United States Department of Agriculture

East Ohmer Creek Restoration

Environmental Assessment

Forest Service
Alaska Region

Tongass National Forest
Petersburg RangerDistrict

R10-MB-802

March 2016

East Ohmer Creek Restoration
Environmental Assessment

Lead Agency:	United States Forest Service Petersburg Ranger District
Responsible Official:	David Zimmerman Petersburg Ranger District PO Box 1328 Petersburg, AK. 99833
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Cover Photo: Streambank erosion and channel widening resulting from unstable banks within the project area.

United States Department of Agriculture
Forest Service
Tongass National Forest
Alaska Region

Petersburg Ranger District
P.O. Box 1328
Petersburg, AK 99833-1328
907-772-3871

File Code: 1950
Date: March 8, 2016

Dear Interested Individuals, Agencies, and Organizations:

The Forest Service, Tongass National Forest, Petersburg Ranger District, has prepared an Environmental Assessment (EA) for the East Ohmer Creek Restoration project. The proposed action would implement stream and floodplain restoration on approximately 0.2 miles of East Ohmer Creek and 0.4 miles of Lumpy Creek, a tributary of East Ohmer. Both are anadromous fish streams in the Ohmer Creek watershed on Mitkof Island near Petersburg, Alaska. Disturbance at this site began in 1959 and included timber harvest and the removal of stumps, gravel, and topsoil in support Mitkof Highway construction. These activities resulted in degraded habitat conditions in the streams and their floodplain.

The goals of this project include: improve stream habitat by stabilizing excessively eroding stream banks and creating pools through strategic wood placement; improve habitat quality within the floodplain through the addition of nurse logs to act as growth sites for conifers; and maintain previously constructed rearing ponds to ensure continued stream connectivity and improve fish cover.

As a result of the comments received during the July 2015 public scoping period, the following modifications were made to the proposed action:

- The number of trees proposed to be harvested for construction of in-stream structures has decreased from 130 to 110 (approximately 60 MBF (thousand board feet)).
- The proposed wood stockpile area was moved from the rockpit near the junction of roads FS6246 and FS6246 to the open portion of FS40100 nearer the project site.
- A new rearing pond will not be constructed; instead, related activities will focus on maintaining and improving cover within the rearing ponds previously constructed.
- The riparian area is no longer proposed for thinning due to ongoing poor soil and hydrologic conditions that would limit the benefit of such activity.

To review the Environmental Assessment visit the project page online: http://www.fs.usda.gov/project/?project=46654 or contact Heath Whitacre [(907) 772-3871 or hwhitacre@fs.fed.us] to request a copy in hard copy or CD format. To give you the opportunity to learn more about the project and comment on the alternatives being considered, we will have a 30-day comment period after this EA is released. Pursuant to 36 CFR 218.24(a)(l), a legal notice initiating this 30-day comment period for the East Ohmer Restoration project is expected to be published in the Petersburg Pilot, the newspaper of record for the Petersburg Ranger District on March 10, 2016. As the Responsible Official, I am seeking your input on the project proposal as presented in the EA. It would be most helpful if your comments are site-specific, detailed, and specific to the Proposed Action and No Action alternatives. Please provide the reason(s) why you are concerned or have suggestions. Individuals who submit specific, written comments

during any designated opportunity for public comment on this project will have standing to participate in the pre-decisional review and objection process. You may provide specific written comments to:

Heath Whitacre, Project Leader
USDA Forest Service, Tongass National Forest, Petersburg Ranger District
PO Box 1328
12 N. Nordic Drive
Petersburg, AK 99833
comments-alaska-tongass-petersburg@fs.fed.us
(please put "East Ohmer" in the subject line)

Comments can also be faxed (907-772-5995) or mailed to Heath Whitacre at the PO Box address above or hand-delivered to the street address.

We look forward to your participation. Your input and ideas will help ensure a successful project.

Sincerely,

for

DAVID ZIMMERMAN
District Ranger

cc: hwhitacre@fs.fed.us

SUMMARY TABLE

What action is proposed?	The proposed action is to: • Restore and stabilize anadromous and resident fish habitat by constructing approximately 15 large wood structures (logs, trees with rootwads attached) into the active stream channels of approximately 0.2 miles of East Ohmer Creek and up to 0.4 miles of Lumpy Creek using heavy equipment. Many of these structures would bolster structures placed in 2000; • Improve floodplain condition by adding large wood to the floodplain with an excavator or helicopter; • Create micro-sites within the floodplain for improved growth conditions by adding logs, whole trees with rootwads attached, rootwad stumps, and topsoil if available; • Harvest and stockpile approximately 110 trees, approximately 80 with rootwads attached to build instream structures; • Collect additional wood (slash, stumps, cull[1] pieces) from previously harvested timber units, local contractors, or private sources for placement within the floodplain; and • Construct temporary puncheon trails to access the restoration sites. Puncheon trails would be constructed using cull and small diameter trees to facilitate access by heavy equipment.
Why?	Current stream channel and floodplain condition along approximately 1.1 miles of East Ohmer Creek (0.2 miles) and Lumpy Creek (0.9 miles) is degraded as a result of floodplain tree harvest and excavation of floodplain gravels for road building during the construction of Mitkof Highway in the early 1960s. Stream and floodplain condition is expected to further degrade with time without project implementation. Current conditions include: • Unstable banks from previous harvest and gravel excavation resulting in high stream width to depth ratios (shallow, wide channels) and active channel braiding; • Lack of future wood recruitment from the floodplain to the streams resulting from floodplain timber harvest and continued active loss of small trees into the streams from excessively eroding banks; • Lack of geomorphic features within the floodplain from previous timber harvest and removal of stumps, as well as grading the floodplain flat following excavation activities; and • Trash within the floodplain including an old vehicle, fuel barrels, and miscellaneous litter.

	This project would improve stream habitat by stabilizing excessively eroding streambanks and creating pools through strategic wood placement. Habitat quality within the floodplain would improve through the addition of wood for flood resilience and to act as growth sites for conifers.
What other action would meet the same need?	None
What would it mean not to meet the need?	Poor floodplain condition would continue into the foreseeable future due to a lack of structure in the form of natural geomorphic features and lack of large wood in the floodplain. The excessively eroding streambanks would continue to result in poor habitat conditions typified by wide, shallow channels lacking deep pools and quality spawning or rearing habitat. The current lack of floodplain wood would continue to limit the natural progression of riparian forest growth and extend the timeframe of recovery of this area by decades and potentially millennia. The streams would continue to have limited fisheries value.
What factors will be used when making the decision?	This environmental assessment does not identify any significant environmental consequences from the proposed action. Any adverse environmental consequences of the proposed action are compared to the benefit of improved habitat conditions in the streams and floodplain.
Are there any ways to mitigate adverse effects?	The primary method for reducing adverse effects is by implementing specific design criteria included in the proposed action, and applying best management practices prior to and during project implementation.
What monitoring is required?	Tongass National Forest Tier II stream habitat surveys would be conducted before implementation, then repeated 1 year and 3 years after project implementation. Photo points would be gathered before and after implementation. Permanent cross-sections would be established for long-term monitoring of channel dimensions in site-specific locations. Monitor and treat reed canarygrass and creeping buttercup populations following Forest Service protocols prior to restoration and a minimum of three years post-implementation. EDRR directives shall be followed.

[1] Cull wood is considered trees that are/were less than one-third sound (capable of producing lumber) and is therefore not utilized in a current or previous timber sale. This wood is often decked onsite at the harvest unit.

INTRODUCTION

The Petersburg Ranger District prepared this environmental assessment (EA) to determine whether effects of the East Ohmer Creek Restoration project may be significant. No significant effects were determined through this analysis. The results are summarized in the finding of no significant impact (FONSI); therefore an environmental impact statement is not needed. For this project, the Responsible Official is District Ranger David Zimmerman.

The Petersburg Ranger District of the Tongass National Forest proposes implementing instream and riparian restoration on approximately 0.2 miles of East Ohmer Creek and up to 0.4 miles of Lumpy Creek, a medium-sized tributary to East Ohmer. These streams support populations of pink salmon (*Oncorhynchus gorbuscha*), chum salmon (*O. keta*), coho salmon (O. *kitsuch*), steelhead (*O. mykiss*), coastal cutthroat trout (*O. clarki clarki*), and Dolly Varden char (*Salvolinus malma*).

LOCATION

The East Ohmer Creek Restoration project area is located on Mitkof Island, which is situated between the mainland to the east and Kupreanof Island to the west, approximately 140 miles south of Juneau, Alaska. East Ohmer and Lumpy Creeks are approximately 21 miles south of Petersburg, Alaska along Mitkof Highway (Figure 1). The project area includes the instream and floodplain restoration area, and the wood collection area (Figure 2). The instream portion of the project is located within the 2,876 acre Upper Ohmer Creek watershed, which is nested within the larger 8,375 acre 6th HUC Ohmer Creek – Frontal Blind Slough watershed. This area is managed according to prescriptions defined for the Old Growth Reserve Land Use Designation (LUD) in the Forest Plan (USDA Forest Service 2008).

Wood collection would occur west of Woodpecker Cove, within a 4,088 acre 7th HUC watershed nested within the larger Woodpecker Cove – Frontal Sumner Strait watershed. This area is managed according to prescriptions for a Scenic Viewshed LUD (USDA Forest Service 2008). Approximately 1.1 miles of stream channel, 0.6 of which is proposed for restoration, as well as approximately 20 acres of floodplain occur within the project area (Figure 1).

WOOD COLLECTION

The wood necessary to complete this project includes whole trees with rootwads still attached, cut logs, and cull wood (slash, pieces left on the ground at previously harvested timber units). An area of approximately 7 acres located 12.0 miles west from the junction of FS road 6245 and Mitkof Highway (Table 1; Figure 2) has been identified as the source for the required wood harvest. Approximately 110 trees equivalent to approximately 60 MBF (thousand board feet) is anticipated for the project (Figure 2).

The wood collection area is located adjacent to stands harvested from 1989-1993 and is bound by a rockpit to the northeast. Trees within this area are predominantly high-defect

hemlock not harvested when the stands were originally cut. A 2-acre gap would be created by harvesting the majority of the whole trees and cut logs within the area depicted by crosshatching in Figure 2. The remainder of the trees needed for the project would be harvested using a single-tree selection prescription, up to the total needed.

