# DRAFTTongass National Forest

# Water Quality Best Management Practices – Annual Monitoring Report

# Fiscal Year 2021

**Executive Summary**

This report summarizes water quality Best Management Practices (BMP) monitoring conducted on the Tongass National Forest in Fiscal Year 2021. This report is intended to: 1) document and share the results of BMP monitoring internally and with external partners, 2) provide adaptive feedback to program managers and project teams about what is working well and where improvements can be made in the future, and 3) to provide a basis for tracking BMP performance over time.

An emphasis is placed the actions identified to improve and maintain nonpoint source pollution control and the protection of water quality. Corrective actions respond directly to problems or deficiencies observed during evaluations. They may be either immediate or longer term, and usually apply specifically to the evaluation site. Adaptive management actions apply more broadly to changes in procedures to improve and maintain nonpoint source pollution control and the protection of water quality.

Water quality BMP’s were evaluated for a mix of projects and activities that occurred across the Forest. Evaluations considered BMP implementation, “did we do what we said we would do to protect water quality” and effectiveness “how well did it work.” Overall, most projects evaluated in FY 2021 were found to have BMP’s fully implemented and fully effective. Exceptions are described in this report along with associated corrective and adaptive management actions and their completion status (Table 1 and Table 2).

**Table 1.** FY21 list of corrective actions.

|  |  |  |
| --- | --- | --- |
| **Site** | **Actions** | **Status (Jan 2022)** |
|  | None identified |  |

**Table 2.** FY21 list of future adaptive management actions.

|  |  |  |
| --- | --- | --- |
| **Site** | **Actions** | **Status (Jan 2022)** |
| Hecla Greens Creek Mine | * Continue to investigate new approaches to mitigate fugitive dust.
* Dredge TDF settling ponds 7 and 10 on a routine annual or as needed basis.
 | * Feedback provided to program staff.
 |
| Sawmill Creek Campground | * Perform and document annual campground inspections.
* Include an erosion control plan in future work
* Incorporate a hydrologist into future recreation design when streams and drainage concerns exist.
* Submit updates to the corporate stream layer on FS lands.
 | * Feedback provided to program staff.
 |
| False Island AOP | * Record BMP implementation.
* If contract requires design modifications, ensure they are adequately re-designed and reviewed.
 | * Feedback provided to program staff.
 |
| Staney AOP | * Verify/validate AOP designs immediately prior to bid solicitation/agreement award.
* Carefully determine if project complexity necessitates contracting as compared to an agreement.
* Improve documentation of project oversight when agreements are used.
 | * Feedback provided to program staff.
 |

**Table 3.** Completed BMP reviews for FY 2021 & 2022 monitoring cycle. See Figure 1 for the site map.

|  |  |  |  |
| --- | --- | --- | --- |
| **Map ID** | **Site Name** | **Activity & Protocol** | **Ranger District** |
| **FY 2021** |
| 1 | Twin Creeks Spur Road Herbicide Treatments | Chemical Use A – Applied near waterbody | Petersburg |
| 2 | Hecla Greens Creek Mine | Minerals B – Active operations | Admiralty NM |
| 3 | Sawmill Creek Campground | Recreation A – Developed recreation operation and maintenance | Sitka |
| 4 | False Island AOP | Road B – Completed waterbody crossing | Sitka |
| 5 | Staney AOP | Road B – Completed waterbody crossing | Prince of Wales |
| 6 | Snakey Unit 70B | Vegetation B – Cable/aerial yarding | Prince of Wales |
| **FY 2022** |
|  | TBD | Aquatic Ecosystem | TBD |
|  | TBD | Facilities | TBD |
|  | TBD | Recreation | TBD |
|  | TBD | Roads | TBD |
|  | TBD | Vegetation | TBD |
|  | TBD | Water Uses | TBD |

\*Sites intentionally selected from Forest populations as compared to randomly selected following protocols for national BMP monitoring targets.

