



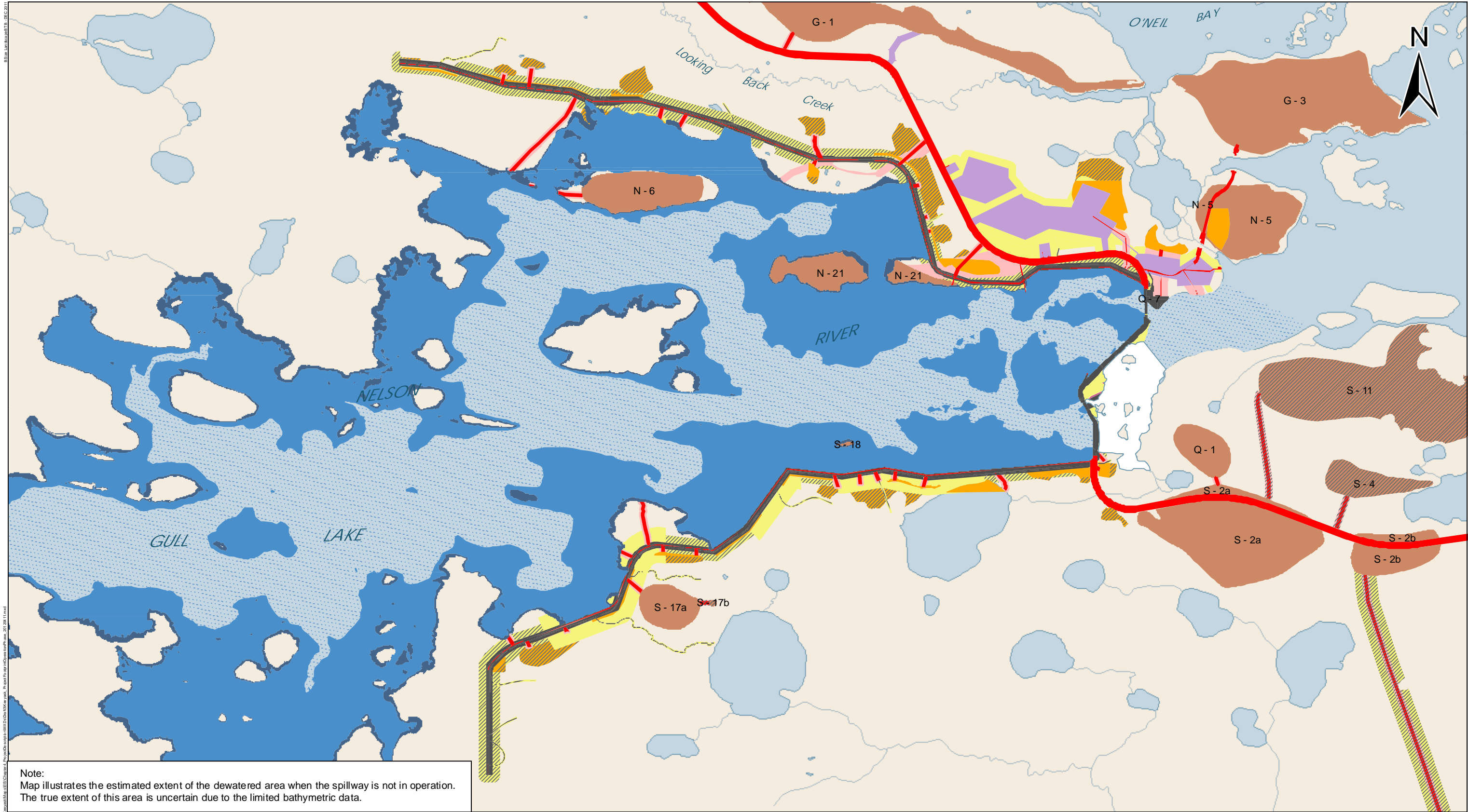
Keeyask Generation Project

Environmental Impact Statement

Supporting Volume

Project Description





Note:
Map illustrates the estimated extent of the dewatered area when the spillway is not in operation.
The true extent of this area is uncertain due to the limited bathymetric data.



DATA SOURCE:
Manitoba Hydro; Government of Manitoba;
Government of Canada; ECOSTEM

