	М	L						
E/H	Ŧ	Н	М						
М	H	М	М						
L	M	М	L						
NA	М	М	L						

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α		Vegetat	ed com	ponent :	>5 acre	s	Vegetated component 1-5 acres							Vegetated component <1 acre					
В	High Moderate Lo		ow	High		Moderate		Low		High		Moderate		Low					
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
P/P	1H_	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L	
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L	
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L	

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: <u>1.0</u>

iv. Final Score and Rating: ______ Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators	
-------------------------	--

- The AA is a slope wetland (HGM type)
- Springs or seeps are known or observed
- Vegetation growing during dormant season
- Wetland occurs at the toe of a natural slope
- AA permanently flooded during dry periods
- Wetland contains an outlet, but no inlet
- Other:__

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	Duration of sa DISCHARGE	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM							
	P/P	S/I	T/E	None					
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L					
Permafrost Underlies Wetland or Insufficient Information Exists	NA								

ii. Recharge Indicators (NA for fringe wetlands)

Wetland contains inlet but no outlet

Other:_____

X Permeable substrate present without underlying impeding layer

X Stream is a known 'losing' stream; discharge decreases downstream

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA co wetlar springs, yr-old) f OR a pla S1, S2, G	ontains irrep nd types [fer seeps, or m forested we int associati 31, or G2 by (Appendix	laceable ns, bogs, nature (>80- tland type] on listed as the AKNHP J)	AA does wetlar diver contains as S3 Af	not contain ir id types and s rsity (#13) is h s plant associ , G3, S?, or G (NHP (Appen	replaceable structural high OR ation listed i? by the dix J)	AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)			
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant	
Low disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L	
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L	
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L	

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____ Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	н	0.8	1.0		
C. General Fish Support	М	0.6	1.0		
D. Water Storage	н	0.9	1.0		
E. Sediment/Nutrient/Toxicant Removal	н	0.9	1.0		
F. Sediment/Shoreline Stabilization	н	0.9	1.0		
G. Production Export/Food Chain Support	н	1.0	1.0		
H. Groundwater Discharge/Recharge	М	0.7	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		6.1	9.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.68		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

____ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score ≥ 50% and 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- ____ Score of 0.9 or 1 functional point for General Wildlife Support; or
- ____ Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

 $\overline{\mathbf{X}}$ Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. _____ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- ____ General Wildlife Support is 0.4 or lower; and
- ____ General Fish Support score is 0.3 or lower; and
- ____ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name an	d ADOT&PF #:_ [_]	Assessment Area #((s): 1 - US - Exist			
3. Evaluation date: 5. Purpose of eval	Mo. <u>4</u> Day <u>1</u> uation:	<u>8 Yr.22</u>	4. Evaluato	r(s) and affiliation: Zach Baer, PWS - Stante	ec	
X Wetland	/waterbody poten n wetlands; post-	tially affected b construction	by a proposed Othe	l project Mitigation wetlands; pre-con r	struction	
6. Wetland location Legal: T	n (s): N or S (circle one	e); R E or	W; S	; and T N or S; R E or W;	S;	Meridian
Approx. statio	ning or milepos	sts or pertinen	t project con	nponent:		
Lat/long:			Dat	um: <u>NAD 83</u> Nearest community: <u></u>	ok, AK	
Watershed: _		_ (smallest nar	med stream),	tributary of Ecore	egion (from USCOE 20	007):
7. Identifying num	pers of related d	lata: wetland c	determination	forms See PJD photos		
GPS waypoint # _		other				
Map (#) showing Briefly describe	AA:	t define the lir	nits of the A	A (e.g., tributary, wetland/upland boundary, ex	AA) ktreme low tide elevation	on):
8. Wetland size (tot 9. Assessment are	al acres, not just a (AA) size: ⁵	AA):	(vis	sually estimated) or <u>5</u> (meas	sured, e.g., in GIS)	
Acreage of the AA N	/INUS the part th	nat is waterbody	y that will be s	separately assessed using the waterbody form	n: acres	s of <u>wetland</u> in AA
10. Classification of	of Wetland and V	Naterbodv in t	he Wetland	AA:		
Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA	Abbreviations: Cowardin Classes: Forested Wetland (FO), Scrub-Shrub Wetland (SS),	HGM Class (Brinson)	% of AA
PSS1/EM1	C	, ,	75	Emergent Wetland (EM), Moss-lichen Wetland (ML), Aquatic Bed (AB).	Riverine	100
PFM1			25	Unvegetated (UN)		
			25	Water (Inundation) Regimes:		
	_			Permanent/Perennial (P/P), Seasonal/Intermittent (S/I)		
				Temporary/Ephemeral/Saturated (T/E)		
				Modifiers: Excavated (X), Impounded (I), Diked (D), Partly Drained (PD),		
Farmed (F), Artificia	I (A), Beaver-mo	dified (B)				
11. Estimated relat	ive abundance ((of similar wetla	ands within th	e same 6 th level hydrologic unit subregion,	Depressional (D), S Lacustrine Fringe (I	Slope (S), Flat (F), L F)
(Circle one)	Unknown	Rare	Common	Abundant		
What information so	urces did you us	e for this estimation	ate?			

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjace the AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA						
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed					
AA is in a natural state	low disturbance	low disturbance	moderate disturbance					
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance					
AA is substantially disturbed	high disturbance	high disturbance	high disturbance					

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	М
1 class, and humans do not prevent establishment of additional classes	М
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species:	
ies)	D	S	species:	
es)	D	S	species:	

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- _ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area
 - interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods
 ____ little to no wildlife sign
- _____ sparse adjacent upland food sources
- _____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ____ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ____ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ____ upland food sources exist in moderate quantity
- ____ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	High						Moderate						Low							
Class cover distribution (all vegetated classes)	Even			Even Uneven						Even Uneven						Even				
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	А
<i>Low</i> disturbance at AA (see #12i & 12ii)	Е	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	Н	М	L	L
High disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)									
Evidence of wildlife use (i)	Exceptional	High	Moderate	Low						
Substantial	1E	.9H	.8H	.7M						
Moderate	.9H	.7M	.5M	.3L						
Minimal	.6M	.4M	.2L	.1L						

iv. Final Score and Rating: 0.8 H Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	nal / Intermitt	tent	Temporary / Ephemeral			
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor	
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L	
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L	
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L	

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named atic life is not listed as impaired)? ar

If yes, reduce the score in 14C.i. by 0.1: 0.5 M (If no, do not change the score.) Υ Ν

b) Do	poviou	s or invasive plant species or invasive	fish species (see Appendices F and G) occur in the AA?
Y	Ν	If yes, reduce the score in 14C.i. by 0.	1: (If no, do not change the score.)

iii. Final Score and Rating: 0.5 M _____ Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