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TEMP PLACE HOLDER - Figure 2. BMP monitoring sites evaluated on the Tongass National Forest during fiscal year 2021. Site numbers correspond to Map ID’s listed in Table 3. Site coordinates are listed in appendix 1.

1. **Tongass NF BMP Program Information**

**Background:** Implementation of soil and water quality standards and guidelines is necessary to maintain soil productivity and water quality. The soil and water standards and guidelines are implemented as best management practices (BMPs) described in the Alaska Region Supplement to Forest Service Handbook 2509.22 and the National Core BMPs (National Best Management Practices for Water Quality Management on National Forest System Lands – FS-990a, April 2012).

**Forest Plan Goals:** Maintain soil productivity and minimize soil erosion from land-disturbing activities. Minimize sediment transported to streams from land-disturbing activities. Maintain and restore the biological, physical, and chemical integrity of Tongass National Forest waters. Minimize the destruction, loss, or degradation of wetlands, and preserve and enhance wetland functions and values.

**Forest Plan Objectives:** Attain State of Alaska Water Quality Standards.

**Soil and Water Forest Plan Monitoring Question:** Are the soil and water conservation practices as described through the best management practices and site-specific prescriptions implemented and effective in minimizing soil erosion and maintaining the State water quality standards? This question specifically addresses a requirement of the 2012 Planning Rule: “Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities” (36 CFR 219.12 (a)(5)vii).


# Evaluation Criteria and Methods: The Forest Plan describes the evaluation criteria as “compliance and implementation of BMPs and the State Water Quality Standards.” Properly implemented BMPs are the primary mechanism for meeting water quality standards from nonpoint pollution activities on the Tongass NF. BMPs are considered effective when field evaluations confirm that sediment or other pollutants have not moved off site or into water bodies.

BMP evaluations are conducted by interdisciplinary teams (ID Teams) following national protocols. At a minimum, ID Teams included a soil, water or fisheries specialists and field personnel responsible for implementing the BMPs. Other interested Forest Service personnel along with representatives from state and federal agencies and private industry are invited. The national protocols include standard data forms and instructions for site selection and evaluation. Forms are completed in the field and all findings are discussed before leaving the site. Completed forms are available on request.

# Monitoring and Reporting Targets: The national BMP program targets are accomplished over a two-year monitoring cycle, in which at least one site or activity per resource is randomly selected for evaluation. Evaluations are performed annually, and results are entered into the Forest Service corporate BMP database. A summary report is compiled annually to provide feedback and follow through on corrective and adaptive actions.

1. **Fiscal Year 2021 Evaluation Summaries**

**3.1 Twin Creeks Spur Road Herbicide Treatments – Chemical use near a waterbody**

**Table 4.** National BMP Program analysis scores.

|  |  |  |
| --- | --- | --- |
| Composite Rating | Implementation Rating | Effectiveness Rating |
| Good | Marginally implemented | Fully effective |

**Site Description:** Herbicide treatments (milestone) for the control of orange hawkweed (*Hieracium aurantiacum*) and oxeye daisy (*Leucanthemum vulgare*) were applied to sections of the Twin Creeks Spur Road, NFS Road 6212, on Mitkof Island, Petersburg Ranger District. A treated section was evaluated from the junction of NFS Road 6209 (Main Twin Creeks road) to the Twin Creeks bridge (MP 0.571), where several mapped fish and non-fish streams are crossed. Applications began in 2020, with year two of treatment performed on June 28th, 2021. Individual plants were sprayed at close range using a backpack sprayer and wand. The plants are easily identifiable, and the method of spray application limits the potential for unintended effects on adjacent broadleaf plants.

**Evaluation:** On September 23rd, 2021 IDT members walked the treated section of Road 6212. They observed individual plants sporadically along the length of road that were in immediate proximity (within 10ft) of flowing water and not treated, as well as individual plants in the treatable road prism. More plants existed in areas where flowing water (from streams or ditch-line) was adjacent to the road prism. Since it had been three months since spray application and many plants have taken on fall color, it was difficult to determine if the individual plants had been sprayed. The small size of plant was used as an indicator of previous spray and subsequent regrowth. In location, 4 plants had visible signs of herbicide spray (wilted flower stalk) with a healthy basal rosette which suggests that spray was not fully applied. No visible signature of the spray was observed on anything other than the target plants.

