



Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Southern Loop Transmission Corridor
- Rd1 to Vivian Transmission Corridor (Existing)
- Route BMX
- Route BMY
- Route BOB
- Route BWP
- Route BXP

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Route Planning Area

- Adjusted Border Crossing
- Route Planning Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinate System: UTM Zone 14N NAD83
 Data Source: MHydro, ProvMB, NRCan
 Date Created: August 10, 2015



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Preference Determination Routes BMX, BWZ, BXP, BOB, and BMY

Map 5-21

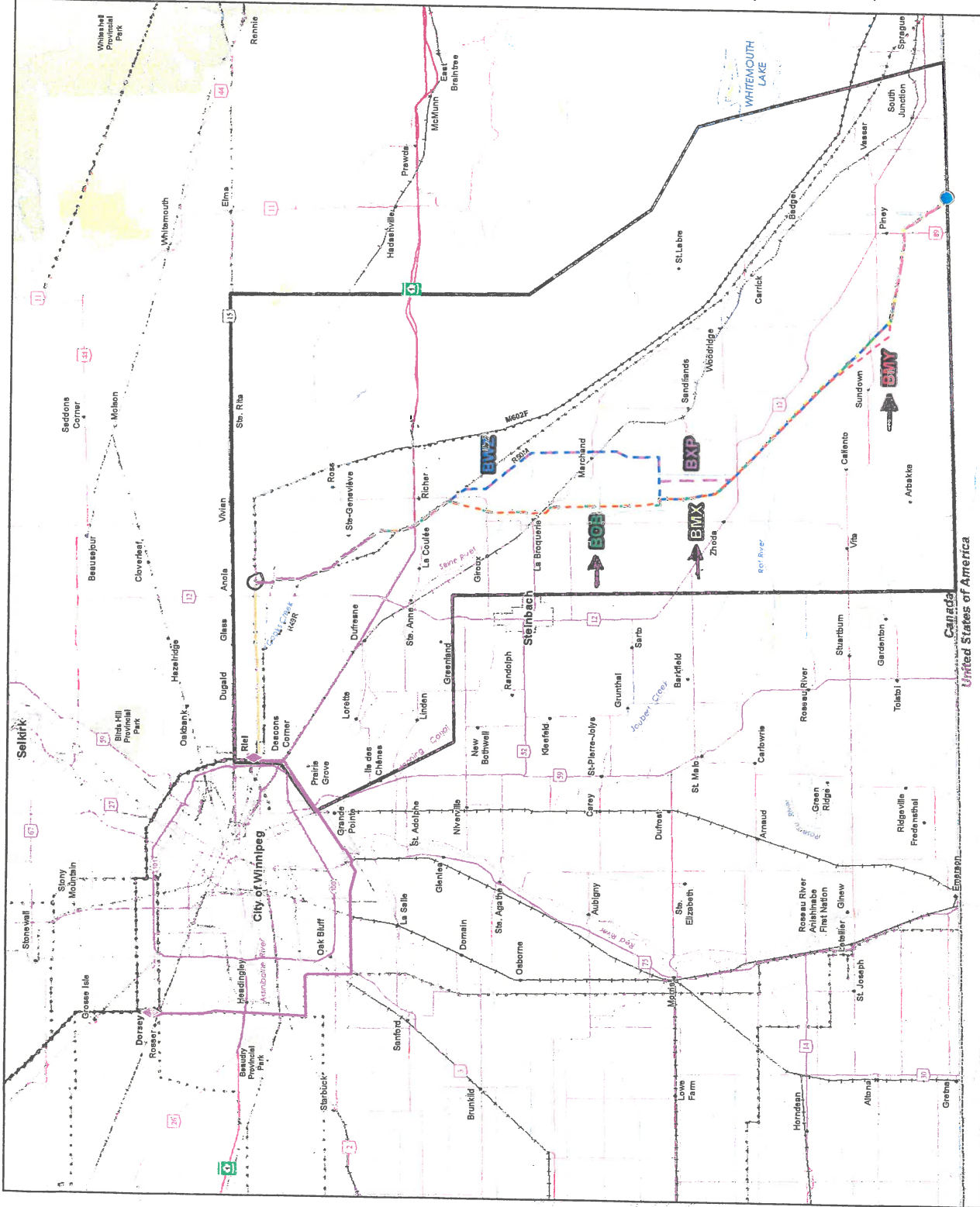




Table 5-33 Route Statistics for Routes BMX, BMY, BOB, BWZ and BXP

Feature	Route BMX	Route BMY	Route BOB	Route BWZ	Route BXP
Built					
Relocated Residences (Within ROW)	0	0	0	0	0
Potential Relocated Residences (100 m from EOROW)	11	11	11	11	11
Proximity To Residences (100 m-400 m from EOROW)	87	89	87	65	63
Proposed Residential Developments – Within ROW	20	20	20	14	14
Current Agricultural Land Use (Value) – ROW	214	215	214	162	162
Acres of Annual Crop (72.9% weighting)	256	256	256	202	202
Acres of Hayland (27.1% weighting)	102	106	102	53	53
Land Capability for Agriculture (Value) – ROW	751	753	752	727	705
Classes 1-3 – Acres (66% weighting)	669	671	671	529	529
Classes 4-5 – Acres (33% weighting)	938	941	936	1,146	1,078
Proximity to Intensive Hog Operations (Acres) – ROW	1,481	1,481	1,491	1,619	1,535
Diagonal Crossings of Prime Agricultural Land (Acres) – ROW	222	226	222	173	173
Proximity to Buildings and Structures (100 m from ROW)	11	11	11	7	7
Public Use Areas (250 m from ROW)	11	11	11	7	7
Historic Resources (250 m from ROW)	4	3	4	3	3
Potential Commercial Forest (Acres) – ROW	493	438	488	485	509

(FPR)