Rating i.,

Estimate the variation in the water volume stored in the wetland portion of the AA that experiences surface ponding or flooding during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 5 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, Call this D for depth: 1 and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D feet X A 1 _____ acre-feet. Use this storage volume estimate in the matrix below. 5 acres = 5

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 75 % plus the additional % of the flooded wetland that is hummocky 0 % = 75 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre-feet				to 5 acre-f	eet	<1 acre-foot		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.6 M _____ Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Ν Comments: Y

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant toxicants at levels such that other functions are sediments, nutrients, or toxicants such that other input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains no or restricted outlet 1H .8H .7M .5M .5M .4M 3L 2L AA contains unrestricted outlet .9H .7M .6M .4M .4M 3L 21 .1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA								
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral						
<i>≥</i> 65%	1H	.9H	.7M						
35-64%	.7M	.6M	.5M						
< 35%	.3L	.2L	.1L						

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	General Wildlife Habitat Rating (14B.iii.)							
Rating (14C.iii.)	E/H	М	L					
E/H	Ħ	Н	М					
М	H	М	М					
L	M	М	L					
NA	М	М	L					

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α		Vegetat	egetated component >5 acres					Vegetated component 1-5 acres					Vegetated component <1 acre					
В	Hi	gh	Мос	lerate	L	ow	Hi	gh	Mod	erate	Lo	w	Hi	gh	Mod	erate	Lc	w
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.7M	.8H	.5M	.6M	.4M	Ę	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.9

iv. Final Score and Rating: 0.9 H Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicator	s
------------------------	---

- The AA is a slope wetland (HGM type)
- Springs or seeps are known or observed
- Vegetation growing during dormant season
- Wetland occurs at the toe of a natural slope
- AA permanently flooded during dry periods Wetland contains an outlet, but no inlet
- Other:

ii. Recharge Indicators (NA for fringe wetlands)

- X Permeable substrate present without underlying impeding layer
- Wetland contains inlet but no outlet
- X Stream is a known 'losing' stream; discharge decreases downstream
- Other:____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Critería	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM						
	P/P	S/I	T/E	None			
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L			
Permafrost Underlies Wetland or Insufficient Information Exists	NA						

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA co wetlar springs, yr-old) f OR a pla S1, S2, G	ontains irrep nd types [fer seeps, or m forested wef int associati \$1, or G2 by (Appendix	laceable ns, bogs, lature (>80- tland type] on listed as the AKNHP J)	AA does wetlan diver contains as S3 Ab	not contain in ad types and s rsity (#13) is l s plant associ 5, G3, S?, or G (NHP (Appen	rreplaceable structural high OR ation listed i? by the dix J)	AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)			
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant	
<i>Low</i> disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L	
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L	
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L	

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____ Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	н	0.8	1.0		
C. General Fish Support	М	0.5	1.0		
D. Water Storage	М	0.6	1.0		
E. Sediment/Nutrient/Toxicant Removal	н	0.9	1.0		
F. Sediment/Shoreline Stabilization	н	0.9	1.0		
G. Production Export/Food Chain Support	н	0.9	1.0		
H. Groundwater Discharge/Recharge	М	0.7	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.6	9.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.62		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

____ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score ≥ 50% and 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- ____ Score of 0.9 or 1 functional point for General Wildlife Support; or
- ____ Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

 $\overline{\mathbf{X}}$ Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. _____ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- General Wildlife Support is 0.4 or lower; and
- ____ General Fish Support score is 0.3 or lower; and
- ____ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and	ADOT&PF #:_	2. Assessment Area #	Assessment Area #(s): PRM1 - US - Resto			
 Evaluation date: 1 Purpose of evalu X Wetland/v Mitigation 	Mo. <u>4</u> Day <u>1</u> ation: vaterbody poten	8 Yr.22	4. Evaluato	r(s) and affiliation: Zach Baer, PWS - Stan	tec nstruction	
	wettands; post-	construction	Othe	1		
3. Wetland location(s):		W 0			
		e); R E or	VV; S	; and I N or S; R E or W	; 5;	Meridian
Approx. station	ing or miepos	ats or pertinent		hponent:	Tok. AK	
Watershed		(smallest nar	Dai ned stream)	tributary of Fcc	region (from LISCOE 2)	007).
			neu streurny,			
'. Identifying numbe	ers of related d	ata: wetland d	etermination	forms See PJD photos		
GPS waypoint #		_ other				
Map (#) showing	AA:	(clos	ely follow the	e user's manual instructions for identifying the	e AA)	
Briefly describe t	he features tha	t define the lin	nits of the A	A (e.g., tributary, wetland/upland boundary,	extreme low tide elevati	ion):
 Assessment area Acreage of the AA M Classification of 	(AA) size: 5 NUS the part th Wetland and V	acr at is waterbody Vaterbody in t	es (visually e / that will be : he Wetland	estimated) oracres (measu separately assessed using the waterbody for	red) m: acre	s of <u>wetland</u> in AA
Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA	Abbreviations: Cowardin Classes: Forested Wetland (FO), Scrub-Shrub Wetland (SS),	HGM Class (Brinson)	% of AA
PSS1/EM1	C	,,	75	Emergent Wetland (EM), Moss-lichen Wetland (ML), Aguatic Bed (AB).	Riverine	100
PFM1	F		25	Unvegetated (UN)		
	1		20	Water (Inundation) Regimes:		
				Permanent/Perennial (P/P), Seasonal/Intermittent (S/I)		
				Temporary/Ephemeral/Saturated (T/E)		
				Modifiers: Excavated (X), Impounded (I) Diked (D) Partly Drained (PD)		
armed (F), Artificial	(A), Beaver-mo	dified (B)				
1. Estimated relatives	/e abundance (r's manual):	of similar wetla	nds within th	e same 6 th level hydrologic unit subregion,	HGM Classes: Rin Depressional (D), S Lacustrine Fringe (verine (R), Slope (S), Flat (F), L F)
(Circle one)	Unknown	Rare	Common	Abundant		
What information sou	rces did you us	e for this estimation	ate?			