Whole trees would be harvested according to guidelines established for similar projects in which excavators are used to push targeted trees over in order to maintain the rootwad (Landwehr 2009). Trees with rootwads still attached have many benefits when used for instream restoration, primarily by increasing structure stability, but also result in improved pool formation, cover, and bank stability due to the greater surface area provided by the root fan.

If alternative wood sources become available through local contractors, state or private timber sales, or private individuals these options would be considered in lieu of harvesting the wood within the planned harvest area (Figure 2). Similarly, if wood becomes available through unpredictable, stochastic events such as landslides or natural blowdown, the wood would be considered for this project. In such cases, the goals and objectives for the particular Land Use Designation (LUD) in which the wood is located would be met, the Forest Plan Standards and Guidelines for resource protection would be applied, and the Project Design Features (see section below) for wood collection activities would be implemented.

Table 1. Anticipated location of wood collection and temporary storage areas for the East Ohmer Creek Restoration project

Watershed HUC# / Name	LUD	Wood Description	Location
19010210120304 / Woodpecker Cove - Frontal Sumner Strait	Scenic Viewshed	Whole Tree / Cut Logs	12.0 miles along FS road 6245
19010210120203 / Ohmer Creek - Frontal Blind Slough	Modified Landscape	Temporary wood storage area	Perpendicular to the road surface on FS road 40010 near the restoration site

Figure 1. East Ohmer Creek Restoration Project Area

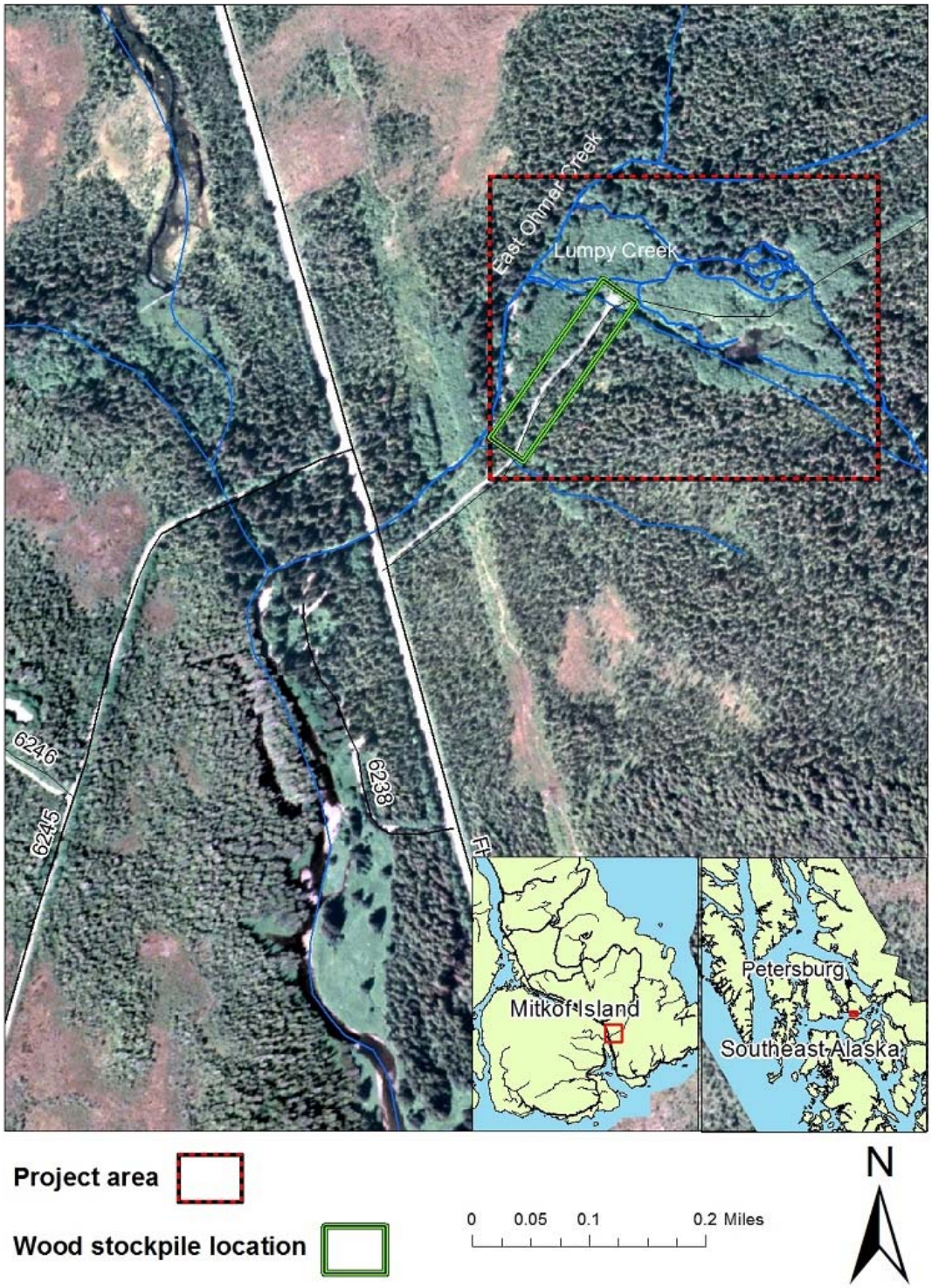
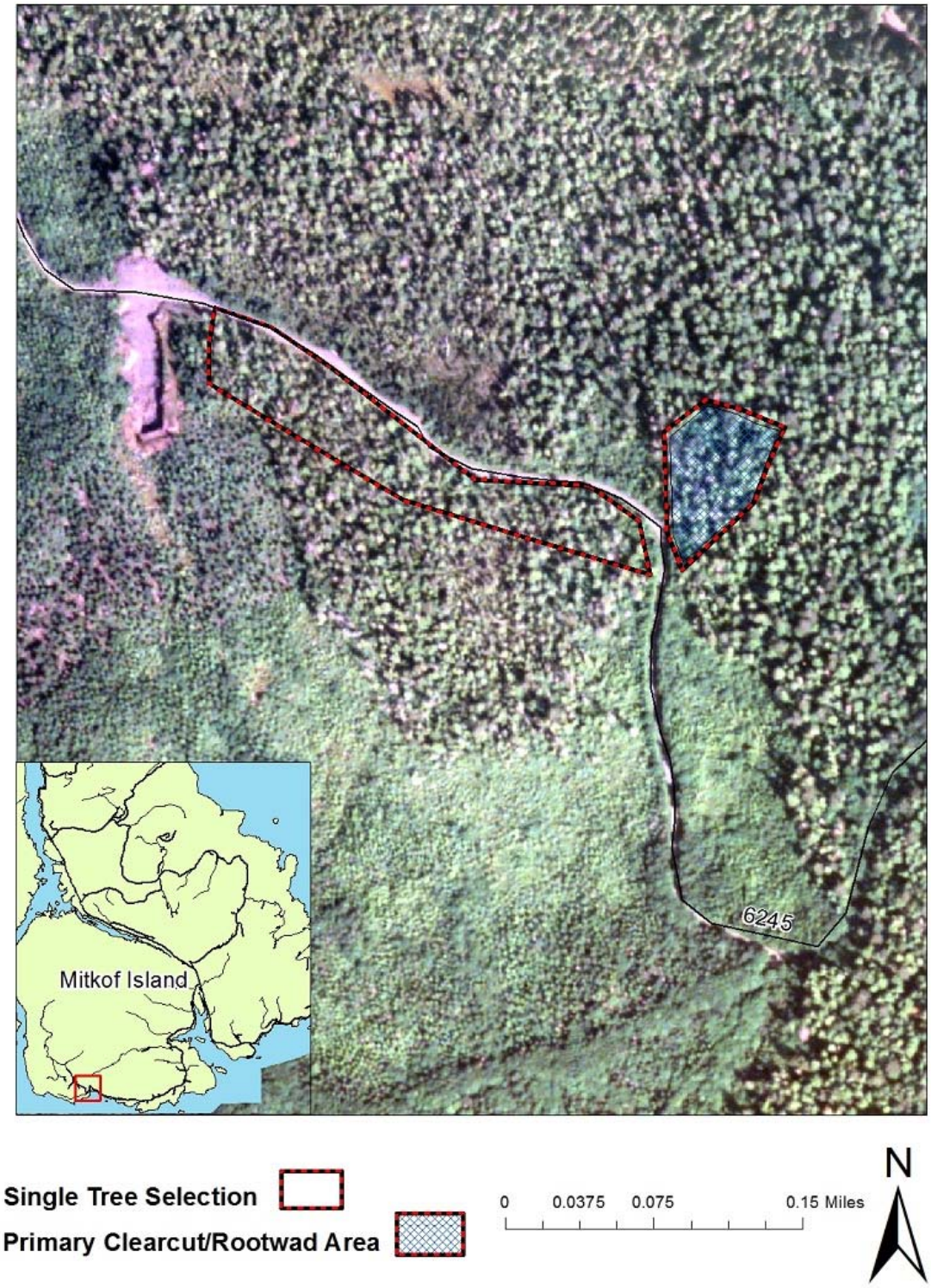


Figure 2. East Ohmer Creek Restoration Wood Collection Area



NEED FOR THE PROPOSAL

The riparian areas of a number of streams on Mitkof Island were harvested in the 1960s, 1970s, and 1980s, prior to the 1990 Tongass Timber Reform Act (TTRA), which subsequently provided stream buffer protection for all fish-bearing streams. A recent Watershed Condition Framework (WCF) score of 1.4 (on a scale from 1 to 3) indicates the Ohmer Creek watershed is "functioning properly" (USDA Forest Service 2015). Nested within that score, however, the watershed received a rating of "fair" for riparian/wetland vegetation condition, aquatic habitat condition, and road and trail condition. Lower scores in riparian vegetation and aquatic habitat are a result of previous harvest within the riparian area. Approximately 22 percent of the watershed has been harvested, with approximately 21 percent of the available riparian area harvested (Table 2). While no harvest has occurred within this watershed since 1986, previous disturbance within the 20-acre project area has resulted in ongoing degraded habitat conditions.

