

Site 36

Butnau River

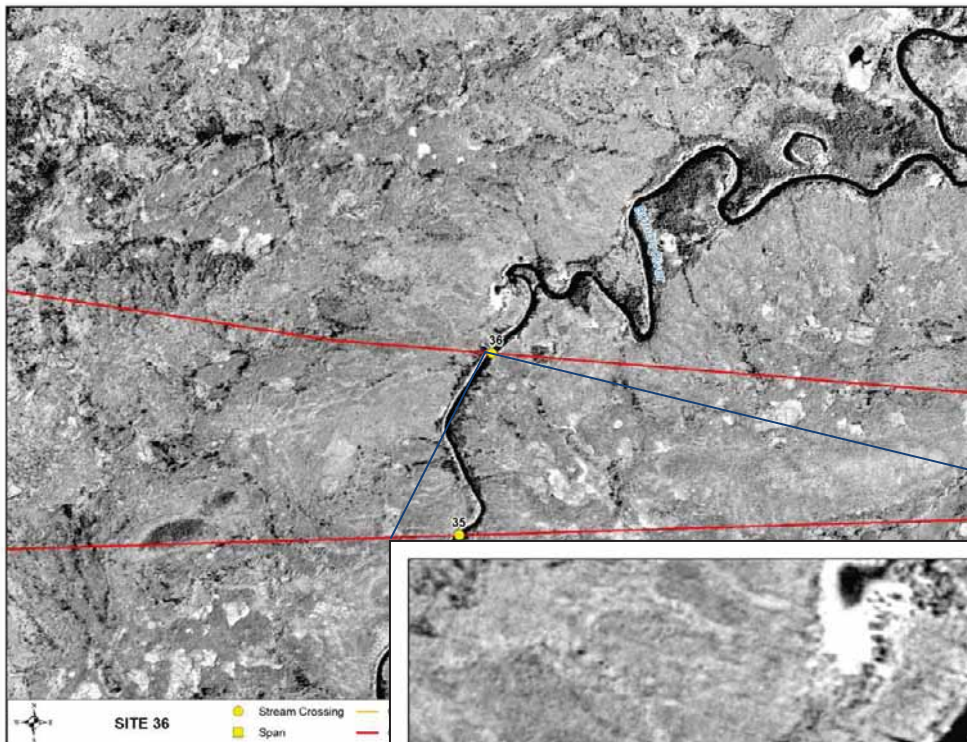
Location

Datum: NAD 83
UTM: *Zone:* 15V
Easting: 383584
Northing: 6241813

Location Depicted Below:

General Morphology

Gen. Description: Small river
Pattern: Irregular wandering
Confinement: Confined
Stage: High
Flow Regime: Perennial
U/S Drainage: 682 km²
Receiving Water/Dist.: Kettle River/10.5 km



Site Conditions

+ Physical Data

Survey Date: 25 July 2009

Channel Profile

Channel and Flow

Channel Width (m) 10-15
Wetted Width (m) -

Water Depths (m)

Max. -
Avg. -

Banks

Right Bank Height (m): ~3 Shape: ~ 30° Stability: stable
Left Bank Height (m): ~3 Shape: ~ 30° Stability: stable

Substrate

Substrate Type (%)

Fines 100
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 10
Flat 60
Run 30
Riffle -

Cover Types

Total Cover Available (%) US DS
10 10

Cover Composition (% of Total)

Large Woody Debris 5 5
Overhanging Vegetation 65 65
Instream Vegetation 25 25
Pool 5 5
Boulder - -
Undercut Bank - -
Surface Turbulence - -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers Y
Deciduous -
Mixed Forest -
Canopy Cover (%) -

+ Water Quality Data

Surface Temp (°C): - DO (mg/L): -
Specific Conductance (µS/cm): - pH: -
TDS (g/L): - Turbidity (NTU): -
Salinity (ppt): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

	Spawning	Rearing/Feeding	Overwintering
Large-Bodied Fish:	Low	Moderate	Low
Small-Bodied Fish:	Moderate	Moderate	Low

Impediments to Migration: None observed

Fish Presence: lake whitefish, longnose sucker, northern pike, walleye, and white sucker (Johnson and Barth 2007)

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Moderate



📷 Photograph Documentation



Photo 1. Site 36 crossing area.



Photo 2. Downstream view of crossing Site 36.



Photo 3. Downstream of Site 36; looking downstream.

Site 37

Unnamed Tributary of Butnau River

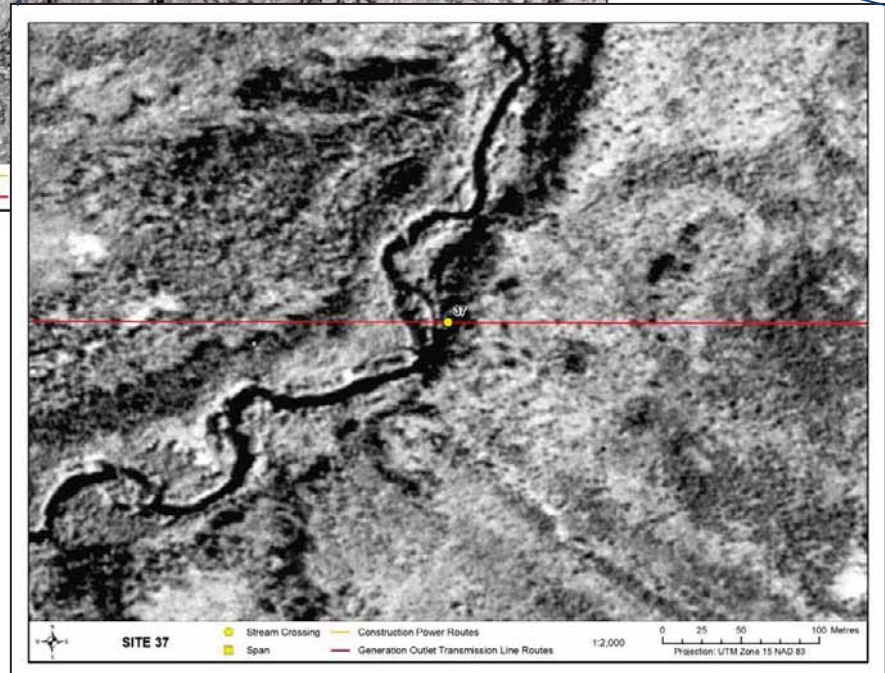
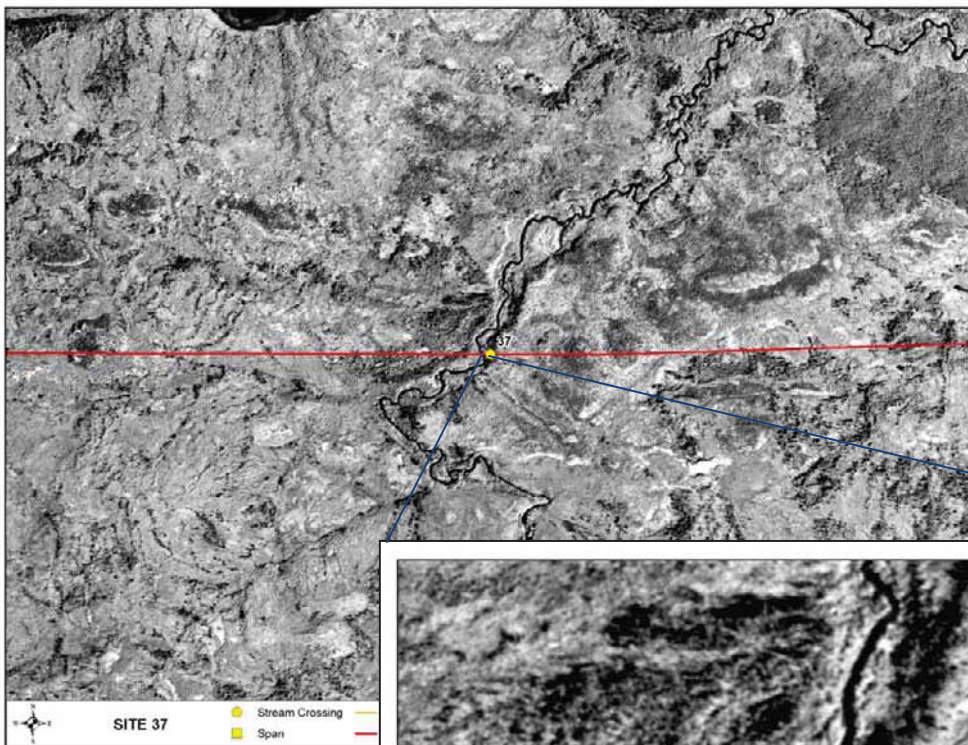
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 377132
Northing: 6241130

Location Depicted Below:

General Morphology

Gen. Description: low gradient boreal stream
Pattern: Irregular meander
Confinement: Frequently confined
Stage: High
Flow Regime: Perennial
U/S Drainage: 128 km²
Receiving Water/Dist.: Butnau River/6 km



Site Conditions

+ Physical Data

Survey Date: 24 July 2009

Channel Profile

Channel and Flow

Channel Width (m) 8-10
Wetted Width (m) -

Water Depths (m)

Max. -
Avg. -

Banks

Right Bank Height (m): ~3 Shape: rounded Stability: Stable
Left Bank Height (m): ~2 Shape: rounded Stability: Stable

Substrate

Substrate Type (%)

Fines -
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool -
Flat 20
Run 75
Riffle 5

Cover Types

Total Cover Available (%)

US 25 DS 20

Cover Composition (% of Total)

Large Woody Debris 15 5
Overhanging Vegetation 80 85
Instream Vegetation 5 10
Pool - -
Boulder - -
Undercut Bank - -
Surface Turbulence - -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers Y
Deciduous -
Mixed Forest -
Canopy Cover (%) 20

+ Water Quality Data

Surface Temp (°C): - DO (mg/L): -
Specific Conductance (µS/cm): - pH: -
TDS (g/L): - Turbidity (NTU): -
Salinity (ppt): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Large-Bodied Fish:
Small-Bodied Fish:

Spawning	Rearing/Feeding	Overwintering
Low	Moderate-High	Low
Low	Moderate-High	Moderate

Impediments to Migration: None observed
Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low-Moderate

📷 Photograph Documentation



Photo 1. Site 37; looking upstream.