MANITOBA – MINNESOTA TRANSMISSION PROJECT
 ENVIRONMENTAL IMPACT STATEMENT
 5: TRANSMISSION LINE ROUTING



Feature	Route BMX	Route BMY	Route BOB	Route BWZ	Route BXP
Natural					
Natural Forests (Acres) – ROW	1,709	1,709	1,718	1,983	1,921
Intactness	863	946	868	866	933
Stream/River Crossings – Centreline	13	13	13	15	15
Wetland Areas (Acres) – ROW	366	422	386	454	488
Conservation and Designated Lands (Acres) – ROW	246	245	245	179	165
Engineering					
Length (km)	121	122	121	128	125
Seasonal Construction and Maintenance Restrictions (Value) – ROW	620	639	616	660	659
Index of Proximity to Existing 500 kV Lines	7,239,274,441	7,321,078,286	7,277,883,925	6,974,453,647	6,663,453,350
Existing Transmission Line Crossings	3	3	3	3	3
Accessibility	435,541,250	435,541,250	438,629,914	444,550,446	418,938,885
Costs ¹	\$106,265,017	\$106,265,017	\$105,059,864	\$108,642,726	\$106,358,864

NOTE:

¹ Costs used were high-level estimates of construction costs used for relative comparison.

Criteria	Route	Scores	Rationale
Environment (natural) (continued)			<p>Route BWZ is slightly preferred to BXP because it provides a larger buffer between the route and the Watson P. Davidson WMA and avoids some wetlands.</p> <p>Route BMX goes over the southern edge of Lonesand Lake, therefore is slightly less preferred than Route BOB.</p>
Environment (built)	BMX	2.9	<p>Route BWZ is the preferred route as it avoids the town of La Broquerie, proposed residential developments and privately owned agricultural lands. Route BXP ranks slightly lower than Route BWZ because it avoids the Maple Leaf Foods operations.</p> <p>Route BOB is a little closer to the cemetery therefore it scores the lowest. Route BMY scores the same as BOB there is little difference between these routes from a built perspective.</p>
	BWZ	1	
	BXP	1.1	
	BMY	3	
	BOB	3	
Community	BMX	2.5	<p>The highest rank was given to the route(s) that best balances the overall concerns.</p> <p>Route BWZ ranks highest from the PEP perspective because it avoids the private recreational area, the Maple Leaf Foods operation and uses the easternmost segment, mitigating the concerns related to residential development in and around the Town of La Broquerie.</p> <p>The Hylife concerns relating to their calving grounds are mitigable with the use of self-supporting towers with protected bases.</p> <p>BWZ However does mitigate concerns with the regarding the land of a private property owner that is of importance to members of the Roseau River Anishinabe First Nation</p> <p>Route BWZ ranks lowest from the FNMEP perspective: It will cause more Crown land fragmentation and affect historical and contemporary use.</p> <p>It creates Archeology concerns (effect on areas identified as potential to contain heritage resources) and greater access to sensitive areas farther east.</p> <p>Route BMY ranks highest from the FNMEP perspective.</p> <p>Route BMY does not address the Town of La Broquerie concerns but accommodates concerns heard from private landowners and livestock operators located within the RM of La Broquerie and the RM of Stuartburn (Hylife, Maple Leaf, recreational lands, Sundown Cemetery and the land of a private property owner that is of importance to members of the Roseau River Anishinabe First Nation. Route BOB accommodates the concerns regarding the land of a private property owner that is of importance to members of the Roseau River Anishinabe First Nation.</p>
	BWZ	2	
	BXP	2.5	
	BMY	1	
	BOB	2	



Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Preferred Route
- Route Finalist SL

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

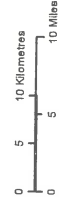
Route Planning Area

- Adjusted Border Crossing
- Route Planning Area

Landbase

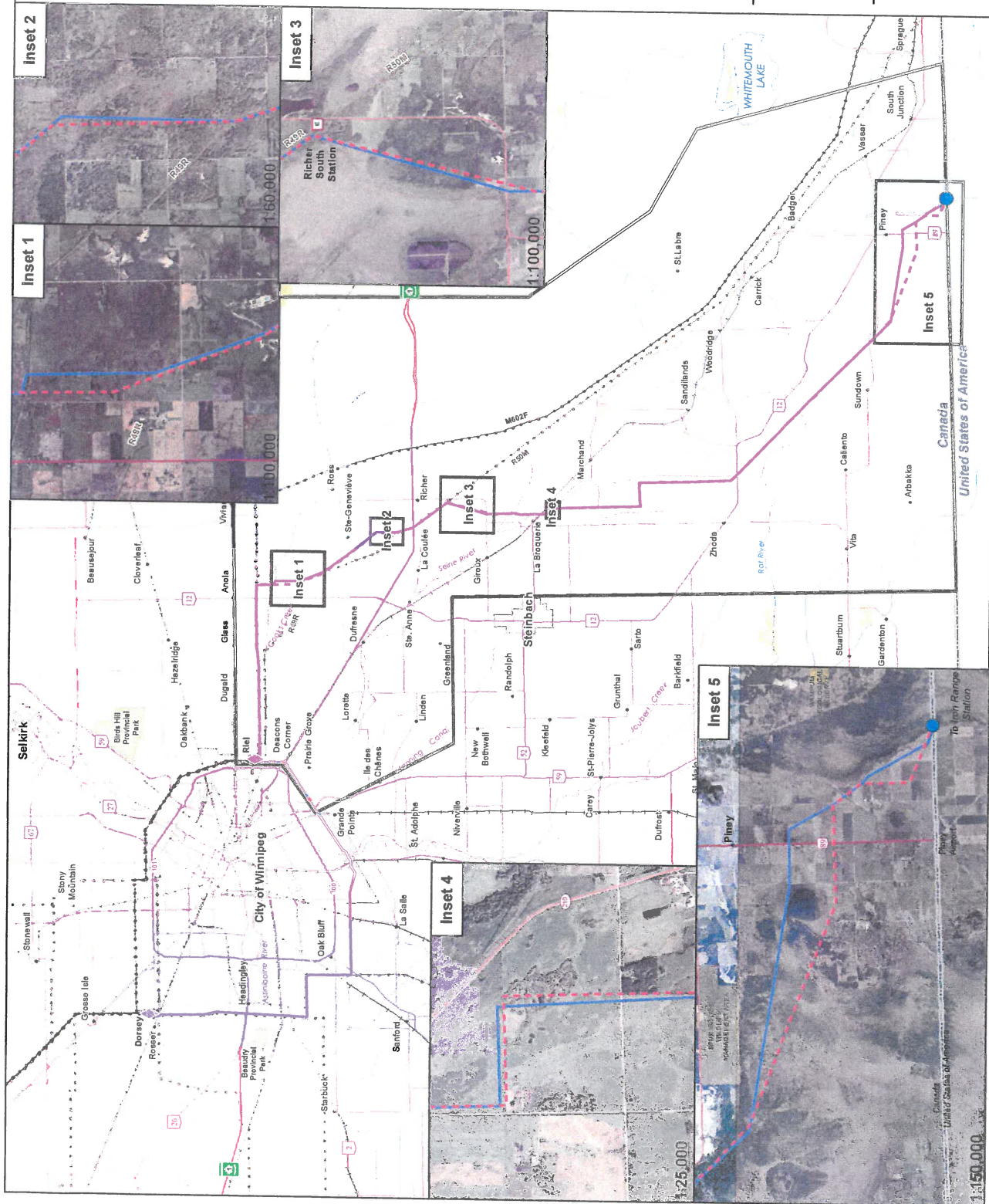
- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinates System: UTM Zone 14N NAD83
Data Source: MB Hydro, FROMB, NRCAN
Date Created: August 10, 2015



