



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

National Marine Fisheries Service

P.O. Box 21668

Juneau, Alaska 99802-1668

April 22, 2004

Colonel Timothy J. Gallagher
District Engineer, Alaska District
U. S. Army Corps of Engineers
Post Office Box 6898
Anchorage, Alaska 99506-6898

Re: POA-2003-1128-4
POA-2003-1129-4
POA-2003-1136-4
POA-2003-1137-4
POA-2003-1130-4
POA-2003-1133-4
POA-2003-1134-4
POA-2003-1135-4
POA-2003-1143-4
POA-2003-1145-4

Attn: Don Kuhl

Dear Colonel Gallagher:

The National Marine Fisheries Service (NMFS) has reviewed the above referenced public notices for work done by the Alaska Department of Transportation (ADOT&PF) from October through December 2002. The work was done in response to flood events on the Kenai Peninsula for the following waterways: Ninilchik River, Anchor River, Deep Creek, Resurrection River, and Kenai River. Much of this work was either exempt from Department of the Army jurisdiction or authorized under a Nationwide Permit. The above public notices request after-the-fact authorization for the additional work that occurred beyond the minimum necessary to restore and protect the original structures involved.

The U.S. Army Corps of Engineers (Corps) has made a determination that this additional work may adversely affect essential fish habitat (EFH). NMFS agrees with this determination, and has previously commented on these projects in collaboration with other agencies (see enclosure dated July 2003). Our primary concern has been, and remains, that the fill and riprap were installed beyond the minimum necessary to restore and protect the original structures involved. NMFS understands that ADOT&PF made decisions during an emergency situation to protect vital infrastructure. The amount of riprap installed, however, went well beyond that normally permitted in a non-emergency situation, with resultant damage to EFH. NMFS is not recommending that the riprap be



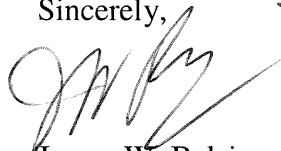
removed, but practicable mitigation measures exist. These mitigation measures are outlined in the July 2003 enclosure.

EFH Conservation Recommendations

The current permit application does not substantially address the multi-agency concerns and suggestions outlined to ADOT&PF in the July 2003 enclosure. NMFS concerns regarding practicable mitigation measures and compensation for impacts to our trust resources have not been resolved, and our position on this project remains unchanged. The recommendations in the enclosure remain our EFH Conservation Recommendations in response to the above referenced actions.

Please note that under section 305(b)(4) of the Magnuson-Stevens Act, the Corps is required to respond in writing within 30 days to NMFS recommendations. If the Corps does not make a decision within 30 days of receiving NMFS EFH Conservation Recommendations, the Corps should provide NMFS with a letter to that effect, and indicate when a full response will be provided. We look forward to working with you, and the applicant, to address the issues discussed above to minimize the effects of this project on living marine resources, including EFH. Brian Lance is the NMFS contact for this project, and can be reached at (907) 271-1301.

Sincerely,



James W. Balsiger
Administrator, Alaska Region

Enclosure

Cc: USFWS, EPA, OHMP, OPMP, ADEC

**RESOURCE AGENCY RECLAMATION STRATEGIES FOR SITES
AFFECTED BY 2002 KENAI PENINSULA FLOODING EVENTS
July 2003**

Participating Agencies:

US Fish and Wildlife Service
National Marine Fisheries Service
US Environmental Protection Agency
Alaska Department of Natural Resources, OHMP
Alaska Department of Natural Resources, DPOR
Kenai Peninsula Borough

It is the intent of the above-noted agencies to come to a consensus on mitigation requirements for DOT flood repair sites so that permits may be issued. Our objective is to produce a single recommendation for each work site that all resource agencies can support. Below is a list of sites, a site summary, agency concerns regarding impacts to fish and wildlife habitat resulting from ADOT&PF flood-mitigation efforts or un-addressed flood effects, and short- and long-term mitigation strategies. Interim habitat mitigation measures should be implemented by September 1, 2003.