Photo 2. Upstream view of Site 37.

Site 38

Unnamed Watercourse

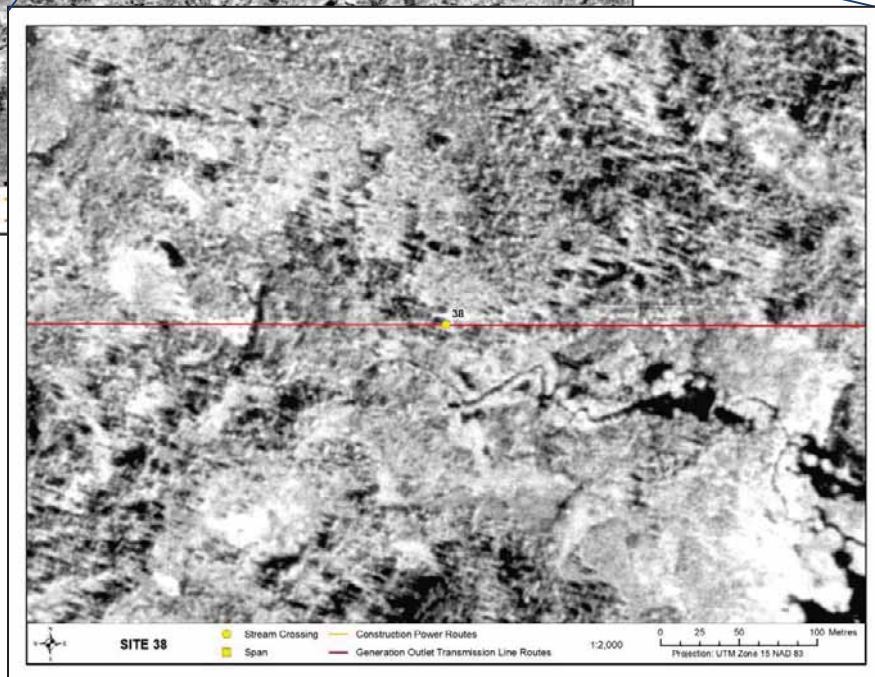
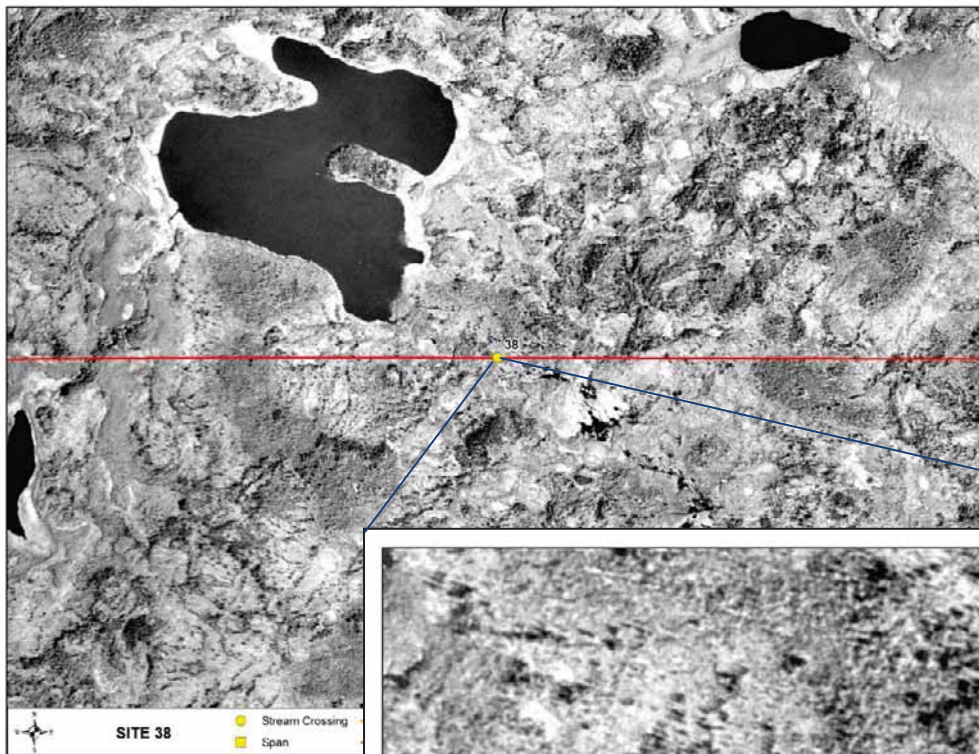
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 372615
Northing: 6241144

Location Depicted Below:

General Morphology

Gen. Description: Wetland/bog drainage
Pattern: -
Confinement: Unconfined
Stage: Moderate
Flow Regime: Perennial
U/S Drainage: 3 km²
Receiving Water/Dist.: Butnau River/19 km



Site Conditions

+ Physical Data

Survey Date: 23 July 2009

Channel Profile

Channel and Flow

Channel Width (m) -
Wetted Width (m) -

Water Depths (m)

Max. ~ 1.5
Avg. < 1

Banks

Right Bank Height (m): - Shape: - Stability: Stable
Left Bank Height (m): - Shape: - Stability: Stable

Substrate

Substrate Type (%)

Fines 100
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 100
Flat -
Run -
Riffle -

Cover Types

Total Cover Available (%) US DS
40 40

Cover Composition (% of Total)

Large Woody Debris 15 15
Overhanging Vegetation 30 30
Instream Vegetation 55 55
Pool - -
Boulder - -
Undercut Bank - -
Surface Turbulence - -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers Y
Deciduous -
Mixed Forest -
Canopy Cover (%) -

+ Water Quality Data

Surface Temp (°C): - DO (mg/L): -
Specific Conductance (µS/cm): - pH: -
TDS (g/L): - Turbidity (NTU): -
Salinity (ppt): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

	Spawning	Rearing/Feeding	Overwintering
Large-Bodied Fish:	Low-Moderate	Low	Low
Small-Bodied Fish:	Moderate	Moderate	Low

Impediments to Migration: Beaver dam ~ 300 m downstream

Fish Presence: Unidentified minnows observed during survey

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



Photograph Documentation



Photo 1. Downstream view of Site 38.



Photo 2. Upstream view of Site 38.



Photo 3. Beaver dam 300 m downstream of ROW.

Site 40

Unnamed Tributary of Butnau River

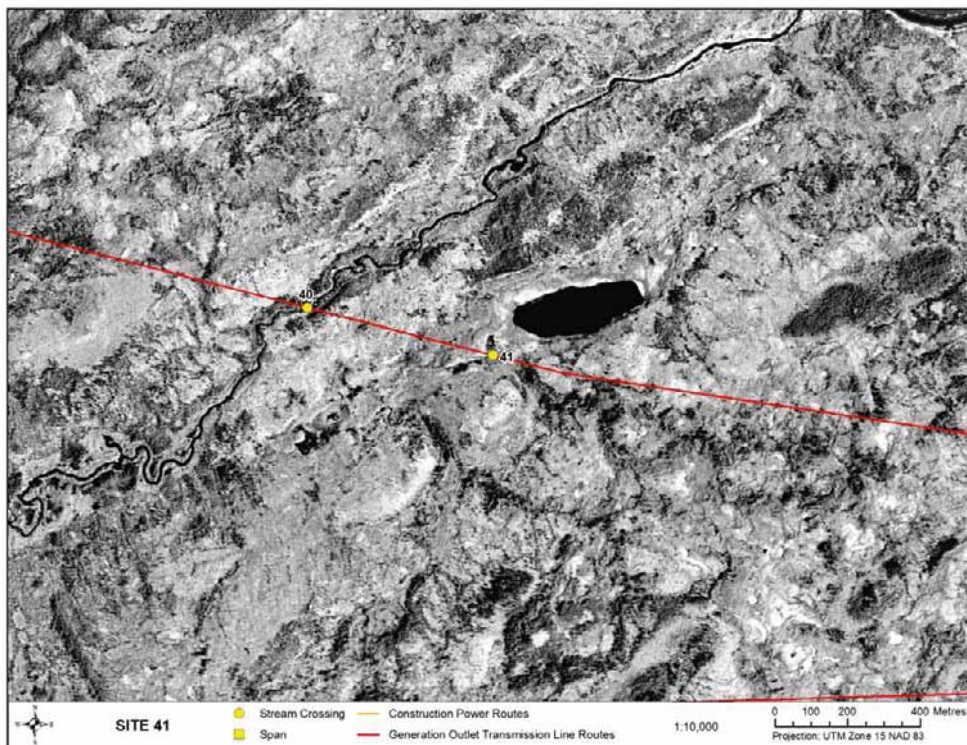
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 380391
Northing: 6242338

