

Stanted

Station #_CL-CR4	Project Name Niagara Wind
Watercourse Name /	Project # 160960269
Photos 369 - 8570	Field Staff Trevor + Hamish
Date SEPT 19,2012	Time _/4:20
	ain, 15°C
GPS Coordinates (Zone) TT E 06/399	Dutuil 1 (833/41)
Descriptive Location <u>Cosession Road 4 - 300</u>	West of Minor Rd
Water Quality Dry	
Dissolved Oxygen (mg/L) pH	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width Pry (m)	Maximum Pool Depth (cm)
Mean Bankfull Width <td>Maximum Pool Depth <u>dry</u> (cm) Mean Water Depth <u>dry</u> (cm)</td>	Maximum Pool Depth <u>dry</u> (cm) Mean Water Depth <u>dry</u> (cm)
% Riffle% Poc	(O)))
Evidence of eroding banks, Comments on bank sta	
Substrate (% cover)	
	Sand /oo' (Said) Silt Muck
BoulderGravel	Sand /00 / Soll Silt Muck Clay Marl Detritus
in-water Cover	
Cover Types Present (circle): Undercut Ban	ks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other Grass scrale / agricultural is
· · · · · · · · · · · · · · · · · · ·	
Riparian Zone	
Riparian Cover (% of watercourse shaded, dominal	at vegetation, mature or early successional)
	Normanicured Igurn of South
Adjacent Land Use Agricultural + run	al residential
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, ground	water upwellings)
- Poor-none	
Migratory Obstructions (seasonal, permanent)	I Al
	ow-no flow
Note any fish observations	
Waterbody Notes	(of road)
Natural Watercourse	Grassed Swale Y Sour Buried Tile N
Surficial Drainage (i.e. furrows)	Dominated by Aquatic Veg N Dry
North Side of	Road
Other Habitat Noțes, Incidențal Wildlife Obseryat	
agricultual trelo disturbed	by ploughing a notile of read
Igrassed on south side of	Iroad I
	V10481 - V1
~ 300 mm culve + -CSP	01048
Field Notes Authored by Hawas Field Notes C	ANC



Stantec		
Station # Ct - CR4		Project Name Niagara Wind Tarm
Watercourse Name		Project Name Niagara Wind Farm Project #
Photos \$071 - 8074		Field Staff Hamis - Leave - Le
Photos 8071 - 8674 Date 19 Sept 2813		Time 2:45 pm
Date	24 hrs Find	L - Rain 15°C
GPS Coordinates (Zone)	7.T E	06 19:13 N 4767 730 Datum Nad 8:
Descriptive Location (2010)	Slon Rd 4.	150 m West of Winer Rd
Descriptive Location		
Water Quality Org		
Dissolved Oxygen (mg/L)	pH	Conductivity (µS/cm)
Water Temperature (°C)		Conductivity (μS/cm) Air Temperature (°C)
Time in situ measurements take	en	
Watercourse Dimensions & N	Morphology	Com)
Mean Watercourse Width Do	(m)	Mean Water Depth (cm)
Mean Bankfull Width 4/2	(m)	Mean Water Depth% Run% Flat
% Riffle _	% Pc	Maximum Pool Depth (cm) Mean Water Depth (cm) Ool % Run % Flat
Evidence of eroding banks, Co	mments on bank s	stability Stable feature
and the second s		
Substrate (% cover)	Cobbla	Sand 100 / (Sall) Silt Muck
Bedrock	Gravel	Clay Marl Detritus
Boulder	Glavei	
Overhanging Vegetation V Riparian Zone Riparian Cover (% of watercounty)		
Adjacent Land Use	cultural / R	ant vegetation, mature or early successionally ass cover-early successional foglicules and foglicules and foglicules and side directly will herbacous a my
Fish Habitat Potential Critical Habitat (spawning or n	ursery areas, grou	ndwater upwellings)
Migratory Obstructions (seaso		none none
		no-low flow
Note any fish observations	^0	
Waterbody Notes		
Natural Watercourse N	Trapezoidal Chann	nel/_ Grassed Swale/ Buried Tile/_
Surficial Drainage (i.e. furrows	s) N Dugout Po	Olio_V Dominated by Addams 1.23
Other Habitat Notes, Incider	ıtal Wildlife Obse	rvations, etc. Upstream (south side of low
grassed dilek,	DULTALL OUT	ing a sign of the
- 300p/SD		
, <u>8</u>		M
Field Notes Authored by	Field No	otes QA/QCed by



Water Quality Project # 150**			1 Tojout Harris	Wind Far	AV 1
Photos 3075 - 1000 Date 1	Watercourse Name 3		Project # 16016024	>~I	
Date Meather conditions in previous 24 hrs	Photos 3075 - 8080		Field Staff Trever -	lamish	
Water Quality Water Quality Dissolved Oxygen (mg/L) Dissolved Oxygen (mg/L) Mater Temperature (°C) Mater Temperature (°C) Mean Watercourse Dimensions & Morphology Mean Watercourse Width Mean Water Depth Water Oxygen (mg/L) Mean Water Depth Mean Water Depth Water Dep	Data 10 Cont and		Time2:55 pm	T. Alb.	
Conductivity (µS/cm) PH	Weather conditions in previous 2	24 hrs	t - kam 15°	<u></u>	
Water Quality Dissolved Oxygen (mg/L) PH				75% Datu	<u>ım (Vaa</u> %5
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Hair Mair Mair Mair Temperature (°C) Hair Mair Mair Mair Mair Mair Mair Mair M	Descriptive Location Conce	5510n Rd 4 -	. 50 m East of W.	cor Rel	
Dissolved Oxygen (nfg/L) pH Conductivity (Listering Vater Temperature (°C) Air Temperature (°					
Watercourse Dimensions & Morphology Mean Watercourse Width Deg (m) Maximum Pool Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Muck Deficit Salt Maximum Pool Depth (cm) Muck Dept	Water Quality Dry		المرابع والمناف المناف والمرابع	(Jam)	
Watercourse Dimensions & Morphology Mean Watercourse Width Deg (m) Maximum Pool Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Muck Deficit Salt Maximum Pool Depth (cm) Muck Dept	Dissolved Oxygen (mg/L)	pH	Conductivity (μS	/cm)	
Watercourse Dimensions & Morphology Mean Watercourse Width Deg (m) Maximum Pool Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Muck Deficit Salt Maximum Pool Depth (cm) Muck Dept	Water Temperature (°C)		Air Temperature (°C)	1-1-6	
Mean Watercourse Width (m) Maximum Pour Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) % Riffle % Pool Evidence of eroding banks, Comments on bank stability Substrate (% cover) Bedrock Cobble Sand (cover) Bedrock Gravel Clay Mari Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Dominated by Aquatic Veg Dry J Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly Expendication of the Comment of	Time in situ measurements take	n			
Mean Watercourse Width (m) Maximum Pour Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) % Riffle % Pool Evidence of eroding banks, Comments on bank stability Substrate (% cover) Bedrock Cobble Sand (00) Soil Silt Muck Boulder Gravel Clay Marl Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse N Trapezoidal Channel N Grassed Swale N Buried Tile N Dominated by Aquatic Veg N Dry Y Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization of the property of the possibility of the property of the property of the possibility of the property of the pro	Watercourse Dimensions & M	orphology	and Double	Oca (om)	
Evidence of eroding banks, Comments on bank stability Substrate (% cover) Bedrock Boulder Gravel Clay Mari Detritus In-water Cover Cover Types Present (circle): Cover Types Present (circle): Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Natural Watercou	Mean Watercourse Width Dist	(m)	Maximum Pool Deptn	(CIII)	
Evidence of eroding banks, Comments on bank stability Substrate (% cover) Bedrock Boulder Gravel Clay Mari Detritus In-water Cover Cover Types Present (circle): Cover Types Present (circle): Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Natural Watercou	Mean Bankfull Width 4 1 2	(m)	Mean Water Depth	CIII	
Substrate (% cover) Bedrock Cobble Sand 1007 (Soil) Silt Muck Bedrock Gravel Clay Marl Detritus In-water Cover Gravel Clay Marl Detritus In-water Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Dominated by Aquatic Veg Dry Dugout Pond Dominated by Aquatic Veg Dry Cher Habitat Notes, Incidental Wildlife Observations, etc. Possibly Parallel Department Color of the Advance of the Advanc					
In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization and pressure of the process of th	Evidence of eroding banks, Con	nments on bank s	tability <u>Stable teaful</u>		
In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization culture Waterbody Notes Authored by Field Notes QAQCed by Field Notes Authored by Field Notes QAQCed by Field Notes Authored by Field Notes QAQCed by Field Notes Authored by					
In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization and pressure of the process of th	Substrate (% cover)		0	Cilt	Muck
In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization and pressure of the process of th	Bedrock	Cobble	Sano (O)	Mod	
In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization and pressure of the process of th	Boulder	Gravel	Clay	iviaii	Detitio
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse N Trapezoidal Channel N Grassed Swale N Buried Tile N Dominated by Aquatic Veg N Dry Y Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization culture Waterbody Notes Natural Watercourse N Dugout Pond Dominated by Aquatic Veg N Dry Y Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization culture Waterbody Advance observed, 100 X vege habitation with grasses y any release Field Notes Authored by Market Space (All Notes QA/QCed by Field Notes Authored by Field Notes QA/QCed by Field Notes Authored by Field Notes QA/QCed by Field Notes OA/QCed by Field Notes OA	Riparian Zone Riparian Cover (% of watercour	rse shaded, domir	nant vegetation, mature or e	arly successiona	al)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse N Trapezoidal Channel N Grassed Swale N Buried Tile Notes Of Channel Dominated by Aquatic Veg N Dry Y Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly of malization cultust Waterbody Manager (lative way flex back though ag field. No Jethied Channel observed.) 100 / Vegetated with grasses 4 ag weeds Field Notes Authored by Manager Field Notes QA/QCed by Field Notes QA	Adjacent Land Use				
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse N Trapezoidal Channel N Grassed Swale N Buried Tile Notes Authored by Aquatic Veg N Dry Y Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg N Dry Y Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization culture Teled Notes Authored by Field Notes QA/QCed by Field Notes QA/QCed by Field Notes Authored by Field Notes QA/QCed Da/QCed Da/QCe					
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse N Trapezoidal Channel N Grassed Swale N Buried Tile Notes Authored by Aquatic Veg N Dry Y Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg N Dry Y Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization culture Teled Notes Authored by Field Notes QA/QCed by Field Notes QA/QCed by Field Notes Authored by Field Notes QA/QCed Da/QCed Da/QCe	Fish Habitat Potential				
Waterbody Notes Natural Watercourse Natural Channel Natural Dominated by Aquatic Veg Natural Channel Natural Dominated by Aquatic Veg Natural Channel Natural Wildlife Observations, etc. Possibly equalization cultural Channel Natural Ch	Critical Habitat (spawning or nu	rsery areas, grou	ndwater upwellings)		
Waterbody Notes Natural Watercourse N Trapezoidal Channel N Grassed Swale N Buried Tile Notes Authored by Aquatic Veg N Dry Y Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly equalization culture The property observed Notes ag field Notes QA/QCed by Field Notes Authored by Manage Field Notes QA/QCed by Field Notes QA/QCed Day Field Notes QA/QCed by Field Notes QA/QCed Day Field Notes QA/QCe	• •				
Waterbody Notes Natural Watercourse		al, permanent)	and Plant		
Natural Watercourse Trapezoidal Channel Dominated Swale Dominated by Aquatic Veg Dry Dugout Pond Dominated by Aquatic Veg Dry Dry Dry Dominated by Aquatic Veg Dry	Migratory Obstructions (season		ne-lew flow	Plant and the state of the stat	
Natural Watercourse Trapezoidal Channel Deflated Swale Dominated by Aquatic Veg Dry Dugout Pond Dominated by Aquatic Veg Dry Dry Dry Dominated by Aquatic Veg Dry Dry Dry Dominated by Aquatic Veg Dry	Migratory Obstructions (season		ne-low flow		
Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly et nalization culture Other Habitat Notes, Incidental Wildlife Observations, etc. Possibly et nalization culture The field Notes Authored by Manual observed, 100 / vegetated with grasses 4 ag weeds Field Notes Authored by Manual Field Notes QA/QCed by Manual Observed (Notes DA/QCed by Manual Observed (Not	Migratory Obstructions (season Note any fish observations	140		Al Division	od Tilo. M
Field Notes Authored by Marris Field Notes QA/QCed by M	Migratory Obstructions (season Note any fish observations Waterbody Notes	rapezoidal Chann	el _N Grassed Swal	<u> </u>	
Field Notes Authored by Maw 3 Field Notes QA/QCed by M	Migratory Obstructions (season Note any fish observations Waterbody Notes Natural Watercourse T	rapezoidal Chann	el _N Grassed Swal	<u> </u>	
Field Notes Authored by Field Notes QA/QCed by	Migratory Obstructions (season Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Other Habitat Notes, Incident	rapezoidal Chann Dugout Po	el _ Grassed Swallond _ Dominated by A	<u> </u>	Dry y - enliet
G:\01609\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc	Migratory Obstructions (season Note any fish observations Waterbody Notes Natural Watercourse T Surficial Drainage (i.e. furrows) Other Habitat Notes, Incident	rapezoidal Chann Dugout Po	el _ Grassed Swallond _ Dominated by A	<u> </u>	Dry 1 enlyst
	Migratory Obstructions (season Note any fish observations Waterbody Notes Natural Watercourse Natural Drainage (i.e. furrows) Other Habitat Notes, Incident	rapezoidal Chann Dugout Po	el A Grassed Swall ond Dominated by A vations, etc. Possibly 100 / Vege hated	<u> </u>	Dry y - enliet



Station # CL - CR4 Watercourse Name 4	Project Name Megara Wind Farm Project #_ 1609 60269
Photos 3081 - 8096	Field Staff Hanksha Trever
Data M SOAF ANIS	Time 3:05 pm
Weather conditions in previous 24 hrs	- Karn ISS
GPS Coordinates (70ne)	N 410 / 14 Datum Vall
Descriptive Location	M RESPOT MU-OF KY
Water Quality Dissolved Oxygen (mg/L)pH Water Temperature (°C) Time in situ measurements taken	Conductivity (µS/cm)Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width (m) % Riffle (m)	% Run% Flat
Evidence of eroding banks, Comments on bank sta	ibility <u>Stable</u>
Substrate (% cover)	
BedrockCobble	Sand 100 (soit) Silt Muck Clay Marl Detritus
BoulderGravel	ClayDetritus
Overhanging Vegetation Woody Debris	
Adjacent Land Use	nt vegetation, mature or early successional) - grasses + some aguatic grasses - cattails have residential + road side dikh + wood
Juneary and a wines	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	lwater upwellings)
Migratory Obstructions (seasonal, permanent)	no-low flow
Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond	d N Dominated by Aquatic Veg V Dry Y
Other Habitat Notes, Incidental Wildlife Observa	ations, etc. ~ 300 my CSP
Field Notes Authored by Hamish Aubrey Field Notes	QA/QCed by



Station # CL - CR 4 Watercourse Name 5	Project Name <u>Hiagara</u> Wnd Farm Project # 1609 60 269
Photos3027 8091	Field Staff Trever + Hamish
Date 19 52012	Time 3:15 pm
Weather conditions in previous 24 hrs	
GPS Coordinates (Zone) 17T E 06198	54 N 4767760 Datum \ 008
Descriptive Location Concession sold 4	- 300 in east of Miror Rd
Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Conductivity (µS/cm) Air Temperature (°C)
Watercourse Dimensions & Morphology	
Mean Watercourse Width Pcy (m)	Maximum Pool Depth NA (cm)
Mean Bankfull Width (m)	Mean Water Depth MA (cm)
% Riffle% Poo	I% Run% Flat
Evidence of eroding banks, Comments on bank sta	bility State
Substrate (% cover)	
BedrockCobble	Sand Soil (1001) Silt Muck Clay Marl Detritus
BoulderGravel	Clay
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dominar	
Adjacent Land Use	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds	water upwellings)
Migratory Obstructions (seasonal, permanent)	no-low
Note any fish observations	0.6
Was a la Nata	
Waterbody Notes Natural Watercourse Natural Watercourse Natural Watercourse Natural Watercourse Natural Watercourse Natural Waterbody Notes Nat	
Other Habitat Notes, Incidental Wildlife Observation	tions, etc. Defined channel associated
with culvert approx 900 ma	· h size, some aquatic grasser
present but limited to roadsio	le ditch."
· ·	
Field Notes Authored by Hawish Field Notes C	QA/QCed by



Stantec

Station # CL - CR 4		Project Nam	e Niagon	a Wind	Farm
Watercourse Name6		•	1609 6026		
Photos 8092 - 8096		Field Staff	Trevor +	Hamish	
Date <u>M XUF FOIL</u>		Time <u>3.25</u>	200		
Weather conditions in previous					
GPS Coordinates (Zone)		212		775 [Datum Nad8
Descriptive Location	Sion Road 4 -	unction with	fatterson po	ad	
Water Quality Org					
Dissolved Oxygen (mg/L)	pH	Con	ductivity (μS/cr	m)	
Water Temperature (°C)		Air Temperat	ture (°C)	100	
Time in situ measurements tak	en				
Watercourse Dimensions & M	Morphology				
Mean Watercourse Width Dre	(m)	Maximum Po		"((cm)
Mean Bankfull Width	(m)	Mean Water			cm)
% Riffle			% Ru	n	% Fla
Evidence of eroding banks, Co	mments on bank s	cability <u>Stabu</u>		:	
Substrate (% cover)					
Bedrock	Cobble	Sand	100 (Soil)	Silt	Muck
Boulder	Gravel			Marl	Nack Detritus
Adjacent Land Use	. shaded by gra	asses, some	nature or early <u>frees</u>	succession	nal)
Agricu	Itwal, roadsid	e ditch			
Fish Habitat Potential Critical Habitat (spawning or nui Migratory Obstructions (seasons		2	no		
Note any fish observations	NO NO	<u> 10 - 600</u>	Toul		
	~0	,			
Waterbody Notes Natural Watercourse	apezoidal Channel	N Gras	sed Swale <u>/</u> ated by Aquation	Buri c Veg_ <i>N</i>	ed Tile
Other Habitat Notes, Incidenta Drainage F	l Wildlife Observa	tions, etc. 6	to road. Da	rt appropriate to	ox FES
Field Notes Authored by Hamilh A	MD CY Field Notes	,	H		
G:\01609\resource\Internal Info and Teams\A	quatic Resources\Field S	heets\Stantec\Form 0	2 Wind Farm Watert	oody Rapid Ass	sessment Form.doo



Station # CL-CR 4	Project Name Nagara Wind Farm	
Watercourse Name	Project # 160966269	
Photos 8697 - 3400	Field Staff Hamish - Trevor	
Date 19 Sept 2012	Time3:35 p/~	
Weather conditions in previous 24 hrs	s Fire - Rain, 15°C.	
GPS Coordinates (Zone)	E 0620335 N 4767785 Date	<u>um Nad</u> 8≤
Descriptive Location	food 4, 50 m East of Paterson fd	
Water Quality () Cy Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	pH Conductivity (μS/cm) Air Temperature (°C)	
Watercourse Dimensions & Morph Mean Watercourse Width Mean Bankfull Width Riffle Evidence of eroding banks, Commen	_(m)	
Substrate (% cover)	Cobble Sand 100 (Soil) Silt	Muck
Boulder	GravelClayMarl	Mook Detritus
Riparian Zone Riparian Cover (% of watercourse sh	Debris Boulder Other	.l)
Adjacent Land Use	a pastal a state for the state of	
agriculture		
Fish Habitat Potential Critical Habitat (spawning or nursery	areas, groundwater upwellings)	
Migratory Obstructions (seasonal, pe	rmanent)	
Note any fish observations		
Waterbody Notes Natural Watercourse Natural Watercourse Natural Drainage (i.e. furrows)	· · · · · · · · · · · · · · · · · · ·	d Tile Dry <u>Xes</u>
Other Habitat Notes, Incidental Wil		wad as field
No de		our, ay THE
apple x		
Field Notes Authored by Harrish	Field Notes QA/QCed by	



Station # CL-(R4	Project Name Mission (1) / F
Watercourse Name8	Project Name Niagara Wind Farm Project #_ 1609 602 69 Field Staff Trevor + Hamish
Photos 801-8104	Field Stoff
Date 19 Sep 2-012	Time 2.45
Weather conditions in previous 24 hrs	Time 3:45 pm - Rach, 15°C
GPS Coordinates (Zone) E 062.050	
Descriptive Location	N 476 7795 Datum Nads
Descriptive Location(oncession Road 4	100 m East of Patterson
Water Quality Dry	
Dissolved Oxygen (mg/L)pH	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C) 17°C
Time in situ measurements taken	7. Tomporature (C)
Watercourse Dimensions & Morphology	
Mean Watercourse Width 07 (m)	Maximum Pool Depth(cm)
Mean Bankfull Width 2 6 6 (m)	Mean Water Depth (cm)
% Riffle% Poo	% Run % Flo
Evidence of eroding banks, Comments on bank sta	ibility stable feature
Cubatasta (0)	
Substrate (% cover)	
BedrockCobble	Sand 100 (Soll) Silt Muck
BoulderGravel	Clay Marl Detritus
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dominan 60 /. 9/05865	nt vegetation, mature or early successional)
Adjacent Land Use fural residential, agri	cultural road
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundw Migratory Obstructions (seasonal, permanent)	vater upwellings)
10w/moflow	
Note any fish observations (O ~)	
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond_	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
	ons, etc. poorly defined draining
Field Notes Authored by Trans (Lader Field Notes QA	WOCod by MP
i:\01609\resource\Internal Info and Teams\Aquatic Resources\Field She	ets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



Station #CL-CR 4	Project Name Niagora Wind Farm
Watercourse Name	Project #
Photos 3105 - 8108	Field Staff Trever - Hamish
Date 19 Sept 2012	Time 3:55 pm
Weather conditions in previous 24 hrs	- Rain, 15°C
GPS Coordinates (Zone) TT E 062	2060 N TOTAL Datum Nous
Descriptive Location Concession Road 4	= 400 m East of Patterson
•	
Water Quality Dry	
Dissolved Oxygen (mg/L) pH_	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	
•	
Watercourse Dimensions & Morphology	Maximum Pool Depth (cm)
Mean Watercourse Width (m)	Mean Water Depth (cm)
Mean Watercourse Width (m) Mean Bankfull Width (m)	Pool % Run% Flat
Evidence of eroding banks, Comments on bank	stability
Evidence of eroding banks, Comments on Same	
	· · · · · · · · · · · · · · · · · · ·
Substrate (% cover)	Sand 100 (Soil) Silt Muck
Boulder Gravel	
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dom	
	gricultural, roadside ditch drainage
	,
Fish Habitat Potential	undwater unwellings)
Critical Habitat (spawning or nursery areas, ground	undwater upweinings)
Migratory Obstructions (seasonal, permanent)	
	110 - 10 M
Note any fish observations	no
Waterbody Notes	
Natural Watercourse	nel N Grassed Swale Y Buried Tile N
Surficial Drainage (i.e. furrows) Dugout F	Pond N Dominated by Aquatic Veg N Dry ∑
•	
Other Habitat Notes, Incidental Wildlife Obse	ervations, etc. Patrest Manicured gross lawns inage channels. Small welland south of road
Field Notes Authored by Hamish Aubrey Field N	lotes QA/QCed by



TERBODY RAPID ASSESSMENT FORM

	WIND FARM	WATERBOD	Y RAPI	D ASSESS	MENTFOR	-7 IAI	
Stantec					1	1	
O. 13 - 4 /	CL - (R4) Name 10 $CL - (R4)$ Name 20 $CL -$		Project Project Field S Time	Name	agara Wine 60269 Va Hamis m	h farm	
Date Weather cond GPS Coordin Descriptive L	ditions in previous 24 hates (Zone)	thrs Fire E 0620 on Road 4 -	- R 500 1	Mast of H	4767814 uy 20	Datum	Nad 83
Water Tempe Time in situ	ty /)ry xygen (mg/L) erature (°C) measurements taken) 1		•			
Watercours Mean Water Mean Bankf	re Dimensions & Morcourse Width You Width You Riffle eroding banks, Com	orphology (m) (m) % P nments on bank	Maxin Mean ool stability	num Pool De Water Depth	pth 1 % Run _	(cm)	% Flat
Substrate ((% cover) Bedrock Boulder	Cobble Gravel		_Sand(o© _Clay	<u>(Sail)</u> Si M	ilt arl	Muck Detritus
Overhangin	over pages es Present (circle): ng Vegetation W	Undercut E oody Debris	Banks Bould	Deep Pool der Ott	Watercre		uatic Veg
Riparian Z Riparian Co	one over (% of watercour	rse shaded, dom	inant veg	etation, matu	ure or early su c - wanicu	iccessional	grass
Adjacent L	and Use Rula re	esidential, a	gricultu	ral			
Critical Ha	tat Potential bitat (spawning or nu		undwate	r upwellings)			
Migratory (Obstructions (seasor	nal, permanent)	no	- low flow	1		
Note any f	ish observations			V 0			
Waterbod Natural W Surficial D	y Notes Vatercourse	Frapezoidal Char	nnel N Pond N	Grasse Dominat s, etc. <u></u> <i>Lo</i>	ed Swale Y ed by Aquation	Burie Veg N	grasses)
Other Ha	bitat Notes, inciden	ital Tribuilo	m	a aborox		`	

Hantsh Field Notes QA/QCed by _



	Project Name Niagara Wind Farm
Station # <u>CL-CR4</u>	Project Name 19/20/2007
Watercourse Name	Project # 160960269 Field Staff Trevers Hamsh
Photos 3113 - 3113	T:
Date 19 Sept 2012	
Weather conditions in previous 24 hrs	620973 N 4767844 Datum Nad83
GPS Coordinates (Zone) E 0	6 Mg 13 Set Wet of Hwy 20
Descriptive Location (on @ssien Rd	6 4 - 475 m = + West of Hwy 20
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	Air Temperature (°C)
Watercourse Dimensions & Morphology	Maximum Pool Depth (cm) Mean Water Depth (cm) % Pool % Run % Flat ank stability 5 fable - mires scorr near culvert
Mean Watercourse Width 0 (4) (m)	Moan Water Denth (cm)
Mean Bankfull Width 1-7 m (m)	% Rool % Run % Flat
% Rittle	nk stability Stable - mirer scour near culvert
Evidence of eroding banks, Comments on ba	The Stability
Substrate (% cover)	Sand 100 (Soll) Silt Muck Clay Marl Detritus
BedrockCobble_	Clay Marl Detritus
BoulderGravel	Olay
Overhanging Vegetation Woody Debris Riparian Zone	ominant vegetation, mature or early successional)
Adjacent Land Use	rural residential
Agricultural	1990
Fish Habitat Potential Critical Habitat (spawning or nursery areas,	groundwater upwellings)
Migratory Obstructions (seasonal, permaner	no-low flow
Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Cl Surficial Drainage (i.e. furrows) N Dugo	hannel // Grassed Swale / Buried Tile
Field Notes Authored by Hamish Aubrey Fi	eld Notes QA/QCed by



Stanter	Level Form
Station # CL-CR4	Project Name Magara Wind Farm
Natercourse Name	Project # 160960269 Field Staff Trever + Hamsh
Photos 8/20 - 8/24 Date 19 Sept 2-8/2	Field Staff // Edw / access
Date 19 Sept 2-012	Time 4: 40 pm
Meather conditions in previous 24 nrs	N 4767828 Datum Nad 8
GPS Coordinates (Zone)	on west of Hwy 20
Descriptive LocationConcessio Rd 4 - 30	on west or riwy 20
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	Conductivity (µS/cm)Air Temperature (°C)
Watercourse Dimensions & Morphology	, (am)
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m) % Riffle% Po	Maximum Pool Depth(cm)
Mean Bankfull Width (m)	Mean Water Depth(CIII) % Flat
% Riffle% Po	ol% Hun% in a
Evidence of eroding banks, Comments on bank st	tability <u>Stable</u>
Substrate (% cover) BedrockCobble	Sand of Soil Silt Muck Clay Marl Detritus
BoulderGravel	ClayBetitus
Cover Types Present (circle): Undercut Bar Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domin	<u> </u>
Adjacent Land Use	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	ndwater upwellings)
Migratory Obstructions (seasonal, permanent)	no-low flow
Note any fish observations	
Continue Drainage (i.e. furrows) N Dugoul Po	Grassed Swale Buried Tile Nond Dominated by Aquatic Veg N Dry Y rvations, etc. Miser small packets of starolog water of channel dug in ag field
70-300)
Field Notes Authored by Field No.	otes QA/QCed by



		Project Name	Nico	ina Wi-	d Farm	
Station # <u>CL-(R4</u>		Project Name Project #	10060	9.69		
Watercourse Name 13		Field Staff	Telune	Hamish		
Photos <u>৪০ </u>		T: (('C	50			
Date 19 Sept 2012		Time	- S. Jan 1997	C # [
Weather conditions in previous 24 hrs GPS Coordinates (Zone)	S the	The second secon	N GET	67353	Datum	Nad83
GPS Coordinates (Zone)	E 0621736	· · · · · · · · · · · · · · · · · · ·	10 ch af	Halu 20		
GPS Coordinates (Zone) [] Descriptive Location [in Koad 4	- 30 W V	, - 3 i			
Water Quality Organization Dissolved Oxygen (mg/L)	pH	Cond Air Temperat	ductivity(ure (°C) ₋	μS/cm) 		
Watercourse Dimensions & Morph	nology				(
Watercourse Dimensions & Morph Mean Watercourse Width Mean Bankfull Width % Riffle Stridense of grading banks. Comme	_(m)	Maximum Po	ol Depth		(CM)	
Mean Bankfull Width	_(m)	Mean Water	Depth	0/ D	(CIII)	% Flat
% Riffle	% Po	ol <u></u>		% Hun		/o i iat
% Riffle Evidence of eroding banks, Comme	nts on bank st	ability/	<u> </u>			
Substrate (% cover)			/ .			Muck
Bedrock	_Cobble	Sand	(Soil)	(00/. SIIT_	ı	wuck Detritus
Substrate (% cover) Bedrock Boulder	_Gravel	Clay_		<u> Mar</u>		_Detritus
In-water Cover Dig Cover Types Present (circle): Overhanging Vegetation Wood Riparian Zone	y Deblis	Dodidor				
Riparian Zone Riparian Cover (% of watercourse s	haded, domin	ant vegetation,	mature o	grasses,	/ ag Wee	ds
Adjacent Land Use Agriculteral	loadia	, I was res	identia			
mi i ii kitat Datantial						
Critical Habitat (spawning or nurser	y areas, grour	ndwater upwelli	ings)			
Migratory Obstructions (seasonal, p	permanent)	no-low fl	oul			
Note any fish observations		\ O				
Waterbody Notes Natural Watercourse	Dugout PC	ond N Dor	ninated b	wale_ <u>/</u> y Aquatic V	eg_ <u>N</u> _	Tile_ <u>N</u> Dry_ <u>Y</u>
~ 450 mm CSP calve	J	- 110 at 130d	= (2/a\$	SES < MUIIU	ultural u	Jeeds .
	channe	1 is ploughe	d on s	JOHN JUNE		
Field Notes Authored by Hamis h		tes QA/QCed by				
LINIO MOIGS VOILINGED DA						Earm



Stantec	process of the second second
Station # CL-Younge	Project Name Hiagara Who Farm
Watercourse Name	Project # 160960259
Photos 9/30 - 8/39	Field Staff Treyor + Hamish
Date 19 Sept	Time <u>5:20 pm</u>
Weather conditions in previous 24 hrs	Fire - Rain 15°C
GPS Coordinates (Zone)	0619315 N 4774960 Datum Nad83
Descriptive Location	
Agricultural land	d, wal residential - Zoo east of clayson a
Water Quality HAR NA	
Dissolved Oxygen (mg/L)	pH Conductivity (μS/cm)
Makes Temperature (°C)	pH Conductivity (μS/cm)
Water Temperature (°C) Time in situ measurements taken	
Watercourse Dimensions & Morpholog	Maximum Pool Depth (cm)
Mean Watercourse Width (m)	Mean Water Depth(cm)
Mean Watercourse Width 1-15 (m) Mean Bankfull Width 3 (m)	% Pool % Run% Flat
Evidence of eroding banks, Comments on	I Darik Stability
2 101 2 2 2	
Substrate (% cover)	ble / Ø Sand 80 Silt Muck
DCG100N	vel /o Clay Marl /o/- Detritus
BoulderGrav	,01
Cover Types Present (circle): Undoverhanging Vegetation Woody Deb Riparian Zone Riparian Cover (% of watercourse shaded	d, dominant vegetation, mature or early successional)
Adjacent Land Use Adjacent Land Use	roadside, rwal residential
- My Cate and	
Fish Habitat Potential	and the star unwallings)
Critical Habitat (spawning or nursery area	as, groundwater upwerings)
Migratory Obstructions (seasonal, perma	inent)
Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoida Surficial Drainage (i.e. furrows)	
Other Habitat Notes, Incidental Wildlift small the culvest observed, de	diacent to cood on southside, not on north side. Readside dialings
Region	
Field Notes Authored by	Field Notes QA/QCed by
Field Notes Authored by	Co. W. J. Farry Wetschody Banid Assessment Form.do



Stantec	Annual Designation of the second seco
Station # U-Fly Rd	Project Name Hingary As Wind Farm
Watercourse Name Spring reek	Project # 60760201
Photos <u>8156</u> 8160	Field Staff Trever & Hamish
Date P1 >20+ 20 4	Time 6:30 pm
in provious 24 prs	7 m39 N 4776898 Datum Nad83
GPS Coordinates (Zone) E 06	20089 N 47/6010 Datum 100000
Descriptive Location Fly Ad - 400	m West of South Grimsley Rd 3
Descriptive Lecture	1
Water Quality NA - Org (worky) Dissolved Oxygen (mg/L) Water Temperature (°C)	
Dissolved Oxygen (mg/L)	pH Conductivity (μS/cm)
Water Temperature (°C)	pH Conductivity (μS/cm)
Time in situ measurements taken	
Watercourse Dimensions & Morphology Mean Watercourse Width(m)	Maximum Pool Depth 30 (cm)
Moon Watercourse Width >(III)	Mean Water Depth(cm)
Mean Bankfull Width\"	% Run % Flat
% Riffle	ank stability Bankerssion south stole of road, me
Evidence of eroding banks, Comments on be	and stability
Substrate (% cover) Redrock Cobble	Sand 70 Silt Muck
Bedrock Scobble	36 Clay Marl Detritus
BoulderGravel	36ClayDetition
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, or	dominant vegetation, mature or early successional)
Adjacent Land Use Nooded area luis	al residential
Fish Habitat Potential Critical Habitat (spawning or nursery areas,	
Migratory Obstructions (seasonal, permane	
Note any fish observations	e small one
Waterbody Notes Natural Watercourse Man Trapezoidal Countries Duginage (i.e. furrows) Duging Other Habitat Notes, Incidental Wildlife	Observations, etc. White tailed der
box cylve	t-14 m wide
	, ne
	Field Notes QA/QCed by
Field Notes Authored by	Field Notes QA/QCed by



