

# Appendix F

## Alternative Site Investigations

## Appendix F. Summary of Site Investigations

Location	Rationale for Alternative Site Assessment	Field Visit Date	Type of Field Assessment	Results
R1.82	No land access to parcel	June 12 , 2012	Visual inspection from roadside and adjacent parcel	Confirmed REA water body
R1.84	No land access to parcel	June 12, 2012	Visual inspection from roadside and adjacent parcel	Confirmed REA water body
R1.2	No land access to parcels	June 18, 2012	Visual inspection from roadside	Confirmed REA water body
R1.37	No land access to parcels	May 24, 2012	Visual inspection from roadside	Confirmed non-REA water body feature on BOR1705 Confirmed REA water body on BOR1637
R1.49	No land access to parcels	June 12, 2012	Visual inspection from roadside	Confirmed REA water body
R1.60	No land access to parcels	June 12, 2012	Visual inspection from roadside	Confirmed REA water body
R2.72	No land access to parcel	May 16, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R2.40	No land access to parcels	May 16, 2012	Visual inspection from roadside	Confirmed REA water body
R2.192	No land access to parcels	May 29, 2012	Visual inspection from roadside and adjacent parcel	Confirmed REA water body on JER3628 Confirmed non-REA water body feature on JER3632
R2.131	No land access to parcels	May 29, 2012	Visual inspection from roadside and adjacent parcel	Confirmed REA water body
R2.179	No land access to parcel	June 5, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R2.302	No land access to parcel	June 5, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
R2.310	No land access to parcel	June 4, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
R2.14	No land access to parcels	May 15 and 24, 2012	Visual inspection from adjacent parcel and roadside	Confirmed REA water body
R2.38	No land access to parcel	June 1, 2012	Visual inspection from roadside	Confirmed REA water body
R2.239	No land access to parcel	May 23, 2012	Visual inspection from adjacent parcel	Confirmed non-REA water body feature
R2.10-A	No land access to parcel	May 16, 2012	Visual inspection from adjacent parcel	Confirmed non-REA water body feature
R2.140-B	No land access to parcels	July 30, 2012	Visual inspection from roadside	Confirmed REA water body
R2.28	No land access to parcels	July 25, 2012	Visual inspection from roadside and adjacent parcels	Confirmed non-REA water body feature on JER1078 Confirmed REA water body on JER3737 and JER3736
R2.34	No land access to parcels	July 25, 2012	Visual inspection from roadside	Confirmed non-REA water body feature on JER1078 Confirmed REA water body on JER1078 and JER3736
R2.10-B	No land access to parcel	May 24, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R2.141	No land access to parcel	May 24, 2012	Visual inspection from adjacent parcel	Confirmed non-REA water body feature
R2.18	No land access to parcel	May 15, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R2.87	No land access to parcel	May 15, 2012	Visual inspection from adjacent parcel	Confirmed non-REA water body feature
R2.93	No land access to parcel	May 15, 2012	Visual inspection from adjacent parcel	Confirmed non-REA water body feature
R2.281	No land access to parcels	May 9 and 23, 2012	Visual inspection from roadside and adjacent parcels	Confirmed REA water body
R2.84	No land access to parcels	October 5, 2012	Air photo interpretation	Confirmed non-REA water body feature on BOR1835

Location	Rationale for Alternative Site Assessment	Field Visit Date	Type of Field Assessment	Results
				Could not confirm water body feature on BOR1835/BOR1103
R2.199	No land access to parcel	October 5, 2012	Air photo interpretation	Confirmed non-REA water body feature
R3.58	No land access to parcel	May 31, 2012	Visual inspection from adjacent parcel	Confirmed non-REA water body feature
R3-B	No land access to parcels	May 11, 2012 June 7, 2012	Visual inspection from roadside	Confirmed REA water body
R3-C	No land access to parcels	June 6, 2012	Visual inspection from roadside	Confirmed REA water body
R3.46	No land access to parcel	May 14, 2012	Visual inspection from roadside	Confirmed REA water body
R3-A	No land access to parcels	May 23, 2012	Visual inspection from roadside	Confirmed REA water body
R3-D	No land access to parcels	May 23, 2012	Visual inspection from roadside and adjacent parcel	Confirmed REA water body
R3.22	No land access to parcel	May 16, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R3.73	No land access to parcels	September 28, 2012	Visual inspection from roadside	Confirmed REA water body
R4-G	No land access to parcels	June 6, 2012	Visual inspection from roadside	Confirmed REA water body
R4.8-E	No land access to parcel	June 8, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4.8-D	No land access to parcel	May 30, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4-I	No land access to parcel	May 31, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4-H	No land access to parcel	May 28, 2012	Visual inspection from roadside	Confirmed REA water body
R4.22	No land access to parcels	May 28, 2012	Visual inspection from roadside	Confirmed REA water body
R4.36	No land access to parcel	May 30, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4.25-B	No land access to parcel	May 22, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4.25-C	No land access to parcel	May 30, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4.8-B	No land access to parcel	July 30, 2012	Visual inspection from roadside	Confirmed REA water body
R4.27	No land access to parcels	July 30, 2012	Visual inspection from roadside	Confirmed REA water body
R4-B	No land access to parcel	May 23, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4-C	No land access to parcel	May 24, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4.51	No land access to parcel	May 24, 2012	Visual inspection from roadside and adjacent parcel	Confirmed non-REA water body feature
R4.11-B	No land access to parcel	May 9, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4.16-C	No land access to parcel	May 9, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R4-D	No land access to parcel	June 12, 2012	Visual inspection from roadside	Confirmed REA water body
R4.61-A	No land access to parcels	May 28, 2012	Visual inspection from roadside	Confirmed REA water body
R4.61-C	No land access to parcel	May 10 and July 30, 2012	Visual inspection from roadside	Confirmed REA water body
R4.62	No land access to parcel	July 31, 2012	Visual inspection from roadside	Confirmed REA water body
R5	No land access to parcel	May 31, 2012	Visual inspection from roadside and adjacent land parcel	Confirmed REA water body
R5. 10	No land access to parcel	May 31, 2012	Visual inspection from roadside	Confirmed REA water body
R6.18-B	No land access to parcels	May 17 and 30, 2012	Visual inspection from roadside and adjacent land parcel	Confirmed REA water body
R6.18-D	No land access to parcels	May 28, 2012	Visual inspection from roadside	Confirmed REA water body
R6.18-C	No land access to parcel	May 28, 2012	Visual inspection from roadside	Confirmed REA water body
R6.20-B	No land access to parcel	July 31, 2012	Visual inspection from adjacent roadside	Confirmed REA water body
R6-B	No land access to parcels	July 31, 2012	Visual inspection from adjacent	Confirmed REA water body

Location	Rationale for Alternative Site Assessment	Field Visit Date	Type of Field Assessment	Results
			parcel	
R6.16	No land access to parcels	May 29, 2012	Visual inspection from roadside	Confirmed REA water body
R6.18-A	No land access to parcel	May 23, 2012	Visual inspection from roadside	Confirmed REA water body
R8.12-A	No land access to parcel	May 24, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
R8.10	No land access to parcels	May 29, 2012	Visual inspection from adjacent parcel and roadside	Confirmed REA water body
R9.29-D	No land access to parcels	May 29, 2012	Visual inspection from roadside	Confirmed REA water body
R9.29-E	No land access to parcel	May 29, 2012	Visual inspection from roadside	Confirmed REA water body
R9.29-C	No land access to parcel	May 29, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
R12.123	No land access to parcel	June 25, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
R12.82	No land access to parcel	May 31, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
R12.54-B	No land access to parcels	June 7, 2012	Visual inspection from roadside	Confirmed REA water body
R12.54-A	No land access to parcel	June 4, 2012	Visual inspection from roadside	Confirmed REA water body
P1.35	No land access to parcel	June 12, 2012	Visual inspection from roadside	Confirmed REA water body
P1.24	No land access to parcel	May 24, 2012	Visual inspection from roadside	Could not confirm water body feature
P1.27	No land access to parcel	June 18, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
P1.32	No land access to parcel	June 12, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
P1.31	No land access to parcel	June 12, 2012	Visual inspection from roadside	Could not confirm water body feature
P1.45	No land access to parcel	June 12, 2012	Visual inspection from roadside	Could not confirm water body feature
P1.46	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
P1.33	No land access to parcel	June 18, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
P2.144	No land access to parcel	May 16, 2012	Visual inspection from adjacent parcel	Confirmed REA water body
P2.142	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
P2.30	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
P2.53	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
P2.18	No land access to parcel	May 15, 2012	Visual inspection from adjacent parcel	Could not confirm water body feature
P2.114	No land access to parcel	May 23, 2012	Visual inspection from adjacent parcel	Confirmed non-REA water body feature
P2.52	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
P3.56	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
P3.61	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
P3.62	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
P4.28	No land access to parcel	June 12, 2012	Visual inspection from roadside	Could not confirm water body feature
P4.36	No land access to parcel	May 23, 2012	Visual inspection from adjacent parcel	Confirmed non-REA water body feature
P4.47	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature

<b>Location</b>	<b>Rationale for Alternative Site Assessment</b>	<b>Field Visit Date</b>	<b>Type of Field Assessment</b>	<b>Results</b>
<b>P4.49</b>	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
<b>P6.8</b>	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
<b>P12.30</b>	No land access to parcel	June 4, 2012	Visual inspection from roadside	Confirmed non-REA water body feature
<b>P12.14</b>	No land access to parcel	June 7, 2012	Visual inspection from roadside	Confirmed REA water body
<b>P12.15</b>	No land access to parcel	October 5, 2012	Air photo interpretation	Could not confirm water body feature
<b>P12.22</b>	No land access to parcel	June 7, 2012	Visual inspection from roadside	Confirmed REA water body feature

# Appendix G

## Summary of Site Investigations

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Date of Investigation	Location	Weather	Duration	Field Notes	Name of Investigator(s) / Qualifications
May 2, 2012	R2.101, R2.111, R2.102, R4-E	24.0°C; Trace of precipitation	11:30-16:50	C. Boros	C. Boros, B.Sc.
May 3, 2012	R2.140-A, P6.6	31.0°C; 16.0 mm of precipitation	9:00-10:50	C. Boros	C. Boros
May 9, 2012	R4.11-B, R4.16-C, R4-I, R2.281	15.5°C; 1.0 mm of precipitation	11:48-17:35	S. Lohnes	S. Lohnes, B.Sc.
May 10, 2012	R4.25-A, R4.41, R4.33-B, R4.54, R4.48, R4.16-B, R4.31, R4.11-A, R4.29, R4.61-C, R4.61-B	13.0°C; 0 mm of precipitation	8:05-17:25	S. Lohnes	S. Lohnes
May 11, 2012	R4.61-A, R3-B, R3.62, R2.73	23.5°C; 0 mm of precipitation	8:00-12:45	S. Lohnes	S. Lohnes
May 14, 2012	R3.64, R3.66, R3.53, R3.46, R3.38, R4-C	23.5°C; 0 mm of precipitation	14:15-18:40	C. Boros	C. Boros
May 15, 2012	R4-I, R2.14, P2.136, R2.18, R4.16-B, P2.18, R2.76, R2.311, R2.87, R2.93	27.0°C; 3.0 mm of precipitation	11:00-17:35	C. Boros S. Lohnes J. Epp A. Arsenault	C. Boros S. Lohnes J. Epp, B.Sc.
May 16, 2012	R4.25-A, R4.33-A, R2.10-A, R2.40, R2.72, P2.144, R3.22, P3.44	12.5°C; 0.4 mm of precipitation	8:00-17:35	S. Lohnes J. Epp	S. Lohnes J. Epp
May 17, 2012	R6-A, R6.1-B, P4.46, R4.45, R4-A	15.5°C; 0 mm of precipitation	9:15-13:55	S. Lohnes J. Epp	S. Lohnes J. Epp P. Deacon (NHA)
May 20, 2012	R4-H	32.0°C; 0 mm of precipitation	13:00-14:30	S. Daraiche	S. Daraiche
May 22, 2012	R4.25-B, R4.43, P8.7, R4.8-B, P4.37, R4.25-B	14.0°C; 0 mm of precipitation	13:50-18:15	C. Boros	C. Boros J. Epp P. Deacon (NHA)
May 23, 2012	R3-D, P3.29, R4.29, R3-A, R3.68, P4.39, R4-B, P4.36, R2.281, R4.8-A, R4.50, R2.239, P2.115, P2.114, R6.18-A	22.5°C; 0 mm of precipitation	8:00-16:45	C. Boros J. Epp S. Aitken	C. Boros J. Epp S. Aitken, B.Sc. S. Daraiche
May 24, 2012	R4-C, R2.10-B, R2.14, R4.51, R2.94, R6.20-A, R2.141, R2.193, R8.12-A, R8.12-B, R4.59, P4.30, R5.8, P1.24, P1.23, R1.37	29.5°C; 0 mm of precipitation	8:00-15:55	C. Boros J. Epp S. Aitken S. Daraiche	C. Boros J. Epp S. Aitken S. Daraiche
May 28, 2012	R4.22, R6.18-D, R6.18-C, R4.61-A	33.0°C; 0 mm of precipitation	12:25-15:00	C. Boros S. Daraiche	C. Boros S. Daraiche
May 29, 2012	R4.16-A, R4.60, P4.40, R2.131, R2.192, R2.186, R8.10, R9.33-B, R9.29-F, R6.16, R9-A, R9.33-C, R9.33-A, R9.29-D, R9.29-C, R9.29-E	27.5°C; 4.2 mm of precipitation	8:00-16:30	C. Boros S. Daraiche	C. Boros S. Daraiche
May 30, 2012	R4.36, R4.8-D, R4.25-C, R2.72, P2.138, R9.29-B, R4.61-A, P4.50, R2.27, R2.14, R6.18-B	23.0°C; 0 mm of precipitation	8:00-16:20	C. Boros S. Daraiche	C. Boros S. Daraiche
May 31, 2012	R4-I, R5.10, R5, R6-C, P6.3, P2.131, R12.82, R3.28, R3.58, R3.51	16.0°C; 4.2 mm of precipitation	8:45-18:00	C. Boros S. Daraiche	C. Boros S. Daraiche
June 1, 2012	R2.30, R2.51, R2.58, R2.46, R2.38	17.0°C; 13.8 mm of precipitation	8:30-11:00	S. Daraiche	S. Daraiche