Location Depicted Below:

General Morphology

Gen. Description: Low gradient boreal stream
Pattern: Irregular meander
Confinement: Frequently confined
Stage: Flood
Flow Regime: Perennial
U/S Drainage: 139 km²
Receiving Water/Dist.: Butnau River/1.8 km



Site Conditions

+ Physical Data

Survey Date: 25 July 2009

Channel Profile

Channel and Flow

Channel Width (m) 7
Wetted Width (m) 20

Water Depths (m)

Max. < 1.5
Avg. < 1.0

Banks

Right Bank Height (m): 1.0 Shape: vertical Stability: Stable
Left Bank Height (m): 1.0 Shape: vertical Stability: Stable

Substrate

Substrate Type (%)

Fines -
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 10
Flat 70
Run 20
Riffle -

Cover Types

Total Cover Available (%)

US 25 DS 25

Cover Composition (% of Total)

Large Woody Debris 30 30
Overhanging Vegetation 40 40
Instream Vegetation 30 30
Pool - -
Boulder - -
Undercut Bank - -
Surface Turbulence - -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers -
Deciduous Y
Mixed Forest -
Canopy Cover (%) -

+ Water Quality Data

Surface Temp (°C): - DO (mg/L): -
Specific Conductance (µS/cm): - pH: -
TDS (g/L): - Turbidity (NTU): -
Salinity (ppt): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Spawning **Rearing/Feeding** **Overwintering**

Large-Bodied Fish: Low Moderate Low
Small-Bodied Fish: Moderate Moderate Low

Impediments to Migration: None observed

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



Photograph Documentation



Photo 1. View of crossing at Site 40.



Photo 2. Upstream view of Site 40.



Photo 3. Downstream view of Site 40.



Photo 4. Aerial view of Site 40.

Site 41

Unnamed Watercourse

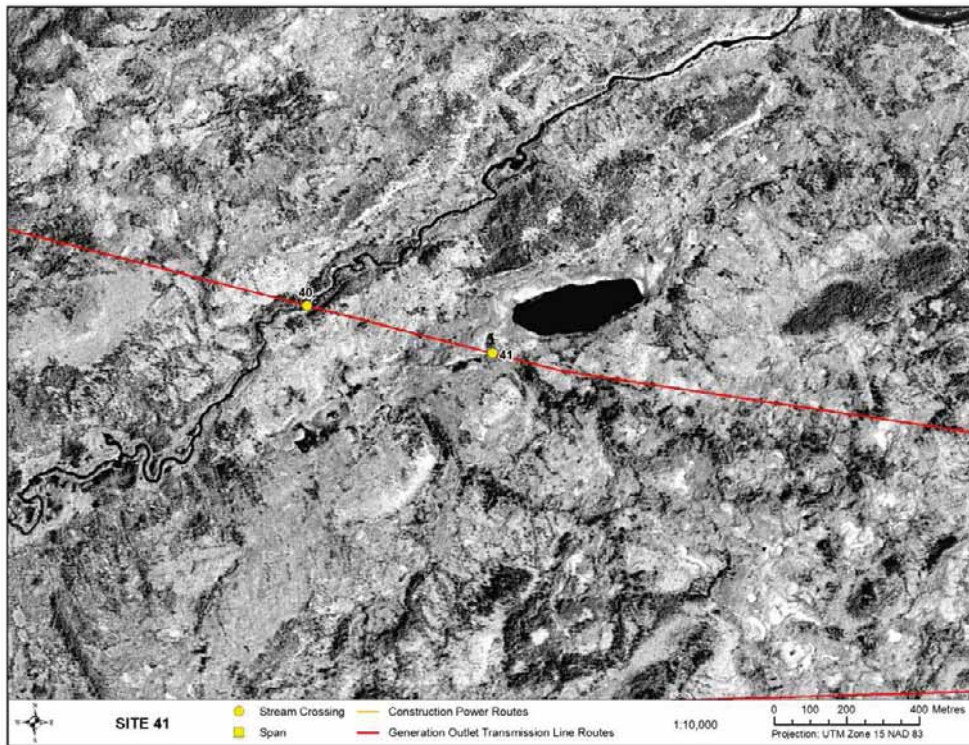
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 380903
Northing: 6242207

Location Depicted Below:

General Morphology

Gen. Description: Wetland/bog drainage
Pattern: -
Confinement: Unconfined
Stage: Moderate
Flow Regime: Perennial
U/S Drainage: 0.15 km²
Receiving Water/Dist.: Butnau River/1.9 km



Site Conditions

+ Physical Data

Survey Date: 25 July 2009

Channel Profile

Channel and Flow

Channel Width (m) 15
Wetted Width (m) -

Water Depths (m)

Max. < 1.0
Avg. -

Banks

Right Bank Height (m): - Shape: - Stability: Stable
Left Bank Height (m): - Shape: - Stability: Stable

Substrate

Substrate Type (%)

Fines 100
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 100
Flat -
Run -
Riffle -

Cover Types

Total Cover Available (%)

US 75 DS 75

Cover Composition (% of Total)

Large Woody Debris 30 30
Overhanging Vegetation - -
Instream Vegetation 70 70
Pool - -
Boulder - -
Undercut Bank - -
Surface Turbulence - -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers -
Deciduous Y
Mixed Forest -
Canopy Cover (%) 0

+ Water Quality Data

Surface Temp (°C): - DO (mg/L): -
Specific Conductance (µS/cm): - pH: -
TDS (g/L): - Turbidity (NTU): -
Salinity (ppt): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Large-Bodied Fish:

Spawning

Rearing/Feeding

Overwintering

Low

Low

Low

Small-Bodied Fish:

Low

Low

Low

Impediments to Migration: None observed

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



Photograph Documentation



Photo 1. View of crossing at Site 41.



Photo 2. Large pool downstream from Site 41.



Photo 3. Small water body upstream of Site 41.

Site 42

Unnamed Tributary of Cache Lake

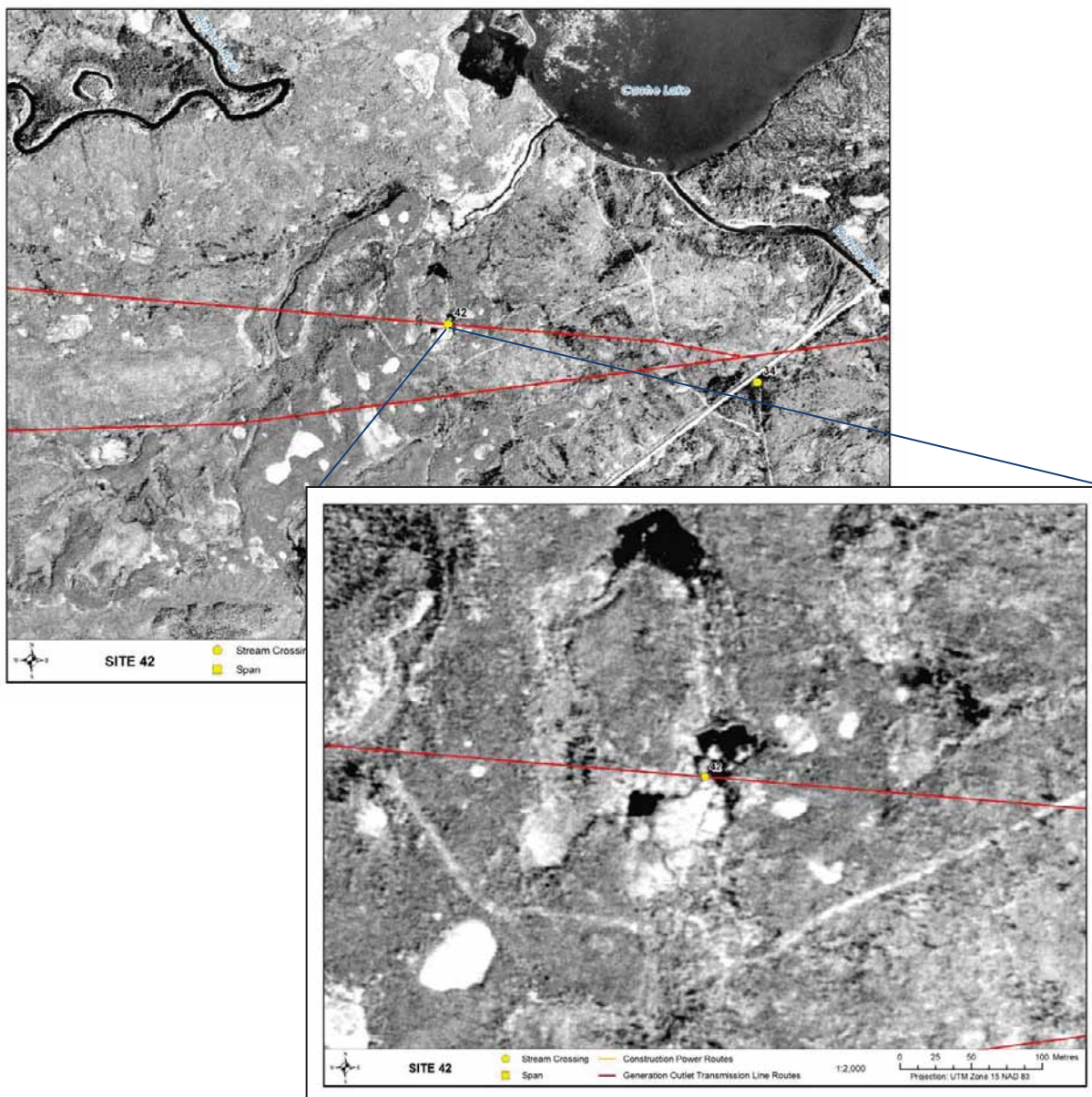
Location

Datum: NAD 83
UTM: *Zone:* 15V
Easting: 385525
Northing: 6241654

Location Depicted Below:

General Morphology

Gen. Description: Wetland/bog drainage
Pattern: -
Confinement: Unconfined
Stage: Moderate
Flow Regime: Perennial
U/S Drainage: 3.57 km²
Receiving Water/Dist.: Kettle River/6 km



Site Conditions

+ Physical Data

Survey Date: 25 July 2009

Channel Profile

Channel and Flow

Channel Width (m) 1-20
Wetted Width (m) -

Water Depths (m)

Max. < 1.0
Avg. -

Banks

Right Bank Height (m): - Shape: - Stability: Stable
Left Bank Height (m): - Shape: - Stability: Stable

Substrate

Substrate Type (%)

Fines 100
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 100
Flat -
Run -
Riffle -

Cover Types

Total Cover Available (%)

US 50 DS 50

Cover Composition (% of Total)

Large Woody Debris 30 30
Overhanging Vegetation - -
Instream Vegetation 70 70
Pool - -
Boulder - -
Undercut Bank - -
Surface Turbulence - -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers -
Deciduous -
Mixed Forest -
Canopy Cover (%) 0

+ Water Quality Data

Surface Temp (°C): - DO (mg/L): -
Specific Conductance (µS/cm): - pH: -
TDS (g/L): - Turbidity (NTU): -
Salinity (ppt): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Large-Bodied Fish:

Spawning

Rearing/Feeding

Overwintering

Low

Low

Low

Small-Bodied Fish:

Low

Low

Low

Impediments to Migration: None observed

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



📷 Photograph Documentation



Photo 1. Downstream view of crossing at Site 42.



Photo 2. Downstream channel connection from Site 42 to Cache Lake.

Site 43

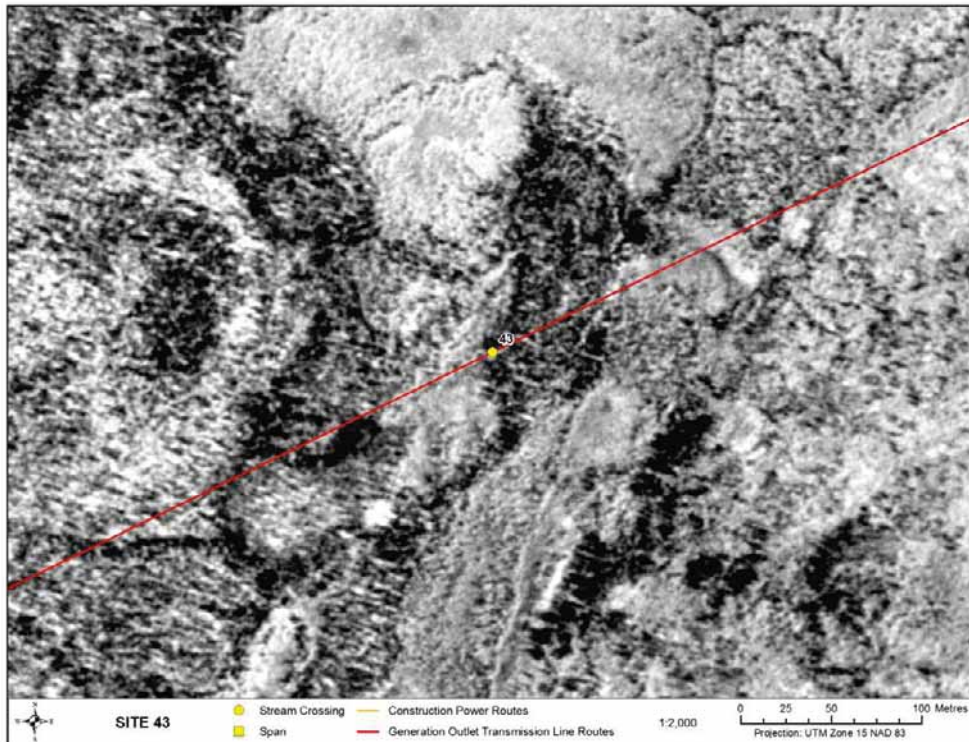
Unnamed Tributary of Kettle River

Location

Datum:	NAD 83	
UTM:	<i>Zone:</i>	15V
	<i>Easting:</i>	392789
	<i>Northing:</i>	6242942
Location Depicted Below:		

General Morphology

Gen. Description:	Wetland/bog drainage
Pattern:	-
Confinement:	Unconfined
Stage:	Moderate
Flow Regime:	Intermittent
U/S Drainage:	0.07 km ²
Receiving Water/Dist.:	Kettle River/1.7 km



Site Conditions

+ Physical Data

Survey Date: 24 July 2009

Channel Profile

Channel and Flow

Channel Width (m)	-	Water Depths (m)	Max.	-
Wetted Width (m)	-		Avg.	-

Banks

Right Bank Height (m):	-	Shape:	-	Stability:	-
Left Bank Height (m):	-	Shape:	-	Stability :	-

Substrate

Substrate Type (%)

Fines	100
Small Gravel	-
Large Gravel	-
Cobble	-
Boulder	-

Habitat Type

Habitat Composition (%)

Pool	100
Flat	-
Run	-
Riffle	-

Cover Types

Total Cover Available (%)

US DS

- -

Cover Composition (% of Total)

Large Woody Debris	-	-
Overhanging Vegetation	-	-
Instream Vegetation	-	-
Pool	-	-
Boulder	-	-
Undercut Bank	-	-
Surface Turbulence	-	-

Riparian

Riparian Vegetation Type (Y/N)

Moss	-
Grasses/Sedges	Y
Shrubs	Y
Conifers	Y
Deciduous	-
Mixed Forest	-
Canopy Cover (%)	-

+ Water Quality Data

Surface Temp (°C):	-	DO (mg/L):	-
Specific Conductance (µS/cm):	-	pH:	-
TDS (g/L):	-	Turbidity (NTU):	-
Salinity (ppt):	-		

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Large-Bodied Fish:

Spawning

Rearing/Feeding

Overwintering

Low

Low

Low

Small-Bodied Fish:

Low

Low

Low

Impediments to Migration: None observed

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



Photograph Documentation



Photo 1. View of crossing at Site 43.



Photo 2. Large ponds located 800 m downstream of Site 43.



Photo 3. Discontinuous channel downstream from Site 43.