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA						
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed				
AA is in a natural state	low disturbance	low disturbance	moderate disturbance				
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance				
AA is substantially disturbed	high disturbance	high disturbance	high disturbance				

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating			
≥3 classes; or 2 classes if 1 is forested	H			
2 classes; or 1 class if forested	М			
1 class, and humans do not prevent establishment of additional classes	М			
1 class, and humans limit establishment of additional classes	L			

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species:	
ies)	D	S	species:	
es)	D	S	species:	

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- _ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area
 - interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods
 ____ little to no wildlife sign
- _____ sparse adjacent upland food sources
- _____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ____ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- ____ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ____ upland food sources exist in moderate quantity
- ____ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)		High						Moderate					Low							
Class cover distribution (all vegetated classes)		Ev	en			Une	ven			Even Uneven			Even							
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	А
<i>Low</i> disturbance at AA (see #12i & 12ii)	Е	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	Н	М	L	L
High disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)									
Evidence of wildlife use (i)	Exceptional	High	Moderate	Low						
Substantial	1E	.9H	.8H	.7M						
Moderate	.9H	.7M	.5M	.3L						
Minimal	.6M	.4M	.2L	.1L						

iv. Final Score and Rating: 0.8 H Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Perma	anent / Peren	nial	Seasonal / Intermittent Temporary / Ephemeral						
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor	
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L	
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L	
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L	

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquation list of single in the structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquation list of single in the structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquation list of the single in the structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquation list of the single in th

N If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do	povio	s or invasive plant species or invasive	fish species (see Appendices F and G) occur in the AA?
Y	Ν	If yes, reduce the score in 14C.i. by 0.	1: (If no, do not change the score.)

iii. Final Score and Rating: 0.6 M Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 5 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: $\underline{1}_{\underline{1}}_{\underline{1}}$ feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 5 feet X A 1 acres = 5 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub $\frac{75}{25}$ % plus the additional % of the flooded wetland that is hummocky 0 % = $\frac{75}{25}$ % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>	>5 acre-fee	t		to 5 acre-f	eet	<	1 acre-foot	:
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.6 M Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are \geq 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Y N Comments:

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant toxicants at levels such that other functions are sediments, nutrients, or toxicants such that other input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains no or restricted outlet 1H .8H .7M .5M .5M .4M 3L 2L AA contains unrestricted outlet .9H .7M .6M .4M .4M 3L 21 .1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA								
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral						
<i>≥</i> 65%	1H	.9H	.7M						
35-64%	.7M	.6M	.5M						
< 35%	.3L	.2L	.1L						

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	General Wildlife Habitat Rating (14B.iii.)							
Rating (14C.iii.)	E/H	М	L					
E/H	Ħ	Н	М					
М	H	М	М					
L	M	М	L					
NA	М	М	L					

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
В	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.7M	.8H	.5M	.6M	.4M	Ę	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.9

iv. Final Score and Rating: 0.9 H Enter on the summary page on the Production Export row.

Comments:

Υ
14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicator	s
------------------------	---

- The AA is a slope wetland (HGM type)
- Springs or seeps are known or observed
- Vegetation growing during dormant season
- Wetland occurs at the toe of a natural slope
- AA permanently flooded during dry periods Wetland contains an outlet, but no inlet
- Other:

ii. Recharge Indicators (NA for fringe wetlands)

- X Permeable substrate present without underlying impeding layer
- Wetland contains inlet but no outlet
- X Stream is a known 'losing' stream; discharge decreases downstream
- Other:____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Critería	Duration of sa DISCHARGE	turation at AA Wet OR WITH WATER GROUNDWAT	lands FROM GROU THAT IS RECHAR ER SYSTEM	INDWATER GING THE		
	P/P	S/I	T/E	None		
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L		
Permafrost Underlies Wetland or Insufficient Information Exists	NA					

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA co wetlar springs, yr-old) f OR a pla S1, S2, G	ontains irrep nd types [fer seeps, or m forested wef int associati \$1, or G2 by (Appendix	laceable ns, bogs, lature (>80- tland type] on listed as the AKNHP J)	AA does wetlan diver contains as S3 Ab	not contain in ad types and s rsity (#13) is l s plant associ 5, G3, S?, or G (NHP (Appen	rreplaceable structural high OR ation listed i? by the dix J)	AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)			
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant	
<i>Low</i> disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L	
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L	
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L	

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____ Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	н	0.8	1.0		
C. General Fish Support	М	0.6	1.0		
D. Water Storage	М	0.6	1.0		
E. Sediment/Nutrient/Toxicant Removal	н	0.9	1.0		
F. Sediment/Shoreline Stabilization	н	0.9	1.0		
G. Production Export/Food Chain Support	н	0.9	1.0		
H. Groundwater Discharge/Recharge	М	0.7	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.7	9.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.63		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score \geq 50% and 6th level hydrologic unit subregion has already experienced \geq 15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. ______ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- ____ Score of 0.9 or 1 functional point for General Wildlife Support; or
- X Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**

 $\overline{\mathbf{X}}$ Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- ____ General Wildlife Support is 0.4 or lower; and
- ____ General Fish Support score is 0.3 or lower; and
- ____ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and	d ADOT&PF #:_	Assessment Area #(s): PRM2 - Dn S - Exis			
3. Evaluation date: 5. Purpose of evalu	Mo4 Day_1 uation:	<u>8</u> Yr. <u>22</u>	4. Evaluato	r(s) and affiliation: Zach Baer, PWS - Stante	<u>с</u>	
Wetland/ Mitigatior	waterbody poten wetlands; post-	tially affected t construction	by a proposed	a project Mitigation wetlands; pre-cons r	struction	
6. Wetland location Legal: T I	(s): N or S (circle one	e); R E or	W; S	; and T N or S; R E or W; ;	S;	Meridian
Approx. statio	ning or milepos	ts or pertinen	t project con	nponent:		
Lat/long:			Dat	um: <u>NAD 83</u> Nearest community: <u></u>	ok, AK	
Watershed: _		_ (smallest nar	med stream),	tributary of Ecore	gion (from USCOE 20	007):
7. Identifying numb	ers of related d	ata: wetland o	letermination	forms See PJD photos		
Map (#) showing Briefly describe t	AA: the features tha	(clos (clos t define the lin	ely follow the mits of the A	user's manual instructions for identifying the A A (e.g., tributary, wetland/upland boundary, ex	AA) treme low tide elevation	on):
3. Wetland size (tota 3. Assessment area Acreage of the AA M	al acres, not just a (AA) size: <u>1.5</u> IINUS the part th	AA):acr at is waterbod	res (visually e y that will be s	sually estimated) or <u>1.5</u> (meas stimated) oracres (measure separately assessed using the waterbody form	ured, e.g., in GIS) d) : acre	s of <u>wetland</u> in AA
Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA	AA: Abbreviations: Cowardin Classes: Forested Wetland (FO), Scrub-Shrub Wetland (SS),	HGM Class (Brinson)	% of AA
PSS1	C		70	Emergent Wetland (EM), Moss-lichen Wetland (ML), Aquatic Bed (AB),	Slope	100
PEM1	С		30	Unvegetated (UN)		
				Water (Inundation) Regimes: Permanent/Perennial (P/P).		
				Seasonal/Intermittent (S/I), Temporary/Ephemeral/Saturated (T/E)		
				Modifiers: Excavated (X), Impounded (I), Diked (D), Partly Drained (PD),		
Farmed (F), Artificial 11. Estimated relati see definitions in use	(A), Beaver-mod ve abundance (er's manual):	dified (B) of similar wetla	ands within th	e same 6 th level hydrologic unit subregion,	HGM Classes: Riv Depressional (D), S Lacustrine Fringe (I	verine (R), Slope (S), Flat (F), L F)
(Circle one)	Unknown	Rare	Common	Abundant		
What information so	urces did vou us	e for this estimation	ate?			