Stantec	1.0		* .	*
Station # CL-Flyrd !		Project Name _		MACA
Station #Watercourse Name	Covinal veor	Project #	160450 464	Hamis Ab
Photos 850-6		Field Staff Tye		THOMISE INDI
Date Sept 19 1/2		Time)	
Weather conditions in previous	24 hrs / Q.	n -15°C		Datum Nads
GPS Coordinates (Zone)	T E 1/2,080		V477663	
Descriptive Location	i PA - Castl	Grand	NIZA UD	
Descriptive Location				
and a Constitute		1 Dry		
Water Quality	pH	Condu	ctivity (µS/cm)	
Dissolved Oxygen (mg/L)	. 7	Air Temperatur	e (°C)	
Water Temperature (°C)		741		
Time in situ measurements take				
Watercourse Dimensions & M	Norphology	Maximum Pool	Depth	(cm)
Mean Watercourse Width	(w)	Maximum 1 00	epth	(cm)
Mean Watercourse Width Mean Bankfull Width OF Biffle	(m)	Mean Water D	% Run	
% Riffle	% Poo			
Evidence of eroding banks, Co	mments on bank sta	ibility 3-7 a		
				•
Substrate (% cover)	Cobble	Sand_	00 % Silt_	
Bedrock	Gravel		Mar	<u>1</u> Detritus
Boulder	alavoi			
Overhanging Vegetation Riparian Zone Riparian Cover (% of watercounty)	t alad domine	ent vocatation of	nature or early succ	cessional)
Adjacent Land Use	_	eld/pas		
V				
Fish Habitat Potential Critical Habitat (spawning or n	iursery areas, groun	dwater upwelling	gs)	
Migratory Obstructions (seaso	nal parmanent)			,
Migratory Obstructions (seaso	many permanana			
Note any fish observations	none.			
Waterbody Notes		/ 0	ssed Swale	Buried Tile
Netural Matercourse	Trapezoidal Channe		nated by Aquatic V	eg Dry 🔽
Surficial Drainage (i.e. furrows	s) Dugout Po	nu Donn		
Other Habitat Notes, Incide	ntal Wildlife Obser	/ations, etc	poled Nat	evinba
Culvet (hax	autoentis	-UAMU	1000	
	A A State No.	es QA/QCed by	NO2	
Field Notes Authored by C\\\A(L)	AT AN LIAIG MOD	69 WW WOOD OF		Danid Assessment FORM



Stamec	
1-11-14 CI EN 142 /C	Project Name Nagana Wino
ration # CL Flyrd 2 / Creek ratercourse Name Trub to Pring Creek	Project # 10090000
MAICOUISE INDIE	Field Staff hand an Hamse 1901
hotos	Time 6.40
ate Sept 19/12	
	N 176 82 Datum Na a s
PS Coordinates (Zone) 7 E 06304	west of South Granibyed 3
escriptive Location	
CB14	
DRY /	
Vater Quality Dissolved Oxygen (mg/L) pH	Conductivity (µS/cm)
//22014ed Oxygon (a -/	Air Temperature (°C) 17°C
	/ III 1011.por
ime in situ measurements taken	
Vatercourse Dimensions & Morphology	
Mean Watercourse Width (m)	Maximum Pool Depth(cm)
Mean Watercourse Width (m)	Mean Water Depth(cm)
	. % Dun % Flat
% Hille Comments on bank si	tability Aable
Evidence of eroding banks, Comments on Same of	
Substrate (% cover)	Sand 70 SiltMuck
Bedrock Cobble	Out to
BoulderGravel	Clay Marl () Detritus
Riparian Zone Riparian Cover (% of watercourse shaded, domin	nant vegetation, mature or early successional)
	oadside dital
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground for the first of the	
Note any fish observations/\ 0/10	
Surficial Drainage (i.e. furrows) Dugout Po	
Other Habitat Notes, Incidental Wildlife Obser	trations, etc. Ited by grasses. Read acts drainage as whole your
Field Notes Authored by T. Chandler Field No.	otes QA/QCed by
Aguatic Resources\Fig	eld Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.do
G:\01609\resource\internal into and Teams vigation	



Stantec	Marrie Parker		1 200		
Station # CLF/4 Rd	3 / <u>L</u>	Project Nam	e <u>Naga</u>		
Watercourse Name Vib to 3	Dring Comple	Project #	11004103		n it Aub
Photos 8 66-8 70	med	Field Staff_	1.(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		* <u> </u>
Data Spot 1911 A		Time			
Meather conditions in previous 2	24 hrs <u>Rain</u>	. 1590	L. L. surgeoner / _ f	(A) Datu	m NIAAK3
and Opendinated (7000)		210	N 47766	Date Date	
Descriptive Location	u Road, 40	m fact c			
Water Quality	1114				
Dissolved Oxygen (mg/L)	bH	Co	nductivity (µS/cm	"	
Water Temperature (°C)		Air Tempera	ature (°C)		
Time in situ measurements take	en				
· · · · · · · · · · · · · · · · · · ·					
Watercourse Dimensions & M	orpnoiogy	Maximum F	Pool Depth	(cm)	
Mean Watercourse Width	(m)	Mean Wate	r Depth	(cm)	
Mean Bankfull Width	(''') % Po		% Ru	n	% Flat
% Riffle Evidence of eroding banks, Cor	mments on bank s	tability 🖂	able		
Evidence of eroding banks, Col	Timento on burne				
Out strate (% cover)					Munde
Substrate (% cover)	Cobble		10	Silt	Muck
Boulder		Cla	у	Marl	Detritus
Riparian Zone Riparian Cover (% of watercount Adjacent Land Use	rse shaded, domin	nant vegetatio	n, mature or earl	y successiona /harthrid	de is 105 mowed
Adjacent Land Ose	2 vesiden	+2///	MNS / YOU	Kanara a	
Fish Habitat Potential Critical Habitat (spawning or n	urserv areas, grou	ndwater upwe	ellings)		
		VALL NOTO			
Migratory Obstructions (seaso	nal, permanent)	Iru cha			
Note any fish observations	MM				
Waterbody Notes		I	Grassed Swale_	Buri	ed Tile
	Trapezoidal Chann	iel	ominated by Ann	atic Veg	_ Dry
Surficial Drainage (i.e. turrows	s) Dugoul r	Onu	Official by Aqu		
Other Habitat Notes, Incider	atal Wildlife Obco	rvations etc.	Box cult	RLL IN	1,0000
Other Habitat Notes, Incider	Nai Wildine Cose	i vations, oto		1 1) 1
bo Han Straight	<u> </u>				
	. /		11		
Field Notes Authored by T. Chay	dev Field N	otes QA/QCed by	111	•	economent Form



Stantec	
Station # Walker Rd D	Project Name Name
Watercourse Name TV 6 TO 30 TO 40	reek Project # 160950009
Photos 8 1 1 2	Field Staff T. chander Hamis Aubred
Data (PAT) 4 (1)	Time 7:05
Weather conditions in previous 24 nrs	Datum \\ A// X
GPS Coordinates (Zone)	6214 COMPANIORA
Descriptive Location	V DAA HAUTUN DI JENG
0.01	
Water Quality	pH Conductivity (μS/cm)
Dissolved Oxygen (mg/L)	pH Conductivity (μS/cm) Air Temperature (°C)/ μ°C
Water Temperature (°C)	Air Temperature (C)
Time in situ measurements taken	
Watercourse Dimensions & Morpholog	3 y
Moon Watercourse Width (M)	Maximum Fooi Deptin
Mann Bonkfull Width 3 (m)	Mean water Depth(OII)
9/ D:#16	% P001
Evidence of eroding banks, Comments or	n bank stability Tana
	· · · · · · · · · · · · · · · · · · ·
Substrate (% cover) BedrockCob	oble Sand 100 % Silt Muck
Boulder Grav	velClayMarlDetritus
Bouldeld.d.	
Cover Types Present (circle): Und Overhanging Vegetation Woody Deb Riparian Zone Riparian Cover (% of watercourse shade	ed, dominant vegetation, mature or early successional)
70% arouses, t	ear
Adjacent Land Use Ag. Aeld	s rural residential
Fish Habitat Potential Critical Habitat (spawning or nursery area	as groundwater upwellings)
	AUNIV NU
Migratory Obstructions (seasonal, perma	anent)
Note any fish observations	
Waterbody Notes	el Channel Grassed Swale Buried Tile
Natural Watercourse Trapezoida	
Surficial Drainage (i.e. furrows)D	
Other Habitat Notes, Incidental Wildlif	te Observations, etc. (albrown OP culvert, dry,
	, K. J.



Stantec	B. granden		A11200 0 1012	
tation # <u>Nalkev R</u>	d 2.16	Project Name	N MARKA AND A	
atercourse Name	- COVING CAC	Project # Field Staff	Chandler Has	nish Albre
notos 8 10		Time	*	
and Continue		V LIME TO THE		
leather conditions in previous 2	4 hrs4	A STATE OF THE PARTY OF THE PAR	4777973 0	atum Nade
PS Coordinates (Zone)	<u> </u>	44.3100 M	A 44	12 <u>al</u>
escriptive Location	aller 20			600 °
t to Ovelity				
/ater Quality		Conduc	ctivity (µS/cm)	
hissolved Oxygen (mg/L)		Air Temperature	e (°C) 17°C	
Vater Temperature (°C)		•		
ime in situ measurements taker				
Vatercourse Dimensions & Mo	orphology	Marrianum Bool	Depth	(cm)
Agan Watercourse Width	(111)	Manage Notes Do	anth (Citi
Mean Bankfull Width	(m)	Mean water De	% Run	% Fla
	%,F	'00l	/0 (tuli	
% Riffle Evidence of eroding banks, Con	iments on bank	Stability		
Substrate (% cover)			100 % Silt	Muck
Bedrock	Cobble	Sand	Marl	Detritus
Boulder	Gravel	Clay	Wan	
Riparian Zone Riparian Cover (% of watercour 709, grance Adjacent Land Use	<u> </u>		nature or early success	
Fish Habitat Potential Critical Habitat (spawning or nu		oundwater upwelling	gs)	
Migratory Obstructions (seasor	$/\lambda/\sqrt{\lambda}$			
Note any fish observations	N'A/			
Waterbody Notes Natural Watercourse T Surficial Drainage (i.e. furrows) Dudoui	Pond Domir	nated by Aquatic Veg_	
Incidon	tal Wildlife Obs	servations, etc	9/10mm CS	b Curvey
Field Notes Authored by T	rde/ Field	Notes QA/QCed by/	NE-	



Stantec	<i>y</i> -4 <i>1</i>	fic
04-41-14 RITOOI-I	Project Name Niagara Wind	
Station #Watercourse Name	Project # 160950269	
Photos Gee log	Field Staff	
Date Jury 12 2013	Time	
Weather conditions in previous 24 hrs) I was a second of the second	
GPS Coordinates (Zone) E V	349 N 4765629 Date	<u>IM</u>
Descriptive Location Valuable Rd	456-11	
Water Quality	-7 \$ (and the first (1.00 cm) 1513	
Water Quality Dissolved Oxygen (mg/L) 10.01 pH_ Water Temperature (°C) 25.05	All Tampontum (90)	
Water Temperature (°C)	Air Temperature (°C)	
Time in situ measurements taken	pm	
Watercourse Dimensions & Morphology		
Mean Watercourse Width (m)	Maximum Pool Depth (cm)	
Mean Bankfull Width (m)	Mean Water Depth(cm)	% Flat
% Riffle 0 % PC	ool% Run	/0 1 ide
Evidence of eroding banks, Comments on bank s	itability	
Substrate (% cover)	O.10	Mode
Bedrock Cobble	2 Sand Silt	Muck Detritus
Boulder Gravel	Clay Marl	
Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris Riparian Zone	Boulder Other	quatic Veg
Riparian Zone Riparian Cover (% of watercourse shaded, domin	nant vegetation, mature or early successional	''
Adjacent Land Use		
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	ndwater upwellings)	
Migratory Obstructions (seasonal, permanent)		
Note any fish observations		
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po	el Grassed Swale Buried and Dominated by Aquatic Veg	
Other Habitat Notes, Incidental Wildlife Obser	vations, etc.	
- WIATHY LATING	The state of the s	
Sield Notes Authored by Field Note	es QA/QCed by	



Stantec	NON
Station #	Project Name NIAGARA WIND Project # 160950269 Field Staff Tichandler MEllah Time 6:10 PM Thurder showers and sunny 172 N 4765995 Datum
Water Quality DRY - TILED Dissolved Oxygen (mg/L) pH_ Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm)Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width (m)	Maximum Pool Depth (cm) Mean Water Depth (cm) ool Run - % Run - % Flat
Substrate (% cover) Bedrock Cobble Boulder Gravel In-water Cover Cover Types Present (circle): Overhanging Vegetation Woody Debris	Sand Silt Muck Clay Marl Detritus unks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, dominated to the control of the control o	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groun Migratory Obstructions (seasonal, permanent) Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Channe Surficial Drainage (i.e. furrows) Dugout Por	el Grassed Swale Buried Tile nd Dominated by Aquatic Veg Dry
Field Notes Authored by T. Chard (av Field Notes	s QA/QCed by



NON

Station # BILTO 02	Project Name NI AGARA	WIND
Photos 3 ST 8851 Date June 7, 2017	Field Staff Chandler M Time	Ellah
Weather conditions in previous 24 hrs 154t + GPS Coordinates (Zone) E 67 7 39 Descriptive Location	hunder showers; Sunny 4 N 476 5896	Datum
Water Quality DRY - TILE DRA Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm) Air Temperature (°C)2	
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m)% Riffle% Pool Evidence of eroding banks, Comments on bank sta		(cm) (cm) % Flat
Substrate (% cover) DRY Bedrock Cobble Boulder Gravel	Sand Silt Marl	Muck Detritus
In-water Cover DRY Over Types Present (circle): Under tit Ban Overhanging Vegetation Woody Debris	ks Deep Pool Watercress Boulder Other	Aquatic Veg
Riparian Zone Riparian Cover (% of watercourse shaded, dominar	nt vegetation, mature or early succes	ssional)
Adjacent Land Use		
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	water upwellings)	
Migratory Obstructions (seasonal, permanent) NO FLOW Note any fish observations		
Note any list observations		
Waterbody Notes Natural Watercourse Trapezoidal Channel _ Surficial Drainage (i.e. furrows) Dugout Pond		
Other Habitat Notes, Incidental Wildlife Observa	tions, etc.	
Field Notes Authored by 1. Chardler Field Notes of	QA/QCed by	



REA

Station #_RITO 0 Z Watercourse Name0 z - 3 Photos	Project Name NIAGARA WIND Project #_160950269 Field Staff T. Chandler, M. Ellah Time 6:30 PM
Weather conditions in previous 24 hrs GPS Coordinates (Zone) Descriptive Location Rlong property Line	N476 5973 Datum
Water Quality Dissolved Oxygen (mg/L) pH_ Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm) Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width	
Substrate (% cover) BedrockCobble BoulderGravel	Sand Silt 20 Muck Clay Marl 60 Detritus
In-water Cover Cover Types Procest (sircie): Undercut Ban Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domina Adjacent Land Use Agricultural Fields (w. cops	nt vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	dwater upwellings)
Migratory Obstructions (seasonal, permanent) Note any fish observations	
Waterbody Notes Natural Watercourse / Trapezoidal Channel Surficial Drainage (i.e. furrows) / Dugaut Pone	Grassed Swale Burjed Tile d Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observa	ations, etc. <u>Sagi Hariam</u> , sedan
Field Notes Authored by Field Notes	QA/QCed by



Station #RITOO		Project Name	Niagava v	lind
Watercourse Name			0450269	0.14.0
Photos See 109		Field Staff	FIG	
Date	1/2012	Time 4:1	NA.	
Weather conditions in previous	s 24 hrs	& Sanny		
GPS Coordinates (Zone)	JTE 6100		4764012	Datum Nac
Descriptive Location	clapor	ov. Soona		Evant 6
	× 1			
Water Quality				
Dissolved Oxygen (mg/L)	pH	Conducti	vity (uS/cm)	
Water Temperature (°C)		Air Temperature (°C)	
Time in situ measurements tak	:en			
Watercourse Dimensions &	Morphology .			
Mean Watercourse Width	(m)	Maximum Pool De	inth /	(am)
wean banktull width	(m)	Mean Water Depth		(cm)
% Riffle	% Poo	1	9/ D.	(cm)
Evidence of eroding banks, Co	mments on bank sta	bility/	/8 NUII	% F
Substrate (% cover)				
Bedrock	Cobble	Sand	Silt	Monale
Boulder	Gravel	Clay	Siit Mart	Muck
n-water Cover			iviali	Detritu:
liparian Cover (% of watercours	se shaded, dominan	t vegetation, mature	or early successio	nal)
·				
rish Habitat Potential Critical Habitat (spawning or nurral digratory Obstructions (seasonal	ll, permanent)			
ote any fish observations				
/aterbody Notes atural Watercourse Tra urficial Drainage (i.e. furrows)_/	pezoidal Channel Dugout Pond_	Grassed S	wale Buri	ied Tile
ther Habitat Notes, Incidental	Wildlife Observation	ons. etc. Sunf	b	age or
ld Notes Authored by		Lokald	12	
	FIGURIOTES CAR	Ocad his 1/17 1 Marie	The state of the s	
01609\resource\internal Info and Teams\Aq	Field Notes QA		- Manager	



		1 63
Station # R 11 170 04 - 1	Project Name Niag	ara Wina
Watercourse Name	Project #	1269
Photos	Field Staff KE+ JE	
Date NUMP 12 20	Time 9.16 AM	
Weather conditions in previous 24 hrs	regain NASAE	18 2 Datum New 83
GPS Coordinates (Zone) TE 62	7606 N4768	Datum 7 3 3
Descriptive Location Conc. 4 6 4	10derins Ra	
Beechpare	V	
Water Quality	Conductivity (μS Air Temperature (°C)	(cm) 984
Dissolved Oxygen (mg/L) pH	Conductivity (µS	7 2 0
Water Temperature (°C)	Air Temperature (°C)	<u> </u>
Time in situ measurements taken 9 20	$+\infty$	ł į
		MY EXCEPT IN CO
Watercourse Dimensions & Morphology Mosp Watercourse Width (m)	Maximum Pool Depth	(cm)
Medi Matorocares	Mean Water Depth	(cm)
Mean Dankidii Widui	Pool %	Run% F
% Riffle% Evidence of eroding banks, Comments on bank	k stability Some excel	<u> </u>
Evidence of eroding banks, comments		
Substrate (% cover)		Silt Muck
BedrockCobble	20 Sand	SiltMuck MarlDetritu
Boulder Gravel	<u> </u>	water Startain, I'
Cover Types Present (circle): Undercut Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dor	Boulder Other	arly successional)
Riparian Cover (% of watercourse shaded, doi	milane rogues	
Adjacent Land Use	*	
A5-5046Pan		
Fish Habitat Potential		
Critical Habitat (spawning or nursery areas, gro		
Critical Habitat (spawning or nursery areas, grown Migratory Obstructions (seasonal, permanent)		
Critical Habitat (spawning or nursery areas, gro		
Critical Habitat (spawning or nursery areas, grown Migratory Obstructions (seasonal, permanent)		
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes	,	Buried Tile
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Note any Materbody Notes Note any Materbody Notes Trapezoidal Cha	nnel Grassed Swale	
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes	nnel Grassed Swale	
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Characteristical Drainage (i.e. furrows) Dugout Other Habitat Notes, Incidental Wildlife Observations	nnel Grassed Swale Pond Dominated by Ad	
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Character Habitat Notes Incidental Wildlife Obs	nnel Grassed Swale Pond Dominated by Ad	quatic Veg Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Characteristical Drainage (i.e. furrows) Dugout Other Habitat Notes, Incidental Wildlife Observations	nnel Grassed Swale Pond Dominated by Ad	quatic Veg Dry

REAS Conc. H REA-6 loses definition grassy suble NON REA-5



	REA	
4693000000v	T004-	المانسان المانسان المانسان

Stantec	F43					
Station # R 11 TO 04 - 2	Project Name Niagara Wind					
Watercourse Name	Project # 160950269					
Photos see a	Field Staff KE + JK					
Date June 12 2012 Time 9:25 Am						
Weather conditions in previous 24 hrs	h					
GPS Coordinates (Zone)	27568 N 4768177 Datum					
Descriptive Location Conc. 4 @ U	Warins Rd					
Water Quality	- 4/1					
	HConductivity (μS/cm)					
Water Temperature (°C)	Air Temperature (°C) 13'					
Time in situ measurements taken	All formporators (o)					
Tille III Situ Tileasurei Tierits takeri						
Watercourse Dimensions & Morphology	The state of the s					
Mean Watercourse Width(m)	Maximum Pool Depth(cm)					
Mean Bankfull Width (m)	Mean Water Depth(cm)					
	Pool% Run% Flat					
Evidence of eroding banks, Comments on ban	k stability					
Substrate (% cover)						
Bedrock Cobble	O Sand W Silt Muck					
Boulder O Gravel						
In-water Cover Cover Types Present (circle): Undercut	Banks Deep Pool Watercress Aquatic Veg					
Overhanging Vegetation Woody Debris						
Riparian Zone						
Riparian Cover (% of watercourse shaded, don	minant vegetation, mature or early successional)					
Adjacent Land Llag						
Adjacent Land USE						
Fish Habitat Potential						
Critical Habitat (spawning or nursery areas, gro	oundwater upwellings)					
Minutes Obstacling (acceptal permanent)						
Migratory Obstructions (seasonal, permanent)	Org .					
Note any fish observationsV ⊢						
•						
Waterbody Notes						
Natural Watercourse Trapezoidal Chan	nnel Grassed Swale Buried Tile					
Surficial Drainage (i.e. furrows) Dugout F						
· · · · · · · · · · · · · · · · · · ·						
Other Habitat Notes, Incidental Wildlife Obse	ervations, etc.					
Debod chand by deter agrate ver						
))))						
1.0.1	1 There					
Field Notes Authored by LFAL Field N	lotes QA/QCed by					





Station # RN TO OUL -	3	Project Name	Viagara W	lind
Watercourse Name		Project # //oc	1950269	
Photos See lon		Field Staff		
Date June 12 201	- Japan .	Time 1		
Weather conditions in previous	24 hrs 6000	<u></u>		
GPS Coordinates (Zone)	T E 027	(o () N	4767868	Datum
Descriptive Location Conc	11 @ Works	Vins Rd. 0	100 80x 400 m	sinhol come.4
	U U	7		
Water Quality	and the same of th		dul	
Dissolved Oxygen (mg/L)	pН	Conducti	vity (μS/cm)/	
Water Temperature (°C)			°C)	
Time in situ measurements take				
Watercourse Dimensions & N	Morphology			
Mean Watercourse Width		Maximum Pool De	epth	_(cm) /\/ / /
Mean Bankfull Width	(m) [.]	Mean Water Dept	h	_(cm) /
% Riffle	% Pc	•	% Run	% Flat
Evidence of eroding banks, Con	mments on bank s	tability		
veg + stable				
Substrate (% cover)				
Bedrock	Cobble20	Sand		Muck
Boulder	Gravel 80	Clay	<u>Marl</u>	Detritus
Overhanging Vegetation W Riparian Zone Riparian Cover (% of watercour				sional)
Ripanan Cover (% oi watercoul	se siladed, domin	ant vegetation, mate		
Adjacent Land Use	010,504	a hay.		
		/		
Fish Habitat Potential	å			
Critical Habitat (spawning or nu	rsery areas, groun	idwater upwellings)	•	
Migratory Obstructions (season	al, permanent)			•
Note any fish observations		,		
Waterbody Notes			_	
	apezoidal Channe			uried Tile
Surficial Drainage (i.e. furrows)	Dugout Por	nd Dominated	l by Aquatic Veg	Dry
Other Habitat Notes, Incidenta	al Wildlife Observ	ations, etc		
estimated a Florida	< < < \ / \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	+ Dumous	no crackit	(Fallicantions fodies
3 agricula Flora		Λ Λ.		<u> </u>
Field Notes Authored by	Field Notes	s QA/QCed by	2 January 18 mily 18 m	



WIND FARM WATERBODY RAPID ASSESSMENT FORM RITTO 94-4

Station # 211 1004- 4	Project Name Niagara Wind
Matercourse Name	Project #_160950269
Photos see leg	Field Staff
Photos	Time 9355 Am
	United the state of the state o
SPS Coordinates (Zone) E In Descriptive Location Swanning Communication	27484 N 4767693 Datum
3PS Cooldinates (Long)	proper by fail head todas - south it Cove. 4 oppor 600-
Descriptive Location	
Nater Quality	pH Conductivity (μS/cm)
Dissolved Oxygen (mg/L)	Air Temperature (°C)
Notor Temperature (°C)	- Air Temperature (0)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	Maximum Pool Depth(cm) Mean Water Depth(cm) % Pool% Run% Flat
Mean Watercourse Width(m)	Mean Water Depth (cm)
Mean Bankfull Width(m)	_% Pool% Run% Flat
v uma	/0 00
Evidence of eroding banks, Comments on b	DANK Stability
Substrate (% cover)	Sand Silt Muck
Bedrock Cobble	g Saild
Boulder Grave	
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded,	dominant vegetation, mature or early successional)
40 10 0011000 3 31000	
Adjacent Land Use	
Fish Habitat Potential Critical Habitat (spawning or nursery areas,	, groundwater upwellings)
Migratory Obstructions (seasonal, permane	ent)
CONNECTOVITY	
Note any fish observations	
Waterbody Notes	Grassed Swale Buried Tile
Natural Motorcourse Tabezoldal	Channel Grassod Gwall
Surficial Drainage (i.e. furrows) Dug	out Pond Dominated by Aquatic veg_v 519
Other Habitat Notes, Incidental Wildlife	Observations, etc.
- law lynn wet area	TARVITAN IN A SECOND STATE OF THE SECOND SEC
water was at all	The washe about connectivity
- vet area in the mode	whidal drainage feeding into it
	Field Notes QA/QCed by



Ni maria	Ministracian	Westernam .	00	Contraction of the second	R	for f
<	and design the property of the second	المتحارض أخروه والمستريدة	And described	0	OX	1-
				Para.	-9"	** Constant

Station # Project Name Niagara Wind Watercourse Name Project #_160950269
Photos Field Staff Communication Field Staff
Photos Date June 12 2010 Time 10:40
Weather conditions in previous 24 hrs (ALA)
ODS Coordinates (Zone) F N Datum
Descriptive Location Cooc. 4 100 m egot of 1005 units
of 400 m south in hold
Motor Ouglish
Water Quality Dissolved Oxygen (mg/L) PH Conductivity (μS/cm)
Water Temperature (°C) Air Temperature (°C)
Time in situ measurements taken
I IMe In situ measurements taken
Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth(cm)
Mean Bankfull Width (m) Mean Water Deptn(CIII)
% Riffle % Pool % Run % Fia
Evidence of eroding banks, Comments on bank stability
Cultistante (% court)
Substrate (% cover) Bedrock Cobble Sand Silt Muck
Boulder Gravel Clay Mari Detritus
Douldel
Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Adjacent Land Use
mt + 11 1/4-4 Phytomatical
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings)
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent)
Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent)
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent)
Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry
Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.



K	637	7			
KII	T)J	The Comment of	*************	K
		with the			

Stantec			F 43
Station # RILTOO4 - 6	Project Name	Niagaral	Jind
Watercourse Name	Project # /	60950269	
Photos See lon	Field Staff	CE 4 N Kum	
Date	Time 0	24 Am	
Weather conditions in previous 24 hrs			
GPS Coordinates (Zone) E	27698	N 4 2 6 6 8	<u>Datum</u>
Descriptive Location	100 m	m Onat Of	LOXSIAN
Descriptive coodion		b	
Water Quality		<u> </u>	
Dissolved Oxygen (mg/L)		ductivity (μS/cm)	
Water Temperature (°C)	/ Air Temperat	ure (°C)	
Time in situ measurements taken			
Watercourse Dimensions & Morphology		\$	
an interpretation of the second of the secon	Maximum Po		(cm)
Mean Bankfull Width (m)	Mean Water	Depth	(cm)
% Riff a management of the contract of the con	% PUUI		% Flat
Evidence of eroding banks, Comments on b	ank stability		
Substrate (% cover) BedrockCobble	<u> </u>	Silt_	
Boulder Gravel		Marl	Detritus
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded,	Boulder dominant vegetation,	w.·	ssional)
0.6			
Adjacent Land Use	•		
SON + May			4
Fish Habitat Potential			
Critical Habitat (spawning or nursery areas,	groundwater upwellin	ıgs)	
Citical Habitat (Spanning or Haros) and it	·		
Migratory Obstructions (seasonal, permane	nt)		•
Note any fish observations			
Note any list observations	/		
Waterbody Notes Natural Watercourse Trapezoidal C	hannel Gra	assed Swale	Buried Tile
Natural Watercourse Trapezoidal C Surficial Drainage (i.e. furrows) Dugo	1100111101	inated by Aquatic Veg	
Other Habitat Notes, Incidental Wildlife C			
- some channel debrit	ao var co	29 FOY CLP	
5 a then becomes in	DUNDA BU	axe up to	<u> </u>
	<u> </u>	8	
	^	**************************************	



REA	3m.l.
	active of

Water Courling in previous 24 hrs OPS Coordinates (Zone) Descriptive Location Water Quality Dissolved Oxygen (mg/L) Dissolved	Station # RITOO	5-1	Project Name	Niaga	rd h)ind
Date		1000	Project #17	00950269		
Weather conditions in previous 24 hrs GPS Coordinates (Zone) Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Head of the provided of the provi		5	Field Staff	KC MP		
GPS Coordinates (Zone) Descriptive Location Water Quality Dissolved Oxygen (mg/L) Dissolved Oxygen (
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Water Temperature (°C) Air Temperature (°C) Air Temperature (°C) Water Temperature (°C) Air Temperature (°C) Air Temperature (°C) Water Temperature (°C) Air Temperature (°C) Water Temperature (°C) Air Temperature (°C) Air Temperature (°C) Water Temperature (°C) Air Temperature (°C)	CPS Coordinates (7-12)	s 24 hrs	OC asers	ast.		-
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Ph Air Temperature (°C) Air Temp	Descriptive Leasting	7 E 0621	399 N	1 47476	Z Datur	MADA
Dissolved Oxygen (mg/L)	Descriptive Location					
Water Temperature (°C) Air Tem		no wo	Her			
Water Temperature (*C)	Dissolved Oxygen (mg/L)	pH	Conduc	tivity (uS/cm)		
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Water Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) % Riffle % Pool % Run % Flat Evidence of eroding banks, Comments on bank stability Substrate (% cover) Bedrock Cobble Sand Silt Muck Boulder Gravel Clay Marl Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Adjacent Land Use Adjacent Land Use Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Water Temperature (°C)	1	Air Temperature	(°C) 20°C		
Mean Watercourse Width	8.3		•			
Mean Bankfull Width	Watercourse Width	Morphology				
## Riffle ## Pool ## Run ## Flat ## Substrate (% cover) Bedrock	Mean Bankfull Width	(m)	Maximum Pool [Depth&O	(cm)	
Substrate (% cover) Bedrock Cobble Sand Silt Muck Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.					(cm)	
Bedrock Goravel Gravel Clay Marl Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Evidence of eroding banks, Co	mments on bank s	tability Stable	% Run 		% Flat
Boulder Gravel Clay Marl Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Seasonal Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Substrate (% cover)					
In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Bedrock	Cobble	Sand	SO Cit	50	B. A 1 .
In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Seasonal (seasonal) Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Boulder	Gravel	Clav			
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Riparian Cover (% of watercour	voody Debris	Boulder Ot	ther	(lenoisa	
Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Adjacent Land Use	and grass	es, early		~	
Note any fish observations	Fish Habitat Potential Critical Habitat (spawning or nul	rsery areas, ground	dwater upwellings)			
Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	Migratory Obstructions (seasona	al, permanent)				
Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	Note any fish observations					
Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc						•
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc		anezoidal Channal	1			_
Other Habitat Notes, Incidental Wildlife Observations, etc.		Punnit Don	d Dominate	J SWale	Buried Til	
	• · · · · · · · · · · · · · · · · · · ·					
	outer navitat Notes, incidenta	ı Wildlife Observa	tions, etc.	NO.		-
Field Notes Authored by Field Notes QA/QCod by Field Notes DA/QCod by						
TOWN TOWN WATER IN THE PROPERTY OF THE PROPERT	Field Notes Authored by	Field Notes	QA/QCed by MF			

bushlot RTI1005-3 bush lox PREA RT11005-1 REA PT 11005-2 ag-field X 20m1 as steld Farm Loubery. Non participant } Road Ryme



NON

Stantec		ė.	1 1	1.
Station #		Project Name	Maya V	<u> 1ma </u>
Natercourse Name Inknau	M	Project # Vande	0269	
Photos 18-124	<u> </u>	Field Staff		
Data Anyla/1		Time		
Weather conditions in previous 24	hrs 2º	C, over cast		- Vt. d 8
GPS Coordinates (Zone) 171	E	17	Date	
Descriptive Location		f Rumer, 400	w mg27	<u> </u>
Dicktrut	Carlo i	1 1		
	-no wat	ev		
Water Quality	pH	Conductivity (u	S/cm)	
Dissolved Oxygen (mg/L)	рп	Air Temperature (°C)		
Water Temperature (°C)		All Temperature (0)		
Time in situ measurements taken_				
Watercourse Dimensions & Mor	phology		,	
Mean Watercourse Width	(m)	Maximum Pool Depth_		•
Mean Bankfull Width	(m)	Mean Water Depth	(cm	
% Riffle			Run	% Flat
Evidence of eroding banks, Comn	nents on bank s	tability		
2 to to to (9/ 20/07)				
Substrate (% cover) Bedrock	Cobble	Sand	Silt	Muck
Boulder	Gravel		Marl	Detritus
Riparian Zone Riparian Cover (% of watercourse	e shaded, domin	nant vegetation, mature or	early successior	nal)
Adjacent Land Use				
mi i iliabitat Datamtial				
Fish Habitat Potential Critical Habitat (spawning or nurs	serv areas, grou	indwater upwellings)		
Childai Habitat (Spawiiii 9 of Hart	Annual Control of the			
Migratory Obstructions (seasona	I, permanent)			
Note any fish observations	<u>Nale</u>			
Note any fish observations				
Waterbody Notes				•
Natural Watercourse Tra	pezoidal Chani	nel Grassed Sw	Aguatic Vea	Dry
Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows)_	Dugout P	ondDominated by	Aquatic veg	
Other Habitat Notes, Incidenta				
		1 1		•
Field Notes Authored by	Field N	otes QA/QCed by		

