NWT Cumulative Impact Monitoring Program

Reporting Templates 2013-14

A) Annual Project Status Report

and B) Project Completion Report

Instructions:

- ☒ Please complete only Part A if the project is ongoing
- ☒ If this is the final year of the project, please complete Parts A and B
- ☒ Please submit as a Word doc, not a pdf
- ☒ Unless otherwise indicated, the information provided must be for the reporting year only
- ☒ To check a box, right click on the box and choose 'Properties'. Change the default value to 'checked'
- ☒ **For continuing multi-year projects: This annual report will be used to evaluate future funding in 2014/15. Please note the evaluation criteria detailed in the 2013 Proposal Guide: Study design; CIMP Priorities; Project Purpose, Objectives and Deliverables; Community Support and Engagement; Decision-maker Engagement; Reporting and Communications; and Leadership and Project Team Experience/Expertise. Ensure your annual report addresses the evaluation criteria**
- ☒ **For continuing multi-year projects: Budget Sheet Template.xls must also be completed**

NWT Cumulative Impact Monitoring Program, 2013-14 A) Annual Project Status Report

1A) Project Information			
Project title	**Understanding and predicting fish mercury levels in the Dehcho region using models of bio-magnification and bio-accumulation**		
Date submitted	**January 31, 2014**		
Valued component (Check all that apply. If 'other' please specify)	☐ Caribou ☐ Fish ☐ Water ☐ Other		
Geographic area/region	**Dehcho Region**		
Project keywords (at least 4)	**Fish; mercury, bio-accumulation; bio-magnification**		
Name of project lead	**George Low**		
Report prepared by (if not lead)	**Joint by George Low and Heidi Swanson**		
Project lead organization	**Dehcho First Nations, Box 89, Fort Simpson, NT, X0E 0N0** **Executive_director@dehcho.org Finance ; dora_tsetso@dehcho.org** **Web site; dehcho.org**		
Contact information Include mailing address, email, telephone and website	**George Low, Dehcho First Nations, 13 Riverview Drive, Hay River, NT, X0E 0R7** **geobarbgeo@hotmail.com ph. 867 874-1248**		
Project collaborators (insert rows as required)			
Team member name	**Role**	**Organization**	**Contact information (email address & telephone)**
Heidi Swanson	**Research Scientist**	**University of Waterloo**	**Heidi.swanson@uwaterloo.ca** **Ph. 519 888-4567 ext. 37387**
Year and month project started		April, 2013	
Anticipated completion year of project		March, 2016	
Execution year of project (eg. Yr. 1 of 3)		Year 1 of 3	
If project continues a previous CIMP-funded project, provide project name			
Project status		☐ on schedule ☐ behind schedule ☐ completed	

Location In decimal degrees (dd.mmm) provide coordinates for the general study location; or if regional, provide 4 coordinates for the bounding box.	60-00-00 N x 115-48-00 W; 60-00-00 N x 122-00-00 W 64-00-00 N x 126-00-00 W; 64-00-00 N x 122-00-00 W	
sample locations in decimal degrees (see template) **Sample locations** Attach spreadsheet with		☐ completed
Consent I acknowledge that CIMP will post this completed report for public access on the NWT Discovery Portal with the exception of financial information in Sections 8A and 3B.		☐ I agree

2A) Project objectives and rationale

Please summarize the rationale for the project and provide a list of the objectives for the project, as approved in the original proposal.

In August 2012, a workshop ("*A Return to Country Food*") was held in Jean Marie River First Nation, NT, to discuss safety, security, and health of traditional foods. During the workshop, it became clear that neither communities nor scientists fully understand why fish mercury levels are high (above consumption guidelines) and increasing in some Dehcho lakes, but are low (below consumption guidelines) and decreasing/stable in other lakes. Dehcho communities identified the need for a partnership with a researcher who would work with them to understand why fish mercury levels are so variable in the region. A partnership was developed between Dehcho communities, the University of Waterloo, and the Aboriginal Aquatic Resource and Oceans Management Program to investigate patterns of fish mercury accumulation in nine Dehcho lakes. We are investigating patterns of bioaccumulation and biomagnification in 9 lakes that differ in temporal trend (increasing vs stable) and represent significant variation in fish mercury levels (below guideline vs. above guideline)

Objectives:

1) Model biomagnification of Hg through lake food webs. Mercury levels increase with trophic level. Rates of increase are determined by lake food web structure, productivity, water chemistry, and watershed characteristics. To explore whether differences in biomagnification rates explain among-lake variability in fish Hg, we will determine rates of Hg biomagnification in 9 Dehcho lakes, contrast these rates between lakes with higher vs. lower Hg, and relate Hg biomagnification rates to predictor variables.
2) Determine best predictors of fish Hg levels. We will relate species-specific fish Hg levels to a suite of possible explanatory variables that reflect fish ecology and life history, lake ecosystem ecology and chemistry, and watershed characteristics.
3) Identify most important variables for future cumulative effects monitoring.
4) Evaluate whether intensive fishing could lower fish Hg levels in lakes with consumption advisories.

Our results will identify critical variables for future cumulative impact monitoring. Decision-makers will use our results to identify possible mitigation strategies (e.g., intensive fishing) for lakes with high fish Hg.

3A) Changes to the project
Report any substantial changes to the key activities, timelines (completion dates), and funding arrangements for the project as approved in the original proposal. Please explain the changes and any corrective actions that will be taken, if applicable. If there were no changes, please indicate that. To provide a cumulative record of changes, please copy and paste entries to this table from each previous year.
There are no substantive changes to report.

4A) Key outputs				
Identify the key outputs for the reporting year (insert rows as required). Key outputs can include non peer-reviewed reports (grey literature), peer-reviewed journal publications, community presentations, scientific presentations, meeting reports, websites, models, software, posters, and data. Note that in addition to this annual report, CIMP requires copies of all reports and publications resulting from CIMP-funded research, even after funding is complete at cimp@aandc-aadnc.gc.ca. The project lead must also upload the reports and publications, or publication metadata if copyright is a concern, to the NWT Discovery Portal http://nwtdiscoveryportal.enr.gov.nt.ca				
Key output	**Intended user(s) of output (be specific)**	**Significance of the key output 'So what?'**	**Emailed to CIMP account?**	**Uploaded to Portal?**
'Eating the Fish: Understanding Mercury Levels in a Changing North.' Oral presentation at: Ka'a'gee Tu "A Return to Country Food - Kakisa" Meeting and Workshop, Kakisa, NT, August 27-29, 2013.	Dehcho leadership and community members from 9 First Nations and two Metis organizations	Dene and Metis leadership and community members very much appreciated the enhanced understanding they gained regarding: i) how mercury got to the North; ii) why some fish have high mercury and others have low mercury; and, iii) how climate change could affect fish mercury levels. Partnerships and support were solidified during face-to-face meetings, and trust was engendered between community and academic partners.	☐	☐
Understanding and predicting fish mercury levels in the Dehcho region using models of bioaccumulation and biomagnification. Oral	Government /regulators, community members,	Audience had opportunity to ask questions regarding the often misunderstood issues surrounding	☐	☐

presentation at: 2nd Northwest Territories Environmental Monitoring Results Workshop, Yellowknife, NT, December 10-12, 2013.	scientists	mercury in fish. Significant progress was made re: connecting our study to others in the region (logistics and results)		

5A) Project progress

Please complete Sections 1 and 2. These sections are where you demonstrate the progress that has been made with the project. The information will be used, in part, to determine future funding levels for the project. ***Section 1****: Check all boxes that apply for the reporting year, and provide a link to a text explanation in Section 2.* ***Section 2:*** *Provide a description and explanation of each of the areas checked in Section 1. Explain the significance for moving the project forward. Use clear language that will be understandable by those who are not experts in the project area. Provide enough detail to give an understanding of the progress that was made and its significance. (Suggest Section 2 is at least 1 page)*

Section 1

Monitoring and research conducted during the year led to:		**Numbered link to Section 2**
New or enhanced knowledge in the field of study	☐	**1**
New or enhanced knowledge of cumulative effects	☐	**1**
Directly impacted a current decision-making process	☐	
Could contribute to a future decision-making process	☐	**1,2**
Development of a standardized monitoring protocol(s)	☐	
Adoption of standardized monitoring protocol(s) by decision-maker[1]	☐	
Responded to a community concern	☐	**3**
New or enhanced community capacity	☐	**4**
New or enhanced analytical tool	☐	
New or enhanced modeling capacity	☐	
Other (please specify, insert rows as required)	☐	

[1] Decision-maker is defined in the 2012-13 CIMP Proposal Guide
http://sdw.enr.gov.nt.ca/nwtdp_upload/call_for_proposals_2012_13_proposal_guide_final.pdf

Section 2

1. During the 2013 field season and during preliminary analyses of data, we were able to combine traditional/local knowledge (provided by First Nations partners and community monitors) of Dehcho lakes with scientific results to reach some preliminary conclusions about why fish mercury levels might be so variable between lakes that are in close geographic proximity. It appears that variation in **fishing pressure** (in one lake, a change from moderate pressure to essentially no pressure) may explain some of the lake-to-lake variation. This is currently under further investigation; results from the full study are needed to verify this preliminary finding.

Fishing pressure varies for many reasons, including fear of contaminated traditional foods, loss of a key harvester, or economic constraints of harvesting activities.

2. If we find that among-lake variation in mercury levels is at least partially explained by fishing pressure (currently, it looks like lakes with low pressure have higher mercury, as we would expect), we can plan to mitigate this by an intensive fishing effort. Both the communities, Dehcho AAROM and the GNWT are keen to explore this option.

3. This project is being conducted in **direct** response to concerns raised by communities in the Dehcho region. Members want to understand why some fish are safe to eat and others aren't, if they should be eating fish at all, and what will happen to fish mercury levels in the face of climate change and industrial development.

4. In summer 2013, academic researchers worked directly with environmental monitors from Dehcho communities (1 academic researcher, 1 student, 4 community members). For two of three lakes sampled (the third was in the community of Trout Lake), researchers and environmental monitors shared a field camp. Environmental monitors learned new techniques for fish collection and processing, while the academic researchers gained significant knowledge in local techniques, history, and importance of the subsistence fishery. Environmental monitors also learned why there is mercury in northern lakes, and why some fish have higher mercury levels whereas others have lower mercury levels.

6A) Project linkages

Please state how NWT decision-makers and communities are engaged in the project as approved in the original proposal. Identify any new linkages that have emerged during the reporting year and the value of those new linkages. Eg. A new decision-maker has been identified that can use the data or results. Include a list of dates and times of meetings and presentations with communities and/or decision-makers. Include a description of who attended the meetings. (Suggest 2 paragraphs)

The Dehcho decision makers and/or environmental coordinators from nine communities were engaged in the study through presentations regarding mercury concerns by the researcher, Heidi Swanson as well as presenters from GNWT, Health and Social Services, Environment Canada, and other government and university experts at the "Return to Country Foods" workshop held in Kakisa in August 2013 (See Attached Report). They came away with a better understanding of mercury issues. We also engaged the communities of Jean Marie River and Sambaa K'e through meetings with their leadership and administration. The Jean Marie River First Nation and the Sambaa K'e Dene Band involved their AAROM funded aquatic monitors in data collecting with the research team on Ekali, Sanguez and Trout lakes.

Dr. Erin Kelly (GNWT) has been involved in this project since its inception. We met with Dr. Kelly in June (14th) 2013 and December (11th) 2013, and as a result of findings presented at the CIMP workshop, have a teleconference call planned for February 2014. Present at the meeting in June was Dr. Heidi Swanson and Dr. Kelly. In December, Heidi and Erin met again, and also met with other researchers working on related CIMP projects in the region (including Andrea Lister and Dr. Jules Blais). Most of the discussions with Dr. Erin Kelly have centered around funding for a community-based intensive fishing activity if fishing

pressure appears to be an important variable in explaining fish mercury concentrations. There is general support for this initiative; funding is in progress.

7A) Key project tasks for next year

Please briefly describe key activities and outputs that are planned for the next year, unless this is the final year of the project. To provide a cumulative record of progress, please copy and paste entries to this table from previous years and organize by year.

April 2014 – Meeting with community partners and Dehcho AAROM (Aboriginal Aquatic Resource and Oceans Management) coordinator (Hay River/Jean Marie River/Kakisa)

April 2014 – Meeting with other CIMP researchers to plan logistics (Waterloo)

June 2014 – Completion of 2013 sample analysis (currently ongoing)

August 2014 – Field sampling

September-December 2014 – Sample processing

December 2014 – Reporting at CIMP workshop

8A) Project funding

Identify all funding to the project for the 2013/14 reporting year. Insert rows as required. Please specify if any of the funding sources were new in the reporting year. Note that the proposed budget for fiscal year 2014/15 is required in a separate spreadsheet.

Funding source	Cash ($K)	In-kind ($K)	Total ($K)
CIMP – project **Originally allocated 40K of $ 59 954 requested** **CIMP allocated an additional 20 K later in the year**	**$60K**		**$60 K**
Government department or agency; AANDC-NCP **Health Canada, Climate Adaptation**	**$4 K** **$ 7.535**		**$4 K** **$ 7.535**
Industry			
University; University of Waterloo	**$7.5 K**	**$ 25 K**	**$32.5 K**
NGO; Dehcho First Nations – Dehcho AAROM program	**$ 12.2 K**	**$ 19 K**	**$ 31.2 K**
Other (please specify, insert rows as required)			

Total leveraged sources (other than CIMP)	**$31.235 K**	**$44 K**	**75.235 K**

NWT Cumulative Impact Monitoring Program, 2013-14

B) Project Completion Report

(Only fill out this section if this was the final year of your project)

1B) Project achievements
Please provide a description of what was achieved in the project. What were the highlights? What were the key outputs? Include maps, photos, figures and tables as appropriate. Include evidence of the results of the project being taken up and used by NWT decision-makers and communities. Use clear language that will be understandable by those who are not experts in the project area. Provide enough detail to give an understanding of the progress that was made and its significance. (Suggest 2-5 pages)

2B) Follow up steps
What are the next steps for follow-up to this project? How can CIMP help to continue the transfer of this knowledge to NWT decision-makers and communities? (Suggest 1 page)

3B) Project funding

Identify all funding to the project over its lifetime. Provide the total for each category. It is not necessary to break down sources within each category as this will have been captured in the annual status reports.

Funding source	Cash ($K)	In-kind ($K)	Total ($K)
CIMP			
Government department or agency			
Industry			
University			
NGO			
Other (please specify, insert rows as required)			
Total leveraged sources (other than CIMP)			