The watershed assessments leading to the WCF score help the Tongass National Forest select "priority" watersheds to focus watershed-scale restoration (USDA Forest Service2011). However, specific stream restoration sites are found both within and outside of these watersheds. The East Ohmer Creek restoration project is not located in a Tongass "priority" watershed. Regardless, it is a small-scale project with a demonstrated restoration need as described below.

Table 2. Summary of timber harvest within project area watersheds

6th HUC Watershed	7th HUC Watershed	Watershed Size (acres)	Total Harvested (% watershed)	Total Harvested since 1986 (% watershed)	Riparian Harvest (% total watershed)
Ohmer Creek-Frontal Blind Slough	19010210120203	3,990	9.7	3.7	2.2
	19010210120205	1,509	13.6	2.3	2.0
	Upper Ohmer Creek[1]	2,876	22.3	0	21.2
Woodpecker Cove-Frontal Sumner Straight	19010210120304	4,092	10.8	2.4	0.3

[1] Upper Ohmer Creek is one of three 7th HUC watersheds within the larger Ohmer Creek – Frontal Blind Slough watershed, and the location of the restoration sites.

Background

Previous disturbance at this site included timber harvest and removal of stumps and topsoil in the floodplain and alluvial fan from approximately 1959-1960. Streamside trees along the East Ohmer Creek restoration reach were extracted via the stream corridor, resulting in a lack of large wood throughout this reach. Gravel and sand were excavated from the project area in

support of construction of Mitkof Highway, primarily from the alluvial fan created by Lumpy Creek, but also in lower portions of the floodplain below the fan. Most of the excavated area on the alluvial fan is characterized by steep-banked pits, old access roads, and channels created by recent surface flow, while the majority of the lower floodplain was graded flat after the gravel was removed. Following gravel extraction the soils on the site consist of a thin layer of sand (less than 20 centimeters) over dense glacial till. In 1986, Forest Service (FS) road 40010 was constructed through the area to access a timber unit on the hillslope to the northeast. These activities resulted in a lack of large, key pieces of wood in the stream channels and floodplain, limited natural recruitment of large wood from the floodplain due to tree harvest and diminished soil productivity, and altered the natural hydrology and flood regime of the site due to the loss of excavated floodplain topsoil, gravels, and sand.

Tongass National Forest Tier II stream habitat surveys indicate lower scores for several key measures of habitat quality when compared to Tongass reference standards for similar channels (Table 3). Habitat attributes including pool metrics, number of large, key pieces of wood, and channel width-to-depth ratio are strong indicators of aquatic habitat condition. The legacy of previous activities on these streams and their floodplain resulted in a lack of pool area and complexity, bank erosion, channel widening, altered hydrology, and degraded floodplain condition. The trajectory of habitat quality is declining in the restoration reaches due to past activities and would continue to decline without project implementation.

Table 3. Tier II habitat results compared to Tongass standards for one of three surveys within the restoration reaches. All surveys had overall ratings of "Fair"

Habitat Attribute[1]	Percentiles for Tongass Standards			EOhmer_R1 Results	Site Percentile	Rating
	25	50	75			
WD	18.5	20.2	32.8	46	75-100	Fair
TLWD/M	0.31	0.37	0.5	0.52	75-100	Excellent
TKWD/M	0.06	0.11	0.15	0.01	0-25	Fair
POOLS/KM	30	40	60	26	0-25	Fair
POOL SPACE	1.3	1.8	2.2	2.7	75-100	Fair
RPD/CBW	0.04	0.04	0.05	0.03	0-25	Fair
D50	15	19	34	45.3	75-100	Fair
PLNGTH/M	0.38	0.54	0.7	0.56	50-75	Good
REL_SUBMRG	26.5	36.9	49.4	8.2	0-25	Fair
POOL_SIZE	0.68	0.84	0.94	1.07	75-100	Excellent

[1] WD = Channel width to depth ratio; TLWD/M = Total large woody debris pieces > 1m long and 0.1 m wide, TKWD/M = Total key woody pieces >3m long x 0.3 m wide, POOLS/KM = # Pools / kilometer, POOL SPACE = pool spacing, RPD/CBW = Ratio of residual pool depth to channel bed width; D50 = Median substrate particle size; PLNGTH/M = Pool length per meter; REL_SUBMRG = Relative submergence of bed particles; POOL_SIZE = Pool size.

Soil productivity is severely altered in the areas where topsoil removal and gravel extraction occurred. The removal of topsoil also removed most of the nutrients available for plant growth. Red alder and Sitka spruce currently occupy the site, but both species are small in

height and diameter when compared to other young-growth stands on floodplain soils where gravel extraction did not occur. Adjacent undisturbed floodplain soils have a thicker organic mat over well-developed soils, whereas the duff layer in the disturbed area is thin and overlies poorly developed soils or sand over dense glacial till. The combination of poorly developed soils over poorly drained glacial till (water table near the surface) has resulted in inhibited growth of floodplain conifers. An estimated 1 to 3 meters of soil was removed from the site. The deeper removals occurred in the alluvial fan area where cobble accumulation would have been thicker.

Murphy and Koski (1989) estimated that on logged Southeast Alaska streams similar to the streams in this project, instream large wood densities would decrease by more than 70 percent within 90 years and would not recover for more than 250 years. The abundance of salmonid species is often closely linked to the abundance of woody debris, particularly during winter when deep pools created by the wood protect fish when ice forms (Hicks et al. 1991). Strategic placement of engineered large wood structures would maintain and restore instream habitat through pool creation, stabilized eroding banks, and improved floodplain condition. Organic matter in the form of nurse logs and topsoil is needed to fully restore the area where gravels were excavated and dense till remains. However, the quantities of topsoil required to replace what was removed is beyond the scope of this project. Instead, addition of large wood to the floodplain would provide structure to help dampen high flow events and provide nurse logs for future conifer recruitment.

The benefits of large wood are well-established. Large wood helps stabilize and regulate the storage and routing of sediment, particulate organic matter and nutrients; improves water quality by stabilizing streambanks; dampens high flow events by providing structure within the floodplain; regulates water temperature by increasing residence time and exchange with hyporheic flow (surface/groundwater mixing); creates deep pools thereby maintaining rearing and overwintering habitats fish use for cover and overwintering; and increases the biotic diversity of a system by serving as substrate for aquatic insect production (Bryant 1983; Bilby 1984; Bilby and Ward 1989; Murphy and Meehan 1991; Jones et al. 2014). Restoration projects which add large wood to streams have shown improved physical habitat characteristics such as favorable changes in substrate, increased pools, cover and habitat complexity (Carah et al. 2014; Roni et al. 2015). Additionally, most studies on the response of salmonids to wood additions have shown an increase in fish numbers following wood placement (Roni et al. 2015). Other studies have shown increases in overwintering rearing capacity for juvenile Coho, and that breeding site selection is strongly influenced by proximity to pool-tail crests and deeper water (Clark et al. 2014; Jones et al. 2014; Roni and Quinn 2001; Roni et al. 2015).

A restoration project implemented in 2000 improved habitat condition within the project area by adding wood structures to both streams, as well as excavating two rearing ponds near the confluence of East Ohmer and Lumpy Creeks. This project would maintain and improve many of the structures built in the past by placing additional wood for habitat complexity and structural integrity, as well as building new structures to improve instream habitat and floodplain condition. This project focuses on restoring processes that improve watershed function and long-term health, and is consistent with management direction for the Old Growth Reserve LUD in which it is located to “Emphasize the protection and restoration of fish habitat, fish production, and aquatic biodiversity” (USDA Forest Service 2008).

Implementation of this project could coincide with timber harvest activities on Mitkof Island in order to benefit from harvesting equipment and a supply of cull material not harvested from a potential timber sale. A helicopter, for example, could be used to transport and stage wood at the restoration site immediately prior to implementation more efficiently. However, the project design is also flexible enough to be implemented without a helicopter, independent of timber sale activities.

DESCRIPTION OF ALTERNATIVES

Alternative 1 – No Action

Under the No Action alternative, current management activities would continue to guide the management of the project area. No trees would be harvested for the remediation of the project area, structures would not be installed in the stream channels, large wood would not be placed within the floodplain, and rearing ponds would not be maintained. Forest Service road 40010 would remain closed until needed for management of the young-growth stand to the northeast, at which time it would be reconstructed.

Alternative 2 - Proposed Action

Alternative 2 proposes the following activities:

- Harvest and stockpile approximately 110 trees for use in restoring portions of two streams and their floodplain (Figure 3). Wood would include cut logs and whole trees with rootwads attached. The majority of the wood would be considered high defect, low value hemlock and would be sourced from a roadside location approximately 12.0 miles from Mitkof Highway on FS road 6425, past Woodpecker Cove (Figure 2). These trees would be stockpiled prior to implementation along the open portion of FS road 40010 near the project site (Figure 1). Whole trees would be harvested according to guidelines established for similar projects (Landwehr 2009). Trees intended for stream placement would be sound and free of rot to maximize longevity. Road maintenance commensurate with impacts from wood collection activities would occur as part of the wood collection contract.
- Collect additional wood from previously harvested timber unit cull/slash piles, local contractors, or private sources for placement within the floodplain. The amount of floodplain wood would depend on locating pieces sound enough to be transported safely by helicopter, should one become available, once stockpiled near the restoration site. The volume of wood to be added to the floodplain would be a fraction of the volume removed originally, and would be limited by availability and funding.
- Construct temporary puncheon trails to access the instream restoration sites by removing a small number of young-growth conifer and alder trees, and placing these trees in front of a machine to minimize soil disturbance. These trails would be wide enough to accommodate the tracks of an excavator and facilitate the transport of cut trees and rootwads needed for the project (approximately 30 feet wide). An estimated 0.6 acres is expected to be “cleared” during creation of these access puncheon trails. Trees and other native material along the access route would be used as puncheon to

minimize potential damage to the floodplain resulting from excavator passage (Figure 3). Puncheon trails would be rehabilitated, with puncheon material decompacted and scattered once instream structures are placed and access is no longer needed. No rocked roads would be constructed for this project.