Refer TO
RITTOOS-3 Or
RITTOOS-1
For Drawing of
grassy wate
grassy wate



REA

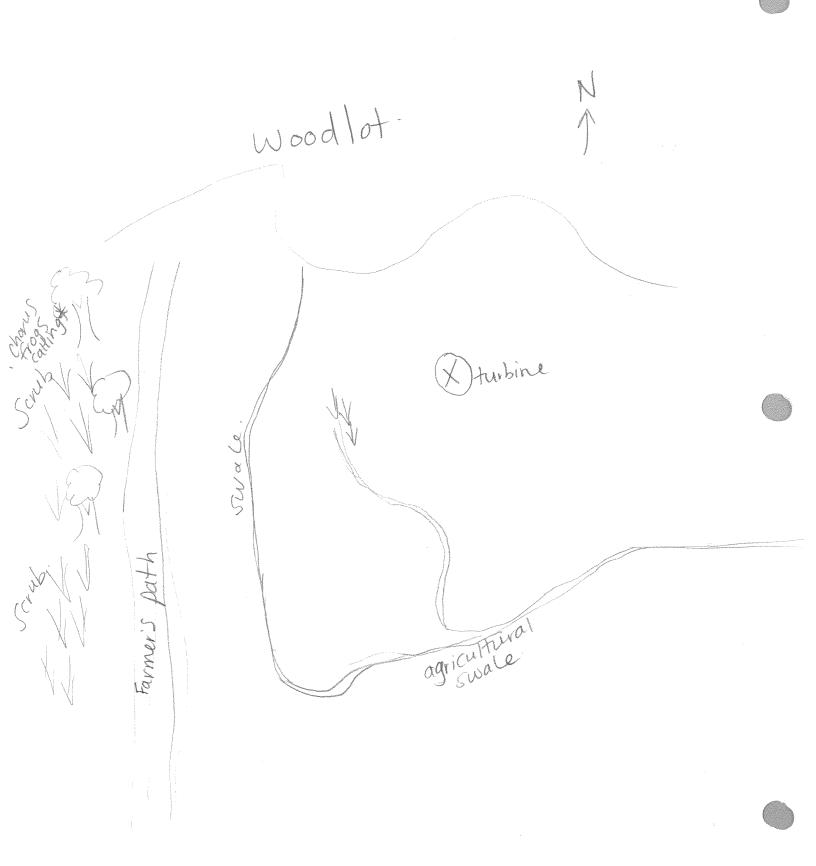
		4
N	•	
	28	

Photos 135 36 5 5 5 5 5 5 5 5 5	Project Name Niagara Wind Project # 160950269 Field Staff 160, MF Time 4:32 N 4748086 Datum Nad 83 Rymer Road 400m 1804
Water Temperature (°C) 19.04°C /	37 Conductivity (µS/cm) 9(03 MS/cm) Air Temperature (°C) 20°C
Substrate (% cover) Bedrock Cobble	Sand 30 Silt 40 Muck Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undercut Banks Overhanging Vegetation Woody Debris	s Deep Pool Watercress Aquatic Veg
Riparian Zone Riparian Cover (% of watercourse shaded, dominant Adjacent Land Use Adjacent Land Use	vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundw	
Migratory Obstructions (seasonal, permanent) Note any fish observations	prinidae.
Waterbody Notes Natural Watercourse Trapezoidal Channel_ Surficial Drainage (i.e. furrows) Dugout Pond_	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observati	ons, etc. frogs - chorus
Field Notes Authored by Field Notes O	A/OCed by MF

bushlot og field REATOOS-3 -RITTOOS-1 swale 1 R1 HOOS-2 ag. field. ag field Rymer Road



Stantec	
Station # RTTOO6 Watercourse Name_Unknown Photos_A4-38 Date_Apr.14/2012 Weather conditions in previous 24 hrs_Clark GPS Coordinates (Zone)_11T_E0623 Descriptive Location_800m_00th_64	Project Name Niagara Wind Project # 160950629 Field Staff R. Clayton M. Faiella Time 10:40am. Ay, 10°C Regional Rd 20, approx 1.2 Km e
Water Quality - not enough wat	Conductivity (μS/cm) Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width 0.40 (m) Mean Bankfull Width 0.50 (m)% Riffle% F Evidence of eroding banks, Comments on bank	Mean Water Depth(cm) Pool% Run% Flat stability
Substrate (% cover)	Sand 50 Silt Muck 50 Clay Marl Detritus
Cover Types Present (circle): Undercut B Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dominated) Adjacent Land Use	Boulder Other algae.
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds)	indwater upwellings)
Migratory Obstructions (seasonal, permanent) Seasonal Note any fish observations	farmer diagnit champet mp.
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po Other Habitat Notes, Incidental Wildlife Observ	ond Dominated by Aquatic Veg Dry
Wild turkeys, Who	es QA/QCed by MF.



tile 31



WIND FARM WATERBODY RAPID ASSESSMENT FORM



Station # RUTOO +		Project Name Name	gara Win	<u>a</u>
Watercourse Name uniona	577	Project #/_095 Field Staff	10269	
Photos		Field Staff L. CALL	tor M. Fai	1111
Photos ———————————————————————————————————		Time <u>3:30 pm</u>	\	
Veather conditions in previous	24 hrs <u>Not 5</u>	onno	7 . 10 7	
GPS Coordinates (Zone)		$\alpha \cup A \cup $	C426 Da	
Descriptive Location	(NO NOT	Elcho Road	22.300m	WASTER
Kris	K Road			
Water Quality \	Water			
		Conductivity (µ	S/cm)	
Dissolved Oxygen (mg/L) Water Temperature (°C)		Air Temperature (°C)	25	
Time in situ measurements tak	en			
		Y		
Watercourse Dimensions & Matercourse Width	(m)	Maximum Pool Depth_	(c	m)
Mean Watercourse Width	(m);	Mean Water Depth	(c	m)
Mean Bankfull Width	(''') % P	ool9	6 Run	% Fla
% Riffle Evidence of eroding banks, Co		<u> </u>		
Evidence of eroding banks, Co	Innerits on baric.			
Substrate (% cover)				9.4
Bedrock	Cobble	Sand	Silt	Muck
Boulder	Gravel	Clay	Mart	Detritus
Riparian Zone Riparian Cover (% of watercou	rse shaded, domi	nant vegetation, mature or	eany successio	ilai)
Adiacont Land Llea		Ę		
Leed Canary	avacs fa	rm ar		
Fish Habitat Potential Critical Habitat (spawning or n	ursery areas, grou	ndwater upweilings)		
Migratory Obstructions (seaso	nai, permanent)	ing algorithm and a second		•
Note any fish observations				
Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows	idal Chann	Grassed Swa	ile Bui	ried Tile
Natural Watercourse	Dugget Pr	and Dominated by	Aguatic Veg	Dry
Surficial Drainage (i.e. furrows) Uugout Pi	old Dollinated by		
Other Habitat Notes, Inciden	tal Wildlife Ohse	ryations, etc.		
Other Habitat Notes, incluen	(al Mildille Onsei	vations, ster		
			,	
· V Name	Field No.	ites QA/QCed by	•	
				mant Earn dos
W:\resource\internal info and Teams\Aqu	atic Resources\Field She	ets\Stantec\Form 02 Wind Farm Wat	erbody Rapid Assessi	nent romi.doc

RIT007-1 Say beans. ElchoRoad



NON

Station # RILOTO8	Project Name NIAGARA WIND	
Watercourse Name <u>0</u> 8 - 1 A Photos <u>8895 - 965 8899 8900 - 52</u>	Project #_160950269 Field Staff T CHANDLER MELLAH	
Date TUNE 8, 20/2	Field Staff T CHANDLER MELLAH Time 3:00 PM	
Weather conditions in previous 24 hrs	w cloudy periods N 4765440 Datum	
Water Quality DR / Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm) Air Temperature (°C)	
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m)% Riffle% Pool Evidence of eroding banks, Comments on bank stal	Maximum Pool Depth(cm) Mean Water Depth(cm)% Run% I	Flat
Substrate (% cover)BedrockCobbleBoulderGravel	Sand Silt Muck Clay Marl Detritu	
In-water Cover Cover Types Present (circle): Underest Bank Overhanging Vegetation Woody Debris	s Deep Fool Watercress Aquatic Ve Boulder Other	g —
Riparian Zone Riparian Cover (% of watercourse shaded, dominan	nt vegetation, mature or early successional)	
Adjacent Land Use ARGRICULTURAL FIELD- E	ROPPED	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds	vater upwellings)	
Migratory Obstructions (seasonal, permanent)		
Note any fish observations		
Waterbody Notes Natural Watercourse Trapezoidal Channel _ Surficial Drainage (i.e. furrows) Dugout Pond		
Other Habitat Notes, Incidental Wildlife Observat	ions, etc	
Field Notes Authored by T. C. HANDLER Field Notes C	MOON NO.	



REA

Stantec

Station # RITO 08	Project Name NIAGARA WIND
Watercourse Name 08-18 Photos 8903-09,8910	Project # 1609 50 269 Field Staff T CHANDLER IN ELIAH
Date TUNE 8 2002	Time 3:40
Weather conditions in previous 24 hrsSunny	w cloudy privids
GPS Coordinates (Zone) 177 E 614618	N 476 4676 Datum
Descriptive Location	·
Water Quality	,
Dissolved Oxygen (mg/L) 71/3 pH 8	Conductivity (µS/cm) 565
Water Temperature (°C) 28°	Air Temperature (°C) 25
Time in situ measurements taken 3,50	
Watercourse Dimensions & Morphology	
	Maximum Pool Depth 30 (cm)
	Mean Water Depth 5 (cm)
% Riffle% Pool Evidence of eroding banks, Comments on bank state	
	Jinty
Substrate (% cover)	
BedrockCobble	SandSilt too Muck
BoulderGravel	Clay Marl Detritus
In-water Cover	
Cover Types Present (circle): Undereut Bank	s Deep Pool Watercress Aquatic Veg
(- 198)	Boulder Other
Riparian Zone	
Riparian Cover (% of watercourse shaded, dominan	t vegetation, mature or early successional)
60% grasses toque he vecetation, i	and trees (mature)
Adjacent Land Use	
Agricultural Geld (towest) Wo	podlot to east and south
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, groundw	vater unwellings)
potential spawning or nursery hobits t	ator apworings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Channel	
Natural Watercourse Trapezoidal Channel _	Grassed Swale Buried Tile
Natural Watercourse Trapezoidal Channel _ Surficial Drainage (i.e. furrows) Dugout Pond_	Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observati	ions, etc. Green floss acustic
invertebrates, tree from.	The state of the s
Field Notes Authored by TICHANDLER Field Notes Q	A/QCed by



WIND FARM WATERBODY RAPID ASSESSMENT FORM $Non\mathcal{REA}$

Station # RITOO8	Project Name NIAGARA WIND
Watercourse Name 8-2	Project # 160950269
Photos <u>8897 - 98</u>	Field Staff TCHANDLER MELLAH
Date JUNE 8 2012	Time 3:20PM
Weather conditions in previous 24 hrs	Los N 4765222 Datum
GPS Coordinates (Zone) 177 E 6/5	+503, N 4765222 Datum
Descriptive Location	
Water Temperature (°C)	OH7.51 Conductivity (μS/cm) 2459 Air Temperature (°C)25 PM
Watercourse Difficultions & Morbinos	SMALL TOND 13 1 26 (am)
Mean Watercourse Width Pony (m)	Maximum Pool Depth 36 (cm)
Mean Bankfull Width // /A (m)	Mean Water Depth(cm) % Pool% Run% Flat
% Riffle	
Evidence of eroding banks, Comments on ba	ank stability
Substrate (% cover)	Sand Silt / రెల Muck
	Sano Sin Mark Detritue
Boulder Gravel	ClayDetritus
La system Course	
In-water Cover	ut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other DuckWEED
Riparian Zone Riparian Cover (% of watercourse shaded, do not have a long to the country of the	lominant vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas,	groundwater upwellings)
Migratory Obstructions (seasonal, permaner	
Note any fish observations	
Waterbody Notes SMALL PONDED Natural Watercourse Trapezoidal C Surficial Drainage (i.e. furrows) Dugo	out Pond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife C	Observations, etc. <u>LEOPARD Y GREEN FROG</u>
Field Notes Authored by T. CHANDLER F	ield Notes QA/QCed by

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



REA

Stanted

Station #	Project Name NIAGARA WIND
Watercourse Name 08-3A	Project # 160950269
Photos 8912 25 Date JUNE 8, 2012	Field Staff TOHANDLER & M, ELLAH Time 4:0
Weather conditions in previous 24 hrs Sunny in	Cloudy Perials
GPS Coordinates (Zone) 17 E 614239	N 476 5160 Datum
Descriptive Location	N T/B o to Datum
Water Quality ISOLATED WETLAND	- MUDON AROUND MARGINS
Dissolved Oxygen (mg/L) pH	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C) 2 5
Time in situ measurements taken	
Watercourse Dimensions & Morphology	~ 80 × 100 m.
Mean Watercourse Width // /A (m)	Maximum Pool Depth(cm)
Mean Bankfull Width (m)	Mean Water Depth (cm)
% Riffle % Poo	
Evidence of eroding banks, Comments on bank sta	
Substrate (% cover) Bedrock Cobble	Sand Silt 100 Muck
Bedrock Cobble Gravel	Sand Silt O Muck Clay Marl Detritus
	Olay Wall Detillus
In-water Cover	
	ks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, dominar	nt vegetation, mature or early successional)
Adjacent Land Use	
Wooded area (west) Plonghed	agricultural Reld (toeast)
Fish Habitat Potential	- 1 11°
Critical Habitat (spawning or nursery areas, ground	water upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations Nove	
Trote any high observations	
Waterbody Notes Natural Watercourse Trapezoidal Channel	Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond	Dry Dominated by Aquatic Veg Dry
	tions, etc. Catails, societarian bullruste
210000	
	h
Field Notes Authored by TICHANDLER Field Notes (QA/QCed by



REA

Station #_RITOS	Project Name Nagava W.ND	
Watercourse Name 08-33	Project # 1609 50 269	ELLAH
Photos 8911	Field Staff TCHANDLER ME Time 4:00	
Date	- / · · · · · · · · · · · · · · · · · ·	
Weather conditions in previous 24 hrs Sunn GPS Coordinates (Zone)	7 7 N 4765038 Dat	um
ar 0 000ramaso (====)		
Descriptive Location		
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	<u>NA</u> Conductivity (μS/cm) <u>NA</u> Air Temperature (°C) <u>25</u>	í
Watercourse Dimensions & Morphology		
Mean Watercourse Width D 27 (m)	Maximum Pool Depth // (cm	•
Mean Bankfull Width 2 (m)	Mean Water Depth // (cm) -/ % Flat
		
Evidence of eroding banks, Comments on bank	. stability 17 EE OCT 19 1000	
Cultivate (9/ cover)		
Substrate (% cover) BedrockCobble	Sand 70 Silt	Muck
Boulder Gravel	30 Clay Marl	Detritus
In-water Cover DC (circle): Undereut I	Banks Doen Pool Watercress A	Aquatic Veg
Overhanging Vegetation Woody Debris	Darino	
Overnariging vegetation 1100dy 250110		
Riparian Zone Riparian Cover (% of watercourse shaded, dom	ninant vegetation, mature or early succession	al)
Adjacent Land Use		
Wooded avea (west) plough	ned agricultural field -to ea	ST
Fish Habitat Potential	oundwater upwellings)	
Critical Habitat (spawning or nursery areas, gro	oundwater upweilings)	
Migratory Obstructions (seasonal, permanent)		
Note any fish observations		
Note any non-observations		
Waterbody Notes	1	<i>></i>
Natural Watercourse / Trapezoidal Char	11101	ied Tile
Surficial Drainage (i.e. furrows) Dugout	Pond Dominated by Aquatic Veg	Dry
Other Habitat Notes, Incidental Wildlife Obs	pervations, etc. terestial veg o	n dar
out channel duy to drain	Wetland @ 08-3A - upstream	
The state of the s	1	
T CHANDIER	Notes QA/QCed by	
Field Notes Authored by TICHANDLER Field	Notes QA/QCed by	



WIND FARM WATERBO Stantec	DDY RAPID ASSESSMENT FORM Wetland /
Station #_RITOO8 Watercourse Name08-4 Photos 8926-27 Date June 8, 2012 Weather conditions in previous 24 hrsSunname GPS Coordinates (Zone)17T	
Water Quality DRY (recently) Dissolved Oxygen (mg/L) pH_ Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm) Air Temperature (°C)2_5
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m) % Riffle% Po Evidence of eroding banks, Comments on bank s	Maximum Pool Depth(cm) Mean Water Depth(cm) ool
Substrate (% cover) BedrockCobble BoulderGravel In-water Cover production of the content of t	Sand Silt Muck Clay Marl Detritus anks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dominated by Agnotic vegetation Indiacent Land Use Plans Lad asvicultwal	Boulder Otherant vegetation, mature or early successional)
rish Habitat Potential Pritical Habitat (spawning or nursery areas, ground	
Indigratory Obstructions (seasonal, permanent) Own Worley Otto any fish observations	
ther Habitat Notes, Incidental Wildlife Observa	I Grassed Swale Buried Tile nd Dominated by Aquatic Veg Dry ations, etc # ai/



Stantec				1 Fin
Station # RITO 10 + 3	> 7	Project Name Niac	gara Win	9
Watercourse Name		Project #	0269	
Photos See (3)		Field Staff KE V.		
note 11100 13 2010		Time <u>4/30⊋</u> ∧		
Weather conditions in previous 24 hr	s Vano	+ SUVO		
GPS Coordinates (Zone) 17.T	E 620	150 N 475	<u>9579</u> Da	tum
Descriptive Location	6 6 50	donad 4a	***	
Descriptive coodion				
Water Quality		Conductivity (µ	S/cm)	
Dissolved Oxygen (mg/L)	_ pH	Air Temperature (°C)		
Water Temperature (°C)		Air remperature (*C)_		
Time in situ measurements taken			- A	
Watercourse Dimensions & Morph				
Watercourse Dimensions a morpi	(m)	Maximum Pool Depth_	(cr	n)
Mean Watercourse Width	_(m) . _(,,,	Mean Water Depth		
Mean Bankfull Width	_(''' <i>)</i> % Pod	· · · · · · · · · · · · · · · · · · ·	Run	% Flat
Evidence of eroding banks, Comme				
Evidence of eroding banks, comme	/			
_				
Substrate (% cover)	0-1-1	Sand	Silt	Muck
Bedrock	_Cobble	Clay	Marl	Detritus
Boulder	_Gravel	iay		
Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse s		ant vegetation, mature or	early succession	nal)
Adjacent Land Use	·			
Fish Habitat Potential		·		
Critical Habitat (spawning or nursen	y areas, groun	dwater upwellings)		
/				
Migratory Obstructions (seasonal, p	ermanent)			
Note any fish observations				
/				
Waterbody Notes				er al Tilla
	zoidal Channe	Grassed Swa	ile Bur	ried Tile
Natural Watercourse Trape Surficial Drainage (i.e. furrows)	Dugout Por	nd Dominated by	Aquatic Veg	_ Dry
Other Habitat Notes, Incidental W	ildlife Observ	ations, etc		
no unterreative	3			
- & GO dro Lan	0 0000	<u> </u>		
	Western			
		s QA/QCed by fre Mass		
Field Notes Authored by	Field Note	s QA/QCed by		



Station # RUTO 12 -		Project Name	liagara Wi	nd 13
Watercourse Name		Project #_//oC	1950269	
Photos See log		Field Staff	7-3 6	
Date VIAU 5 2012		Time 9:07-	Sandan A. A. A.	
Weather conditions in previous 2	!4 hrs <u>/ △ △ △</u>) SSS N	11754233	Datum
GPS Coordinates (Zone)	E 62	1 2 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	WINE WASTER LY.	and ror etchy len
I JEST IDRAG COOKIO!	100 m m	21 1 1 Court 2 Court		
work of Mayby 3 - m field	\	, X	\ 1	
Water Quality		1 too le	He wat	er (nois
Dissolved Oxygen (mg/L)	pH_	Conductiv	vity (μS/cm)	
Water Temperature (°C)		Air Temperature (°C)	
Time in situ measurements take	n			
Watercourse Dimensions & Mo	orpriology (m)	Maximum Pool De	oth /	(cm)
Mean Watercourse Width	(w). (…)	Mean Water Dept		(cm)
Mean Bankfull Width	% P		% Run	% Flat
Evidence of eroding banks, Com			$\overline{/}$	
EAIDBLICA OF GLOCIFIED PRINCE, CON-				
Substrate (% cover)	Cobble	Sand	Silt	Muck
Bedrock		Clay	Marl	Detritus
Boulder	Glavel	O.u.y	•	•
Overhanging Vegetation We Riparian Zone Riparian Cover (% of watercours	re shaded domil		re or early success	ional)
Adjacent Land Use				
-43 37				
Fish Habitat Potential				
Critical Habitat (spawning or nur	sery areas, grou	ndwater upwellings)	•	
Migratory Obstructions (seasons	al, permanent)	•		
Note any fish observations				
more		,		
Waterbody Notes	apezoidal Chann	el Grassed	Swale B	uried Tile
Natural Watercourse Transcription Surficial Drainage (i.e. furrows)_	Dugout Pr	· ~ ·	d by Aquatic Veg	Dry
Sunicial Drainage (i.e. lullows)_	Dugout.		•	
Other Habitat Notes, Incidenta	ai Wildlife Obser	rvations, etc.	agreatic ve	<u> </u>
		Λ .Α		
Field Notes Authored by		13 171 .		
FIEID MOSES MUNICIPOLDY	Field No	ites QA/QCed by Jul Miles	Andrew Control of the	
W-tracource\Internal Info and Teams\Aquati	Field No	ets\Stantec\Form 02 Wind Fai	m Waterbody Rapid Asses	ssment Form.doc



NOREA

Stantec			RE
Station # R T O 13 - Watercourse Name Photos 46 - 50 Date Photos 46 - 50 Weather conditions in previous 24 hrs GPS Coordinates (Zone) 7 E 0 0 Descriptive Location Approx 500 Dunyille	Time 14 2 0°C Clardy N of Hwy 3 - Wainflet	Viagara Li Tayton H	ind Z
Water Quality - *Agricultur	an swall x		
Dissolved Oxygen (mg/L)	PH Conductivi	ty (μS/cm)	
Water Temperature (°C) Time in situ measurements taken	OH Conductivi Air Temperature (°0	C)	
Watercourse Dimensions & Morphology			
Mean Watercourse Width (m)	Maximum Pool Dor	sth.	()
Mean Bankfull Width (m)	Mean Water Depth)(r)	_(cm)
% Riffle \ %	6 Pool	% Run	_(cm) % Fla
Evidence of eroding banks, Comments on bar			
Substrate (% cover)BedrockCobble	Sand	0.11	• • •
BoulderGravel	Sand Clay		Muck Detritus
In-water Cover Cover Types Present (circle): Undercut Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dor	Boulder Othe	r	
Adjacent Land Ose			
Fish Habitat Potential Critical Habitat (spawning or nursery areas, growning or nursery areas, grownigratory Obstructions (seasonal, permanent) Note any fish observations			
	1		
Vaterbody Notes latural Watercourse Trapezoidal Chan surficial Drainage (i.e. furrows) Dugout F Other Habitat Notes, Incidental Wildlife Obse	Dominated b	y Aquatic Veg	Dry

Field Notes Authored by K. Cay to

Field Notes QA/QCed by M. Faic A



REA

Statites	- Widadad Wind
Station # RIT013 - 2	Project Name
Natercourse Name waynawa	Project #
Photos	Field Stail
Data Any 4/12.	Time 14:30
Neather conditions in previous 24	hrs 10°C, Clardy N 4755999 Datum Nad 83
GPS Coordinates (Zone)	E Duala Fill a La Vin 1964
Descriptive Location Approx	GOOM NOTA OF FLOOR
OFDUNY	
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	Omg/L pH 8.73. Conductivity (μS/cm) 843 Air Temperature (°C) 12°C
Watercourse Dimensions & Mo	rnhology
Watercourse Diffielisions & inc	(m) Maximum Pool Depth (cm)
Mean Watercourse Width Mean Bankfull Width	(m) Mean Water Depth (cm)
% RIIIA	70 1 001
Till anding books Com	ments on bank stability
Evidence of eroding burner, of	ngrass-very stable
Substrate (% cover)	Cobble Sand SO Silt Muck
Bedrock	Copple Sand Detritus
Boulder	GravelSoClayMailDounted
Riparian Zone	Se shaded, dominant vegetation, mature or early successional)
5 /6 9 9 v	43343,963
Adjacent Land Use	
+avviiavi	
Fish Habitat Potential Critical Habitat (spawning or nu	rsery areas, groundwater upwellings)
Migratory Obstructions (season	al, permanent)
<u> </u>	J MINE VAT
Note any fish observations	
Waterbody Notes Natural Watercourse Transport	rapezoidal Channel Grassed Swale Buried Tile Dugout Pond Dominated by Aquatic Veg Dry al Wildlife Observations, etc Yog UM PM g in To
	Water
. .	
Field Notes Authored by K. C. C.	Field Notes QA/QCed by A. Fait Q

K11T013-2 as reld Scrub P. Pour our 1900 OER WATER BODY OSTANTAL SWOLDER PER 09:5210 va. Eng. greenhouses



WIND FARM WATERBODY RAPID ASSESSMENT FORM R 11 TO13 -3

Sub-lice C		()(0	1
Station # RNTO 13-3	Project Name Nid	Shara Wir	
Watercourse Name	Project # 1609	SURIO	
Photos	Field Staff 126 +	V)	-
Date June 13 20/2	Time 10: 54 Per	¥ /	
Weather conditions in previous 24 hrs rd r	196 N 4	755 274 Da	tum
and Orandinaton (7ana)			300 m south
Descriptive Location Approved 700 m W			
Water Quality Dissolved Oxygen (mg/L) 9.04 pH_ Water Temperature (°C) 18.59 Time in situ measurements taken 10.35	Conductivity (Air Temperature (°C)	(μS/cm) <u>5 7 3</u>	
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m) % Riffle % Po	Maximum Pool Depth Mean Water Depth		•
Evidence of eroding banks, Comments on bank s			
Stop stable, veg	-		
Substrate (% cover) Redrock Cobble	Sand	Silt	Muck
Deditor	Clay	Marl	Detritus
Boulder Gravel	-		Jemno Mino-
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domin	nant vegetation, mature o	r early succession	al)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	ndwater upweilings)		
Migratory Obstructions (seasonal, permanent) Note any fish observations	www most		•
2006	,		
Waterbody Notes Natural Watercourse Trapezoidal Chann Surficial Drainage (i.e. furrows) Dugout Po	el Grassed Sw ond Dominated by		ed Tile Dry
= Evaporet covered in tem	vations, etc.	oved 3 f	ons Cu
W-\resource\Internal Info and Teams\Aquatic Resources\Field Sher	ets\Stantec\Form 02 Wind Farm W	aterbody Rapid Assessm	ent Form.doc
Wiresource\internal Info and Teams\Aquatic Resources\rield Stield	and the state of t		



RM P 11TO 12

Stantos					
Station # RITO 3	9x4	Proied	t Name	Viagara Wir	d
Watercourse Name Whom	VA .			1950269	
Photos Apply			Staff 长 后		
Date June 13 2012		Time	10:20	*	
Weather conditions in previous 2	4 hrs COM				
GPS Coordinates (Zone)		554	N		atum
Descriptive Location Turu	3, 100 m W	est of To	ownlm/Du	world Wantlet Kd.	amornitely
200 in Not highery 3					CT C
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	pH	Air Ter	Conduct	sample ivity (µS/cm) (°C)	
	, and a				
Watercourse Dimensions & Mo				<u></u>	
Mean Watercourse Width			um Pool D		m)
Mean Bankfull Width	(m).		Water Dept	n(ci % Run	m) % Flat
% Riffle	<u> 100 </u>			% Run	
Evidence of eroding banks, Comi	ments on bank s	stability			
Substrate (% cover)					
Bedrock	Cobble	29	Sand	Silt	Muck
Boulder	Gravel		Clay	Marl	Detritus
Cover Types Present (circle): Overhanging Vegetation Woo Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential	ody Debris	Boulde	r Ott	ner	Aquatic Veg / A
Critical Habitat (spawning or nurs	ery areas, grour	ndwater up	owellings)		
Migratory Obstructions (seasonal, slas On ally	permanent)				
Note any fish observations	**************************************		7		
gene					
Waterbody Notes		· · · · · · · · · · · · · · · · · · ·			
	pezoidal Channe	əl	Grassed	Swale_\ Buri	ed Tile
				Swale / Burio	ed Tile
Natural Watercourse Trap	Dugout Por	nd	Dominated		
Natural Watercourse Trap Surficial Drainage (i.e. furrows) Other Habitat Notes, Incidental	Dugout Por	nd	Dominated tc.		

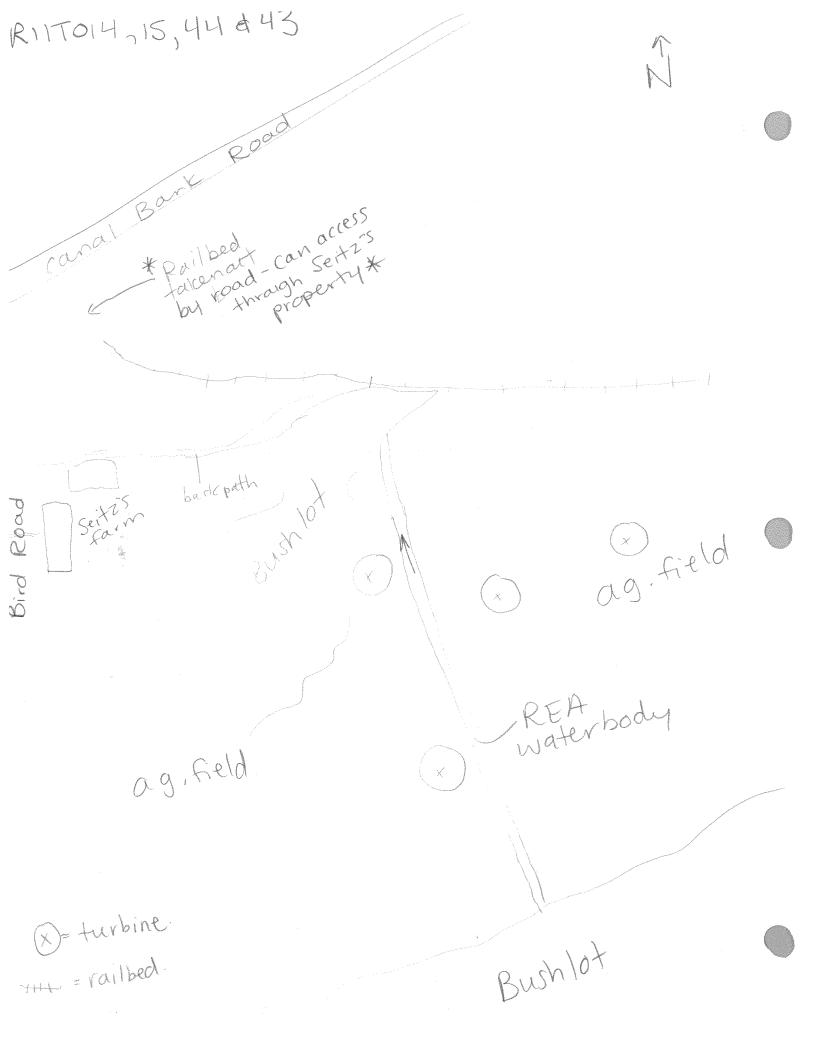


REA

Stantec		Project Name	5	
tation# RITOIH	RIITOISRI	TOTIO		1
Vatercourse Name	Violes	Project Name //	lagara Wu	<u> </u>
hotos 100- 106	CVIUC 8 1	Project # \\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	0809	
ate April 5/12:		Time 10:34	Hen M. taicla	
eather conditions in previou	us 24 hrs	and the same of th	and .	
PS Coordinates (Zone)	1T E 0624	MAS NH	748666 Da	
escriptive Location $\sqrt{\ \ }$	in south a	f Canal Bar	& Road a	km to
- Of Bird K	Coad			
ater Quality	ž.	.pgs.		
issolved Oxygen (mg/L)	<u> </u>	9.12 Conductivity	(uS/cm) 2631	15/2 m
ater Temperature (°C) 6	127	Air Temperature (°C)	30	
me in situ measurements ta	ken 0:40 ar	<u> </u>		
atercourse Dimensions &	Morphology		Standing	water
ean Watercourse Width	2.75(m)	Maximum Pool Depth	4	W now
ean Bankfull Width	(m)	Mean Water Depth		•
% Riffle			(cm % Run	
vidence of eroding banks, Co	omments on bank s	stability	_/0 /\ulli	% Fla
banks a	re fully be	getated is on	acces to the second	```
			The attention	planed
ıbstrate (% cover)				W-
Dada al.				
Bedrock	Cobble	Sand		Muck
Bedrock Boulder	Cobble Gravel	Sand 4 (Silt_ 10 Marl	Muck Detritus
Boulder water Cover over Types Present (circle):	Gravel	SO Clay	Marl	Detritus
BoulderBoulder	GravelUndercut Ba	Clay Clay Deep Pool	Marl	
Boulder water Cover over Types Present (circle): verhanging Vegetation	Gravel	SO Clay	Marl	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation verhander	Gravel Undercut Ba Woody Debris	Clay Onks Deep Pool Boulder Other	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation Vertical Ve	Undercut Ba Woody Debris urse shaded, domini	Clay Clay Clay Clay Char	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone parian Cover (% of watercou	Gravel Undercut Ba Woody Debris	Clay Clay Clay Clay Char	Marl Watercress	Detritus
Boulder -water Cover over Types Present (circle): verhanging Vegetation Vege	Undercut Ba Woody Debris urse shaded, domin	anks Deep Pool Boulder Other_ ant vegetation, mature of	Marl Watercress	Detritus
Boulder -water Cover over Types Present (circle): verhanging Vegetation Verhanding Vegetation Verhanding Vegetation Verhanding Vegetation Verhanding Vegetation Verhanding Vegetation Verhanding Vegetation Vege	Undercut Ba Woody Debris urse shaded, domin	Clay Clay Clay Clay Char	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone oarian Cover (% of watercould jacent Land Use	Undercut Ba Woody Debris urse shaded, domin	anks Deep Pool Boulder Other_ ant vegetation, mature of	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone parian Cover (% of watercours) jacent Land Use	Undercut Ba Woody Debris urse shaded, domin cattails	Clay anks Deep Pool Boulder Other_ ant vegetation, mature of	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation verhanging Veget	Undercut Ba Woody Debris urse shaded, domin	SO Clay anks Deep Pool Boulder Other_ ant vegetation, mature of the clay dwater upwellings)	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation verhanging Veget	Undercut Ba Woody Debris urse shaded, domin	anks Deep Pool Boulder Other_ ant vegetation, mature of the pool and t	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone oarian Cover (% of watercoul) jacent Land Use sh Habitat Potential tical Habitat (spawning or nugratory Obstructions (season	Undercut Ba Woody Debris urse shaded, domin attacks ursery areas, groun nal, permanent)	anks Deep Pool Boulder Other_ ant vegetation, mature of the pool and t	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone oarian Cover (% of watercoul) jacent Land Use sh Habitat Potential tical Habitat (spawning or nugratory Obstructions (season	Undercut Ba Woody Debris urse shaded, domin attacks ursery areas, groun nal, permanent)	SO Clay anks Deep Pool Boulder Other_ ant vegetation, mature of the clay dwater upwellings)	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation verhanging Vegeta	Undercut Ba Woody Debris urse shaded, domin attacks ursery areas, groun nal, permanent)	anks Deep Pool Boulder Other_ ant vegetation, mature of the pool and t	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation verhanging Veget	Undercut Ba Woody Debris Urse shaded, dominated and a ground a ground and a ground a ground and a ground a ground and a ground a ground and a ground a ground and a ground a ground a ground and a ground a ground a ground a ground and a ground a gr	anks Deep Pool Boulder Other_ ant vegetation, mature of the pool and t	Marl Watercress	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone oarian Cover (% of watercoul) jacent Land Use sh Habitat Potential tical Habitat (spawning or numeratory Obstructions (season) te any fish observations	Undercut Ba Woody Debris urse shaded, domin a Harris ursery areas, groun al, permanent)	anks Deep Pool Boulder Other_ ant vegetation, mature of the second of th	Marl Watercress A	Detritus
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone parian Cover (% of watercould jacent Land Use sh Habitat Potential tical Habitat (spawning or numerical Habitat (spawning or numeri	Undercut Ba Woody Debris urse shaded, domin attacks ursery areas, groun all permanent) rapezoidal Channel	anks Deep Pool Boulder Other_ ant vegetation, mature of the control dwater upwellings) A caging and aurous Grassed Sur	Marl Watercress A or early successiona	Detritus quatic Veg
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone parian Cover (% of watercould jacent Land Use sh Habitat Potential tical Habitat (spawning or numerical Habitat (spawning or numeri	Undercut Ba Woody Debris urse shaded, domin attacks ursery areas, groun all permanent) rapezoidal Channel	anks Deep Pool Boulder Other_ ant vegetation, mature of the control dwater upwellings) A caging and aurous Grassed Sur	Marl Watercress A or early successiona	Detritus quatic Veg
Boulder water Cover over Types Present (circle): verhanging Vegetation parian Zone oarian Cover (% of watercoul) jacent Land Use sh Habitat Potential tical Habitat (spawning or numeratory Obstructions (season) te any fish observations	Undercut Ba Woody Debris urse shaded, domin attacks ursery areas, groun all permanent) rapezoidal Channel Dugout Pon	anks Deep Pool Boulder Other_ ant vegetation, mature of the second of th	Marl Watercress A or early successiona	quatic Veg

Field Notes Authored by K. Claufa

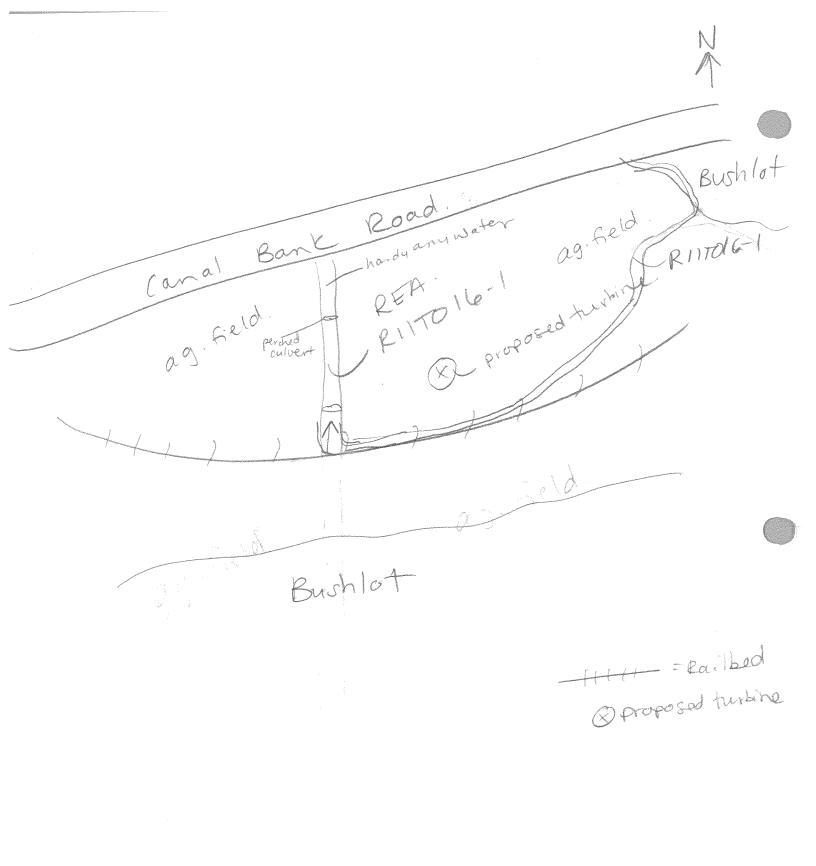
Field Notes QA/QCed by A. Faiela.