**Corrective Actions**

None identified

**Adaptive Management Actions**

None identified

**3.2 Hecla Greens Creek Mine – Minerals active operations**

**Table 5.** National BMP Program analysis scores.

|  |  |  |
| --- | --- | --- |
| Composite Rating | Implementation Rating | Effectiveness Rating |
| Excellent | Fully implemented | Fully effective |

**Site Description:** The Hecla Greens Creek Mine (HGCM) is an underground lead, zinc, silver, and gold mine located approximately 18 miles southwest of Juneau AK on northern Admiralty Island National Monument. Mine facilities are concentrated in three areas, the 920-mine portal and mill in upper Greens Creek watershed, the tailings dry stack facility and water treatment plant (TDF) at Tributary Creek, and the ore transfer and housing/administration complex at Hawk Inlet. They are connected by two primary access routes “A” Road from Stephens Passage ferry dock to Hawk Inlet, and “B” Road from Hawk Inlet to the TDF and 920 area. The initial EIS and ROD for the HGCM was published in 1983, followed shortly after by the first General Plan of Operations (GPO) approved by the Forest Service in 1984. Expansions to mine activities and changes to the GPO have prompted several additional NEPA decisions in 1988, 1992, 2003, 2013, and a pending North Extension Project expansion decision to the TDF in 2022.

Following national BMP monitoring protocol, *Mineral B – Active Non-Placer Mineral Operations*, IDT members identified a specific area to evaluate by selecting a single water body within or proximal to operational areas that the team believed to be most at risk from impacts to water quality. Approximately 30 acres along the TDF’s south perimeter, adjacent to the headwaters of Tributary Creek, were selected due to past and ongoing interest in Tributary Creek. This area included the primary TDF point of entry, interior “dirty road” exit wash station, dry tailings stacks, retention pond 7 and pond 10, and the water treatment facility among other infrastructure.

**Evaluation:** An IDT completed a project document review on August 17th, including NEPA documents with a focus on the 2003 Tailings Disposal EIS and the 2013 Tailings Disposal Facility Expansion EIS, the 2020 HGCM General Plan of Operations with a focus on *Appendix 5 BMP* *Plan* and *Appendix 3 Tailings Facility*, and recent USFS mine inspection reports. They concluded that BMP provisions included in the EIS documents were adequately represented in the GPO along with additional measures such as fugitive dust mitigation, and thus BMP provisions were fully implemented this operating season at the HGCM.

 On August 18th, an IDT conducted an onsite evaluation of the selected TDF southern area. They traversed the TDF’s south perimeter and walked down slope of the TDF (approximately 300ft) to the origin of Tributary Creek. The surface drainage network surrounding the dry tailings stacks and interior “dirty roads” was free of debris and appeared in good condition. No signs of impairment to wetland function or signs of seepage or leachates were observed in the Tributary Creek headwaters. The team toured the facility’s surface and ground water collection and monitoring system, which were fully functional, and observed no indications of seepage or leachates. HGCM Environmental staff noted a decreased capacity of Pond 7 due to sediment accumulation in the basin, which has never been dredged during its 14 years of operation. They outlined plans to dredge the pond this year, stating capacity should be improved by approximately 25%, and to continue doing so on an annual basis. HGCM uses a variety of BMP measures to mitigate against fugitive dust and manages a dust deposition monitoring program in the area surrounding the TDF. Conditions were wet and thus not dusty during the site visit, but dust fencing along the south perimeter adjacent to the main access road was in place and dust monitoring stations were observed throughout the facility. Several on-site weather stations were also present, which allow for monitoring wind conditions and managing activities accordingly. Overall BMP provisions outlined in NEPA documents and the GPO were found to be fully effective.