CREATED BY:
Hydro Power Planning - Keeyask & Burntwood Planning Section

COORDINATE SYSTEM:
UTM NAD 1983 Z15N

DATE CREATED:
18-JAN-12

REVISION DATE:
18-APR-12

0 0.55 1.1 Kilometres
0 0.45 0.9 Miles

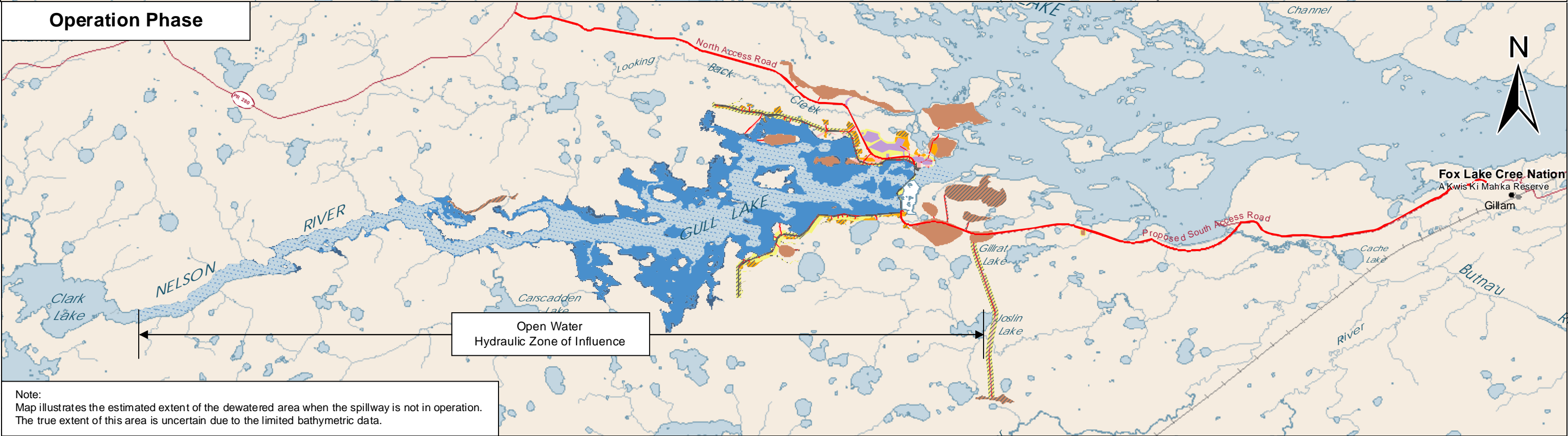
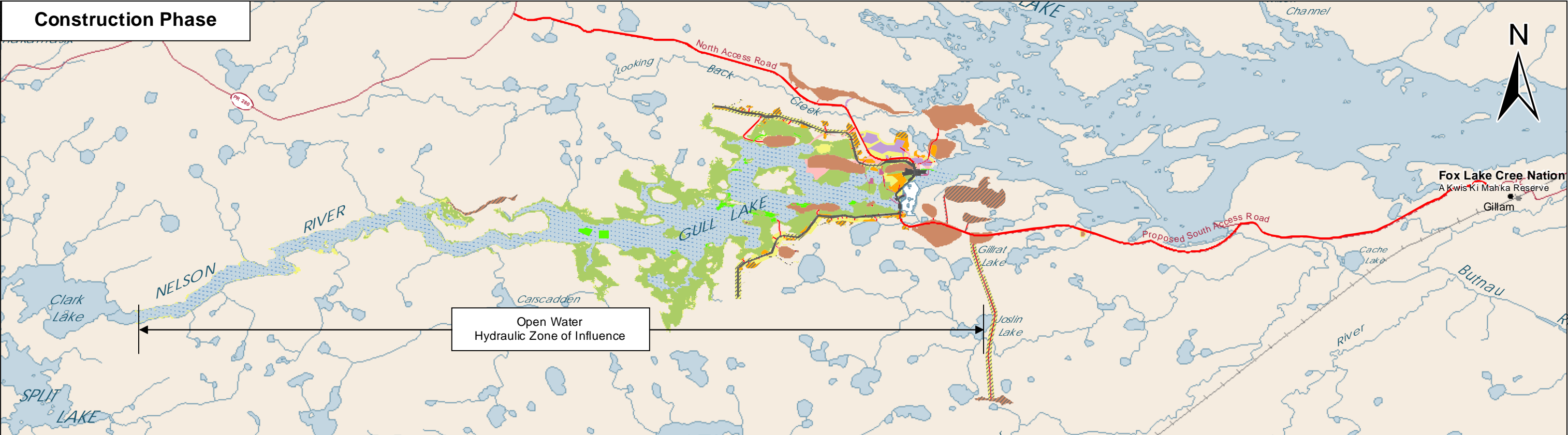
VERSION NO:
3.0

QA/QC:
APPROVED

Legend

- | | | |
|------------------|-----------------------------------|--|
| Road | Camp and Work Area | 30-year Reservoir Expansion Area (159 m) |
| Road Corridor | Excavated Material Placement Area | Altered Water Level or Flow |
| Infrastructure | Mitigation Area | Potential Dewatered Area |
| River Management | Possible Disturbed Area | Existing Water Surface Area |
| Borrow Area | Initial Flooded Area (159 m) | Areas Unlikely to be Used |

Project Footprint Operation Phase Site Level



Note:
Map illustrates the estimated extent of the dewatered area when the spillway is not in operation.
The true extent of this area is uncertain due to the limited bathymetric data.



DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; ECOSTEM		
CREATED BY: Manitoba Hydro - Hydro Power Planning		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 18-JAN-12	REVISION DATE: 25-APR-12
0 3 6 Kilometres 0 2 4 Miles	VERSION NO: 3.0	QA/QC: APPROVED

Legend

- | | | |
|--------------------|--|-----------------------------|
| Road | Excavated Material Placement Area | Altered Water Level or Flow |
| Road Corridor | Mitigation Area | Potential Dewatered Area |
| Infrastructure | Possible Disturbed Area | Existing Water Surface Area |
| River Management | Reservoir Clearing | Areas Unlikely to be Used |
| Borrow Area | Initial Flooded Area (159 m) | |
| Camp and Work Area | 30-year Reservoir Expansion Area (159 m) | |