- Restore and stabilize anadromous and resident fish habitat by building structures using the stockpiled wood in the active channels of approximately 0.2 miles of East Ohmer Creek and up to 0.4 miles of Lumpy Creek (Figure 3). Approximately 15 structures would be built; 9 in East Fork Ohmer Creek and 6 in Lumpy Creek. The purpose of the structures would vary by site, but includes pool creation, bank stabilization, and improved channel width-to-depth ratio compared to reference conditions. No cable, rebar, or cement would be used in the construction of structures.
- Improve floodplain condition by adding logs, whole trees with rootwads attached, or rootwad stumps, to the floodplain. A helicopter may be used for staging wood in close proximity to restoration sites and for these floodplain placements if possible. Helicopter use would minimize site disturbance. If a helicopter is unavailable, the wood would be placed using heavy equipment, with floodplain placements being limited to areas immediately adjacent to the instream sites or to areas along existing or planned access routes. The wood would improve resilience during flood events by providing structure in the floodplain, and would provide a stable growing medium for conifers. The wood would act as nurse logs and improve resilience during flood events by providing structure in the floodplain.
- Improve floodplain condition by mounding topsoil in specific areas disturbed by activities and outside of areas prone to flooding. Mounds would be created by placing topsoil over logs, stumps, and rootwads. The topsoil would help restore soil productivity by providing an elevated surface with deeper rooting substrate and nutrients to sites that currently have dense till close to the soil surface. Soil would only be sourced opportunistically and may originate from road maintenance or construction activities, previous overburden sites, or private contractors. All sources would be required to be weed-free.
- Reduce soil compaction via subsoiling (shallow trenches) to help restore productivity to the site. This activity would only occur on or adjacent to equipment access trails.
- Create micro-sites for conifer growth through additions of rootwad stumps and puncheon (slash) material in portions of the floodplain used to access stream sites.
- Maintain two previously-constructed rearing ponds by providing additional cover in the form of whole trees and tree tops, as well as reestablishing flow connection on one of the ponds.
- Remove a substantial amount of trash including logging cables, rusted out 55 gallon drums, a junked truck, and miscellaneous debris currently on the site. All trash accessible from equipment access trails or transportable by hand would be hauled to a landfill.

This alternative would restore degraded stream habitat by stabilizing streambanks, increasing pool area and complexity through placements of large wood, would improve rearing habitat through maintenance of two previously-excavated ponds, and improve floodplain condition, soil productivity, and stability through placements of wood. An excavator would be used to implement the proposed actions, and would be procured through contracting.

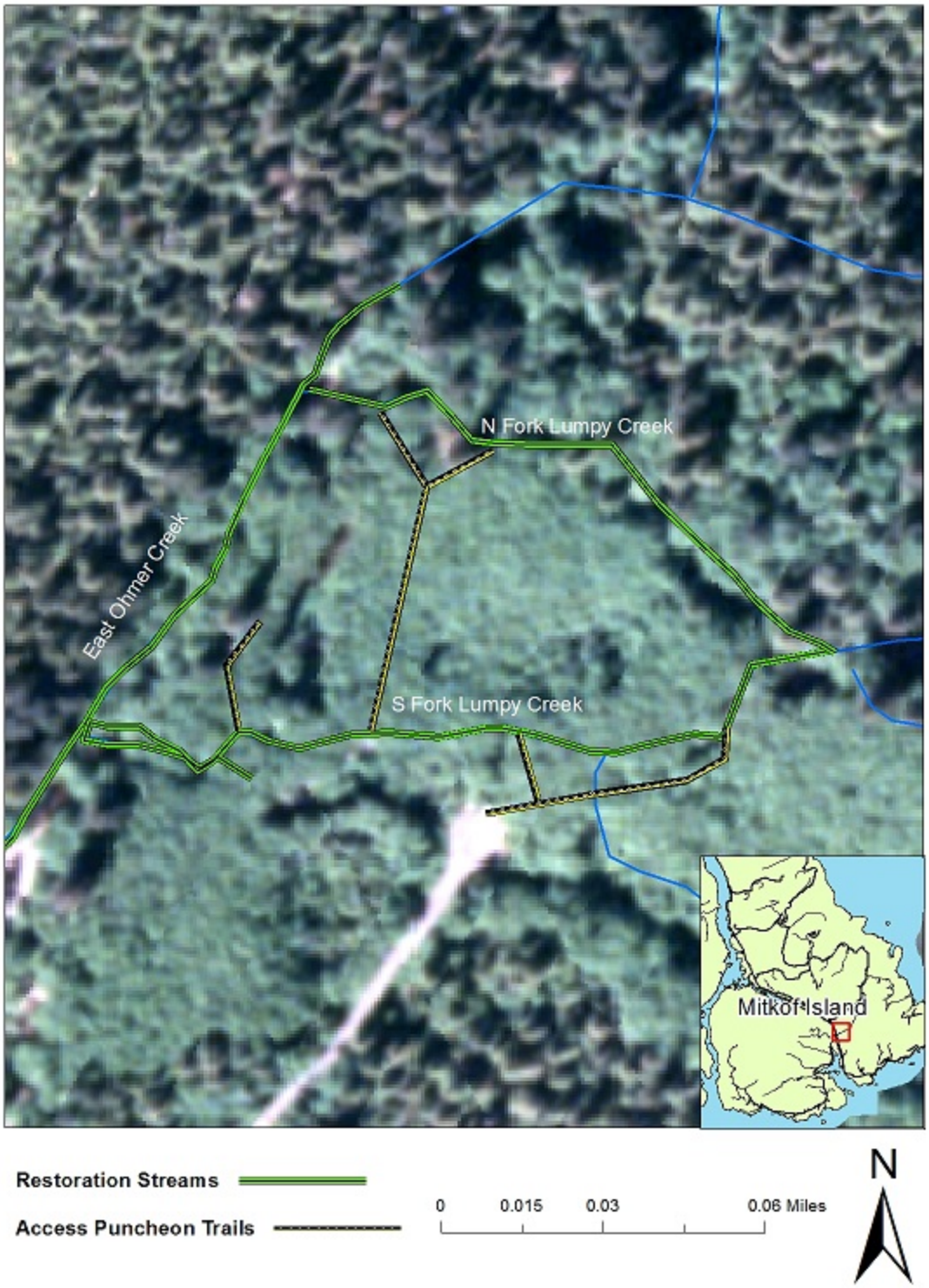
ALTERNATIVES CONSIDERED BUT NOT ANALYZED

The upper portion of Lumpy Creek flows from a canyon which naturally constricts the channel. When the stream emerges from the canyon it dissipates its energy across an alluvial fan. These dynamic landforms are crossed and formed by streams, which over time occupy many positions on the fan surface. An alternative considering stream and floodplain restoration in all portions of the project area, including the alluvial fan was considered but not selected. The previous excavation of gravel, sand, and cobble in support of Mitkof Highway construction resulted in steep-banked pits in the upper portions of the alluvial fan. Recent evidence indicates a new channel being formed upstream of these areas, terminating in a beaver pond complex to the north. Consideration was given to building large wood structures designed to trap sediment and route flows back to the original channel during times of high flows. However, the size, number, and cost of the structures required to achieve this goal along the steepened landform was considered too high when weighed with a lower probability of long-term success resulting from the legacy of past activities combined with the dynamic nature of the alluvial fan. This alternative would have required sourcing approximately 350 trees and importing large quantities of topsoil to replace topsoil excavated in support of Mitkof Highway construction.

For these reasons, active restoration of 0.5 miles of the portion of Lumpy Creek flowing through the alluvial fan was eliminated from consideration in the proposed action.

Similarly, thinning trees within the riparian area was originally included in the proposed action as part of the overall restoration strategy. Thinning previously harvested riparian areas to speed the growth of large conifers is a common treatment under “normal” conditions. However, the additional removal of stumps, topsoil and gravel within the floodplain in the project area resulted in soil and hydrologic conditions that are not conducive to a beneficial response to thinning. Most of the soils within the floodplain are no longer capable of supporting the growth of large trees. While thinning might benefit individual trees growing on productive microsites, a stand-level riparian treatment would likely be ineffective and has therefore been removed from consideration as a restoration treatment.

Figure 3. East Ohmer Creek Restoration Streams



Time and Duration of Activity

The work is anticipated to occur during the summer of 2017. This project would potentially be completed in phases, depending on the acquisition of the required wood for the project, channel development and response on the alluvial fan, partner involvement, and budget considerations. Once begun, the project as described in the proposed action could be completed within a 1 month timeframe. If the work is phased into subsequent years, each phase would be completed in less than 1 month. Work windows for the instream portion would be developed in consultation with the Alaska Department of Fish & Game (ADFG), Title 16 Memorandum of Understanding.

Project Design Features

The following project design features would help prevent potential effects of the proposed work:

1. A pre-work meeting with contractors would be conducted to review key project design features.
2. Wood harvest activities would adhere to standards and guidelines for maintaining the scenic integrity objectives within the Scenic Viewshed LUD in which the cut logs and rootwad trees would be harvested. (USDA Forest Service 2008). Rootwad trees would be harvested according to guidelines established during similar restoration projects on Harris River, 12-Mile Creek and Gandlaay Haanaa (formerly Fubar Creek) on Prince of Wales Island, West Fork Saginaw Creek, South Fork Kadake Creek, and Josie Creek on Kuiu Island, and Sitkoh River near Sitka, Alaska (Landwehr 2009). All harvest locations would be rehabilitated with slash following tree removal.
3. Within the wood collection area, no trees would be sourced within 100 feet of fish-bearing streams. Trees may be removed for access and to construct the restoration sites within 100 feet of East Ohmer and Lumpy Creeks as described below. Riparian areas and streams would be identified and protected according to their associated management objectives (BMP 12.6; 13.16; National BMP AqEco-4). No streams were identified in the wood sourcing area. Crossing streams while sourcing wood for the stockpile is not anticipated.
4. Oil pollution prevention and contingencies would be in place. Equipment would be fueled a minimum of 150 feet from an active stream channel. Detailed equipment refueling plans would be considered prior to work commencement (BMP 12.8; 12.9; National BMP Road-10).
5. Equipment access trails used during the project would be closed upon project completion and would be covered in slash to minimize erosion and soil compaction in areas where equipment operates, or where mineral soils are exposed to encourage natural regeneration (BMP 12.17; National BMP # Road-2). No roads would be constructed for this project.
6. Areas of bare ground resulting from construction activities where slash is not available, and all disturbed waterways would be replanted with salmonberry (*Rubus spectabilis*) and willow (*Salix sitchensis*) cuttings. Replant salmonberry throughout

the floodplain in the spring prior to budburst. Consider other options for revegetation using local seed sources. (BMP 12.17; National BMP Veg-2).