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjace the AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA						
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed					
AA is in a natural state	low disturbance	low disturbance	moderate disturbance					
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance					
AA is substantially disturbed	high disturbance	high disturbance	high disturbance					

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	М
1 class, and humans do not prevent establishment of additional classes	М
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list speci
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species:	
ies)	D	S	species:	
es)	D	S	species:	

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- ____ observations of abundant wildlife #s or high species diversity (during any period)
- _____abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ____ presence of extremely limiting habitat features not available in the surrounding area interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods
 ____ little to no wildlife sign
- _____ sparse adjacent upland food sources
- _____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ____ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- \underline{X} upland food sources exist in moderate quantity
- ____ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	High						Moderate							Low									
Class cover distribution (all vegetated classes)	Even			s cover ribution (all Even Uneven Even etated classes)						Even Uneven							Une	ven			Eve	en	
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	А	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	А			
<i>Low</i> disturbance at AA (see #12i & 12ii)	Е	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М			
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	Н	М	L	L			
High disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	M	L	L	L	L	L	L	L			

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)						
Evidence of wildlife use (i)	Exceptional High Moderate		Low				
Substantial	1E	.9H	all a	.7M			
Moderate	.9H	.7M	.5M	.3L			
Minimal	.6M	.4M	.2L	.1L			

iv. Final Score and Rating: 0.5 M Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	Seasonal / Intermittent Temporary				neral
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y N If yes, reduce the score in 14C.i. by 0.1:______ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y N If yes, reduce the score in 14C.i. by 0.1:______ (If no, do not change the score.)

iii. Final Score and Rating: <u>NA</u> Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 1.5 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: $\underline{1}_{\underline{1}}_{\underline{1}}$ feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 1_{1} feet X A 1.5_{1} acres = 1.5_{1} acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 70 % plus the additional % of the flooded wetland that is hummocky 5 % = 75 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>	>5 acre-fee	t	1 to 5 acre-feet		<	<1 acre-foot		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.6 M Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are \geq 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Y N Comments:

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant sediments, nutrients, or toxicants such that other toxicants at levels such that other functions are input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains no or restricted outlet 1H .8H .7M .5M 5M .4M 3L .2L AA contains unrestricted outlet .9H .7M .6M .4M .4M .3L 2L .1L

ii. Final Score and Rating: 0.4 M Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA						
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral				
<i>≥</i> 65%	_111_	.9H	.7M				
35-64%	.7M	.6M	.5M				
< 35%	.3L	.2L	.1L				

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	General Wildlife Habitat Rating (14B.iii.)				
Rating (14C.iii.)	E/H	М	L		
E/H	Н	Н	М		
М	Н	М	М		
L	М	M	L		
NA	М	М	L		

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α	Vegetated component >5 acres					Vegetated component 1-5 acres							Vegetated component <1 acre					
В	Hi	gh	Мос	lerate	L	ow	Hi	gh	Mod	erate	Lo	w	Hi	gh	Mod	erate	Lo	w
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.8

iv. Final Score and Rating: 0.8 H Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

	i. Discharge Indicators	ii. Recharge Indicators (NA for fringe wetlands)
_X	The AA is a slope wetland (HGM type)	Permeable substrate present without underlying impeding layer
	Springs or seeps are known or observed	Wetland contains inlet but no outlet
	Vegetation growing during dormant season	Stream is a known 'losing' stream; discharge decreases downstream
	Wetland occurs at the toe of a natural slope	Other:
	AA permanently flooded during dry periods	
X	Wetland contains an outlet, but no inlet	
	Other:	

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM						
	P/P	S/I	T/E	None			
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L			
Permafrost Underlies Wetland or Insufficient Information Exists		NA					

iv. Final Score and Rating: <u>1.0 H</u> Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA co wetlar springs, yr-old) f OR a pla S1, S2, G	ontains irrep nd types [fer seeps, or m forested wef int associati \$1, or G2 by (Appendix	laceable ns, bogs, lature (>80- tland type] on listed as the AKNHP J)	AA does wetlan diver contains as S3 Ab	AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)			AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)			
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant		
<i>Low</i> disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L		
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L		
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L		

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____ Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	М	0.5	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	М	0.6	1.0		
E. Sediment/Nutrient/Toxicant Removal	М	0.4	1.0		
F. Sediment/Shoreline Stabilization	М	0.7	1.0		
G. Production Export/Food Chain Support	н	0.8	1.0		
H. Groundwater Discharge/Recharge	н	1.0	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		4.3	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.5375		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score ≥ 50% and 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- ____ Score of 0.9 or 1 functional point for General Wildlife Support; or
- ____ Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

 $\overline{\mathbf{X}}$ Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- General Wildlife Support is 0.4 or lower; and
- ____ General Fish Support score is 0.3 or lower; and
- ____ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh	2. Assessment Area	2. Assessment Area #(s): PRM2 - Dn S - Restor			
3. Evaluation date: Mo. 4 Day 18 Yr. 22 4. Evaluator(s) and affiliation: Zach Baer, PWS -	Stantec				
5. Purpose of evaluation:					
X Wetland/waterbody potentially affected by a proposed project Mitigation wetlands; pr	re-construction				
Mitigation wetlands; post-construction Other					
6. Wetland location(s):					
Legal: T N or S (circle one); R E or W; S ; and T N or S; R E	or W; S;	Meridian			
Approx. stationing or mileposts or pertinent project component:					
Lat/long: Datum: NAD 83 Nearest commun	nity: <u>Tok, AK</u>				
Watershed: (smallest named stream), tributary of	Ecoregion (from USCOE 2	2007):			
7. Identifying numbers of related data: wetland determination forms See PJD photos					
GPS waypoint # other					
Map (#) showing AA: (closely follow the user's manual instructions for identifying	g the AA)				
Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland bound	ary, extreme low tide eleva	tion):			
8. Wetland size (total acres, not just AA): (visually estimated) or _1.5	(measured, e.g., in GIS)				
9. Assessment area (AA) size: 1.5 acres (visually estimated) oracres (me	easured)	as of watland in AA			
Acleage of the AA Minto's the part that is waterbody that will be separately assessed using the waterbod	ay ioiiii aci	es or <u>welland</u> in AA			
10. Classification of Wetland and Waterbody in the Wetland AA:					
Class Water Modifier Abbreviations:	HGM Class				
(Cowardin) Regime (if any; % of AA Cowardin Classes: Forested Wetlar (Cowardin) (FO) Scrub Shrub Wetland (SS)	nd (Brinson)	% of AA			
(Cowardin) Cowardin) (TO), Scrub-Sindb Wetland (CO), Emergent Wetland (EM), Moss-licher	n				
PSS1 C 70 Wetland (ML), Aquatic Bed (AB),	Slope	100			
PEM1 C 30 Unvegetated (UN)					
Water (Inundation) Regimes:					
Seasonal/Intermittent (S/I)					
Temporary/Ephemeral/Saturated (T/	E)				
Modifiers: Excavated (X), Impounde	ed				
(I), Diked (D), Partly Drained (PD),					
Farmed (F), Artificial (A), Beaver-modified (B)	HGM Classes: R	iverine (R)			
11. Estimated relative abundance (of similar wetlands within the same 6 th level hydrologic unit subregic	Depressional (D),	Slope (S), Flat (F),			
see definitions in user's manual):	Luousumerninge	(IF)			
		(LF)			
(Circle one) Unknown Rare Common Abundant		(LF)			