### Appendix G. Summary of Site Investigations

Date of Investigation	Location	Weather	Duration	Field Notes	Name of Investigator(s) / Qualifications
June 4, 2012	R2.310, P12.30, P12.31, R12.54-A	17.0°C; 1.0 mm of precipitation	12:50-15:20	C. Boros S. Daraiche	C. Boros S. Daraiche
June 5, 2012	R2.179, R2.302	17.5°C; 0 mm of precipitation	8:10-10:30	C. Boros	C. Boros S. Daraiche
June 6, 2012	R3-C, R4-F, R6.20-B, R4-G	22.5°C; 0 mm of precipitation	7:50-18:15	C. Boros	C. Boros S. Daraiche
June 7, 2012	R3-B, R3.64, R12.54-B, P12.14, R12.22	23.0°C; 0 mm of precipitation	11:00-16:20	C. Boros S. Daraiche	C. Boros S. Daraiche
June 8, 2012	R4.8-E, R9-B	28.5°C; 5.0 mm of precipitation	8:45-11:30	C. Boros	C. Boros S. Daraiche
June 12, 2012	P4.28, R3.70, R4-D, P4.43, R4.37, R2.2, P2.33, R1.60, P1.32, R1.49, P1.31, P1.45, P1.35, R1.84, R1.82, R2.70	24.0°C; 0 mm of precipitation	8:00-18:45	C. Boros J. Epp	C. Boros J. Epp
June 18, 2012	P2.140, R9.29-A, R9.29-F, R4.41, R4.33-B, R4.39, P1.33, R1.2, P1.27	13.0°C; 0 mm of precipitation	9:30-15:25	C. Boros J. Epp	C. Boros J. Epp
June 25, 2012	R12.123	18.5°C; 0 mm of precipitation	15:00-15:10	C. Boros	C. Boros J. Epp
July 25, 2012	P4.44, R4.8-C, R4.25-A, R2.28, R2.34	29.0°C; 9.2 mm of precipitation	11:15-15:00	C. Boros J. Epp	C. Boros J. Epp
July 30, 2012	R2.140-B, R4.58, R4.27, R4.8-B, R4.61-C	30.5°C; 0 mm of precipitation	13:10-16:40	C. Boros	C. Boros
July 31, 2012	R4.61-A, R4.62, R6.20-B, R6.18-D, R6-B, R3.32, R12.2	29.0°C; 0 mm of precipitation	8:30-17:15	C. Boros	C. Boros
September 17, 2012	R3.70, R4-D	25.5°C; 3.4 mm of precipitation	10:45-13:25	C. Boros	C. Boros
September 18, 2012	P12.32	17.0°C; 5.2 mm of precipitation	11:45-12:15		S. Gildner (NHA)
September 28, 2012	R3.74, R3.73, P4.45, R4.33-B, R4.39, R4.48	17.5°C; no data available for precipitation	7:45-13:15	C. Boros	C. Boros
October 5, 2012	P2.142, P2.30, P2.53, P3.56, P3.61, P3.62, P4.47, P6.8, P1.46, R2.84, R2.199	24.0°C; 5.0 mm of precipitation	8:00-10:00	J. Epp	J. Epp
November 22, 2012	R4.51, R3.38, R2.94	15.0°C; 5.0 mm of precipitation	12:30 – 14:00	C. Boros	C. Boros

Note: Weather taken from Environment Canada Website, accessed July 26, 2012  
 Temperature = Maximum Temperature recorded  
 Precipitation = total mm of precipitation on given day



# Appendix H

## Project Team CVs



## Sarah Aitken, B. Sc. Hon., ET Diploma Aquatic Ecologist

### Professional History

2008 - present, AECOM, Aquatic Ecologist

2007 – Kawartha Lake Conservation, Fisheries Technician

2004-2006, Gartner Lee Limited, Environmental Technologist

2004 – Credit Valley Conservation, Water Resources Assistant

### Education

Environmental Technology, Sir Sandford Fleming College Lindsay, ON 2001 – 2004

Environmental Resource Science (Honours) Trent University Peterborough, ON 2006 – 2008

### Years of Experience

With AECOM: 6

With Other Firms: 1

### Training

MTO/DFO/OMNR Fisheries Protocol Training for Consultant Fisheries Specialists – January 2010

Canadian Pleasure Craft Operator

WHMIS Training

Fall Arrest Training

Ontario Benthos Biomonitoring Network Certification Course, Ministry of the Environment, April 2005

Electrofishing Certification Level 2 Backpack, September 2010

Sarah Aitken is an Aquatic Ecologist with AECOM. She has over six years of experience in the environmental field in both the public and private sector. Since joining AECOM in 2004, Sarah has worked on a diverse range of projects including environmental monitoring projects, Renewable Energy projects, transportation projects, environmental impact studies, large-scale dewatering projects, construction monitoring projects and several EEM mining programs and lake management studies. Sarah has coordinated and implemented a variety of ecological and water resource monitoring activities for various projects and also has experience collecting benthic invertebrates, fish sampling and conducting detailed fish habitat information. She has experience in the collection and analysis of water quality data, stream assessments, various lake sampling techniques, installation of a variety of surface water field equipment, and report writing.

### EXPERIENCE

Experience with various lake sampling techniques, including sediment coring, bathymetry, benthic invertebrate sampling, water quality and lake profiling for Brampton Lakes and Fairy Lake.

Completed several Fish community and biomass surveys for various projects including EA's and EIS studies. This included the use of different equipment including; backpack electrofisher, gill nets, hoop nets and minnow traps. Sarah has contributed technical advice to the permitting and approval process of several projects.

Completed several construction monitoring projects including regular site inspection of construction activities near water, fish capture and relocation and turbidity monitoring.

Conducted various water quality sampling programs for both surface water and groundwater systems. Also completed detailed analysis and report preparation with these results.

Sarah has coordinated and implemented several environmental baseline studies and completed Environmental Effects Monitoring (EEM) programs for several mining projects.

### Fisheries and Fish Habitat Assessments

#### **NextEra Wind Energy Centre, Renewable Energy Assessment-Waterbodies (2010-2012)**

Coordinated the water bodies program including field work, reporting and obtaining agency approvals. Preparation of the water bodies report, Bluewater Species at Risk program for Redside Dace sampling and agency consultation with MNR and local Conservation Authorities.

#### **Walpole Island First Nation, Walpole Island Dredge Cut Restoration Project, ON (2009-2010)**

Standard First Aid with CPR Level A,  
March 2012

Gartner Lee Centres of Excellence –  
Fisheries Methods Course, June 2008

Lake Management in a Changing  
Environment, North American Lake  
Management Society Conference,  
November 2008

Taxonomy, Ecology and Control of  
Nuisance Algae, Pre-conference  
Workshop, North American Lake  
Management Society, November 2008

Fish Identification Workshop - Royal  
Ontario Museum (2009)

Conducted a feasibility study that included assessments of sediment and water quality in order to develop a strategy to restore 14 linear kilometres of aquatic habitat around Potawatomi Island.

**Squirrel Island Bridge Replacement, Walpole Island, ON (2009)**

Aquatic investigations were undertaken to aid in the assessment of potential effects of a bridge replacement on Squirrel Island between River Road South and Squirrel Island Road. Detailed background view and fish habitat mapping was conducted.

**Mississauga Road Widening – Huttonville Creek, Mississauga Ontario (2010-Present)**

Sarah contributed technical advice to the permitting and approval process for an ESA required permit. This involved the evaluation of different alternatives and their associated impacts and benefits analysis. Sarah also assisted in developing rationale for the different alternatives and compensation plans.

**City of Guelph, Arkell Springs Creek AMP Monitoring, Eden Mills Ontario (2008-2009)**

Monitored the effects of a long-term pumping project on a coldwater trout stream. Sarah collected data including stream velocities, surface and groundwater interaction, fisheries community information, redd surveys and aquatic habitat assessments.

**Monora Creek, Brook Trout Biomass Survey, Ontario (2004-2009)**

Conducted annual biomass surveys and spawning surveys to determine if there was an impact on fish populations from groundwater extraction. Temperature monitoring and stream flow monitoring was also conducted on a monthly basis. Sarah also coordinated and prepared annual reports for the client.

**City of London, Storm Drainage and Stormwater Management Facility and Servicing - Class Environmental Assessment, White Oak Area, London, Ontario.**

Collected aquatic habitat and reconnaissance level fish species presence data from White Oak drain and tributaries and provided recommendations for stormwater management implications. [2009]

**Blockline Environmental Impact Study, Kitchener, Ontario (2009-Present)**

Sarah collected detailed fish habitat information in Schneider Creek for the Preliminary Design Brief for the extension of Block Line Road from Hanson Avenue to Courtland Avenue East. Sarah assessed the significance of Schneider Creek, the present constraints and opportunities, the potential impacts anticipated as a result of the proposed road extension and provided an Environmental Management Plan for the protection and management of Schneider Creek.

**TTC – 407 Subway Station, Toronto, Ontario (2009)**

Sarah collected detailed fish habitat information according to the MTO/DFO Fish Habitat Protocol. Fish community surveys were also conducted the length of the study reach.

**Waterloo LRT Environmental Impact Study, Region of Waterloo, Ontario (2009-2010)**

Conducted detailed fish habitat assessments of all identified watercrossings in study area, specifically looking at crossing locations and downstream habitat. Sarah conducted fish community surveys by electrofishing and minnow traps and assessed the significance of all the watercourse crossings, the present constraints and opportunities, the potential impacts anticipated and mitigation techniques to protect the watercourses.

### **Environmental and Construction Monitoring**

#### **Design-Build of the Elgin Area Primary Water Transmission Main Twinning, Ontario (2010-Present)**

Sarah played a large role in coordinating and implementing the field work which included detailed assessment of all potential watercourse crossings, collection of fish habitat information and fish community studies. Sarah maintained contact with regulatory agencies and compiled a detailed report submitted for agency approval. She also worked with Transport Canada to obtain Navigable Waters approvals.

#### **York Region Sanitary Sewer Installation – 16th Avenue, Markham, Ontario (2004-2006)**

Sarah coordinated field schedules and implemented field programs for the 16th Avenue Projects, which included stream flows, groundwater levels, maintenance of stream loggers, site investigations, water quality sampling and fish sampling. Sarah was also responsible for peer reviewing data collection from other consulting firms and auditing site selections. She was responsible for organizing high quality field notes for project records, developing rating curves, creating a database for data storage and preparing reports for the client.

#### **York Region Sanitary Sewer Installation – 9<sup>th</sup> Line, Stouffville, Ontario (2004-2006)**

Sarah played a large role in completing a long-term monitoring program which monitored the impacts from dewatering on a coldwater Brook Trout stream. Weekly stream flows, groundwater levels, maintenance of stream loggers, construction monitoring, water quality sampling and fish sampling. She was responsible for data collection and organization, developing rating curves and preparing reports for the client. Sarah also maintained relationships with sub-consultants and the client.

#### **York Region Sanitary Sewer Installation – King Road, King City, Ontario (2004-2006)**

Sarah coordinated and implemented field programs for the King Road sanitary sewer installation, which included stream flows, groundwater levels, construction monitoring, wetland monitoring, and site investigations. She was responsible for the taking and organizing field notes for the project records and preparing reports for the client.

#### **Puslinch Culvert 93 Replacement, Puslinch, Ontario (2010)**

Coordinated and assisted in construction monitoring of silt fencing and channel removal. Helped develop and implement a fish capture and relocation plan during construction phase.

**Huron County Culvert 86-19.7 Bridge Replacement, Huron County, Ontario (2010)**

Coordinated and assisted in construction monitoring of silt fencing and channel removal. Helped develop and implement a fish capture and relocation plan during construction phase.