Preferred Route Adjustments

Map 5-19





Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Riel to Vivian Transmission Corridor (RVTC)
- Southern Loop Transmission Corridor (SLTC)
- Piney East Route Finalists
- Route DKT
- Route DWM
- Route EEL
- Route FWZ

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Route Planning Area

- Route Planning Area
- Border Crossing Area

Landbase

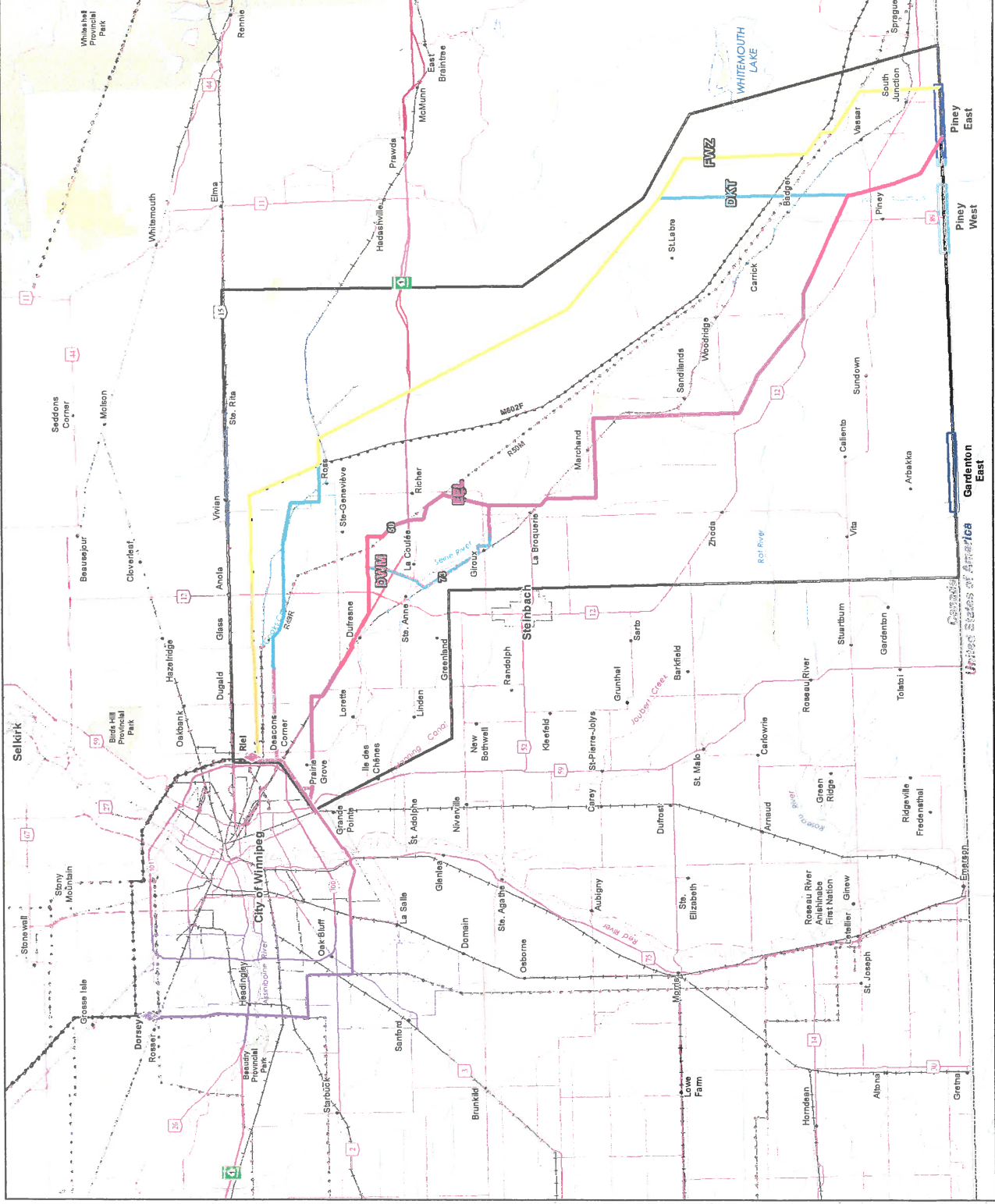
- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProAMB, INRCAN
 Date Created: August 10, 2015