**Project Footprint
Overview**
Construction and Operation Phase



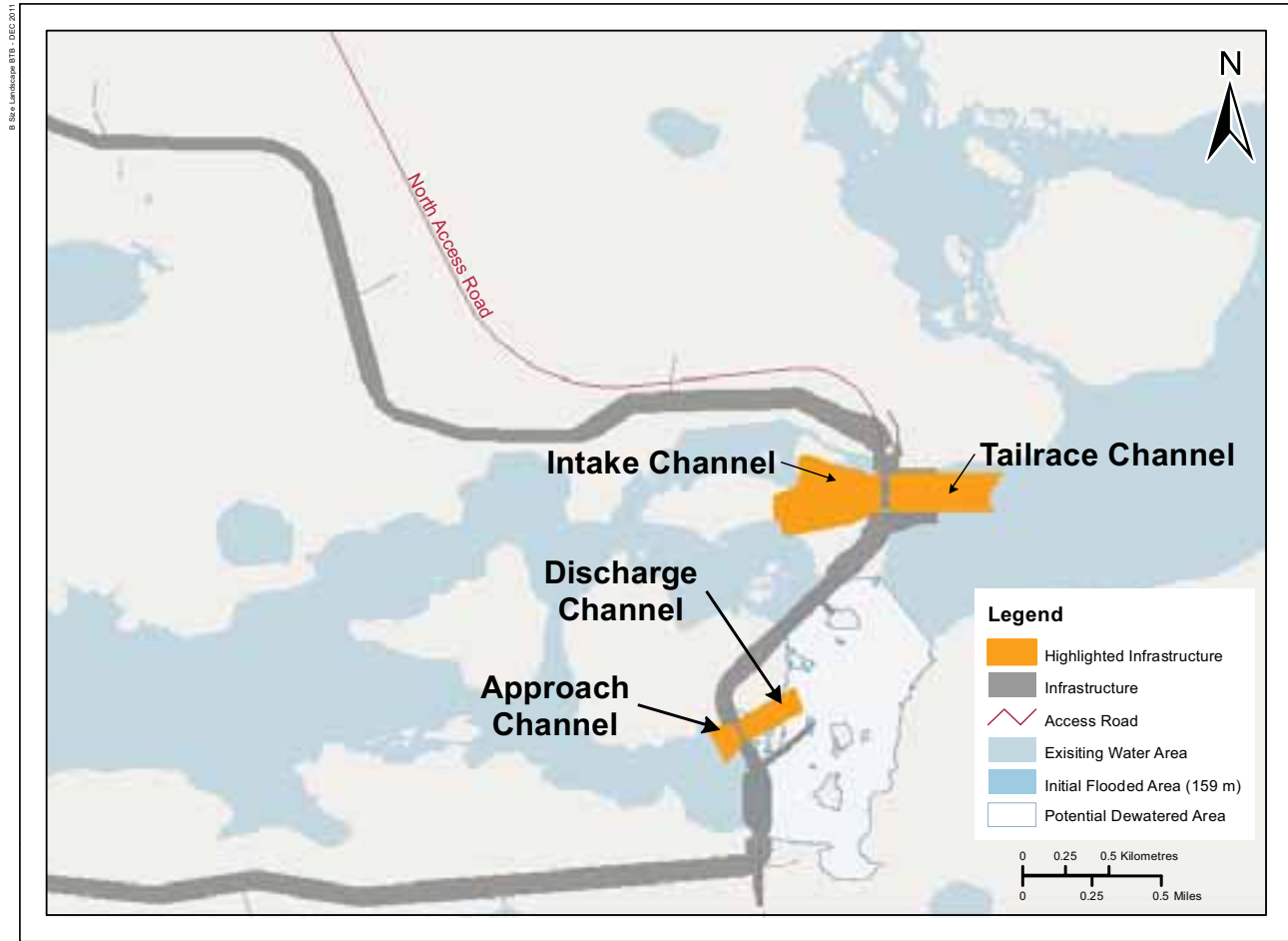
Artist's Rendering - Concept Only



DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; KGSA; Manitoba Hydro Artist Concept Rendering - November 2011		
CREATED BY: Manitoba Hydro - Hydro Power Planning - GIS & Special Studies		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 03-NOV-11	REVISION DATE: 11-APR-12
0 0.25 0.5 Kilometres 0 0.2 0.4 Miles	VERSION NO: 2.0	QA/QC: APPROVED

Note:
Map illustrates the estimated extent of the dewatered area when the spillway is not in operation. The true extent of this area is uncertain due to the limited bathymetric data.

Principal Structures



Artist's Rendering - Concept Only



DATA SOURCE:
Manitoba Hydro; Government of Manitoba; Government of Canada;
KGS Acres; Manitoba Hydro Artist Concept Rendering - November 2011

CREATED BY:
Manitoba Hydro - Hydro Power Planning - GIS & Special Studies

COORDINATE SYSTEM:
UTM NAD 1983 Z15N

DATE CREATED:
07-MAR-12

REVISION DATE:
25-JUN-12

0 0.25 0.5 Kilometres
0 0.2 0.4 Miles

VERSION NO:
1.0

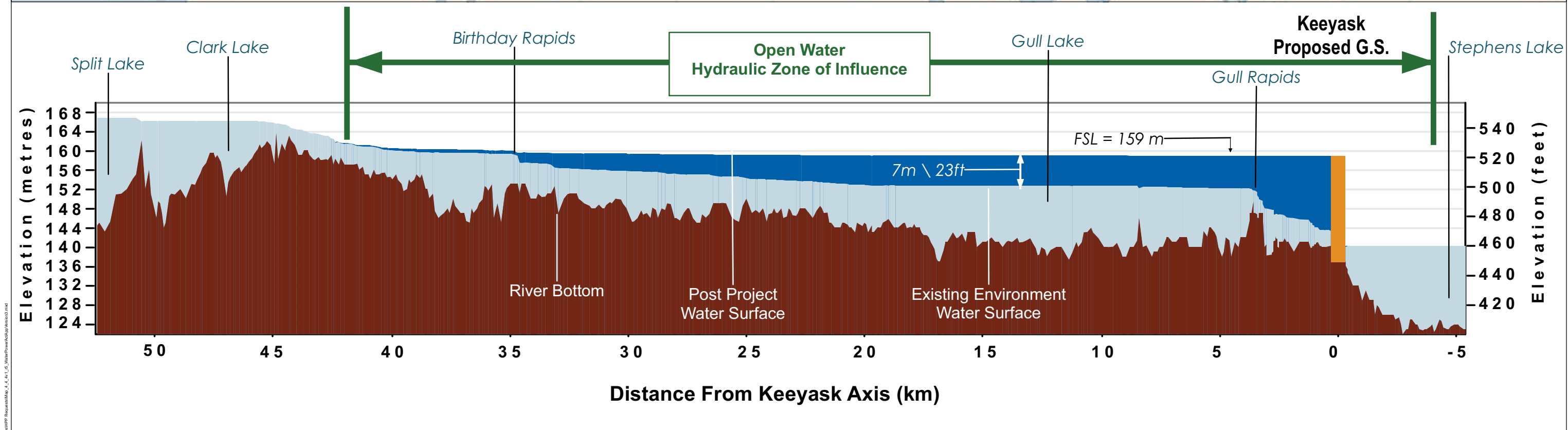
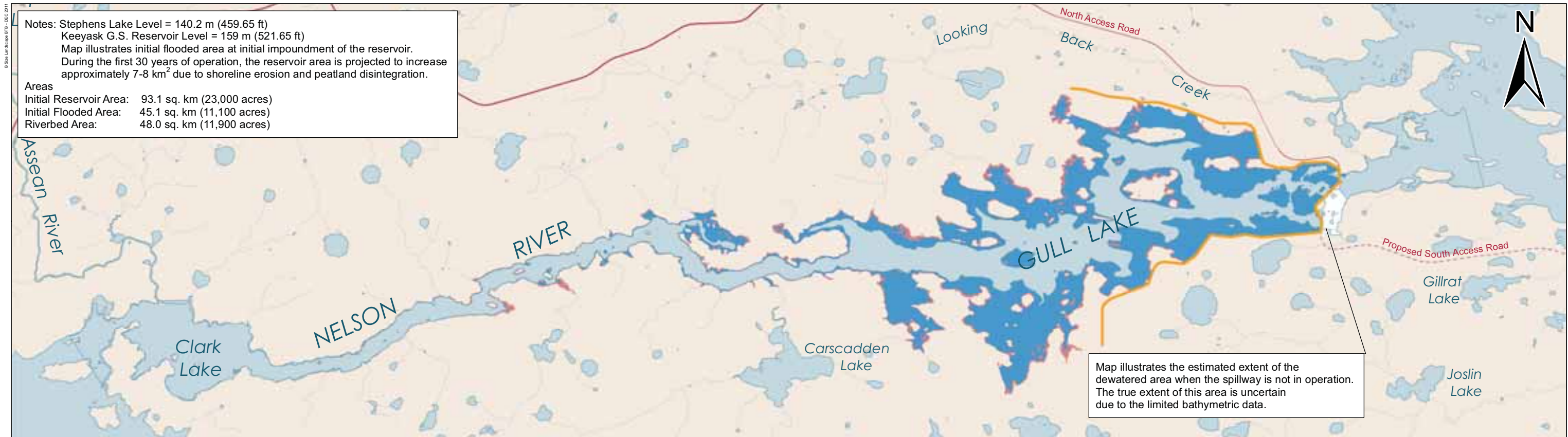
QA/QC:
APPROVED