**Lake Management Studies****Fairy Lake Water Quality Study, Acton, Ontario (2008-2009)**

Sarah coordinated and completed field work analysis of a small urban lake including low flow and rain event sampling, dissolved oxygen lake profiling, water quality measurements and sediment core sampling. She compiled and analysed field data and assisted in the preparation of the final report. Sarah also helped determine options for enhancing the quality of the lake for the client and nuisance geese management options.

**Citywide Lake Assessment/Management Study, Brampton, Ontario (2004-2006)**

Sarah participated in an extensive monitoring program to collect water quality, fish community data and habitat ecology for several urban lakes within the City of Brampton. Sarah assisted in the data organization and report writing, as well as answering client comments.

**West End Community Centre, DFO Compliance Monitoring, Guelph, Ontario (2008-2009)**

Project manager for a pond monitoring study (2008-2009) resulting in management recommendations for improvements to water quality, mitigation of nuisance wildlife and suitability of fish stocking. Sarah conducted pond profiling and captured and re-stocked pond with select species.

**Woodbine Racetrack Water Quality Monitoring, Etobicoke, Ontario (2004-2006)**

Sarah completed monthly surface water quality sampling from various stormwater ponds and the receiving waterbodies.



## **Caroline Boros, Honours B. Env. Sc. Aquatic Ecologist**

### **Professional History**

AECOM

Aquatic Ecologist  
2007 to present

Grand River Conservation Authority  
Water Quality Technician  
Cambridge Ontario  
2006 – 2007

Hamilton Conservation Authority  
Water Resource  
Technologist Assistant  
Ancaster Ontario  
2004 – 2005

### **Education**

Honours Bachelor of  
Environmental Science  
University of Guelph  
2000 – 2004

Ecosystem Restoration  
Graduate Certificate  
Niagara College

### **Years of Experience**

With AECOM: 5

With Other Firms: 2

Caroline is a graduate of the University of Guelph Honours Environmental Science degree program and is currently working as an Aquatic Ecologist for AECOM (formerly Gartner Lee Limited) with over four years experience in the field. She has an excellent background in the aquatic sciences, specifically with ecosystem restoration and habitat assessment.

### **EXPERIENCE**

#### **Ecological Assessment and Monitoring**

##### **NextEra Wind Energy Centre, Renewable Energy Assessment-Waterbodies (2011-2012)**

Acted as lead aquatic field ecologist for waterbodies surveys conducted in Bluewater, Goshen and Jericho study areas under the direction of the Renewable Energy Act (REA) requirements. Involved in the report preparation for the Bluewater Waterbodies REA submission to the Ministry of Environment. Acted as lead aquatic field ecologist for the Species at Risk surveys conducted in Bluewater study area – target species were Redside dace and Black redbhorse.

##### **Walkers Aggregates Inc., Aquatic Ecology Monitoring Program, Thorold (2007 – 2011)**

Collection and management of surface water and aquatic data to assess impacts on streams due to quarry activities. The investigation includes surface water flow monitoring, benthic macroinvertebrate community assessment, and fish community and habitat assessment. Participate in formal responses to various provincial agency technical comments as it pertains to submitted reports for on-going compliance of permits.

##### **Township of Brock, Blackwater Bridge Replacement Environmental Impact Study, Brock (2010 – 2011)**

Conducted fish habitat assessment and fish community survey to document existing conditions and identify potential impacts as a result of the proposed bridge replacement. Ongoing consultation with local conservation authority to determine mitigation and compensation measures for the potential bridge design.

##### **Clean Harbors Canada Inc., Natural Environment Assessment, Petrolia (2011)**

Completed a natural features assessment in support of the Environmental Assessment document for the potential expansion of the landfill. Field investigations included fish habitat and community assessments in surrounding areas, and bird surveys for onsite woodlots.

**Walpole Island First Nations, Dredge Cut Restoration, Walpole Island (2011)**

Assisted in the desktop background research, data compilation and interpretation and summarized the water quality, and fish habitat and community findings in the report.

**Town of Innisfil, Lakeshore Water Treatment Plant Expansion Municipal Class Environmental Assessment (2010)**

Completed fish habitat and fish community assessments, including fish habitat assessment in the lake using live underwater video feed (using scuba divers and a dive boat). Prepared field data results and potential impacts to fisheries in the respective sections in the final report.

**Town of Fort Erie, Bridge Replacement: Fish habitat and community assessment, Fort Erie (2010)**

Completed a fish habitat and fish community assessment as part of an Environmental Assessment for two proposed bridge replacements in the township. Prepared a memo which included the characterization of the relative risk for the proposed works within the DFO Risk Management Framework.

**Walkers Aggregates Inc., Ten Mile Creek Re-alignment Monitoring, Thorold (2007- 2009)**

Conducted post-construction monitoring and reporting of fish habitat and community for a re-aligned stream in order to comply with Department of Fisheries and Oceans (DFO) authorization.

**Walkers Aggregates Inc., Permit to Take Water: Aquatic Ecology Monitoring, Ridgemount (2009)**

As part of the reapplication process for a Permit to Take Water (PTTW) a potential stream re-alignment assessment was completed. The investigation included surface water flow monitoring, temperature monitoring, benthic macroinvertebrate community assessment, and fish community and habitat assessment.

**Surface Water Monitoring****Clean Harbors Canada Inc., Surface Water Investigation, Petrolia (2011)**

Involved in an off-site surface water investigation for a waste transfer facility which includes wet weather sampling events, water level monitoring (using loggers), and sediment sampling. On-going monitoring for 2011 with a final report to be completed at the end of the year.

**Décor, Surface Water and Operations and Maintenance Monitoring, Hamilton (2009- 2010)**

Project Manager. Co-ordinated field investigations and monitoring for the Certificate of Approval for their surface water monitoring, and operations and maintenance monitoring. Prepared quarterly reports for Ministry of Environment review which examined water quality conditions on site.

**Clean Harbors Canada Inc., Assimilative Capacity Study, Mississauga (2010)**

Responsible for collecting the surface water quality samples and stream flow measurements used to assess the assimilative capacity of the onsite discharge to the down gradient stream.

**Groundwater Monitoring****Confidential Private Company, Remediation monitoring, Cambridge (2007 – 2011)**

Site is TCE impacted and has a purge water containment program in place. Assisted in remediation program initiation through groundwater well development, groundwater sampling, hydraulic conductivity testing, water level measurements, and PID measurements. Also participated in the monitoring program during the in-situ chemical oxidant injections.

**Clean Harbors, Compliance monitoring, Facilities- London, Niagara, Sarnia, Mississauga (2007 – 2010)**

Involved in ongoing Certificate of Approval compliance monitoring for each of the facilities. Conducted field work which included: water levels, groundwater sampling, groundwater well development, surface water sampling, well recovery pump test.

**CBM St. Mary's Cement, Permit to take water – Phase 1 pump test, Flamborough (2008)**

Involved in the Permit to Take Water Phase 1 Pump Test conducted in the spring. Assisted in field work co-ordination and preparation for daily on-site meetings with the Ministry of Environment. On-site work included groundwater sampling, slug testing, logger calibration, logger installations, database management, piezometer installation in wetlands.

**City of Guelph - Imico, Groundwater monitoring, Guelph (2007 – 2009)**

Complete bi-annual monitoring on-site for the Certificate of Approval which includes water levels and groundwater sampling.

**City of Guelph, Arkell Springs Aquifer Investigations, Guelph (2007)**

Involved in groundwater investigations including quarterly water levels, groundwater sampling, piezometer installation and monitoring, logger installations and logger data management.





## Andrea Dart Environmental Technician

### Professional History

01/2006 - present, AECOM, Environmental Technician  
2005 - 2005, Nulmage Landscaping, Crew Member  
2005 - 2005, Ministry of the Environment, Nutrient Management Specialist Assistant  
2004 - 2004, Acorus Restorations, Native Wetland Nursery Supervisor  
2003 - 2003, Ministry of Natural Resources, Surface Water Specialist's Assistant

### Education

Diploma, Environmental Technology, Sir Sandford Fleming College

### Years of Experience

With AECOM: 6  
With Other Firms: 3

### Training and Certifications

40 Hour Hazwoper Training  
RAQS Fisheries Contract Specialist  
Certified Inspector of Sediment and Erosion Control - CISEC  
Excavation and Trenching Safety Awareness  
Asbestos Awareness  
Health and Safety Personal Protective Equipment Training  
Working at Heights  
Confined Space Entry  
Confined Space Awareness  
Fall Prevention Training  
WHMIS Training  
CPR and First Aid Training  
Transportation of Dangerous

Ms. Dart is an environmental technician with over six years of experience in the environmental consulting business. She has been the lead field coordinator and team member for many large-scale projects. Ms. Dart has been responsible for managing compliance monitoring, conducting construction monitoring with sediment and erosion control inspections, managing environmental assessments, data evaluation, quality control, and liaison with subcontractors and the public. She has been the deputy project manager on multiple projects. She has written landfill, aggregate, and sections of environmental assessments and monitoring reports, as well as field methodologies. She has worked in headwater streams, rivers, lakes, wetlands, landfills, quarries, and contaminated sites. Ms. Dart is a member of the Woodlot Association, Willow Beach Naturalist Club, Friends of Presqu'île Park, and became an Ontario Stream Steward in 2011. Within her first year at AECOM, Ms. Dart won the Top Contributor award.

### Experience

Regional Municipality of York, Southeast Collection Trunk Sewer, Environmental Assessment.

Conducted amphibian surveys, benthic collection and rapid Ontario stream assessments at multiple locations. Conduct weekly sediment and erosion control inspections at various locations and provided weekly summaries. Conducted extensive water level measurements and wetland monitoring. Compiled data and created the graphical presentation for bi-monthly reports, conducted quality control of data, and contributed to written sections of the bi-monthly monitoring report. [2010-present]

Regional Municipality of York, Reconstruction and Bridge/Culvert Replacement, and Road Improvements - Stouffville Road, Stouffville ON.

Conducted periodic sediment and erosion control inspections and provided weekly summaries to client. Conducted benthic invertebrate collection. [2011-present]

Regional Municipality of York, Reconstruction and Bridge/Culvert Replacement, and Road Improvements – Ressor Road and 16<sup>th</sup> Ave, Markham ON.

Conducted periodic sediment and erosion control inspections and provided weekly summaries to client. [2012-present]

Regional Municipality of York, 16th Avenue Trunk Sewer Phase II, Markham, Ontario.

Lead field coordinator. Conducted and managed all compliance monitoring requirements. Conducted streamflows and electrofishing. Collected surface water samples, field chemistry, wetland moisture measurements, benthic invertebrates. Installed mini

Goods Certificate  
Operator in Training of Water Treatment  
Operator in Training of Wastewater Treatment  
Operator in Training of Water Distribution  
Operator in Training of Wastewater Collection  
Pleasure Craft Operator Certificate  
Ontario Stream Assessment Protocol Certified with Level 1 Fish I.D

piezometers and collected water levels. Worked with the telemetry system uploading data into database and conducting quality control. Compiled data and created the graphical presentation for the monthly reports, created stage discharge curves, and contributed to the writing of the monthly monitoring reports. Organized the extensive field work and coordinated several employees. [2006-2010]

Regional Municipality of York, West Rainbow Creek Sanitary Sewer Project, Markham, Ontario.

Lead field coordinator. Conducted and managed all compliance monitoring requirements. Conducted a mussel rescue, electrofishing, and streamflows. Collected water levels, surface water samples, field chemistry, temperatures, and monitored the discharge water quality. Compiled data and created the graphical presentation for reports, stage discharge curves, and contributed to the writing of the monitoring reports. [2009-2010]

Ministry of Transportation Ontario, 407 East Environmental Assessment and 407 East Foundation Design Study, Markham, Ontario.

Lead field coordinator. Collected streamflows, water levels, field chemistry, temperature, surface/residential water samples, as well as hundreds of residential water well surveys. Conducted stream reconnaissance; installed and set up level loggers and barologgers, which were downloaded regularly and created detailed graphs for reporting. Performed pump and hydraulic conductivity testing; developed boreholes and collected groundwater samples; compiled data and created the graphical presentation for reports; and organized data into spreadsheet and graphs used for the report. [2008-2009]

NextEra, Wind Energy Centre, Natural Heritage Assessment Report, Grand Bend, Ontario.

Team member. Conducted extensive amphibian surveys throughout season and conducted rapid Ontario stream assessments. As well, assisted with Ecological Land Classification assessments. Conducted data management and quality control. Compiled data and created graphical presentation for reports.[2011-present]

Regional Municipality of York, Upper York Sanitary Sewer, Environmental Assessment.

Conducted amphibian surveys at multiple locations. Conducted fish habitat assessments and rapid Ontario stream assessments. Crew member for electrofishing at multiple locations. Weekly temperature logger downloads.[2011-present]

CN Rail, Credit River Expansion Project, Georgetown On.

Liaison with contractor and client. Overseeing restoration planting in accordance with design drawings and making further recommendations if applicable while on site.[2011-2011]

Confidential Client, Groundwater Investigation and Remediation Work, Toronto and Guelph, Ontario.