Site 46

Unnamed Tributary of Kettle River

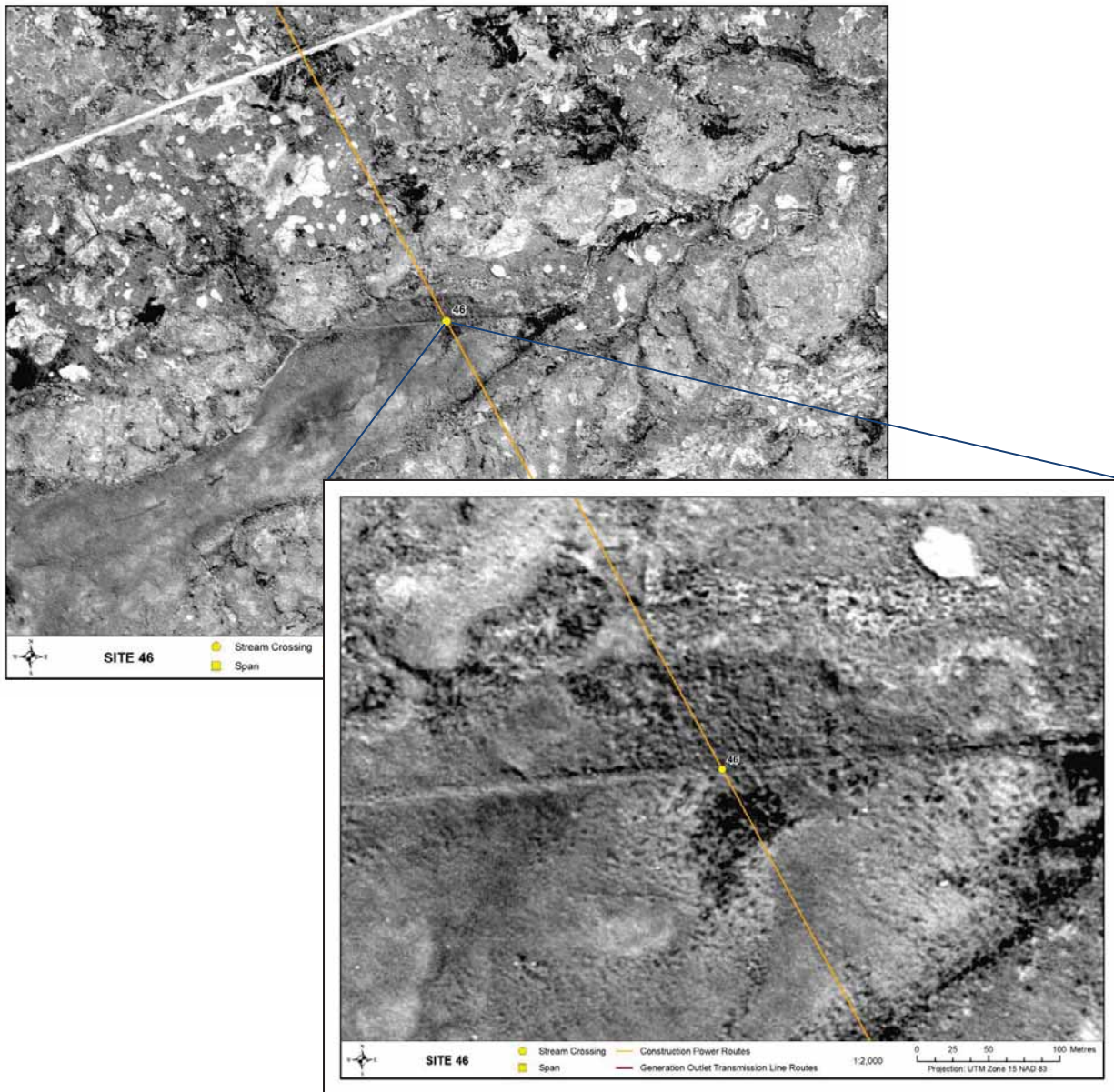
Location

Datum: NAD 83
UTM: *Zone:* 15V
Easting: 373115
Northing: 6231432

Location Depicted Below:

General Morphology

Gen. Description: Wetland/bog drainage
Pattern: -
Confinement: Confined
Stage: High
Flow Regime: Ephemeral
U/S Drainage: 0.8 km²
Receiving Water/Dist.: Kettle River/9 km



Site Conditions

+ Physical Data

Survey Date: 22 July 2009

Channel Profile

Channel and Flow

Channel Width (m)	-	Water Depths (m)	Max. ~1.0
Wetted Width (m)	-	Avg.	-

Banks

Right Bank Height (m):	-	Shape:	-	Stability:	Stable
Left Bank Height (m):	-	Shape:	-	Stability:	Stable

Substrate

Substrate Type (%)

Fines	100
Small Gravel	-
Large Gravel	-
Cobble	-
Boulder	-

Habitat Type

Habitat Composition (%)

Pool	100
Flat	-
Run	-
Riffle	-

Cover Types

	US	DS
Total Cover Available (%)	30	30

Cover Composition (% of Total)

Large Woody Debris	10	10
Overhanging Vegetation	50	50
Instream Vegetation	40	40
Pool	-	-
Boulder	-	-
Undercut Bank	-	-
Surface Turbulence	-	-

Riparian

Riparian Vegetation Type (Y/N)

Moss	-
Grasses/Sedges	Y
Shrubs	Y
Conifers	Y
Deciduous	-
Mixed Forest	-
Canopy Cover (%)	0

+ Water Quality Data

Surface Temp (°C):	-	DO (mg/L):	-
Specific Conductance (µS/cm):	-	pH:	-
TDS (g/L):	-	Turbidity (NTU):	-
Salinity (ppt):	-		

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

	Spawning	Rearing/Feeding	Overwintering
Large-Bodied Fish:	Low-Moderate	Low	Low
Small-Bodied Fish:	Moderate	Moderate	Low

Impediments to Migration: None observed

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



Photograph Documentation



Photo 1. View of crossing at Site 46.



Photo 2. Wetland pools at Site 46.



Photo 3. Man-made channel upstream from crossing at Site 46.



Photo 4. Downstream view of crossing at Site 46.

Site 47

Unnamed Watercourse

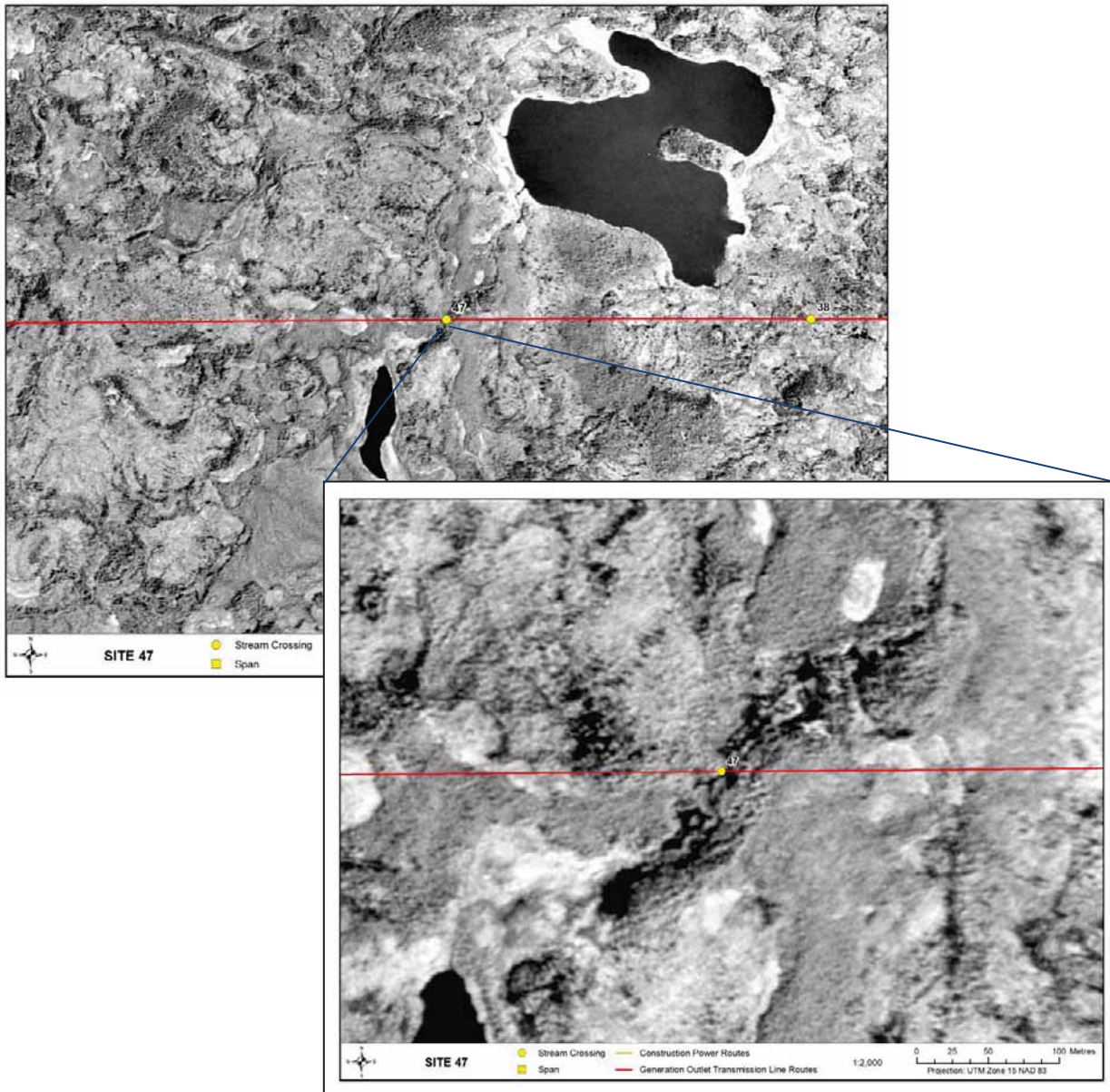
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 371509
Northing: 6241142

Location Depicted Below:

General Morphology

Gen. Description: Wetland/bog drainage
Pattern: -
Confinement: Unconfined
Stage: High
Flow Regime: Perennial
U/S Drainage: 0.74 km²
Receiving Water/Dist.: Butnau River/21 km



Site Conditions

+ Physical Data

Survey Date: 24 July 2009

Channel Profile

Channel and Flow

Channel Width (m) -
Wetted Width (m) -

Water Depths (m)

Max. ~ 1.5
Avg. < 1

Banks

Right Bank Height (m): - Shape: - Stability: Stable
Left Bank Height (m): - Shape: - Stability: Stable

Substrate

Substrate Type (%)

Fines 100
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 100
Flat -
Run -
Riffle -

Cover Types

Total Cover Available (%)

US 40 DS 40

Cover Composition (% of Total)

Large Woody Debris 5 5
Overhanging Vegetation 20 20
Instream Vegetation 75 75
Pool - -
Boulder - -
Undercut Bank - -
Surface Turbulence - -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers -
Deciduous -
Mixed Forest -
Canopy Cover (%) 0

+ Water Quality Data

Surface Temp (°C): -
Specific Conductance (µS/cm): -
TDS (g/L): -
Salinity (ppt): -

DO (mg/L): -
pH: -
Turbidity (NTU): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Spawning

Rearing/Feeding

Overwintering

Large-Bodied Fish:

Low-Moderate

Low

Low

Small-Bodied Fish:

Moderate

Moderate

Low

Impediments to Migration: Shallow water

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



📷 Photograph Documentation



Photo 1. View of crossing Site 47.