7. Subsoiling (shallow trenching) would only be used in areas where the risk of intercepting subsurface flow is minimal.
8. Petroleum-based hydraulic fluid in heavy equipment is replaced with vegetable–based hydraulic fluid to protect water quality in the event of a spill. Spill containment kit would be kept on site (BMPs 12.8; 12.9; National BMP AqEco-2; Road-3).
9. In-channel construction activities are subject to fish timing windows and would be determined in consultation with the Alaska Department of Fish and Game, Habitat Division as per the Title 16 Memorandum of Understanding (BMPs 14.6, 18.3; National BMP AqEco-2; Road-3).
10. Equipment use in live streams would be kept to a minimum. To the extent possible, equipment would be limited to puncheon trail surfaces and gravel bars, only accessing the active flow channel when necessary to perform detailed site-specific construction (BMPs 14.6, 14.14; 18.3; National BMP AqEco-2; Road-3).
11. Equipment would not be stored, maintained or repaired within the stream channel or floodplain (BMP 14.14; National BMP Road-9; Fac-2).
12. Where feasible or advisable, active flow channel work sites would be dewatered. Fish would be removed from the dewatering area prior to dewatering of the site (BMP 14.15).
13. An erosion/sediment control plan would be created prior to project construction as part of the construction contract. Erosion control devices such as silt fence would be used to protect water ways from sediment impacts (BMP 14.5; National BMP AqEco-2).
14. All equipment would be cleaned prior to being brought on site to reduce the potential for invasive plant introduction (BMP 14.14; National BMP Fac-7). During implementation, ensure that clothing, footwear, materials, equipment and tools used in the project area are free of invasive plants (BMP Veg 8).
15. Areas suitable for staging construction materials and equipment would be identified on site prior to implementation (BMP 12.8; 14.14; National BMP Fac-2).
16. If heritage resources are discovered during construction, all construction must cease and a Forest Service archeologist must be notified.
17. All trash accessible from equipment access trails or transportable by hand would be removed to a landfill.
18. If previously undiscovered sensitive or rare plants are encountered prior to or during implementation, protect the population and avoid disturbance in the area containing the population (and similar habitats in that vicinity). Notify a Forest Service Botanist/Ecologist immediately to evaluate the population and recommend further avoidance or mitigation measures.
19. Rootwads and rootwad trees would be harvested from a weed free site.
20. Significantly control reed canarygrass and creeping buttercup populations along the access road and old roadbed within the project area prior to restoration activities.
21. Thoroughly evaluate topsoil if imported from outside the project area to ensure the source is weed-free.
22. Consider implementing restoration activities from June to early July to minimize the potential for transporting viable invasive seed sources to the restoration site.

Furthermore, a Forest Service fisheries technician, fisheries biologist, or hydrologist would be on-site during the implementation of the proposed activities. These individuals would inspect and monitor construction activities to ensure proper implementation and take appropriate action to reduce or eliminate negative effects to resources.

Environmental Impacts of the No Action and Proposed Action Alternative

Fisheries

Alternative 1 - No Action

Direct and Indirect Effects

The No Action alternative would result in a continued lack of pool area and complexity, continued bank erosion/avulsion, channel widening, streambed incision, altered hydrology, and degraded floodplain condition. The trajectory of fish spawning habitat quality, while minimal through the restoration reach is anticipated to continue to decline as a result of poor channel and floodplain condition. Rearing habitat within the previously excavated ponds is expected to remain intact in the larger of the two, but habitat in the smaller pond is expected to diminish due to the loss of flow connection at lower water levels from siltation of the excavated channel.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Adverse effects to fish and aquatic organisms including turbidity and disturbance from machinery are expected to be short in duration (hours to days) and below lethal levels. The impact to the overall populations is expected to be negligible. It is possible this project may result in individual fish being crushed by heavy equipment. The more likely short-term outcome is individuals being displaced temporarily. This project is not expected to affect overall populations due to construction activities being confined to a discrete portion of the stream network (~2.3 percent of known fish streams in the watershed), the short timeframe of instream activities, and timing the instream work to minimize disruption to fish.

Beneficial direct effects of this project include improved fish habitat through increased quantity and quality of pools, improved cover, improved bank stability, and maintenance of rearing habitat. Indirectly, improved physical habitat (pools) would benefit rearing and resting salmonids during overwintering and migration by providing cover, improved forage efficiency, and thermal refugia during times of low water and high temperatures. Implementation would occur at an appropriate time after fry and smolt emigration and before adult migration, in accordance with agreed upon fish timing windows through the Alaska Department of Fish and Game Title 16 Concurrence Memorandum of Understanding. The USFS would also obtain the required U.S. Army Corps of Engineers permits as appropriate, and continue EFH consultations with NOAA Fisheries for the instream portion of the project.

Cumulative Effects

The analysis area for cumulative effects includes the two watersheds in which project activities occur, as described above.

Alternative 1

The floodplain would continue to recover over the course of hundreds/thousands of years. Eventually, soils will recover enough to support large trees which will be available for natural recruitment to the stream, but this will also occur on a similar, prolonged time scale. The stream environment through the restoration reaches will eventually stabilize into a new "dynamic equilibrium," but most likely habitat will be simplified through these sections compared to streams of the same channel type. The restoration reaches are short enough that fish populations are unlikely to be negatively affected on a watershed scale.

Alternative 2

While the loss of individual fish is possible during implementation, this loss would have negligible effect to overall fish populations. Impacts related to the wood collection portion of the project are expected to be minimal, and would not affect fish streams. Potential effects to fish are minimized through mitigation measures and project design features discussed above. No long-term negative cumulative effects are expected with implementation of the proposed action.

Cumulatively, the effects of the proposed action are expected to be beneficial for fisheries resources as a result of long-term, stable pools and improved stability of the floodplain and streambanks. Benefits to adult and juvenile salmonids from the addition of large wood are well documented and result from the improvements discussed above.

Harvest of trees in support of this project is minimal and would occur according to Tongass riparian buffer standards and guidelines, ensuring buffer protection for streams. No fish streams have been identified within the proposed harvest area.

Hydrology

Alternative 1 - No Action

Direct and Indirect Effects

The No Action alternative would result in a continued lack of pool area and complexity, continued bank erosion/channel avulsion, channel widening, streambed incision, altered hydrology, and degraded floodplain condition. The trajectory of habitat quality is currently declining in the floodplain and many portions of these streams and would continue to decline without project implementation.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Aquatic resources are the most likely to be affected by the instream restoration portion of the project. The proposed action would result in the short-term (1 month to 1 year) adverse effects to water resources in the form of sedimentation and substrate disturbance caused by heavy equipment transiting puncheon trails, crossing the streams and operating on the banks

during stream structure excavation and placement. Fine particles could remain in suspension for a short distance downstream for a limited time period, dissipating with time and distance. Based on monitoring conducted for similar restoration projects on the Tongass (Prussian 2007), short-term turbidity pulses exceeding the State water quality criteria of 5 NTUs above natural conditions are expected for a short period after cessation of stream channel disturbance. In the referenced study, the initial flush of turbidity occurred following the diversion of water back into the channel following 3 weeks of instream work in dry conditions, however turbidity decreased by 87 percent in 3 hours and 96 percent in 15 hours.

Placement of large wood and creation of micro-sites within the floodplain would also cause short-term, adverse effects through disturbance of soils. The proposed activities would improve resilience to high flow events through increased structure, provide a growth medium for future conifer recruitment, and would speed the rate of recovery of the floodplain in the long term.

Cumulative Effects

The analysis area for cumulative effects includes the Upper Ohmer Creek watershed and the #19010210120304 7th HUC watershed as described under "Location" above and in Table 2.

Alternative 1

The floodplain would continue to recover over the course of centuries. On streams and floodplains such as those in the project area where wood has been removed, hydrologic equilibrium is out of balance and aquatic habitat is either degraded or rapidly deteriorates. The removal of large wood and subsequent excavation of floodplain sand, gravel, and cobbles has initiated a cascading and connected series of hydrologic events which is leading to long term aquatic habitat and floodplain degradation within the instream project area. Large trees will continue to be affected by poor growing sites due to poor soil conditions and lack of woody (or other) floodplain structure providing microsites for growth. Stream habitat conditions along these relatively short reaches would continue to deteriorate due primarily to a lack of streambank stability resulting from the loss of wood.

Alternative 2

Alternative 2 is expected to have long-term, beneficial cumulative effects to the restoration reaches. Beneficial effects would be expected in sediment transport and metering improvements, pool development, pool frequency and quality, improved streambank stability, and width-to-depth ratio reduction. These habitat improvements are expected to benefit fish as described above under "Fisheries."

The potential negative effects of this project to water quality (turbidity) and physical stream habitat (sedimentation) during the construction phase would be short-term in duration (hours to days), and are not expected to have long-term negative cumulative consequences.

Cumulative harvest effects related to the wood collection portion of the project are expected to be minimal within the affected watersheds. An area of approximately 7 acres would provide approximately 110 trees for the project, whereas typical stocking rates for old-growth timber in this area range from 100-150 trees per acre (Parks, personal communication). The majority of the trees within this area would therefore be retained.

Cumulative harvest levels would increase 0.2 percent in the Woodpecker Cove-Frontal Sumner Strait watershed with Alternative 2 (Table 4).

Old-growth tree harvest associated with this project would not occur in the Ohmer Creek – Frontal Blind Slough watershed where the proposed restoration streams are located. The effect of removing a small number of young-growth conifer and alder trees along the access routes to the streams (approximately 0.6 acres) does not appreciably add to cumulative harvest levels in this watershed. Use of these trees for puncheon material would help minimize the potential effects of excavator passage through the floodplain (see "Project Design Features" for description).

Previous and planned harvest levels within these watersheds were considered and cumulative harvest levels are summarized in Table 4. The 2015 Mitkof Island EA proposed a maximum of 11.5 percent of this watershed to be harvested under Alternative 2 of that document (2.5 percent in Upper Ohmer Creek Watershed). The Mitkof Island EA project has since been retracted and is therefore not reflected below in Table 4.