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjace the AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA									
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed								
AA is in a natural state	low disturbance	low disturbance	moderate disturbance								
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance								
AA is substantially disturbed	high disturbance	high disturbance	high disturbance								

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	М
1 class, and humans do not prevent establishment of additional classes	М
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species:
ies)	D	S	species:
es)	D	S	species:

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

					0/		
Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- ____ observations of abundant wildlife #s or high species diversity (during any period)
- _____abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- ____ presence of extremely limiting habitat features not available in the surrounding area
- _____ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods
 ____ little to no wildlife sign
- _____ sparse adjacent upland food sources
- _____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- ____ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- \underline{X} upland food sources exist in moderate quantity
- ____ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)				Hi	gh							Mode	erate					Low		
Class cover distribution (all vegetated classes)		Eve	en			Une	ven			Eve	n			Uneven				Even		
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	А
<i>Low</i> disturbance at AA (see #12i & 12ii)	E	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	Н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	H	М	М	L	Н	М	L	L
High disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

		Wildlife habitat features rating (ii)												
Evidence of wildlife use (i)	Exceptional	High	Moderate	Low										
Substantial	1E	9H	.8H	.7M										
Moderate	.9H	.7M	.5M	.3L										
Minimal	.6M	.4M	.2L	.1L										

iv. Final Score and Rating: 0.7 M Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	nal / Intermitt	ent	Tempo	Temporary / Ephemeral				
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor			
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L			
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L			
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L			

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y N If yes, reduce the score in 14C.i. by 0.1:______ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y N If yes, reduce the score in 14C.i. by 0.1:______ (If no, do not change the score.)

iii. Final Score and Rating: <u>NA</u> Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 1.5 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: $\underline{1}_{\underline{1}}_{\underline{1}}$ feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 1_{1} feet X A 1.5_{1} acres = 1.5_{1} acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 70 % plus the additional % of the flooded wetland that is hummocky 5 % = 75 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>	>5 acre-fee	t		o 5 acre-fe	eet	<1 acre-foot		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.6 M Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are \geq 10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Y N Comments:

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant sediments, nutrients, or toxicants such that other toxicants at levels such that other functions are input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains **no or restricted outlet** 1H .8H .7M .5M .5M .4M 3L .2L AA contains unrestricted outlet .9H .7M .6M .4M .4M .3L 21 .1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA								
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral						
<i>≥</i> 65%	1H	.9H	.7M						
35-64%	.7M	.6M	.5M						
< 35%	.3L	.2L	.1L						

ii. Final Score and Rating: <u>1 H</u> Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	General Wildlife Habitat Rating (14B.iii.)									
Rating (14C.iii.)	E/H	М	L							
E/H	Н	Н	М							
М	Н	М	М							
L	М	M	L							
NA	М	M	L							

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α		Vegetat	ed com	ponent	>5 acre	s	1	Vegetated component 1-5 acres						Vegetated component <1 acre					
В	Hi	gh	Мос	lerate	L	ow	Hi	gh	Mod	erate	Lo	w	High Moderate		Lc	w			
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L	
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L	
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L	

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.8

iv. Final Score and Rating: 0.8 H Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

	i. Discharge Indicators	ii. Recharge Indicators (NA for fringe wetlands)
_X	The AA is a slope wetland (HGM type)	Permeable substrate present without underlying impeding layer
	Springs or seeps are known or observed	Wetland contains inlet but no outlet
	Vegetation growing during dormant season	Stream is a known 'losing' stream; discharge decreases downstream
	Wetland occurs at the toe of a natural slope	Other:
	AA permanently flooded during dry periods	
X	Wetland contains an outlet, but no inlet	
	Other:	

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	Duration of sa DISCHARGE	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM								
	P/P	S/I	T/E	None						
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L						
Permafrost Underlies Wetland or Insufficient Information Exists		NA								

iv. Final Score and Rating: <u>1.0 H</u> Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA co wetlar springs, yr-old) f OR a pla S1, S2, G	ontains irrep nd types [fer seeps, or m forested wef int associati \$1, or G2 by (Appendix	laceable ns, bogs, lature (>80- tland type] on listed as the AKNHP J)	AA does wetlan diver contains as S3 Ab	not contain in ad types and s rsity (#13) is l s plant associ 5, G3, S?, or G (NHP (Appen	rreplaceable structural high OR ation listed i? by the dix J)	AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)				
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant		
<i>Low</i> disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L		
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L		
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L		

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____ Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	М	0.7	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	М	0.6	1.0		
E. Sediment/Nutrient/Toxicant Removal	н	0.9	1.0		
F. Sediment/Shoreline Stabilization	н	1.0	1.0		
G. Production Export/Food Chain Support	н	0.8	1.0		
H. Groundwater Discharge/Recharge	н	1.0	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.3	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.6625		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score ≥ 50% and 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- ____ Score of 0.9 or 1 functional point for General Wildlife Support; or
- ____ Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