**Corrective Actions**

None identified

**Adaptive Management Actions**

* HGCM continues to investigate new ways to mitigate fugitive dust. They plan to continue monitoring and studying wind variability at the site and how to best adjust operations as to minimize fugitive dust.
* HGCM plans to dredge accumulated sediment in pond 7 to increase capacity. This has not been done over the 14-year life of the pond. HGCM intends to perform annually in the future.

**3.3 Sawmill Creek Campground – Developed recreation operation and maintenance**

**Table 6.** National BMP Program analysis scores.

|  |  |  |
| --- | --- | --- |
| Composite Rating | Implementation Rating | Effectiveness Rating |
| No Plan | No BMP’s | Not effective |

**Site Description:** The Sawmill Creek Campground is a recreation site on the Sitka Ranger District. A dispersed campsite as early as the mid-1940’s, it was designated a campground in the 1960’s and was recently upgraded to include an outhouse, electricity for the camp host site, and a day use area with a shelter. The area has day use, camping and includes a trailhead to the Beaver Lake trail network. It is accessed by a Forest Service system road that the City and Borough of Sitka uses for access to utility infrastructure adjacent to the recreation site. The City and Borough of Sitka maintains this road as a condition of their Blue Lake Dam FERC license under the terms of a Road Maintenance Agreement with the Forest Service.

The BMP evaluation considered an aquatic zone that included a reach (approximately 100ft) of Sawmill Creek, a transect along the edge of the rec site that lies adjacent to the creek, and the entire reach of an alluvial fan tributary stream that flows through the rec site to Sawmill Creek.

**Evaluation:** On August 20th an IDT completed a project document review followed by an on-site field evaluation. While a site-specific operation and maintenance plan does not exist for the recreation site, the document review revealed multiple guidance documents that include some consideration of soil and water BMP provisions. NEPA which was completed according to the FERC relicensing process included recreation site mitigation and improvements constructed in 2018 and 2019 to reduce erosion, improve drainage, and improve garbage and sanitary waste management. A maintenance agreement with the City of Sitka includes culvert and outhouse inspections. Site inspections were performed pre and post severe storm events in 2021, however no documentation of routine inspections was found. While the 2018/2019 contract did not include an erosion control plan, soil and water BMP’s were mentioned (minimize area of disturbance, incorporate tributary stream, consider drainage around and through site, etc).

During the onsite evaluation, BMP provisions were observed to be fully effective. No evidence of erosion or sedimentation was observed except for the alluvial fan tributary where some sediment had accumulated downstream of a culvert. Alluvial fan channels naturally transport sediment, and the lack of stream gradient through the constructed channel may hinder this process and could create long term maintenance issues to the rec site. A French drain installed post construction to the shelter due to runoff ponding issues was an effective adaptive solution. The outhouse was properly located away from the creek (more than 100ft) and elevated as to minimize the potential to contact groundwater. No evidence of trash or domestic animal waste was observed. No corrective actions were identified.

**Corrective Actions**

None identified

**Adaptive Management Actions**

* Perform and document annual inspections of the campground including drainage structures, infrastructure conditions, and tributary conditions through the site (including sedimentation and gradient of the alluvial fan channel).
* Include an erosion control plan and both fuel and chemical waste plans into any future construction work.
* Incorporate a hydrologist into future recreation design to ensure streams and drainage are adequately addressed.
* Submit updates to the corporate stream layer on FS lands (? Was this the AF trib channel?)