Site numbers and site summaries are reproduced from the DOT spreadsheet titled "2002 Kenai Peninsula Flood Repair Summary" dated 02/04/2003.

RIVER: Ninilchik

SITE#: 49. Ninilchik River Bridge at Sterling Hwy

SITE SUMMARY: This site is being evaluated by the DOT for future action. The fill on the abutment slope was failing and washing down the slope into the river. DOT indicated that work was also necessary at the toe of the slope (ordinary high water).

HABITAT CONCERNS: Vegetation is sparse on the slope. Fishermen use the underpass to gain access to the other side of the highway (instead of crossing over the road, they go under it). The high level of pedestrian use contributes significantly to the eroding slope.

404 PERMIT RECOMMENDATION: A US Army Corps of Engineers (COE) Nationwide Permit (NWP) will be required for this project.

INTERIM HABITAT MITIGATION MEASURES: Stabilize slopes and soils by mulching, hydro seeding and by staking erosion matting or hanging geogrid. At ordinary high water (OHW), set the toe with coir logs and work landward using soil wraps/brush layering and vegetative plantings. Vegetative plantings should consist of woody-

stemmed vegetation (willow, alder, etc.) planted on one foot centers, and should be planted from OHW to 5-feet above OHW (5 rows).

LONG TERM HABITAT MITIGATION MEASURES: Develop access plan for the public to safely access both sides of the highway –either below the bridge or across the roadway. People need to be able to move safely without causing erosion, rilling and bank failure.

RIVER: Ninilchik

SITE#: 4. Ninilchik Village Bridge

SITE SUMMARY: Some work at this site has already been completed, and some is being evaluated for future action. DOT has indicated that a new bridge will be constructed at this site. A US Army Corps of Engineers (COE) individual permit will be required for this project.

HABITAT CONCERNS: Concerns include that best management practices (BMP's) were not implemented to control erosion and runoff; soil/fill was deposited directly into the river; the extent of riprap was above what might have been necessary; machinery was operating in the river; fishing access for the public was lost. Resource agencies feel that the level of work conducted in this area of the river went beyond what was necessary to restore access and to provide future road protection. As a result, riparian vegetation was damaged and/or completely lost, in-water habitat and habitat complexity is diminished, water velocities may be increased, and hydrologic impacts from the installed riprap may result in down- and up-stream erosion of banks.

404 PERMIT RECOMMENDATION: A US Army COE Individual Permit will be required for this project, preferably in combination with any work planned for Site #5, Ninilchik Beach Road.

INTERIM HABITAT MITIGATION MEASURES: Mulch, hydro-seed and stake erosion mats on exposed banks and soils. Lay banks back as necessary.

LONG TERM HABITAT MITIGATION MEASURES: Conduct a floodplain/hydrologic analysis (see also Site # 5) prior to the design and siting of a new bridge. The reach to be considered should be at least from the Sterling highway bridge to the mouth of the river. Include comparison analysis with existing riprap upstream and at bridge still in place, and with it removed. Resource agencies would like to assist in the design of the hydrologic analysis and in the bridge location and design.

RIVER: Ninilchik

SITE#: 5. Ninilchik Beach Road

SITE SUMMARY: Some work at this site has already been completed, and some restoration is required.

HABITAT CONCERNS: Concerns include that best management practices (BMP's) were not implemented to control erosion and runoff; the extent of riprap was above what might have been necessary; fishing access for the public was lost. Loss of fishing access at this site should be mitigated by providing access at an upriver site (e.g. at the Sterling Highway bridge, etc.). Resource agencies feel that the level of work conducted in this area of the river went beyond what was necessary to restore access. As a result, riparian vegetation was damaged and/or completely lost, in-water habitat and habitat complexity is diminished, water velocities may be increased, and hydrologic impacts from the installed riprap may result in down- and up-stream erosion of banks.