Piney East Border Crossing Preference Determination Routes

Map 5-13





Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Riel to Vivian Transmission Corridor (RVTC)
- Southern Loop Transmission Corridor (SLTC)
- Piney West Route Finalists
- Route AOS
- Route AOO
- Route BZG
- Route AOS (Alternative Route)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Route Planning Area

- Route Planning Area
- Border Crossing Area

Landbase

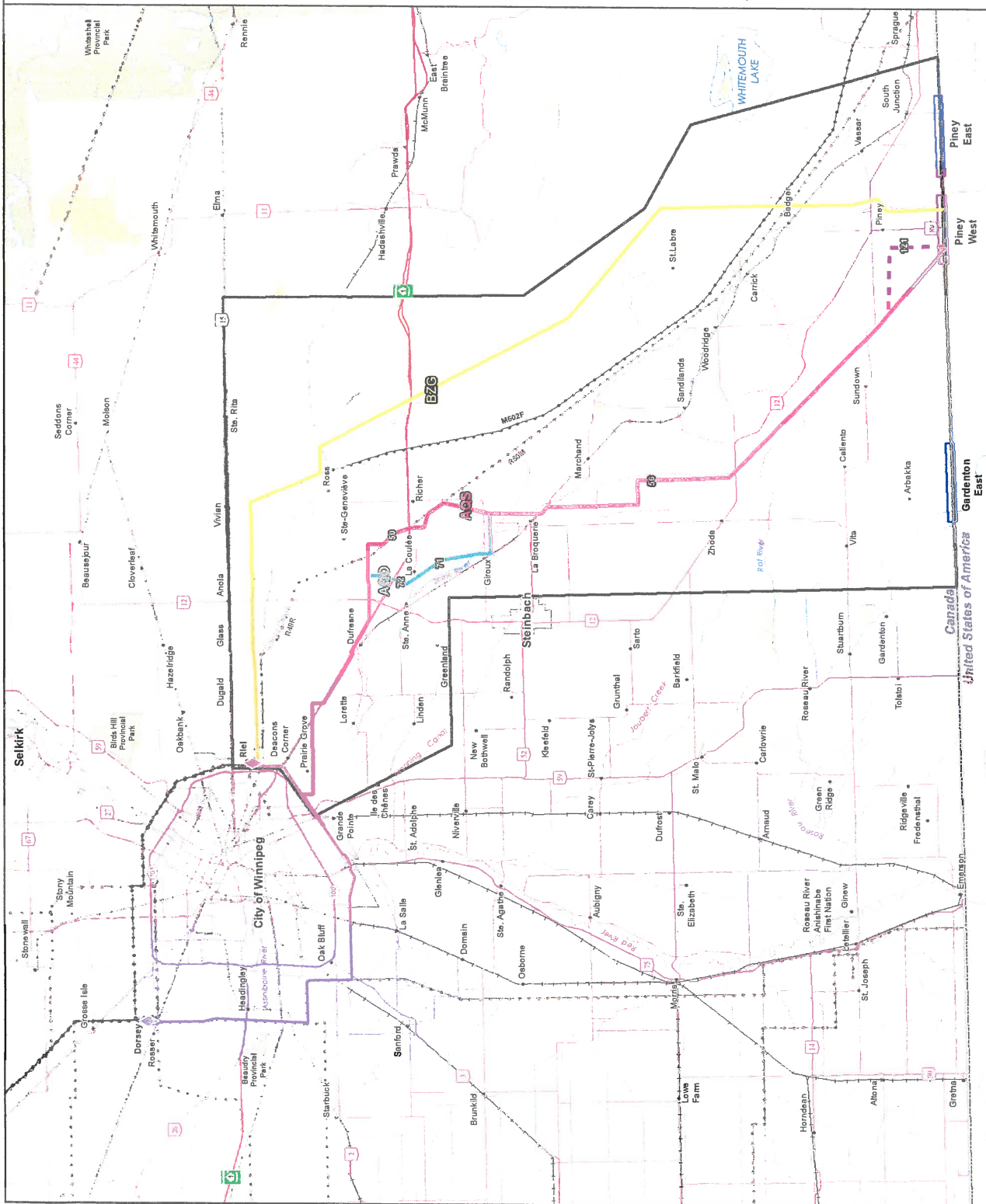
- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinates System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: August 10, 2015