 $\overline{\mathbf{X}}$ Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- ____ General Wildlife Support is 0.4 or lower; and
- ____ General Fish Support score is 0.3 or lower; and
- ____ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name ar	nd ADOT&PF #:_	Manh Choh			2. Assessment Area #	(s): <u>PRM2 - US - Ex</u> ist
3. Evaluation date 5. Purpose of eva	: Mo. <u>4</u> Day_1 Iuation:	<u>8 Yr. 22</u>	4. Evaluato	r(s) and affiliation: <u>Zach Baer</u> , PWS - Sta	antec	
Wetland	/waterbody poten	tially affected b	by a proposed	project <u>X</u> Mitigation wetlands; pre-o	construction	
Mitigatio	on wetlands; post-	construction	Othe	r	-	
6. Wetland location	n(s):					
Legal: ⊺	N or S (circle one	e); R E or	r W; S	; and T N or S; R E or	W; S;	Meridian
Approx. statio	oning or milepos	sts or pertinen	t project con	nponent:		
Lat/long:			Dat	um: <u>NAD 83</u> Nearest community	:Tok, AK	
Watershed:		_ (smallest nar	med stream),	tributary of Ec	coregion (from USCOE 2	007):
7. Identifying num	bers of related d	lata: wetland o	determination	forms See PJD photos		
GPS waypoint #		other				
Map (#) showing Briefly describe	g AA: the features tha	(clos	sely follow the	user's manual instructions for identifying the \mathbf{A} (e.g., tributary, wetland/upland boundary)	he AA) / extreme low tide elevati	ion).
				(e.g., inducity, weitaria aplana beariaary		
8. Wetland size (to	tal acres, not just	AA):	(vis	sually estimated) or <u>0.5</u> (m	easured, e.g., in GIS)	
· ·	(1 1 1 1 1 1 1 1 1 1	,	,			
9. Assessment are Acreage of the AA I	ea (AA) size: <u> </u>	aci nat is waterbod	res (visually e v that will be s	stimated) oracres (meas separately assessed using the waterbody f	orm: acre	s of wetland in AA
10. Classification	of Wetland and V	Naterbody in 1	the Wetland	AA: Abbreviations:		
Class (Cowardin)	Water Regime (Cowardin)	(if any; Cowardin)	% of AA	Cowardin Classes : Forested Wetland (FO), Scrub-Shrub Wetland (SS),	HGM Class (Brinson)	% of AA
PSS1	C		80	Emergent Wetland (EM), Moss-lichen Wetland (ML), Aquatic Bed (AB),	Slope	100
PEM1	C		20	Unvegetated (UN)		
	- Ŭ			Water (Inundation) Regimes:		
				Seasonal/Intermittent (S/I).		
				Temporary/Ephemeral/Saturated (T/E)		
				Modifiers: Excavated (X), Impounded		
Earmod (E) Artificia	A Boover me	dified (B)		(I), Diked (D), Partly Drained (PD),		
11. Estimated rela	tive abundance ((of similar wetla	ands within th	e same 6 th level hydrologic unit subregion,	HGM Classes: Ri Depressional (D), S Lacustrine Fringe (verine (R), Slope (S), Flat (F), (I F)
see definitions in us (Circle one)	ser's manual): Unknown	Rare	Common	Abundant	()	/
(
What information so	ources did you us	e for this estim	ate?			

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjace the AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA							
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed						
AA is in a natural state	low disturbance	low disturbance	moderate disturbance						
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance						
AA is substantially disturbed	high disturbance	high disturbance	high disturbance						

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	М
1 class, and humans do not prevent establishment of additional classes	М
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species:
ies)	D	S	species:
es)	D	S	species:

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- observations of abundant wildlife #s or high species diversity (during any period)
- abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- presence of extremely limiting habitat features not available in the surrounding area
- interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods ___ little to no wildlife sign
- ____ sparse adjacent upland food sources
- ____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- observations of scattered wildlife groups or individuals or relatively few species during peak periods
- Х common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- Х upland food sources exist in moderate quantity
- interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent vegetated classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)		High							Moderate							Low				
Class cover distribution (all vegetated classes)	Even			Uneven				Even				Uneven				Even				
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	А	P/P	S/I	T/E	А
<i>Low</i> disturbance at AA (see #12i & 12ii)	E	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	H	М	М	L	Н	М	L	L
<i>High</i> disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

		Wildlife habitat features rating (ii)								
Evidence of wildlife use (i)	Exceptional	High	Moderate	Low						
Substantial	1E	<u>.9H</u>	.8H	.7M						
Moderate	.9H	.7M	.5M	.3L						
Minimal	.6M	.411	.2L	.1L						

iv. Final Score and Rating: 0.7 M Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating) i.

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	nal / Intermitt	ent	Temporary / Ephemeral			
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor	
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L	
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L	
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L	

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

N If yes, reduce the score in 14C.i. by 0.1: _____ (If no, do not change the score.) Υ

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA? N If yes, reduce the score in 14C.i. by 0.1:____ Υ

____ (If no, do not change the score.)

iii. Final Score and Rating: NA Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

Rating i.,

Estimate the variation in the water volume stored in the wetland portion of the AA that experiences surface ponding or flooding during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 6 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 0.5 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D __ feet X A _6__ 0.5 acres = 3 _____ acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 80 % plus the additional % of the flooded wetland that is hummocky 5 % = 85 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre-feet				to 5 acre-fe	eet	<1 acre-foot		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Ν Comments: Υ

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant toxicants at levels such that other functions are sediments, nutrients, or toxicants such that other input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains **no or restricted outlet** 1H .8H .7M .5M 5M .4M 3L .2L AA contains unrestricted outlet .9H .7M .6M .4M .4M .3L 2L .1L

ii. Final Score and Rating: 0.4 M Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle NA here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA							
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral					
<i>≥</i> 65%	1H	.9H	.7M					
35-64%	.7M	.6M	.5M					
< 35%	.3L	.2L	.1L					

ii. Final Score and Rating: <u>1 H</u> Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	General Wildlife Habitat Rating (14B.iii.)						
Rating (14C.iii.)	E/H	М	L				
E/H	Н	Н	М				
М	Н	М	М				
L	ŧ	М	L				
NA	M	М	L				

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α		Vegetat	ed com	ponent	>5 acre	s	Vegetated component 1-5 acres Vegetated compo				ponent	<1 acre						
В	Hi	gh	Мос	lerate	L	ow	Hi	gh	Mod	erate	Lo	w	Hi	gh	Mod	erate	Lc	w
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.9

iv. Final Score and Rating: 0.9 H Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

	i. Discharge Indicators	ii. Recharge Indicators (NA for fringe wetlands)
_X	The AA is a slope wetland (HGM type)	Permeable substrate present without underlying impeding layer
	Springs or seeps are known or observed	Wetland contains inlet but no outlet
	Vegetation growing during dormant season	Stream is a known 'losing' stream; discharge decreases downstream
	Wetland occurs at the toe of a natural slope	Other:
	AA permanently flooded during dry periods	
X	Wetland contains an outlet, but no inlet	
	Other:	

