16-TAN Aquatic Community Compilation Report – Executive Summary

Introduction

Husky Energy contracted SLR Consulting (Canada) Ltd. (SLR) to complete an aquatic community assessment as a component of the fisheries assessment activities for the pipeline release (16TAN) incident which occurred on July 21, 2016. The objective of the fish and benthic community assessment in 2016 was to gather fish and benthic invertebrate community information to detect potential impacts to aquatic life as a result of the spill. Ultimately, information collected will be used to track recovery, and inform potential corrective actions and habitat offset opportunities.

Methodology

Desktop analysis was completed to collect and review existing baseline information, specialists from local organizations were also contacted to gather North Saskatchewan River fish and fish habitat information. Based on the earlier aquatic habitat assessment, water and sediment sampling results and the application of the Shoreline Classification and Assessment Technique (SCAT), potentially affected high quality aquatic habitat sites were identified for sampling. Locations were selected to enable the comparison of conditions between two reference and four potentially impacted areas.

Fish

A total of 28 sites were identified for fish collection, and fish community assessment methods were adapted from existing applicable provincial protocols. A variety of sampling methods were used to allow fish capture in differing river depths and flow conditions. Fish collection methods and level of effort for each method were chosen to provide representative data for a broad range of species and size classes (adult, juvenile, and young-of-year), allowing for a comparison of how common or rare a species is relative to other species in a community.

Species, life stage, length and weight are recorded for all captured fish. An external examination of each fish was also performed to assess condition and health. Captured fish were released back to the location of capture, aside from a small subset that was kept for identification purpose, tissue analysis, or both.

Benthic Macroinvertebrates

A total of nine sites were identified for benthic collection. The Water Security Agency (WSA)'s standard collection methods were used, and WSA experts were present to oversee much of the sample collection. At benthic monitoring locations, water and sediment samples were collected to characterize the conditions during the time of sampling.

Findings

A total of 23 fish species and over 8,000 individual fish were captured from the North Saskatchewan River during the 2016 study. Eight species of small-bodied fish (forage fish) were captured, and over 4000 small-bodied individuals. Throughout the study area, the most dominant small-bodied species

were Emerald Shiner and River Shiner. 15 species of large-bodied fish (with recreational and commercial value) were captured and almost 4000 large-bodied individuals. Throughout the study area, the most dominant large-bodied species were Common White Sucker, Walleye, and Shorthead Redhorse.

In general, fish species diversity and abundance was greater in the upper reaches of the North Saskatchewan River. Four Lake Sturgeon were also caught in the exposure study area within 0-40 kilometres from the pipeline release, the highest number recorded in the entire study area.

Identifying the presence of juvenile and adult species throughout the study area can pinpoint areas used for certain life history strategies (e.g. spawning, rearing, foraging). Data on body length and study area presence was collected for Walleye, Shorthead Redhorse, Northern Pike and Goldeye/Mooneye for this purpose.

The benthic macroinvertebrate community was evaluated for diversity, and the representation of different species within the community. A total of 11,788 benthic macroinvertebrate individuals at various life stages were collected, representative of 107 taxa. The dominant taxa include aquatic/terrestrial worms, mayflies and a water boatman species.

Conclusion and Next Steps

This study is one of the most comprehensive fisheries inventories undertaken in the North Saskatchewan River and lower reaches of its major tributaries since 1987. A second study is planned in 2017, allowing a comparison between the results of both study years.

Data from the aquatic and community assessment studies will be used to prepare an Environmental Impact Study. Data will allow us to estimate existing fisheries values, and estimate the value of habitat features removed or altered through clean-up activities (i.e. determination of any remaining harm to fish).