REA

Stantec		**Contraval of charge from the Contraval of
Station # RITO I(0 -) Watercourse Name Linkhaum Photos 83-92	Project Name Nigagra Project # 160950 269	brill
Date April 19720	Field Staff 120 & MF Time 12:30	
Weather conditions in previous 24 hrs	11116 18.20	
GPS Coordinates (Zone)		2 Datum Nada
Descriptive Location on Sartho	f Canal Bank Road	2 Cm Past
Water Quality		*
Dissolved Oxygen (mg/L) 12.77	H 8.75 Conductivity (μ S/cm)	162
Trace remperature (C)	Air Temperature (°C) 12°C	
Time in situ measurements taken	39 pm.	
Watercourse Dimensions & Morphology		
Mean Watercourse Width (m) Mean Bankfull Width (m)	Maximum Pool Depth	(cm)
	Mean Water Depth	(cm)
Evidence of eroding banks, Comments on bank	Pool% Run k stability unstable ban	% Flat
	<u> </u>	
	*very turbid!	
BedrockCobble	Sand Silt Mar	60 Muck
BoulderGravel	O_ClayMar	1 20 Detritus
Cover Types Present (circle): Undercut Overhanging Vegetation Woody Debris Riparian Zone	Banks Deep Pool Watercress Boulder Other	Aquatic Veg
Riparian Cover (% of watercourse shaded, dom	ninant vegetation, mature or early succ	essional)
Adjacent Land Use	ereany	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground to the state of the s	undwater upwellings)	
Migratory Obstructions (seasonal, permanent)	of toraging	
Note any fish observations	perniunent	
Waterbody Notes Natural Watercourse Trapezoidal Chanr Surficial Drainage (i.e. furrows) Dugout P	nel Grassed Swale Pond Dominated by Aquatic Veg	
Other Habitat Notes, Incidental Wildlife Obse	rvations, etc	
Field Notes Authored by Field No	otes QA/QCed by MF	





Stantec	
Station # RIITO 17 & RIITO 47	Project # 1609 50 69 2
Watercourse Name Unknown	Project #
Photos 69-89	Time \ \ 30
Date Provide in provious 24 hrs. 10°C	Clarder
Weather conditions in previous 24 hrs O C GPS Coordinates (Zone) E O G A	2792 N 4748529 Datum NAD 83
Descriptive Location Kast of	Bird Rd & Km south of Cana
Bank Road	
Water Quality	9.03 Conductivity (µS/cm) 510 us/cm
Dissolved Oxygen (mg/L) 14.74mg/L pH_	Air Temperature (°C)/\delta^*C
Water Temperature (°C) 15,4,6 C	Air Temperature (*C)
Time in situ measurements taken 7:00)
Watercourse Dimensions & Morphology Mean Watercourse Width (m)	Maximum Pool Depth O. (cm)
Mean Bankfull Width (m)	Mean Water Depth OSO (cm)
% Po	pol 00 % Run% Flat
Evidence of eroding banks, Comments on bank s	tability stable banks, some exosion for
adjacent land is	se.
Substrate (% cover)	Sand 50 Silt 10 Muck
BedrockCobble	Clay Marl Detritus
Boulder Gravel	c(o
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domin	nant vegetation, mature or early successional)
Adjacent Land Use Farm land	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grou	indwater upwellings)
Migratory Obstructions (seasonal, permanent)	H.
Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Chanr Surficial Drainage (i.e. furrows) Dugout P	
Other Habitat Notes, Incidental Wildlife Obse	ervations, etc. frogs-leopard, chons
A \$	otes QA/QCed by M. Fairla.

NIIIUIT & 4+ woodlot distribed area planted agica sold ag held lots of Jegetation pool/standing ROMA Bird Road anoan BAANAM



HEAD KO

Stantec

Station # RITOIS	Project Name Niagara Wind
Watercourse Name 18~1	Project # 18.0950 769 Field Staff T Class address M Ellah
Photos 8837-34	rielu Stati
	Time 4:25
Weather conditions in previous 24 hrs hounders	howed inaferroon of Lerwise Sunny
GPS Coordinates (Zone)	NA/ROOD Datam
Descriptive Location At proposed access Road	(VACSONC
Descriptive Location	
Water Quality DRY	
Water Quanty	Conductivity (µS/cm)
Dioce	Air Temperature (°C) 20
Water Temperature (°C)	/iii romporatoro (o)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	Maximum Pool Depth (cm)
Mean Watercourse Width DRY (m)	(VICENTIAL CO. C.
Mean Bankfull Width(m)	Mean Water Depth (cm) % Flat
% Riffle% Poo	70
Evidence of eroding banks, Comments on bank sta	ability None
Substrate (% cover)	Sand 100 Silt Muck
BedrockCobble	Janu
BoulderGravel	Clay Marl Detritus
084	
In-water Cover PRY	nks Deep Pool Watercress Aquatic Veg
Cover Types Present (circle): Undercut Bar	into Egypt est
Overhanging Vegetation Woody Debris	Boulder Onio
Riparian Zone	and the motorion motors or early successional)
Riparian Cover (% of watercourse shaded, domina	ant vegetation, mature or early successionary
30% gras/shinb	
Adjacent Land Use	
Agricaltural field	
Fish Habitat Potential	dwater unwellings)
Critical Habitat (spawning or nursery areas, groun	dwater upweimige)
Migratory Obstructions (seasonal, permanent)	
1 ALL /W + (AV	
Note any fish observations	
Nove	,
Waterbody Notes	
Transported Channe	Grassed Swale Buried Tile Dry
Surficial Drainage (i.e. furrows) Dugout Po	nd Dominated by Aquatic Veg Dry_X
Other Habitat Notes, Incidental Wildlife Observ	f
Other Habitat Notes, incidental Wildlife Observ	of the select mosent but not commo
with well-defined bed & banks;	The state of the s
	1.0
Field Notes Authored by TIC handler Field Note	es QA/QCed by





Stantec

Station #_RITO [8	Project Name: Nagara Wind
Watercourse Name	Project #: 1609 So 269 Field Staff T. Chander M. Ellah
Photos <u>8839 - 44</u>	I ICIG CIGIT
Date <u>June 7,2017</u>	Time
	2 d N 4766486 Datum
GPS Coordinates (Zone) E 629 8	34 N 4766486 Datum
Descriptive Location	
Water Quality DRY	
Dissolved Oxygen (mg/L) pH	N / A Conductivity (µS/cm) N / A
Water Temperature (°C)	Air Temperature (°C) <u>20</u>
Time in situ measurements taken	
Watercourse Dimensions & Morphology Green	ular wetarea 15×30m
Moan Watercourse Width ALA (m)	Maximum Pool Depth (cm)
Mean Watercourse Width // (m) Mean Bankfull Width (m)	Mean Water Depth (cm)
% Riffle% Po	ol% Run% Flat
Evidence of eroding banks, Comments on bank st	ability Stable
Cubatrata (9/ cover)	
Substrate (% cover) BedrockCobble	Sand / 90 Silt Muck
Boulder Gravel	Clay Marl Detritus
Boulderaraver	
In-water Cover DRY	A. alfallan
Cover Types Present (circle): Undercut Ba	nks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other
/	<i>"</i>
Riparian Zone Riparian Cover (% of watercourse shaded, dominated)	ant vegetation, mature or early successional)
Bull rush - No water	ant vogotation, materio of carry control
Adjacent Land Use	
Cocnfield (planted)	
- Wilkerick Abronia	
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, groun	dwater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations NONE	
-	
- Largerian L	ith veg - not playsher not dug, Buried Tile
Waterbody Notes	Crossed Swale Buried Tile
Natural Watercourse Trapezoidal Channe	el Grassed Swale Buried Tile nd Dominated by Aquatic Veg Dry_/_
	An An
Other Habitat Notes, Incidental Wildlife Observ	vations, etc. leopard frog.
Office Habitat Notes, moraontar manie esser	, ,
and the second s	11 N
Field Notes Authored by T. Chandler Field Note	es QA/QCed by



NOTA

Station # RITO 18	Project Name NIAGARA WIND
Watercourse Name	Project # 160950269
Photos <u>8845-46</u>	Field Staff Tichandler M Ellah
Date June 7, 2012	Time <u>4:55</u>
Weather conditions in previous 24 hrs	thundershowers/syn
GPS Coordinates (Zone) 17 E 6298	37 N 4766384 Datum
Descriptive Location Near RR Tracks	
Water Quality DRY	
Dissolved Oxygen (mg/L) pH	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C) 22
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width DR7 (m)	Maximum Pool Depth (cm)
Mean Bankfull Width (m)	Mean Water Depth // (cm)
% Riffle% Poo	ol% Run% Flat
% Riffle % Poor Evidence of eroding banks, Comments on bank sta	ability minor rill feature
(ploughed over)	
(
Substrate (% cover)	0 0 m d / / 50 10 11 1 1 1 1 1
Bedrock Cobble	Sand OO Silt Muck Clay Marl Detritus
BoulderGravel	Clay Marl Detritus
in-water Cover DRY	
Cover Types Present (circle): Undercut Ban	ks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	
Riparian Zone	
Riparian Cover (% of watercourse shaded, dominal	nt vegetation, mature or early successional)
O'lo- cornected	
Adjacent Land Use	
Cornfield	
Pieto Heldres Descript	
Fish Habitat Potential	-1
Critical Habitat (spawning or nursery areas, ground	water upweilings)
Migratory Obstructions (seasonal, permanent)	
	
Waterbody Notes DRY DRAINAGE F	EARLE WHIED
Natural Watercourse Trapezoidal Channel	Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observa	tions, etc.
	į.
Field Notes Authored by T. Chaw lov Field Notes	QA/QCed by



Station # K T U T F	patentia.	Project Name N	agara Wir	id i
Watercourse Name		Project # //oC)		
Photos Sales		Field Staff	+ 1 <	
Date June 13 20/3	<u> </u>	Time 10:50	ANN	
Weather conditions in previous	24 hrs 1000			
GPS Coordinates (Zone)	TE Ga	931 N	1785174 D	atum
Descriptive Location	lutchinson Ko	J. Approximately 600-	アインとしている	3
Water Quality	R R R R R R R R R R R R R R R R R R R	/		.gattineng.
Dissolved Oxygen (mg/L)	DH_	7.7 Conductivity Air Temperature (°C)	(μS/cm) <u>15 λ</u>	<u>. O</u>
Water Temperature (°C)		Air Temperature (°C)	<u>85°</u>	
Time in situ measurements take	n <u> 10:55</u>			
Watercourse Dimensions & M				
Mean Watercourse Width		Maximum Pool Depth		n)
Mean Bankfull Width	(m)	Mean Water Depth_		
	<u> 100</u> % F		_% Run	% Flat
Evidence of eroding banks, Com	nments on bank	stability		
- stuble + veg	*			
Substrate (% cover)				
Bedrock	Cobble		Silt	Muck
Boulder	Gravel	Clay	Mari	Detritus
		anks Deep Pool Boulder Other_	Watercress	Aguatic Veg
Riparian Zone Riparian Cover (% of watercours	e shaded, domin	nant vegetation, mature o	r early succession	al)
Adjacent Land Use				
Fish Habitat Potential				
Critical Habitat (spawning or nurs	serv areas orou	ndwater upwellings)		
Mark (Spanning of Train	oci y arcas, groui	iditator aptromisgo)	•	
Minus Annua Ob - Annua Maria /				
Migratory Obstructions (seasona	I, permanent)			•
Note any fish observations				
none-per		rab. Grock s	ticklebac	
Note any fish observations		ob Arock s	rcklebac	· · · · · · · · · · · · · · · · · · ·
Note any fish observations Served - bart Waterbody Notes	hanent 180 p	ob. Frook S	ale Burie	d Tile
Note any fish observations Waterbody Notes Natural Watercourse Tra	pezoidal Channe		ale Burie	W
Note any fish observations Served - bart Waterbody Notes	pezoidal Channe		ale Burie	ed Tile
Note any fish observations Waterbody Notes Natural Watercourse Tra	pezoidal Channe Dugout Po Wildlife Obsen	nd Dominated by	***************************************	W
Note any fish observations Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows) Other Habitat Notes, Incidental	pezoidal Channe Dugout Po Wildlife Obsen	nd Dominated by	***************************************	W
Note any fish observations Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows) Other Habitat Notes, Incidental	pezoidal Channe Dugout Po Wildlife Obsen	nd Dominated by	***************************************	W





Station # RITORO-1		Project	Namet	liaga	ra W	<u>nd</u>
Watercourse Name unknow	Project # 1/20950209					
Photos 735-740	Field St	aff <u>V</u> C	laute	n. M.	Faiella.	
note become the	Time	10:01				
Weather conditions in previous	24 hrs	Fod, no.	-, hum	nid		
		and the same of th	1.4	the state of the state of	143	<u>Datum NaQ</u>
GPS Coordinates (Zone) Descriptive Location OA	f of h	mane	baa	(Ac	its o	roperty)-
600 m no	rth of	Cond	80	KRO	oad.	
Water Quality — no w	sater					
Dissolved Oxygen (mg/L)	pH		Conduct	ivity (μS/c	:m)	
Water Temperature (°C)		Air Tem	perature	(℃) <u> </u>		
Time in situ measurements take	an					
Watercourse Dimensions & N	Morphology		1/2	44		(am)
Mean Watercourse Width	/m)	Maximu				(cm)
Mean Bankfull Width	(m) [.]	mean v	Vater Dep	tn		(cm) % Fla
% Riffle	% !	Pool		% R	un	
Evidence of eroding banks, Cor	mments on bank	stability	e +=++	. 1		
	stable	- 00	t tut			
Substrate (% cover)	Cobble		Sand	50	Silt	Muck
Bedrock	Gravel		Clay		Marl	Detritus
Boulder	Glavei	2()		•		· ,c
in-water Cover						
Cover Types Present (circle):	Undercut l	Banks	Deep Poo	ol Wate	ercress	Aquatic Veg
Overhanging Vegetation W	Voody Debris	Boulde	r 01	her	· · · · · · · · · · · · · · · · · · ·	And the second s
Cvomanging regeneration						
Riparian Zone		-!	ntion mot		lu europe	ional)
Riparian Cover (% of watercoul	rse shaded, dom	nınant vegeu	auon, mau	ule of ear	y success	ioi iai j
	IND TURGET	T(X 1)(A'). N	*V 100 1 1		5.3 · · · · · · · · · · · · · · · · · · ·	
Adjacent Land Use						
+a.m.i.g						
Fish Habitat Potential	recent areas are	undwater ur	wellings)			
Critical Habitat (spawning or nu	arsery areas, gro	dilawator up	,			
Migratory Obstructions (season	nal nermanent)					
Migratory Obstructions (season	vater					*
Note any fish observations						
Note any list observations						
Waterbach Notes		,				
Waterbody Notes Natural Watercourse T	ranezoidal Char	nnel	Grasse	d Swale		Buried Tile
Surficial Drainage (i.e. furrows)	Dugout f	Pond	Dominate	ed by Aqu	atic Veg_	<u> </u>
Other Habitat Notes, Incident	tal Wildlife Obs	ervations, e	tc	narity»		
Onidi Hantet Hotos, Holden						
					,	
Field Notes Authored by K. Cau-	Field N	Votes QA/QCed b	y <u>NAF</u>			

as field. as field proposed ad dydniel Roga nmax

NA

TIESA



WIND FARM WATERBODY RAPID ASSESSMENT FORM

S. Andrews	14000	
		procession of the second
		UTA
		and the second

Station # KIII 0 09-1		Project Name	Niago	Lia Win	d
Watercourse Name which ou		Project #//	0950	269	
Photos See alas los		Field Staff	clauten	M. Fail	a
Date June 12/12		Time3°	35 pm		
Weather conditions in previous	24 hrs	nihot thu	nd.		
GPS Coordinates (Zone)			N47497	<u>∕⁄₀</u>	itum NATO8
Descriptive Location LoSor	n east o	P Buskotti	Road:	00 non-	public
Road			,		*
Water Quality	_				
Dissolved Oxygen (mg/L)	37 oh	759 Condu	uctivity (uS/c	m) 248	
Water Temperature (°C)	35	Air Temperatur	e (°C)	700	
Time in situ measurements take	ən <u>3:4</u> 7	<u> </u>			
Watercourse Dimensions & M	lombology				
Mean Watercourse Width		Maximum Pool	Denth () . 50 (én	a)
Mean Bankfull Width	(m) [.]	Mean Water De			
% Riffle) % Ri		'/ % Fla
Evidence of eroding banks, Cor					
		- Curamer		Securit	
Substrate (% cover)			1 /		
Bedrock	Cobble	Sand	40	Silt /	Muck
Boulder	Gravel	SO Clay		Marl	Detritus
Riparian Zone Riparian Cover (% of watercours	se shaded, domin		Other	/ successiona	al)
Adjacent Land Use	d				
Fish Habitat Potential Critical Habitat (spawning or num	sery areas, groun	dwater upwellings			
Migratory Obstructions (seasona	il. permanent)		•		
Note any fish observations				7	
Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows) Other Habitat Notes, Incidental	pezoidal Channel	Grasse	ed by Aquat	ic Veg	Dry
1 1		å_ ,		•	
Field Notes Authored by K. Clayfor	Field Notes	QA/QCed by	<u> </u>		

Bushlot (X) 024 RITO24 ag. field SELLOGH. drascumed Road 29. Feld. with callale Road LakeShove



Non

10000	Time 12:35 (950269 ayton, M. 9 m. 768838 Da 00m east ad (µS/cm)	Fairla.
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m)% Riffle% Poc Evidence of eroding banks, Comments on bank sta		(CI	n)
Bedrock Cobble Boulder Gravel In-water Cover Cover Types Present (circle): Undercut Ban Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domina	Boulder Other	Marl Watercress	Muck Detritus Aquatic Veg
Adjacent Land Use Fish Habitat Potential			
Critical Habitat (spawning or nursery areas, ground Migratory Obstructions (seasonal, permanent)	water upwellings)		
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Ponce Other Habitat Notes, Incidental Wildlife Observa	Dominated b	y Aquatic Veg	ied Tile Dry Bushlot
Field Notes Authored by R. Clayton. Field Notes	QA/QCed by M. Fair	la-	



NOT YEAR ANAH

h.	
	Station # R) TO28 Project Name Nagara (Wind
	Watercourse Name unknown Project # 160950269
	Date Apr 4/12 Field Staff K. Clayton M. Faiella Time 12:40 and
	Weather conditions in a visit of the conditio
	Descriptive Location N 4769098 Datum Nad 8 3
	DOSCIPLIVE LOCATION
	Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Conductivity (μS/cm)
	Dissolved Oxygen (mg/L) PH Conductivity (μS/cm)
	Air Temperature (°C)
	Time in situ measurements taken
	Watercourse Dimensions & Morphology
	Mean Pentiful Width (m) Maximum Pool Depth (cm)
	wear bankfull width (m) Mean Water Denth (cm)
	Evidence of eroding banks, Comments on bank stability
-	exposed soil
;	Substrate (% cover)
•	Bedrock Cobble Sand SO Silt Muck Boulder Gravel SO Clay Marl Detritus
_	
	n-water Cover
(Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
(Overhanging Vegetation Woody Debris Boulder Other Aquatic Veg
	Overhanging Vegetation Woody Debris Boulder Other Terrestrial plants
	Riparian Zone
ŀ	Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
F	djacent Land Use
	- agricultural land
	ish Habitat Potential
Ĺ	ritical Habitat (spawning or nursery areas, groundwater upwellings)
<u> </u>	ligratory Obstructions (accessed to 1)
14	ligratory Obstructions (seasonal, permanent)
N	ote any fish observations
•	ote any list observations
N	aterbody Notes
Ν	atural Watercourse Trapezoidal Channel Grassed Swale Buried Tile
S	urficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry
0	ther Habitat Notes, Incidental Wildlife Observations, etc
Fie	Id Notes Authored by K. Clayton Field Notes QA/QCed by H. Faielly
. , .	Field Notes QA/QCed by Y TAIRIA

przylez ag. field Hurbine. defined water flaw agricultural and water. No not changed bushlot ag. field



REA

Stantec

Station # RITD 29 Watercourse Name 29-1 Photos 8865-69 Date Thre 8, 2012 Weather conditions in previous 24 hrs Sunny GPS Coordinates (Zone) E 6286 Descriptive Location	Project Name NIAGARA WIND Project # 160950269 Field Staff TICHANOLER MELLAH Time 10:55AM Cloudy periods. MR 07 N 4763603 Datum
Water Quality DAY BUT SOIL WET Dissolved Oxygen (mg/L)A pH_ Water Temperature (°C)A Time in situ measurements takenA	<u>N/A</u> Conductivity (μS/cm) <u>N/A</u> Air Temperature (°C) <u>25</u>
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width 2.5 (m)	Mean Water Depth (cm)
Bedrock Cobble Boulder Gravel In-water Cover Cover Types Present (circle): Undereut Bar Overhanging Vegetation Woody Pebris Riparian Zone	Sand Silt Muck Clay Marl Detritus oks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Cover (% of watercourse shaded, domina 30% grass early Adjacent Land Use figricultural field - cropped. Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, ground Migratory Obstructions (seasonal, permanent) しょうしょう とうしゃ とうしゃ とうしゃ とうしゃ とうしゃ とうしゃ とうしゃ とうし	
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond Other Habitat Notes, Incidental Wildlife Observa	Greecod Swolo
Field Notes Authored by TICHANDLER Field Notes (



XtoN	
REA	
AH	

Station # RUTO 29 Watercourse Name 29-2	Project Name NIAGARA WIND Project # 160950269
Photos 8670 -/	Field Staff TICHANDUER MELLAH
Date TUNE 7, 2012	Time II ISAM
Weather conditions in previous 24 hrs	N 4763066 Datum
GPS Coordinates (Zone) 171 E 628309	N 4-76 3066 Datum
Descriptive Location	
Water Quality DRY Dissolved Oxygen (mg/L) NA pH Water Temperature (°C) NA Time in situ measurements taken NA	<u>N/A</u> Conductivity (μS/cm) <u>N (A</u> Air Temperature (°C) <u>25</u>
Watercourse Dimensions & Morphology	
Mean Watercourse Width be (m)	Maximum Pool Depth NA (cm)
Mean Bankfull Width(m)	Mean Water Depth (cm)
% Riffle % Poo	
Evidence of eroding banks, Comments on bank sta	ability 10 ge it to Hire
Substrate (% cover) Bedrock Cobble	SandSiltMuck
Bedrock Cobble Gravel	Clay Marl Detritus
In-water Cover Types imagest (circle): Undercut Bar	nks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other
,	
Riparian Zone Riparian Cover (% of watercourse shaded, domina	ant vegetation, mature or early successional)
Adjacent Land Use	4
Agrica Mel Geld - SOT	bean!
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, groun	dwater upwellings)
•	
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	A , , , , , , , , , , , , , , , , , , ,
	1
Waterbody Notes	el Grassed Swale Buried Tile
Natural Watercourse Trapezoidal Channe	
Surficial Drainage (i.e. furrows) Dugout Po	
Other Habitat Notes, Incidental Wildlife Observ	vations, etc
(() a a sum of 0	es QA/QCed by
Field Notes Authored by 1 CHANDER Field Note	es un accurry





Station #_RITO29 Project Name NIAGARA WIND
Watercourse Name <u>₹29, −3</u> Project # 1609 5 0 269
Photos 8872-76 Field Staff T. CHANDER, M ELLAH
Date Time 11:35
Weather conditions in previous 24 hrs Sunny with cloudy periods
GPS Coordinates (Zone) 17T E 62 8560 N 4762922 Datum
Descriptive Location
Water Quality
Dissolved Oxygen (mg/L) 6:30 pH 7:95 Conductivity (μS/cm) 1608
Water Temperature (°C) 15.17 Air Temperature (°C) 25
Time in situ measurements taken
Watercourse Dimensions & Morphology
Mean Watercourse Width 3 (m) Maximum Pool Depth 40 (cm)
Mean Bankfull Width (m) Mean Water Depth 5 (cm)
30 % Riffle 50 % Pool /0 % Run /0 % Fla
Evidence of eroding banks, Comments on bank stability NINDR BASAC SCOUR SOME
TREES WITH BENT TRUNKS
Substrate (% cover)
Bedrock Cobble 40 Sand 26 Silt Muck Solder 35 Gravel Clay 6 Marl Detritus
BoulderGravelClay(\omega MarlDetritus
In-water Cover
Cov - Proposit (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) 95% - Mature trees Adjacent Land Use
- Wood of - mature
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings)
Spawing 9 hur sery potental
Migratory Obstructions (seasonal, permanent)
Note any fish observations None observed
Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observations, etc. Green Rog. Naturally sinuous channel with well defined valley. Flow Observed (ZLLs)
Field Notes Authored by T. CHANDLER Field Notes QA/QCed by



January II was a	in the second se
Station # R TO3 1-7 2	Project Name Niagara Wind
Watercourse Name	Project # 160950269
Photos Seelos	Field Staff
Date JULY 11 2010	Time 5 000
Weather conditions in previous 24 hrs	SULDING
GPS Coordinates (Zone) E 6,25	089 N 476507 Datum
Descriptive Location Valuthon For	1000 m upot of Heasup Ra
Water Quality	<i>)</i>
	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width(m)	Maximum Pool Depth (cm)
Mean Bankfull Width(m)	Mean Water Depth (cm)
% Riffle% Poo	
Evidence of eroding banks, Comments on bank sta	Dility
Substrate (% cover)	6
BedrockCobble	SandSiltMuck
BoulderGravel	Clay Marl Detritus
In-water Cover	
Cover Types Present (circle): Undercut Bank	ks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other
Overhanging vegetation vicedy beauty	
Riparian Zone	
Riparian Cover (% of watercourse shaded, dominar	nt vegetation, mature or early successional)
Adissantiandilla	
Adjacent Land Use	
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, ground)	vater upwellings)
Migratory Obstructions (seasonal, permanent)	
	`
Note any fish observations	
	,
Waterbody Notes	
Natural Watercourse Trapezoidal Channel _	Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond	
Other Habitat Notes, Incidental Wildlife Observat	
- surricial drainage CM	much soy hold
	and the Meet



,	16	/ p 3	
R	**************************************	1031	
,	Microsopposir	8	

Stantec	F1335
Station # R 1 TO 3 1 - 8	Project Name Niagara Wind
Watercourse Name	Project # 1/00950269
Photos See los	Field Staff X + J K
Date une 12012	Time 4:57 pm
Weather conditions in previous 24 hrs \rightarrow \rightarr	SUMMY
GPS Coordinates (Zone) E 425 16	04 / N 476 5094 Datum
Descriptive Location Vaughan Rd	200 m west of Mrasup Red
ν	
Water Quality Dissolved Oxygen (mg/L)	op w/ too much algal to
Piezeland Owner (mall)	Conductivity (µS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	And the second s
- And the state of	
Watercourse Dimensions & Morphology	Maximum Pool Depth & (cm)
Mean Watercourse Width (m)	(110XIII) (111) (111) (111)
Mean Bankfull Width 3:5 (m)	1410dif 44ddi 20pt
% Riffle (OO % Poo	л <u> </u>
Evidence of eroding banks, Comments on bank sta	ibility 210000
<u>veg</u>	
Substrate (% cover)	
Redrock Cobble	SandSiltMuck
Boulder Gravel	OO Clay Marl Detritus
A CONTRACTOR OF THE CONTRACTOR	
In-water Cover	iks Deep Pool Watercress Aquatic Veg
Cover Types Present (circle): Undercut Ban Overhanging Vegetation Woody Debris	The state of the s
Overlanding vogodulov	
Riparian Zone Riparian Cover (% of watercourse shaded, dominated)	ent vocatation mature or early successional)
Riparian Cover (% of watercourse snaded, dorninal	The vegetation, material of daily deceases.
A l'accept long	
Adjacent Land Use	
209 - 13 000:	
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, ground	lwater upwellings)
Offical Flability (opanising of Finance)	
Migratory Obstructions (seasonal, permanent)	
AIY	
Note any fish observations	· · · · · · · · · · · · · · · · · · ·
none	
Market Notes	
Waterbody Notes Natural Watercourse Trapezoidal Channel	Grassed Swale Buried Tile
Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond	
Sumicial Drainage (i.e. lunows) Bugett six	
Other Habitat Notes, Incidental Wildlife Observa	ations, etc.
- Chander AMY 13 HAYANIAA	dy wa yew small pours
Ried al alace	ary y a grosmate plans
filed y alade	ary y a grosmate plans
Ried al alace	ary y a grosmate plans



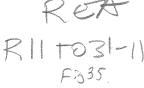
Field Notes Authored by KP



WIND FARM WATERBODY RAPID ASSESSMENT FORM Stantec Station # Project Name Niagara Wind Watercourse Name Project # 1/00950269 Photos . Field Staff K Date June. Time S Weather conditions in previous 24 hrs GPS Coordinates (Zone) Datum **Water Quality** Dissolved Oxygen (mg/L) _____ __ Conductivity (μS/cm) ___ pН Water Temperature (°C) Air Temperature (°C) Time in situ measurements taken Watercourse Dimensions & Morphology Mean Watercourse Width_____ Maximum Pool Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) % Riffle % Pool % Run % Flat Evidence of eroding banks, Comments on bank stability Substrate (% cover) **Bedrock** Cobble Sand Silt Muck Boulder Gravel \ Clay Mart Detritus **In-water Cover** Cover Types Present (circle): **Undercut Banks** Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale **Buried Tile** Surficial Drainage (i.e. furrows) ____ Dugout Pond___ ___ Dominated by Aquatic Veg Other Habitat Notes, Incidental Wildlife Observations, etc.