Note:
Map illustrates the estimated extent of the dewatered area when the spillway is not in operation. The true extent of this area is uncertain due to the limited bathymetric data.

Powerhouse and Spillway Channels

Principal Structures





DATA SOURCE:
Government of Canada; Government of Manitoba; Manitoba Hydro:
gull-ee-50perc-3032cms-rev3; Shore Year 30 Polygon
pp-50perc-3032-159-shore-rev3; pp-DS-50perc-3030-140p2-shore-rev1

CREATED BY:
Manitoba Hydro - Water Resources Engineering Department

COORDINATE SYSTEM:
UTM NAD 1983 Z15N

DATE CREATED:
26-JAN-10

REVISION DATE:
29-MAY-12

VERSION NO:
2.0

QA/QC:
APPROVED

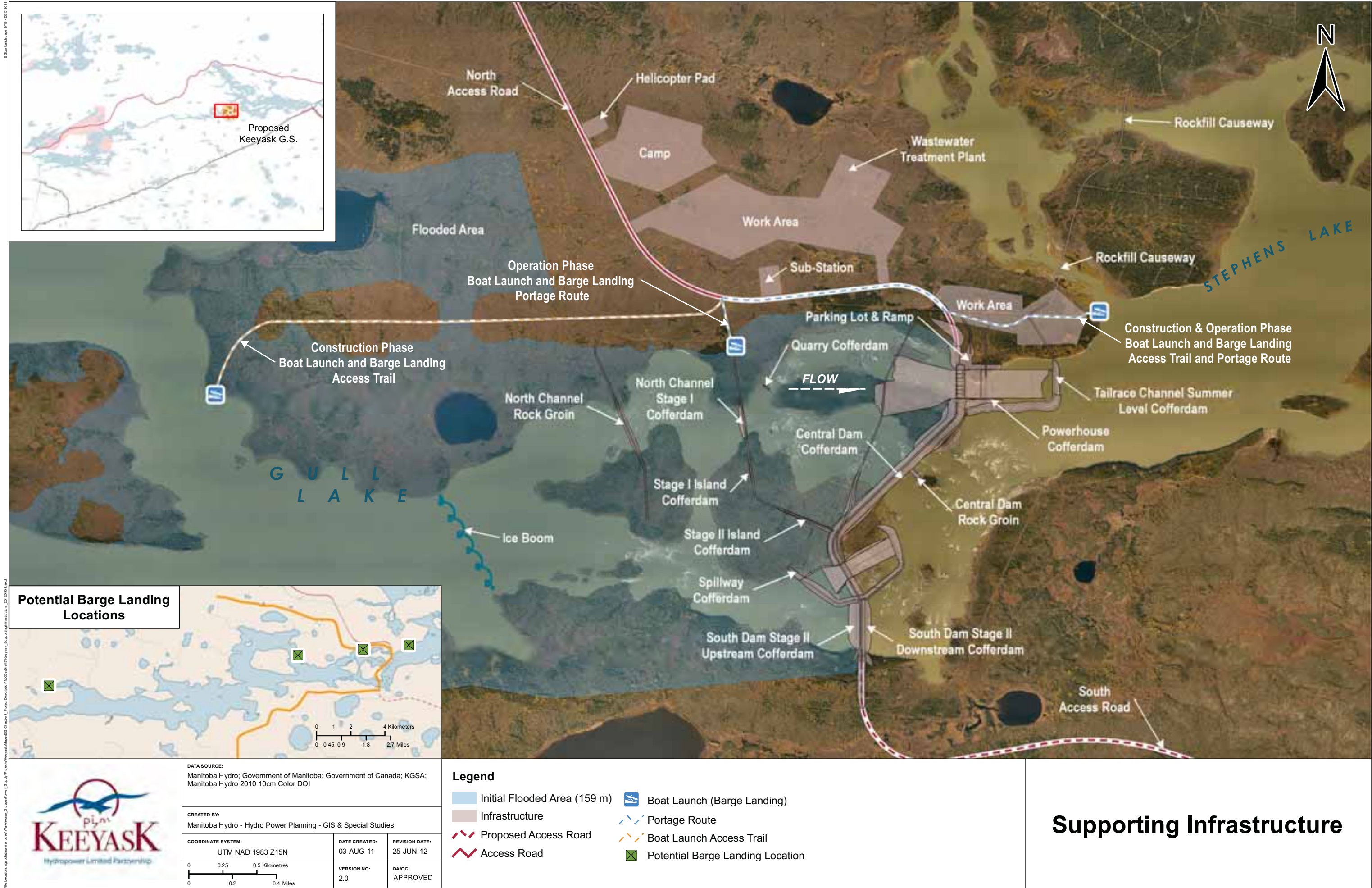
Legend

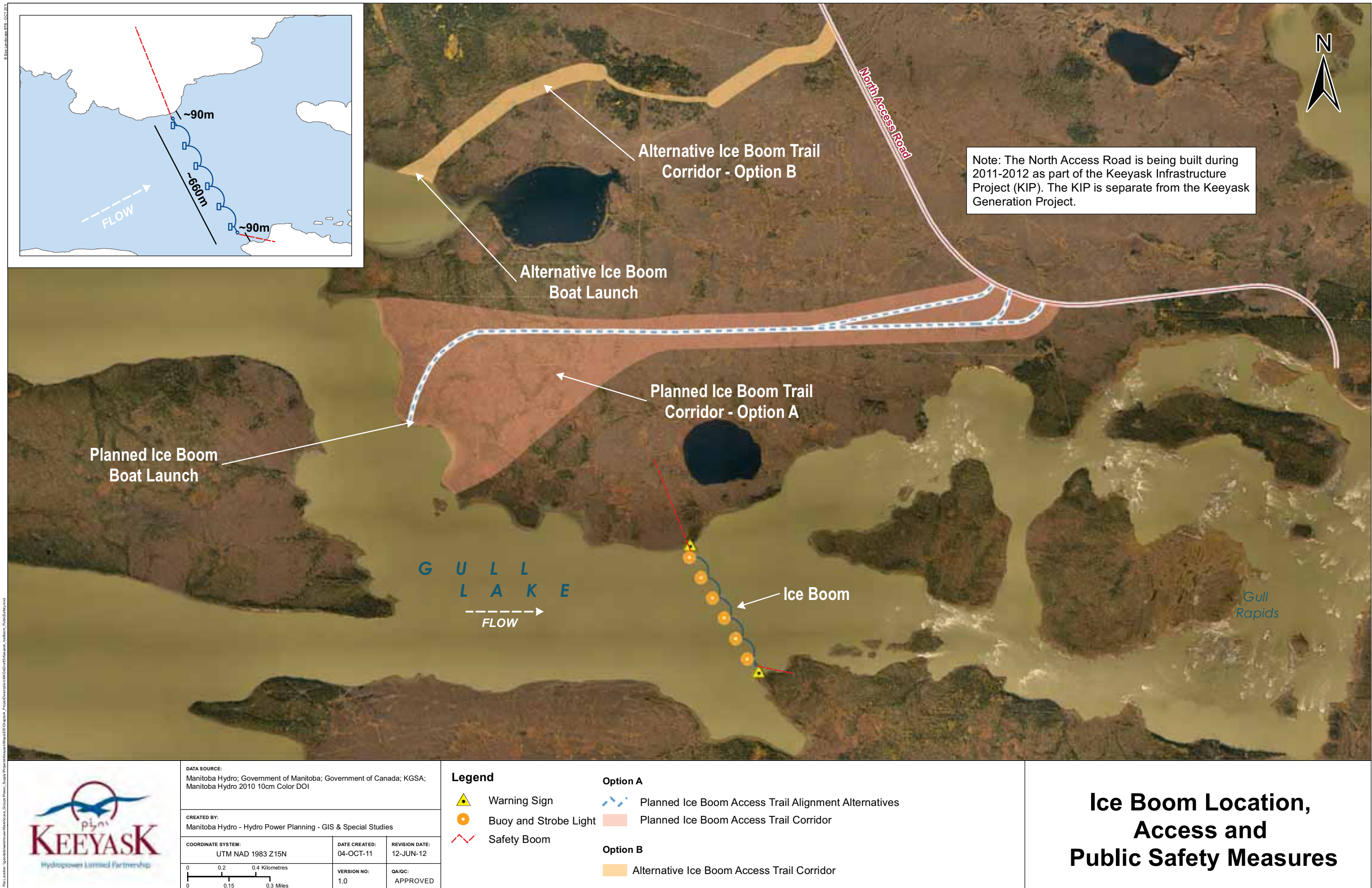
- Existing Water Surface Area
- Initial Flooded Area (159 m)
- Reservoir Expansion During First 30 Years
- Keeyask Principle Structures

Note:
50th Percentile, Open Water Flow
Existing Environment
and Post-Project Environment

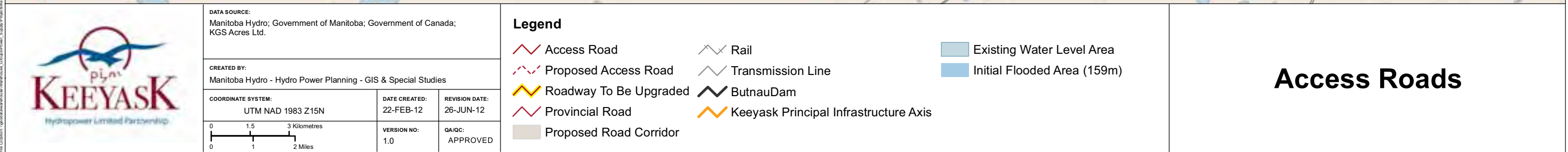
The 30-year shoreline expansion upstream, of Birthday Rapids is not a Project effect as it is predicted to occur without the Project.

