

Saskatchewan Protocol Agreement

A Cooperative Approach to Prioritizing & Managing Fisheries Issues at Power-generating Facilities



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Fisheries and Oceans
Canada

Pêches et Océans
Canada



Saskatchewan
Watershed
Authority



Saskatchewan
Ministry of
Environment

Background

- ❖ Fisheries and Oceans Canada (DFO) Fish Habitat Management increased program presence in the prairies in approximately 2000-2001
- ❖ SaskPower Corporation (SPC) have worked proactively with DFO on fish habitat related issues since then.
- ❖ In 2002, DFO expressed concerns with minimum flow and fish stranding at E.B. Campbell facility and Nipawin operations
 - ❖ Alternative operating scenarios assessment/research to reduce impacts suggested by DFO in 2002
 - ❖ March 2004, SaskPower and DFO outline a study and work plan to move forward

Background

- ❖ June 2004, DFO confirms fish stranding below E.B. Campbell. Discussions start with the goal of reducing fish related impacts. Focus is minimum flow and ramping rates at E.B. Campbell facility.



Initiatives/Discussions related to EBC

- ❖ Minimum flow-75cms continuous
 - ❖ Ramping-from 300cms to 75cms over 1 hour
 - ❖ Monitoring
 - ❖ Aquatic Assessment Study
 - ❖ Tailrace Modifications
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- ❖ (Spin Off: Assessment/discussion of fish related issues at other operations/plants)

Challenges encountered with EBC

- ❖ Some measures were costly (real and perceived)
- ❖ Other stakeholders not part of decisions/changes
- ❖ EBC is a peaking plant – fluctuating operations
- ❖ Some measures were prescriptive. While they were intended to reduce fisheries related impacts, there was little mechanism to measure environmental result

❖ Result: 2005 SPC and DFO agreed to form a *Fisheries Issues Committee* and ultimately the *Protocol Agreement*

Fisheries Issues Committee

- ❖ Tasked with addressing fish and fish habitat-related issues at SPC facilities (hydro, thermal)
 - ❖ Initial review of potential issues by DFO
 - ❖ Facility / Site Visits
 - ❖ Research and data gaps
 - ❖ Identified/Development of prioritization criteria & Protocol Agreement

- ❖ Federal and Provincial Members
 - ❖ SaskPower (3)
 - ❖ DFO (3)
 - ❖ Saskatchewan Ministry of Environment (2)
 - ❖ Saskatchewan Watershed Authority (2)



Fisheries Issues Committee Goals

- ❖ Foster transparent and pro-active communications
- ❖ Prioritize issues to mitigate and manage – achieve compliance with the *Fisheries Act*
- ❖ Include provincial government interests
- ❖ Set out means to prioritize, plan, and resolve concerns / disputes
- ❖ Provide SPC with certainty on application of *Fisheries Act*
- ❖ Develop scientific and results based solutions

Purpose of Protocol Agreement

- ❖ Clarify application of the federal *Fisheries Act* and other legislation to SaskPower facilities and operations
- ❖ Foster communication among regulators and SaskPower
- ❖ Identify and prioritize issues for fish and fish habitat
- ❖ Propose workable solutions for known and potential impacts
- ❖ Ensure meaningful stakeholder consultation is undertaken where appropriate

Issue Prioritization Criteria

- ❖ Economic / Social / Environmental
- ❖ Species at Risk
- ❖ Biological
- ❖ Fish Kill (frequency / timing / duration)
- ❖ HADD (frequency / type of habitat / magnitude)

Issues Identified

- ❖ The Steering Committee listed known and potential issues linked to each facility
- ❖ 49 facility-related issues evaluated
- ❖ The following list of potential issues were identified at one or more facilities:
 - Tailrace Stranding
 - Instream Flow Needs
 - Entrainment
 - Reservoir Fluctuation
 - Water Quality
 - Fish Passage
 - Spillway Stranding
 - Maintenance
 - Sediment Transport

Challenges

Information

- ❖ Significant information gaps identified – solutions may need study and professional judgment

Resources

- ❖ Significant resources may be required to obtain science-based answers
- ❖ Limited human resources to implement action plan
 - ❖ Need to align resources with priorities and principles