Field Notes QA/QCed by Ve Mee W:\resource\internal info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc





	Y RAPID ASSESSMENT FOR	RM R11 to 31-11
Startec Station # Plant Station # Photos Photos Photos Photos Pate Weather conditions in previous 24 hrs Photos GPS Coordinates (Zone) E Photos Phot	Project Name Niagara U Project # 1/09/5/02/09 Field Staff Time 30pm	Datum Leasup Kd
Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	O Conductivity (μS/cm) Air Temperature (°C)	NO L
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width (m) ———————————————————————————————————		(cm) (cm) % Flat
Substrate (% cover) BedrockCobble BoulderGravel In-water Cover	Sand Silt Mari	
Cover Types Present (circle): Undercut Bar Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domina	Boulder Other_	
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	dwater upwellings)	
Migratory Obstructions (seasonal, permanent) Seasonal Note any fish observations	,	
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Por	nd Dominated by Aquatic Ve	
Other Habitat Notes, Incidental Wildlife Observ	melised the cu	Trest +
Field Notes Authored by Field Notes	s QAQCed by Juller	Anneemont Form doc

Non REA 378



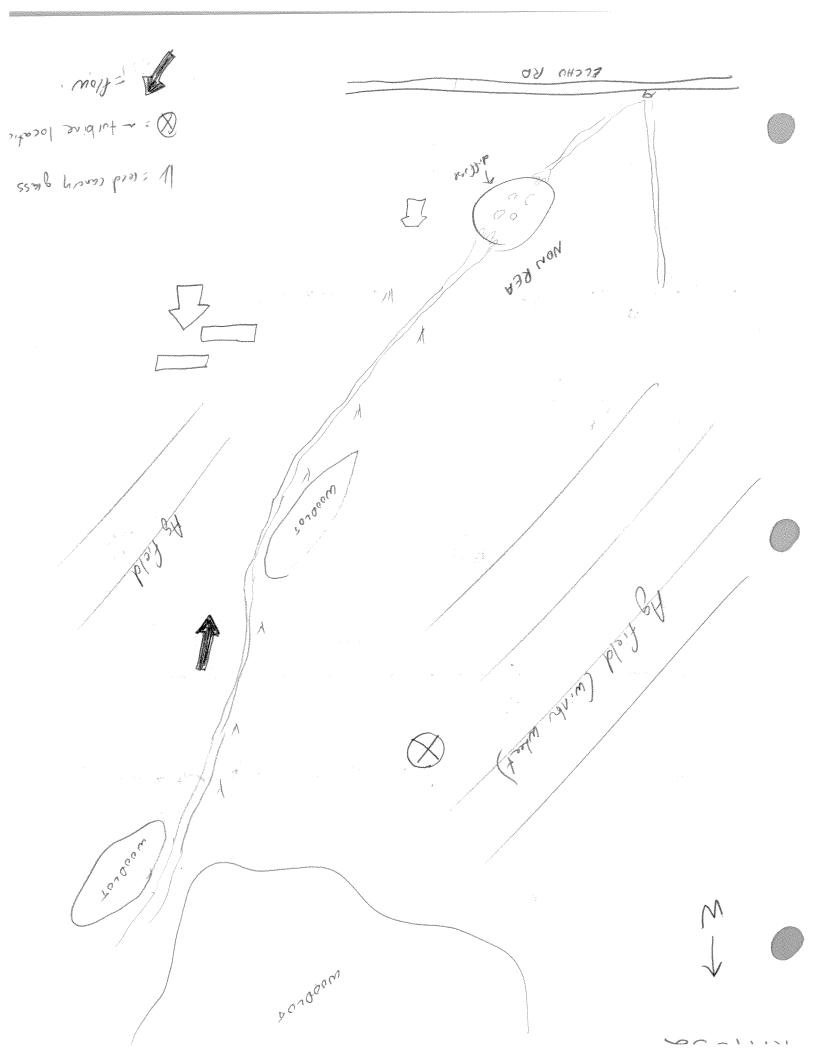
Station # R117031-12			3
	Project Name Niag	ara Win	<u>d</u>
Watercourse Name	Project # 160956	2269	
Photos 500 65	Field Staff	IK	
Date 1000 10012	Time 5:4500		
Weather conditions in previous 24 hrs	W + hot		
GPS Coordinates (Zone) E	12/7 N 476		
Descriptive Location Vauhan Rd	550 M ves	OF H	eashyo
			*
Water Quality			
Dissolved Oxygen (mg/L) pH_			
Water Temperature (°C)	Air Temperature (°C)	<u> </u>	
Time in situ measurements taken			
Watercourse Dimensions & Morphology			_
Mean Watercourse Width (m)	Maximum Pool Depth	<u> </u>	,
Mean Bankfull Width (m)	Mean Water Depth	(cn	
% Riffle % P	ool%	Run	% Fla
Evidence of eroding banks, Comments on bank s	stability		
Substrate (% cover)			
Bedrock Cobble	40 Sand	Silt	Muck
Boulder Gravel	60 Clay	Marl	Detritus
DoulderOravor			
Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domin	Boulder Other		quatic Veg
5 4/0			
Adjacent Land Use	dertal		
mt s. ss. b. sa. a. M. na mál ná			
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	ndwater upwellings)		
Critical Habitat (spawning or nursery areas, groun	ndwater upwellings)		•
Critical Habitat (spawning or nursery areas, ground Migratory Obstructions (seasonal, permanent)			•
Critical Habitat (spawning or nursery areas, ground Migratory Obstructions (seasonal, permanent)	ndwater upwellings)		•
Critical Habitat (spawning or nursery areas, ground Migratory Obstructions (seasonal, permanent) Note any fish observations			
Critical Habitat (spawning or nursery areas, ground Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes		Burie	d Tile
Critical Habitat (spawning or nursery areas, ground Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Note any Watercourse Trapezoidal Channel	el Grassed Swale	Burie	d Tile
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Note any Waterpourse Trapezoidal Channel	el Grassed Swale	Burie	d Tile
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po	el Grassed Swale_ nd Dominated by Aqu	atic Veg	Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po	el Grassed Swale_ nd Dominated by Aqu	atic Veg	Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po Other Habitat Notes, Incidental Wildlife Observations	el Grassed Swale_ nd Dominated by Aqu vations, etc over access roc	iatic Veg	Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po	el Grassed Swale_ nd Dominated by Aqu vations, etc over access roc	iatic Veg	Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po Other Habitat Notes, Incidental Wildlife Observations	Grassed Swale_ nd Dominated by Aqu vations, etc wer access noc	iatic Veg	Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po Other Habitat Notes, Incidental Wildlife Observations	el Grassed Swale_ nd Dominated by Aqu vations, etc over access roc	iatic Veg	Dry



REA

Sta	ntec
-	

Station # RII To 3 2	Project Name Niasara Wind
Watercourse Name Unknown	Project Name <u>Niasara Wind</u> Project #/ <u>509</u> 50269
Photos 8-23	Field Staff Kc, MF
Date April 4, 2012	Time 9:20 000 .
Weather conditions in previous 24 hrs and	
GPS Coordinates (Zone) 17T E 0624	4862 N 4764452 Datum NAD8
Descriptive Location _ 800mNorth of Elel	ho Rd + ~ 1.4km NE of Culver Rd.
Water Quality	or A.C.
Dissolved Oxygen (mg/L) / pH	Air Temperature (°C) / 0 2
Water Temperature (°C) <u>≤.05°C</u>	Air Temperature (°C) /0°2
Time in situ measurements taken 9,35	am.
Watercourse Dimensions & Morphology	
Mean Watercourse Width 20 (m)	Maximum Dool Double 200 ()
Mean Watercourse Width 2.0 (m) Mean Bankfull Width 3.0 (m)	
% Riffle 30 % Poo	
Evidence of eroding banks Comments on bank st	ol % Run 70 % Flat ability Undercut, minor slumping
exposed soil.	ability other corp. Minst slumping
Substrate (% cover)	
Redrock Cobble	Sand 50 Civ.
Bedrock Cobble Gravel	Sand 50 Silt Muck 50 Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undercut Bar Overhanging Vegetation Woody Debris	nks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, domina	int vegetation, mature or early successional)
Adjacent Land Use	VIGN Grasus.
agriculture.	
og HEDITURE.	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	lwater upwellings)
Migratory Obstructions (seasonal permanent)	
Non REA Section d/s is diffuse la	ck of definition may make his burton
Note any fish observations None	ele of definition may rouse obstruction
Waterbody Notes	
Natural Watercourse Trapezoidal Channel	Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swale Buried Tile d Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observa	itions, etc
Many bild speics	HOID, GLO.
for the state of t	
Field Notes Authored by MF Field Notes	QA/QCed by





REA

Stanted

Station # RILTO33 Project Name NIAGARA WIND
Watercourse Name 33-1 Project # 160950269
Photos 9857-61, 8862deletal 8863-64 Field Staff TChandler C M. Ellah
Date
Weather conditions in previous 24 hrs Light thunder showers and sunny
GPS Coordinates (Zone) 171 E 626876 N 4765898 Datum
Descriptive Location Datam
Water Quality
Time in situ measurements taken 7:00 PM
Watercourse Dimensions & Morphology
Mean Watercourse Width 1,5 (m) Maximum Pool Depth 15 (cm)
Mean Bankfull Width 4 (m) Mean Water Depth 3-4 (cm)
% Riffle% Pool % Run _ \infty % Flat
Evidence of eroding banks, Comments on bank stability MINDR BANKSCOUR
Substrate (% cover)
Bedrock 4 Cobble 5 Sand 60 Silt Muck Detritus
In-water Cover Cover Types (resent reine): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use
Plaughed Agricultural field w coops planted
January Coops Praveled
Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
potential soawning & hursery areas
Migratory Obstructions (seasonal, permanent)
LOW/NO Flow
Note any fish observations
Waterbody Notes Natural Watercourse 77 Trapezoidal Channel 77 Grassed Swate Buried Tile
Curticial Drainogo (i. a. furnamo)
Sumcial Drainage (i.e. Turrows) Dugout Pond Deminated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observations, etc. 9 Teen frog
No flow- water ponded, Watercourse flows along Gee Road
alongits down stream section.
Field Notes Authored by 1. Chardler Field Notes QA/QCed by

ROTO33 33-1 PROPERTY LINE Watercourse has been realished along fee Pd. (old) □ FARM HousE

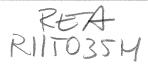


			NOT REA
WIND FARM WATERBOD	Y RAPID ASSESS	MENT FORM	2 11To 34
Stantec			E12
Station # R TO 3 Watercourse Name Photos See log Date Weather conditions in previous 24 hrs Surry cl	Project Name No Project # 1600 Field Staff No Project # 1600 Field Staff No Project Time 2140 project Name No	150269	
GPS Coordinates (Zone) E 62 C Descriptive Location C A A A A A A A A A A A A A A A A A A	04 500 m	1763909 De	atum
Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Conductivity Air Temperature (°C)		
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width		n(cr (cr _% Run	•
Substrate (% cover) Bedrock Boulder Gravel	SandClay	Silt Marl	Muck Detritus
In-water Cover Cover Types Present (circle): Undercut Bank Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dominant	ks Deep Pool Boulder Other_	Watercress	Aquatic Veg
Adjacent Land Use	Trogozation, materio		
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds	water upwellings)		14-25-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-
Migratory Obstructions (seasonal, permanent)			•
Note any fish observations			
Waterbody Notes Natural Watercourse Trapezoidal Channel _ Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Sw Dominated by	ale Burie Aquatic Veg	d Tile
Other Habitat Notes, Incidental Wildlife Observat	hea 1		
Field Notes Authored by Field Notes C	DAYQCed by Free		





Station # RIITO35H	Project Name Niagara Wind F54
Watercourse Name	Project #_1/00950269
Photos See log	Field Staff REQUE
Date 1408 11 2012	Time 1:50 pm
Weather conditions in previous 24 hrs Sunn	1 or 100+.
GPS Coordinates (Zone) TE 627.10	69 N, 476 453 2 Datum
Descriptive Location Ger Rd South	of Vaushan
Water Quality	2
Dissolved Oxygen (mg/L) pH	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width(m)	Maximum Pool Depth (cm)
Mean Bankfull Width (m)	Mean Water Depth(cm)
Mean Bankfull Width (m)	% Run % Flat
Evidence of eroding banks, Comments on bank sta	bility
Substrate (% cover)	
Bedrock Cobble	SandSiltMuck
Boulder Gravel	ClayDetritus
	•
In-water Cover	Door Dool Motorcoon Access Von
Cover Types Present (circle): Undercut bank	ks Deep Pool Watercress Aquatic Veg Boulder Other
Overhanging Vegetation Woody Debris	Boulder Other
Riparian Zone	
Riparian Cover (% of watercourse shaded, dominar	nt vegetation, mature or early successional)
Adjacent Land Use	
Fish Habitat Potential	votor unualtingal
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds	water upwellings)
	water upwellings)
Critical Habitat (spawning or nursery areas, grounds Migratory Obstructions (seasonal, permanent)	water upwellings)
Critical Habitat (spawning or nursery areas, grounds	
Critical Habitat (spawning or nursery areas, grounds Migratory Obstructions (seasonal, permanent) Note any fish observations	
Critical Habitat (spawning or nursery areas, grounds Migratory Obstructions (seasonal, permanent) Note any fish observations	
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel_	treas normally farmed now dry Grassed Swale Buried Tile
Critical Habitat (spawning or nursery areas, grounds Migratory Obstructions (seasonal, permanent) Note any fish observations	treas normally farmed now dry Grassed Swale Buried Tile
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel_	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Critical Habitat (spawning or nursery areas, grounds Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond Other Habitat Notes, Incidental Wildlife Observat	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Critical Habitat (spawning or nursery areas, grounds Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond Other Habitat Notes, Incidental Wildlife Observat	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Critical Habitat (spawning or nursery areas, grounds Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond Other Habitat Notes, Incidental Wildlife Observat	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry





Field Notes Authored by KC

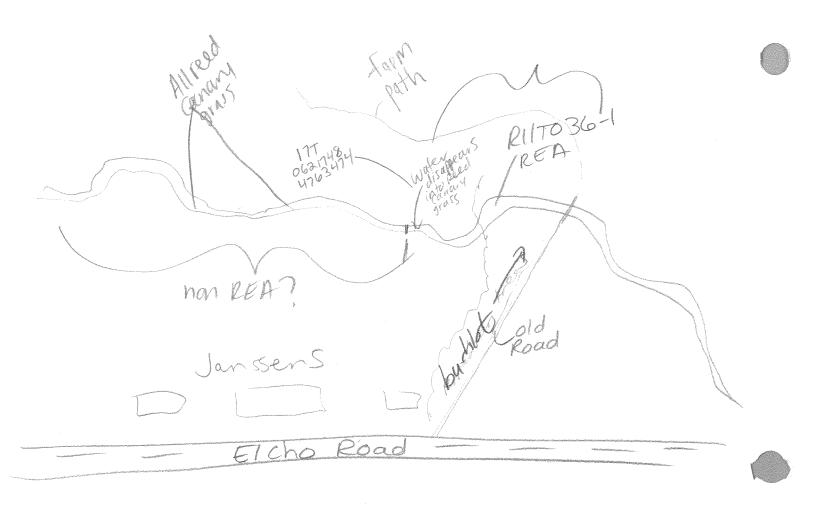
WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RII TO35 H Project Name Niagara Wind Project #_ Watercourse Name Field Staff Photos 500 Time 2:10 Date Jul Weather conditions in previous 24 hrs Datum GPS Coordinates (Zone) Descriptive Location 699 **Water Quality** 7. / Conductivity (μS/cm) ___ Dissolved Oxygen (mg/L) ______ Air Temperature (°C) 25°C Water Temperature (°C) __ Time in situ measurements taken Watercourse Dimensions & Morphology Maximum Pool Depth (cm) Mean Watercourse Width Mean Water Depth (cm) Mean Bankfull Width (m). % Flat % Run % Pool % Riffle Evidence of eroding banks, Comments on bank stability Substrate (% cover) Silt Muck Cobble Sand **Bedrock Detritus** Gravel Clay_ Boulder In-water Cover Aquatic Veg Watercress Deep Pool **Undercut Banks** Cover Types Present (circle): Other Boulder Woody Debris Overhanging Vegetation Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) low How or clasional Note any fish observations Mre Waterbody Notes **Buried Tile** Trapezoidal Channel Grassed Swale____ Natural Watercourse Dominated by Aquatic Veg_ Surficial Drainage (i.e. furrows) Dugout Pond Other Habitat Notes, Incidental Wildlife Observations, etc. _ M. Singal Dub

Field Notes QA/QCed by W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



						Tile 25
90						REA DIS inbushla
	WIND FARM	M WATERBO	DY RAPID	ASSESSI	MENT FORM	Afon REA
Stantec					Mf-	artesta
Date June Weather cond GPS Coordin	1/2 /2 /2ch.	<u> </u>			50269 Han M.Fa	Datum Nad 83
	west of	Janc	Ceac	Propert	\	
Water Tempe	ygen (mg/L) <u>6 · 0</u>	pH_		Conductivity perature (°C)	(μS/cm) <u>38</u> 21°C	
Mean Waterc Mean Bankfu	% Riffle	(m) (m) % P	Mean Wa	n Pool Depth ater Depth	0.60 0.40 % Run	(cm) (cm) % Flat
Evidence of e	eroding banks, Com	e tated c		CAS .		<u> </u>
Substrate (%	cover) _Bedrock	Cobble		and	Silt S	Muck
	_Boulder	Gravel	<u>// 🔾 ·</u> C	Clay	<u>Marl</u>	Detritus
In-water Cov Cover Types Overhanging	Present (circle):	Undercut Ba	anks D Boulder	eep Pool Other_	Watercress	Aquatic Veg
Riparian Zor Riparian Cov	er (% of watercours	se shaded, domir	nant vegetat	ion, mature o	or early success	ional)
Adjacent Lan	d Use	and:	abour			
Fish Habitat Critical Habita	Potential at (spawning or nur	sery areas, grou	ndwater upw	veilings)		
Migratory Obs	etructione (easeons	il nermanent)	F	9 /		
Note any fish	observations	Nama ang ang ang ang ang ang ang ang ang an				
Waterbody Natural Water Surficial Drain	Notes rcourse Tra nage (i.e. furrows)_	apezoidal Channo	el ond [Grassed Sw Dominated by	vale B v Aquatic Veg	uried Tile Dry
Other Habita	nt Notes, Incidenta ಕ ಬಳಿಗು	l Wildlife Obser	vations, etc	·		
	300					
Field Notes Author	red by K. Claytu	Field Not	es QA/QCed by	MIK	, inches de la constantina della constantina del	



N





Station # PILT 038-	1	Project Name _			d
Watercourse Name unkna		Project #/_	0950		
Photos Su on As by		Field Staff	Claute	N, M, F	diella.
Date 13/13		Time	<u> </u>	×	
Weather conditions in previous	24 hrs \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	V			
GPS Coordinates (Zone)	T E 0626	<u> </u>	1476	<i>000</i> D	atum Mad
Descriptive Location Noth of	(Silve 51				,
Water Quality - no	Nater			2	
Dissolved Oxygen (mg/L)		Conduc	tivity (uS/c	m)	
Water Temperature (°C)	•	Air Temperature	(°C) 20)°(
Time in situ measurements take	<u>n</u>				
Watercourse Dimensions & M					
Mean Watercourse Width			Depth	(c	m)
Mean Bankfull Width	<u>(m)</u> ·	Mean Water De	oth	(c	
	% Poo	***************************************	% Ru	ın	% Flat
Evidence of eroding banks, Com	nments on bank sta	bility	\		
Substrate (% cover)					
Bedrock	Cobble Gravel	Sand	So	Silt S/	Muck
Boulder	Gravel	Clav		Marl	Detritus
Overhanging Vegetation Working Riparian Zone Riparian Cover (% of watercours		t vegetation, mat	ther ure or early	succession	nai)
Aujacent Land USE	LAND C.				·
Fish Habitat Potential					
Critical Habitat (spawning or nurs	sery areas, groundw	ater upwellings)			
Migratory Obstructions (seasonal		,			
Note any fish observations	Water				
Materia de Notes					
Waterbody Notes	nandidal Ob	~	4.0		
Natural Watercourse Tra					ed Tile
Surficial Drainage (i.e. furrows)	Dugout Pona_	Dominate	d by Aquati	c Veg	Dry
Other Habitat Notes, Incidental	Wildlife Observati	ons, etc.	9999		
				<u> </u>	
Field Notes Authored by K. Clayfor		VQCed by			

Bushlat 164 8751 Say beans. (RIM0381) i pitos ? Moled H.O. at the series Jerros 361 Mak street Silver





Station # RIT038-3)	Project Name	iagaral	vind	
Watercourse Name Lancaco	. 1	Project #/_O	950269		
Photos _ Set on to lose	~	Field Staff KClo	when a v	1 Fair	<u>ella -</u>
Date June 3/12		Time <u>12:20</u>			
Weather conditions in previous	24 hrs Hot	dhumod.			
GPS Coordinates (Zone)	T E OGZ	750 N_	476950	Datum	NIACLS
Descriptive Location	W Santh	of lilver	Street.		
Water Quality	n ater	Camduativ	ity (S/cm)		
Dissolved Oxygen (mg/L)	pH	Conductiv	ιι y (μο/σιτή		
Water Temperature (°C)		Air Temperature (°	C)		
Time in situ measurements take	m				
Watercourse Dimensions & M	lorphology		- 41-	(000)	
Mean Watercourse Width	<u>>(m)</u>	Maximum Pool De	otn	(CIII)	
Mean Bankfull Width Q	(m) [·]	Mean Water Depth	% Run	(CIII)	% Flat
% Riffle	% Po		% Ruii		/0 1 100
Evidence of eroding banks, Cor	nments on Dank s	stability			
Substrate (% cover)					
Bedrock	Cobble	Sand	<u> </u>		_Muck
Boulder	Gravel	Clay	Mari		_Detritus
	rse shaded, domin	nant vegetation, matur	e or early succe	essional)	·
Adjacent Land Use	ians ·				
MIZZZZZZZZ					
Fish Habitat Potential Critical Habitat (spawning or nu	rsery areas, grour	ndwater upweilings)	·		
Migratory Obstructions (season	al, permanent)			•	
Note any fish observations					
Waterbody Notes			O issale	م المسام المساوح	Tilo
Natural Watercourse T	rapezoidal Channe			Buried 7	
Surficial Drainage (i.e. furrows)	Dugout Po	ond Dominated	by Aquatic Veg	3	Dry
Other Habitat Notes, Incident	al Wildlife Obser	vations, etc. <u>Col</u>	pir to	Chick	20
VI CLA.	V	AND	,		
Field Notes Authored by K VIW	10Y \ Field Not	es QA/QCed by			

Sel mar Del mar Del





Station # RITO39 Watercourse Name unknown Photos 708-714 Date June 1/12:	Projec	t Name \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<u> </u>	sind	
Date June 11/12.	Time ₋	13:00		alt	
Weather conditions in previous 24 hrs	<u>o earr</u>	- Clara	1 (ght		e not
GPS Coordinates (Zone) 17T E		N	- 6/ - 7		Nad 8:
Descriptive Location Sarth of	Vaughn	KOOD , W	tit of		
Water Quality DCY		and the second s			
Dissolved Oxygen (mg/L)	pH	_ Conductivity	(μS/cm)		
Water Temperature (°C)	. —	mperature (°C)			
Time in situ measurements taken					
Watercourse Dimensions & Morpholog	•				
Mean Watercourse Width (m)	Maxig	rum Pool Depth		(cm)	
Mean Bankfull Width (m)	Mean	Water Depth		(cm)	
% Riffle	% Pool	Water Bopti	% Run	(0)	% Flat
Evidence of eroding banks, Comments on	bank stability				
Substrate (% cover)					
Bedrock Cobb	le	Sand	Silt	50	_Muck
Bedrock Cobb Boulder Grav	əl <u> </u>	_Clay	Marl		_Detritus
In-water Cover Cover Types Present (circle): Under Overhanging Vegetation Woody Debi	rcut Banks is Bould	Deep Pool er Other_	Watercress	Aqu	atic Veg
Riparian Zone Riparian Cover (% of watercourse shaded	dominant vege	tation, mature o	or early succes	ssional)	
Adjacent Land Use	farmlar	<u>d</u>			
Fish Habitat Potential Critical Habitat (spawning or nursery area	s, groundwater ι	upwellings)			
Migratory Obstructions (seasonal, perman					
Note any fish observations	***************************************				
Waterbody Notes Natural Watercourse Trapezoidal Surficial Drainage (i.e. furrows) Du	Channel jout Pond	_ Grassed Sv _ Dominated by	vale / Aquatic Veg_	Buried ⁻	Tile Dry
Other Habitat Notes, Incidental Wildlife	Observations,	etc.Canpleto	elydny,	SUK	<u>Scial</u>
Field Notes Authored by K. Ca. Hor	Field Notes OA/OCeo	In WY			

Non REA



WIND FARM WATERBODY RAPID ASSESSMENT FORM

RIITO41-

Station # 5110941	1			
Watercourse Name		Project #	agara Wi	7.4
Photos		Field Staff KE +	10000	
Photos Date Date	f Lighter	Time 9:31 A	M	
vveather conditions in previous	s 24 hrs 🗸 🗸 🦯	Ġ		*
GPS Coordinates (Zone)	ME bal	127 N 4	17569921	Datum
Descriptive Location 60 CC	<u> </u>	ALDINOND OF		ot ty
4 900 m Past	into he			
Water Quality				
Dissolved Oxygen (mg/L)	pH_	Conductivity	(uS/cm)	
Water Temperature (°C)		Air Temperature (°C)	<u> </u>	
Time in situ measurements tak	en			
Watercourse Dimensions & M	Morphology			
Mean Watercourse Width	(m)	Maximum Pool Depth) (<i>(</i>	rm)
Mean Bankfull Width	(m).	Mean Water Depth	((em)
% Riffle	% Po		_% Run(\	% Els
Evidence of eroding banks, Co	mments on bank s	tability /		/O 1"10
		_/		
Substrate (% cover)				
Bedrock	Cobble	Sand	Silt	Muck
Boulder	Gravel/_	Clay	Marl	
Cover Types Present (circle):	Undercut Bar	nks Deep Pool	Watercress	Aquatic Veg
Cover Types Present (circle): Overhanging Vegetation W Riparian Zone	oody Debris	Boulder Other_		Aquatic Veg
Cover Types Present (circle): Overhanging Vegetation W Riparian Zone Riparian Cover (% of watercours	oody Debris	Boulder Other_		
n-water Cover Cover Types Present (circle): Overhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use	oody Debris	Boulder Other_		
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours djacent Land Use	se shaded, domina	Boulder Other_		
Cover Types Present (circle): Overhanging Vegetation W Riparian Zone Riparian Cover (% of watercours adjacent Land Use	se shaded, domina	Boulder Other_		
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Riparian Cover (% of watercours) Riparian Cover (% of watercours)	se shaded, domina	Boulder Other_		
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours adjacent Land Use ish Habitat Potential critical Habitat (spawning or nurs	se shaded, domina	Boulder Other_		
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs Rigratory Obstructions (seasona	se shaded, domina	Boulder Other_		
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs	se shaded, domina sery areas, ground	Boulder Other_		
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs ligratory Obstructions (seasona ote any fish observations /aterbody Notes	se shaded, domina	Boulder Other_		
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs Iligratory Obstructions (seasona Tote any fish observations Atterbody Notes atural Watercourse Tra	se shaded, domina sery areas, ground I, permanent)	Boulder Other_ Int vegetation, mature or water upwellings) Grassed Swal	early succession	nal)
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs ligratory Obstructions (seasona ote any fish observations /aterbody Notes	se shaded, domina sery areas, ground I, permanent)	Boulder Other_ Int vegetation, mature or water upwellings) Grassed Swa	r early succession	nal)
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs Indigratory Obstructions (seasonate Total Adjacent Seasonate Cote any fish observations Traintical Drainage (i.e. furrows)	se shaded, domina sery areas, ground I, permanent) pezoidal Channel Dugout Pond	Boulder Other_ Int vegetation, mature or Iwater upwellings) Grassed Swall Dominated by A	r early succession	nal)
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs Iligratory Obstructions (seasonal ote any fish observations atterbody Notes atteral Watercourse Tra urficial Drainage (i.e. furrows) ther Habitat Notes, Incidental	se shaded, domina sery areas, ground I, permanent) pezoidal Channel Dugout Pond Wildlife Observat	Boulder Other_ ant vegetation, mature or water upwellings) Grassed Swall Dominated by A	r early succession	nal)
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs Iligratory Obstructions (seasona Tote any fish observations Atterbody Notes atural Watercourse Tra	se shaded, domina sery areas, ground I, permanent) pezoidal Channel Dugout Pond Wildlife Observat	Boulder Other_ ant vegetation, mature or water upwellings) Grassed Swall Dominated by A	r early succession	nal)
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs Iligratory Obstructions (seasonate any fish observations Atterbody Notes attural Watercourse Transport of the Habitat Notes, Incidental The Habitat Notes, Incidental	se shaded, domina sery areas, ground I, permanent) pezoidal Channel Dugout Pond Wildlife Observat	Boulder Other_ ant vegetation, mature or water upwellings) Grassed Swall Dominated by A	r early succession	nal)
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs Iligratory Obstructions (seasona ote any fish observations Atterbody Notes atural Watercourse Tra urficial Drainage (i.e. furrows) ther Habitat Notes, Incidental	se shaded, dominated server areas, ground l, permanent) pezoidal Channel Dugout Pond Wildlife Observat	Boulder Other_ Int vegetation, mature or Iwater upwellings) Grassed Swall Dominated by A	r early succession	nal)
Cover Types Present (circle): Dverhanging Vegetation W Riparian Zone Riparian Cover (% of watercours Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurs Iligratory Obstructions (seasonate any fish observations Atterbody Notes attural Watercourse Transport of the Habitat Notes, Incidental The Habitat Notes, Incidental	se shaded, dominated server areas, ground l, permanent) pezoidal Channel Dugout Pond Wildlife Observat	Boulder Other_ ant vegetation, mature or water upwellings) Grassed Swall Dominated by A	r early succession	nal)



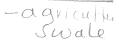
REA

		200
Stantec	4	1-4

Station # RITO 33	Project Name Nigggya (1)
Watercourse Name	Project Warne Nagaya (1)
. Photos <u>60-68</u>	Field Chaff
Date Apr 4/12	Time 15 : 18
Weather conditions in previous 24 hrs	10°C Clardin
GPS Coordinates (Zone) E O(o)	1907
Descriptive Location For Gove	Ed A Datum Wad
Water Quality	
Dissolved Oxygen (mg/L) 10.4 7mg/L	N 084 a
Water Temperature (°C)	
Time in situ measurements taken	Air Temperature (°C)
	ol anding
Watercourse Dimensions & Morphology	Standinger
Mean Watercourse Width (m)	Maximum Pool Depth 0.20 (cm)
Mean Bankfull Width (m)	Mean Water Depth (cm)
% Riffle	/- Uaal
Evidence of eroding banks, Comments on bar	nk stability
tairly stable	covered in vegetation
Substrate (% cover)	
BedrockCobble	0 / 5
BoulderGravel	Sand60Silt0 Muck
	ClayMarl Detritus
In-water Cover	- Standing
Cover Types Present (circle): Undercut	Banks Doon Book Markey
Overhanging Vegetation Woody Debris	Aduatic Ved
The state of the s	Boulder Other
Riparian Zone	
Riparian Cover (% of watercourse shaded, dor	minant vegetation, mature or early successional)
Adjacent Land Un	early successional)
Adjacent Land Use	
tarmlana	
Fish Habitat Potential	
Critical Habitat for an incident and inciden	
Critical Habitat (spawning or nursery areas, gro	oundwater upwellings)
	My, foraging
Migratory Obstructions (seasonal, permanent)	
Note any fish observations mall for	
recte any list observations	sh - cyprinidal p.
Waterbody Notes	
Natural Watercourse Trapezoidal Chan	
Surficial Desirate (
Dugout P	Pond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Obse	
The contract visiting of the contract visiting	rvations, etc.
trogs, Sma	ii cyprinidal.
3 7	
ield Notes Authored by K. C. du ton Field No.	11 ()
Field No	ites QA/QCed by Tale a

Bush lot as Seldi Gore Road





Stantec

Charles III OUTCOUR				K8.
Station # R11T042-1		Project Name	Niagara L	
Watercourse NameNON MALE	<i>Y</i> 1	Project #		NVA
Watercourse Name unit nave				
Date Apr Clip		Field Staff	lauten M. Fai	cla
Weather conditions in previous 24	1 hrs	Time 9:00 an	7	
GPS Coordinates (Zone)	+ IIIS JANNO			
Descriptive Location	T = 0 (0 1 9 c	N	1753627 D	atum M.
Descriptive Location 1.2 km	South of		4 Km west	atum Nac
	Hutching	on Road.		
Water Quality - no we	ater -	ag. Swale		
Dissolved Oxygen (mg/L)	5U		,	
Water Temperature (°C)	рп	Conductiv	ty (μS/cm)	
Water Temperature (°C) Time in situ measurements taken		Air Temperature (°	C)/	
· · · · · · · · · · · · · · · · · · ·		./		
Watercourse Dimensions & Mor	phology	/ -		· · · · · · · · · · · · · · · · · · ·
Mean Watercourse Width	/m)		•	
Mean Bankfull Width	(''')	Maximum Pool Dep	oth(ci	n)
% Riffle	(m)	wear water Depth	(cı	m)
Evidence of oroding hards	% Po	ol / · -	% Run	% Flat
Evidence of eroding banks, Comm	ents on bank st	ability		% riat
Substrate (% cover)				
Bedrock	Cobble	0		
Boulder	Gravel \	Sand	Silt	Muck
	_Glavel	Clay	Marl	Detritus
In-water Cover				
Cover Types Present (circle):	/ Undament D		All and the second	
Overhanging Vegetation Wood	Ondercut Bar	ks Deep Pool	Watercress	Aquatic Veg
Tomanging regetation www.	ly Debris	Boulder Other		iquatio veg
Riparian Zone				
Riparian Cover (% of watercourse	و و د داد داد	. \		
Riparian Cover (% of watercourse s	iriaded, domina	nt vègetation, mature	or early successiona	al)
Adjacent Land Use				,
rajacent Land OSB			\	
			ag land	1
ish Habitat Potential				
ritical Habitat Potential				
Critical Habitat (spawning or nursery	/ areas, ground	vater upwellings)		
figratory Obstructions (seasonal, pe	ermanent)			
lote any fish observations	<u> </u>			
ote any fish observations				
/aterbody Notes				
mA				•
urficial Designation (oidal Channel_	Grassed Sw	ale Burio	4 Tile
urficial Drainage (i.e. furrows)	_ Dugout Pond	Dominated by	aleBuried	***************************************
			Aqualic veg	Dry
ther Habitat Notes, Incidental Wil	dlife Observat	ons. etc		u,
			ots of Red 1	WIND
		- NIGIT BIWC	Lalling	
d Notes Authored by				
		f formation i		
id Notes Authored by 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Field Notes Q	VQCed by M. Fair	10	



Stantec	· · · · · · · · · · · · · · · · · · ·
Station # RITTO 42 - 2	. KE
Watercourse Name	Project Name Niagara Wind
Watercourse Name Unividam Photos 95-99	Project # (609503.69
Date Apr 5/13	_ Field Staff
	Time 9:0
Weather conditions in previous 24 hrs(2001,1200
GPS Coordinates (Zone) TEO Descriptive Location Km Square	The state of the s
Descriptive Location Km Sauth	not they 3 a 1.4 Km west of
- AMCNJW	Rd.
Water Quality	
Dissolved Oxygen (mg/L) 1) - 85mg/L	pH Conductivity (μS/cm) / (μS/cm)
Water Temperature (°C) 5.79°C	Air Tomperature (20)
I man in a 11.	- / w remperature (*C)
	doum
Watercourse Dimensions & Morphology Mean Watercourse Width (m)	Standit 9
	Maximum Pool Depth 0.40 (cm)
0/ 0://	Mean Water Depth 0.60 (cm)
Evidence of eroding banks, Comments on b	_% Pool % Run % Flat
Stable banks, comments on b	ank stability
2144	riparian regetation.
onpariate (% cover)	
BedrockCobble	SandSO Silt \0 Muck
Boulder Gravel	Sand S Silt Muck 4 Clay Marl Detritus
Riparian Zone Riparian Cover (% of watercourse shaded, do	ominant vegetation, mature or early successional) ary — also lots of Redourcy Dogs
Carried	\$ brolars.
tarmana	TOP
ish Habitat Potential	
Critical Habitat (spawning or nursery areas, g	roundwater upwollings)
ligratory Obstructions (seasonal, permanent)	grading.
50×40 a .	
ote any fish observations	
/aterbody Notes	
atural Watercourse Trapezoidal Cha	nnol .
urficial Drainage (i.e. furrows) Dugout	
	Diy
ther Habitat Notes, Incidental Wildlife Obs	servations, etc. Reducing black by to
	orvacions, etc
	J
d Notes Authored by K. Claydon Field N	Notes QA/QCed by M. Faccil a.

RIH042-2 Bush lot Bushlot agricultural 212-1 as field. as field Hufchian Rd [] _ buses Faris



RITO42-3 Non REA

Station # RITO42-	2 t 042-4	Project Name	Niagara	Wind	i je
Watercourse Name warning		Project #	16095026	7	*
Photos 34-41		Field Staff	· Claciton.	MEA	-7110
Date Apr 19/13		Time			T L L L L
Weather conditions in previous 2	24 hrs 3,00				
GPS Coordinates (Zone)			1 4753674	Datum	Vad83
Descriptive Location			m east of		1 Road
					!
Water Quality	- Standir	y wate			
Dissolved Oxygen (mg/L)	pH_	Conduc	ctivity (µS/cm)		
Water Temperature (°C)		Air Temperature	e (°C) "		
Time in situ measurements taker	n		,		
Watercourse Dimensions & Mo	orphology		Stand	ingwo	Her
Mean Watercourse Width 0,5	h (m)	Maximum Pool	Denth 0.30	(cm)	
Mean Bankfull Width	(m)	Mean Water De	nth 0.35	(cm)	
% Riffle	% Po	ol 107		(011)	% Flat
Evidence of eroding banks, Com	ments on bank st	ability	/0 IXUII	:	/0 1 161
			ble in we	24dion	\
Substrate (% cover)		<i>ş</i>			
Bedrock	Cobble	Sand	Silt	50	Muck
Boulder	Gravel	Sand Clay	Siit_ Marl		Detritus
bodidei	Oraver	Oiay	iviaii	28	Deu ilus 7.
Cover Types Present (circle): Overhanging Vegetation Wo Riparian Zone			ool Watercress Other	Aqua	atic Veg
Riparian Cover (% of watercours	e shaded, domina	int vegetation, ma	ture or early succe	essional)	
<590, grass	es, come à	willow so	chrudz.		
Adjacent Land Use					
ag field					
Fish Habitat Potential					
Critical Habitat (spawning or nurs	contarose aroun	twater unwellings	· \		
Childa Habitat (spawning of fluis	sery areas, ground	iwatei upweilings)		
Migratory Obstructions (seasona	I, permanent)				
Note any fish observations					
Waterbody Notes					•
Natural Watercourse Tra	nezoidal Channel	Grace	ed Swale	Buried T	ïle
Surficial Drainage (i.e. furrows)					Dry
			iod by Aquallo Vog	J	~· y
Other Habitat Notes, Incidental	Wildlife Observa	ations, etc			
y					
1/ 2/	3	_ <u>\$</u>			
Field Notes Authored by N. Claut	Field Notes	QA/QCed by	raiella.		