404 PERMIT RECOMMENDATION: A US Army COE Individual Permit will be required for this project, preferably in combination with any work planned for Site #4, Ninilchik River Bridge.

MITIGATION MEASURES: As noted for Site 4 above, this river segment will be included in a floodplain/hydrologic analysis. The reach to be considered should be at least from the Sterling highway bridge to the mouth of the river. Resource agencies would like to assist in the design of the hydrologic analysis. Information from the hydrologic analysis will assist in the design of an appropriate retro-fit (e.g. similar to the design at MP 160.4, etc.) for the 1000-feet of riprap. In addition, study should be given to the high bluff/slope immediately above the Beach Road. Sections of this slope failed during the storms. Discharge and drainage of the slope and the road must be mitigated so that no direct discharges occur.

RIVER: Deep Creek

SITE#: 6. Deep Creek at Sterling Hwy Bridge – North Parking Area

SITE SUMMARY: Some work at this site has already been completed, and restoration is required. Resource agencies have deferred to AK State Parks regarding recommendations for these sites (see mitigation measures below).

HABITAT CONCERNS: Concerns include that best management practices (BMP's) were not implemented to control erosion and runoff; the extent of riprap was above what might have been necessary, and public/fishing access was lost at this site. Excessive amount of riprap has resulted in loss of in-water habitat and habitat complexity, potential increase in water velocities, and off-site erosion of banks.

404 PERMIT RECOMMENDATION: A US Army COE Individual Permit will be required for this project

INTERIM HABITAT MITIGATION MEASURES: Mulch and hydro-seed on the top and upper slope of the riprap. Live stake willow along edges (at OHW) of riprap.

LONG TERM HABITAT MITIGATION MEASURES: Develop fully accessible pathway to river. Develop fishing access trail on top of fill/riprap north of restroom at the north parking lot. Develop and install interpretation at north and south parking lots about flooding events, human impacts along river, best management practices for controlling erosion along river banks, etc.

At the upstream section of riprap, keep the riprap along the toe of the road, but remove the rip rap as it moves away from the roadway. Remove riprap near the well. Replace the riprap with spruce tree revetments, root wads, or other technique to stabilize the bank toe and then revegetate with woody-stemmed vegetation. Revegetate (woody stems) the area near the bridge where new access points were created. To prevent further damage to riparian vegetation, fence-off the cottonwood stand that is located immediately upstream of the bridge.

RIVER: Deep Creek

SITE#: 6. Deep Creek at Sterling Hwy Bridge – South Parking Area

SITE SUMMARY: Some work at this site has already been completed, and restoration is required. Resource agencies have deferred to AK State Parks regarding recommendations for these sites (see mitigation measures below).

HABITAT CONCERNS: Concerns include that best management practices (BMP's) were not implemented to control erosion and runoff; the extent of riprap was above what might have been necessary, and public/fishing access was lost at this site. Excessive amount of riprap has resulted in loss of in-water habitat and habitat complexity, potential increase in water velocities, and off-site erosion of banks.

404 PERMIT RECOMMENDATION: A US Army COE Individual Permit will be required for this project

MITIGATION MEASURES: Plant alder and wild rose at the toe of the drainage ditch that runs parallel to the Sterling Hwy. Incorporate multiple swales to slow and pond runoff prior to entering the culvert that discharges into Deep Creek. Live stake willow along edges (at OHW) of riprap.

RIVER: Deep Creek

SITE#: 6. Deep Creek at Sterling Hwy Bridge – Southwest Corner (across the highway from the South parking area)

SITE SUMMARY: No DOT work was completed or necessary at this site.

HABITAT CONCERNS: This area is being suggested as a mitigation project. Historically, this site provided for vehicular access to the south side of Deep Creek. Vehicles were commonly parked in the floodplain within 20-feet of the creek.