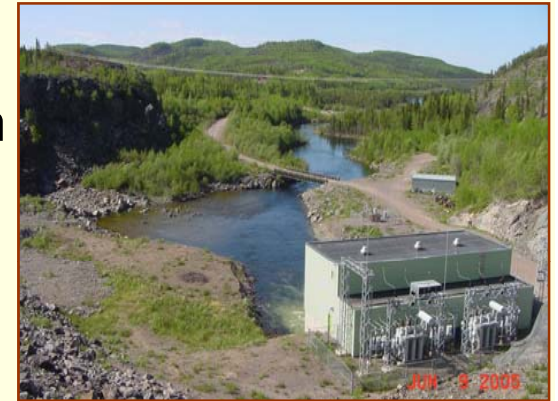
Recognized need to consider issues from a Systems Approach

- ❖ Many issues are interconnected and solutions must meet multiple objectives
- ❖ Some operational changes may have implications upstream or downstream to power generation, fish and wildlife, other water users, and ecosystems

Annual Action Plans*

- ❖ In each annual Action Plan, there are key deliverables under the Protocol Agreement. Action Plan outlines the actions to be undertaken over the upcoming year.
- ❖ 2007-2010 activities were primarily focused on information gathering, data collecting and bringing facilities into compliance with the *Fisheries Act* through the issuance of authorizations where deemed appropriate

*Protocol Agreement requires the development of annual action plans. These are reviewed and approved by an executive committee. Membership is SPC, DFO MoE and SWA executives



Action Plans (Activities Completed to Date)

- ❖ Literature database established
- ❖ Facility tours to better understand operations
- ❖ Development of shutdown and spillway operation procedures for Charlot River (a northern SK facility)
- ❖ Develop a comprehensive monitoring and research plan for fisheries issues relating to the operation of E.B. Campbell hydroelectric facility.
 - ❖ The plan includes budgeting, timelines, and procedures for assessing the impacts of issues including stranding, water level fluctuations, impacts to water quality, and entrainment
- ❖ Aquatic assessment study in Saskatchewan River to assess discharge relationships combined with fish habitat suitability
- ❖ EB Campbell Draft Spillway Fish Salvage Plan completed (Spring 2011?)
- ❖ Develop and implement a scientifically defensible fish stranding assessment
 - Stranding assessment to determine if/where tailrace modifications are required
 - Will include post-enhancement monitoring