Bush lot. harse grande ag, field. stonder ag. Field. REA RITTO42-2 farm Swale -RITO42-4 Midefred channel nowater a culvert 30m Not standing water about 30m Not culvertives talged a lack of a lack of the culvertives to a lack of the culvertive t · we is de rive through. nowater a culvert REA hase *photos: 42-54 - willows, actorive, backgrape, Ther hinge HWY 3



REA

Stanted

	Station # RITO 44 Watercourse Name un Knam Photos 93-101	Project Name Niagara Wind Project # 1609 50 369 Field Staff
٠	Date Apr 19/12	
	Weather conditions in previous 24 hrs 17°	Time 2:40pm
	GPS Coordinates (Zone)	24474: N 4748438 Datum NAD83
	Descriptive Location Sa	Ath of Canal Bank Rd. 18m
	east of Bird P	a caracter and
	Water Quality Dissolved Oxygen (mg/L) 13.85 C Water Temperature (°C) 13.85 C Time in situ measurements taken 12	OH_8_96 Conductivity (μS/cm) 300μs/cm
		Maximum Pool Depth 60 (cm) Mean Water Depth 60 (cm) % Pool 8 Run 8 Flat
	Evidence of eroding banks, Comments on ba	
	Substrate (% cover) Bedrock Cobble	
	BedrockCobble_ Boulder Gravel	SandSiltO_Muck SO_ClayMarlSO_Detritus
	OOJO, ASh, Will	
	Adjacent Land Use	shlot
	Fish Habitat Potential	
	Critical Habitat (spawning or nursery areas, gr	roundwater unwellings)
	Spaunina, nu	
·	Migratory Obstructions (seasonal, permanent)	
	Note any fish observationshuge Sch	100 Of shiners
ı	Waterbody Notes Natural Watercourse Trapezoidal Cha Surficial Drainage (i.e. furrows) Dugout	
-	Other Habitat Notes, Incidental Wildlife Obs	servations, etc. hundreds of shiners
F	Field Notes Authored by Field	Notes QA/QCed by

Bush lot ag. Field Bushlot 多 REA! RIMOHY



REA

Station # RITO 4 S - I Watercourse Name In Known Photos O FO Date A STATE OF THE ST	Project Name Niagara Wind Project # 16.0950269 Field Staff Le + MF Time 11:43 Carrage Cast N 4748406 Datum NAD83 Th of Canal Bank Rd, 500 m Cast
Water Quality	Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width (m)	Maximum Pool Depth 0.40 (cm) Mean Water Depth 0.30 (cm) Pool 100 % Run % Flat k stability Lable to begetation
Substrate (% cover) BedrockCobbleBoulderGravel In-water Cover Cover Types Present (circle):	Sand 30 Silt 50 Muck Clay Marl 20 Detritus Banks Deep Pool Watercress Aquatic Veg Boulder Other
Adjacent Land Use	ninant vegetation, mature or early successional) ag. field.
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grown and particular of the company of the	undwater upwellings)
Note any fish observations Permaneh	
Other Habitat Notes, Incidental Wildlife Obse	nel Grassed Swale Buried Tile Pond Dominated by Aquatic Veg Dry Prvations, etc
1 . a 1	otes QA/QCed by M. Faiella

con a Bank pad pail way bed Briylox setis farm REA (previously) Bush lot buildared REAWaterbody PITTO45-1





Station #	2	Project Name	Migago 1	. \ ` ~ d
Watercourse Name <u>why</u>	naun	Project #	1609 5021	2017 00
Photos		Field Staff	C & ME	3-1
DateApr 19 // 2		Time\		
Weather conditions in previou	s 24 hrs	DIFFE COS		
GPS Coordinates (Zone)	T F ALGE		N 474 8832	Datum II I S
Descriptive Location 500	no Citto	of Can		
	Bird Road	- A LAN	al Bank A	ed; soom e
Water Quality	- Standinger			
Dissolved Oxygen (mg/L)	PH	Condu	ctivity (uS/cm)	
Water Temperature (°C)		Air Temperature	2 (°C)	
Time in situ measurements tal	čen	, romporatare		
Watercourse Dimensions &	Morphology		istan	
Mean Watercourse Width	(m)	Maximum Pool	Depth 20	(cm)
	(m)	Mean Water De	ofth 15	(cm)
% Riffle	` % Po		% Run	(cm) % Flat
Evidence of eroding banks, Co	mments on bank s	4 . 1 . 1114		
	table bunks			
Substrate (% cover)				
Bedrock	Cobble	Sand	_∂O Silt	60 Muck
Boulder	Gravel	Clay	Mar	
In-water Cover Cover Types Present (circle): Overhanging Vegetation	Undercut Ba Voody Debris	nks Deep Po Boulder C	ol Watercress Other	Aquatic Veg
Riparian Cover (% of watercou	rse shaded, domin	ant vegetation, ma	ture or early succ	essional)
Adjacent Lend Hea	grasses 1	<u>'ayly</u>		
	·			
- farm o	<u> </u>			
Fish Habitat Potential				
Critical Habitat (spawning or nu	rsery areas, groun	dwater upwellings))	
Migratory Obstructions (season	al, permanent)			
Note any fish observations				
Trote any fish observations	6034 Spanish Spanish			
Waterbody Notes				
Natural Watercourse Tr	rangzoidal Channel		-d O1.	Ph. 1 1 mm.
Surficial Drainage (i.e. furrows)	Dugout Pon	d Grasse	ed Swaleed by Aquatic Veg	Buried Tile Drv
Other Habitat Notes, Incidenta				-
Field Notes Authored by K. Clarific	Field Notes	CANCELL WIE	En alla	

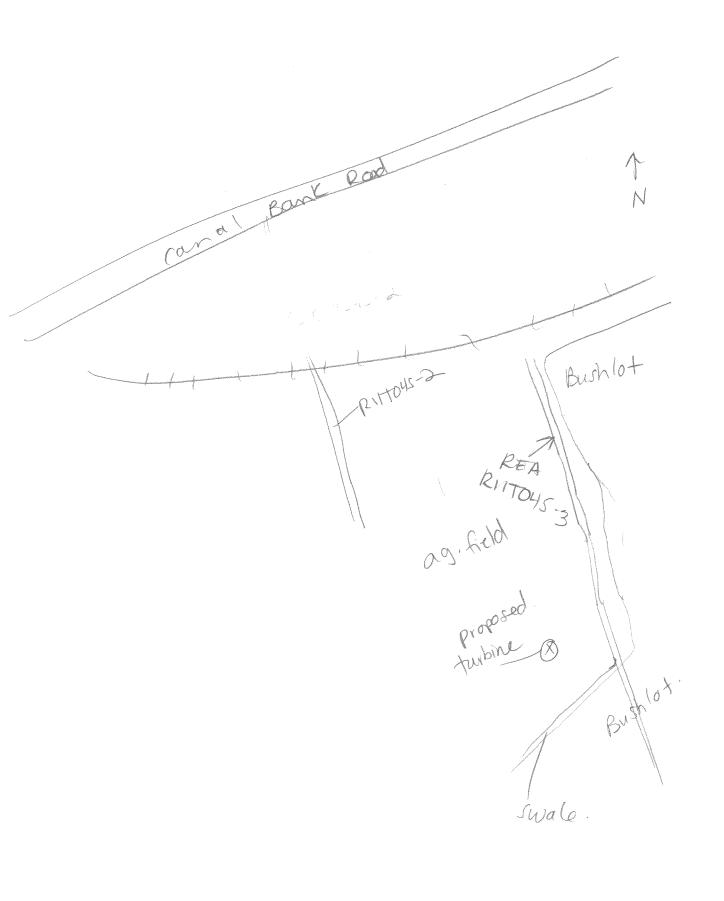
Canal Bank Rd Railbed REA (Previously) water drive it dominated by again buildored Section Bushlot





Stanted

Station # PUTO 45		Project Name _/\	ianara	Wind
Watercourse Name WAY	have	Project #	60950 20	99
Photos	****	Field Staff/		·
Date		Time <u>la :⊘</u> 8		
Weather conditions in previous	24 hrs \@	- overtast		
GPS Coordinates (Zone) 17	1 E0623	blot N	4749128	Datum NAD
Descriptive Location 400	m south o	f Manal B	unc Rel	
Water Quality	dandiat	Kr.		
Dissolved Oxygen (mg/L)	pH_	Conductivi	h. (Olama)	
Water Temperature (°C)	PII	Conductivi	ιy (μδ/cm)	
Time in situ measurements take	en ·	Air Temperature (°0	J)	
				·
Watercourse Dimensions & N	lorphology			
	<u>) (</u> m)		th&O	(cm)
	<u>△(</u> m)	Mean Water Depth	15	(cm)
% Riffle	% Po	ool <u> 100</u>	% Run	% Flat
Evidence of eroding banks, Cor	nments on bank s	tability		
Substrate (% cover)	<u></u>		* * _	
Bedrock	Cobble	Sand		40 Muck
Boulder	Gravel	Clay	Marl	20 Detritus
Cover Types Present (circle): Overhanging Vegetation W Riparian Zone	oody Debris	Boulder Other	r	Aquatic Veg
Riparian Cover (% of watercours	se shaded, domina	ant vegetation, mature	or early succes	ssional)
Adjacent Land Use	Cattails,	early		
	C. 14	· · · · · · · · · · · · · · · · · · ·		
<u> </u>				
Fish Habitat Potential				
Critical Habitat (spawning or nur	CODY OFFICE OFFICE	dundon i mi i nilla a a		
Charact (opamiling of Hail	Sery areas, ground	awater upweilings)		
Migratory Obstructions (seasona	l permanent)		٠.٠	
and a control (occasional	intermitte	NE OF BEXWAY	- 11T	La but in
Note any fish observations		NII (N PRAIVIUN	1001 100	Tation Very
				- Carried M
				CI
Waterbody Notes		J.		•
latural Watercourse Tra	pezoidal Channel	Grassed S	wale	Ruried Tile
Surficial Drainage (i.e. furrows)_	Dugout Pon		y Aquatic Veg_	Dry
			, , iqualio rog_	Oiy
Other Habitat Notes, Incidental	Wildlife Observa	ations, etc. <u>& 00</u> 5		
		3		
£ -				
eld Notes Authored by K	ž.	OA/OCED by M. Fair		







Station #_ R 1 1 0 4 9 - 1		Project i	Name	Niaga	ra U	Jind	
Watercourse Name Unknow				0950			
Photos See Make low		Field Sta	aff_\C	Claunter	M_{i}	- raic	Na.
Date	,	Time	4.45	_ CnG			
Weather conditions in previous 2	4 hrs <u>Rair</u>	hot	ethu	unlid.			
GPS Coordinates (Zone) 17	E 0626	2974	N	4748	3779	Datur	n Nade
Descriptive Location	m porth	7 6 ‡ /	22) CES	hove (200d	~~30	20 m
of old Railbec	<u> </u>						
Water Quality	- howa	tcv					
Dissolved Oxygen (mg/L)	pH		Conduct	tivity (μS/c	m)		
Water Temperature (°C)	•		perature	(°C) <u> </u>	1ºC		
Time in situ measurements taken				· -/			
Watercourse Dimensions & Mo	rphology				**ag		
Mean Watercourse Width		Maximur	n Pool D	epth		(cm)	
Mean Bankfull Width	(m).			th		(cm)	
% Riffle	─────── % Po		ator Dep	% Ru		(0111)	% Flat
Evidence of eroding banks, Comi					A11	***************************************	/0 1 1at
	~						
Substrate (% cover)	0-66-	•		Ca		HA	
Bedrock Boulder	Cobble Gravel		and lay	$\mathcal{O}\mathcal{U}$	Silt Marl	90	_Muck Detritus
Riparian Zone Riparian Cover (% of watercourse	ody Debris shaded, domina	int vegetat	ion, matu	herc	and the same of th	sional)	<u> </u>
100 % m	ature tre	es, ma	tire	-			
Adjacent Land Use							
Fish Habitat Potential							
Critical Habitat (spawning or nurse	on/ arone around	huotor unu	امعمناأه				
~ [~ []	COA: 12000	water upw Nutrsid	omiga <i>)</i>	1 Duas	2.79		
Migratory Obstructions (seasonal,	permanent)				J		
Note any fish observations	Same and the same						
Waterbody Notes Natural WatercourseTrap Surficial Drainage (i.e. furrows)			Grassed ominated	Swale by Aquat	ic Veg_	Buried T	ile Dry
Other Habitat Notes, Incidental \	-						-
,		,					
						<u> </u>	
14 0					"		
Field Notes Authored by K.Claufan	Field Notes	QA/QCed by _	MK				

· warld be great habitat if there was water (ie. inspring); -lots of wordydebris, shaded channel old Rail bed. 1/21/1023 Veldhuizer 2000 Path ake share Road



NON

Stantec		DUG PONT
Station # RILTO5Z Watercourse Name 5Z-1	Project Name	
Photos 8885 Date June 8. 2017	Field Staff T CHANDLER	M ELLAH
Weather conditions in previous 24 hrsSunny	Time 2:00 PM	
GPS Coordinates (Zone) E 6142 Descriptive Location	259 N 4766482	Datum
Dissolved Oxygen (mg/L) pH	ND Conductivity (μS/cm)	
Water Temperature (°C) Time in situ measurements taken	Air Temperature (°C)	
Watercourse Dimensions & Morphology		
Mean Watercourse Width (m) Mean Bankfull Width (m) % Riffle % Po		(cm) (cm) % Fla
Evidence of eroding banks, Comments on banks		
Substrate (% cover)BedrockCobble	SandSilt	
Boulder Gravel	SandSilt_ ClayMar	
Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris		Aquatic Veg
Riparian Zone Riparian Cover (% of watercourse shaded, domination	ant vegetation, mature or early succ	essional)
Adjacent Land Use	And the second s	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groun	dwater upwellings)	
Migratory Obstructions (seasonal, permanent)		
Note any fish observations		
Waterbody Notes Natural Watercourse Trapezoidal Channe Surficial Drainage (i,e. furrows) Dugout Por		Buried Tile
Other Habitat Notes, Incidental Wildlife Observ	ations, etc.	
Field Notes Authored by TICH ANDLE Field Notes	s QA/QCed by	



NON	
REA	

Sta	n	te	×

Station #_FIT057 Watercourse Name57-7 Photos \$886-88 Date TUNE \$ 2017 Weather conditions in previous 24 hrs GPS Coordinates (Zone) 171 E 61416 Descriptive Location	Project Name NIAGARA WIND Project # 160950169 Field Staff TCHANDLER M. ELLAH Time 2:05 N 9766482 Datum
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	M/A Conductivity (μS/cm)//A Air Temperature (°C)25
Watercourse Dimensions & Morphology Mean Watercourse Width	
Substrate (% cover) BedrockCobbleBoulderGravel Cover Types Present (circle): Undercut Bank Overhanging Vegetation Woody Debris	Sand Silt Muck Clay Marl Detritus As Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, dominant of the shaded of the s	nt vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds)	vater upwellings)
Migratory Obstructions (seasonal, permanent) No Y Low Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Channel _ Surficial Drainage (i.e. furrows) Dugout Pond Other Habitat Notes, Incidental Wildlife Observat	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry ions, etc
Field Notes Authored by CHANDLER Field Notes Q	A/QCed by



NON

Station # RUTO 52		Name NIAGARA	WIND
Watercourse Name 52-3		# <u>160950269</u>	
Photos 8889	_ Field S	taff TCHANDLER	M ELLAH
Date JUNE 8 20/2	Time _2	2.72	
Weather conditions in previous 24 hrs	6,4977	N /1-7//231	5-1
` / / - 	6/4366	N 4766321	Datum
Descriptive Location			
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	pHAir Tem	Conductivity (µS/cm)	
7			······································
Watercourse Dimensions & Morphology Mean Watercourse Width(m)	Maximu	ım Dool Dorith	()
Mean Bankfull Width (m)		um Pool Depth Vater Depth	(cm)
/	% Pool	% Run	(cm) % Flat
Evidence of eroding banks, Comments on ba	■ P	//o muii	
Substrate (% cover)		and the same of th	
, · · · · · · · · · · · · · · · · · · ·		Sand Silt	Muck
Boulder Gravel		Clay Ma	
, /			- D Ottitudo
In-water Cover	/		
		Deep Pool Watercress	s Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder	Other	
Riparian Zone	-		
Riparian Cover (% of watercourse shaded, d	ominant vegeta	ation, mature or early succ	cessional)
		~	
Adjacent Land Use			
PLOUGHED ARI FIELD			
Fish Habitat Potential			
Critical Habitat (spawning or nursery areas, g	groundwater up	wellings)	
Migratory Obstructions (seasonal, permanen	rt)		
Note any fish observations			
Note any non-observations			
Wotorbody Notes	1	/	
Waterbody Notes		Oversed Overla	D. 20171 8
Natural Watercourse Trapezoidal Ch		Grassed Swale	Buried Tile V
Surficial Drainage (i.e. furrows) Dugou	ut Pond_/	Dominated by Aquatic Ve	eg Dry
Other Habitat Notes, Incidental Wildlife Ol	servations el	tc.	
Field Notes Authored by T. C. HANDLER	14 Notes - 04 (00 - 11	NR	



NON

Stantec

Station #_RIITO 52		Project Name	NIAGARA	WIND
Watercourse Name 52-4		Project #160		<u> </u>
Photos 8890			CHANDLER	M ELLAH
Date SUNF 9, 7017		Time 2.20		16 5-67(17
Weather conditions in previous	24 hrs			
GPS Coordinates (Zone)	E 6144	72 N	V 4766319	Datum
Descriptive Location			· TTOD21	Datuiii
Water Quality DRY	THEF	7		
Dissolved Oxygen (mg/L)	DH	Conde	otivity (v.C.lom)	
Water Temperature (°C)	pri_	Condu	clivity (μο/ciii)	
Time in situ measurements take	an /	Air remperature) ('U)	
Watercourse Dimensions & M	lorphology			
Mean Watercourse Width		Maximum Pool	Depth	(cm)
Mean Bankfull Width	(m)		pth	(cm)
% Biffle	% Po	pol	% Run	% Flat
Evidence of eroding banks, Cor	nments on bank s	tability		
		/		
Substrate (% cover)				
Bedrock	Cobble	Sand	Silt	Muck
Boulder	Gravel		Mar	
				D United
to have Doing	· · · · · · · · · · · · · · · · · · ·			
Cover Types Present (circle):	Undercut Ba	inks Deep Po		Aquatic Veg
Overhanging Vegetation W	oody Debris	Boulder C	Other	
Riparian Zone			<i>d</i> **	
Riparian Cover (% of watercours	se shaded, domin	ant vegetation, ma	ture or early succ	essional)
		<u> </u>		
Adjacent Land Use	~ ~ ~	a la maridata.		
Poubly	ED AGR	4. FIELD		
Fish Habitat Potential				
Critical Habitat (spawning or nur	sery areas, groun	dwater upwellings)		
Migratory Obstructions (seasona	l normanent)			
A PA PLANN	ii, permanem)			
Note any fish-observations	/			-
		1		
Waterbody Notes/				
	apezoidal Channe		ed Swale	Buried Tile
Surficial Drainage (i.e. furrows)	Dugout Por	nd_/ Dominat	ed by Aquatic Ve	g Dry
Other Habitat Notes Incidente	l Wildlife Observ	ations at a		
Other Habitat Notes, Incidenta	i wiidille Observ	auons, etc.		
6 4.10	r.0			
Field Notes Authored by CHONDI	イリー Field Note:	s QA/QCed by	4	



1	VR	01	N	+	
<u> </u>	1		-	_	,

Station # RITO 52	Project Nam	_	- WIND
Watercourse Name 5 2 - 5 Photos 8891 92		50950269 TCHANDLER	M ELLAH
Date JUNE 8, 2017 Weather conditions in previous 24 hrs Cloudy GPS Coordinates (Zone) TE 6/42 Descriptive Location	Time 2:3 operiods, sun 295	N 476 6060	Datum
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	I Cor Air Tempera	nductivity (μS/cm) ture (°C) _25	
Mean Watercourse Width (m) Mean Bankfull Width (m)	Maximum Po Mean Water Pool stability		(cm) (cm) % Fla
Substrate (% cover) BedrockCobbleBoulderGravel	Sand_ Clay_		
In-water Cover Covering Covernment (circle): Undergute Overhanging Vegetation Woody Debris		Pool Watercress Other	Aquatic-Veg
Riparian Zone Riparian Cover (% of watercourse shaded, dom	inant vegetation,	mature or early succ	essional)
Adjacent Land Use	AL FIE	FLD	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds)	undwater upwellin	gs)	
Migratory Obstructions (seasonal, permanent)			
Note any fish observations			
Waterbody Notes Natural Watercourse Trapezoidal Chann Surficial Drainage (i.e. furrows) Dugout Po		ssed Swale nated by Aquatic Veg	Buried Tile
Other Habitat Notes, Incidental Wildlife Obser	rvations, etc		
		/	
Field Notes Authored by TICH ANDLER Field No	tes QA/QCed by/\dagged	R	



Station #_RITO 52_ Watercourse Name 52-6	Project Name NIAGARA	WIND
Photos <u>8893 - 94</u> Date <u>14NE 8, 2012</u>	Project # 60950769 Field Staff T CHANDLER Time 2:45	M ELLAH
Weather conditions in previous 24 hrs Synthesis GPS Coordinates (Zone) F E 614 Descriptive Location	ny w cloudy periods 492 N 4766082	Datum
Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	- Conductivity (μS/cm) Air Temperature (°C)25	
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m)% Riffle% Evidence of eroding banks, Comments on bank	Maximum Pool Depth	(cm) (cm) % Flat
Substrate (% cover) BedrockCobbleBoulderGravel	Sand Silt Clay Ma Banks Deep Pool Watercress Boulder Other	<u>Detritus</u>
Riparian Zone Riparian Cover (% of watercourse shaded, dom		cessional)
Adjacent Land Use CORN FIELD		
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds)	undwater upwellings)	
Migratory Obstructions (seasonal, permanent)		
Note any fish observations		
Waterbody Notes Natural Watercourse Trapezoidal Chanr Surficial Drainage (i.e. furrows) Dugout P	nel Grassed Swale Pond Dominated by Aquatic Ve	Buried Tile
Other Habitat Notes, Incidental Wildlife Obse	ervations, etc.	
Field Notes Authored by TICH PNDER Field No.	otes 04/0Ced by MA	

tile#a9



WIND FARM WATERBODY RAPID ASSESSMENT FORM

NOREDS

Station #_RUTOS4	Project Name N	igara Wine	4
Watercourse Name Unknown	Project #/_O_9 Field Staff Class	50269	
Photos	Field Staff <u>K. Clau</u>	ton Miraie	\ <i>u</i> .
Date	Time		
Weather conditions in previous 24 hrs	thumid	D-4	
GPS Coordinates (700e) 1 file E	N	Dat	
Descriptive Location	Naughn Koa		
Water Quality Dissolved Oxygen (mg/L) pH_ Water Temperature (°C) Time in situ measurements taken	Conductivity Air Temperature (°C)	(μS/cm)	
Watercourse Dimensions & Morphology Mean Watercourse Width (m)	Maximum Pool Depth	(cm))
Evidence of eroding banks, Comments on bank s	tability		
Substrate (% cover)			
Bedrock Cobble Cobble	Sand	Silt	Muck
Boulder Gravel	Clay	Marl	Detritus
In-water Cover Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domin	Boulder Other_		
Adjacent Land Use			
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	ndwater upweilings)		
Migratory Obstructions (seasonal, permanent)			
Note any fish observations			
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po			d Tile
Other Habitat Notes, Incidental Wildlife Observed hald eagle calling	in buthlat acre	covn field	from
Field Notes Authored by Kanton Field Note	es QA/QCed by		





Station # RII TOSS		Project Name	Niagard (wind	
Watercourse Name unkn	aun	Project #		69	
. Photos		Field Staff	Clayten	M' Fairlld	
Date Apr 5 //2.		Time 12:	20 000		
Weather conditions in previous		SUMMU	}		
GPS Coordinates (Zone)	I E DOD	3 ST X	N 47/243	Fa Datum Na	オダ
Descriptive Location	m nath	Of Elcho	Roan	· Vm each	<u> </u>
- ot Region	nal Rdi	<u> </u>			
Water Quality		_			<u></u>
Dissolved Oxygen (mg/L)	<u>.0</u> → pH	8.45 Cond	uctivity (μS/cm) _	345	
Water Temperature (°C)	· C				
Time in situ measurements take	en <u>(2:3)</u>				
Watercourse Dimensions & M	orphology				
Mean Watercourse Width	(o() (m)	Maximum Poo	l Depth	(cm)	
Mean Bankfull Width	(m)	Mean Water D	enth A	<u>S</u> (cm)	
% Riffle	% Po		(//) % Run		Flat
Evidence of eroding banks, Con	ments on bank st		VCare		
	Riparian	Vealta	ha	Hable trav	
Substrate (% cover)		V			
Bedrock	Cobble	Sand_	1100	MA	
Boulder	Gravel	Salid_ Clay		iltMuck	
*	OidVei	Clay		arl Detrit	us
In-water Cover				·	
Cover Types Present (circle):	Undercut Bar	nks Deep F	ool Watercre	ss Aquatic Ve	
Overhanging Vegetation Wo	oody Debris	Boulder	Other	os Aduatic Ac	y
					-
Riparian Zone					
Riparian Cover (% of watercours	e shaded, domina	int vegetation, m	ature or early su	ccessional)	
<u> </u>	grasses, e	'arly			
Adjacent Land Use	n.				
	mand				
Plat Hattan Barana					
Fish Habitat Potential					
Critical Habitat (spawning or nurs			s) 🦳		
Migratory Obstructions (access	awning, 1	Dursery	, toragin	<u> </u>	
Migratory Obstructions (seasona	i, permanent)	F			
Note any fish observations	and the second s				
Waterbody Notes					
	nozoidal Channel	A			
	pezoidal Channel		sed Swale	Buried Tile	
		d Domine	ited by Aquatic V	eg Dry_	
Cumolai Dialilage (i.e. lullows)	Dugout Pon	u Domina	ioa by Aquatio V	cg Dry	
			od winn	back hide	
			ed wing	black birds	-
			ed wing	black birds	
Surficial Drainage (i.e. furrows) Other Habitat Notes, Incidental			ed wing	black hirds	
Other Habitat Notes, Incidental			ed wing	black hirds	





NOT A REA

7	 	 _	- '	 	 	-	 	_	•	 	 •	_
Stantec												

Station #RI/T056H Project Name NIAGARA VIIIV Watercourse Name 56H-1 Project #160950269 Photos \(\frac{7847}{-49} \) Field Staff \(\frac{7}{1} \) Chandler \(\text{M} \) Ellah \(\frac{1}{1} \) Weather conditions in previous 24 hrs \(\frac{676}{2} \) GPS Coordinates (Zone) \(\frac{17}{1} \) E \(\frac{676}{2} \) \(\frac{7}{3} \) N \(\frac{4769267}{9267} \) Datum Descriptive Location
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken PH NA Conductivity (μS/cm) Air Temperature (°C) 2 O
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width (m) Mean Water Depth (cm) Wean Water Depth (cm)
Substrate (% cover) Bedrock Cobble Sand Silt Muck Boulder Gravel Clay Marl Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Adjacent Land Use Adjacent Land Use Agricultural Reld - planted in crops: Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent) No Flow Note any fish observations
Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observations, etc. No Access to drainage feature except along Fifteen Rood.
Field Notes Authored by T : Chand (91 Field Notes QA/QCed by W



Not	REA
-----	-----

	Not Res
WIND FARM WATERS	BODY RAPID ASSESSMENT FORM
Stantec	TIP 46
	Project Name Alima and Joan Fin
Station # R \ 105 A Watercourse Name	Project Name Niagara Wind Project # 160950269
Photos Section	Field Staff K 7 4 4 K
Date (4/0 12 20/2	Time 2 44000
Weather conditions in previous 24 hrs	n The state of the
Of S Cooldinates (Est. 5)	25140 N 47686BDatum
Descriptive Location BOOK KA JU	16+ South of Paul Haus
Water Quality	
Dissolved Oxygen (mg/L) p	pH Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width(m)	Maximum Pool Depth(cm)
Mean Bankfull Width (m)	Mean Water Depth (cm)
	% Pool% Run% Flat
Evidence of eroding banks, Comments on bar	nk stability
Substrate (% cover)	
BedrockCobble	SandSiltMuck
BoulderGravel_	ClayMarlDetritus
In-water Cover	·/
Cover Types Present (circle): Undercut	it Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other
Diversion 7ene	
Riparian Zone Riparian Cover (% of watercourse shaded, do	ominant vegetation, mature or early successional)
Adjacent Land Use	
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, gro	roundwater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
<u> </u>	
Waterbody Notes	•
Natural Watercourse Trapezoidal Char	annel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout	Pond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Obs	servations, etc.
- no waterouse or water	er 100gg, just subjected
drundse, I was at	Second as Non Atlance to Many
TIV TIGUE AT WALL UT	ALLOW FINAL A 1500 INDICE
Field Notes Authored by Field N	Notes QA/QCed by
	Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



parameter.	T058

Station # Plant 1000 Miles	Project Name Nic		d
Watercourse Name	Project #	50269	
Photos See log	Field Staff K	- JK	
Date	Time		
Weather conditions in previous 24 hrs		E control of a secondary	
GPS Coordinates (Zone) E 028	<u> 432 N (</u>	<u> 17675220</u>	atum
Descriptive Location 600 4 6 6 6	CK)WAT KI	DURLARY	
apprend 800 m south	- A FIRA		
Water Quality Mostly day or	too little	rayer to	sample
Dissolved Oxygen (mg/L) pH		(μS/cm)	
Water Temperature (°C)	Air Temperature (°C)		
Time in situ measurements taken	The day of the state of the sta		
Watercourse Dimensions & Morphology			*
Mean Watercourse Width () (m)	Maximum Pool Depth	(cr	n) $d \wedge d$
Mean Bankfull Width (m)	Mean Water Depth	· · · · · · · · · · · · · · · · · · ·	• / / ~/ /
% Riffle % Poo	•	% Run	% Flat
Evidence of eroding banks, Comments on bank sta	- Aller Control of the Control of th		
Linds of Ground Parists, Comments of the Comme	•		
Substanta (% sough)			
Substrate (% cover) Bedrock Cobble	Sand	Silt	Muck
Boulder Gravel	Clay	Mari	Detritus
Cover Types Present (circle): Undercut Bank Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dominar Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds)	1 O.T.	r early succession	al)
INDIA () Z	3,		
Migratory Obstructions (seasonal, permanent)			•
Migratory Obstructions (seasonal, permanent)			•
MINU			
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swa	***************************************	ed Tile
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swa	***************************************	
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Dugout Pond Other Habitat Notes, Incidental Wildlife Observations	Grassed Swa	***************************************	

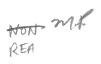
- shallow, narrow defined channel along back edge of Add - 100ses definition definition + ploughed through in adjacent Rield Ploughed - BOBOUNK Observed in my Reld ~ 10-20.



NON outside
REA wood!
REA wood!