Table 4. Summary of wood collection under Alternative 2 as it effects cumulative harvest levels

6th HUC Watershed	7th HUC Watershed	Total % Watershed Harvested	Total % Harvested since 1986	Foreseeable Future Harvest (% watershed)	Alternative 2 Cumulative Harvest (% increase)
Ohmer Creek-Frontal Blind Slough	Upper Ohmer Creek	22.3	0.0	0.0	0.0
Woodpecker Cove-Frontal Sumner Straight	19010210120304	10.8	2.4	1.0	0.2

The impacts of the proposed activities are not expected to be significant nor result in long-term degradation of water quality, alter water quantity, nor affect any beneficial use of the water. The effects are expected to be short in duration and would be mitigated by following Forest Plan standards and guidelines, BMPs, and project design criteria incorporated into contract design. The proposed activities are covered under Nationwide Permit #27 pertaining to Section 404 of the Clean Water Act. Implementing the proposed action is expected to improve the long-term cumulative condition of stream and floodplain habitat within the watershed.

Soils

Alternative 1 - No Action

Direct and Indirect Effects

Soils on the site are in a degraded condition. Topsoil, including duff layers and woody detritus has been removed from the site. The productivity of the site is much less than sites on similar landscape positions where the topsoil has not been removed. One to 3 meters of sands, gravels and topsoil were removed. That soil allowed hyporheic flows of water through the sands and gravels, and the soils supported a productive floodplain and alluvial fan forest. Currently, hyporheic flow is severely limited through the dense till and water flows over the till rather than through it.

Under Alternative 1, soils would remain in a degraded condition. Natural recovery would require centuries if not millennia of sediment deposition from upstream areas. Hyporheic flows across the floodplain and alluvial fan would continue to be impaired.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The addition of large woody debris and topsoil would help the site recover more quickly, but there would still be many areas in a severely degraded condition. The woody debris and topsoil/rootwad areas would be nutrient hotspots and if the topsoil piles are well drained, they would support larger trees than the severely disturbed areas. Hyporheic flow would not be restored unless stabilized sands and gravels are brought to the site and floodplain connectivity restored. Alternative 2 as currently designed would not fully restore floodplain soil function. It would supply elevated microsites on the floodplain where conifer growth would not be inhibited by a dense till substrate. An engineered floodplain soil over the 20 acres of severely disturbed soils is outside the scope of this project.

Subsoiling of the dense till would loosen the soil and allow root and water penetration. However subsoiling may have an undesired effect of creating preferential flow paths in the soil and scour could occur during flood events, in essence creating new stream channels. Therefore subsoiling should only be used in areas where the risk of intercepting subsurface flow is minimal.

Alternative 2 proposed to use wood from a seven acre roadside stand near Woodpecker Cove. The stand is mostly within 200 feet of the 6245 road, but yarding distance ranges up to 450 feet in one corner. Soils on the site are mostly well drained and support a western hemlock dominated stand. A one acre area within the stand is on poorly and somewhat poorly drained soils. The well drained soils are suitable for root-wad harvest. The more poorly drained areas of the stand are better suited for log only harvest.

Rootwad harvest can severely displace nutrient rich duff layers and upper soil horizons, negatively affecting soil productivity at the site. Rootwad harvest guidelines (Landwehr 2009) were written to minimize effects to soils and maintain soil productivity. Initial monitoring of rootwad harvest areas indicates that soil quality standards and tree stocking requirements are met but growth of trees and other vegetation is likely slower than on adjacent conventional shovel yard sites (Foss 2015). Monitoring is ongoing, and it will be

several years before more definitive results (regarding plant growth and community composition) can be obtained. The effect of the rootwad removal would depend on how much topsoil, duff and slash is left on the site and how the topsoil, duff and slash is distributed across the site. Given the use of the rootwad harvest guidelines, relatively short yarding distances, gentle slopes, and avoidance or rootwad harvest on poorly or somewhat poorly drained soils, the effects to soils at the Woodpecker Cove rootwad harvest area are expected to be within soil quality standards.

Cumulative Effects

The analysis area for cumulative effects is the affected floodplain and alluvial fan. Impacts to soils are site specific and off-site effects from soil impacts (other than sedimentation) do not occur. Sedimentation is discussed in the hydrology section. The timeframe used is the estimated recovery times for soils under the various alternatives. Past activities are discussed in the affected environment section. There are no reasonably foreseeable activities associated within the analysis area for soils.

Alternative 1

Under Alternative 1 the soils would slowly recover. The soils are supporting vegetation and as that vegetation advances, dies and decays soil productivity would slowly be improved. Hyporheic function across the severely disturbed area would take millennia or more to recover to pre-disturbance conditions.

Alternative 2

Under the proposed action (Alternative 2) the changes in the stream may allow more water to access the degraded soils on the floodplain and alluvial fan. Because the soils on the floodplain consist of dense till near the surface more water on the floodplain may cause more flooding and wetland development and /or scour and erosion. Therefore care should be taken to prevent re-routing water to already wet areas of the floodplain. The creation of nurse log microsites and soil mound (topsoil or rootwad additions) would provide a rooting and growing medium that should be capable of supporting large conifers. Large conifers would help restore floodplain vegetation productivity and provide large woody debris that can add habitat complexity to the floodplain and streams.

Wetlands

The analysis area for wetlands includes the floodplain and alluvial fan area where activities are proposed at the confluence of Ohmer and Lumpy Creeks and the wood harvest area near Woodpecker Cove.

About 1 acre of forested wetland on a poorly drained organic soil exists in the wood harvest area adjacent to the 6245 road. The wetland is forested near the road and grades into a non-forested type north of the road. More forested wetland occurs south of the proposed harvest area. The forested wetland supports a hemlock and cedar-dominated stand.

Alternative 1 – No Action

Direct and Indirect Effects

No wood harvest is proposed, therefore no wetlands would be affected.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The wetland is suitable for stem only harvest and the effects to the wetland would be minor as long as slash is used to support the equipment removing the logs. Timber harvest on many similar areas of wetland has resulted in minimal impacts to the wetland soils and hydrology and regeneration and growth is expected to be rapid, albeit slower than on well-drained sites.

Cumulative Effects

The analysis area for cumulative effects includes the wetlands in the vicinity of the proposed activities. A 15-year foreseeable future is the time boundary for the analysis.

Past activities have impacted the wetland near the proposed wood harvest area. The 6245 road has altered soil hydrology in the area causing a flush of woody vegetation (shore pine) north of the road. Given the low hydraulic conductivity of the organic soils in the wetland, the vegetation indicators, and the results of at least one road and soil water study on nearby Wrangell Island (Kahklen and Moll 1999) effects on soil hydrology are limited to within a few meters of the road. There is little evidence of a change in soil hydrology in the wetland area proposed for wood harvest.

Although the Decision Notice (DN) for the Mitkof Island Environmental Assessment (EA), approving 28.5 MMBF of timber harvest on about 4,117 acres was retracted in 2015, a similar project may be proposed in the future. Under the 2015 Mitkof DN, no timber harvest was planned within the wetland where wood harvest is proposed for this project.

The construction of the 6245 road changed the soil hydrology within a few meters of the road, including in the wetland where wood harvest is proposed in Alternative 2. The road improved soil drainage slightly. The area is still a forested wetland, but the area near the road is slightly dryer than before the road was built. The East Ohmer Creek Restoration Project proposes to harvest logs from this wetland using conventional shovel yard methods. The effects are described above. The area will remain wetland into the foreseeable future. The harvest would remove wood from about 1 acre of a 5-acre forested wetland. A similar undisturbed 26-acre forested wetland lies just north of the road.

Botany

Potential effects are analyzed for the proposed project, stream channel and floodplain work as well as the harvest of source wood, to threatened, endangered, sensitive (TES), and rare plants. Additionally, the risk of spreading invasive species, or leading to the establishment of invasive species, is evaluated with respect to the proposed project activities. The area of analysis for the direct and indirect effects to populations of sensitive and rare plants is the project area. Mitkof Island is the area of analysis for cumulative effects.

No rare or sensitive plant species were documented within the project area. Only one species, the lichen *Lobaria amplissima* is found in the vicinity of the project area. There is no suitable habitat within the project area, however. See Botany Resource Report and the Botany Biological Evaluation (BE) in the project record for additional information.

Alternative 1 - No Action

Direct and Indirect Effects

No ground disturbing activities would occur; therefore, there would be no direct effects. Indirectly, the no action alternative could contribute to the continued spread of non-native plants (reed canarygrass and creeping buttercup are currently present). These invasive plant species could out-compete native vegetation over time, further slowing down the recovery of the system to a natural state and impacting sensitive and rare plant habitat.

Alternative 2 - Proposed Action

Direct and Indirect Effects

The habitat is marginal for the occurrence of sensitive and rare plants due to the level of disturbance. The soils are saturated (with the exception of berms paralleling Lumpy Creek), the alder canopy shades the understory, and the soils are shallow and poorly developed. In-stream, scouring of the riverbed and banks appears to occur regularly. The project area does have a fair amount of habitat variability: shallow ponds, creeks and streams, saturated red alder/skunk cabbage (*Lysichiton americanum*) floodplain, well-drained berms along the creek, Western hemlock (*Tsuga heterophylla*)/Blueberry (*Vaccinium*) forest, and an old logging road.

Plants and their respective habitats may be directly affected by installation of wood, thinning, felling trees, or associated activities. These effects could be adverse; however, given the disturbed nature of the restoration site, the effects could be positive in the long-term. The indirect impacts from changing hydrology or changing the light regime could again be either positive or negative. Any indirect effects related to the introduction of non-native plants would likely be negative.

Cumulative Effects

Alternative 1

The cumulative effect of doing nothing in this area could lead to invasive plants continuing to spread and alter habitat.

Alternative 2

The cumulative effects of the East Ohmer Creek restoration project upon the sensitive and rare plant species and their habitat is evaluated based on knowledge of plant biology, preferred habitat, and the proximity of plant populations to past, present and future activities on Mitkof Island. Habitat on the Tongass is protected to some degree through Forest Plan wetland, riparian and beach standards and guidelines, as well as in non-development land use designations and old-growth reserves. Past management activities have likely had an effect on some populations; however, due to the low likelihood of sensitive/rare plant presence, the proposed action is not expected to contribute significantly to overall success of populations in the long term.