Piney West Border Preference Determination Routes

Map 5-14



Project Infrastructure

- Converter Station (Existing)
- Round 2 Alternative Route and Segment Number

Infrastructure

- Existing 500KV Transmission Line
- Existing 230KV Transmission Line

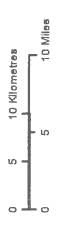
Assessment Area

- Route Planning Area

Landbase

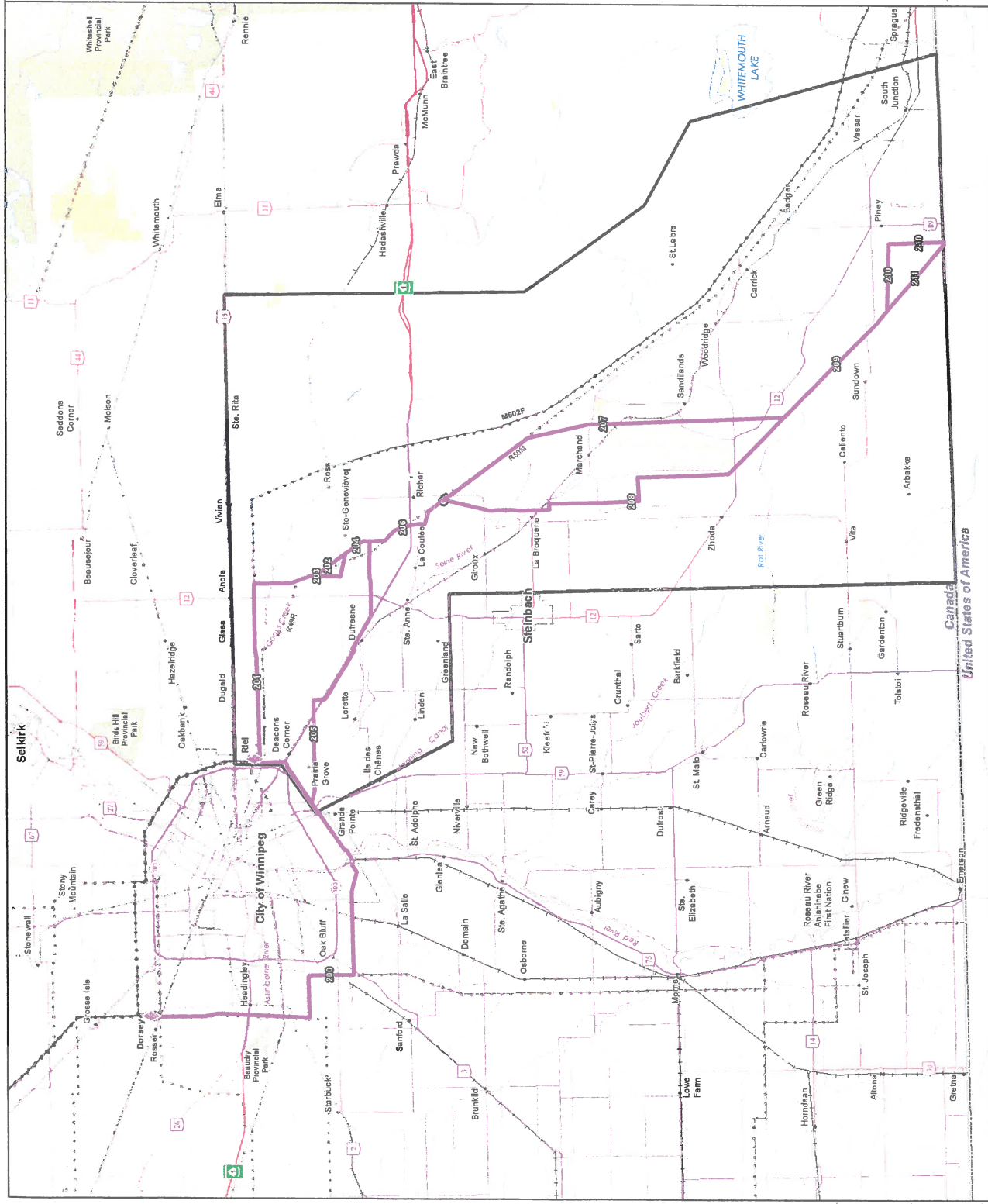
- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinates System: UTM Zone 14N NAD83
 Date Source: MB Hydro, Proj/WB, IBCAN
 Date Created: July 15, 2015



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Round 2 Alternative Routes



Manitoba-Winnipeg Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500KV Transmission Line
- Existing 230KV Transmission Line

Round 1 First Nations Feedback

- First Nations Areas of Concern - Cultural: Feedback Zone
- Area 1
- Area 2
- Area 3

Areas of Interest Along Refined Alternati Round 2 Feedback

- Roseau River First Nation
- Pegule First Nation

Assessment Area

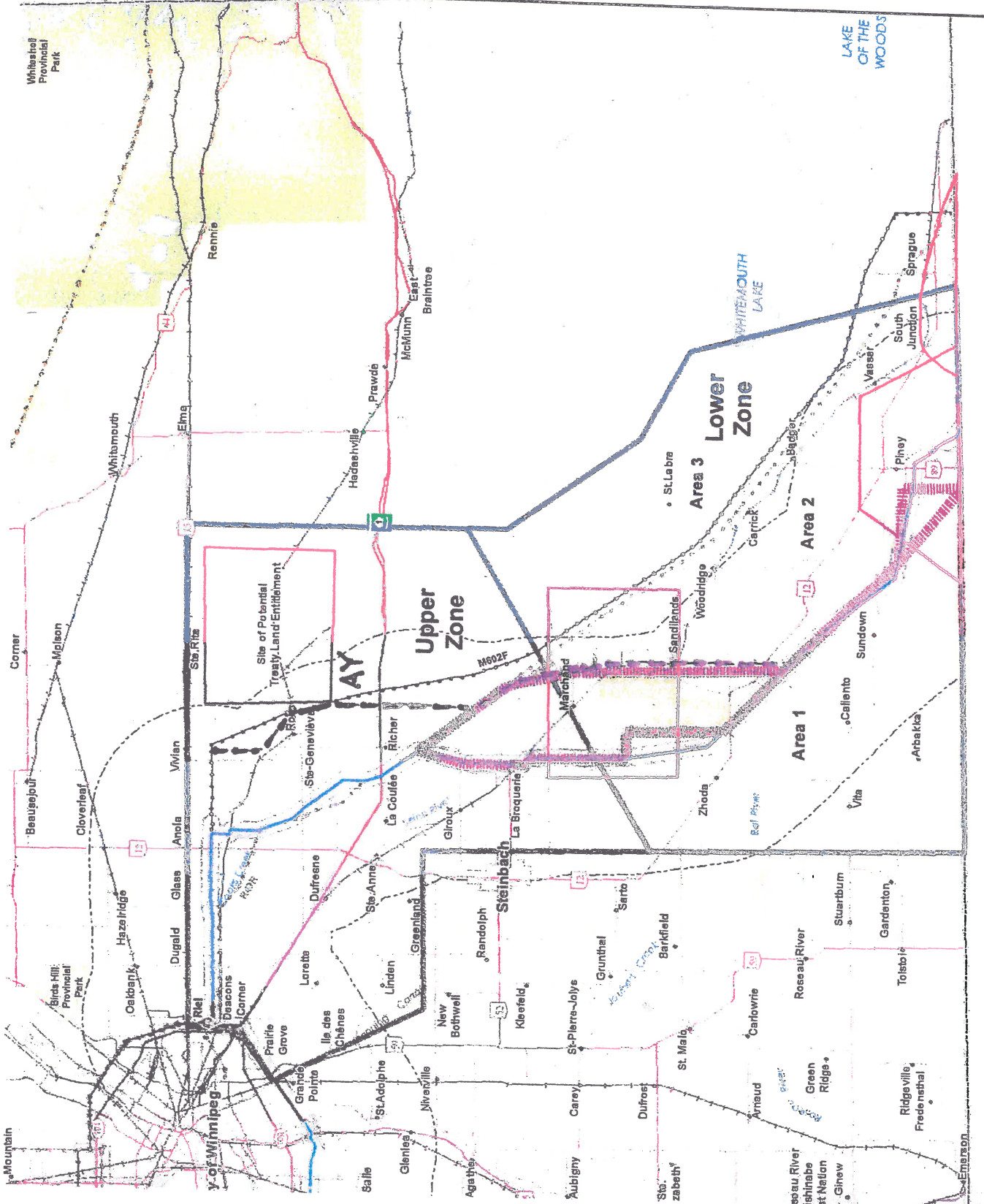
- Traditional Land and Resource Use Local Assessment Area
- Traditional Land and Resource Use Regional Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Li
- Ecological Re
- Wildlife Manag
- Provincial Par

