May 14, 2008

PORT MACKENZIE RAIL EXTENSION EIS
(FD 35095)

SURFACE TRANSPORTATION BOARD
SECTION OF ENVIRONMENTAL ANALYSIS

SUMMER 2008 FISHERIES SURVEYS

Date: May 14, 2008

To: Mike Nagy, Natural and Physical Sciences Lead, ENTRIX, Inc.
Alan Summerville, Project Manager, ICF International
Jack Colonell, Water Resources Lead, ENTRIX, Inc.
Tricia Waggoner, Fisheries Lead, USKH, Inc.

From: Lynn Noel, Biological Environment Lead

Subject: Summer 2008 Fisheries Surveys

The Alaska Railroad Corporation (ARRC) plans to file a petition with the Surface Transportation Board (Board) pursuant to 49 U.S.C. 10502 for authority to construct and operate approximately 30 to 45 miles of new rail line connecting the Matanuska Susitna Borough's Port MacKenzie (Port) in southcentral Alaska to a point on the ARRC main line between Wasilla and north of Willow, Alaska. The proposed Port MacKenzie Rail Extension Project would provide freight services between the Port and Interior Alaska and would support the Port's continuing development as an intermodal and bulk material resources export and import facility. The Port is owned by the Matanuska Susitna Borough (MSB) and MSB is a co-sponsor of the Project. ICF International has subcontracted to ENTRIX, Inc. (ENTRIX) and USKH Inc. (USKH), as part of the Environmental Impact Survey Team, to prepare the third party Environmental Impact Statement (EIS) for the lead federal agency, the Board. ENTRIX and USKH seek to evaluate the potential impacts of the proposed rail expansion on anadromous and resident fishes; and recreational, subsistence, and personal use fisheries along the proposed railway corridor. The following describes our approach for this evaluation, which will occur during April to September 2008 with most field evaluations occurring during August.

PURPOSE AND NEED

The Port MacKenzie Rail Extension Project would establish a rail link between the Port and the existing ARRC rail system, providing Port customers and shippers with rail transportation between the Port and Interior Alaska. The Port is a deepwater facility on the north side of Knik Arm in upper Cook Inlet. Presently, the only surface mode of freight transport available to the Port is trucking. Construction of a Port MacKenzie Rail Extension Project would provide an additional mode of transportation for the movement of bulk materials, intermodal containers and other freight to and from the Port.

The proposed railway corridors are within the Susitna River Valley and extend between the Susitna River, Cook Inlet, Knik Arm and the existing ARRC main line (Figure 1). The project area may be inhabited by as many as 26 fish species (Table 1). Anadromous fishes commonly occurring within the proposed railway corridor include all five salmon species, as well as eulacon, and Dolly Varden (Johnson and Weiss 2007). The five salmon species; Chinook (king), chum (dog), coho (silver), pink (humpy), and sockeye (red); are regulated under the Magnuson-Stevens Fishery Conservation and Management Act, which is a federal law that governs U.S. marine fisheries management. The Magnuson-Stevens Act requires the cooperation of federal and state agencies along with others to protect, conserve and enhance Essential Fish Habitat (EFH) that is habitat critical to spawning, feeding, migration or growth to maturity. In addition to the marine-based commercial, subsistence and personal-use fisheries, the anadromous and freshwater fish resources in the streams and lakes within the proposed railway corridor support significant recreational, subsistence, and personal use fisheries.

Our initial review of available information on fisheries resources in the proposed railway corridor indicates that some of the major water bodies have been surveyed and the relative importance of these resources is fairly well understood. However, it appears that many of the smaller waterbodies have not been surveyed and information regarding habitat quality, habitat use, and the relative importance to local populations is lacking.

The preliminary alignments for the proposed railway corridor include 120 identified hydrologic crossings. The proposed survey will evaluate habitat conditions at all identified crossings from the air and at a subset of crossings likely to contain fish habitat from the ground. The physical location of proposed railway alignments and associated stream crossings may potentially impact aquatic habitat and fish populations by:

- creation of barriers that preclude access to important spawning and rearing areas,
- alteration of hydraulic properties of the stream channel including channel configuration, scour, upwelling and hyporheic flow,
- degradation of riparian and low velocity habitats along the lateral margins of the stream that are important for juvenile fish rearing and insect production, and
- alteration of the erosion and sediment supply processes.