404 PERMIT RECOMMENDATION: A US Army COE NWP will be required for this project

MITIGATION MEASURES: Develop *upland* parking area on the west side of the Sterling Hwy across from the south parking lot. Install gate for utility access while prohibiting people from driving/parking/camping in the floodplain.

RIVER: Stariski Creek

SITE#: 8. Stariski Creek at Sterling Hwy

SITE SUMMARY: Some work at this site has already been completed, some is being evaluated for future action, and restoration is required. Culverts washed out at this site. FEMA has indicated that they will pay for a bridge at this site.

HABITAT CONCERNS: A scour hole has formed at the downstream end of the culverts; culverts are now perched which prevents fish passage; fill/spoils were illegally placed on banks of the creek; a mass failure has occurred at the downstream (north) section of the bank; and riparian vegetation was destroyed.

404 PERMIT RECOMMENDATION: A US Army COE NWP will be required for this project

INTERIM HABITAT MITIGATION MEASURES: *(Mitigation measures and NWP recommendation are based on the on-site interagency discussion that within two years, i.e., by December 31, 2005, a bridge will replace the existing culverts.)* Remove scrapped piece of guardrail in parking area. Remove fill/spoils from the banks downstream of the culvert. Revegetate this area with woody-stemmed vegetation (willow and/or alder) at a density of 1 stem per foot. Regrade the pad/parking area so that water drains away from the stream and toward the wetlands. Mulch, seed, and permanently block access to the pad with rock bollards or other mechanism. On the northwest culvert outlet near the pad

the bank is eroding into the stream. Some of the erosion is due to the runoff from the pad. Some is due to toe failure. Stabilize the toe with a spruce tree revetment or coir logs. Install willow wattles and live stakes terracing to the top of the bank. Woody-stemmed vegetation (alder, spruce, cottonwood, willow, etc.) should be planted on the terraced bank.

LONG TERM HABITAT MITIGATION MEASURES: DOT has indicated that the culverts at this site will be replaced with a bridge. Conduct a floodplain/hydrologic analysis prior to the design and siting of a new bridge. Resource agencies would like to assist in the design of the hydrologic analysis and in the bridge location and design.

RIVER: Anchor River

SITE#: 7. Anchor River @ Nikolaevsk Culverts

SITE SUMMARY: Work at this site has already been completed. Twin culverts were washed out and replaced with larger culverts.

HABITAT CONCERNS: Loss of riparian vegetation; erosion potential; long-term fish passage issues associated with culverts and potential for repeated wash-outs.

404 PERMIT RECOMMENDATION: A US Army COE Individual Permit will be required for this project

INTERIM HABITAT MITIGATION MEASURES: *(Mitigation measures and NWP recommendation are based on the on-site interagency discussion that within two years, i.e., by December 31, 2005, a bridge will replace the existing culverts.)* Mulch, hydro-seed with native vegetation and install erosion control matting on all disturbed areas (all four corners). Live stake willow or plant alder from OHW landward 15-feet at stem densities of 1 stem per lineal foot. Install signage, bollards, and/or other features to discourage ATV damage during growing seasons until vegetation is established. To facilitate compliance, advance in-person communication with Nikolaevsk residents is encouraged.

LONG TERM HABITAT MITIGATION MEASURES: DOT has indicated that the culverts at this site will be replaced with a bridge. Conduct a floodplain/hydrologic analysis prior to the design and siting of a new bridge. Resource agencies would like to assist in the design of the hydrologic analysis and in the bridge location and design.

RIVER: Anchor River

SITE#: 10. Anchor River, MP 157, at 4-Culvert Crossing on the Sterling Hwy

SITE SUMMARY: Work at this site has already been completed. Bank of 4 culverts plugged. Major fill sluffs.

HABITAT CONCERNS: Loss of riparian vegetation and potential for erosion; long-term fish passage issues associated with culverts and potential for repeated wash-outs.