For sensitive and rare plant species, the project may adversely impact individuals, but is not likely to result in a loss of viability in the Tongass or cause a trend toward federal listing (FSM 2672.42.2005). The likelihood of sensitive or rare species occurring in the project area

is low. Moreover, the habitat is highly degraded, so the installation of woody material in the floodplain may improve sensitive and rare plant habitat.

Invasive Plants

The risk of spreading invasive species, or leading to the establishment of invasive species, is evaluated with respect to the proposed project activities. The area of analysis for the direct and indirect effects to populations of sensitive and rare plants is the project area. Mitkof Island is the area of analysis for cumulative effects.

See the Invasive Plant Risk Assessment in the project record for additional information.

Alternative 1 - No Action

Direct and Indirect Effects

The present conditions provide an opening for steady colonization by invasive plants. Creeping buttercup (*Ranunculus repens*) is currently spreading via stoloniferous clones along the old logging road, and reed canarygrass (*Phalaris arundinaceae*) is moving in to the pond habitat from FS Road 601400. No action would indirectly allow for the spread of these non-native plants.

Alternative 2 - Proposed Action

Direct and Indirect Effects

The proposed action would contribute directly, as well as indirectly, to the spread of invasive plants as the seed source is already present. Increased foot and vehicular traffic, disturbed soil, a change in light regime, and a change in hydrology would all contribute to the colonization by plants. The already disturbed habitat from historical logging activities increases the likelihood of infestation.

The establishment and spread of invasive plants would depend on the implementation and success of the project design features for this project. The overall risk is high if the current reed canarygrass and creeping buttercup populations are left alone. Opening the canopy would benefit both the reed canarygrass and the creeping buttercup, both of which are present on site. With no project design features in place to control invasives, reed canarygrass is likely to spread within the understory in the floodplain, along the pond edge, and on the old road bed – essentially anywhere within the project area that has an open canopy allowing sunlight to reach the ground. Creeping buttercup would likely continue to spread vegetatively on the drier sites that have partial sun exposure.

The overall risk of invasive plants spreading as a result of the project is low to moderate if project design features are followed. The direct and indirect effects do not change; however, removing seed source and vegetative material from the site prior to restoration, as well as ensuring that tools and equipment are weed free, would greatly decrease the chance that the

non-native plants spread beyond where currently established.

Cumulative Effects

Alternative 1

No action would allow for the spread of reed canarygrass and creeping buttercup. The cumulative effect would be an increased potential for dispersal on Mitkof Island.

Alternative 2

Recreation and subsistence use would continue within the project area. If project design features are not implemented, the project would likely contribute to the spread of invasive plants on Mitkof Island. The proposed design features would serve to decrease the spread of invasive plants locally.

Wildlife

The full wildlife report is incorporated by reference into this EA and additional descriptions of wildlife species that may occur in the project area and their habitat requirements can be found in the wildlife report in the planning record (East Ohmer Creek Restoration Project Record, Petersburg Ranger District).

The analysis area for direct, indirect and cumulative effects is Wildlife Analysis Area (WAA) 2007. This area encompasses all project activities and also overlaps the Mitkof Island EA (MIA) project area. All of the effects for this project would occur within VCU 4520.

The majority of trees used for this project are expected to come from the area with the highest volume class (i.e., SD5S-Volume Class 5). Based on a stocking rate of 100 – 150 trees per acre for productive old growth (POG), removal of 110 trees would reduce POG by 2 acres in the project area. Wildlife models were not applied to this analysis because at the spatial scale analyzed (WAA 2007), the removal of 2 acres of POG would be unmeasurable. Analyses are qualitative rather than quantitative; however, maximum effect to wildlife habitat would be the removal of 110 trees (2 acres of POG) from the identified wood collection area.

Alternative 1 - No Action

Direct and Indirect Effects

The No Action alternative would result in no additional direct or indirect effects beyond the existing condition because no ground disturbing activities or habitat changes would occur. No additional old- or young-growth habitat would be affected.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Direct and indirect effects of the proposed action would include both detrimental and beneficial effects. Detrimental effects would include the following:

- Short term disturbance to wildlife from presence of humans during restoration activities;

- Reduction or redistribution of large woody debris that may provide nesting, denning, or foraging habitat for some wildlife species such as marten;
- Reduction in old growth habitat where mature old growth trees are removed for instream treatments.

Beneficial effects would include the following:

- Increased understory forage associated with young growth harvest; and,
- Improved or maintained stream habitat which may ensure productivity for fish that serve as prey species for predators such as wolves and bears.

There would be no effect for Threatened or Endangered species, no impact for most sensitive species (*excluding* goshawks), and negligible to minor impacts to Management Indicator Species because one or more of the following conditions have been met:

- The species does not regularly occur in the analysis area; or,
- The species is restricted to marine environments, which would not be affected by the proposed activities; or,
- The species habitat(s) would not be affected to the degree that population changes would be likely.

Due to potential human disturbance at undocumented nest sites, this project may impact individual goshawks but is not likely to cause a trend to federal listing or a loss of viability. For more detail on species, their habitats, how they would be affected and the rationale behind effects determinations, please see the Biological Evaluation and associated wildlife resource reports in the planning record.

Cumulative Effects

Mitkof Island is among the most heavily harvested Islands on the Tongass National Forest. The same high level of harvest that has led to the need for instream treatment to improve or maintain fish habitat has also reduced wildlife habitat capability for species associated with old growth forest in the uplands.

The MIA project proposes harvest of both old-growth and young-growth forest in WAA 2007 (i.e., Mitkof Island) (USDA Forest Service 2015). There is no overlap between the wood collection area proposed for the East Ohmer Creek Restoration project and old-growth and young-growth harvest units in the MIA.

While roughly 18 percent (14,561 acres) of the original POG in WAA 2007 has been harvested, the MIA project proposes to harvest an additional 843 acres of POG from this WAA, further reducing the percent original POG remaining by roughly 2 percent. High Volume POG and High Volume POG below 800 feet have been highly reduced in abundance in this area, and are proposed under the MIA project to be reduced to 62 percent and 56 percent of their original (circa 1954) acres, respectively (USDA Forest Service 2015).

Cumulative effects include impacts from possible future timber harvest both on federal and non-federal lands on Mitkof Island. Additional reduction of POG would reduce habitat, and thus would have negative effects to old growth dependent species. Impacts would be localized and would not impact the viability of old growth dependent species on the Tongass.

Management activities considered in the cumulative effects determinations for wildlife in association with the MIA project can be found in the Biological Evaluation and Fish and Wildlife Resource Report in the MIA planning record.

Alternative 1

This alternative would not contribute to cumulative effects on wildlife resources in the analysis area because no disturbance activities would occur as a result of this alternative.

Alternative 2

Activities proposed in the East Ohmer Creek Restoration project would include minimal harvest of live, standing old growth trees (~ 2 acres POG), resulting in a small reduction in habitat quality for species that rely on old-growth. This minimal harvest would not contribute measurably (i.e., ≤ .01 percent) to cumulative effects associated with old-growth harvest as described in the MIA project. Using old-growth trees for instream treatments may contribute to a reduction in mature forest stands, or structural changes to these stands. Depending on the configuration of harvest, these structural changes may benefit wildlife. Instream wood treatments should benefit wildlife through improved or maintained fish habitat and populations of fish prey species for wildlife.

Timber

Alternative 1 - No Action

Direct and Indirect Effects

No timber would be harvested to provide large wood for this project.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The wood collection area is proposed to provide a source of material for the Ohmer Creek restoration project (Figure 2). Live green trees of low value, high defect, with and without rootwads attached would be selected. Trees used in the East Ohmer Creek / Lumpy Creek restoration project would be selected not for their commercial value, but for their value to provide woody material towards the formation of instream structures.

The wood collection area is within a Scenic Viewshed LUD, making this area suitable for development activity. This area consists of low value defective, predominantly Western hemlock with minor amounts of defective or dead Alaska yellow-cedar. For this reason, the proposed wood collection area is suited for providing the needed woody material, while minimizing the impact to the commercial timber base.

The amount of volume and acres of trees needed for this project is estimated about 60 Gross MBF (thousand board feet). This assumes 110 trees with an average diameter of 24 inches and a total height of 100 feet. The proposed wood collection area is about 7 acres. Of these 7 acres, a 2-acre opening would be created where most of the harvested trees with rootwads attached would originate.

The remaining 5 acres are located adjacent to existing FS road 6245. Individual trees would be selected, as needed, along an estimated 1,400 foot segment south/southwest of the road.

Wood would be transported by truck along existing Forest Service and State of Alaska roads to the restoration project site, where it would be temporarily decked along FS road 40010 until construction of instream structures begins.

Cumulative Effects

Cumulative effects include impacts of past, present, and reasonably foreseeable future activities in the vicinity where wood sourcing would occur. Foreseeable future actions that could affect forest resources include pre-commercial thinning in the adjacent young-growth stands as well as old-growth timber harvest from small sale activity nearby.

The continued development and treatment of existing young-growth combined with new harvest from future timber sales and existing old-growth stands would create a matrix of shifting forest conditions within the wood sourcing area and vicinity. This matrix would be composed of newly regenerating young-growth stands; young-growth stands moving into and progressing through the stem exclusion phase; young-growth stands outside of suitable timber lands that will begin to move into the understory re-initiation phase of development; and, ultimately, old-growth forest conditions. The cumulative effect of these conditions create a forested condition with a variety of stand structures of mixed tree species capable of providing a variety of habitat conditions within the project area.

The proposed wood sourcing area includes acres that were not considered commercially viable for timber production when past logging occurred nearby between the late 1980s to early 90s and to date no microsale harvest activity has occurred within the proposed area.

The Mitkof Island EA with Finding of No Significant Impact (FONSI) was signed March 9, 2015 and approved the harvest of an estimated 28.5 MMBF of timber on about 4,117 acres across Mitkof Island. After agency review, the EA, DN and FONSI were retracted. Future timber sales, however could be planned in the vicinity at a later date and under new direction. The Woodpecker Environmental Impact Statement (EIS) with Record of Decision (ROD), signed December 24, 2002, cleared about 5.4 MMBF within 400 acres. Additional harvest of dead and down trees was cleared under the Mitkof Microsales Categorical Exclusion, signed September 27, 2010.