Accomplishments

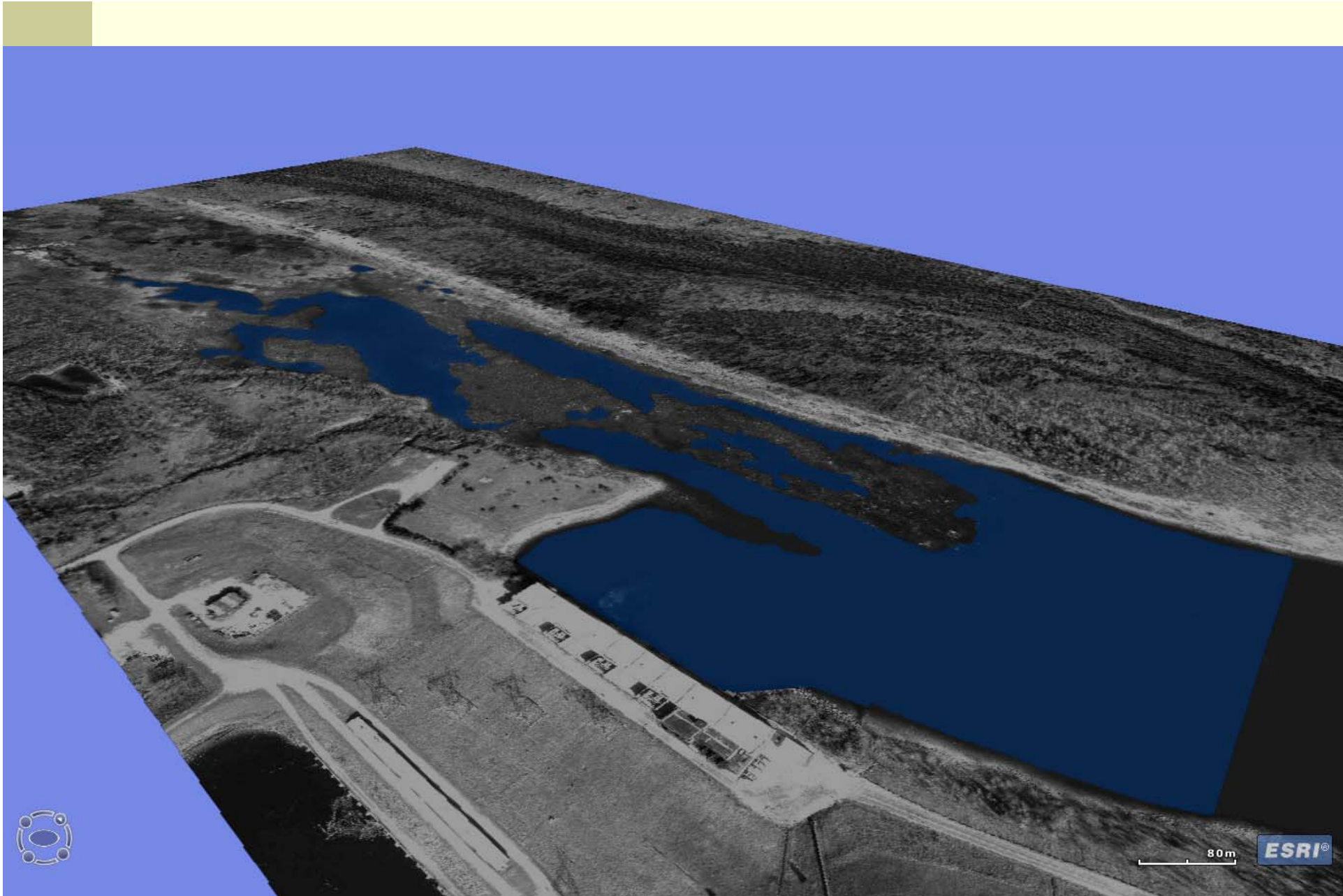
- ❖ In response to the identification of 49 issues at 14 SaskPower facilities, from 2007-2010 a total of 125 activities were initiated
- ❖ The committee has completed 78 (62.4%) of these activities at 13 facilities
- ❖ Currently the committee is actively working on 27 ongoing facility issues
- ❖ 10 facility issues have been resolved and removed from the list of potential concerns
- ❖ 12 facility issues are on hold due to lower priority or information gaps