Field staff that conducted extensive groundwater sampling, water levels, field chemistry, low flow sampling, and LNAPL and DNAPL bailing. [2006-present]

Holcim, Permit To Take Water and Certificate of Approval Monitoring, Mississauga, Colborne, Peterborough, and Port Hope, Ontario.  
Lead field coordinator. Conducted water levels from mini piezometers, boreholes, and residential wells. Collected field chemistry, surface water samples, and sediment samples from Lake Ontario. Collected surface water discharge, residential, and groundwater samples. Also conducted a surface water tracer test in Lake Ontario. Compiled data and created the graphical presentation for reports. Prepared and wrote the quarterly and annual reports. [2006-present]

Township of Georgina, Georgina Landfill, Georgina, Ontario.  
Deputy project manager. Collected gas readings, water levels and groundwater samples from boreholes. Also collected surface water samples, field chemistry, and streamflows. Compiled data and created the graphical presentation for reports. Prepared and wrote the annual monitoring report. Created the annual budgets. [2008-present]

County of Simcoe; Tosorontio, Alliston, Mara and Essa Landfills, County of Simcoe, Ontario.  
Deputy project manager. Managed and completed all required field compliance monitoring, such as groundwater levels, groundwater samples, gas readings, surface water samples, field chemistry, streamflows, residential samples, and leachate seep observations. Liaison with landfill site supervisors. Compiled data and created the graphical presentation for reports. Prepared and wrote the annual monitoring reports. [2010-present]

Bram West Landowners Association, Block 40-3 Environmental Impact Study, Mississauga, Ontario.  
Lead field coordinator. Collected water levels, field chemistry, and streamflows. Conducted a habitat assessment, completed surveying for top of pipe elevations for new mini piezometers, performed pump and hydraulic conductivity testing, developed boreholes, collected groundwater samples, and compiled data and created the graphical presentation for reports. [2009]

### **Awards**

Making a Difference award, 2010 and 2012  
Top Contributor award, 2006  
National Garfield Weston Merit Scholarship  
Pepsico Scholarship  
Millennium Scholarship

### **Volunteer Work**

Nature Conservancy of Canada  
Friends of Presqu'île Park  
Extend-A-Care Retirement Center  
Lower Trent Conservation Area

**Sylvain DARAÎCHE**  
**Biologist**  
**Environment and Resources**  
**Trois-Rivieres and Saguenay**



**Work Experience**

Since 2008	AECOM, Biologist, Wildlife Technician
2002-2008	Alliance Environnement inc., Biologist, Wildlife Technician
1999-2002	Corporation de LACTivité pêche LSJ, Biologist
1996-1999	Pémesseau Faune, Co-Director, Biologist, Technician
1995	Pro Faune, Wildlife Development Technician
1994	MEF, Scuba Diver, Technician Helper

**Education**

Bachelor's degree in Biology, UQAR, 1998  
 Diploma of Collegial Studies in Natural Environment Technology (Wildlife Management), Cégep de Saint-Félicien, 1995

**Years of experience**

15 years

**Citizenship**

Canadian

**Languages**

French, English

**Continuing Education**

Pleasure Craft Operator Card  
 Professional scientific scuba diver  
 Autonomous Aqualung Diver's Certificate  
 Wilderness and Remote First Aid Certificate  
 Boreal Forest Survival Certificate  
 Training in oxygen therapy and near drowning  
 Training in proper handling of firearms and bows and arrows  
 ASP construction: safety on construction sites  
 Safety Guidelines for Contractors—CN Safety

**Professional Activities**

Representative of the Association des Sauvaginiers du Saguenay-Lac-Saint-Jean to the Table de concertation sur la réglementation de la chasse à la sauvagine au Québec.

Director of the Association des Sauvaginiers du Saguenay-Lac-Saint-Jean

Résumé

**Career Summary**

After earning a degree in Natural Environment Technology, Mr. Daraïche launched and directed a wildlife management and consultation firm known as Pémesseau Faune. He has carried out multiple projects in the course of his career concerning aquatic and terrestrial ecosystems and the biological populations that they host. He has also worked on the physical and human aspects of different projects.

Mr. Daraïche has participated in field operations, result interpretation and analysis and the drafting of reports on various activities.

Over the past few years, Mr. Daraïche has conducted inventories among and characterized aquatic and terrestrial environments, planned and supervised wildlife development work (fish habitats) and assessed the impact of and monitored environmental issues. His duties have included work on diverting the Manouane, Portneuf, du Sault aux Cochons and Rupert rivers and contributions to the Rapides-des-Cœurs, Chute-Allard and Eastmain 1A hydropower development projects. Mr. Daraïche possesses the skills and experience necessary for active involvement in different areas of environmental assessments (certificate of authorization applications, impact studies and screenings) and is qualified to supervise environmental work and to provide environmental monitoring services for various projects. He has worked on different Hydro-Québec and Ministère des Transports du Québec projects and construction sites over the past few years.

**Representative Project Experience**

**Biologist and Wildlife Technician—Ministère des Transports du Québec**

Environmental monitoring of Route 172/138 intersection redesign in Sacré-Coeur and Tadoussac—Ministère des Transports

Environmental monitoring of work to replace a bridge over Rivière à la Truite (Route 138) in Raguenuau—Ministère des Transports

Environmental monitoring of work to replace culverts along Route 389 (Côte-Nord)—Ministère des Transports

Wildlife management efforts at Lake Beloeil (Laurentian wildlife reserve) as compensatory measures for the Route 175 upgrade project. Planning and supervision of improvements—Groupe Conseil Nutshimit Inc.

Environmental follow-up of compensation developments for the Route 175 upgrade project: physical integrity of improvements, use by fish and passability of culverts. Fieldwork—Groupe Conseil Nutshimit Inc.

#### **Biologist and Wildlife Technician—Other Projects**

Application for certificate of authorization and preparation of plans and specifications for redesign of channel downstream from the Roméo-Tremblay and repair of the dam apron—Contact Nature Rivière-À-Mars

Preliminary development concepts and issues pertaining to facilitation of free passage by anadromous brook trout—Patrice Fortin Brook and outlet of Lac à Bedaine, Saint-Jean Saguenay River—Coop Quatre-Temps

Identification of sensitive factors involved in managing the Pipmuacan and Bersimis-2 reservoirs—Hydro-Québec

Preparation of plans and specifications and assessment of the compliance of lake trout spawning enhancements and fish cover provided as compensatory measures in the Kipawa Reservoir—PWGSC

Monitoring water quality of the Benjamin and Gauthier Rivers—Zip Saguenay

Monitoring water quality of the Des Aulnaies River—UPA

Inventory of waterfowl migration and nesting couples for the Rupert River diversion project and the Eastmain 1A hydropower project in 2009—SEBJ

Partial diversion of the Manouane River: environmental monitoring in 2009. Assessment of the impact of sedimentation on Atlantic salmon spawning grounds—Hydro-Québec

Partial diversion of the Sault aux Cochons River: environmental monitoring in 2009. Monitoring of fish populations. Electric fishing—reproduction of lake trout. Field surveys, data entry and analysis—Hydro-Québec

Partial diversion of the Sault aux Cochons River: environmental monitoring in 2008. Monitoring of fish populations. Electric fishing—Lake trout reproduction. Field surveys, data entry and analysis—Hydro-Québec

Partial diversion of the Manouane River, environmental monitoring in 2008. Fish population; reproduction of Atlantic salmon and integrity of developments. Fieldwork and writing of reports—Hydro-Québec

Partial diversion of the Sault aux Cochons River and Portneuf River. Environmental monitoring in 2008 during the operational phase. Wetland monitoring—Hydro-Québec

À Mars River pond development plan for anadromous brook trout. Monitoring the efficiency and integrity of wildlife management. Fieldwork and writing of reports—Contact Nature Rivière-À-Mars

Monitoring of environmental impact. Chute-Allard and Rapides-des-Cœurs hydropower facilities. Survey on fishing—Hydro-Québec

Environmental assessment for the installation of a power plant on the Manouane River in Mauricie—Field surveys, data processing—Société en commandite Manouane Sipi

Characterization of fish species and habitats found in Lahoud Brook in Saguenay—Roche Ltd.

Partial diversion of the Sault aux Cochons River: environmental monitoring 2007. Lake trout reproduction. Field surveys and data entry—Hydro-Québec

Environmental characterization of runoff in Paul-Dufour Lake. Field surveys and data entry—Alcan Inc., Grande-Baie complex.

Application to amend certificate of authorization for the Saint-Augustin cranberry bog—Canneberges Bieler Inc.

Résumé

Identification of sensitive factors in the Hart-Jaune, Mitis and Mitisgouèche reservoirs. Field surveys and data processing—Hydro-Québec

Fish habitat compensation in 2007. Chute-Allard and Rapides-des-Cœurs hydropower facilities. Supervision of management work—Hydro-Québec

Characterization of water flow in summer low water conditions and determination of the ability of brook trout pass through culverts. Chute-Allard and Rapides-des-Cœurs hydropower facilities. Field surveys, capture-mark-recapture, electric fishing—Hydro-Québec

Partial diversion of the Portneuf River: environmental monitoring in 2007. River productivity (field surveys). Monitoring of fish populations. Capture-mark-recapture, net fishing—Hydro-Québec

Partial diversion of the Sault aux Cochons River, environmental monitoring in 2007. Monitoring of fish populations. Electric fishing—Lake trout reproduction. Field surveys, data entry and analysis—Hydro-Québec

Partial diversion of the Manouane River, environmental monitoring in 2007. Stocking of Atlantic salmon and monitoring of incubators. Fieldwork and writing of reports. Navigation conditions and log depots—Hydro-Québec

Roméo-Tremblay dam fishway on the À Mars River: Identification and assessment of solutions for promoting maintenance of a stable channel in the channel downstream from the fishway. Surveys—Comité ZIP Saguenay, City of Saguenay and the MRNF

Environmental characterization of a peat bog and the surrounding area for production of cranberries. Field surveys and data entry—Canneberges Bieler, Saint-Ludger-de-Milot

Plan to develop À Mars River ponds for anadromous brook trout. Wildlife management and inventories produced in 2006 and in 2007. Supervision, fieldwork and writing of reports—Comité Zip Saguenay

Partial diversion of the Manouane River: environmental monitoring in 2006. Stocking of Atlantic salmon and study of the feasibility of introducing lake trout—Reproduction of Atlantic salmon and integrity of management. Fieldwork and writing of reports—Hydro-Québec

Characterization and feasibility study pertaining to the issue of erosion of riverbanks in Betsiamites. Field surveys and data processing—Conseil de bande de Pessamit

Monitoring study of the environmental impact of the Baie-Comeau papermill. Field surveys—Abitibi-Consolidated

Partial diversion of the Portneuf River, environmental monitoring 2006. Characterization of navigation conditions. Fieldwork and data entry—Hydro-Québec

Characterization of lacustrine ecosystems and development of ecological restoration frameworks tailored to the situations of certain lakes in the La Mauricie National Park of Canada, fieldwork, data analysis and processing—Parks Canada

Partial diversion of the Sault aux Cochons River, environmental monitoring 2006. Lake trout reproduction. Field surveys, data entry and analysis—Hydro-Québec

Identification of sensitive components in the Outardes 2 and Outardes 3 reservoirs. Field surveys and data processing—Hydro-Québec

Environmental assessment for repair of the Anse aux Gascons fishing port, data updates, research and writing of reports—Public Works and Government Services Canada

Writing a report on enhancements introduced in 2003 and 2004 (Atlantic salmon spawning grounds and wing deflectors), partial diversion of the Manouane River—Hydro-Québec

Identification of sensitive components : infrastructure, wetlands, wood residues from the Outardes 4 and Manic 3 reservoirs, field surveys—Hydro-Québec

Planning and supervision of Atlantic salmon spawning ground management and wing deflectors, partial diversion of the Manouane River—Hydro-Québec

Résumé

Monitoring of Portneuf River fish populations, diversion of the Portneuf River, net fishing, data entry—Hydro-Québec

Capture-mark-recapture in evaluating brook trout populations in Bacon and Portneuf lakes, partial diversion of the Portneuf River—Hydro-Québec

Capture of spawners and installation of Atlantic salmon incubators, partial diversion of the Manouane River—Hydro-Québec

Creation of a computer image bank, partial diversion of the Portneuf and Sault aux Cochons rivers—Hydro-Québec

Assessment of brook trout spawning grounds in winter conditions, partial diversion of the Portneuf River—Hydro-Québec

Characterization and assessment of wetlands on the future Gatineau golf course at Domaine Saint-Alexandre—Daniel Arbour

Assessment of the problem of fish capture by the water intake at the Gentilly 2 nuclear power plant. Fish sampling—Hydro-Québec

Writing of a report on enhancements produced in 2003 et 2004 (Atlantic salmon spawning grounds and wing deflectors), partial diversion of la Manouane River—Hydro-Québec