The objective of this study is to characterize fish habitat and fisheries resources within the proposed railway corridor so that potential impacts may be avoided or minimized. Information collected during these surveys will be used to complete environmental assessments for the third party EIS, as well as the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) Essential Fish Habitat Assessment.

Figure 1. Distribution of Hydrologic Crossings for Fish Habitat Evaluation within the Port MacKenzie Rail Extension Project Area.

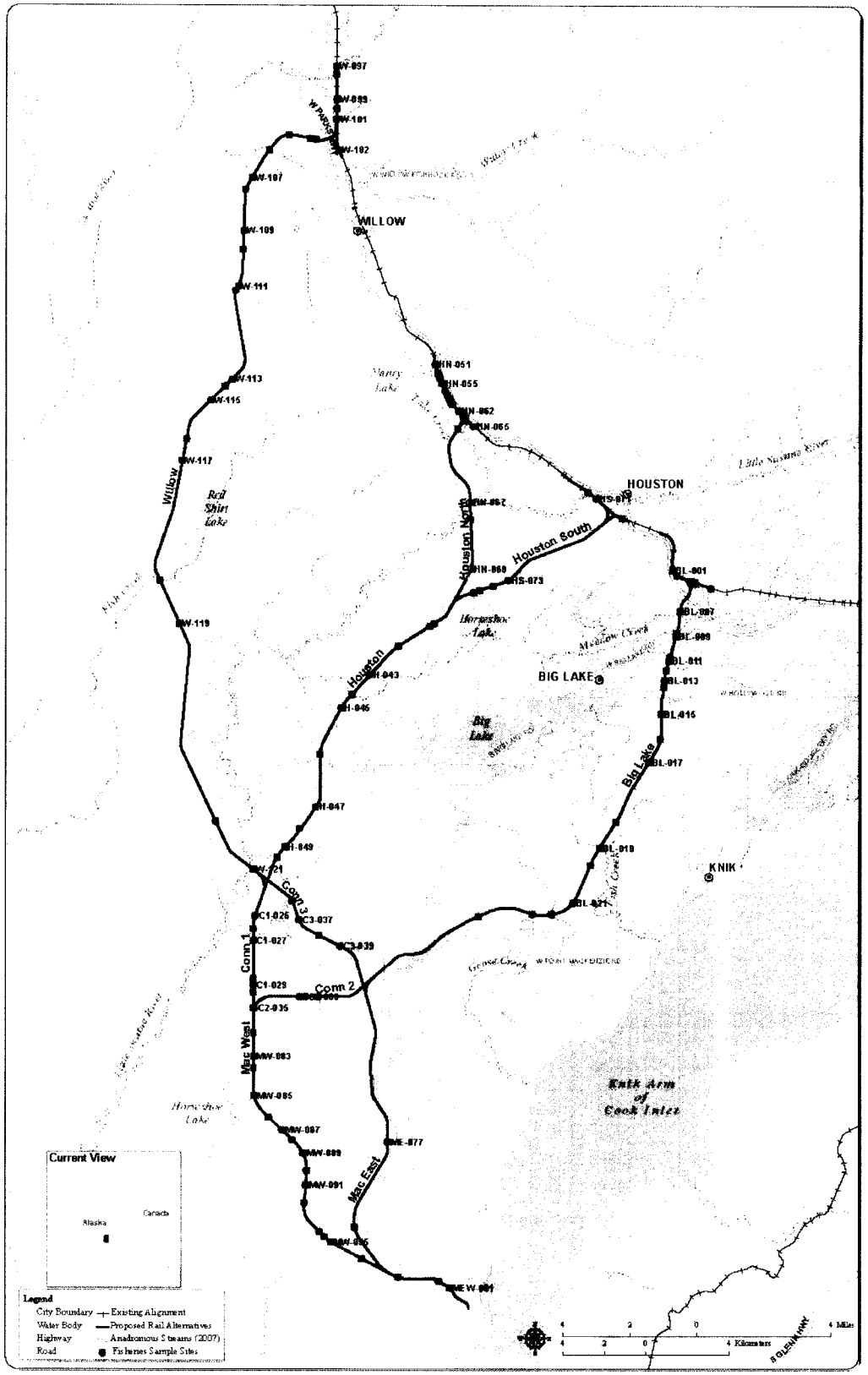

Table 1. Fishes Potentially Occurring within the Port MacKenzie Rail Extension Project Area.