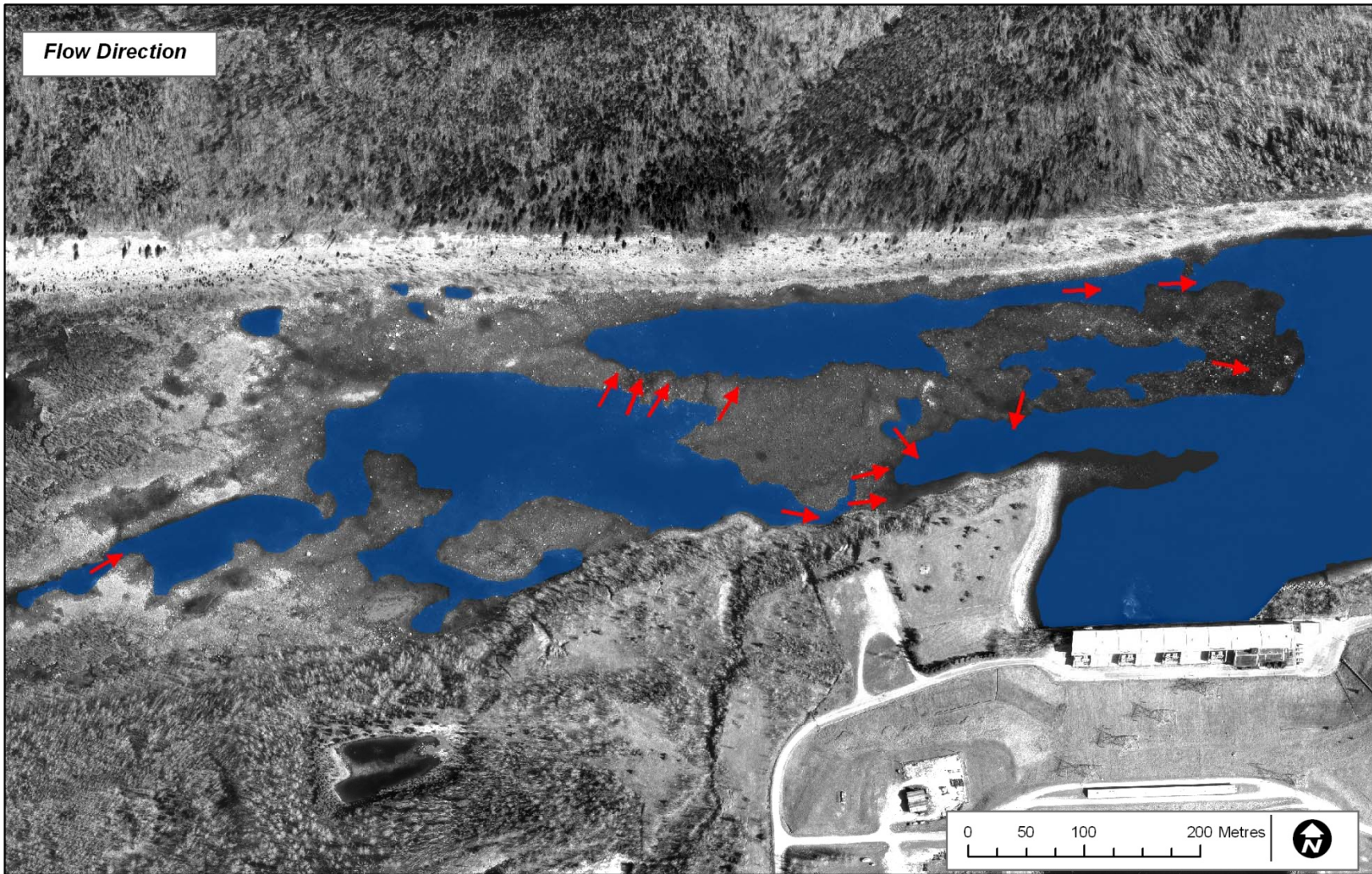
Accomplishments

- ❖ A study to identify high risk fish stranding locations in the EB Campbell tailrace will enable development of a plan to reshape the tailrace to prevent stranding (example follows*)
- ❖ River2D modeling determined that the increase in minimum flow from 0 to 75 cms at EB Campbell reduced fish stranding potential in the study reaches by 50%.
 - ❖ Bathymetric surveys of 3 sites covering 13.5 of the first 23.3 km.
 - ❖ Model output used to estimate area of isolated pools as discharge drops
- ❖ Revision of the committee membership to include the SE Fisheries Branch Manager has facilitated discussion and decision-making