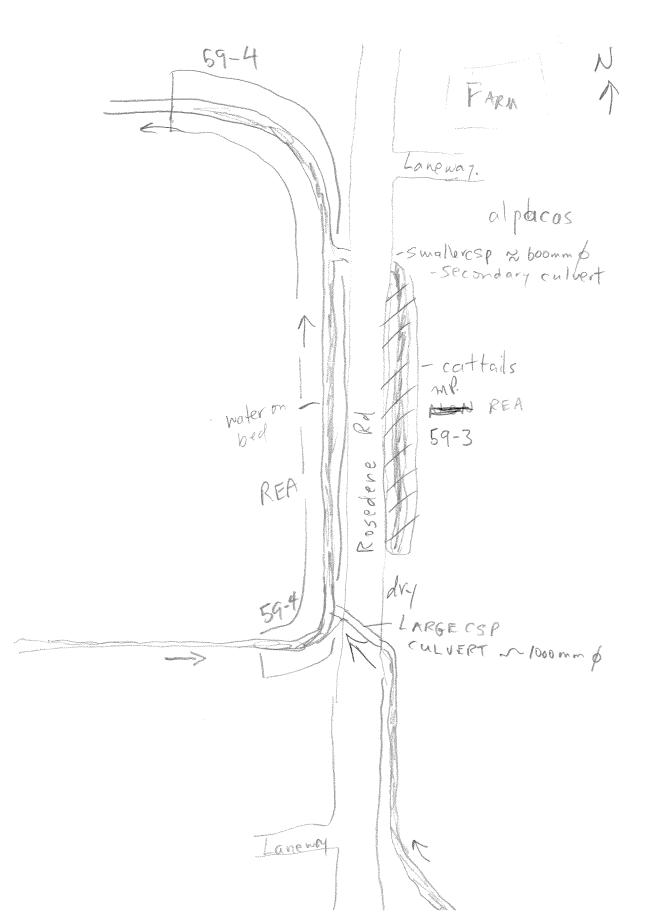
Station #	Project Name NIAGARA WIND
Watercourse Name 59 2	Project # 16 0 9 50 269
Photos 8828-29 Date Jule 7. 2012	Field Staff Tchandler M EllAH
Weather conditions in previous 24 hrs	Time 2125 PM
GPS Coordinates (Zone) 17 E 62.992	0 N 4767524 Datum
Descriptive Location	Datum
Water Quality DRY	
Dissolved Oxygen (mg/L) pH	Conductivity (µS/cm)
Water Temperature (°C)	Air Temperature (°C) 25
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width Nowater (m)	Maximum Pool Depth(cm)
Mean Bankfull Width ~ 2 (m)	Mean Water Depth (cm)
% Riffle% Poo	ol% Run% Flat
Evidence of eroding banks, Comments on bank sta	ibility Roorly defined smale us
of wood lot - defined channel in	woodlot
Substrate (% cover)	
BedrockCobble	SandSiltMuck
BoulderGravel	Clay Marl Detritus
In-water Cover NA ANATER Cover Types Present (circle): Undercut Ban Overhanging Vegetation Woody Debris	ks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone	
Riparian Cover (% of watercourse shaded, dominar	at vegetation, mature or early successional)
No water couse us y woodlot; loo;	to vegetation, mature of early successionary
Adjacent Land OSE	
Hayfield up wood st; words	- Control of the Cont
· · · · · · · · · · · · · · · · · · ·	
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, ground	water upweilings)
Migratory Obstructions (seasonal, permanent)	
There any non-observations	
Waterhody Notes	
Waterbody Notes Natural Waterpourse Transpoidal Channel	Grand Swale Duried Tile
Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swale Buried Tile J Dominated by Aquatic Veg Dry
Dagour Fond	
Other Habitat Notes, Incidental Wildlife Observa	tions, etc. Bobolinks in area.
~ ^(/	A
Field Notes Authored by Field Notes (QA/QCed by





Station #_RITO 59 Watercourse Name 59-3 Photos 5833 8830 Date	Project Name NIA GARA WIND Project #_160950269 Field Staff Tichandor M Ellah Time 2:45 N 476 7449 Datum
Descriptive Location	
Water Quality Solated pool at disend Dissolved Oxygen (mg/L) 1.74 pH_7 Water Temperature (°C) 21.66 Time in situ measurements taken 2.45 PM	8 CSPC ulverto Rosedene Rd. 179 Conductivity (µS/cm) 4380 Air Temperature (°C) 27
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width 2-3 (m) ———————————————————————————————————	Maximum Pool Depth (cm) Mean Water Depth (cm) White Run Flat
Substrate (% cover) BedrockCobble BoulderGravel	Sand 100 Silt Muck Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undercut Bank Overhanging Vegetation Woody Debris	s Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, dominar	
Adjacent Land Use	d (to west)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground)	
Migratory Obstructions (seasonal, permanent) As your flow - perched colored Note any fish observations	t at Rosedone Rd. ~10cm
Waterbody Notes — Intermitted Woderbo Natural Watercourse Trapezoidal Channel _ Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observat	ions, etc
Field Notes Authored by M. Ella Wotes C	DA/OCed by AR

RILTO 59 59-3





Stantec

Station # RIOT59	Project Name: NIAGARA WIND
Watercourse Name 59-4 Photos 5831-32, 34, 35, 36	Project #: 160950269
Date June 7, 2012	Field Staff T, Chandlor, M Ellah
Weather conditions in previous 24 hrs	rehowers previous evening, then sunny
GPS Coordinates (Zone) 77 E 4292	N 476 7433 Datum
Descriptive Location	17 N 776 /133 Daium
Water Quality	
Dissolved Oxygen (mg/L) 5.00 pH	8.17 Conductivity (µS/cm) 4062
Water Temperature (°C)27, 15	Air Temperature (°C)
Time in situ measurements taken3:00 PM	
Watercourse Dimensions & Morphology 🕝 🖯	Maximum Pool Depth 20 (cm) Mean Water Depth 5 (cm)
Mean Watercourse Width(m)	Maximum Pool Depth 20 (cm)
Mean Bankfull Width 2,5 (m)	Mean Water Depth (cm)
% RITILE% P	ool <u> </u>
Evidence of eroding banks, Comments on banks	stability Evidence y voing louse!
50m.	V
Substrate (% cover)	
BedrockCobble	Sand Silt Muck Clay Marl Detritus
BoulderGravel	Clay Marl Detritus
In-water Cover	minor
Cover Types Present (circle): Undercut Ba	anks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other
Riparian Zone	
Riparian Cover (% of watercourse shaded, domin	ant vegetation, mature or early successional)
70%- grass, early	an regulation, mature or early successionary
Adjacent Land Clee	
Road to east posture thay field	to west of drainage teature
	0
Fish Habitat Potential	advista a visco Illia v A
Critical Habitat (spawning or nursery areas, ground spawning or nursery ar	idwater upweilings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
Waterbody Notes	
Natural Watercourse Transzoidal Channe	el Buried Tile
Surficial Drainage (i.e. furrows) Dugout Po	nd Dominated by Aguatic Vog Dry
	1
Other Habitat Notes, Incidental Wildlife Observ	rations, etc. In frmittent channel almo
roadside ditaribats y water	, No evidence & flow.
very slight Clan evidant.	<i>D</i>
Field Notes Authored by T. Chandler Field Note	as QA/QCed by

Tiles4 REA



Fish Habitat Potential Critical Habitat (spawning or nur Migratory Obstructions (seasona Note any fish observations Waterbody Notes	sery areas, ground all, permanent) percoidal Channel Dugout Pond	dwater upweiling Grass Domina	sed Swaleated by Aquatic	Buried T	ile
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nur Migratory Obstructions (seasona Note any fish observations Waterbody Notes Natural Watercourse Tra	sery areas, ground	twater upwelling	sed Swale	Buried T	ile
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nur Migratory Obstructions (seasonal	sery areas, ground	twater upwelling	s) .	_	
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nur Migratory Obstructions (seasonal	sery areas, ground	twater upwelling	s) .	_	
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nur	sery areas, ground	twater upwelling	, j		
Adjacent Land Use	ec (read co	mans gro	ist, early		
100% aroc	ec (read ce	manigro	ist, early	1	unter communication construction and con
Riparian Cover (% of watercours	se soacen como:		action of Garry 3	www.asiUlial)	
Cover Types Present (circle): Overhanging Vegetation W Riparian Zone	Undercut Bar coody Debris	Boulder	Other		atic Veg
BoulderBoulder	Gravel	SO_Clay_	**************************************	Mari	_Detritus
Substrate (% cover) Bedrock	Cobble	Sand_		sit	_Muck
Evidence of eroding banks, Cor	mments on bank s	tability <u>£a:</u>	rlystabl	e -lots	0-f
Mean Watercourse Width 2 Mean Bankfull Width 3 Riffle	(m) (m) / <i>O</i> % Po	Maximum Poo Mean Water I		75 (cm) 40 (cm)	% Flat
Time in situ measurements take Watercourse Dimensions & M				in	Preld entra
Water Quality Dissolved Oxygen (mg/L) 3.5 Water Temperature (°C) 22	· \(\lambda\)	7.66 Cond	ductivity (μS/cm ure (°C) <u> </u>	535 C	
Descriptive Location _~~~	morth	Of Lax	<u>omore</u>	<u> </u>	
Of O Cooldinates (2016)	<u> </u>	<u> </u>	N 4747	894 Datur	mNad83
GPS Coordinates (Zone)	24 nrs	v. noteni			
Date June 18/18 Weather conditions in previous	24 hrs & 2000	- American Company	50	<u> </u>	· · · · · · · · · · · · · · · · · · ·
Photos Sur Photos Date June 1971 Photos Weather conditions in previous	24 hrs & 2000	Field Staff	609502 2 claylon 1 30	269 Y.Faiella	

1

ag field ag feld REA-061-1 GE Riparian March) Sanle mature trees, but mostly grasses. ag. Feld/car as feld/ Barrick's Yellanshed Laceshae



Station # < TO	22-14	Project Name			2 2170
Watercourse Name		Project #/(00950		
Photos See photo log		Field Staff	: clay-te	n, M. Fo	urella:
Date June 12		Time <u> 🔾 🖫</u>	4.5		
Weather conditions in previous		1000 to 1	numid.		L. Te
GPS Coordinates (Zone)		1903	N 4751	Date Date	um Nac
Descriptive Location		t of the	<u>uninian</u>	(Coxd	
Water Quality				ı	
Dissolved Oxygen (mg/L)	pH	Condu	uctivity (uS/cm	n)	
Water Temperature (°C)		Air Temperatu	re (°C) 😞 🔻	• • • • • • • • • • • • • • • • • • • •	
Time in situ measurements tak		•			
Watercourse Dimensions & Mean Watercourse Width	(m)	Maximum Pool	Depth_O	60 (cm))
	(m) [.]	Mean Water De		50 (cm)	
% Riffle	% Po			1	% Fla
Evidence of eroding banks, Co	mments on bank s	tability <u>Sho</u>	de life	zelat	<u> </u>
Substrate (% cover)					
Bedrock	Cobble	Sand	10	Silt 10	Muck
Boulder	Gravel	_ <clay< td=""><td></td><td>Marl</td><td>Detritus</td></clay<>		Marl	Detritus
Overhanging Vegetation Riparian Zone Riparian Cover (% of watercour	Voody Debris		Otherature or early	successional	
Adjacent Land Use	and.				
Fish Habitat Potential					
	PAGE / GEOGG - GEOLIE				
Critical Habitat (spawning or nu	Insery areas, ground		•)		
Migratory Obstructions (season		- 12 3 3 3 3			
mgratory obotractions (ocacon	www.			•	
Note any fish observations	Angelia de la companya de la company				
Waterbach Notes					
Waterbody Notes	rangeraidal Channal	C	ad Cumba	Dl	Til
Natural Watercourse Transport			ed Swale		
Surficial Drainage (i.e. furrows)_	Dugout Pond	u Dominat	ed by Aquation	veg	Dry
Other Habitat Notes, Incidenta	al Wildlife Observa	itions, etc		,	
	nine mining the control of the contr				
Field Notes Authored by K.Claufa	Field Notes	QA/QCed by			

buchlot REP. 1062-1 Tag. feld 6/92. as fild war in channel toolay, reading. catais. * very hith catails smalls Road 06225134751621



Station # R 11 + 70 - 65 -	No.	Project Name 6	·	
Watercourse Name		Project Name	agara wu	<u>\a</u>
		Project #/(O	150269	
Photos 52/3 Date June 13 201		Field Staff		
	24 bro	Time 1211	2 pm	
Weather conditions in previous		3 3 4 3 4 4	1 mg/ m / 1 mg/	
GPS Coordinates (Zone)		3340 N	175 4676 D	latum /
Descriptive Location along	7	Dunnille w	a relegt	Just
Water Quality	Manage of the state of the stat	· ·		
Dissolved Oxygen (mg/L)	84 nu	8/30 Conductivity	1/4 Slom) 70	***
Water Temperature (°C)	Ž. ŪT	Air Temperature (°C	$\gamma (\mu \text{Ordin}) = \gamma \otimes \gamma$	
Time in situ measurements tak		All remperature (*C)	
Time in Situ measurements tak				
Watercourse Dimensions & Mean Watercourse Width Mean Bankfull Width Riffle Evidence of eroding banks, Co	(m) (m) 100% F mments on bank	stability		m) m) % Fla
steep, but sta	ale + ve	YOPED .		
Substrate (% cover)	(,		
Bedrock	Cobble	40 Sand	Silt	Muck
Boulder	Gravel	Clay	Ont	Detritus
In-water Cover Cover Types Present (circle): Overhanging Vegetation W			Watercress	Aquatic Veg
Riparian Zone Riparian Cover (% of watercour	rse shaded, domii	nant vegetation, mature	or early succession	nal)
Adjacent Land Use	700,0(31)/	*WINDE + SVA	4 111113	1 1 1
Ag - corn +			1	~
	~ }			
Fish Habitat Potential				
Critical Habitat (spawning or nul	rsery areas, grou	ndwater upweilings)		
Migratory Obstructions (seasons	al, permanent)			
sermanent		' 		•
Make and Calculation				
Note any fish observations				
Note any fish observations				
Waterbody Notes				
Waterbody Notes Natural Watercourse Tra	apezoidal Channe		valeBurie	ed Tile
Waterbody Notes Natural Watercourse Tra			vale Burie	ed Tile
Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows)_	Dugout Po	nd Dominated by		
Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows)_ Other Habitat Notes, Incidenta	Dugout Po	nd Dominated by /ations, etc		
Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows)_ Other Habitat Notes, Incidenta	Dugout Po	vations, etc.		
Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows)_ Other Habitat Notes, Incidenta	Dugout Po	vations, etc.		
Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows)_ Other Habitat Notes, Incidenta	Dugout Po	vations, etc.		
Waterbody Notes Natural Watercourse Tra Surficial Drainage (i.e. furrows)_ Other Habitat Notes, Incidenta	Dugout Po	vations, etc.		

Bush lot (0/0



REA

Station #	Project Name Nia gava Index Project # 100950269 Field Staff Time 3:16 20444 N 4756980 Datum JAP8 of Crare Rd Cong North of
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	H Conductivity (μS/cm) Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width (m)	Mean Water Depth S (cm) Pool Run % Flat
Substrate (% cover) BedrockCobbleBoulderGravel In-water Cover Cover Types Present (circle): Undercut Overhanging Vegetation Woody Debris	Sand SO Silt SO Muck Clay Marl Detritus Banks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, dor Adjacent Land Use Farm land	minant vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, growth) Migratory Obstructions (seasonal, permanent) Note any fish observations	oundwater upwellings)
Waterbody Notes Natural Watercourse Trapezoidal Chan Surficial Drainage (i.e. furrows) Dugout F Other Habitat Notes, Incidental Wildlife Obse	Pond Dominated by Aquatic Veg Dry
Field Notes Authored by Field N	otes QA/QCed by

Bushlot ag. field. Durbine DERKOTA! 0 haftstede farm GORE ROAD



Station # RIV TO 76		Project Name Nic	laara Wir	d
Watercourse Name UNKnown		Project # 1609	50269	
Photos		Field Staff	JK	
Photos Date June 12 201	7 .	Time 4 150		
Monther conditions in provious 24 h	are 100 1 10			
GPS Coordinates (Zone)	E 6235	Da N 4	16588 D	atum
GPS Coordinates (Zone) Descriptive Location	Vaushau fd.			
•	Y		#	
Western Consiller				
Water Quality	nLI	Conductivity /	(Slom)	
Dissolved Oxygen (mg/L)		Conductivity (
Water Temperature (°C)		Air Temperature (°C)		
Time in situ measurements taken_				
Watercourse Dimensions & Morp	hology			
Mean Watercourse Width		Maximum Pool Depth	(c	m)
Mean Bankfull Width		Mean Water Depth	(c	m)
% Riffle	% Pool		% Run	% Flat
Evidence of eroding banks, Comme	nts on bank stat	oility /		
			*	
Substrate (% cover)	Cobble	Sand	Silt	Muck
Bedrock	Gravel	Sand Clay	Siit Marl	Widek Detritus
Boulder	_Graver	Clay	iviaii	
In-water Cover	X			
Cover Types Present (circle):	Undercut Bank	s Deep Pool	Watercress	Aquatic Veg
Overhanging Vegetation Wood	y Debris	Boulder Other		
Riparian Zone	/			
Riparian Cover (% of watercourse s	naded, dominan	t vegetation, mature or	early succession	iai)
Adjacent Land Use				
Adjacent Land Ose				
Fish Habitat Potential				
Critical Habitat (spawning or nursery	areas, groundw	ater upwellings)		
Officer (identity of the early	, and and , 3 . a minute			
Migratory Obstructions (seasonal, po	ermanent)			
			\	•
Note any fish observations	*			
		/		
Waterbody Notes		0	to Book	- 4 TH -
	coidal Channel _	Grassed Swa		ed Tile
Surficial Drainage (i.e. furrows)	_ Dugout Pond_	Dominated by /	Aquatic Veg	_ Dry
	1.1116. OF4			
Other Habitat Notes, Incidental Wi		ons, etc.		7
- low lying complan	para	u Minimal	<u> </u>	<u> </u>
drainay 10to				
- NO ONO 12016	NOWNE			
		Λ Α	•	
Field Notes Authored by	Field Notes Q/	many la fler		



WIND FARM WATERBODY RAPID ASSESSMENT FORM RILTO78 H

	(hardine	anaar	-	and the second	9	and in	
1	1	angen.	n. jenne		0.	í	4

Station # R\170 78 H-	Project Name Niagara Wind
Watercourse Name	Project #_//0950269
Photos See log	Field Staff
Date) ML 12 2017	Time 4 pm.
Weather conditions in previous 24 hrs	
GPS Coordinates (Zone) 7 E Page	N 476505 Datum
	west of Boyle Rd. or South side.
3 /	
Water Quality	
Dissolved Oxygen (mg/L) pH_	Conductivity (µS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width (m)	Maximum Pool Depth (cm)
Mean Bankfull Width (m)	Mean Water Depth (cm)
% Riffle % Po	- Andrews
Evidence of eroding banks, Comments on banks	
,	
Substrate (% cover)	otto.
Bedrock Cobble_	Sand Silt Muck
Boulder Gravel	Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris Riparian Zone	The state of the s
Riparian Cover (% of watercourse shaded, domina	ant vegetation, mature or early successional)
Adjacent Land Use	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	dwater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
none	
Waterbody Notes Natural Watercourse Trapezoidal Channel	Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pon	
Other Habitat Notes, Incidental Wildlife Observa	ations, etc.
- noised channel dry	
Field Notes Authored by K	QA/QCed by Julian
Tion House	-



WIND FARM WATERBODY RAPID ASSESSMENT FORM RITO 78 H

Non	REA

Station # KILTO784-2	Project Name Niagara Wind
Watercourse Name	Project # 160950269
Photos See log	Field Staff KE + JK
Date JVR & GOLD	Time 3:50 000
Weather conditions in previous 24 hrs	,
GPS Coordinates (Zone) TE GARU	66 N 4765-214 Datum
Descriptive Location Vaughan Rd 86	Um west of Kuyle Ra
Water Quality	A M
Dissolved Oxygen (mg/L) pH	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	4/4
Mean Watercourse Width 0 (m)	Maximum Pool Depth (cm)
Mean Bankfull Width(m)	Mean Water Depth(cm)
% Riffle % Poo	l % Run % Flat
Evidence of eroding banks, Comments on bank sta	Dility
Substrate (% cover)	
Bedrock Cobble	Sand Silt Muck
Boulder Gravel	Clay Marl Detritus
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dominar	
Adjacent Land Use	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground)	vater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
- COCC	
Waterbody Notes Natural Watercourse Trapezoidal Channel _	Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond	Dominated by Aquatic Veg Dry
Tanada and the second s	
Other Habitat Notes, Incidental Wildlife Observat	ensed channel regul
RUG ON VIGANO	akan alatan
- targer roughly leaves for 50	thurse gerainage
Field Notes Authored by K Field Notes O	WQCed by the Iller





Stantec

Station #_RIT079 Project Name Niagara	Nind				
Watercourse Name 79-1 Project # 160950269					
Photos 8807-09 Field Staff T, Chandler M, Ellah					
Date <u>June 7,7217</u> Time <u>10:55 AM</u>					
Weather conditions in previous 24 hrs					
GPS Coordinates (Zone) 13'(E 630771 N 4772424	Datum				
Descriptive Location					
Weben Ouglibe					
Water Quality Dissolved Oxygen (mg/L) 4, 4 0 pH 8.30 Conductivity (μS/cm)	761				
,,					
Water Temperature (°C)					

Watercourse Dimensions & Morphology Mean Watercourse Width (m) Maximum Pool Depth	(om)				
Mean Bankfull Width 8 (m) Mean Water Depth 50	(cm) (cm)				
% Riffle% Pool					
Evidence of eroding banks, Comments on bank stability					
toutside y meander - not excessive					
Substrate (% cover)					
	SiltMuck Marl Detritus				
Olay	Marl Detritus				
In-water Cover	gifte				
Cover Types Present (circle): Undercut Banks Deep Pool Watercre	ess Aquatic Veg				
Overhanging Vegetation Woody Debris Boulder Other					
Riparian Zone					
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early si	(ccessional)				
50 De elvaded averson last successioned	accessional)				
Adjacent Land Use					
Scrubland, mostly open/grass with few trees					
Fish Habitat Potential					
Critical Habitat (spawning or nursery areas, groundwater upwellings)					
Spawning & nuisery area					
Migratory Obstructions (seasonal, permanent)	1				
Note any fish observations Non Observa	osev «a·				
Note any list observations Nov Page Veg					
Waterbody Notes /	**************************************				
Natural Watercourse Trapezoidal Channel Grassed Swale	Durio Tilo				
Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic	builed lile				
Dominated by Aquatic	Veg Drý				
Other Habitat Notes, Incidental Wildlife Observations, etc. <u>Walnuts clo</u>	se by Green				
Fos, tadpoles, red belied word pecker, vellow wasts	(ev)				
Field Notes Authored by T. Chandley Field Notes 04/00ed by					





Station #_R\\To 79 Watercourse Name_79-2 A	Project Name NIAGARA WIND Project # 1609 50 269
Photos 8810 - 8817, 8818	Field Staff To Chandler M. Ellah
Weather conditions in previous 24 hrs Thund GPS Coordinates (Zone) 17 E (30 Descriptive Location	Time 11:35 levshauers late yesterday 0210 N 477 506 Datum
Time <i>in situ</i> measurements taken	Air Temperature (°C) 25
Evidence of eroding banks, Comments on bank A Recent bank Scour - banks Substrate (% cover)	Maximum Pool Depth (cm) Mean Water Depth 2 (where ponder m) Pool 0 % Run 0 % Flat stability Well defined channel w edvidural O 5 m high NOT PLOUGHED channel exposed drain tibe
Bedrock Cobble Gravel	20 Sand 50 Silt Muck Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undereut I Overhanging Vegetation Woody Debris	Banks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, dom 5% Shoded - Early Succession Adjacent Land Use AGRICULTWALL Cold	ninant vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, grounds)	undwater upwellings)
Migratory Obstructions (seasonal, permanent) Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Chang Surficial Drainage (i.e. furrows) Dugout P	nel Grassed Swale Buried Tile Pond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Obse	broken ties.
Field Notes Authored by 1. Chandle Field No	otes QA/QCed by

RIITO 79
79-2A.

A 2000.

REA

Well-defied
Channel

GPS 630333
4771516



NON

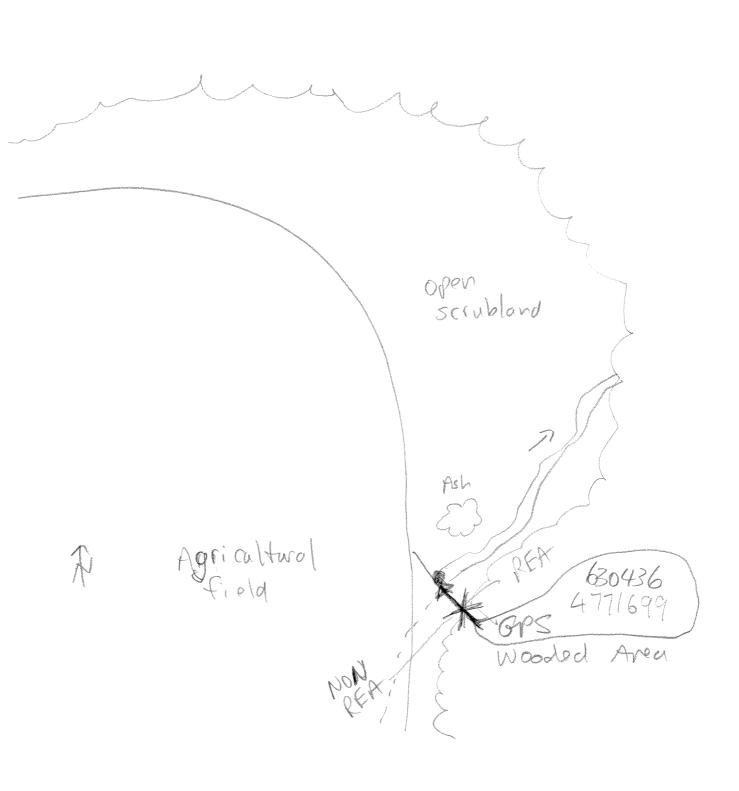
Station #R\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Project Name NJAGARA WIND Project #_/60950269
Date June 7, 2012 Weather conditions in previous 24 hrs GPS Coordinates (Zone) 127 E 6304 Descriptive Location	Field Staff Ti Chandler, M Ellah Time 12:05 Aday Thundershowers in area yesterday evening 81 N 4771591 Datum
Water Quality NowATER DR Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm) Air Temperature (°C)
wear bankruit width (m)	Maximum Pool Depth (cm) — Tiled Mean Water Depth (cm) % Run % Flat
Substrate (% cover) BedrockCobble BoulderGravel	Sand Silt Muck Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domin	Boulder Other
Adjacent Land Use	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	ndwater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
	el Grassed Swale Buried Tile nd Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observ	vations, etc. <u>Flycatchers</u>
Field Notes Authored by Field Note	s QA/QCed by
r leid Note	o which by



REA

Stanted

Station # KITO79	Project NameNIAGARA WIND
Watercourse Name 79-2C	Project # 168959 Z69
Photos \$20,8822,8823	Field Staff Tchander M ELLAH
Date JUNE 7, 2012	Time 2'15 AA
Weather conditions in previous 24 hrs Thunder	storner previous evening
ar 3 Coordinates (Zone)	36 N 477/699 Datum
Descriptive Location	
Water Quality	
Dissolved Oxygen (mg/L) 6,05 pH%,	Conductivity (μS/cm) 967
Water Temperature (°C) 19,35	Air Temperature (°C) 25
Time in situ measurements taken12:, 25	7.11 Temperature (C)
Watercourse Dimonoione & Marris al	
Watercourse Dimensions & Morphology Mean Watercourse Width (m)	M
Manage Development of the second of the seco	Maximum Pool Depth 7 (cm)
Mean Bankfull Width 7.5 (m) ———————————————————————————————————	Mean Water Depth 2 (cm)
Evidence of eroding banks, Comments on bank sta	/o i la
minor under cuts.	bility hinor base trour
Substrate (% cover)	
Bedrock Cobble Gravel	Sand So Silt Muck
BoulderGravel	Clay Marl Detritus
In-water Cover	
Cover Types Present (circle): Undercut Bank	Os Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other
Riparian Zone	
Riparian Cover (% of watercourse shaded, deminer	A comment of the comm
Riparian Cover (% of watercourse shaded, dominar	it vegetation, mature or early successional)
Adjacent Land Use	
Scrubland then plaughed garing	Hural Cold farther west- West Lorge
	Itural Geld farther west-woodedorea to east.
Critical Habitat (spawning or nursery areas, groundy	vater upwellings)
STUMBLE DOYCHAL	
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
I.	
Waterbody Notes /	
Natural Watercourse_/ Trapezoidal Channel_	Grassed Swale Buried Tile
Natural Watercourse Trapezoidal Channel _ Surficial Drainage (i.e. furrows) Dugout Pond_	Dominated by Aquatic Veg Day
Other Habitat Notes, Incidental Wildlife Observati	ions, etc. green from stacharte hickory
freen From Leaved in Wooded area of	sy agricultural Rield,
	U -
ield Notes Authored by T. Chandok Field Notes Q	A/OCad by 1177
rield Notes Q	A/QUEU DY



+118

WB



WIND FARM WATERBODY RAPID ASSESSMENT FORM

Station # RITO81 a		Project Nan	ne Niag	ara Wir	d
Watercourse Name unkna	un tob.	Project #	160950	2269	
Photos Date	***************************************	Field Staff _	'E clay	den M.F	aie la
Date une ///		Time	:04 pm		
Weather conditions in previous	24 hrs <u>\lambda</u>	La rong	10-l-		
GPS Coordinates (Zone)	TEO(oll	334	N 47/a	$V_0 \neq D_0$	itum Nac
Descriptive Location	Of CONC	ection 4	~~300	Im Pac	
- Jarlin K	000 B	600 mu	yest to	77	ilum Bo
Water Quality	_ /	-no w			
Dissolved Oxygen (mg/L)	/ pt	I Cor	nductivity (µS/	cm)	
Water Temperature (°C)		Air Tempera	ture (°C)		
Time in situ measurements take	n				
Watercourse Dimensions & M	orphology				
Mean Watercourse Width	(m)	Maximum Po	ool Depth	(cn	1)
Mean Bankfull WidthQ	(m) [.]	Mean Water	Depth	(cn	,
% Riffle	%	Pool	% R	lun	
Evidence of eroding banks, Con	nments on bank	stability			
Substrate (% cover)					
Bedrock_	Cobble	<u>⊇</u> ∩Sand	70	014	
Boulder	Cobbie Gravel	Sano.		Silt <u> </u>	Muck
bodidei	——Qiavei —	Clay_		Mart	Detritus
In-water Cover Cover Types Present (circle): Overhanging Vegetation Wo	Undercut E	Banks Deep Boulder	Pool Wate	ercress A	quatic Veg
	•		<u> </u>		namental and the second se
Riparian Zone					
Riparian Cover (% of watercours	e snaded, dom	inant vegetation, i	nature or earl	y successiona	l) (li
Adjacent Land Use	<u>B Zisser</u>	aracsec	POCIUO	ucctoin	nac l
Adjacent Land Use	1d - ha	4			
Fish Habitat Potential		* ·	e de la seconda		
Critical Habitat (spawning or nurs	ery areas, grou	ındwater upwelline	as)		
DOtential Son	MANNE		,-,		
Migratory Obstructions (seasonal	, permanent)				
Jeasana	2	·		•	
Note any fish observations					
		2			
Waterbody Notes		Iml.			
Natural Watercourse /// Trap	pezoidal Chann	***************************************	sed Swale	Buried	Tile
Surficial Drainage (i.e. furrows)	Dugout Po	ond Domin	ated by Aquat	tic Veg	Dry
Other Hebitet Notes Insidental	Milalia Ohaa				
Other Habitat Notes, Incidental	wildlite Obser	vations, etc.			
Ł .					
ield Notes Authored by L. Claudov	Field Note	S QAQCed by Man	4 Donero		
				Ī	

Han Field.

Petrosia

PEA.

Rannel

Channel



Station #	Project Name Niagara wind Project # 160950269 Field Staff K C MF. Time 11:25 am 018412: N 4754806 Datum Nad8
Water Quality Dissolved Oxygen (mg/L)	pH_890_ Conductivity (μS/cm)_320 Air Temperature (°C)_3°C
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width (m)	Maximum Pool Depth 0.80 (cm) Mean Water Depth 0.60 (cm)
Substrate (% cover) Cobble BedrockCobble Gravel	Sand 4/0 Silt /0 Muck
In-water Cover Cover Types Present (circle): Underco Overhanging Vegetation Woody Debris	cut Banks Deen Pool Watercross Kaustin Van
Riparian Zone Riparian Cover (% of watercourse shaded, de Shades / a Adjacent Land Use	lominant vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, g	groundwater upwellings)
Migratory Obstructions (seasonal, permanent Note any fish observations	
Waterbody Notes Natural Watercourse Transpoidal Cha	annel Grassed Swale Buried Tile It Pond Dominated by Aquatic Veg Dry eservations, etc Arog S
Field Notes Authored by K Cld V + On Field	

RUT0.82

Bushlot Haizinga's farm HWY 3



*	R	EA	7
			199

Stantec		L) &110m
Station # RIT082-2 Watercourse Name unknown Photos 0 - 6 Date April 19 / 12 Weather conditions in previous 24 hrs 0	Project Name Niagara Project # 160950269 Field Staff KC, MF Time 8:15am	Wind of cul
GPS Coordinates (Zone) TE 06 Descriptive Location 500m N 0 +	3 14 14 14 17 39 17 6	Datum NAD 83
Water Quality	no water	
Dissolved Oxygen (mg/L) Water Temperature (2C) Time in situ measurements taken	pH Conductivity (μS/cm) Air Temperature (°C)	
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Bankfull Width (m) % Riffle Evidence of eroding banks, Comments on ba	Maximum Pool Depth Mean Water Depth% Pool% Run onk stability	_(cm) _(cm) % Flat
Substrate (% cover)	- no water	
	SandSOSilt ClayMarl	SO_Muck Detritus
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, do Adjacent Land Use	minant vegetation, mature or early success	Aquatic Veg
Fish Habitat Potential Critical Habitat (spawning or nursery areas, gn	roundwater upwellings)	
Note any fish observations	Yintermitent	
Waterbody Notes Natural Watercourse Trapezoidal Char Surficial Drainage (i.e. furrows) Dugout		uried Tile Dry
Other Habitat Notes, Incidental Wildlife Obs	ervations, etc. red wing blad	chirds,
eld Notes Authored by K. Clayton Field N	Notes QA/QCed by M. Faitla.	

upstream pation REA Phragmitis e117082.3 Hand pocket 5 of proposed Lurbin no water hamed Rag. Swale in 28x wide culvert ag. Field water body , powater , of fait R1/1082-1 landowner Wants to tile tile swampy hanne into 82-1

France into REA Price 82-1

patier into * land owner drain this patl diannel rowater-= director water in channel 0+ flou waterbody? photos: = phragnite 17→33 Stand cathails ,a)gal , reed rana M (= proposed Orars turbine R11T082-3 HWY



Stantec

Photos 8764 - 72 + 73	N 11-man (1) Deture
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm) Air Temperature (°C)
Evidence of eroding banks. Comments on bank stab	Mean Water Depth(cm)
Substrate (% cover) Bedrock Cobble 2 Boulder 5 Gravel 2 o	
In-water Cover Cover Types Present (circle): Undercut Banks Overhanging Vegetation Woody Debris E Riparian Zone Riparian Cover (% of watercourse shaded, dominant Plant Land Use High Cultural Field (cropped)	Nogotation mature or early and the second of
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundware)	ater upwellings)
Migratory Obstructions (seasonal, permanent) しいかんの子のw Note any fish observations <u>was some</u> wate	ſ
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observation	ns, etc. wet de fined channel
ield Notes Authored by Treyor (handler Field Notes QA/	QCed by



0	-	Δ
15	\cup	M

Stantec REA	Van SE A notes
Station # RITO 84-1 + 84-3 Watercourse Name unknown	Project Name Nidgara Wind Project #
Photos 55-65.	Field Staff KC € M F
Date April 19 10	Time
Weather conditions in previous 24 hrs 12 oc	
GPS Coordinates (Zone) TT E 0622- Descriptive Location Coom Sarth 0-	185 N 475355 Datum NAD
	f Jenny jump Rd,
Water Quality danding Len	
Water Quality Dissolved Oxygen (mg/L) fand water pH	Conductivity (μS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	, in Temperature (Sy
Watercourse Dimensions & Morphology	standing Hz
Mean Watercourse Width (m)	Maximum Pool Depth(cm)
Mean Bankfull Width 5m (m)	Mean Water Depth /5-10 (cm)
% Riffle% Poo	ol of of Pup
Evidence of eroding banks, Comments on bank sta	ability
Substrate (% cover)	
BedrockCobble_	SandS Silt_S Muck
BoulderGravel	Clay Marl Detritus
Cover Types Present (circle): Undercut Ban Overhanging Vegetation Woody Debris Riparian Zone	Boulder Other
Riparian Cover (% of watercourse shaded, domina Adjacent Land Use	ant vegetation, mature or early successional)
famland	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	lwater upwellings)
Migratory Obstructions (seasonal, permanent)	int with at
Note any fish observations	THO MI JUNI
Waterbody Notes Natural Watercourse Trapezoidal Channel_ Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swale Buried Tile d Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observat	
Field Notes Authored by Kaylon Field Notes C	DAYOCED by M. Faiella.