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM						
	P/P	S/I	T/E	None			
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L			
Permafrost Underlies Wetland or Insufficient Information Exists		NA					

iv. Final Score and Rating: <u>1.0 H</u> Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA co wetlar springs, yr-old) f OR a pla S1, S2, G	ontains irrep nd types [fer seeps, or m forested wef int associati \$1, or G2 by (Appendix	laceable ns, bogs, lature (>80- tland type] on listed as the AKNHP J)	AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)		A/ irreplac structu to m	AA does not contain ceable wetland types and ural diversity (#13) is low moderate (Appendix J)		
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
<i>Low</i> disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____ Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	н	0.8	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	М	0.7	1.0		
E. Sediment/Nutrient/Toxicant Removal	М	0.4	1.0		
F. Sediment/Shoreline Stabilization	н	1.0	1.0		
G. Production Export/Food Chain Support	н	0.9	1.0		
H. Groundwater Discharge/Recharge	н	1.0	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.1	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.6375		

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

____ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

____ Score of 0.9 or 1 functional point for General Fish Support; or

Percent of possible score ≥ 70% (round to nearest whole number); or

Percent of possible score ≥ 50% and 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- ____ Score of 0.9 or 1 functional point for General Wildlife Support; or
- ____ Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

 $\overline{\mathbf{X}}$ Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- ____ General Wildlife Support is 0.4 or lower; and
- ____ General Fish Support score is 0.3 or lower; and
- If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7

Appendix A Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

Project name and ADOT&	2. Assessment Area #(s): PRM2 - US - Resto				
Evaluation date: Mo. 4 Purpose of evaluation:	_Day <u>18</u> _Yr. <u>22</u> _	4. Evaluato	or(s) and affiliation: Zach Baer, PWS - Stan	tec	
Wetland/waterbody	potentially affected	by a proposed	d project Mitigation wetlands; pre-co	nstruction	
X Mitigation wetlands	; post-construction	Othe	er		
Wetland location(s):					
Legal: T N or S (cir	cle one); R E o	r W; S	; and T N or S; R E or W	; S;	Meridian
Approx. stationing or m	ileposts or pertiner	nt project con	mponent:		
Lat/long:		Da	tum: <u>NAD 83</u> Nearest community: _	Tok, AK	
Watershed:	(smallest na	imed stream),	tributary of Eco	region (from USCOE 2	007):
dentifying numbers of re	ated data: wetland	determination	forms See PJD photos		
3PS waypoint #	other	acternination			
Map (#) showing $\Lambda\Lambda$:	(clo	selv follow the	user's manual instructions for identifying the	ΔΔ)	
Briefly describe the feature	es that define the li	imits of the A	\mathbf{A} (e.g., tributary, wetland/upland boundary, e	extreme low tide elevati	ion):
classification of Wetland	part that is waterboo	the Wetland	Actes (measures) ofactes (measures) separately assessed using the waterbody for Actes	m: acre	s of <u>wetland</u> in AA
Class Wa (Cowardin) (Cowa	me (if any; modifier) (if any;	% of AA	Cowardin Classes : Forested Wetland (FO), Scrub-Shrub Wetland (SS),	HGM Class (Brinson)	% of AA
SS1 C	, , , , , , , , , , , , , , , , , , , ,	80	Emergent Wetland (EM), Moss-lichen Wetland (ML), Aquatic Bed (AB),	Slope	100
EM1 C		20	Unvegetated (UN)		
			Water (Inundation) Regimes:		
			Seasonal/Intermittent (S/I),		
			I emporary/Ephemeral/Saturated (T/E)		
			(I), Diked (D), Partly Drained (PD),		
med (F), Artificial (A), Beav Estimated relative abunc	ver-modified (B) lance (of similar wetl al):	ands within th	he same 6 th level hydrologic unit subregion,	HGM Classes: Ri Depressional (D), S Lacustrine Fringe (verine (R), Slope (S), Flat (F), L F)
(Circle one) Unknowr	Rare	Common	Abundant		
nat information sources did	you use for this estim	nate?			

12. General condition of AA:

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA	Predominant conditions adjacent to (within 500 feet of) the AA, <u>plus</u> any area that drains into the AA								
Conditions within AA	Adjacent land is in a natural state	Adjacent land has experienced minimal or minor disturbance	Adjacent land is substantially disturbed						
AA is in a natural state	low disturbance	low disturbance	moderate disturbance						
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance						
AA is substantially disturbed	high disturbance	high disturbance	high disturbance						

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location):

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses):

13. Structural Diversity of AA: (based on number of simplified Cowardin vegetated classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	Rating
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	М
1 class, and humans do not prevent establishment of additional classes	М
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern: i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (list spec
Secondary habitat (list species)
Incidental habitat (list species)
None or unknown

st species)	D	S	species:
ies)	D	S	species:
es)	D	S	species:

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/ primary	sus/ primary	doc/ secondary	sus/ secondary	doc/ incidental	sus/ incidental	none or unknown
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	OL
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	OL

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: <u>0 L</u> Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):

- observations of abundant wildlife #s or high species diversity (during any period)
- abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- presence of extremely limiting habitat features not available in the surrounding area
- interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):

- ____ few or no wildlife observations during peak use periods ___ little to no wildlife sign
- ____ sparse adjacent upland food sources
- ____ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):

- observations of scattered wildlife groups or individuals or relatively few species during peak periods
- Х common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- Х upland food sources exist in moderate quantity
- interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.

Structural diversity is from #13.

For class cover to be considered evenly distributed, the most and least prevalent vegetated classes must be within 20% of each other in terms of their percentage of the AA (see #10).

Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)				Hi	gh							Mode	erate)				Low		
Class cover distribution (all vegetated classes)		Ev	en			Une	ven			Eve	n			Uneven				Even		
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	А	P/P	S/I	T/E	А
<i>Low</i> disturbance at AA (see #12i & 12ii)	E	Е	Е	Н	Е	Е	Н	н	Е	Н	Н	М	Е	н	М	М	Е	н	М	М
Moderate disturbance at AA (see #12i & 12ii)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	H	М	М	L	Н	М	L	L
<i>High</i> disturbance at AA (see #12i & 12ii)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

		Wildlife habitat features rating (ii)													
Evidence of wildlife use (i)	Exceptional	High	Moderate	Low											
Substantial	1E	<u>.9H</u>	.8H	.7M											
Moderate	.9H	.7M	.5M	.3L											
Minimal	.6M	.411	.2L	.1L											

iv. Final Score and Rating: 0.7 M Enter on the summary page on the General Wildlife Support row. Comments:

14C. General Fish Support Rating: (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating) i.