Common Name	Scientific Name
Alaskan Blackfish	*Dallia pectoralis*
American Shad	*Alosa sapidissima*
Arctic Grayling	*Thymallus arcticus*
Arctic Lamprey	*Lampetra camtschatica*
Bering Cisco	*Coregonus laurettae*
Burbot	*Lota lota*
Chinook Salmon (King)	*Oncorhynchus tshawytscha*
Chum Salmon (Dog)	*Oncorhynchus keta*
Coastrange Sculpin	*Cottus aleuticus*
Coho Salmon (Silver)	*Oncorhynchus kisutch*
Dolly Varden	*Salvelinus malma*
Eulachon	*Thaleichthys pacificus*
Humpback Whitefish	*Coregonus pidschian*
Lake Trout	*Salvelinus namaycush*
Longnose Sucker	*Catostomus catostomus*
Ninespine Stickleback	*Pungitius pungitius*
Northern Pike	*Esox lucius*
Pacific Lamprey	*Lampetra tridentata*
Pink Salmon (Humpy)	*Oncorhynchus gorbuscha*
Pond Smelt	*Hypomesus olidus*
Rainbow Smelt	*Osmerus mordax*
Rainbow Trout	*Oncorhynchus mykiss*
Round Whitefish	*Prosopium cylindraceum*
Slimy Sculpin	*Cottus cognatus*
Sockeye Salmon (Red)	*Oncorhynchus nerka*
Threespine Stickleback	*Gasterosteus aculeatus*

Sources: ADF&G 2007, Johnson and Weiss 2007, Mecklenburg et al. 2002.

METHODS

Study Site Selection

Prior to beginning field studies during June to September 2008, a thorough review of available information will be completed to assist in the final selection of survey sites. The first step in this process will be to review the site specific characteristics for fish distributions for the species identified in Table 1. Temporal occurency by life stages for anadromous species will be intigral in this review (Groot and Margolis 1991). Our review will rely on existing documents that describe spatial and temporal distribution fish and fish habitat use within waters crossed by the proposed railway corridors. Regional and local Alaska Department of Fish and Game (ADF&G) and NMFS biologists will also be contacted to gather information on fisheries resources within the proposed railway corridor and proposed restoration actvities that could result in changes to existing fish passage structures in the vicinity of the proposed alignments. The objective of this review is to identify waterbodies where sufficient information exists to describe fisheries resources, such that fish sampling would be unnecessary, and to identify waterbodies where significant information gaps remain for fish distribution and habitat use. Ground-based field efforts will focus on defining habitats at crossings with important fisheries resources and defining habitat and fish

occurrence for those crossings likely to contain suitable fish habitat where significant information gaps exist.

The second step in the study site selection process will be to assemble baseline information on water bodies potentially impacted by the proposed alignments. Each water crossing will be classified by physical characteristics (e.g., size, channel pattern, etc.) and by water type:

- clearwater,
- mixed clearwater and glacial,
- glacial,
- mixed humic-stained and glacial, and
- humic-stained.

These preliminary water-type classifications will be used to identify important habitat types for each of the species potentially occurring within the proposed railway corridor. For example, Chinook salmon may overwinter in the Susitna River but move to small tributaries during the warmer summer months to rear. Potential data sources include the ADF&G Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes (Johnson and Weiss 2007), aerial photographs, topographic maps, and stream hydrography layers.

Selection of study sites will be prioritized on the basis of: 1) potential for providing Essential Fish Habitat [spawning, feeding, migration, rearing], 2) potential for sport, anadromous and subsistence fish production, 3) availability of information regarding fisheries resources within a basin, and 4) potential for impacts related to the proposed rail corridor.

Field Methods

Habitat Assessment

The objective of the habitat assessment surveys is to document existing habitat conditions at the proposed water body crossings. Because areas in the vicinity of the proposed alignments may be affected by fish access and invasive species, habitat conditions within the local watershed, especially downstream blockages and presence of northern pike, will also be assessed.