Source:
 1. Roseau River, Swan Lake and Long Plain First Nation January 2014, Manitoba Hydro Licensing and Environment
 2. IMTP Aboriginal Engagement - What We Heard R. Manitoba Hydro.

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProWB, NRCAN
 Date Created: August 11, 2015



First Nations Areas of C Identified During Prelimina.

MAP 11-3

Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Peguis First Nations Plant Harvesting Sites¹

- Gathering
- Gathering

Assessment Area

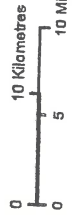
- Traditional Land and Resource Use Local Assessment Area
- Traditional Land and Resource Use Regional Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

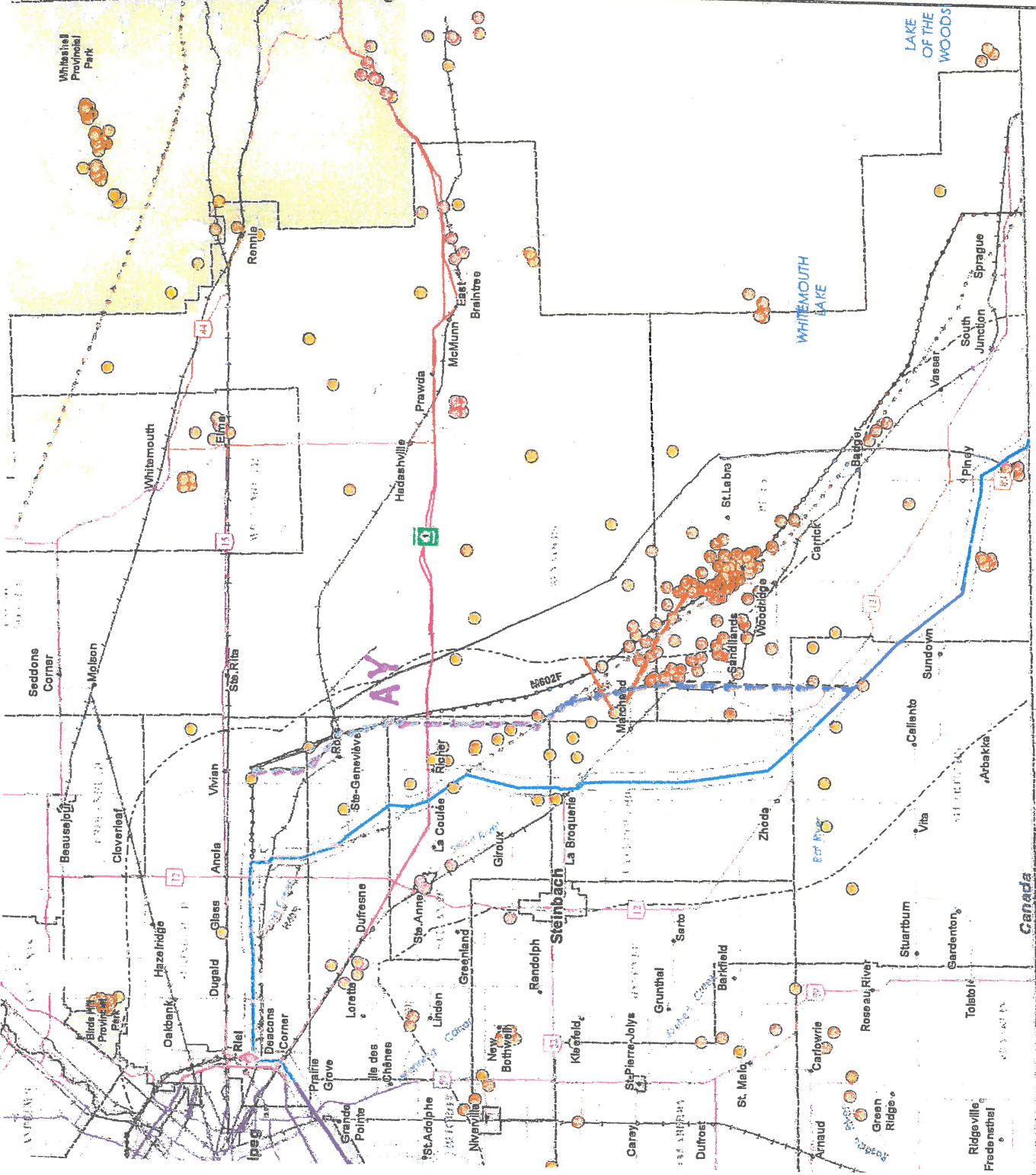
Source:
1. Peguis FN Areas of Interest from Aboriginal Traditional Knowledge Interviews, October 2014 – March 2015, Whelan Enns Associates Inc.