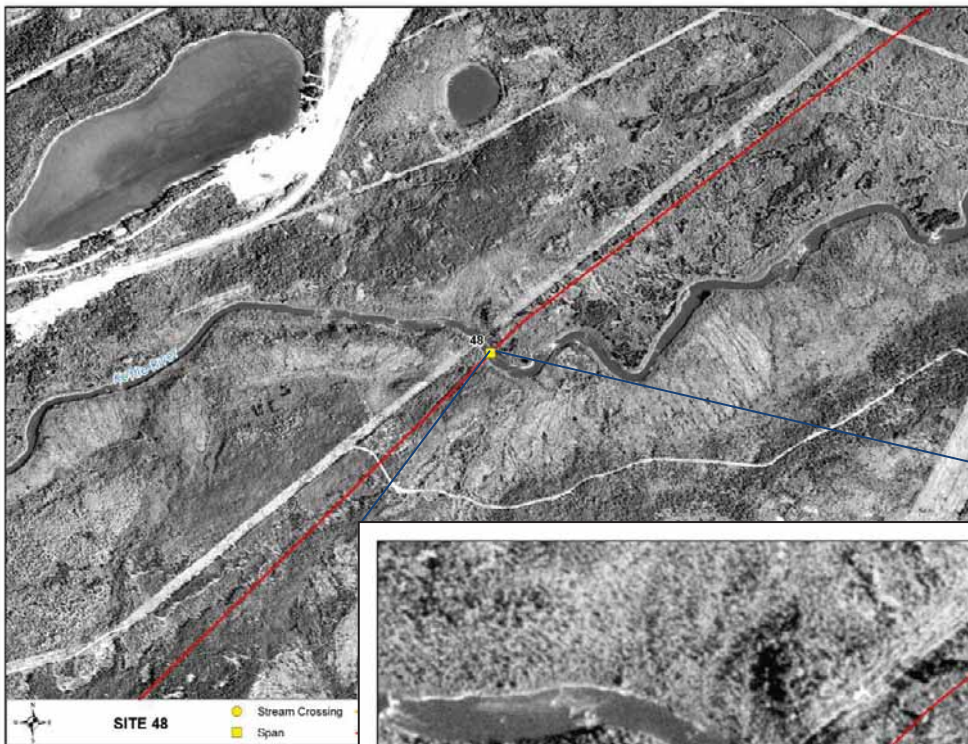
Photo 2. Downstream view of Site 47.

Location

Datum:	NAD 83	
UTM:	<i>Zone:</i>	15V
	<i>Easting:</i>	398190
	<i>Northing:</i>	6246076
Location Depicted Below:		

General Morphology

Gen. Description:	Medium sized river
Pattern:	Sinuous
Confinement:	Confined
Stage:	Moderate
Flow Regime:	Perennial
U/S Drainage:	1957 km ²
Receiving Water/Dist.:	Nelson River/8 km



Site Conditions

+ Physical Data

Survey Date: 23 July 2009

Channel Profile

Channel and Flow

Channel Width (m)	20
Wetted Width (m)	20

Water Depths (m)

Max.	-
Avg.	-

Banks

Right Bank Height (m):	3-5	Shape: rounded	Stability:	Stable
Left Bank Height (m):	3-5	Shape: rounded	Stability :	Stable

Substrate

Substrate Type (%)

Fines	-
Small Gravel	-
Large Gravel	-
Cobble	-
Boulder	-

Habitat Type

Habitat Composition (%)

Pool	-
Flat	-
Run	50
Riffle	50

Cover Types

Total Cover Available (%)

US DS

- -

Cover Composition (% of Total)

Large Woody Debris	-	-
Overhanging Vegetation	-	-
Instream Vegetation	-	-
Pool	-	-
Boulder	-	-
Undercut Bank	-	-
Surface Turbulence	-	-

Riparian

Riparian Vegetation Type (Y/N)

Moss	-
Grasses/Sedges	Y
Shrubs	Y
Conifers	-
Deciduous	-
Mixed Forest	Y
Canopy Cover (%)	0

+ Water Quality Data

Surface Temp (°C):	-	DO (mg/L):	-
Specific Conductance (µS/cm):	-	pH:	-
TDS (g/L):	-	Turbidity (NTU):	-
Salinity (ppt):	-		

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

	Spawning	Rearing/Feeding	Overwintering
Large-Bodied Fish:	Moderate	Low	Low
Small-Bodied Fish:	Low	Low	Low

Impediments to Migration: None observed

Fish Presence: brook trout, longnose sucker, northern pike, walleye, white sucker (Johnson and Barth 2007)

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Moderate-High



Photograph Documentation



Photo 1. View of crossing at Site 48.



Photo 2. Upstream view of Site 48.



Photo 3. Downstream view of Site 48.

Site 49

Unnamed Tributary of Stephens Lake

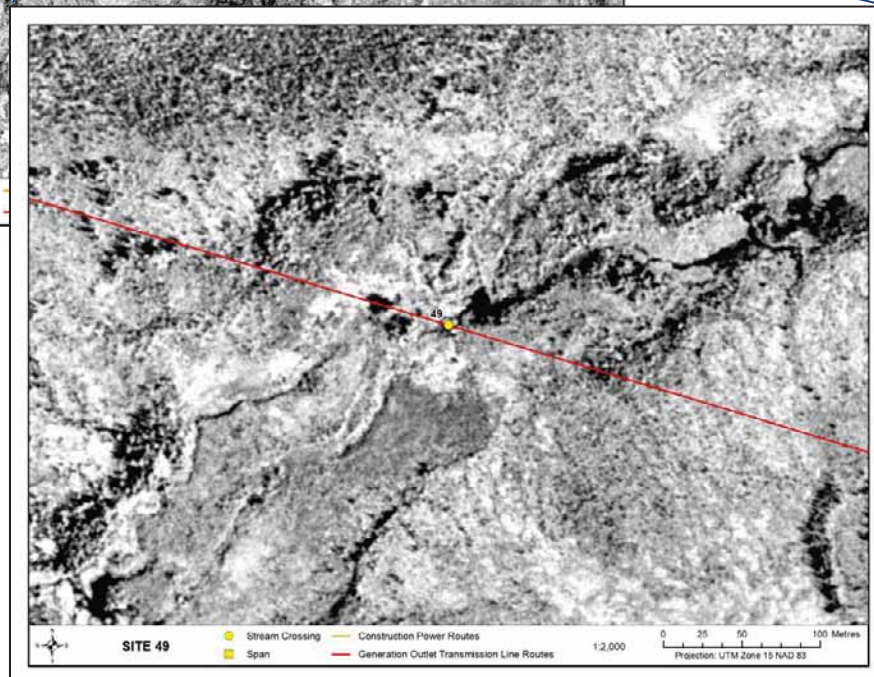
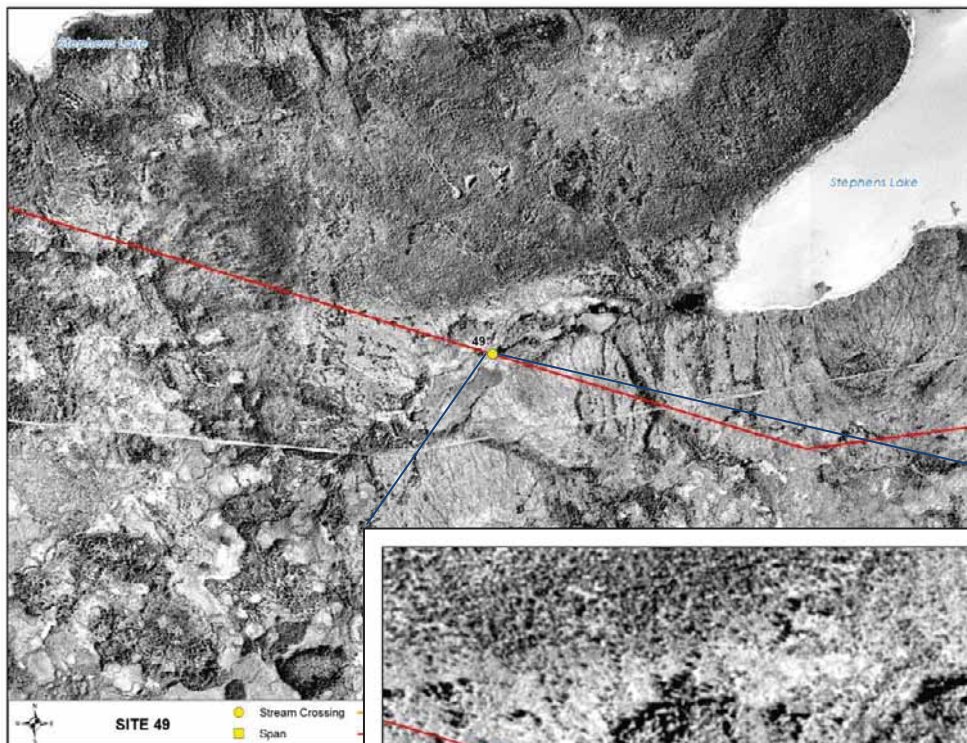
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 374041
Northing: 6243487