All identified water crossings that are not selected for ground-based habitat assessments will be evaluated for habitat characteristics during aerial-based surveys (Appendix 1). The crossing site and areas surrounding the crossing (e.g. upstream and downstream reaches, tributaries, sloughs, connected lakes, etc.) will be evaluated and sketched if necessary, from a helicopter, using channel types and protocols presented in Paustian et al. (1992). Surveyors will visually estimate dimensions for various habitat characteristics. Relevant parameters will include channel type, bankfull width, dominate substrate, stream bank composition, and incision depth. Aerial surveys will attempt to identify and document habitats supporting fish as well as habitats that may contribute to overwintering success (e.g., beaver dams, backwater sloughs, springs, etc.).

Habitat characteristics (Flosi et al. 1998) at selected stream crossing sites will be directly measured and recorded during ground-based surveys. Habitat and local hydrology will be characterized using a modification of the rapid assessment protocol presented used by the Washington Department of Fish and Wildlife (WDFW 2000, Appendix 2, Appendix 3). Relevant habitat parameters will include habitat type, wetted width, depth, stream flow, substrate composition, cover type and composition, and riparian vegetation characteristics. Channel morphology will be characterized following the US Forest Service (Paustian et al. 1992) and Rosgen (Rosgen 1994) systems. Survey crews will sample water quality parameters including temperature, conductivity, turbidity, pH, and dissolved oxygen. Recent precipitation and runoff will be noted (none, trace, moderate, heavy) and riparian vegetation will be characterized (Viereck et al. 1992). Global Positioning Satellite (GPS) receivers and aerial photographs will be used to locate crossings and to record the final position of each evaluation site. Some crossings may be evaluated either upstream or downstream of the proposed location due to access constraints.

Fish Surveys

The objective of the fish surveys is to document the presence of fish in representative streams for which little, no, or conflicting information exists. Fish surveys will be conducted at a sub-selection of the crossings selected for habitat evaluations. Minnow traps and beach seines will be used as the primary methods of capture in all streams. If the site is suitable for seining, seining would be the primary sample method. Surveyors will use 9 meter by 1.2 meter beach seines with 7 millimeter mesh size. Beach seines will be pulled in an upstream direction over a distance of 10 to 15 meters. Surveyors will attempt to estimate the total area sampled for each pull. If seining is not appropriate, minnow traps will be placed along the lateral margins of the water body in areas with abundant cover or other features likely to attract fish. Traps will be baited with salmon roe and left in place for approximately 4 hours at helicopter-accessed sites and up to but no longer than 24 hours at sites accessible from the road system.

Fish collected in traps or nets will be placed in buckets. Large single species hauls will be sub-sampled and excess fish will be released immediately. Survey crews will process fish immediately after capture and will release them as soon as possible. Fish will be identified to the species level using appropriate taxonomic keys (e.g., Pollard et al. 1997, Mecklenburg et al. 2002) and measured for length. Captured fish will be released near the point of capture. If it is not possible to definitively classify fish to the species level in the field a small number of fish (i.e., 2 to 3 fish per species per site) may be retained. Information collected at these sites will be used to make rudimentary estimates of relative abundance based on catch per unit effort (Appendix 4).

Both minnow traps and beach seines have inherent methodological limitations. Minnow traps are only effective at capturing fish of smaller size classes. Beach seines are difficult to effectively fish in very deep water, very fast water, in water with abundant debris, and may cause fish to flee in clear water streams. In circumstances where it is not possible to effectively fish a habitat using either beach seines or minnow traps; surveyors will use backpack electroshockers or hook and line sampling. Sampling conducted using electroshockers will consist of single pass sampling techniques and will be consistent with protocols recommended by NMFS (NMFS 2000), and ADF&G (Buckwalter, ADF&G, Sport

Fish, Personal Communication, April 10, 2008). These protocols will ensure protection of both anadromous and resident fisheries resources.

- Shockers will not be used when conductivity is > 350 uS/cm
- Each electrofishing session will start with minimum voltages and pulse widths to avoid unnecessary stress and injury.
- Electroshockers will not be used when fish may be in spawning condition or if redds are observed in the immediate area.
- Survey crews will monitor fish for problems with recovery time, injury, mortality or other indications of stress and adjust settings to avoid injuries.

Survey crews will identify and document redds when observed. Where salmon carcasses are observed, survey crews will determine the species using visual characteristics as well as knowledge of life history characteristics (e.g., spawn timing, habitat characteristics, etc.).

REPORTING

The results of these surveys will be compiled and used in preparation of the third-party EIS and EFH assessments. ENTRIX will ensure compliance with all reporting requirements and specified terms and conditions of the scientific collecting permit.

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