Planning and supervision of Atlantic salmon spawning ground management and wing deflectors, partial diversion of the Manouane River—Hydro-Québec

Writing of a report on developments produced in 2002 and 2003 (brook trout spawning grounds and wing deflectors), partial diversion of the Sault aux Cochons River—Hydro-Québec

Planning and supervision of brook trout spawning grounds and wing deflectors, partial diversion of the Sault aux Cochons River—Hydro-Québec

Experimental electric fishing in tributaries of the Saint-Maurice River, Hydropower projects at the Rapides-des-Cœurs and Chute-Allard power plants—Hydro-Québec

Assessment and characterization of wetlands, installation of capture devices for small wildlife, amphibians and reptiles in Longueuil—Hydro-Québec

Planning and supervision of Atlantic salmon spawning grounds and wing deflectors, partial diversion of the Manouane River—Hydro-Québec

Writing of report on enhancements introduced in 2003 (Atlantic salmon spawning grounds, wing deflectors, nesting islands and wood piles), partial diversion of the Manouane River—Hydro-Québec

Land surveys of spawning ground sites to be managed for Atlantic salmon, partial diversion of the Manouane River—Hydro-Québec

Capture of spawners and installation of Atlantic salmon incubators, partial diversion of the Manouane River—Hydro-Québec

Inventory of Atlantic salmon nests in the Manouane, Petite Manouane and Duhamel rivers, partial diversion of the Manouane River—Hydro-Québec

Inventory of nests and characterization of Atlantic salmon spawning grounds in the Manouane and Petite Manouane rivers, partial diversion of the Manouane River—Hydro-Québec

#### **Corporation de LACTivité pêche LSJ, Biologist and Wildlife Technician**

Assessment of upstream migration of Atlantic salmon on the Ashuapmushuan, Saumons and Métabetchouan rivers

Patrol and protection of Atlantic salmon and yellow walleye spawning grounds on the Ashuapmushuan, Belle-Rivière, Saumons and Métabetchouan rivers and on Lake Saint-Jean

Implantation of transmitters for Atlantic salmon and aerial telemetry monitoring in the Ashuapmushuan and Saumons rivers

**Péresseau Faune, Co-Director, Biologist and Wildlife Technician**

Multi-resource inventory of the inhabited forest of Saint-Mathieu-du-Parc

Ecological diagnosis of lakes

Piscicultural management of brook trout

Repair of a dike regulating Lake des Érables water levels

Inventory of regenerating and precommercial forest stands

Supervision of silvicultural work

Inventories and formulation of a development plan for the American woodcock

Inventories and formulation of a development plan for small game

Formulation of different wildlife projects

**Pro Faune, Wildlife Technician and Biologist**

Ecological diagnosis of Mingan—Parks Canada

Monitoring and salmon count of the Mingan River and hydrometric survey—Conseil de bande des Montagnais de Mingan

**Relevant Experience—Forest Wildlife**

Aerial inventory of moose in Pointe-Taillon

Inventories of plant regeneration, of browse and of mark-capture-recapture of American hares

Formulation of a management plan for Virginia deer around the Témiscouata Reservoir





## Jessica Epp

### Education

B.Sc.,(Honours) Marine & Freshwater Biology, 2006  
Restoration Ecology, Niagara College, 2011

### Years of Experience

With AECOM: 1

With Other Firms: 8

### Training and Certifications

Ontario Freshwater Mussel Identification Workshop, Department of Fisheries and Oceans Canada, 2012

Standard First Aid with CPR A and AED, St. John Ambulance, 2012

ArcGIS Desktop II: Tools and Functionality, ERSI, 2012

Pleasure Craft Operator Card, Boaterexam.com, 2011

Aquatic Renewal - Workshops 1, 2 and 3, University of Guelph, Ontario Government, Wellington and Waterloo Stewardship Councils and Trout Unlimited Canada, 2011

Class 2 Electrofishing Backpack Crew Leader Certification, Niagara College, 2010

Ontario Benthos Biomonitoring Network Certification, Niagara College, 2010

Small Non-pleasure Vessel Basic Safety (MED A3), Georgian College, 2009

Ontario Fish Identification Workshop, Royal Ontario Museum, 2008

Methodology Workshop: Fish,

Ms. Epp is an aquatic ecologist, with AECOM's Ecological services group working in Guelph. She has over five years of fishing experience using seines, dip nets, angling, spring-haul traps, and electrofishing equipment. Ms. Epp has the ability to collect and identify benthic macroinvertebrates and analyze data following the Ontario Benthos Biomonitoring Network (OBBN) protocol. She has experience in ecological field monitoring, including wildlife surveys, habitat assessments and using Ecological Land Classification (ELC) for Southern Ontario, as well as over six years of experience with freshwater mussel identification and relocations. Ms. Epp is capable of identifying flora found in Southern Ontario, choosing appropriate plants and planting strategies for specific ecosystems.

### Project Experience

#### **NextEra Energy Canada, Bluewater, Goshen and Jericho Wind Energy Centres Grand Bend, Ontario.**

Conducted fish habitat assessment, surface water and fish community surveys targeted for Species at Risk to document existing conditions and identify potential impacts as a result of the proposed wind energy centres. Prepared field data results and potential impacts to Species at Risk and water bodies in the respective sections in the final reports.

#### **Regional Municipality of York, Upper York Sewage Solutions, Newmarket, Ontario.**

Conducted fish community surveys to document existing conditions and identify potential impacts as a result of the proposed works.

#### **Municipality of Central Elgin, East Side Development Area Stormwater Management, St. Thomas and Central Elgin, Ontario.**

Conducted fish habitat assessments to document existing conditions and identify potential impacts as a result of the proposed stormwater management improvements. Prepared field data results and potential impacts in a technical memorandum.

#### **City of Mississauga, Sawmill Creek Erosion Control, Mississauga, Ontario.**

Conducted desktop background research and preliminary Species at Risk screenings.

#### **City of Peterborough, Environmental Assessment Parkway Corridor, Peterborough, Ontario.**

Conducted desktop background research and preliminary Species at Risk screenings.

University of Guelph, 2005

**Other Experience:**

*Aquatic Ecology Intern- Royal Botanical Gardens (2011-2012)*

Wetland restoration activities, including marsh replanting and wild species management. Monitoring of water quality, wetland plants, young of the year fish, salmon spawning, and migratory waterfowl. Monitoring involved the operation of boats, YSI meter, spring-haul traps, and electrofishing gear. Seasonal operation of the Cootes Paradise Fishway including fish identification, measurements, gender determination and PIT tagging, as well as, public information and education. Recording, inputting, analyzing and interpreting field data. Writing the Project Paradise Report, encompassing all field data for the 2011 field season and presenting at the annual Project Paradise Workshop. Independent project working with ArcGIS to determine emergent and meadow marsh plant growth areas in Cootes Paradise Marsh and producing a final report.

*Field Technician – Water Systems Analyst (2005-2012)*

Relocation of freshwater mussel Species at Risk in Ontario. Identification of mussel species, marking, measuring and relocating mussels using approved government protocol.

*Research Technician – Environment Canada (2006-2010)*

Supervised and trained new staff and graduate students in a laboratory setting. Field work collecting lake samples for water chemistry and persistent organic pollutants, air, sediment, zooplankton, *Mysids* and *Dioporia* samples aboard a research vessel. Performed GC-MS analysis for environmental pollutants from biota, air, water and sediment samples. Analyzed and organized data using ChemStation software. Performed extractions of historical, new and emerging organic pollutants from biota samples in tight time frames with consistent accuracy. Managed a laboratory, responsibilities included organization, maintaining supply inventories and managing space.

*Research Assistant – University of Guelph (2004-2006)*

Host fish identification of freshwater mussels Species at Risk and propagation and culture of juvenile mussels for recovery. General care and maintenance of fish and mussels in the Hagen Aqualab, including water chemistry, monitoring and feeding. Extensive fieldwork, including fishing (seining, angling, dip nets, electrofishing) and mussel surveys. Successfully managed ongoing projects independently while supervisor was on annual leave. Trained Boy Scouts and Ontario Rangers in mussel identification, techniques for finding mussels and fishing techniques.

*Field Assistant – Gartner Lee Ltd. (2006)*

Participated in the Mill Creek Annual Monitoring Program which monitors the population of Brown Trout (*Salmo trutta*) in Mill Creek after channel diversions and sedimentation. Electrofishing, identification of fish species, weighed, measured and clipped Brown Trout.

# Sam Gildiner

Ecologist

## Education

MEM, Forestry, University of New Brunswick, 2011

BSc, Forest Management, University of New Brunswick, 2009

Diploma, Forest Technology, Maritime College of Forest Technology, 2007

## Licenses/Registrations

Certified Arborist, Ontario, #ON-1579A, Issued 06/29/2012, Exp. 06/29/2015

## Years of Experience

With AECOM: 1

With Other Firms: 7

## Professional Associations

International Society of Arboriculture, Active Member

Association of Registered Professional Foresters of Ontario, Active Member

Association of Registered Professional Foresters of New Brunswick, Active Member

New Brunswick Wetland Delineators Association, Executive Committee, 2010 - 2012

## Training and Certifications

Bear Awareness Training

CPR and First Aid Training

Fire Extinguisher Training

Mr. Gildiner is a terrestrial ecologist with more than 7 years of experience in the natural resource and environmental consulting field. He has worked throughout eastern and western Canada as a forester, and has worked in central and eastern Canada as an ecological consultant. Mr. Gildiner has experience in wetland science, forest science, habitat management, forest management, soil science, and arboriculture.

## Project Experience

### *Other Category*

**J.D. Irving Limited, Federal Flood Relief Bridge and Culvert Replacement, Fredericton, New Brunswick.** Coordinated assessments of watercrossing affected by storms on crown land. Performed field work with surveyors, engineers, and biologists to determine compensation to forest company. Prepared reports detailing required infrastructure damage and replacement objectives. [04/01/2011-11/10/2011]

**Matt Harris and Sons Ltd., Water Source and Supply Assessment - Johnston Estates, Fredericton, New Brunswick.** Coordinated well driller, location of wells, and field technicians to assess the potential for groundwater supply to well systems in a proposed residential subdivision. Managed long term safe yield calculations, water quality testing, and reporting for suitability of an aquifer for proposed development. [10/05/2011-10/31/2011]

**Matt Harris and Sons Ltd., Water Source and Supply Assessment - Richardson Estates, Fredericton, New Brunswick.** Coordinated well driller, location of wells, and field technicians to assess the potential for groundwater supply to well systems in a proposed residential subdivision. Managed long term safe yield calculations, water quality testing, and reporting for suitability of an aquifer for proposed development. [06/29/2011-08/22/2011]

**Willow Homes, Water Source and Supply Assessment - Willow Estates, Fredericton, New Brunswick.** Coordinated well driller, location of wells, and field technicians to assess the potential for groundwater supply to well systems in a proposed residential subdivision. Managed long term safe yield calculations, water quality testing, and reporting for suitability of an aquifer for proposed development. [07/27/2011-09/01/2011]

**Peterson Mini Home Park, Peterson Mini Home Park - Environmental Impact Assessment, Fredericton, New Brunswick.** Coordinated all field work and reporting associated with provincial EIA requirements including wildlife habitat, rare species, wetlands, groundwater, archaeology, and social considerations. [04/08/2011-09/22/2011]

**Matt Harris and Sons Ltd., Harris Estates - Environmental Impact Assessment, Fredericton, New Brunswick.** Coordinated all field work and reporting associated with provincial EIA requirements including wildlife habitat, rare species, wetlands, groundwater, archaeology, and social considerations. [04/14/2011-08/18/2011]

**Kria Resources, Nesting Bird Survey, New Brunswick.** Conducted field work and reporting for bird nest surveys in northern New Brunswick for a mining project. [06/15/2011-06/22/2011]

**Chippin Real Estate, Trail Design and Layout, Fredericton, New Brunswick.** Designed and implemented on-the-ground a trail system that highlighted natural features of a significant woodland/wetland complex to increase natural capital of a residential subdivision. [08/02/2011-08/24/2011]

**Department of Transportation - New Brunswick, Route 8 Suspended Solids Monitoring, Southern New Brunswick.** Conducted total suspended solids monitoring, data management, reporting, and lab testing for water quality monitoring for a new highway alignment. [04/01/2011-11/23/2011]

**Department of Transportation - New Brunswick, Route 8 Species at Risk and Nest Surveys, Fredericton, New Brunswick.** Conducted field work, mapping, and reporting for habitat descriptions, rare plant surveys, and nesting bird surveys for several borrow pit locations along a highway construction path. [05/17/2011-07/05/2011]

**Wassis Estates, Wassis Estates - Environmental Impact Assessment, Wassis, New Brunswick.** Coordinated all field work and reporting associated with provincial EIA requirements including wildlife habitat, rare species, wetlands, groundwater, archaeology, and social considerations. [04/06/2011-07/20/2011]

**City of New Maryland, New Maryland Water Supply Investigation - Environmental Impact Assessment, New Maryland, New Brunswick.** Conducted field work and reporting duties for wildlife habitat assessment and wetland delineation for an area surrounding a proposed well location. [08/03/2011-08/23/2011]