Location Depicted Below:

General Morphology

Gen. Description: Wetland/bog drainage
Pattern: -
Confinement: Unconfined
Stage: Moderate
Flow Regime: Perennial
U/S Drainage: 0.11 km²
Receiving Water/Dist.: Stephens Lake/0.6 km



Site Conditions

+ Physical Data

Survey Date: 25 July 2009

Channel Profile

Channel and Flow

Channel Width (m) 1
Wetted Width (m) -

Water Depths (m)

Max. ~ 1
Avg. < 1

Banks

Right Bank Height (m): - Shape: - Stability: Stable
Left Bank Height (m): - Shape: - Stability: Stable

Substrate

Substrate Type (%)

Fines 100
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool -
Flat 100
Run -
Riffle -

Cover Types

Total Cover Available (%) US DS
30 30

Cover Composition (% of Total)

Large Woody Debris - -
Overhanging Vegetation 35 35
Instream Vegetation 35 35
Pool - -
Boulder - -
Undercut Bank 30 30
Surface Turbulence - -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers Y
Deciduous -
Mixed Forest -
Canopy Cover (%) 0

+ Water Quality Data

Surface Temp (°C): - DO (mg/L): -
Specific Conductance (µS/cm): - pH: -
TDS (g/L): - Turbidity (NTU): -
Salinity (ppt): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

	Spawning	Rearing/Feeding	Overwintering
Large-Bodied Fish:	Low	Low	Low
Small-Bodied Fish:	Moderate	Moderate	Low

Impediments to Migration: Beaver dams downstream of crossing

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



📷 Photograph Documentation



Photo 1. View upstream towards crossing Site 49.



Photo 2. Downstream view towards Stephens Lake.

Site 52

Unnamed Pond

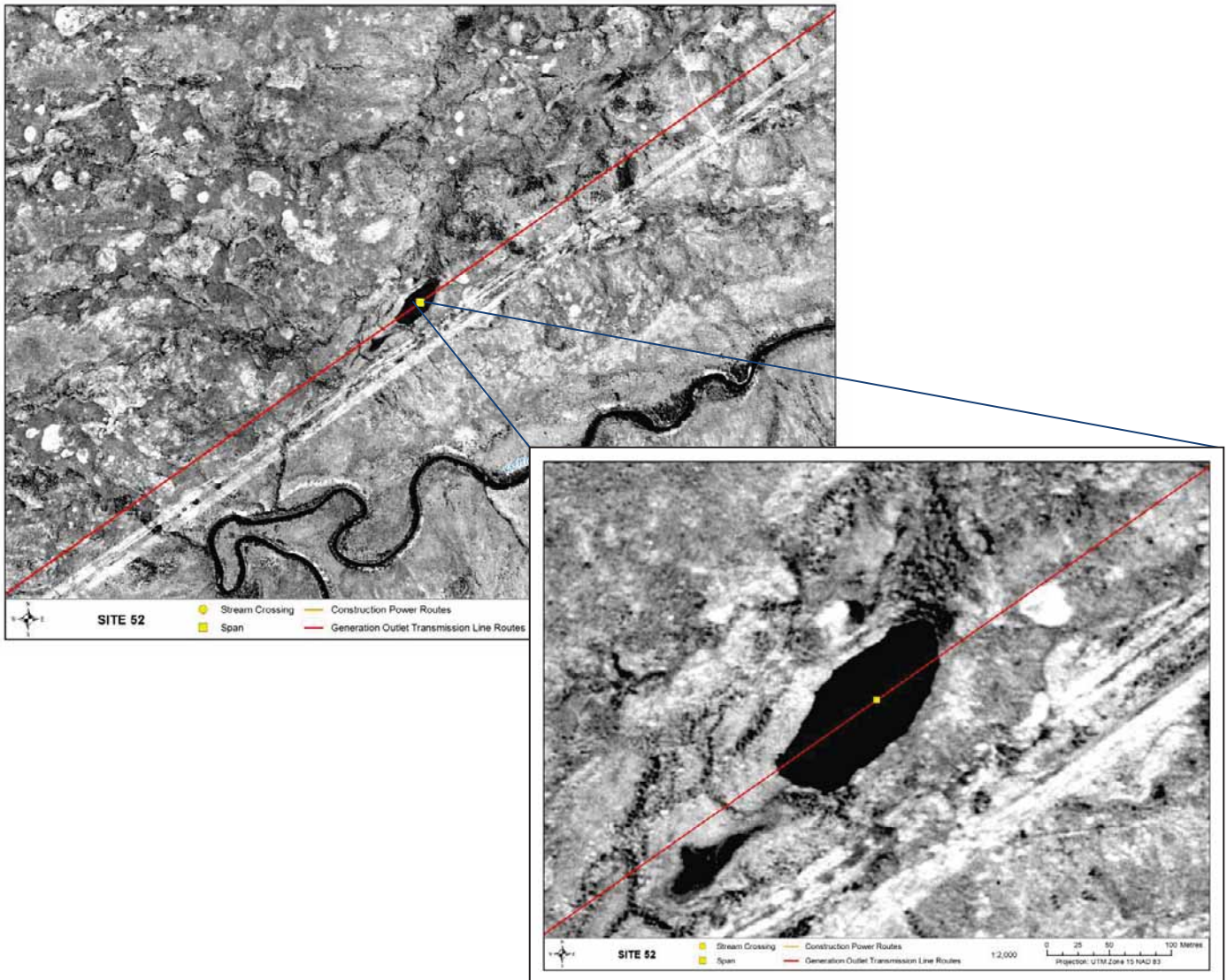
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 385715
Northing: 6238618

Location Depicted Below:

General Morphology

Gen. Description: Isolated Pond
Pattern: -
Confinement: Confined
Stage: -
Flow Regime: Perennial
U/S Drainage: n/a
Receiving Water/Dist.: Butnau River/4 km



Site Conditions

+ Physical Data

Survey Date: 1 September 2012

Channel Profile

Channel and Flow

Channel Width (m) 155
Wetted Width (m) 155

Water Depths (m)

Max. -
Avg. -

Banks

Right Bank Height (m): - Shape: - Stability: Stable
Left Bank Height (m): - Shape: - Stability: Stable

Substrate

Substrate Type (%)

Fines -
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 100
Flat -
Run -
Riffle -

Cover Types

Total Cover Available (%)

US DS

- -

Cover Composition (% of Total)

Large Woody Debris -
Overhanging Vegetation -
Instream Vegetation -
Pool -
Boulder -
Undercut Bank -
Surface Turbulence -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers Y
Deciduous -
Mixed Forest -
Canopy Cover (%) 0

+ Water Quality Data

Surface Temp (°C): -
Specific Conductance (µS/cm): -
TDS (g/L): -
Salinity (ppt): -

DO (mg/L): -
pH: -
Turbidity (NTU): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Spawning

Rearing/Feeding

Overwintering

Large-Bodied Fish:

Low

Low

Low

Small-Bodied Fish:

Moderate

Moderate

Moderate

Impediments to Migration: Undefined connection to downstream waters.

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low

Site 53

Unnamed Tributary of Kettle River

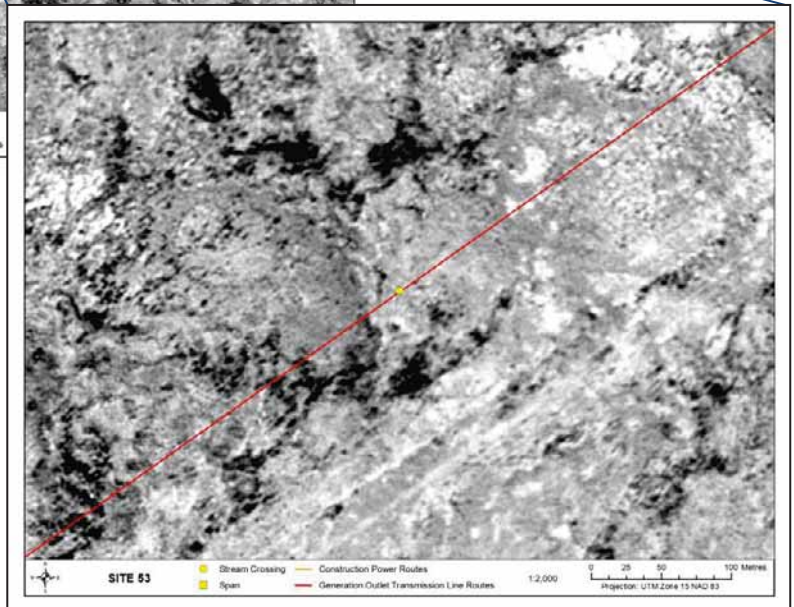
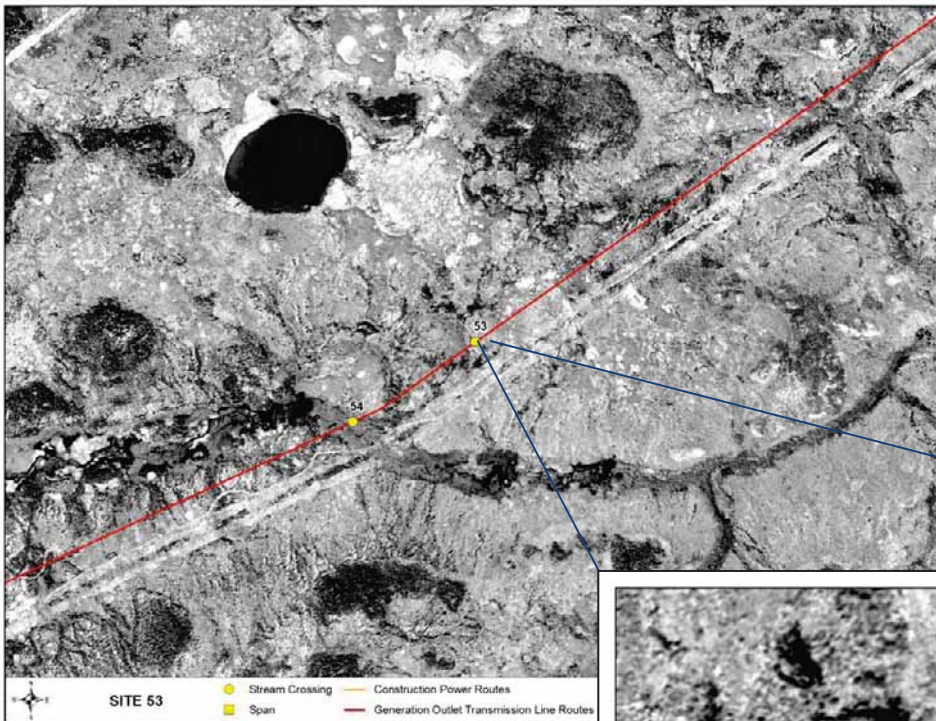
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 377704
Northing: 6232996