404 PERMIT RECOMMENDATION: A US Army COE NWP will be required for this project

INTERIM HABITAT MITIGATION MEASURES: Mulch and install erosion control matting at access points and on embankments. The access points should naturally revegetate provided that the soil is held in-place and vehicle access continues to be blocked by woody debris deposited there by ADOT&PF post-flood.

LONG TERM HABITAT MITIGATION MEASURES: Recommend that a bridge for this site be placed on the STIP list. Conduct a floodplain/hydrologic analysis prior to the design and siting of a new bridge. Resource agencies would like to assist in the design of the hydrologic analysis and in the bridge location and design.

RIVER: Anchor River

SITE#: 17. Anchor River, MP 15.3 North Fork Road

SITE SUMMARY: Work at this site has already been completed and restoration is required. Bridge approaches were washed out and the embankment was damaged. Excessive fill was placed, unnecessarily creating a large “parking lot.” Both ends of the fill remain disturbed and vulnerable to erosion. Riprap not properly tied in.

HABITAT CONCERNS: Loss of riparian vegetation and potential for increased erosion; loss of wetland habitat. Increased vehicle access may result in increased runoff of pollutants into river.

404 PERMIT RECOMMENDATION: A US Army COE NWP will be required for this project

INTERIM HABITAT MITIGATION MEASURES: Place additional over-flow culverts across North Fork Road (and within the floodplain of the Anchor River). Remove fill from wetland area and restore wetlands according to site-specific restoration plan to be developed in coordination with resource agencies. Facilitate wetland restoration and permanently limit vehicle access to nearshore areas (not more than 2 cars)

by installing bollards. Also install rock bollards at a location approximately 100 feet east of the bridge on the downstream side (Off-road vehicles are gaining access to riparian areas at this site.). Bollards should be placed so that vehicular traffic is prevented from accessing near shore areas.

LONG TERM HABITAT MITIGATION MEASURES: Recommend that a replacement, appropriately-sized bridge for this site be placed on the STIP list. Conduct a floodplain/hydrologic analysis prior to the design and siting of a new bridge. Such an analysis should include scenarios with the existing riprap treatments, and reconstructed natural banks (without riprap). Resource agencies would like to assist in the design of the hydrologic analysis and in the bridge location and design.

RIVER: Anchor River

SITE#:17c. Anchor River, MP 16 North Fork Road, Riprap area upstream of Ruby Creek.

17c. Anchor River, MP 17 North Fork Road, @ Ruby Creek Culverts

SITE SUMMARY: Restoration is required at these sites and they are being evaluated for future action. Two culverts were added to the Ruby Creek site. Upstream of Ruby Creek, the embankment was armored.

HABITAT CONCERNS: At the upstream site, excessive fill was placed unnecessarily creating a large “parking lot.” Both ends of the fill remain disturbed and vulnerable to erosion. Riprap not properly tied in. Concerns include: loss of riparian vegetation and in-stream habitat; increased water velocities; erosion at ends of riprap; run-off from roadway & “parking lot.” Additionally, hydrologic analysis will be necessary to determine if river has been excessively “pinched” (narrowed) at this site by the fill and whether this may increase erosion to off-site banks.

404 PERMIT RECOMMENDATIONS:

MP 16: A US Army COE Individual Permit will be required for this project.

MP 17: A US Army COE NWP will be required for this project.

INTERIM HABITAT MITIGATION MEASURES: At MP 16, remove riprap on the upstream portion of this project to pre-flood size and configuration. Pull the toe of the bank back and retrofit to MP 160.4 design. Both ends of the riprap/bank stabilization treatment need to be tied into the existing bank and then revegetated with woody-stemmed vegetation. All exposed soils shall be mulched, hydro seeded with native vegetation and covered with erosion control blankets. Reclaim/retrofit the downstream portion of riprap via the addition of fines and graded rock, and then plant alder and cottonwood on 1-foot centers.

At MP 17, maintain tow of the three culverts for overflow, and replace mainstem culvert with properly-sized and set culvert.