**Sunbury Developments, Noonan Estates, Noonan, New Brunswick.** Performed field work, data compilation, and mapping duties for vegetation community description and wetland delineations. [08/10/2011-08/24/2011]

**Wolastoqiyik Sacred Land Trust, Ecological Forest Management Plan, Burton, New Brunswick.** Conducted field work, mapping, data compilation, public presentations, community teaching, and team management for forest management plan prescribing silvicultural interventions to meet community goals. [02/17/2010-11/15/2011]

**Hill Developments, Hill Developments - Wetland Delineation, Fredericton, New Brunswick.** Performed wetland delineation, mapping, data compilation, and reporting duties for residential subdivision wetland delineations. [07/01/2010-08/10/2010]

**OVAC Ltd., Route 11 Wetland Delineations, Northern New Brunswick.** Performed wetland delineations, functional assessments, mapping, and data compilation for a linear highways alignment as part of a provincial environmental impact assessment. [06/09/2010-08/04/2010]

**Sundbury Developments, Noonan Developments, Noonan, New Brunswick.** Performed wetland delineation, mapping, data compilation, and reporting for a residential subdivision. [08/12/2010-09/07/2010]

**Department of Transportation - New Brunswick, Lorneville Barge Terminal - Environmental Impact Assessment, Lorneville, New Brunswick.** Assisted with rare plant surveys, habitat assessments, electrofishing, and shoreline assessment of a proposed barge terminal as part of an EIA. [08/17/2011-09/14/2011]

**Chippin Real Estate, Wetland Delineation, Fredericton, New Brunswick.** Performed wetland delineation field work, mapping, data compilation, and reporting duties for a residential development. [07/29/2010-08/18/2010]

**Port of Belledune, Port Expansion, Belledune, New Brunswick.** Performed suspended solids monitoring in ocean waters during a dredging operation. [05/03/2011-07/05/2011]



## Shelley J. Lohnes

Ecologist

### Education

B.Sc. with Honours, Wildlife Biology,  
University of Guelph, 2004

Diploma, Arctic and Boreal Entomology,  
University of the Arctic, 2004

### Years of Experience

With AECOM: <1  
With other firms: 9

### Professional Associations

Canadian Environmental Certification  
Approvals Board, CEPIT  
Society for Ecological Restoration  
Bird Studies Canada  
Ontario Field Ornithologists  
American Fisheries Society

### Languages

English and French (bilingual)

### Training

Fisheries Specialist for the  
MTO/DFO/OMNR Protocol  
Royal Ontario Museum Fish Identification  
Workshop  
MTO/MNR Endangered Species Act  
Training  
OMNR Stream Habitat Assessment  
Protocol  
Pleasure Craft and Zodiac Operator's  
Certification  
Electrofishing Crew Leader Backpack  
St. John's Ambulance Advanced First Aid  
and C.P.R.  
Automated External Defibrillator  
CN Rail Safety  
WHMIS/Transportation of Dangerous  
Goods

Shelley Lohnes has nine years of experience conducting aquatic habitat assessments for freshwater ecosystems, wildlife and vegetation surveys for terrestrial habitats, and completing environmental impact assessment in Canada. She specializes in terrestrial and aquatic species at risk survey protocols and wildlife population assessments. Shelley has excellent working knowledge of current environmental legislation and policies. Her experience in both aquatic and terrestrial ecosystems allows her to provide analysis of impacts to the interactions between these two environments. She also has experience in biodiversity monitoring sampling protocols for freshwater phytoplankton and zooplankton, as well as experience in avian, herpetofauna, mammal, invertebrate and fish identification.

### Project Experience

#### Fisheries Inventory and Assessment

- Highway 11 New Interchange at South Entrance to Powassan From 5.7 km South of Highway 534, northerly 5.0 km Detail Design Study (G.W.P. 323-00-00) (2012)
- Total Project Management/Detailed Design Services for Bridge and Hydrology Engineering for Local Road Board Structures; Replacement of Culverts along Nepewassi Lake Road at Highway 69 and Onaping Lake Road at Highway 144, Sudbury Area, G.W.P. 5022-10-00 & 5023-10-00 (2011-2012)
- Fisheries assessment and impact assessment for rehabilitation of culverts crossing Highway 4 from Kippen to Clinton, W.P. 75-85-00. MTO Assignment # 3008-E-0023 (7) (2010-2011)
- Fisheries assessment and impact assessment for Highway 6, Durham to Dornoch, Grey County Fisheries Assessment, MTO Assignment # 3008-E-0023 (5), DFO Authorization # BU-08-3450 (2010-2011)
- Fisheries assessment for the rehabilitation of culverts crossing Highway 4 from Kippen to Clinton, W.P. 75-85-00 (2010-2011)
- Fisheries assessment and impact assessment for structural culvert rehabilitation at Walden Drain, Walker Drain and Kading Drain on Highway 21, Grand Bend; Woodlawn Drain, Highway 403, Brantford; and McKenzie Creek, Highway 6, Caledonia. MTO Assignment # 3008-E-0023 (6) (2010-2011)
- Total Project Management/Detailed Design Services for the Rehabilitation of Highway 37 from the North Limits of Tweed Northerly to Highway 7, GWP 213-00-00 (2008-2009)
- Total Project Management/Detailed Design Services for the Old Gull River Bridge, Highway 35, Rehabilitation of Sharp's Creek Culverts, Highway 11, Replacement of Portage Creek Culvert, Highway 124, and Rehabilitation of Hurricane Creek Culvert, Highway 118 (2008)
- Total Project Management/Detailed Design Services for Consolidated Central Region Traffic Signals Design Assignment, Agreement # 2004-E-0067, (2005-2009)

- Natural Resources Inventory and Assessment for the Hope Side Road Extension Class Environmental Assessment, City of Ottawa (2008-2009)
- Detail Design for Highway 522 from 32.2 km west of Highway 524 easterly 6 km, Ministry of Transportation (2008)
- Fisheries assessment for the Stoney Creek and Powell Drain Erosion Control Project, City of London (2008)
- Stoney Creek and Powell Drain, City of London (2008)
- Fish Salvage for St. Clair/ Lambton intersection reconstruction, Sarnia (2008)
- Mud Creek Stream Habitat Survey, City of Ottawa (2003)
- Rideau River Fisheries Assessment, City of Ottawa, (2003)
- Freshwater Aquaculture Research Program, Department of Fisheries and Oceans (2003)

### Wildlife Surveys

- Detailed Design Services for the New Interchange and Extension of existing 4-laning, Highway 17 at the west junction of Sudbury Municipal Road 55, from 20.5 km west of Highway 144, easterly for 6.5km , Sudbury, G.W.P. 156-98-00 (2011-2012)
- Terrestrial Assessment for the Highway 401 and Wonderland Road Interchange, MTO Assignment #3008-E-0023 (14), Ministry of Transportation (2011-2012)
- Terrestrial Assessment for Highway 401 and Highway 6 South, Morriston – Speed Change Lane Extension, MTO Assignment #3008-E-0023 (15), Ministry of Transportation (2011)
- Species at Risk Survey for Rehabilitation of Highway 7 from Maberly to Wemyss, WP 4512-02-00 (2010)
- Avian and Wildlife Assessment for the Rehabilitation of Highway 37 from the North Limits of Tweed Northerly to Highway 7, GWP 213-00-00 (2008-2009)
- Avian and Wildlife Assessment for the Old Gull River Bridge Removal – Highway 35, Rehabilitation of Sharpe's Creek Culverts – Highway 11, Replacement of Portage Creek Culvert – Highway 124, and Rehabilitation of Hurricane Creek Culvert – Highway 118 (2008-2010)
- Avian Assessment for the Rehabilitation of Highway 8 from Seaforth East Limits Easterly to Mitchell west Limits excluding 0.94 km in Dublin, GWP (2008-2009)
- Avian and Wildlife Assessment for the Realignment of Italia Lane, Kingston, GWP 4330-04-01 (2008-2009).
- Avian Assessment for the Glen Miller Bridge, Trenton, USL Concrete (2010)
- Avian Assessment for the Fort York Pedestrian Bridge, City of Toronto, AECOM (2010)
- Avian Assessment for the Ken Whillans Drive Extension, City of Brampton, AECOM (2007/2010)
- Avian and Wildlife Assessment for the Stoney Creek Erosion Control Wetland Natural Resource Impact Assessment, City of London (2009-2010)
- Avian and Wildlife Assessment for the Stoney Creek Sanitary Sewer Environmental Impact Assessment, City of London (2009-2010) Avian and Wildlife Survey for 220 Greyabbey Trail Lake Ontario Shoreline Environmental Impact Assessment, IBI Group (2009-2010)
- Avian Inventory and Assessment for Hope Side Road Extension Class Environmental Assessment, City of Ottawa (2008-2009).

### Vegetation Surveys

- Total Project Management/Detailed Design Services for Consolidated Central Region Traffic Signals Design Assignment, Agreement # 2004-E-0067, (2005-2009)
- Total Project Management/Detailed Design Services for the Re-alignment of Italia Lane, Kingston, GWP 4330-04-01 (2008)
- Neyagawa Boulevard Natural Environment Inventory Avian and Vegetation Assessment (2009),
- GO Transit Layover Natural Environment Assessment (2009).
- Hope Side Road Extension Environmental Assessment (2008).
- Highway 8 from Seaforth East Limits Easterly to Mitchell West Limits Excluding 0.94km in Dublin, Ministry of Transportation (2008)
- Stoney Creek and Powell Drain for the City of London (2008)
- Highway 522 from 0.6 km west of Highway 522B in Trout Creek, westerly 19.7 km (2008).
- Dundas Street West Bridge over Humber River Vegetation Removals and Restoration Plan (2008).

**Environmental Monitoring and Construction Administration**

- Highway 401 - Homer Watson Interchange, Post-Construction Monitoring, Ministry of Transportation (2009-2010)
- Highway 6 Post-Construction Monitoring, Ministry of Transportation (2009)
- Highway 8 Bridge Widening, Fisheries Contracts Specialist, Bot Construction (2009-2012)
- Highway 3 from 1.6 km West of Essex County Road 11 Easterly to 0.2 km East of Essex County Road 34, Cont 2009–3005 , Ministry of Transportation (2009-2010)
- Highway 404 Extension from Green Lane to Queensville Sideroad, HCI (2010-2012)
- Windsor Bridges Cont 2009-3017 , LEA Consulting (2009-2010)
- Highway 6 from Arthur to Mount Forest, Cont 2007-3052, Construction Environmental Inspection and Administration (2010)
- Highway 6 from Mount Forest to Durham, Cont 2008-3008, Construction Environmental Inspection and Administration (2010)
- Highway 11 - Emsdale Cont. 2008-5114, Construction Environmental Inspection and Administration (2009)
- Burk's Falls Environmental Inspection, LBC (2009)
- Highway 7 Peterborough, Cont 2007 - 4005, Fisheries Contracts Specialist, LBC, (2008)
- Ceramics Post-Construction Monitoring (2007-2008)
- Highway 40 at Moore Line, Cont 2007-3044, Construction Environmental Inspection and Administration (2008)
- Mercury Experiment To Assess Atmospheric Loading (METAALICUS), Department of Fisheries and Oceans, (2004)
- Ottawa River Seasonal Biological Monitoring Program at Britannia Beach, Mooney's Bay, Westboro Beach, Petrie Island, City of Ottawa, (2003)
- Surface Water Pesticide Monitoring Program, City of Ottawa, (2003).

**Individual Environmental Assessments**

- Environmental Impact Assessment for the Dingman Creek Erosion Control Wetland, City of London (2009-2012)
- Environmental Impact Study for the Stoney Creek Erosion Control Wetland, City of London (2009-2010)
- Environmental Impact Study for the Stoney Creek Trunk Sanitary Sewer and Watermain Crossing, City of London (2009-2010)
- Scoped Environmental Impact Assessment for the Temporary Works Yard at Oxford Road 29, Township of Blandford-Blenheim (2009)
- Greyabbey Trail Environmental Impact Assessment, City of Toronto (2009)
- Natural Resource Assessment for the Intersection Improvements at Winchester and Ritson Road North, Region of Durham (2009)
- Neyagawa Boulevard Natural Resource Assessment, Town of Oakville (2009)
- GO Transit Layover Natural Environment Assessment, Town of Markham (2009).

**EMAN Projects**

- Meteorological Station Daily Monitoring, 2004, Department of Fisheries and Oceans
- Limnological Data Collection for Long Term Ecological Research (LTER) of Boreal Lakes, 2004, Department of Fisheries and Oceans.

**Additional Relevant Experience**

- Environmental Advisory Committee, City of Guelph, Term ending November 2012
- Meteorological Station Daily Monitoring, 2004, Department of Fisheries and Oceans
- Limnological Data Collection for Long Term Ecological Research (LTER) of Boreal Lakes, 2004, Department of Fisheries and Oceans
- Long term purple loosestrife monitoring project vegetation survey, University of Guelph.
- Effects of disturbed boreal forest habitat on ground-dwelling insect populations, University of Guelph.