Duration of surface water in AA	Perma	anent / Peren	nial	Seaso	nal / Intermitt	ent	Temporary / Ephemeral			
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	Optimal	Adequate	Poor	Optimal	Adequate	Poor	Optima I	Adequate	Poor	
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L	
Resident and non- salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L	
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L	

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

N If yes, reduce the score in 14C.i. by 0.1: _____ (If no, do not change the score.) Υ

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA? N If yes, reduce the score in 14C.i. by 0.1:____ Υ

____ (If no, do not change the score.)

iii. Final Score and Rating: NA Enter on the summary page on the General Fish Support row. Comments:

14D. Water Storage: (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

Rating i.,

Estimate the variation in the water volume stored in the wetland portion of the AA that experiences surface ponding or flooding during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 6 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 0.5 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D __ feet X A _6__ 0.5 acres = 3 _____ acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 80 % plus the additional % of the flooded wetland that is hummocky 5 % = 85 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	2	>5 acre-fee	t		to 5 acre-fe	eet	<1 acre-foot		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Water Storage row. Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? Ν Comments: Υ

14E. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle NA here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low]) AA receives or surrounding land use (including Waterbody is on Alaska's Section 303(d) List of proposed future land use) has potential to Impaired Waterbodies or AA receives or surrounding deliver levels of sediments, nutrients, or land use has potential to deliver high levels of Sediment, nutrient, and toxicant toxicants at levels such that other functions are sediments, nutrients, or toxicants such that other input levels within AA not substantially impaired. Minor sedimentation, functions are substantially impaired. Major sources of nutrients or toxicants, or signs of sedimentation, sources of nutrients or toxicants, eutrophication are present, or sources are unnatural turbidity, or signs of eutrophication are suspected. present. ≥ 70% <u>≥ 70%</u> < 70% < 70% % cover of vegetation in AA Evidence of flooding / ponding in AA Yes No Yes No Yes No Yes No AA contains **no or restricted outlet** 1H .8H .7M .5M .5M .4M 3L 2L AA contains unrestricted outlet .9H .7M .6M .4M .4M 3L 21 .1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row. Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the <u>wetland</u> area subjected	Duration of surface water adjacent to rooted vegetation in the AA								
to erosive forces, % cover of species with deep, soil-binding root masses	Permanent / Perennial	Seasonal / Intermittent	Temporary / Ephemeral						
<i>≥</i> 65%	1H	.9H	.7M						
35-64%	.7M	.6M	.5M						
< 35%	.3L	.2L	.1L						

ii. Final Score and Rating: <u>1 H</u> Enter on the summary page on the Sediment/Shoreline Stabilization row. Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat	General Wildlife Habitat Rating (14B.iii.)								
Rating (14C.iii.)	E/H	М	L						
E/H	Н	Н	М						
М	Н	М	М						
L	ŧ	М	L						
NA	M	М	L						

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

Α		Vegetat	ed com	ponent	>5 acre	s	Vegetated component 1-5 acres							Vegetated component <1 acre						
В	High Moder		lerate	Low		High		Moderate		Low		High		Moderate		Low				
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No		
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L		
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L		
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L		

iii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1.)

Vegetated Upland Buffer: Area with \geq 30% plant cover, \leq 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

) <u>Is the</u>re an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?

N If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly: 0.9

iv. Final Score and Rating: 0.9 H Enter on the summary page on the Production Export row.

Comments:

Υ

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

	i. Discharge Indicators	ii. Recharge Indicators (NA for fringe wetlands)
_X	The AA is a slope wetland (HGM type)	Permeable substrate present without underlying impeding layer
	Springs or seeps are known or observed	Wetland contains inlet but no outlet
	Vegetation growing during dormant season	Stream is a known 'losing' stream; discharge decreases downstream
	Wetland occurs at the toe of a natural slope	Other:
	AA permanently flooded during dry periods	
X	Wetland contains an outlet, but no inlet	
	Other:	

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	Duration of saturation at AA Wetlands FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM					
	P/P	S/I	T/E	None		
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L		
Permafrost Underlies Wetland or Insufficient Information Exists	NA					

iv. Final Score and Rating: <u>1.0 H</u> Enter on the summary page on the Groundwater Discharge/Recharge row. Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80- yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)			AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)			AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)		
Estimated relative abundance of wetland types (from 11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
<i>Low</i> disturbance at AA (from 12.i. and ii.)	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
<i>Moderate</i> disturbance at AA (from 12.i. and ii.)	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	.2L
High disturbance at AA (from12.i. and ii.)	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

- 14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)
- i. Is the AA a known or potential recreation or education site: (circle) Y N if 'Yes' continue with the evaluation; if 'No' then circle NA here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ____ Educational/scientific study; ____ Consumptive rec.; ____ Non-consumptive rec.; ____ Other iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	Known	Potential
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: <u>NA</u> Enter on the summary page on the Recreation/Education Potential row. Comments:

General Site Notes:

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	н	0.8	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	М	0.7	1.0		
E. Sediment/Nutrient/Toxicant Removal	н	0.9	1.0		
F. Sediment/Shoreline Stabilization	н	1.0	1.0		
G. Production Export/Food Chain Support	н	0.9	1.0		
H. Groundwater Discharge/Recharge	н	1.0	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.6	8.0		
Percentage of Possible Score (actual points divided by possible points)	%	0.7			

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):

Category 1 Wetland: Must satisfy one of the following criteria; otherwise go to Category 2.

Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; or

____ Score of 0.9 or 1 functional point for Uniqueness; or

____ Score of 0.9 or 1 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

Score of 0.9 or 1 functional point for General Fish Support; or

X Percent of possible score \geq 70% (round to nearest whole number); or

Percent of possible score \geq 50% and 6th level hydrologic unit subregion has already experienced \geq 15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied and meets any one of the following criteria; otherwise go to Category 4. _____ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; or

- Score of 0.9 or 1 functional point for General Wildlife Support; or
- Score of 0.6 to 0.8 functional point for General Fish Support; or
- ____ Score of 0.8 functional point for Uniqueness; or

_____ Score 0.7 or 0.8 functional point for Water Storage and answer to Question 14D.ii. is "yes"; or

Percent of possible score \geq 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.

____ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied and all of the following criteria are met; if not, go to Category 3. Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); and

- Score of 0.5 or lower for Uniqueness; and
- General Wildlife Support is 0.4 or lower; and
- General Fish Support score is 0.3 or lower; and
- If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; and
- ____ Is not rated "High" for any function or service; and
- Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 3 4

Wetland Assessment Form Page 7 of 7



Appendix 5

Permittee Responsible Mitigation Figures

Areas 1 - 3







Stream

📢 Wetland

(At original document size of 8.5x11) 1:7,500 1 in = 625 ft





Tetlir

Client Peak Gold LLC Project Manh Choh Project Figure **PRM Project 2**

Figure Number

3









- 📢 Wetland
- 💕 Pond

900 Feet (At original document size of 8.5x11) 1:7,500 1 in = 625 ft

0



Perched Culvert at PRM Area 3