Past, present and reasonably foreseeable future small sales generated from the Woodpecker EIS can be found in the project record (Mitkof Island Catalog of Thinning, Small Sales and Salvage by VCU and the Mitkof Island Catalog of Timber Harvest by VCU).

Alternative 1

No timber would be harvested to provide large wood for this project; therefore, this alternative would not cumulatively effect timber resources within the analysis area.

Alternative 2

The harvest of low value high defect trees from two acres and individual tree removal along 5 acres of existing road 6245 is considered negligible to the commercial timber base and not expected to have a significant effect. Further mitigation to the impact to the timber base would be achieved through consultation with foresters and the silviculturist to identify low value defective trees at the time of harvest.

Silviculture

Alternative 1 - No Action

Direct and Indirect Effects

Under Alternative 1, no new timber harvesting would occur. There would be no direct, or indirect effects to forest structure, forest health and productivity, and timber volume production under this alternative.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Stands within the wood collection area consist primarily of high-defect Western hemlock with minor amounts of defective or dead Alaska yellow-cedar. Nearby young-growth stands were harvested from 1989 to 1993, and are predominantly Sitka spruce mixed with Western hemlock and Alaska yellow-cedar. Direct effects of the proposed action include harvesting approximately 110 trees, singly and in one group up to 2 acres in size, thus reducing the stand's volume in the short-term by approximately 60 MBF. By targeting decadent low volume hemlock for removal, the percentage of spruce in the stand would increase, and forest health would improve by opening up growing space for younger more vigorous trees. The impact to future timber sale volume in the area would be minimal.

Cumulative Effects

Cumulative effects of past, present, and reasonably foreseeable future activities were assessed for stands within the two watersheds where project activities occur (see "Location"). The proposed harvest area is located within a Scenic Viewshed LUD, which allows harvest activities consistent with those proposed (USDA Forest Service 2008).

Large-scale industrial logging began in the project area in 1954 and started with a clearcut along the beach in the south end of the Wrangell Narrows. This was followed by more clearcuts along the beach and the construction of logging roads in 1962. There has been approximately 13,000 acres of timber harvested since 1909 on Mitkof Island, approximately 500 acres of which was within the Woodpecker Cove – Frontal Sumner Strait watershed. Past and present activities in this watershed include harvest cleared in the Woodpecker EIS and ROD, harvest of dead and down trees cleared under the Mitkof Microsales CE, and pre-commercial thinning activities in young-growth stands.

Foreseeable future activities that affect the Silviculture resource include pre-commercial thinning in the adjacent young-growth stands and old-growth timber harvest from small sale activity near the wood collection source area (Figure 2). The 2015 Mitkof Island EA approved harvest of approximately 28.5 MMBF of timber on about 4,117 acres on Mitkof Island. The Mitkof Island decision was since retracted, but future timber sales may be planned in the vicinity within the next 10 years.

Additional past, present and reasonably foreseeable future small sales generated from the Woodpecker EIS can be found in the project record (Mitkof Island Catalog of Thinning, Small Sales and Salvage by VCU and the Mitkof Island Catalog of Timber Harvest by VCU).

Alternative 1

Under Alternative 1, no new timber harvesting would occur; therefore, there would be no cumulative effects to forest structure, forest health and productivity, and timber volume production.

Alternative 2

Stand composition within the Woodpecker Cove – Frontal Sumner Strait watershed includes a mix of species within young-growth and existing old-growth that when combined with harvest from future timber sale and pre-commercial thinning activities would maintain the existing matrix of varied forest conditions. The cumulative effect of implementing the proposed action would maintain a variety of stand structures, with mixed tree species capable of providing a suite of habitat conditions. This project would not lead to a change in the overall species composition or stand structure within the project area.

Negative cumulative effects to forest vegetation from the proposed action would be minimal due to the limited area and volume of tree removal, and further minimized by adhering to the silvicultural prescription developed for this project. Overall, cumulative effects of the proposed action would be insignificant.

Compliance with Other Laws and Regulations

National Forest management Act / 2008 Tongass Land and Resources Management Plan

The proposed action is consistent with all Forest Plan standards and guidelines, and all proposed activities are allowable under the Modified Landscape Land Use Designation. No Forest Plan amendment would be required.

The proposed action is consistent with the Forest-wide standards and guidelines for Wetlands.

The proposed action is consistent with the principles and criteria of the State of Alaska's Policy for the Management of Sustainable Salmon Fisheries (5AAC.39.222); specifically, section (c)(1) which identifies the importance of maintaining wild salmon habitat at levels of resource productivity that assures sustained yields, and calls for the restoration of degraded salmon spawning, incubating, and rearing habitats.

Endangered Species Act (1973, as amended)

Biological evaluations were completed for threatened, endangered, proposed and sensitive species. There would be no effect on any threatened, endangered or proposed species under either alternative.

Bald and Golden Eagle Protection Act (1940, as amended)

No bald eagle nests have been documented within the project area. Management activities with comply with 50 CFR 22.26.

ANILCA Section 810, Subsistence Evaluation and Finding

The effects of this project have been evaluated to determine potential effects on subsistence opportunities and resources. There is no documented or reported subsistence use that would be restricted as a result of this decision. For this reason, this action would not result in a significant possibility of a significant restriction of subsistence use of wildlife, fish, or other foods.

Clean Water Act (1977, as amended)

Congress intended the Clean Water Act of 1972, as amended in 1977 and 1987, to protect and improve the quality of water resources and maintain their beneficial uses. Section 313 and Executive Order 12088 of January 23, 1987 address Federal agency compliance and consistency with water pollution control mandates. The site-specific application of best management practices (BMPs), with a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution as defined by Alaska's Nonpoint Source Pollution Control Strategy (ADEC 2013). In 1997, the State approved the BMPs as described in the Forest Service's Soil and Water Conservation Handbook (USDA Forest Service 2006) as consistent with the Alaska Forest Resources and Practices Regulations. The BMPs are incorporated into the Tongass Land Management Plan.

The Forest Service issued National Core BMPs in 2012 (USDA Forest Service 2012). The East Ohmer Creek Restoration project would implement the most up-to-date BMP guidance.

Clean Air Act (1970, as amended)

Emissions from the implementation of the East Ohmer Creek Restoration project would be of short duration and are not expected to exceed State of Alaska ambient air quality standards (18 AAC 50).

Marine Mammal Protection Act (1972, as amended)

No marine habitat occurs within the East Ohmer Creek Restoration project area. None of the actions authorized in this project would have an effect on marine mammals.

Magnuson-Stevens Fishery Conservation and Management Act

Essential Fish Habitat (EFH) consultation was initiated on October 9, 2015. No comments were received.

National Historic Preservation Act of 1966

A Forest Service archeologist has reviewed this project under the provisions of Section 106 and has made a determination of No Historic Properties Affected in the area of potential effect for the proposed project.

Tongass Timber Reform Act (TTRA) of 1990

Forest Plan riparian standards and guidelines apply to the project and no commercial timber harvest would occur because of the proposed action. The design and implementation direction incorporates best management practices (BMPs), and Forest Plan standards and guidelines for the protection of all stream classes.

E.O. 11988 (Floodplains), E.O. 11990 (Wetlands)

The project is located within the floodplain of East Ohmer and Lumpy Creeks and about one acre of the proposed wood harvest area. The project would not negatively impact the functional value of any floodplain as defined by Executive Order 11988 and would not have negative impacts on wetlands as defined by Executive Order 11990.

E.O. 12962 (Recreational Fisheries)

The project is consistent with Executive Order 12962 since it improves the quantity, function, sustainable productivity, and distribution of United States aquatic resources for increased recreational fishing opportunities.

E.O. 12898 (Environmental Justice)

Implementation of this project is not anticipated to cause disproportionately high and adverse human health or environmental effects on minority populations and low income populations because the proposed activities are not expected to cause any effects to human health or result in meaningful adverse environmental consequences.

E.O. 12962 (Aquatic Systems, Recreational Fisheries)

The project minimizes the effects on aquatic systems through project design, application of standards and guidelines, BMPs, and site-specific mitigation measures. Recreational fishing opportunities would be protected, are not expected to be negatively affected, and would likely be enhanced.

E.O. 13007 (Indian Sacred Sites)

Tribal governments or their authorized representatives are responsible for notifying the agency of the existence of a sacred site. No sacred sites were identified within the project area.

E.O. 13112 (Invasive Species)

Design criteria are included to reduce the potential for introduction and spread of invasive species. The need to treat invasive species presently established would remain.

E.O. 13175 (Consultation and Coordination with Indian Tribal

Governments)

The following federally recognized tribal governments and organizations were contacted via a scoping letter and briefed by the district ranger during coordination meetings:

- Petersburg Indian Association
- Wrangell Cooperative Association
- Sealaska Corporation
- Central Council Tlingit and Haida Tribes of Alaska
- Sealaska Heritage

E.O. 13186 (Migratory Birds)

The project is anticipated to enhance habitat for migratory birds using the project area and to have a long-term beneficial effect.

E.O. 13443 (Facilitation of Hunting Heritage and Wildlife Conservation)

The project would have no effect on hunting opportunities in the East Ohmer Creek Restoration project area.

Agencies and Persons Contacted

The interdisciplinary team of Forest Service resource specialists was consulted in the development of the environmental analysis. Other agencies, entities, and individuals contacted include the following:

- Alaska Department of Fish and Game, Division of Habitat – Fish Habitat Title 16 Concurrence
- Alaska Department of Fish and Game, Petersburg, Alaska
- Alaska Department of Natural Resources, Division of Forestry

The following Federal and State agencies would be consulted prior to implementation of instream work as per State and Federal requirements:

- National Oceanic and Atmospheric Administration, National Marine Fisheries Service
- Department of the Army, U.S. Army Engineer District, Alaska
- Alaska Department of Natural Resources, Office of Project Management and Permitting

The project was listed on the Petersburg Ranger District Schedule of Proposed Action (SOPA) beginning March 27, 2015. A scoping letter was posted on July 27, 2015 on the Tongass National Forest website for the Petersburg Ranger District requesting public input. A legal notice offering a 30-day comment period on the Proposed Action was posted in the Petersburg Pilot, the newspaper of record, on July 30, 2015.

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