**PATRICK W. DEACON, B.E.S.**  
**TERRESTRIAL AND WETLAND BIOLOGIST**

**EDUCATION**

- Honours Bachelor of Environmental Studies, Environment and Resource Studies (2008), University of Waterloo, Waterloo, Ontario.

**CERTIFICATIONS AND MEMBERSHIPS**

- Certifications:
  - Northeastern Ecological Land Classification Training, 2011
  - Environmental Monitoring for Construction, Vancouver Island University, 2011
  - Prescribed Burn Worker Certification (RX-100), 2010
  - Ontario Exterminator License (Landscape Class), 2010
  - Diploma of Excellence in Ecological Restoration and Rehabilitation, University of Waterloo, 2008
- Memberships:
  - Field Botanists of Ontario, 2006 to present
  - Vermillion Forks Field Naturalists, 2004 to present
  - Nature London (McIlwraith Field Naturalists), 2007 to present
  - Tallgrass Ontario (TGO), 2008 to present

**AREAS OF PROFESSIONAL EXPERIENCE**

Patrick specializes in ecological restoration, natural resource inventories and evaluations, research and impact studies. His background in tallgrass prairie management has allowed him to work extensively with species at risk throughout Southern Ontario. He has worked on projects focusing on the identification of important natural features and the evaluation of the significance and sensitivity of these features.

Patrick's specific expertise includes:

- inventories of terrestrial and wetland biological resources.
- identification of significant vegetation communities.
- management of tallgrass prairie, savanna and woodland ecosystems.
- invasive species control
- development and implementation of more than 30 restoration plans, often involving species at risk.

*Terrestrial and Wetland Ecosystem Studies*

Patrick routinely conducts vegetation inventories for a variety of habitat types. While his expertise lies in botany, he can readily identify birds, bats, reptiles, amphibians and mammals as well. Patrick has been heavily involved in species at risk monitoring, specifically for populations of *Aureolaria pedicularia*, *Frasera caroliniensis*, *Hybanthus concolor* and *Pycnanthemum incanum*. He is knowledgeable in the methodology of transect and quadrat sampling and has employed these approaches to study both ecological restoration success and development impacts for



numerous projects. Patrick has experience with detailed soil sampling studies and has conducted in-depth soil analyses.

Patrick's specific expertise includes:

- field and laboratory identification of vascular plants.
- inventories and mapping of terrestrial and wetland vegetation communities and fauna.
- detailed soil sampling analysis.

#### *Wildlife Studies*

Patrick has experience conducting wildlife population surveys and assessments of terrestrial, wetland and riparian wildlife habitats. He has worked on various studies investigating a variety of wildlife habitats, notably this has included several years of monitoring American Badger (*Taxidea taxus*) dens. In addition, he has been involved in collecting field data for projects monitoring populations of birds and mammals.

Patrick's specific expertise includes:

- wildlife population surveys.
- identification of rare and sensitive species.
- acoustic surveys of bats.
- visual and auditory identification of amphibians and bird species.

#### *Renewable Energy Studies*

Patrick has experience conducting pre-construction wildlife and vegetation monitoring related to proposed wind power and solar generating facilities in Ontario and Saskatchewan, as well as post-construction monitoring of fauna at operational wind power projects in Ontario. He develops Natural Heritage Assessments (NHAs) including records reviews, site investigation field surveys, and evaluations of significance, and uses these to assess the potential impacts of proposed facilities.

Patrick's specific expertise includes:

- participation in a wide array of biological field surveys including but not limited to: acoustic bat monitoring, bird behaviour/breeding monitoring, waterfowl, herpetofauna, vegetation and mammal inventories, and post-construction mortality surveys.
- extensive experience in analyzing data, and interpreting and reporting monitoring results.
- developing NHA reports.

## **EMPLOYMENT HISTORY**

<b>City of Kitchener Ecological Monitoring Volunteer</b> Kitchener, Ontario	2012 to present
<b>Terrestrial and Wetland Biologist</b> Natural Resource Solutions Inc., Waterloo, Ontario	2010 to present
<b>Ecological Restoration Technician</b> Waterloo Stewardship Network, Brant Resource Stewardship Network Hamilton-Wentworth Stewardship Council	2008 to 2011
<b>Nursery Apprentice</b> Nith River Native Plants, New Hamburg, Ontario	2008 to 2011
<b>Nursery Apprentice</b> Native Plant Source, Breslau, Ontario	2006 to 2008



# Appendix I

## Seepage Areas

## Appendix I. Seepage Areas

Feature ID	Project Component (associated infrastructure)	Indicators Found	Description of Site Where Found (water body or terrestrial feature – ELC code)
R1.60	Transmission Line Crossing	Water Speedwell	Water body
R2.72	Transmission Line Crossing	Watercress	Water body
R2.14	Collection Line Crossing	Iron Staining, Bank Seepage	Water body
R2.70	Transmission Line Crossing	Bank Seepage	Water body
R2.179	Collection Line Crossing	Water Speedwell	Water body
R2.101	Collection Line and Road Crossing; Turbine 83	Watercress, Bank Seepage	Water body
R2.102	Collection Line and Road Crossing, Turbine	Watercress, Water Speedwell, Skunk Cabbage	Water body
R2.10-B	Collection Line and Road Crossing; Turbine 33	Watercress	Water body
R2.18	Collection Line and Road Buffer; Turbine 31	Iron staining	Water body
R2.73	Road Buffer; Turbine 79	Bank Seepage	Water body
R2.76	Collection Line and Road Buffer; Turbine 80	Water Speedwell, Iron Staining	Water body
R3.66	Collection Line Crossing	Watercress, Potential Iron Staining	Water body
R3-B	Collection Line Crossing and Buffer; Transmission Line Crossing	Watercress, Bittercress, Water Speedwell	Water body
R3.53	Collection Line Crossing; Transmission Line Crossing	Watercress	Water body
R3.74	Collection Line Buffer	Watercress	Water body
R3-A	Collection Line Crossing and Buffer	Water Speedwell	Water body
R3-D	Collection Line Crossing; Road Buffer	Watercress, Water Speedwell	Water body
R3.22	Collection Line and Road Crossing	Watercress	Water body
R4-F	Collection Line Crossing	Watercress	Water body
R4.8-E	Collection Line and Road Buffer	Water Speedwell	Water body
R4.59	Road Buffer; Turbine 15	Watercress	Water body
R4.25-A	Collection Line Crossing and Buffer; Road Buffer; Transmission Line Crossing	Watercress, Water Speedwell	Water body
R4-I	Collection Line and Road Buffer; Turbine 13	Bank Seepage	Water body
R4.8-D	Collection Line and Road Crossing; Turbine 20	Bittercress	Water body
R4.25-B	Collection Line Crossing and Buffer; Road Crossing	Watercress, Water Speedwell	Water body
R4.8-B	Collection Line Buffer; Road Crossing and Buffer; Turbines 29 and 30; MET Tower Buffer	Watercress, Water Speedwell,	Water body
R4.11-B	Collection Line Crossing; Road Buffer; Turbine 4; MET Tower Buffer	Watercress	Water body
R4.16-C	Collection Line Buffer; Road Buffer; Turbine 19	Watercress, Bank Seepage, Iron Staining	Water body
R4.16-B	Collection Line Crossing and Buffer; Road Crossing and Buffer; Turbine 25	Watercress	Water body
R4.33-B	Collection Line Crossing and Buffer; Road Crossing and Buffer; Turbine 22 and 24	Watercress, Water Speedwell	Water body
R4.33-A	Collection Line Crossing; Transmission Line Crossing; Substation Buffer	Watercress	Water body
R4.61-A	Collection Line Crossing and Buffer	Watercress	Water body
R4.61-C	Collection Line Crossing and Buffer	Watercress	Water body
R4.61-B	Collection Line and Road Crossing	Watercress	Water body
R5	Collection Line Crossing and Buffer	Watercress	Water body
R5.8	Collection Line Crossing; Road Crossing and Buffer; Turbine 1	Water Speedwell	Water body
R6.18-D	Collection Line Crossing and Buffer; Road Crossing and Buffer	Watercress	Water body
R6.18-C	Collection Line Crossing	Watercress	Water body
R9.29-B	Collection Line Crossing	Water Speedwell	Water body
R9.29-A	Collection Line Crossing and Buffer	Water Speedwell, Iron Staining	Water body

**Appendix I. Seepage Areas**

<b>Feature ID</b>	<b>Project Component (associated infrastructure)</b>	<b>Indicators Found</b>	<b>Description of Site Where Found (water body or terrestrial feature – ELC code)</b>
<b>33</b>	Road Buffer; Turbine 103	Skunk Cabbage, Slow trickle of water observed	FOD4-2
<b>90</b>	Collection Line Crossing and Buffer; Road Crossing and Buffer; Turbines 32, 33, 34, 77, 79, 81, 82, 83, 85 and 87; Transmission Line Crossing	Iron Staining, Bank Seepage	FOD5-1
		Bank Seepage, Skunk Cabbage	FOD4-2
		Iron Staining, Skunk Cabbage	FOD5-3
		Iron Staining, Skunk Cabbage	FOD7-4
		Iron Staining, Skunk Cabbage	FOD6a
<b>164</b>	Collection Line Buffer	Skunk Cabbage	FOM6-3
<b>243</b>	Collection Line Buffer	Marsh Marigold	SWD1-2
<b>249</b>	Collection Line Buffer	Skunk Cabbage	CUM1-1
<b>249</b>	Collection Line Crossing	Skunk Cabbage	FOC4-1
<b>263</b>	Collection Line Buffer; Turbine 10	Skunk Cabbage	SWD4-2
<b>377</b>	Collection Line Buffer; Transmission Line Buffer	Bank Seepage	FOD7-2

# Appendix J

## Corrections to Records Review

**Appendix J. Corrections to Records Review**

<b>Feature #</b>	<b>Correction</b>	<b>Reason for Correction</b>
R1.2	Not as mapped	The channel has been straightened
R1.37	Not as mapped	Part of the channel is a tile drain feature – may become grassed waterway
R2.72	Not as mapped	Part of the channel is a tile drain feature and it begins as a pond
R2.192	Not as mapped	Part of watercourse is a tile drain feature
R2.186	Not as mapped	Part of the watercourse is a tile drain feature
R2.302	Not as mapped	Tile drain feature – no surface feature
R2.310	Not as mapped	Tile drain feature – no surface feature
R2.14	Not as mapped	Watercourse is dammed creating a pond to the south.
R2.30	Not as mapped	No surface feature
R2.58	Not as mapped	No channel – wetland area
R2.46	Not as mapped	No channel – wetland area
R2.38	Not as mapped	No channel – wetland area
R2.239	Not as mapped	Tile drain feature – no surface feature
R2.10-A	Swale feature, no water body found	No channel was found, field was ploughed through
R2.101	Not as mapped	Part of the watercourse is a tile drain feature
R2.102	Not as mapped	Part of the watercourse is a tile drain feature
R2.111	Not as mapped	Tile drain feature – no surface feature
R2.28	Not as mapped	Part of the watercourse is a tile drain feature
R2.34	Not as mapped	Part of the watercourse is a tile drain feature
R2.32	Not as mapped	No channel present, however there is a small depression area
R2.140-A	Not as mapped	Tile drain feature – no surface channel
R2.141	Not as mapped	Tile drain feature – no surface channel
R2.178	Not as mapped	Tile drain feature – no surface channel
R2.193	Not as mapped	Tile drain feature – no surface channel
R2.76	Not as mapped	Watercourse is buried and then emerges
R2.311-A	Swale feature, no water body found	No channel was found field ploughed through, however some low lying areas that may provide seasonal surface water conveyance
R2.311-B	Swale feature, no water body found	No channel was found field ploughed through, however some low lying areas that may provide seasonal surface water conveyance
R2.312	Swale feature, no water body found	No channel was found field ploughed through, however some low lying areas that may provide seasonal surface water conveyance
R2.87	Not as mapped	Tile drain feature – no surface feature
R2.93	Not as mapped	Tile drain feature – no surface feature
R2.94	Not as mapped	Tile drain feature – no surface channel
R2.199	Not as mapped	Tile drain feature – no surface feature
R3.58	Not as mapped	Tile drain feature – no surface feature
R3.28	Not as mapped	Small section is a tile drain feature through an agricultural field
R3.51	Not as mapped	Tile drain feature in agricultural field
R3.64	Not as mapped	Tile drain feature for a small section
R3.62	Not as mapped	Tile drain feature – no surface feature
R3.68	Not as mapped	Tile drain feature – no surface feature
R3.70	Not as mapped	Part of the watercourse is a roadside ditch that does not appear to convey water
R3.74	New feature observed – previously unmapped	A watercourse was observed
R3.73	New feature observed – previously unmapped	A watercourse was observed
R4.45	Not as mapped	Tile drain feature – no surface feature
R4.59	New feature observed – previously unmapped	A watercourse was observed