LONG TERM HABITAT MITIGATION MEASURES: At MP 16, conduct a floodplain/hydrologic analysis prior to any future actions. The analysis would include the 90-degree bend in the downstream stream segment. Resource agencies would like to assist in the design of the hydrologic analysis.

RIVER: Anchor River

SITE#: 16. Anchor River, MP 163-163.5 Sterling Highway

SITE SUMMARY: Work at this site has already been completed, restoration is required and future action is being evaluated. Riprap was added to the road embankment to protect the highway from the Anchor River.

HABITAT CONCERNS: The placement of additional riprap destroyed the riparian vegetation along this strip. No buffer remains for sheet flow from the highway.

404 PERMIT RECOMMENDATION: A US Army COE NWP will be required for this project

INTERIM HABITAT MITIGATION MEASURES: Install a drainage ditch so that water from the road either drains upstream or downstream to a vegetated area. Retrofit the riprap with the MP 160.4 design. Revegetate the upstream portion of the fill using woody-stemmed vegetation on 1-foot centers. All exposed soils shall be mulched, hydro seeded and covered with erosion control blankets.

LONG TERM HABITAT MITIGATION MEASURES: Discontinue hydro axing in near shore areas.

RIVER: Anchor River

SITES*: 14 & 15. Anchor River, MP 162-162.2 Sterling Highway

SITE SUMMARY: Work at this site has already been completed. Riprap was added to the road embankment to protect the highway from the Anchor River. The east shoulder suffered a large vertical washout.

HABITAT CONCERNS: Erosion from exposed banks; loss of riparian vegetation; and loss of in-stream habitat.

404 PERMIT RECOMMENDATION: A US Army COE NWP will be required for this project

INTERIM HABITAT MITIGATION MEASURES: Re- mulch and re-seed with native vegetation the work area. Plant woody-stemmed vegetation on 1-foot centers where the riprap transitions to fine materials

LONG TERM HABITAT MITIGATION MEASURES: Retrofit the riprap with the MP 160.4 design.

RIVER: Anchor River

SITE#: 13. Anchor River, MP 161 Sterling Highway

SITE SUMMARY: Work at this site has already been completed. Riprap was added to the road embankment to protect the highway from the Anchor River. The northeast bridge abutment was undermined and the pavement washed away.

HABITAT CONCERNS: Remaining debris a hazard to the public and wildlife; erosion from exposed banks; loss of riparian vegetation; and loss of in-stream habitat.

404 PERMIT RECOMMENDATION: A US Army COE Individual Permit will be required for this project (if the fill exceeded nationwide limits).

MITIGATION MEASURES: Clean up area – pieces of Marsden mat are strewn over the area. Scarify the access road that runs the length of the riprap. Mulch it and plant woody-stemmed vegetation on one-foot centers on the entire fill area, tapering into the rock riprap. Bollards should be placed so that vehicular traffic is prevented from accessing this area. Retrofit the riprap with the MP 160.4 design.

RIVER: Anchor River

SITE#: 12. Anchor River, MP 160.4-160.5 Sterling Highway (near Terry Yaeger Property).

SITE SUMMARY: Work at this site has already been completed and future action is being evaluated. This section of the roadway is commonly flooded. New riprap was

installed. Prior to the floods, this site was to be repaired using a hybrid/bio-engineered riprap treatment.

HABITAT CONCERNS: Resource agencies feel that the level of work conducted in this area of the river went beyond what was necessary to restore access. As a result, in-water habitat and habitat complexity is diminished, water velocities may be increased, and hydrologic impacts from the installed riprap may result in off-site (cross-, down- and/or up-stream) erosion of banks. Also, no buffer exists for sheet flow from the highway, and riparian vegetation has been lost.

404 PERMIT RECOMMENDATION: A US Army COE Individual Permit will be required for this project.

MITIGATION MEASURES: Retrofit the riprap with the agreed upon MP 160.4 design.