Tailrace area modeled below E.B.
Campbell Dam





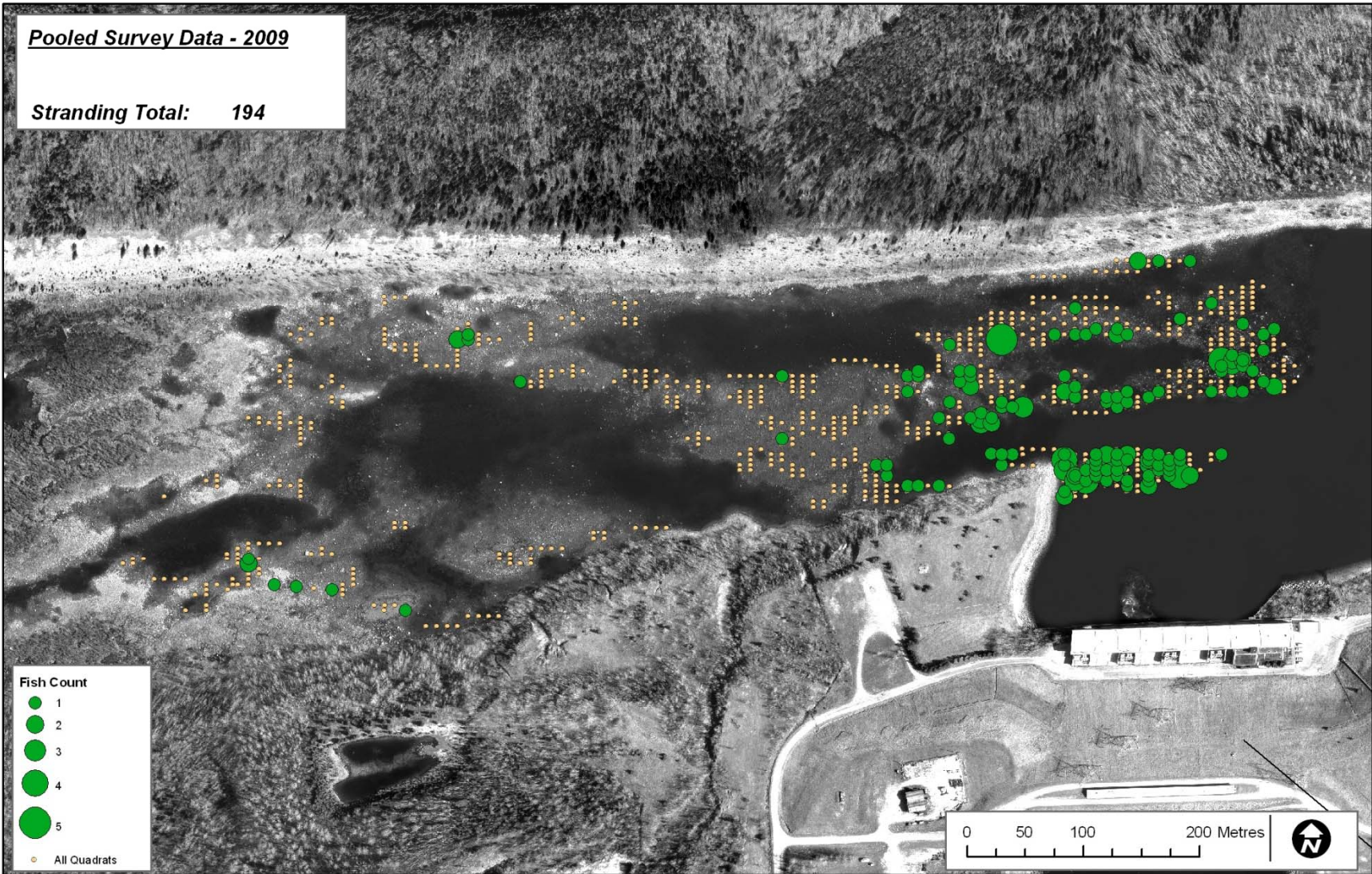


Tailrace Fish Stranding*

- ❖ The majority of fish stranding is beaching of smaller fish species and trapping for larger species
 - ❖ Beaching typically occurs in areas where water drains out of permanent pools over about a 4 hour period
 - ❖ Trapping occurs in areas that isolate, but don't necessarily dry up
- ❖ Predation by mammals and birds on larger fish species was apparent

Pooled Survey Data - 2009

Stranding Total: 194



Path Forward 2011 – 2013 Action Plan

- ❖ The proposed actions still involve a great deal of information gathering with more focus on facility specific research activities to further clarify and/or address prioritized issues
- ❖ The data and information being gathered is critical in that it fills identified gaps and gives the committee the confidence needed to make the necessary decisions (i.e. potential operational changes and authorizations)

A major committee initiative in 2011 will be to reassess and update the ranking of issues by facility

- *Result? New committee priorities will incorporate the knowledge and fisheries improvements gained over the last four years in future decisions and actions*

SUMMARY

- ❖ A key ingredient is the relationship between the utility and our regulators...TRUST!
- ❖ Committee members understand, appreciate and respect the mandate of each organization
- ❖ Establish working relationships to cooperatively and effectively work through issues in an open and transparent manner.
- ❖ Communications; the committee has improved its ability to talk through specific issues and determine a course of action.
- ❖ A comfort level has been built between committee members to contact each other when information is needed.

QUESTIONS??