Water Surface Profiles and Flooded Area

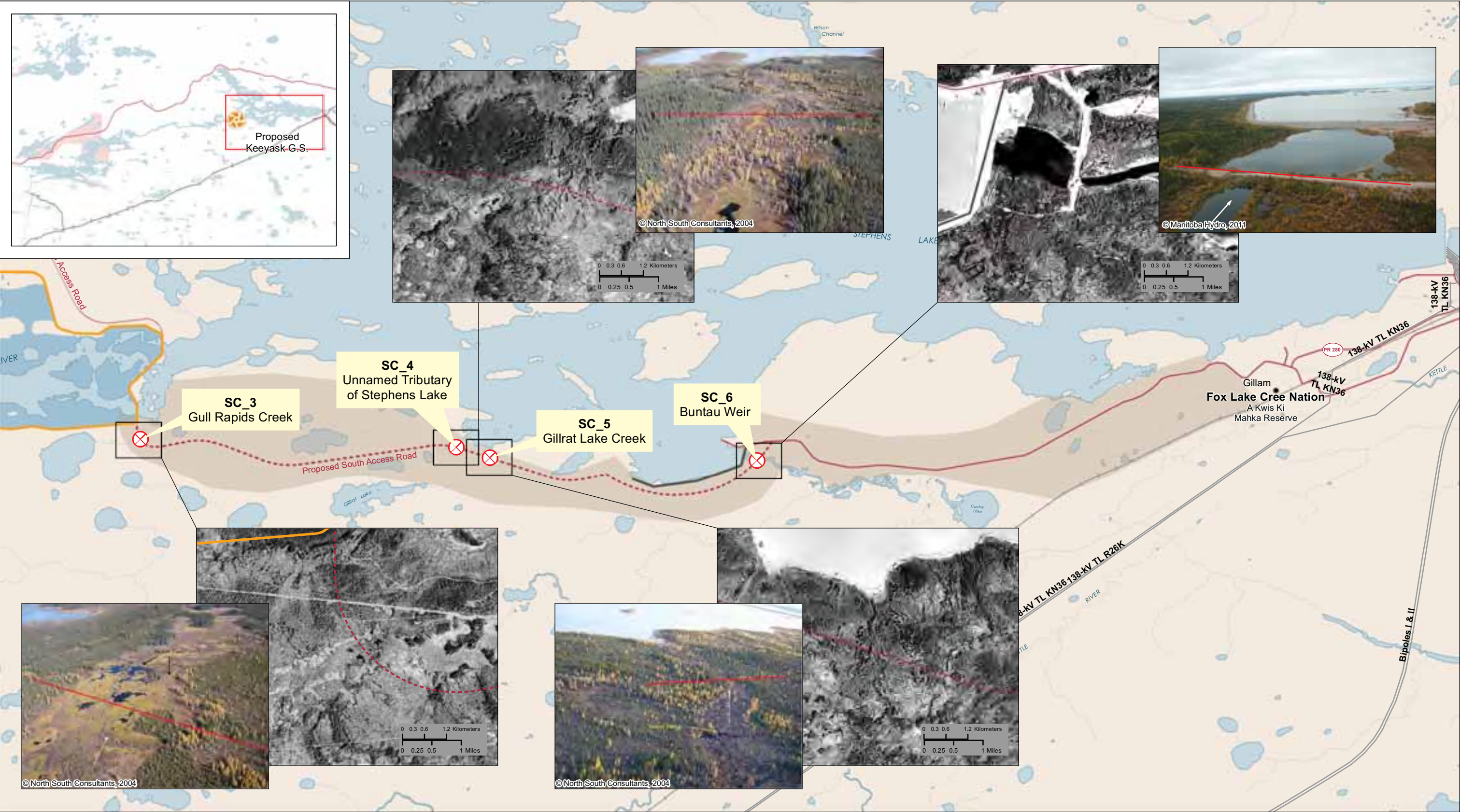







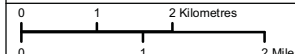


8 Size Landscape 1175 - DEC 2011
File Location: I:\MFA GIS\GIS_Maps\GIS\Keeyask_SouthAccessRoad_StreamCrossings_V01-2008.mxd
© North/South Consultants, 2004





DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; KGS Acres Ltd.; Manitoba Hydro 1999 Black & White 1m 1999 DOI; North / South Consultants Inc.		
CREATED BY: Manitoba Hydro - Hydro Power Planning - GIS & Special Studies		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 22-FEB-12	REVISION DATE: 08-JUN-12
VERSION NO: 1.0	QA/QC: APPROVED	

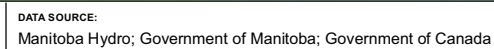


Legend

Access Road	Rail
Proposed Access Road	Transmission Line
Existing Highway	Butnau Dam
Proposed Road Corridor	Keeyask Principal Infrastructure Axis
Proposed Stream Crossing	Existing Water Level Area

Initial Flooded Area (159m)

South Access Road Stream Crossings



CREATED BY:
Manitoba Hydro - Hydro Power Planning - GIS & Special Studies

COORDINATE SYSTEM:
UTM NAD 1983 Z15N

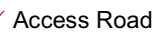
DATE CREATED:
25-MAR-12

REVISION DATE:
10-MAY-12

VERSION NO:	1.0
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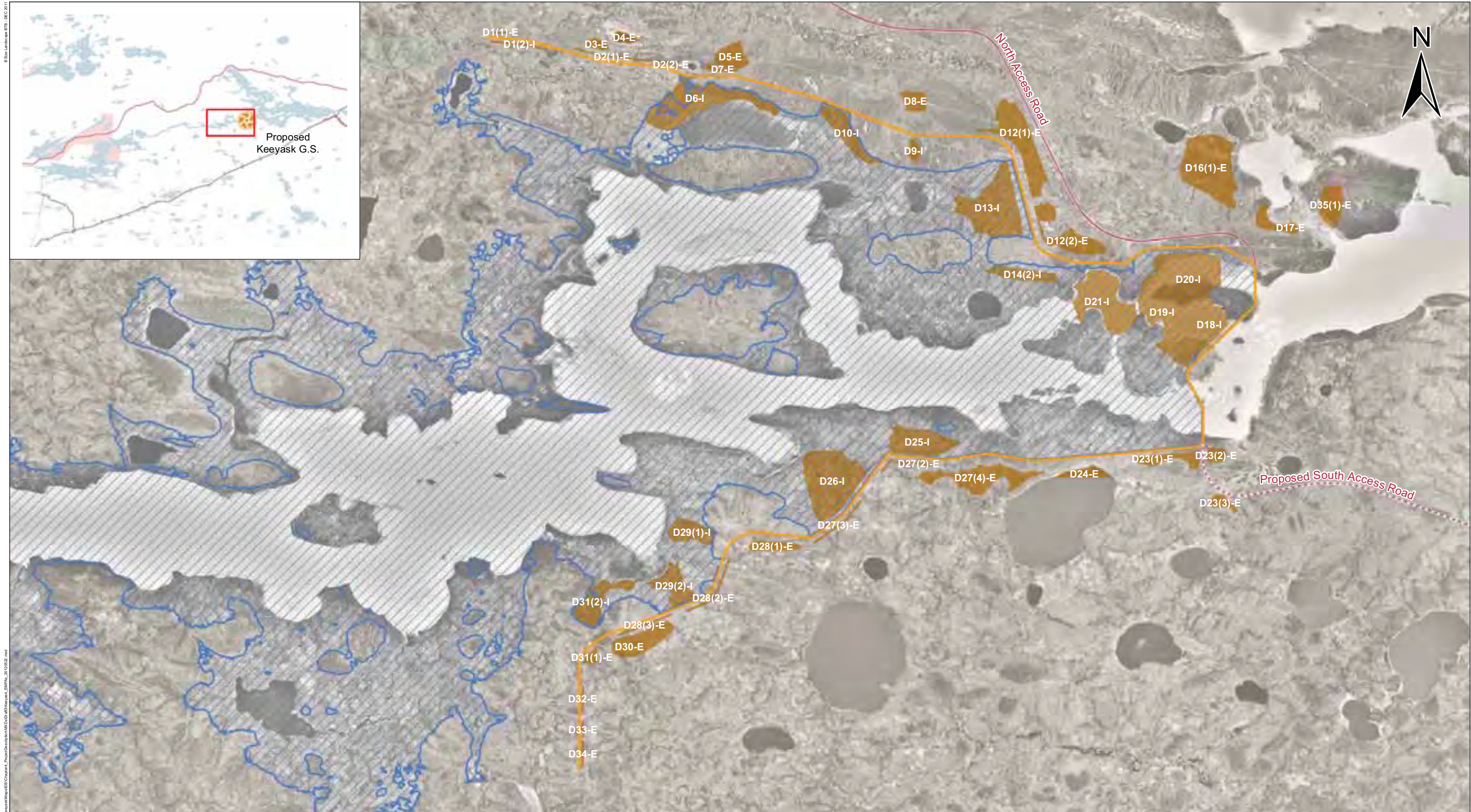
QA/QC:
APPROVED