RIVER: Anchor River

SITE#: 11. Anchor River, MP 160 Sterling Highway (Near the Alaska Road Builders bridge site – destroyed in flood events).

SITE SUMMARY: Work at this site has already been completed. Riprap was added to the road embankment to protect the highway from the Anchor River.

HABITAT CONCERNS: Loss of riparian vegetation and loss of in-stream habitat.

404 PERMIT RECOMMENDATION: A US Army COE NWP will be required for this project.

MITIGATION MEASURES: Retrofit the riprap with the MP 160.4 design.

RIVER: Anchor River

SITE#: 9? Anchor River, Old Sterling Highway Bridge

SITE SUMMARY: Work at this site has already been completed, and restoration is required. Riprap was added to the road embankment to protect the bridge from the Anchor River. A US Army Corps of Engineers (COE) Nationwide Permit will be required for this project.

HABITAT CONCERNS: Erosion from exposed banks; loss of riparian vegetation; and loss of in-stream habitat.

404 PERMIT RECOMMENDATION: A US Army COE NWP will be required for this project.

MITIGATION MEASURES:

- A) Upstream side of bridge on the right (looking downstream): Riprap was placed in this area to protect the bridge abutment. Place topsoil over the upper portion of the riprap where it grades to finer materials. Mulch and seed with beach wild rye. Plant alder and cottonwood poles on 2-foot centers. Fence this area to prevent bank trampling. Hang geogrid cells and fill with topsoil and seed on the steep sloped area immediately adjacent to the bridge.
- B) Upstream side of bridge on the left (looking downstream): This area receives high levels of pedestrian use. The area is trampled and eroding. Mitigation measures include providing stable public access to the river by developing a designated path and revegetating the disturbed areas.
- C) Downstream side of bridge on the left (looking downstream): Stabilize the toe of the bank with spruce tree revetment or coir log. Install brush layering above the toe, and revegetate to 25-feet from ordinary high by mulching and seeding with beach wild rye. Plant alder and cottonwood poles on 2-foot centers. Hang geogrid cells and fill with topsoil and seed on the steep sloped area immediately adjacent to the road shoulder.
- D) Downstream side of bridge on the right (looking downstream): Recommendations forthcoming (staff would like to conduct an additional site visit).

RIVER: Kenai River/Lake

SITE#: 25. Primrose Road ????. Where and what is this project?

SITE SUMMARY:

HABITAT CONCERNS:

404 PERMIT RECOMMENDATION:

INTERIM HABITAT MITIGATION MEASURES:

LONG TERM HABITAT MITIGATION MEASURES:

RIVER: Kenai River

SITE#: 30, Kenai River – Cooper Landing, MP 55 Sterling Hwy

SITE SUMMARY: Work at this site has already been completed, and restoration is required.

HABITAT CONCERNS: Erosion from exposed banks; loss of riparian vegetation; and loss of in-stream habitat.

404 PERMIT RECOMMENDATION:

INTERIM HABITAT MITIGATION MEASURES: Possible mitigation work at the ends of the riprap.

LONG TERM HABITAT MITIGATION MEASURES:

RIVER: Kenai River

SITE#: 31, Kenai River – Cooper Landing, MP 48.9 Sterling Hwy

SITE SUMMARY: Work at this site has already been completed, and restoration is required.

HABITAT CONCERNS:

404 PERMIT RECOMMENDATION:

INTERIM HABITAT MITIGATION MEASURES:

LONG TERM HABITAT MITIGATION MEASURES:

RIVER: Kenai River

SITE#: 48, Kenai River – Cooper Landing Bridge, MP 47 Sterling Hwy

SITE SUMMARY: Work at this site has already been completed.

HABITAT CONCERNS:

404 PERMIT RECOMMENDATION:

INTERIM HABITAT MITIGATION MEASURES:

LONG TERM HABITAT MITIGATION MEASURES:
