

MANITOBA-MINNESOTA TRANSMISSION PROJECT

Clean Environment Commission Hearing



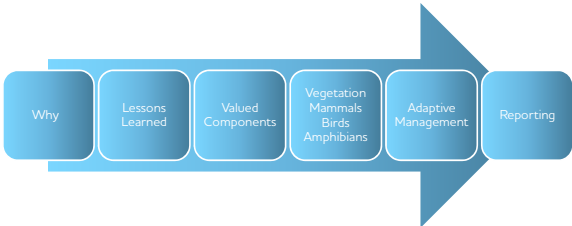
- Introduction & Project Description
- Engagement
- Routing
- Construction, Operations & Property
- Methods
- EMF
- Socio-Economic Environment
- Biophysical Environment
- Environmental Protection Program & Monitoring

Jonathan Wiens, Manitoba Hydro

Draft Environmental Monitoring Plan

2

Environmental Monitoring Plan presentation roadmap



Why Lessons Learned Valued Components Vegetation Mammals Birds Amphibians Adaptive Management Reporting

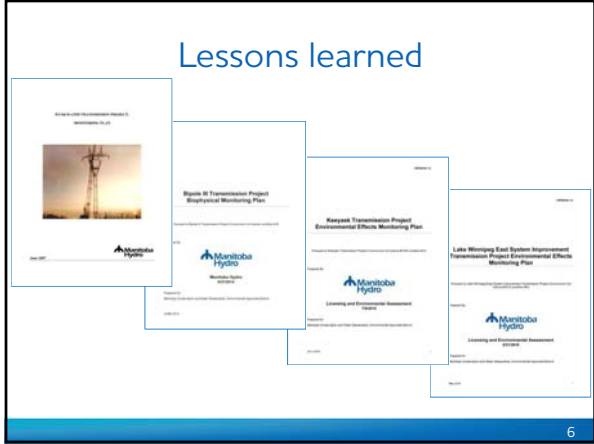
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Why monitor?

- Confirm the nature and magnitude of effects;
- Assess effectiveness of mitigation;
- Identify any unexpected effects;
- Identify additional mitigation measures;
- Confirm compliance with regulatory requirements; and
- Collect information to evaluate long-term changes or trends.

5





Valued component selection

- Fish and fish habitat
- Vegetation and wetlands
- Wildlife and wildlife habitat
- Employment and the economy
- Infrastructure and services

8

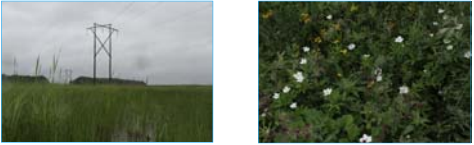
Fish and fish habitat

- Stream crossings

9

Vegetation and wetlands

- Wetlands
- Plant species of conservation concern
- Invasive plant species
- Traditional use plant species



10

Wildlife and wildlife habitat


- Amphibians
- Common garter snakes
- Birds
- Ungulates and predators
- Black bear



11

Employment and the economy

- Project employment reporting
- Direct/indirect business opportunities reporting
- Direct labor income and taxes reporting



12

Infrastructure and services

- Traffic monitoring survey



13

Proposed Monitoring Activities Schedule							
Valued Component	Key Monitoring Activity	Pre-Construction Surveys	Clearing and Construction of the Transmission Lines and station modifications				Post Construction
		2017/18 (1 st -3 rd Quarters)	Fiscal Year(s) (April-March)				2021/2022
			2017/2018 (4 th Quarter)	2018/2019	2019/2020	2020/2021	
Fish and Fish Habitat	Stream Crossing Assessment						
Vegetation and Wetlands	Wetland Survey						
	Bank Plant Survey						
	Wetland Species Survey						
Wildlife and Wildlife Habitat	Traditional Use Plant Species Survey						
	Wetland Proportion Survey						
	Snake Monitoring Survey						
	Endangered Species Survey						
	Specialized Species Life Survey						
	Red Spreader of Conservation Concern Survey						
	Golden-shagreened Warbler Habitat Survey						
	Blacksnake Survey						
	Wolfhound Operations Mapping Survey						
	Canada Jay Survey						
Wetland Creation Station Gathering							
Employment and Economy	General Use Survey						
	Employment Opportunities Reporting						
	Government Business Opportunities Reporting						
Infrastructure and Services	Public Working Survey						
	Black Bear Site-Specific Use Survey						
Outfitting and Falconry	Pomarine Falcon Conservation Value Study						