Legend

 Access Trail

Note:
The Location of boat launches and portage alignments are subject to change.

Boat Launch and Access Routes



DATA SOURCE:
Manitoba Hydro; Government of Manitoba; Government of Canada; KGS
Acreas; Manitoba Hydro 1999 1m Black & White DOI

CREATED BY:
Manitoba Hydro - Hydro Power Planning - GIS & Special Studies

COORDINATE SYSTEM:
UTM NAD 1983 Z15N

0 0.55 1.1 Kilometres
0 0.45 0.9 Miles

DATE CREATED:
09-FEB-12

VERSION NO:
2.0

REVISION DATE:
22-MAY-12

QA/QC:
APPROVED

Legend

- Excavated Material Placement Area
- Access Road
- Proposed Access Road
- Keeyask Principal Structures
- Initial Flooded Area (159 m)

Excavated Material Placement Areas



DATA SOURCE:
Manitoba Hydro; Government of Manitoba; Government of Canada; KGSA;
Manitoba Hydro 2010 10cm Color DOI

CREATED BY:
Manitoba Hydro - Hydro Power Planning - GIS & Special Studies

COORDINATE SYSTEM:
UTM NAD 1983 Z15N

0 0.25 0.5 Kilometres
0 0.2 0.4 Miles

DATE CREATED:
03-AUG-11

VERSION NO:
1.0

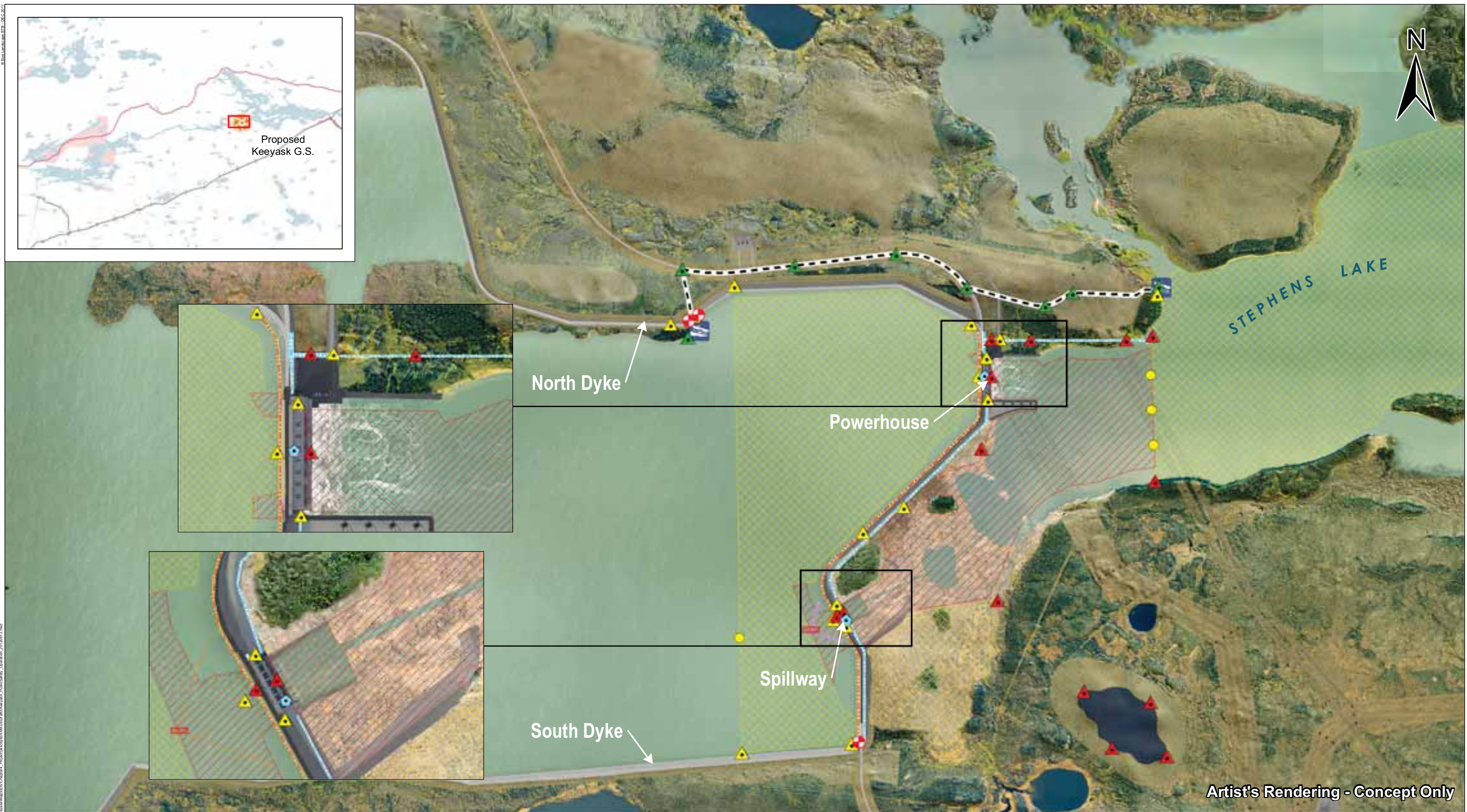
REVISION DATE:
13-JUN-12

QA/QC:
APPROVED

Legend

- | | | |
|--------------|-------------------------|----------------------|
| Ice Boom | Danger Sign | Proposed Access Road |
| Safety Boom | Warning Sign | Access Road |
| Access Trail | Dangerous Waterway Zone | Infrastructure |
| Buoys | Warning Waterway Zone | Flooded Area |
| Boat Launch | | |