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: August 10, 2015



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MAP 11-4





Canada
United States of America

Manitoba-Minnesota Transmission Project

Project Infrastructure

-  Converter Station (Existing)
-  Final Preferred Route (FPR)
-  Infrastructure
-  Existing 500kV Transmission Line
-  Existing 230kV Transmission Line












Peguis First Nations Hunting and Trapping Sites

-  Hunting/Hunting Birds/Trapping
-  Hunting/Hunting Birds/Trapping

Assessment Area

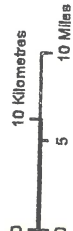
-  Traditional Land and Resource Use Local Assessment Area
-  Traditional Land and Resource Use Regional Assessment Area

Landbase

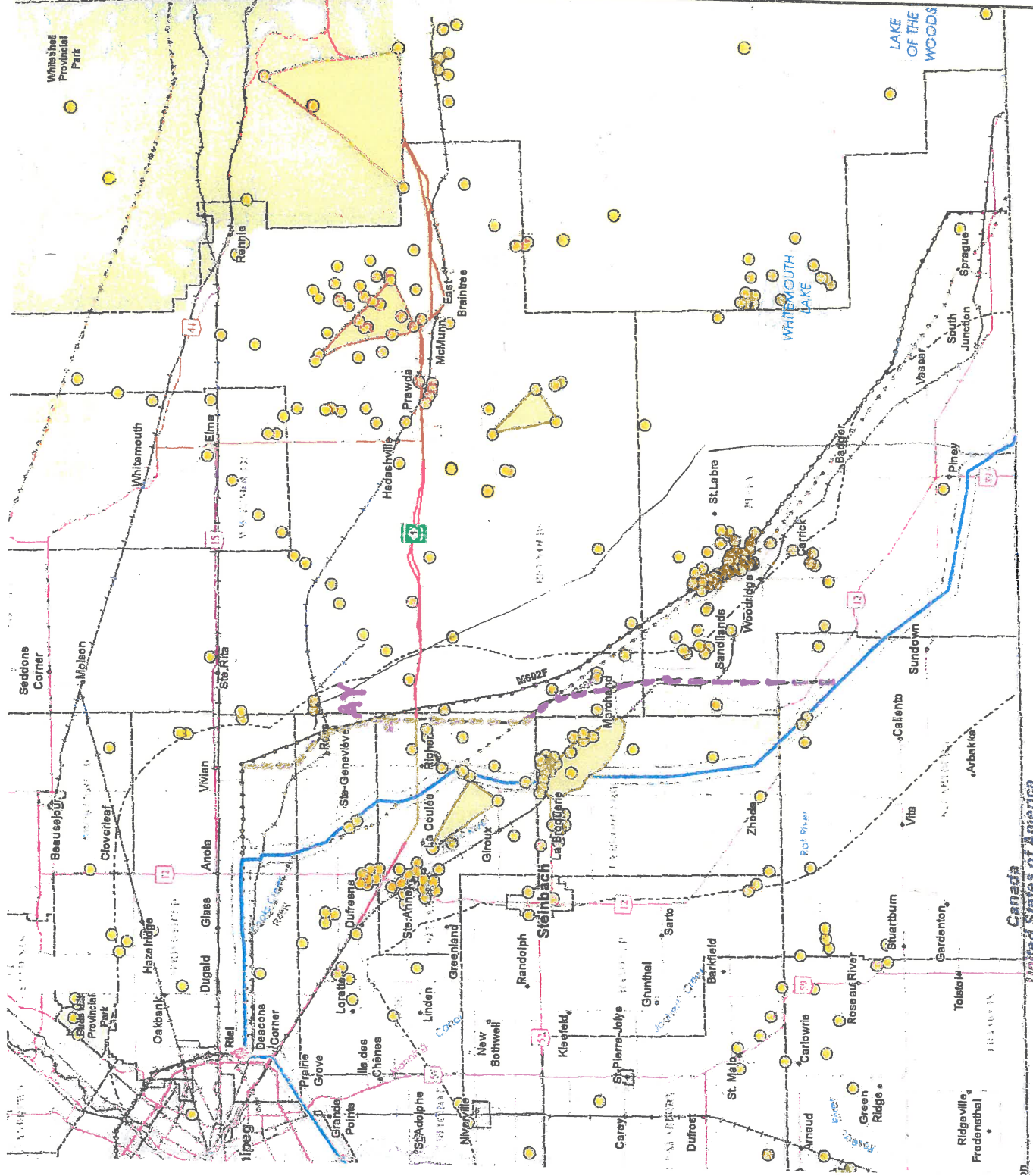
-  Community
-  Railway
-  Trans Canada
-  Provincial Highway
-  Provincial Road
-  City
-  First Nation Lands
-  Ecological Reserve
-  Wildlife Management Area
-  Provincial Park
-  Rural Municipality

Sources:
1. Peguis FN Areas of Interest from Aboriginal Traditional Knowledge Interviews, October 2014 – March 2015, Wholan Enns Associates Inc.