**3.4 False Island AOP – Completed waterbody crossing**

**Table 7.** National BMP Program analysis scores.

|  |  |  |
| --- | --- | --- |
| Composite Rating | Implementation Rating | Effectiveness Rating |
| Poor | Not implemented | Not effective |

**Site Description:** At mile post 6.787 the NFS Road 7540, a part of the remote False Island road system, crosses a Class II fish stream. The pre-replacement crossing structure was an 18” inch corrugated metal pipe (CMP), and its replacement was included in the Sitkoh Priority Watershed Fish Passage Remediation project. During a final field review of project sites, an additional Class II fish stream crossing (Rd 7540 MP 6.737) concern was identified. It posed a greater risk to aquatic resources and it was determined more advantageous to immediately address fish passage there. The 48” pipe originally intended for the MP 6.787 site was used there, and consequently left only a 36” pipe available for the MP 6.787 site. The two sites are connected by 200ft of road ditch, with flow direction from the inlet of MP 6.787 to the inlet of MP 6.737.

**Evaluation:** An IDT completed a project document review on August 20th. While no project-level NEPA was completed, BMP guidance was provided within the contract document and the Title 16 Concurrence documentation. While contract modifications to reflect changes in AOP design were not completed, due to limited time and schedule constraints, communication with the Forest Fish Program and the ADF&G biologist overseeing project concurrence clarified adjusted plans and approval was received from both. A site-specific erosion control plan was not completed for the project. While verbal confirmation was provided regarding BMP implementation and no problems occurring during construction, there is insufficient supporting documentation such as daily diaries, photos, fish passage project inspection checklist, or other evidence.

On August 25th the IDT conducted an on-site evaluation of the AOP project site. No evidence of erosion or sedimentation was observed. Diversion potential was identified, where overflow would be diverted down the ditch line approximately 200ft to the MP 6.737 crossing with the larger 48” CMP. A ditch block exists, however due to a small elevation difference between the ditch and road there is moderate concern that storm flows could push out of the ditch and across the road. The available 36” CMP used for the site was slightly too short as compared to designs. As a result, the structure was moderately unaligned with the approaching stream flow. Additionally, the outlet did not reach the existing stream channel thus a shallow channel was cut to connect the flow. While the low gradient of the cut channel poses little risk of erosion, it did not undergo processes of design or review that are typical of similar actions.

**Corrective Actions**

None identified

**Adaptive Management Actions**

* Record BMP implementation using daily diaries, photos, fish passage project inspection checklist, or other evidence to document correct and effective implementation.
* If contract requires design modification, ensure elements are adequately re-designed and reviewed to account for discharge, diversion potential, and sediment transport accordingly.

**3.5 Staney AOP – Completed road waterbody crossing**

**Table 8.** National BMP Program analysis scores.

|  |  |  |
| --- | --- | --- |
| Composite Rating | Implementation Rating | Effectiveness Rating |
| Excellent | Fully implemented | Fully effective |

**Site Description:** At mile post 0.586 the NFS Road 3012, also known as the Rio Beaver Road, crosses a moderate gradient mixed control (MM process group) anadromous stream. The pre-replacement crossing structure was a 24” corrugated metal pipe (CMP), with an aquatic organism passage rating of red for gradient and gray for constriction. The site was selected from the Big Thorne Stewardship contract to be replaced by an 81” x 59” x 40’ aluminized steel CMP arch and was implemented using a road project agreement with the Klawock Tribe. The poor hydraulic geometry of the pre-replacement structure was changed to improve approaching flow and a log bank was added on the downstream river right to mitigate lateral migration. A road grade of 3% approaches the crossing from the left for approximately 21’ and has approximately 190’ of road ditch that connects to the stream.

**Evaluation:** On September 7th an IDT completed a project document review followed by an on-site field evaluation. Project BMP provisions were found to be adequately included in the Big Thorne EIS, site specific erosion control plan and dewatering plan, ADF&G Title 16 Concurrence documentation, and the road project agreement. Daily Diaries are not required for agreements, however a fish passage project inspection checklist was completed and documented before and during construction. The addition of dates and details to elements noted in the checklist would help provide more clear information regarding the implementation and success of BMPs during construction. Site inspections and contract administration were performed during critical times. A few inconsistencies were identified between the Title 16 Concurrence documentation and the project agreement regarding required BMPs.