Waterways Public Safety Measures Construction Phase



Artist's Rendering - Concept Only



DATA SOURCE:
Manitoba Hydro; Government of Manitoba; Government of Canada; KGSA;
Manitoba Hydro Artist Concept Rendering - March 2012

CREATED BY:
Manitoba Hydro - Hydro Power Planning - GIS & Special Studies

COORDINATE SYSTEM:
UTM NAD 1983 Z15N













DATE CREATED:
04-APR-12

REVISION DATE:	13-JUN-12
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VERSION NO:	1.0
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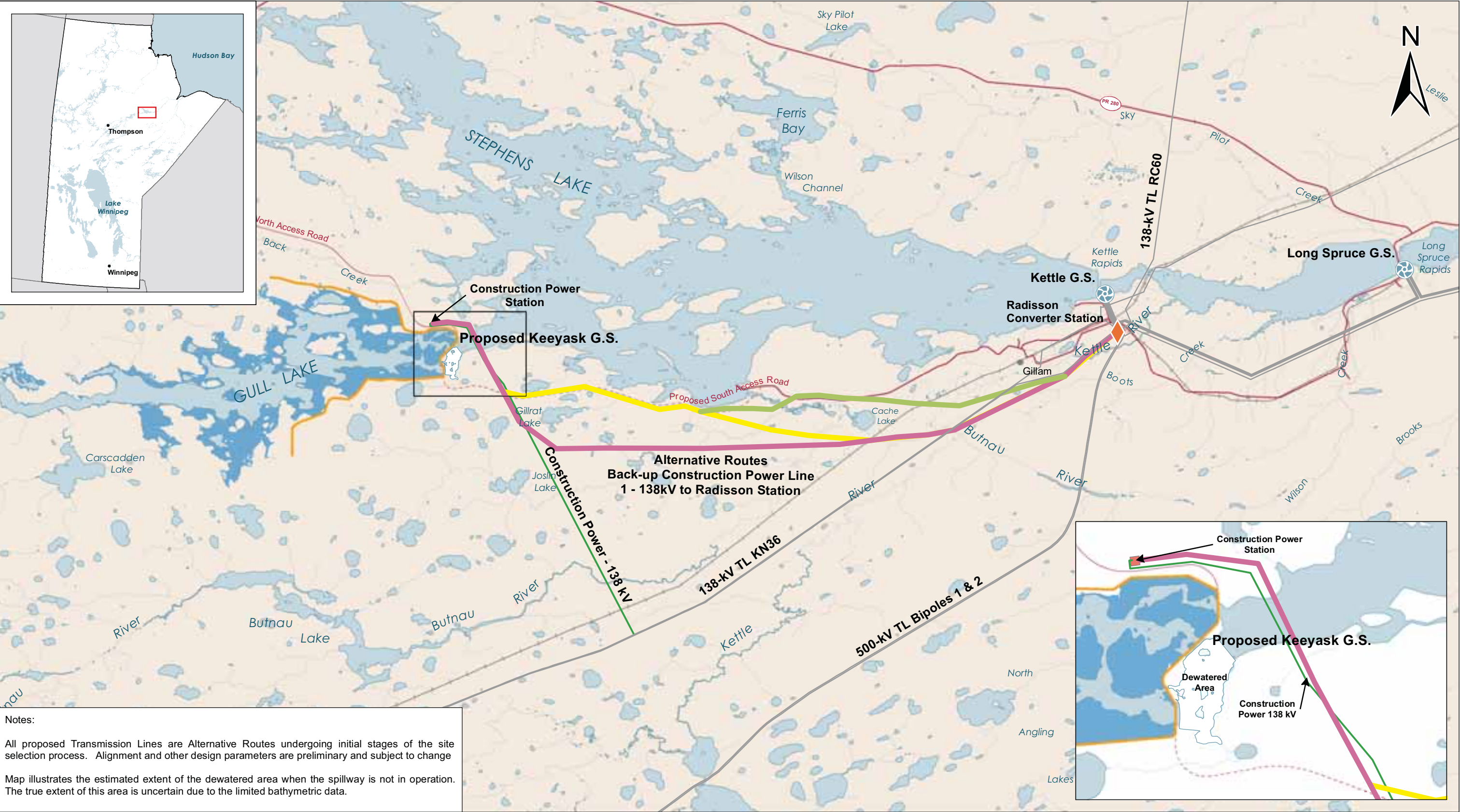
QA/QC:	
APPROVED:	


Legend


- | | | | | | |
|---|-------------------------|---|-------------------|---|-------------------------|
|  | Safety Boom |  | Danger Sign |  | Dangerous Waterway Zone |
|  | Fence |  | Portage Sign |  | Warning Waterway Zone |
|  | Guard Rail |  | Warning Sign |  | Barricade |
|  | Potential Portage Route |  | Boom Anchor Point |  | Buoys |
|  | Boat Launch |  | Siren & CCTV | | |

Waterways Public Safety Measures Operation Phase


8 Size Landscape 1115 1562 2012
File Location: I:\geodatabase\workspace\workspace\Engineering\Power_Supply\Projects\Keeyask\Map\GIS\Chapter4_PreliminaryTransmissionLines\Construction_2012022.mxd







DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; Manitoba Hydro - Transmission; Manitoba Hydro - Water Resource Engineering (PP_95perc_4327_159_shore_rev5)		
CREATED BY: Manitoba Hydro - Hydro Power Planning - GIS & Special Studies		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 13-FEB-12	REVISION DATE: 22-MAY-12
	VERSION NO: 2.0	QA/QC: APPROVED


Legend


 Transmission Line (Existing)


 Construction Power Line (Proposed)


Back-up Construction Power Transmission Line


 Route Alternative Option A


 Route Alternative Option B


 Route Alternative Option C


 Generating Station (Existing)


 Converter Station (Existing)


 Keeyask Principal Structures


 Transmission Substation (Proposed)


 Potential Dewatered Area

 Initial Flooded Area (159 m)

 Existing Water Level

 Highway

 Access Road

 Proposed Access Road

Keeyask Transmission Project

Preliminary Transmission Corridors
During Keeyask Generation Project
Construction Phase