**Appendix J. Corrections to Records Review**

<b>Feature #</b>	<b>Correction</b>	<b>Reason for Correction</b>
<b>R4-I</b>	Not as mapped	Actual watercourse meanders more
<b>R4.16-A</b>	Not as mapped	Part of the watercourse is a tile drain feature
<b>R4.60</b>	New feature observed – previously unmapped	A watercourse was observed
<b>R4.43</b>	Not as mapped	Tile drain feature – no surface channel
<b>R4.51</b>	Not as mapped	Ploughed through in agricultural field
<b>R4.29</b>	Not as mapped	Tile drain feature – no surface feature
<b>R4.54</b>	Not as mapped	Tile drain feature – no surface feature
<b>R4.41</b>	Not as mapped	Tile drain feature – no surface feature
<b>R4.48</b>	Not as mapped	Tile drain feature – no surface feature
<b>R4.37</b>	Not as mapped	Tile drain feature – no surface channel
<b>R4.39</b>	Not as mapped	Tile drain feature – no surface feature
<b>R4.11-A</b>	Not as mapped	Tile drain feature – no surface feature
<b>R4.62</b>	New feature observed – previously unmapped	A watercourse was observed.
<b>R6.20-A</b>	Not as mapped	Watercourse extends further than mapped portion.
<b>R6.16</b>	Not as mapped	Tile drain feature – no surface feature
<b>R6-A</b>	Not as mapped	No surface feature – has been ploughed through
<b>R8.12</b>	Not as mapped	No surface feature
<b>R9.33-A</b>	Not as mapped	Tile drain feature – no surface feature
<b>R9.33-C</b>	Not as mapped	Tile drain feature – grass swale
<b>R9.33-B</b>	Not as mapped	Tile drain feature – no surface feature
<b>R9-A</b>	Not as mapped	Tile drain feature – no surface feature
<b>R12.123</b>	Not as mapped	Feature has been ploughed through
<b>R12.82</b>	Not as mapped	Tile drain feature – no surface feature
<b>R12.2</b>	Not as mapped	Tile drain feature – no surface feature
<b>P2.33</b>	Not as mapped	Not a pond, it is a wetland feature discussed further in the Natural Heritage Assessment Report
<b>P1.35</b>	New feature observed – previously unmapped	A pond was observed
<b>P1.33</b>	Not as mapped	No surface feature
<b>P1.46</b>	New feature observed – previously unmapped	A pond was observed
<b>P2.144</b>	New feature observed – previously unmapped	A pond was observed
<b>P2.136</b>	Not as mapped	Watercourse that had been dammed, creating a pond
<b>P2.140</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P2.138</b>	New feature observed – previously unmapped	A pond was observed
<b>P2.143</b>	New feature observed – previously unmapped	A pond was observed
<b>P3.61</b>	New feature observed – previously unmapped	A pond was observed
<b>P3.62</b>	New feature observed – previously unmapped	A pond was observed
<b>P4.39</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P4.43</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P4.37</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P4.40</b>	New feature observed – previously unmapped	A pond was observed
<b>P4.44</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P4.45</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P4.46</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P4.48</b>	New feature observed – previously unmapped	A dugout pond was observed

**Appendix J. Corrections to Records Review**

<b>Feature #</b>	<b>Correction</b>	<b>Reason for Correction</b>
<b>P4.49</b>	New feature observed – previously unmapped	A pond was observed
<b>P4.50</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P6.6</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P6.8</b>	New feature observed – previously unmapped	A pond was observed
<b>P8.7</b>	New feature observed – previously unmapped	A pond was observed
<b>P12.30</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P12.31</b>	New feature observed – previously unmapped	A dugout pond was observed
<b>P12.32</b>	New feature observed – previously unmapped	A dugout pond was observed



# Appendix K

Summary of Water Bodies in  
Relation to Project Component  
and Shortest Distance

### Appendix K. Summary of Water Bodies in Relation to Project Component and Shortest Distance

REA Water Body Feature ID	Turbine <sup>1</sup>	Collection Line		Access Road		Transmission Line		Meteorological Tower <sup>2</sup>	Substation and Laydown area <sup>2</sup>
		Within 120 m	Crossing	Within 120 m	Crossing	Within 120 m	Crossing		
R1.2	-	-	-	-	-	-	Yes	-	-
R1.37	-	-	-	-	-	-	Yes	-	-
R1.49	-	-	-	-	-	-	Yes	-	-
R1.60	-	-	-	-	-	-	Yes	-	-
R1.82	-	-	-	-	-	-	Yes	-	-
R1.84	-	-	-	-	-	7.2	-	-	-
R2.101	112.52	92.38	-	92.38	-	-	-	-	-
R2.102	81.2	0.9	-	0.9	-	-	-	-	-
R2.10-B	70.4	-	Yes	-	Yes	-	-	-	-
R2.131	-	-	Yes	-	-	-	-	-	-
R2.14	-	-	Yes	-	-	-	-	-	-
R2.140-B	-	-	Yes	-	-	-	-	-	-
R2.179	-	-	Yes	-	-	-	-	-	-
R2.18	38.72	46.3	-	46.3	-	-	-	-	-
R2.186	-	-	Yes	-	-	-	-	-	-
R2.192	-	-	Yes	-	-	-	-	-	-
R2.2	-	-	-	-	-	-	Yes	-	-
R2.27	-	-	Yes	-	-	-	-	-	-
R2.28	-	-	Yes	-	-	-	-	-	-
R2.281	-	In disturbance area	Yes	-	-	-	-	-	-
R2.30	-	-	-	-	-	-	Yes	-	-
R2.34	-	-	Yes	-	-	-	-	-	-
R2.38	-	-	-	-	-	-	Yes	-	-
R2.40	-	-	-	-	-	-	Yes	-	-
R2.46	-	-	-	-	-	In disturbance area	-	-	-
R2.51	-	-	-	-	-	In disturbance area	-	-	-
R2.58	-	-	-	-	-	79.5	-	-	-
R2.70	-	-	-	-	-	118.9	-	-	-
R2.72	-	-	-	-	-	-	Yes	-	-
R2.73	104.0	-	-	93.3	-	-	-	-	-
R2.76	69.76	25.4	-	25.4	-	-	-	-	-
R2.84	-	-	-	-	-	28.6	-	-	-
R3.22	-	-	Yes	-	Yes	-	-	-	-
R3.28	-	-	Yes	-	-	-	-	-	-
R3.38	-	-	Yes	-	-	-	Yes	-	-
R3.46	-	-	Yes	-	-	-	Yes	-	-
R3.51	-	-	-	-	-	-	-	-	-
R3.53	-	-	Yes	-	-	-	Yes	-	-
R3.64	-	105.1	-	-	-	-	-	-	-
R3.66	-	-	Yes	-	-	-	-	-	-
R3.70	-	-	Yes	-	Yes	-	-	-	-

Notes: 1 – Measurements for turbine from tip of blade

2 – Measurements from disturbance area

### Appendix K. Summary of Water Bodies in Relation to Project Component and Shortest Distance

REA Water Body Feature ID	Turbine <sup>1</sup>	Collection Line		Access Road		Transmission Line		Meteorological Tower <sup>2</sup>	Substation and Laydown area <sup>2</sup>
		Within 120 m	Crossing	Within 120 m	Crossing	Within 120 m	Crossing		
R3.73	-	56.7	-	-	-	-	-	-	-
R3.74	-	100.5	-	-	-	-	-	-	-
R3-A	-	-	Yes	-	-	-	-	-	-
R3-B	-	-	Yes	-	-	-	Yes	-	-
R3-C	-	-	-	90.1	-	-	-	-	-
R3-D	-	-	Yes	In disturbance area	-	-	-	-	-
R4.11-B	73.31	-	Yes	73.1	-	-	-	96.6	-
R4.16-A	-	In disturbance area	-	-	-	-	-	-	17.2
R4.16-B	37.7	-	Yes	-	Yes	-	-	-	-
R4.16-C	50.9	6.8	-	6.8	-	-	-	-	-
R4.22	-	26.9	-	26.9	-	-	-	-	-
R4.25-A	-	-	Yes	31.2	-	-	Yes	-	-
R4.25-B	-	-	Yes	-	Yes	-	-	-	-
R4.25-C	65.2	55.3	-	55.3	-	-	-	-	-
R4.27	-	16.2	-	-	-	-	-	-	-
R4.31	-	17.5	-	38.9	-	-	-	-	-
R4.33-A	-	-	Yes	-	-	-	Yes	-	67.7
R4.33-B	36.0	-	Yes	-	Yes	-	-	-	-
R4.36	129.9	In disturbance area	Yes	In disturbance area	Yes	-	-	-	-
R4.50	-	In Disturbance area	-	-	-	In disturbance area	-	-	-
R4.51	-	In disturbance area	-	16.0	-	-	-	-	-
R4.58	-	-	Yes	-	Yes	-	-	-	-
R4.59	33.3	-	-	29.0	-	-	-	-	-
R4.60	-	12.7	-	-	-	-	-	-	-
R4.61-A	-	In disturbance area	Yes	-	-	-	-	-	-
R4.61-B	-	-	Yes	-	Yes	-	-	-	-
R4.61-C	-	-	Yes	-	-	-	-	-	-
R4.62	-	-	Yes	-	-	-	-	-	-
R4.8-A	-	-	Yes	-	-	-	Yes	-	-
R4.8-B	33.4	-	Yes	-	Yes	-	-	83.4	-
R4.8-C	-	-	Yes	-	-	-	-	-	-
R4.8-D	90.7	-	Yes	-	Yes	-	-	-	-
R4.8-E	-	118.09	-	55.1	-	-	-	-	-
R4-A	-	-	Yes	-	-	-	-	-	-
R4-B	76.5	-	-	108	-	-	-	-	-
R4-C	-	In disturbance area	Yes	In disturbance area	-	-	-	-	-
R4-D	-	-	Yes	-	Yes	-	-	-	-
R4-E	37.4	36.7	-	36.7	-	-	-	-	-
R4-F	-	-	Yes	-	-	-	-	-	-
R4-G	-	-	Yes	-	-	-	-	-	-
R4-H	-	-	Yes	-	-	-	-	-	-

Notes: 1 – Measurements for turbine from tip of blade

2 – Measurements from disturbance area

### Appendix K. Summary of Water Bodies in Relation to Project Component and Shortest Distance

REA Water Body Feature ID	Turbine <sup>1</sup>	Collection Line		Access Road		Transmission Line		Meteorological Tower <sup>2</sup>	Substation and Laydown area <sup>2</sup>
		Within 120 m	Crossing	Within 120 m	Crossing	Within 120 m	Crossing		
R4-I	149.1	29.7	-	29.7	-	-	-	-	-
R5	-	In disturbance area	Yes	-	-	-	-	-	-
R5.10	-	In disturbance area	Yes	-	-	-	-	-	-
R5.8	41.3	-	Yes	-	Yes	-	-	-	-
R6.18-A	-	3.0	-	-	-	-	-	-	-
R6.18-B	39.1	-	Yes	-	Yes	-	-	-	-
R6.18-C	-	-	Yes	-	-	-	-	-	-
R6.18-D	-	In disturbance area	Yes	-	Yes	-	-	-	-
R6.20-A	-	31.3	-	31.3	-	-	-	-	-
R6.20-B	-	-	Yes	-	-	-	-	-	-
R6-B	94.3	-	-	91.9	-	-	-	-	-
R6-C	-	-	Yes	-	-	-	-	-	-
R8.10	72.1	-	Yes	In disturbance area	Yes	-	-	-	-
R8.12	-	-	Yes	-	-	-	-	-	-
R9.29-A	-	In disturbance area	Yes	-	-	-	-	-	-
R9.29-B	-	-	Yes	-	-	-	-	-	-
R9.29-C	-	-	-	-	Yes	-	-	-	-
R9.29-D	69.0	-	Yes	-	Yes	-	-	-	-
R9.29-E	-	81.8	-	-	-	-	-	-	-
R9.29-F	-	-	Yes	-	Yes	-	-	-	-
R9-B	94.8	-	-	93.8	-	-	-	-	-
R12.54-A	-	-	Yes	-	-	-	-	-	-
R12.54-B	-	-	Yes	-	-	-	-	-	-
P1.24	-	-	-	-	-	100.5	-	-	-
P1.31	-	-	-	-	-	76.0	-	-	-
P1.35	-	-	-	-	-	45.1	-	-	-
P2.136	-	90.1	-	-	-	-	-	-	-
P2.138	-	-	-	-	-	13.0	-	-	-
P2.142	-	90.5	-	-	-	-	-	-	-
P2.18	-	48.2	-	48.2	-	-	-	-	-
P2.30	-	34.0	-	-	-	-	-	-	-
P2.53	-	-	-	-	-	39.2	-	-	-
P3.44	-	111.6	-	111.6	-	-	-	-	-
P4.47	-	97.3	-	-	-	-	-	-	-
P6.3	-	-	Yes	-	-	-	-	-	-
P12.22	-	28.6	-	-	-	-	-	-	-

Notes: 1 – Measurements for turbine from tip of blade

2 – Measurements from disturbance area