During the onsite evaluation, BMP provisions were observed to be fully effective. The crossing structure did not pose a risk of diversion potential. No evidence of erosion or sedimentation at the crossing or along its left approach were observed. Stream flow was too high to see the extent and contents of the structure in-fill during the evaluation. It was noted that during construction multiple high-water events occurred that made keeping the site dewatered very challenging and were more than channel bypass was able to maintain, resulting in some high water flowing around the bulk sacks/coffer dam. Yellow Fish Passage cards were missing from the site, originals were likely removed during construction activities, and it’s recommended that specialists to verify cards are in place upon project completion.

**Corrective Actions**

None identified

**Adaptive Management Actions**

* Verify/validate AOP replacement structure designs immediately prior to Replacement Bid Solicitation/Agreement award to ensure site conditions have not changed, requiring design adjustments. In this case, there is a concern that this replacement resulted in too small of a structure. Assumed this was primarily due to a flood event sometime between design and construction which caused some flow to shift from mainstem into this channel, resulting in increased stream flows at site. Pre-design photos show channel of much smaller dimension than current channel.
* Ensure contractor/partner have addressed how a 75% bankfull (Q2) flow will be addressed with bypass channel, as required in FSSS. Overall, goal is to avoid working in-stream during high flow event but at times, contractor/partner is not equipped with bypass structures/pipes necessary to convey a high flow event when construction is underway.
* Carefully weigh circumstances and sites which are most vs least conducive to construction under Agreements vs contracted. Complex sites may require a high level of specialized experience and equipment.
* Improve documentation of project oversight when Agreements are being utilized since Daily Diaries are not required, particularly noting site-specific erosion control measures applied (options laid out in EC Plan) and whether supplemental erosion control was needed and applied; whether and what corrective actions were needed and taken (dewatering adjustments included); and final acceptance of work beyond that noted in Agreement monitoring report provided by partner.

**3.6 Snakey Unit 70B – Vegetation management cable/aerial yarding**

**Table 9.** National BMP Program analysis scores.

|  |  |  |
| --- | --- | --- |
| Composite Rating | Implementation Rating | Effectiveness Rating |
| Excellent | Fully implemented | Fully effective |

**Site Description:** The Snakey Unit 70B is part of the Big Thorne EIS and is located along tributaries to the Thorne River on Prince of Wales Island. The Silvicultural prescription identified the unit stand as mature to over-mature with moderate stem decay and prescribed even-age management clearcut. Treatments occurred from August to October 2020. Buffered streams exist on three sides of the Unit, including one mainstem Class I stream and three Class I and three Class II tributaries. No stream crossings were required for temporary roads accessing the unit. The focus aquatic management zone (AMZ) selected for the evaluation is located on the western unit boundary and is associated to a MMS stream that changes to PAS part way along the unit boundary (noted as Stream 1 on unit card).

**Evaluation:** On August 3rd an IDT completed a project document review followed by an on-site field evaluation. Project BMP provisions were found to be adequately included in the Big Thorne EIS, unit card, change analysis, and stream course protection documentation. Project information was consistent and accurate throughout project documents. Inspection reports were well documented, performed at critical times, and showed that supplemental erosion control was needed and appropriately applied. The streams mapped in the area were not yet been incorporated into the Corporate GIS streams dataset.

During the onsite evaluation, BMP provisions were observed to be fully effective. Very little blowdown has occurred post-harvest in stream buffers. Operator did a good job of crossing the wet area in the unit, being careful to use wood/slash to travel on and then remove on way out. Success was due to preventative measures taken by contractor and sale administrator to protect water resources. Few small areas (<100 square feet) existed where operator could not fully operate on puncheon due to lack of material, and only one minor spot (< 100 square feet) was not covered with slash. Overall, operator did the best job he could with no corrective actions needed. The Sale Administrator noted that operator missed a few small hemlocks in far back of the unit, two of which had been felled into buffer. SA documented that these should have been pulled back into the unit but since shovel trails were pulled, the impact to soils from returning with shovel was a greater risk.

**Corrective Actions**

None identified

**Adaptive Management Actions**

None identified