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: August 10, 2015



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Project Infrastructure

- Converter Station (Existing)
- Route Finalist SIL
- Route Finalist AY
- Route Finalist SGZ
- Route Finalist URQ
- Route Finalist URV

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

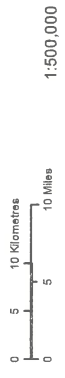
Route Planning Area

- Adjusted Border Crossing
- Route Planning Area

Landbase

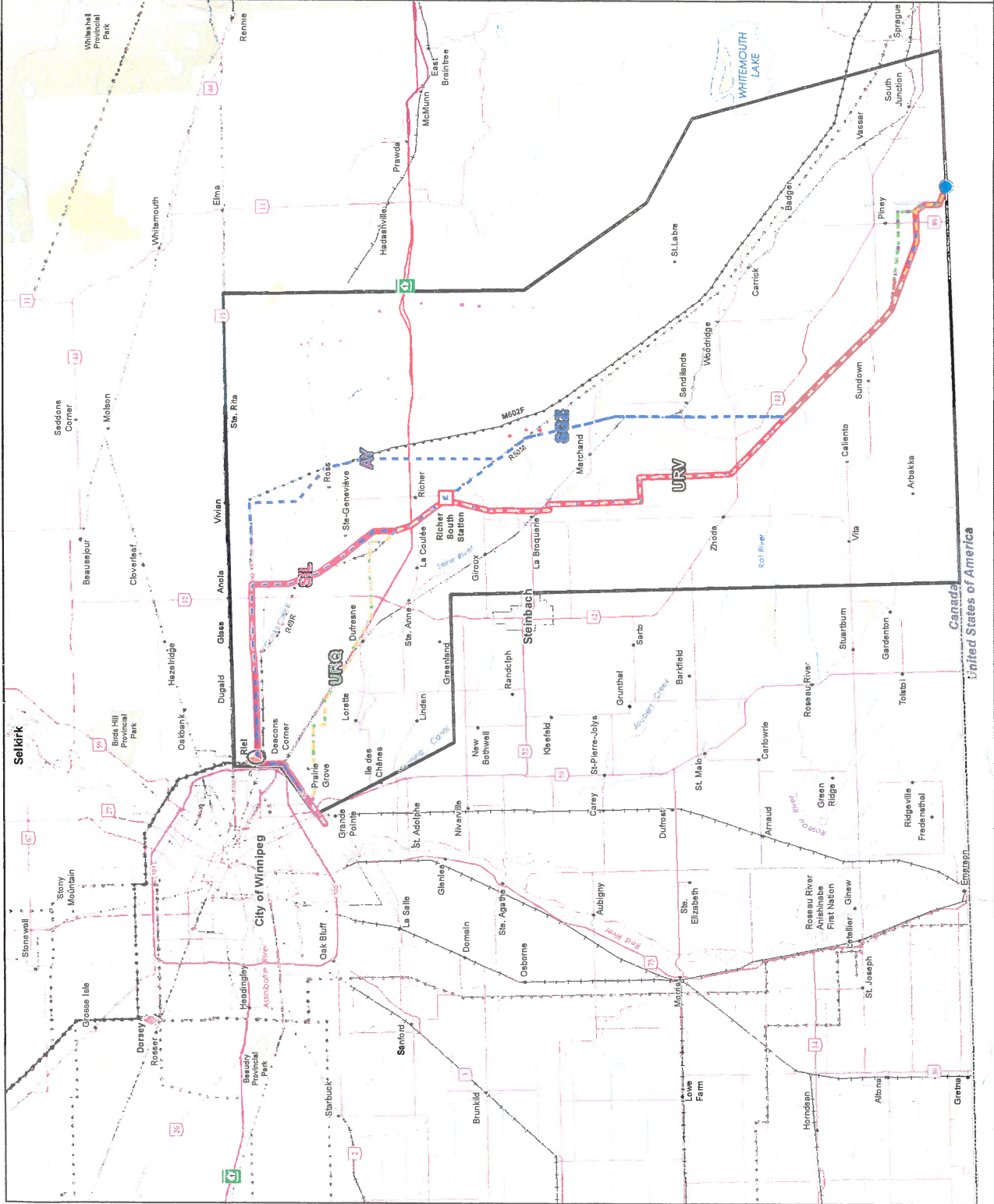
- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park

Coordinate System: UTM Zone 48N NAD83
 Contour Interval: 100m, 1:500,000
 Date Created: August 10, 2015



**Round 2 Preference
Determination Routes**

Map 5-18



Feature (Based Upon Table T5-27)	Impact Assessment	SIL (BMY Proxy)	AY	BZG
Relocated Residences	Less is Better	1	0	0
Potential Relocated Residences (within 100 m)	Less is Better	15	6	1
Proximity to Residences (100 m – 400 m)	Less is Better	130	68	13
Proposed Residential Development (within ROW)	Less is Better	31	4	0
Proximity to Buildings (within 100 m)	Less is Better	72	28	5
Crop Land (Acres)	Less is Better	828	730	617
Hay Land (Acres)	Less is Better	133	46	35
Proximity to Hog Operations (Acres)	Less is Better	1,754	596	235
Diagonal Crossing of AG Land (Acres)	Less is Better	140	140	20
Public Use Areas (within 250 m)	Less is Better	17	7	12
Historic Resources (within 250 m)	Less is Better	8	10	11
Potential Commercial Forests (Acres)	Less is Better (?)	521	863	1,536
Natural Forests (Acres)	Less is Better (?)	1,656	2,068	1,752
Stream, River Crossings (Number)	Less is Better	27	14	11
Wetlands (Acres)	Less is Better	383	707	215
Existing Transmission Line Crossings (Number)	Less is Better	13	11	11
Length (km) (from Anola)	Less is Better	161	166	160
Cost (\$)	Less is Better	\$152M	\$145M	\$134M
Following ELD (HVTL or RR) (km)	More is Better	12.2	29.2	21.7
Areas of Concern (Heritage or Zone 3) (km)	Fewer is Better	17	17	53
Areas of Interest (km)	Fewer is Better	37	33	?
Potential TLE (km)	Fewer is Better	0	0	9
Plant Gathering Site (Number)	Fewer is Better	1	7	5
Hunting Sites (Number)	Fewer is Better	10	1	3