Location Depicted Below:

General Morphology

Gen. Description: Wetland/bog drainage
Pattern: -
Confinement: Unconfined
Stage: -
Flow Regime: Ephemeral
U/S Drainage: 0.4 km²
Receiving Water/Dist.: Kettle River/4 km



Site Conditions

+ Physical Data

Survey Date: 1 September 2012

Channel Profile

Channel and Flow

Channel Width (m) -
Wetted Width (m) -

Water Depths (m)

Max. -
Avg. -

Banks

Right Bank Height (m): - Shape: - Stability: Stable
Left Bank Height (m): - Shape: - Stability: Stable

Substrate

Substrate Type (%)

Fines -
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 100
Flat -
Run -
Riffle -

Cover Types

Total Cover Available (%)

US DS
- -

Cover Composition (% of Total)

Large Woody Debris -
Overhanging Vegetation -
Instream Vegetation -
Pool -
Boulder -
Undercut Bank -
Surface Turbulence -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers Y
Deciduous -
Mixed Forest -
Canopy Cover (%) 0

+ Water Quality Data

Surface Temp (°C): -
Specific Conductance (µS/cm): -
TDS (g/L): -
Salinity (ppt): -

DO (mg/L): -
pH: -
Turbidity (NTU): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Spawning

Rearing/Feeding

Overwintering

Large-Bodied Fish:

Low

Low

None

Small-Bodied Fish:

Low

Low

Low

Impediments to Migration: Beaver dams downstream and upstream

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



Site 54

Unnamed Tributary of Kettle River

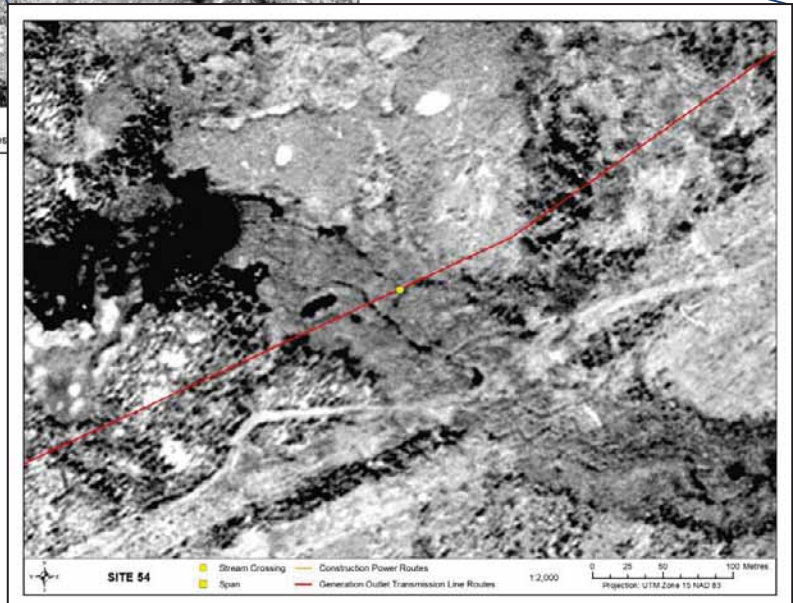
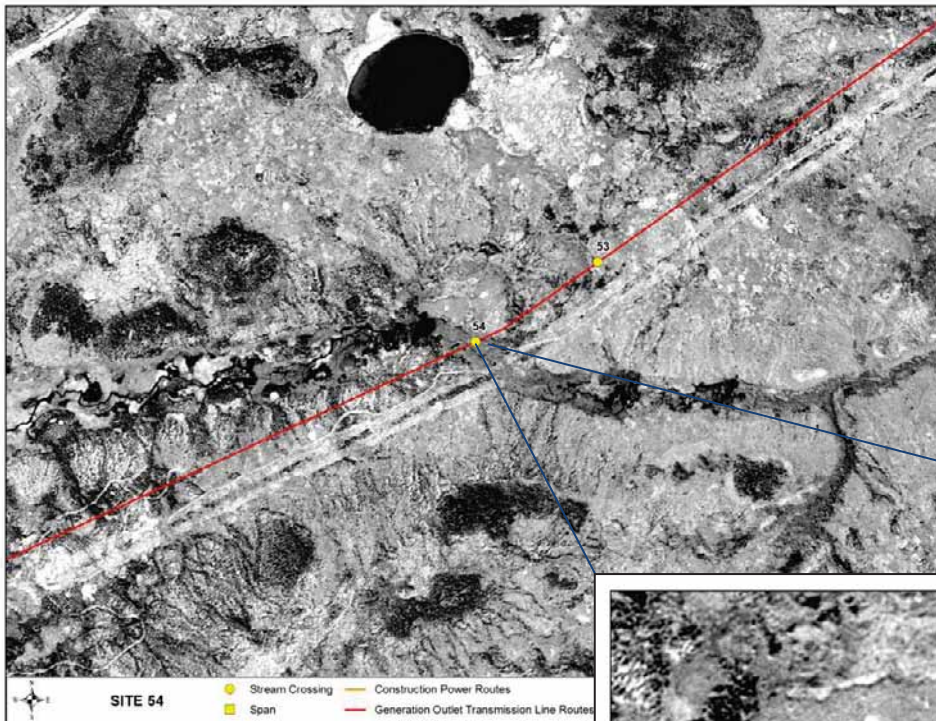
Location

Datum: NAD 83
UTM: Zone: 15V
Easting: 377357
Northing: 6232769

Location Depicted Below:

General Morphology

Gen. Description: Wetland/bog drainage
Pattern: -
Confinement: Confined
Stage: -
Flow Regime: Perennial
U/S Drainage: 7.2 km²
Receiving Water/Dist.: Kettle River/4 km



Site Conditions

+ Physical Data

Survey Date: 1 September 2012

Channel Profile

Channel and Flow

Channel Width (m) ~ 5
Wetted Width (m) -

Water Depths (m)

Max. -
Avg. -

Banks

Right Bank Height (m): - Shape: - Stability: Stable
Left Bank Height (m): - Shape: - Stability: Stable

Substrate

Substrate Type (%)

Fines -
Small Gravel -
Large Gravel -
Cobble -
Boulder -

Habitat Type

Habitat Composition (%)

Pool 100
Flat -
Run -
Riffle -

Cover Types

Total Cover Available (%)

US DS
- -

Cover Composition (% of Total)

Large Woody Debris -
Overhanging Vegetation -
Instream Vegetation -
Pool -
Boulder -
Undercut Bank -
Surface Turbulence -

Riparian

Riparian Vegetation Type (Y/N)

Moss -
Grasses/Sedges Y
Shrubs Y
Conifers Y
Deciduous -
Mixed Forest -
Canopy Cover (%) 0

+ Water Quality Data

Surface Temp (°C): -
Specific Conductance (µS/cm): -
TDS (g/L): -
Salinity (ppt): -

DO (mg/L): -
pH: -
Turbidity (NTU): -

Fish Habitat Classification and Sensitivity

+ Fish Habitat Potential

Spawning

Rearing/Feeding

Overwintering

Large-Bodied Fish:

Low-Moderate

Low

Low

Small-Bodied Fish:

Moderate

Moderate

Low

Impediments to Migration: Beaver dams downstream and upstream

Fish Presence: Unknown

+ Fish and Fish Habitat Sensitivity

Sensitivity Rating: Low



📷 Photograph Documentation



Photo 1. View of crossing at Site 46, 4 km upstream of Site 54.



Photo 2. Downstream view of crossing at Site 46, 4 km upstream of Site 54.