14

Valued component selection

Vegetation and wetlands

- Wetlands
- Plant species of conservation concern
- Invasive plant species
- **Traditional use plant species**

Wildlife and wildlife habitat

- **Amphibians**
- Common garter snakes
- **Birds**
- **Ungulates and predators**
- Black bear

15

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Traditional use plant species


- Black River First Nation
- Long Plain First Nation
- Swan Lake First Nation
- Peguis First Nation
- Sagkeeng First Nation
- Roseau River Anishinabe First Nation
- Dakota Plains First Nation
- Manitoba Metis Federation

16

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Traditional use plant species

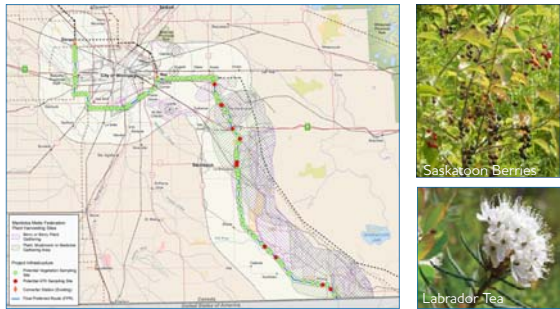
- Long-term vegetation monitoring plots at traditional use sites



17

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Traditional use plant species



Saskatoon Berries


Labrador Tea

18

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Traditional use plant species

Significant unexpected decrease in abundance of traditional use plant species (excluding trees) at locations identified by communities in the PDA? → *Action: Report results to community that identified the area and discuss mitigation measures, such as revised vegetation management options.*



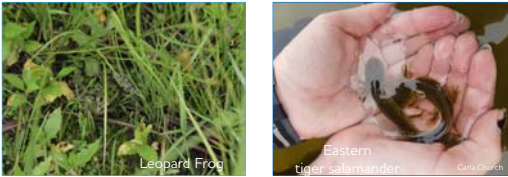
Asarum - Wild ginger Survey plot Weekay - Sweet flag

19

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Amphibians

- Northern leopard frog
- Eastern tiger salamander

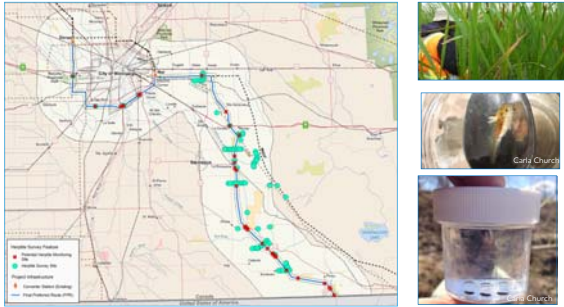


Leopard Frog Eastern tiger salamander

20

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Amphibians



21

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22

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Amphibians

Insufficient riparian buffer retained? → Action: Implement site specific rehabilitation measures as required.

Decline of breeding activity of northern leopard frog near proposed infrastructure? → Action: Report to SD regional wildlife biologist/manager, implement site specific rehabilitation measures as required.

Discovery of an eastern tiger salamander? → Action: Report to SD Conservation Data Centre as incidents are detected.

23

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Birds

- Bird-wire collision
- Species of conservation concern
- Sharp-tailed grouse leks
- Stick nests

24

Vegetation Amphibians **Birds** Mammals Adaptive Management Reporting

Birds

Bird mortality statistics are above expected based on baseline abundance/flightpath surveys? → Action: Report to SD regional wildlife biologist/manager; implement bird diverter measures

Leks near project footprint have significant reduction in male grouse abundance, or alert behavior, compared to pre-construction baseline and control lekking sites away from the project? → Action: Report to SD regional wildlife biologist/manager; implement site specific vegetation management, and/or install raptor perch deterrents.

Habitat Management Sites (HMS's) within project footprint have significant reduction in density compared to pre-construction baseline and control point counts away from the project? → Action: Report to SD regional wildlife biologist/manager; implement revised vegetation management

Active stick nest site identified in pre-construction survey? → Action: If stick nest removal required, consult with SD biologist/manager and consider relocating adjacent to ROW.





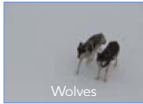


28

Vegetation Amphibians **Birds** **Mammals** Adaptive Management Reporting

Ungulates and predators

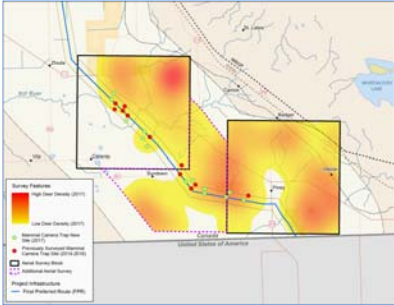
- White-tailed deer
- Elk
- Wolves

29

Vegetation Amphibians **Birds** **Mammals** Adaptive Management Reporting


Aerial surveys



30

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Trail camera surveys



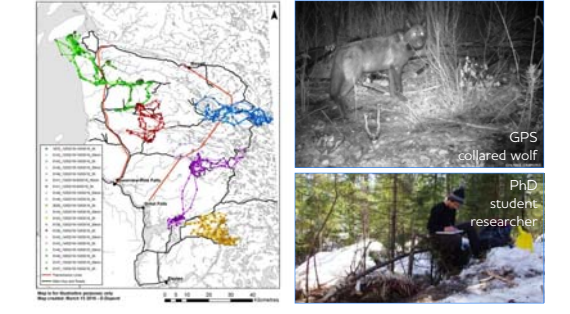
White-tailed deer
Sandhill cranes
Red Fox
Raccoon
Wolves
Black bears

31

This slide features a navigation bar at the top with buttons for 'Vegetation', 'Amphibians', 'Birds', 'Mammals', 'Adaptive Management', and 'Reporting'. The main title is 'Trail camera surveys'. Below the title are six photographs: a trail camera mounted on a tree trunk, a white-tailed deer in a field, sandhill cranes in a field, a red fox, a raccoon, and a wolf. A sixth photo shows a black bear in a field. The number '31' is in the bottom right corner.

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Wolf study



GPS collared wolf
PhD student researcher

32

This slide features a navigation bar at the top with buttons for 'Vegetation', 'Amphibians', 'Birds', 'Mammals', 'Adaptive Management', and 'Reporting'. The main title is 'Wolf study'. Below the title are two images: a map of a region with colored lines representing wolf movement paths, and a photograph of a wolf with a GPS collar. A second photograph shows a PhD student researcher in a snowy field. The number '32' is in the bottom right corner.

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Vita Cross Border Elk Monitoring Partnership



Elk

33

This slide features a navigation bar at the top with buttons for 'Vegetation', 'Amphibians', 'Birds', 'Mammals', 'Adaptive Management', and 'Reporting'. The main title is 'Vita Cross Border Elk Monitoring Partnership'. Below the title are four images: a herd of elk in a snowy field, a helicopter in flight, a close-up of a collar, and another herd of elk in a snowy field. The number '33' is in the bottom right corner.

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Ungulates and predators

Elk observed within the LAA during aerial, camera trap surveys, or as a result of Vita Cross Border Elk Monitoring Partnership?, or Significant change in ungulate or predator occurrence or distribution relative to baseline data? → Action: Provide SD regional wildlife biologist/manager with GPS location and circumstances as incidents are detected. Consider altering, changing or removing human access points, adjusting vegetation management schedules or prescriptions, adjusting transmission line inspection and maintenance schedules and adjustments to monitoring activities.



Elk Wolf White-tailed Deer

34

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Adaptive management

- Lessons learned from previous monitoring programs
- Documents, processes, procedures and mitigation measures will be continuously evaluated by inspection, monitoring and communication.




Peregrine falcon
Black bears
Eastern tiger salamander

35

Vegetation Amphibians Birds Mammals Adaptive Management Reporting

Reporting

- Annual submission
- Website
- Submitted to regulators
- Presentations



36