June Rd Jenny TWO DOOD アノカア





Station # R 11 + 1085 -	onderplace.	Project Name N	iagara Wi	nd
Watercourse Name unknow	m swale	Project # //o		
Photos <u>700, 701</u> Date <u>June 1/18</u>	2	Field Staff Y	whon Ma	C faielle
Date June 1/12		Time <u>2:35</u> 6		
Weather conditions in previous	24 hrs _ Sw	my hot		
GPS Coordinates (Zone)	T E 0619	9282 N4	7696710	Datum
Descriptive Location Sarth	of CIVI	00 - 20	n Minor	
	*			
Water Quality			/	
Dissolved Oxygen (mg/L)	pH_	Conductivity	/ (μS/cm)	
Water Temperature (°C)		Air Temperature (°C	<u> </u>	
Time in situ measurements take)n			
Watercourse Dimensions & M	orphology			
Mean Watercourse Width	(m)	Maximum Pool Dept	h (c	cm)
Mean Bankfull Width	(m) [.]	Mean Water Depth	(0	m)
% Riffle \	% Po	ool	_% Run`	% Fla
Evidence of eroding banks, Con	nments on bank s	tability /		
Substanta (W. source)	\			
Substrate (% cover)	O-bbl-			
Bedrock	Cobble		Silt	
Boulder	Gravel	Clay	<u>Mari</u>	Detritus
Cover Types Present (circle): Overhanging Vegetation Wo Riparian Zone	oody Debris	Boulder Other_		
Riparian Cover (% of watercours	ie shaded, domina	ant vegetation, mature o	or early succession	nal)
Adjacent Land Use	/ .			
Fish Habitat Potential				
Critical Habitat (spawning or nurs	sery areas, ground	dwater upwellings)		
Migratory Obstructions (seasonal	l nermanent)			
				•
Note any fish observations		No.		
Waterbody Notes				
	nezoidal Channal	Crossed Sw	ala D	
Natural Watercourse Tra	Pezuluai Cilatifiei Dugout Pon	d Daminated by	aleBund	ed ille
Surficial Drainage (i.e. furrows)	Dugout Pon	u Dominated by	Aquatic Veg	_ Dry
Other Habitat Notes, Incidental	Wildlife Observa	itions, etc.		
of the second		~/	•	
Field Notes Authored by	Field Notes	QA/QCed by		



REA

	V
Station # RITO88 TO88-IB Watercourse Name TO 8-IB Photos 2774-76 Date Jack 12017 Weather conditions in previous 24 hrs. Suntain GPS Coordinates (Zone) F 6 6 1 5 8 6 6 Descriptive Location A Southern Term Als Mr WB US	0 ' N 477///7 5 Det
Water Quality Now ATER - GR Dissolved Oxygen (mg/L) pH_ Water Temperature (°C) Time in situ measurements taken	ASSED WATERWAY Conductivity (µS/cm) Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width 5 (m) Mean Bankfull Width (m) NAM 8 Riffle 9 Polymorphology Evidence of eroding banks, Comments on bank states	Maximum Pool Depth(cm) Mean Water Depth(cm)
Bedrock Cobble Boulder Gravel In-water Cover A Cover Types Present (circle): Undercut Bar Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domina Grass Timed Adjacent Land Use	Clay Marl Detritus nks Deep Pool Watercress Aquatic Veg Boulder Other ant vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground Migratory Obstructions (seasonal, permanent)	lwater upwellings)
Note any fish observations None	
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond Other Habitat Notes, Incidental Wildlife Observa	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Field Notes Authored by Trever Chardler Field Notes C	QA/QCed by



MP BEA, 4

nonk

Stantec

Station #	Project Name: Niagara Wind
Watercourse Name Toss - IA	Project #: 160950 269
Photos <u>8777 - 79</u>	Field Staff Trevor Chandler, Mitch Ellah
Date June 6, 2012	Time 12:30
Weather conditions in previous 24 hrsSanny	+ clouds -
GPS Coordinates (Zone) 171 E 615670	
Descriptive Location 200 M South of Fav	mat Send of Woods Road.
at concrete box culvert (ruins) - 1	8 US NW6 415 M.D.
Water Quality - taken outside study area Dissolved Oxygen (mg/L) 3.51 pH 7	/ Project lock 81 Conductivity (µS/cm) 1753
Water Temperature (°C)	Air Temperature (°C) 20
Time in situ measurements taken 12:40	
Evidence of eroding banks, Comments on bank stal	Maximum Pool Depth 50 (cm) Mean Water Depth 5 (cm) ———————————————————————————————————
Called Mars Material Section 1	pools immed. up ad/s a concrete Devries property, 200ppool-the estile dry.
Substitute (/o COVE))	
Bedrock 5 Cobble 3 Boulder 10 Gravel 1	○ Sand 40 Silt Ø Muck
Boulder 10 Gravel 15	Clay Marl Detritus
Riparian Zone Riparian Cover (% of watercourse shaded, dominan 2010 shade grasses & colonial Adjacent Land Use Agricultural fields: Fish Habitat Potential	Boulder Other Concrete Slabs. t vegetation, mature or early successional)
Critical Habitat (spawning or nursery areas, groundw	vater upwellings)
Migratory Obstructions (seasonal, permanent) ໄວພ /ກວ	
Note any fish observations None observed.	
Waterbody Notes Natural Watercourse Trapezoidal Channel _ Surficial Drainage (i.e. furrows) Dugout Pond_	
Field Notes Authored by Trever Chandler Field Notes Q	A/QCed by



NON OREA

Stantec

REA

Station #	Project Name: Niagara Wind Project #: 160950269 Field Staff Trevor Chandlor, Mitch Ellah Time 12:50 cloud, N 4771469 Datum outhern terminus of woods Rd.
Water Quality NO WATER Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Ø Conductivity (μS/cm) Ø Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m)% Riffle% Pool Evidence of eroding banks, Comments on bank standard fields - ploughed over - so	Maximum Pool Depth (cm) Mean Water Depth (cm) ol % Run % Flat
	Sand 80 Silt Muck Clay Marl Detritus
In-water Cover A Cover Types Present (circle): Undercut Ban Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domina	Boulder Other
Adjacent Land Use Agricultural Reld Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, ground	water upwellings)
Migratory Obstructions (seasonal, permanent) ໄຫມ (ທຸດ ຄະເພດ) Note any fish observations	
Waterbody Notes	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observa	tions, etc
Field Notes Authored by T. Chandler Field Notes C	DA/QCed by



			R	L	gramma. F
D	origina	acase.			

Station # RITO89-	*# frootings.	Project Name	Niagara Wi	ind Figlo
Watercourse Name		Project #//	0950269	
Photos Seeley		Field Staff		
Date June 13 2012	•	_ Time <u> </u>	00M	
Weather conditions in previous 24	1 hrs <u>/ Au</u>	ntsun)	
GPS Coordinates (Zone)	E 623	3 260	N 475 2696	Datum
Descriptive Location <u>BOOK</u>	v Rd	, len	nest of	TOWN RE
Water Quality	-			
Dissolved Oxygen (mg/L)	<u> </u>	Condu	activity (μ S/cm) $\underline{54}$	0
Water Temperature (°C)	1.51	Air Temperatu	re (°C) <u> </u>	
Time in situ measurements taken	a: 25	S V M		
Waterpayers Dimensions 2 Mar	mhalam.	•		
Watercourse Dimensions & Mor Mean Watercourse Width		Maximum Dool	Donth OO	/\
Mean Bankfull Width	(m). (111)	Maximum Pool Mean Water Do		(cm)
% Riffle		Pool	epui <u> </u>	(cm)
Evidence of eroding banks, Comm			% Run	% Flat
steep put s	A 1 73			
Substrate (% cover)		_		
Bedrock	Cobble	Sand	Silt	Muck
Boulder	Gravel	80 Clay	<u>Mart</u>	Detritus
Cover Types Present (circle): Overhanging Vegetation Wood Riparian Zone	Undercut B dy Debris		ool Watercress Other	Aquatic Veg
Riparian Cover (% of watercourse	shaded, domi	nant vegetation, ma	iture or early succession	onal)
80 6 PLM	1 , Ash	r . etc. (4	Push lot to	USO+)
Adjacent Land Use	,	*		state
AS-Whoax, So	N, (or)	\wedge		
	0 '			
Fish Habitat Potential	*			
Critical Habitat (spawning or nurse	ry areas, grou	ndwater upwellings		
Migratory Obstructions (seasonal, p	permanent)			
permanent				•
Note any fish observations		,		
Waterbody Notes		/		
	zoidal Channe	el 🗸 Grasse	od Swale Bur	ied Tile
Surficial Drainage (i.e. furrows)			ed by Aquatic Veg	Dry
,				
Other Habitat Notes, Incidental W	ildlife Obser	vations, etc.		
deep incised cha	nont o	Ul was fer	TIOMA	MUN9-
field Notes Authored by KF		s QAVQCed by lock	Laure L.	



	I Dr.
Station # R 1170 89 - 2	Project Name Niagara Wind Fo
Watercourse Name	Project # 160950269
Photos see o	Field Staff
Date Inc 13 2012	Time 2:38 pm
Weather conditions in previous 24 hrs	
GPS Coordinates (Zone)	4167 N 4253064 Datum
Of O Oodidition (=+	400 M yest of town he
Descriptive Location Book Rate	
Water Quality	- ANI
Dissolved Oxygen (mg/L) PH	Conductivity (μS/cm)
Diogottog exigen (g.)	Air Temperature (°C)
Water Temperature (°C) Time in situ measurements taken	7 Tomporatare (o/
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width (m)	Maximum Pool Depth(cm)
Mean Bankfull Width 2 (m)	Mean Water Depth (cm)
	Pool
Evidence of eroding banks, Comments on bank	
steep stardy + vee	
0.00	
Substrate (% cover)	
Bedrock Cobble	Sand Silt Muck
Boulder Gravel	Clay Marl Detritus
	water planta
In-water Cover	
Cover Types Present (circle): Undercut E	Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris	Boulder Other
RCG	
Riparian Zone Riparian Cover (% of watercourse shaded, dom	inant vegetation, mature or early successional)
Ripanan Cover (% of Water Course shaded, dom	ote alone
Adjacent Land Llan	3
Adjacent Land Use	
Tick Uchitet Detential	
Fish Habitat Potential	induster unwellings)
Critical Habitat (spawning or nursery areas, grou	Manator aphromiss)
1 Ot at a diagram (accessed permanent)	
Migratory Obstructions (seasonal, permanent)	A Company of the Comp
permanent	
Note any fish observations	
ANO	
Waterbacht Motor	
Waterbody Notes Natural Watercourse Trapezoidal Chann	nel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout P	Office Dominiated by Addatic Vog_v_ Dif
	motions sta
	ryadolis, etc.
Other Habitat Notes, Incidental Wildlife Obse	as John Hod all as India
- Musca Mannel , mast	or dominated of agrave
- Musica Mannel, norst	or dominated if agrave
- Musca Mannel, norst	or dominated if agrave
- marca manner, norst	a dominated of agrave
- marca manner, norst	or dominated my agraves
Field Notes Authored by KE Field No	a dominated of agrave

REA -1 TOOK AND TOO



Stantec	FB
01-11-4 & 11 tn 89 - 3	Project Name Niagara Wind
Station # K 1 1 0 8 5 7 3	Project # 1/009502/09
Watercourse Name	Field Staff KF + J K
Priotos	Time 31.10 pr
Weather conditions in previous 24 hrs Va	
Weather conditions in previous 24 in 5 1/2	23724. N 475 3082 Datum
GPS Coordinates (Zone) 17 † E 6 Descriptive Location	will Wastlest Kd Noth of Books Rd (pomblitist) & 150m mil
Descriptive Location	Kor.
of Bodle.	1./ /
Water Quality	Mary Mary
	pH Conductivity (μS/cm)
Dissolved Oxygen (mg/L)	Air Temperature (°C)
Water Temperature (°C)	- × , , ,
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width (m)	Maximum Pool Depth (cm)
Mean Bankfull Width(m)	Mean Water Depth(cm)
Mean Bankfull VVidui() **Riffle	% Pool% Run% Flat
Evidence of eroding banks, Comments on I	
EAIGRICO OF CLOCKING DOWNS, COMME	
	and the contract of the contra
Substrate (% cover) Redrock Cobble	sand Silt Muck
	Dotritue Dotritue
Boulder Grave	The state of the s
Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded,	dominant vegetation, mature or early successional)
nedalnow-elm.	RCG, Maple, REV)
Adjacent Land Use	
Fish Habitat Potential	aroundupter unwellings)
Critical Habitat (spawning or nursery areas,	, groundwater upwormigs)
none	2011
Migratory Obstructions (seasonal, permane	ant) — Argent general en
ANY	
Note any fish observations	
NUR	
Waterbody Notes shallow	
Natural Watercourse Trapezoidal C	Channel Grassed Swale Buried Tile
I AUTOLOGUE -	out Pond Dominated by Aquatic Veg Dry
Surficial Drainage (i.e. furrows) Duge	
Other Habitat Notes, Incidental Wildlife	Observations, etc.
Other Habitat Notes, incidental villand	rodge now ul debred hed +
-shallow channel in	
- POLY CONTRACTOR	10 drainage to KBA-1+2
- WAL HAM ZONALO	X WILLIAM !
	The same of the last the last the same
mild Makes Authored by W. T.	-iola Naige Cavucou VV 1/46//
	Field Notes QA/QCed by June 1800 1900 1900 1900 1900 1900 1900 1900

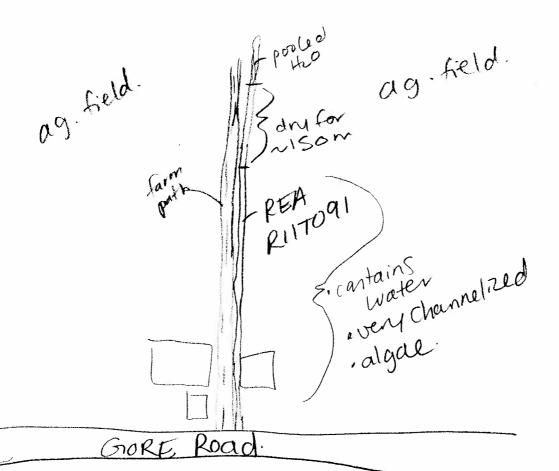




WIND FARM	WATERBODY	RAPID	ASSESSMENT	FUKIVI
			•	

D. TOO!	Project Name Niagara Wind
Station #	Project #/(_0 0 9 50 0 2 9
Watercourse Name unknown	Field Staff CC & MF
Photos 102-106	Time 3 0 3
Weather conditions in previous 24 hrs 12°C	noercast.
GPS Coordinates (Zone) F E 062	0509 N 4756692 Datum NAD 03
Descriptive Location Soom east o	f Govered GOON OF HUTCH,
Water Quality - Standing water	
Dissolved Oxygen (mg/L)DH	Conductivity (µS/cm)
Water Temperature (°C)	Air Temperature (°C)
Time in situ measurements taken	
Watercourse Dimensions & Morphology	
Mean Watercourse Width(m)	Maximum Pool Depth (cm)
Mean Bankfull Width (m)	Mean Water Depth (cm) % Flat
% Riffle % P	00l
the second secon	stability
fairly ctable of	we to regetation.
Substrate (% cover)	Sand 30 Silt 30 Muck
BedrockCobble	Salid
BoulderGravel	Clay Mari Detritus
Cover Types Present (circle): Undercut B Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, domi	nant vegetation, mature or early successional)
	Fax W
Adjacent Land Use aquiculture	al Cald:
agneum	ar pera
Fish Habitat Potential	
Critical Habitat (snawning or nursery areas, group	undwater upwellings)
Spacevire	TOUR DE LA CONTRACTION DE LA C
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
Note any han observations	
Matarbach Notas	· · · · · · · · · · · · · · · · · · ·
Waterbody Notes Natural Watercourse Trapezoidal Chan	nel Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout F	Pond Dominated by Aquatic Veg Dry
Sufficial Drainage (no. ranews)	
Other Habitat Notes, Incidental Wildlife Obse	ervations, etc
	Notes QA/QCed by
Field Notes Authored by Field Notes Authored Field Notes Field Notes Field Notes Field Notes	
	OOD MAKE & Form Waterbady Panid Assessment Form. GOC

K





NON

Stantec

Station # RIT093H Watercourse Name 93-1a Photos 8796-98 Nophoto8745 Date June 10, 2012	Project Name Niagara Wind Project # 160950 269 Field Staff Tr. Chandler, M. Ellah Time 1:40 PM
Weather conditions in previous 24 hrs GPS Coordinates (Zone) E 6/837 Descriptive Location	2 N 4767446 Datum
Water Quality // O WATER Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m)% Riffle% Po Evidence of eroding banks, Comments on bank st	ol % Run % Flat
Substrate (% cover) BedrockCobble BoulderGravel	20 Sand 20 Silt Muck Clay 20 Marl Detritus
In-water Cover NO WATER Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris	nks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, domin Adjacent Land Use	ant vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	ndwater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Po	el Grassed Swafe Buried Tile ond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Obser	vations, etc. Field recent, plaughed
Field Not	res OA/OCed by



REA

Stantec

Station #RIT093H Watercourse Name93-1b Photos3998801 DateJune62012	Project Name Niagera Wind Project # 160950259 Field Staff T. Chandley M Ellah Time 4:50 PM
Weather conditions in previous 24 hrs GPS Coordinates (Zone) F 6 18 500 Descriptive Location	N 4767 51 Datum
Water Quality Dissolved Oxygen (mg/L)	9.29 Conductivity (µS/cm)
Watercourse Dimensions & Morphology Mean Watercourse Width 15 (m) Mean Bankfull Width (m) % Riffle (m) Evidence of eroding banks, Comments on bank st	ol% Run% Flat
Substrate (% cover) Bedrock Cobble Boulder Gravel	Sand So Silt Muck Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris	nks Deep Pool Watercress Aquatic Veg Boulder Other Alsa
Riparian Zone Riparian Cover (% of watercourse shaded, dominated to the shaded of the	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	
Migratory Obstructions (seasonal, permanent) Note any fish observations Note any fish observations	
Waterbody Notes Natural Watercourse Trapezoidal Channe Surficial Drainage (î.e. furrows) Dugout Po	el Grassed Swale Buried Tile ond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Obser	vations, etc. dragonfly's common yellowthroat Water. Gray tree frogs.
	tes QA/QCed by





Stantec

D. 1	Project Name Niagara Wind
Station # KITTO93H	Project # 1/ 5950759
Watercourse Name 93-2 Photos 8802-06	Field Staff T, Chandler M. Ellah
Date June 6,7012	Time <u>5:00 PM</u>
Weather conditions in previous 24 hrs	N 4767030 Datum
GPS Coordinates (Zone) H E 6 18 263	N 4767030 Datum
Descriptive Location	
Water Quality 100 SHALLOW Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm)Air Temperature (°C)25
Watercourse Dimensions & Morphology Mean Watercourse Width(m) Mean Bankfull Width(m)% Riffle	Maximum Pool Depth (cm) Mean Water Depth (cm) ol % Run % Flat ability
Substrate (% cover) BedrockCobbleBoulderGravel	Sand Silt O Muck Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris	nks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, domin	ant vegetation, mature or early successional)
Adjacent Land Use Agricultural Relds - Soyl	s winter wheat
Agricultural Kelas 309	Dean to the total
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	ndwater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations	
NOIS any han observations	
Surficial Drainage (i.e. furrows) Dugout Po	el Grassed Swale Buried Tile ond Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Obser	revations, etc. Green Frogs, use not playered apstream (wat)
Wooden area Als. Watercon	ree has hooding about
in wheat field.	
Field Notes Authored by 1. Chandles Field No.	otes QA/QCed by

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



REA

Stantec

Station # R To 94 Watercourse Name 94 - 1 Photos \$790 - 91 Date June 6 702 Weather conditions in previous 24 hrs. 5 m 9 9 GPS Coordinates (Zone) 171 E 6 18 4 2 o Descriptive Location Along Scott Road	N 9 16 80 15 Datum
Water Quality No WATER Dissolved Oxygen (mg/L) pH Water Temperature (°C) Time in situ measurements taken	Conductivity (µS/cm)Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width	bility Minor Scaur around
Substrate (% cover) Bedrock 5 Cobble 2 Boulder 5 Gravel	O Sand 70 Silt Muck Clay Marl Detritus
In-water Cover Cover Types Present (circle): Overhanging Vegetation Woody Debris	ks Deep Pool Watercress Aquatic Veg
Riparian Zone Riparian Cover (% of watercourse shaded, domina 90%-960ses trees at Scott Rd. Adjacent Land Use Agvicultura Fields.	nt vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery areas, ground	dwater upwellings)
Migratory Obstructions (seasonal, permanent) Note any fish observations	
Other Habitat Notes Incidental Wildlife Observ	Grassed Swale Buried Tile nd Dominated by Aquatic Veg Dry ations, etc Nooded area at
Scott Kd. Sheghare hickory.	
Field Notes	s OA/OCed by MA

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



NON

Stantec	
Station #RIT094	Project Name: Nagava Wind
Watercourse Name 94-2	Project #: 1609 50 2 69
Photos <u>\$192 - 94</u>	Field Staff T. Chandler M. Ellah
Date June 6,2017	Time_3:40
Weather conditions in previous 24 hrs.	cloud,
GPS Coordinates (Zone) 177 E 6.1845	- Company of Contraction
GPS Coordinates (2011e)	†
Descriptive Location	
Water Quality No WATER Dissolved Oxygen (mg/L) pH_ Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm)Air Temperature (°C)
Watercourse Dimensions & Morphology	'/A
Mean Watercourse Width(m)	Maximum Pool Depth(cm)
Mean Bankfull Width(m)	Mean Water Depth(cm)
	ool% Run% Flat
Evidence of eroding banks, Comments on bank s	stability NoNE
Evidence of creamy	
Bedrock Cobble Gravel In-water Cover Cover Types Present (circle): Undercut Bedrock Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, dominated Cover Land Use County Cou	Clay Mari Detritus Banks Deep Pool Watercress Aquatic Veg Boulder Other
Critical Habitat (spawning or nursery areas, ground	undwater dpwominge)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations/	
Note any lish observations	
Waterbody Notes Natural Watercourse Trapezoidal Chan Surficial Drainage (i.e. furrows) Dugout F Other Habitat Notes, Incidental Wildlife Observed Annual Control of the Control	ervations, etc. Depression Dimension Dime
	. 1
Field Notes Authored by T. Chandlov Field!	Notes ON/OCod by
Field Notes Authored by 1. Unand 10 Y Field !	NOTES CANCIOCU DY



				0 = A
			Na	OREA Le 13
			7	10.13
WIND FARM WAT	ERRONY RAP	ID ASSESSM	MENT FORM	a Swall
WIND FARM WATE	EKBOD1 IO.		(>(N	g Swaler Hardy Pr
Stantec				1
tion # R 1 T 0 95 - 1	Projec	t Name No	Gara Wing	
tarantico Name (A (\CV)(A A A	Projec	t # 1609 Staff <u>V</u> Cla	Harm M. Fa	ella
400 (10)	Time	9:30		
te June 13/17 eather conditions in previous 24 hrs _		1711 Cl.	7/ 6050 Date	um Nad?
o Operation (ODD)		Cresic	22 015 KM	1 1000
scriptive Location	anth of	(VXXX		
UPT MAX RUM				
ater Quality - no wate	pH	Conductivity	(μS/cm)	
ssolved Oxygen (mg/L)	Air Te	Conductivity	17°C	
ater Temperature (°C) me in situ measurements taken				
ratercourse Dimensions & Morphol	OQV		h (cm	1)
ean Watercourse Width (n	n) Maxi	mum Pool Dept	/	1)
ean Bankfull Width(n	,	Water Depth_	% Run	% Flat
% Riffle	% Pool			
% Riffle vidence of eroding banks, Comments	OII Darik Stadiii-)			
Cail	- tilled			Muck
Suparrate (A Cotton)	cobble	Sand	Silt Marl	Muck Detritus
BedrockC	Gravel	Clay	Mail	
Overhanging Vegetation Woody [Riparian Zone Riparian Cover (% of watercourse sha	aded, dominant ve			
Fish Habitat Potential Critical Habitat (spawning or nursery a	areas, groundwate	er upwellings)		
Migratory Obstructions (seasonal, per Note any fish observations	manent)	C/		
Note any fish observations				
Waterbody Notes Natural Watercourse Trapez Surficial Drainage (i.e. furrows)	oidal Channel	Grassed Dominated	Swale Bu by Aquatic Veg	ried Tile Dry
Surficial Drainage (i.e. furrows)	_ Dugout Folia			•
Other Hebitat Notes, Incidental Wi	Idlife Observation	ns, etc		
			·	
Field Notes Authored by	Claid Bioton CAh	OCed by WA		
Sield Notes Authored by	LIGIT (40/00 CTA)			ement Form.doc

W:\resource\internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc

Bushlo halse Swale agricultural swale. Nan REA hedge rav barr -grasced hedge van Creek Road





Stantec					الم ما ا	
" PITO 96-1		Project N	lame <u>Nia</u>	gara L	11/4	
ation #Name_unknawn		Project #	#_1609°	20302		
notos 754-762		Field Sta	# 12. Clays	WIRU	ITH A	
iotos		Time	11919			
eather conditions in previous 24 hrs	Rain	hot	humys	I AUAL	Datum	Nad 8
- 0 1 170001	1 / W / / / \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1882	N 4	> U - U	<u>Dutairi</u>	
escriptive Location	YOU?	Bird k	pad.			
later Quality - no W) ater		Conductivity (uS/cm)		
issolved Oxygen (mg/L)	pH	Air Tom	perature (°C)	21		
Inter Temperature (°C)		Air rein	peraturo (°).			
me in situ measurements taken						
latercourse Dimensions & Morpho	logy	Mavimu	m Pool Depth		(cm)	
lean Watercourse Width(I	m)	Moan W	/ater Depth		((((((((((((((((((((((((((((((((((((
lean Bankfull Width(m) m) ⁻ ————————————————————————————————————	Mean M	valor Dopa	% Run		% Fla
% Riffle	% PC	ະtahilitv	and the second s			
% Riffle Evidence of eroding banks, Comment	s on Dark s	icability .				
				Silt	107)	Muck
Substrate (% cover) Bedrock(Cobble		Sand			Detritus
	Gravel		Clay	Mai		
Cover Types Present (circle): Overhanging Vegetation Woody		Boulde	r Other			
Cover Types Present (circle): Overhanging Vegetation Woody	Debris aded, domi	Boulde	r Other			
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse sh	Debris aded, domi	Boulde	r Other			
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use	Debris aded, domi △ C	Boulde	r Other			
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use	Debris aded, domi △ C	Boulde	r Other			
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery	aded, domi	Boulde nant veget undwater u	r Other	or early succ	essional	
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery	aded, domi	Boulde nant veget undwater u	r Other	or early succ	essional	
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, personal of the personal of	aded, domi	Boulde nant veget undwater u	r Other	or early succ	essional	
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, personal of the personal of	aded, domi	Boulde nant veget undwater u	r Other	or early succ	essional	
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, personal shadjacent) Note any fish observations	aded, domi	Boulde nant veget undwater u	r Other	or early succ	essional	
Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, per Note any fish observations Waterbody Notes Natural Watercourse	aded, domi	Boulde nant veget undwater u	grassed S Dominated	or early succ	essional	d Tile
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, per Note any fish observations Waterbody Notes Natural Watercourse Trapez	aded, domi	Boulde nant veget undwater u	grassed S Dominated	or early succ	essional	d Tile
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, personal shadjacent) Note any fish observations	aded, domi	Boulde nant veget undwater u	grassed S Dominated	or early succ	essional	d Tile
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, per Note any fish observations Waterbody Notes Natural Watercourse Trapez	aded, domi	Boulde nant veget undwater u	grassed S Dominated	or early succ	essional	d Tile
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, per Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Other Habitat Notes, Incidental Witercourse	aded, domi	Boulde nant veget undwater u	grassed S Dominated I	Swale_ by Aquatic V	essional	d Tile
Cover Types Present (circle): Overhanging Vegetation Woody Riparian Zone Riparian Cover (% of watercourse shadjacent Land Use Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery Migratory Obstructions (seasonal, per Note any fish observations Waterbody Notes Natural Watercourse Trapez	areas, ground ar	Boulde nant veget undwater u nel Pond ervations,	Grassed S Dominated I	Swale_ by Aquatic V	Burie	d Tile Dry

Offine · farmard. P11096-1 d Ange Bird Road $\leftarrow N$



NON

Stantec

Station # RIT097 Watercourse Name 97- Photos 8787 Date 5 10 2012 Weather conditions in previous 24 hrs 5 17 224 Descriptive Location 600 South of S	N 4/65 66 Datum
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken	Conductivity (μS/cm)
Watercourse Dimensions & Morphology Mean Watercourse Width	Mean Water Depth(cm) ol
Substrate (% cover) Bedrock Boulder Gravel	Sand 20 Silt 80 Muck Clay Marl Detritus
In-water Cover Cover Types Present (circle): Undercut Bar Overhanging Vegetation Woody Debris	nks Deep Pool Watercress Aquatic Veg Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, domina Open Geld Adjacent Land Use	
Fish Habitat Potential N/A Critical Habitat (spawning or nursery areas, ground	
Migratory Obstructions (seasonal, permanent) Note any fish observations	
Surficial Drainage (i.e. furrows) Dugout Pol	I Grassed Swale Buried Tile nd Dominated by Aquatic Veg Dry
Field Notes Authored by T. Chandler Field Note	es QA/QCed by



MIND PHEN WATERDOOM	REA
Stantec	N 1
tation #RITTO91 Vatercourse Name97 - 2 Photos 8733 - 85 Date	Project Name: Niagra Wind Project #: 160950269 Field Staff T, Chandler M, Ellah Time 2:00PM cloud N 4766234 Datum Soon West of Pord Davidson Ra
Water Temperature (°C) /4,27 Time in situ measurements taken 2:10 PM	分38 Conductivity (µS/cm) <u>2630</u> Air Temperature (°C) <u></u> 2 o
Watercourse Dimensions & Morphology Mean Watercourse Width / (m) Mean Bankfull Width (m) ———————————————————————————————————	tability Marabalany Vegetation
Substrate (% cover) Bedrock O Cobble Boulder O Gravel	Sand 30 Silt Muck Clay Marl Detritus Watercress Aquatic Veg
Cover Types Present (circle): Ondercut B Overhanging Vegetation Woody Debris	Boulded Other (19 100) 4 XIND
Riparian Zone Riparian Cover (% of watercourse shaded, dominated to the shaded of the	
Fish Habitat Potential Critical Habitat (spawning or nursery areas, gro	undwater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fish observations have seen	
Waterbody Notes Natural Watercourse Trapezoidal Char	nnel Grassed Swale Buried Tile
Other Habitat Notes, Incidental Wildlife Obs	servations, etc. Large grassed buffer Nooded area to north of Silven Street
	Notes QA/QCed by

Non REA

Stantec	Project Name: Viagara Wind
" - " PI(TO 07	
ation # RI(TO 97 atercourse Name 97-3	Project #: 160950269 Field Staff T. Chandler M. Ellal
atercourse Name	Field Staff
ate 1, we 6, 2012	Time 7:28 PM
・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	Sung Cloud. N 4765985 Datum
PS Coordinates (Zone) 177 E 6	7166 N 41031X3
PS Coordinates (2016) The 20 × 40	m + dry swale that drains to west. Rr. 100-300m Souths Silver Street.
escriptive Location Davidso	_ RJ, 100-300m South 5 31101.
A00 m 4068 4 1 111 = 1	Ru. 100-300m Souths Silver Street.
Votor Quality	a ve Conductivity (uS/cm) 1073
See alvod Ovygen (mg/L) 3.40	pHX.18 Conductivity (μο/οιιγ)
Veter Temperature (°C) & °CO	
Time in situ measurements taken2	35 pm
	NM ()
Watercourse Dimensions & Morpholog	Maximum Pool Depth (cm)
Mean Watercourse Width(m)	Mean Water Depth (City)
a postatuli Width / Y''	/ % BIII
% Riffle	on bank stability pond feature w sware
Evidence of eroding banks, Comments of the second toward, Swale is play	on bank stability pond feature w swale
draining towart, Swale is plu	~?wr 30.0
	City (25) MUCK
Substrate (% cover) BedrockCol	bble Sailu Detritus
Boulder Gra	avelClay
Bouldel	Been Real Watercress Aquatic Veg
Overnanging vogos	ebris Boulder Other
090 shaded	
Adjacent Land Use	
703101	
Fish Habitat Potential Critical Habitat (spawning or nursery a	
Migratory Obstructions (seasonal, perr	manery Meter turbid.
Migratory Obstructions (seasonal, perrond may dry out in Sum Note any fish observations	mer. Water turbing natural
Note any fish observations None	Seen.
Waterbody Notes Natural Watercourse Trapezo Surficial Drainage (i.e. furrows)	Dominated by Aquatic Veg Dry Dry
was Noted Incidental Wile	dlife Observations, etc. Mallord ducks in penderes to pond. No evidence of excavation
Other Habitat Notes, incluental VIII	eess to pond. No evidence & excavere
Catile & norses was	
(P.g. soil piles)	. /-
- no mater outleting the poor	M
Field Notes Authored by I 1 Chandler	Field Notes QA/QCed by
Field Notes Authored by 11 hand 47	SO Wind Form Waterbody Rapid Assessment Form.do



				REA
		10050	MENT FORM	4
WIND FARM V	NATERBOD	Y RAPID ASSESS	SIMILIA I OTAM	R117098-1
Stantec		. 1		and Feb
Station # R11 TO 98-		Project Name N	950269	Fig. 2
Watercourse Name		Field Staff	+ 1 R	
Photos 3 201	 .	Time/	IX-1-4	
Date Weather conditions in previous 24	hrs <u>(a) (a)</u> E 617 672	N	4753587	Datum
CDS Coominates (Zurio/	2 1/1/102	t nown	Marsha	
Descriptive Location				
· · · · · · · · · · · · · · · · · · ·		2014	4	
Water Quality	PH_	Conductin	vity (μS/cm)	
Dissolved Oxygen (mg/L)	一 文	Air Temperature (°C)	
				day
Time in situ measurements taken				(cm)
Watercourse Dimensions & Mo	(m)	Maximum Pool D	eptn	(cm)
Man Watercourse Wider	(m) [.]	Mean Water Dep	% Run	
Mean Bankfull Width	%	etability		
% Riffle Evidence of eroding banks, Com	ments on bank	Stability		
LVICO				3 4
Substrate (% cover)	o this	40 Sand	Silt_	MuckDetritus
Bedruck	Cobble Gravel	HO_Clay	<u>Mad</u>	
Boulder	Glavor _		•	Aquatic Veg
	Undercut loody Debris	Boulder)ther	
Riparian Zone	chaded dat	minant vegetation, ma	iture or early succ	essional)
Riparian Zone Riparian Cover (% of watercour	30 4 Pr	racy scape.	n hold	0
Adjacent Land Use	sident	at T W		
Fish Habitat Potential Critical Habitat (spawning or no	ursery areas, gi	oundwater upweilings	3)	
Migratory Obstructions (seaso	nal, permanent)		
Note any fish observations		/		
none				
Waterbody Notes Natural Watercourse Surficial Drainage (l.e. furrows	Trapezoidal Ch		sed Swale ated by Aquatic V	Buried Tile
Sullidat Diamoge (الم معالمات المالية	nservations, etc.	1 - 1 - 1	
Other Habitat Notes, Incide	ntal Wilding O	te fired bec	2 & mars	aus definit
- behind house	to west	ate Was	is nowle	then conne
Field Notes Authored by	Fie	eld Notes QA/QCed by	ind Farm Waterbody Rap	Id Assessment Form.doc
Management Info and TeamsW	quatic Resourcesv-let	M 04100000000000000000000000000000000000		

5 viticial brainage 160/8/00/ REA-7 surticual drainage COLO grassed smale BEA-1 noalless 2000sed



Stantec Attion # Project Name	WIND FARM WATERBOD	TATIO TO STATE	, , , , ,	
Adjacent Land Use Field Staff			1	Fis
Air Temperature (°C) Water Coudinates (Zone) Water Cuality Water Outline in previous 24 hrs Sescriptive Location Water Outline in size measurements taken Water Depth Water Outline in size measurements taken Water Depth Wate	Stantec	- LANGE NICOLA	a Wind	
Air Temperature (°C) Nater Cuality	011-090-2	Project Name 1005	269	
Air Temperature (°C) Nater Cuality	ation # /< 111 0 10	Project #	K	
reather Colidinates (Zone) PS Coordinates (Zone) PAIR Temperature (°C) PM Axir Temperature (°C	atercourse Name	Field Staff P		
reather Colidinates (Zone) PS Coordinates (Zone) PAIR Temperature (°C) PM Axir Temperature (°C	notos Socios	Time // O A/M		
reather Colidinates (Zone) PS Coordinates (Zone) PAIR Temperature (°C) PM Axir Temperature (°C	ate June 13 2010		1/2 & Datum	
Vater Quality psecriptive Location escriptive Location post- pissolved Oxygen (mg/L) vissolved Oxygen (mg/L) Vater Temperature (°C) Vater Depth Vater Cover Vater Cover Vater Cover Vater Cover (Vater Other Vater Cover (Vater Other Vater Depth Vater Depth Vater Cover Vater Cover (Vater Other Vater Other Mater Depth Vater Depth Vater Depth Vater Cover Vater Cover Vater Cover (Vater Other Vater Depth Vater Depth Vater Cover Vater Cover (Vater Other Vater Other Mater Other Vater Depth Vater Depth Vater Depth Vater Cover Vater Cover Vater Cover (Vater Other Other Vater Depth V		146 N 475	3450 Datum	
Vater Quality Dissolved Oxygen (mg/L) Vater Temperature (°C) Vater Temperat	PC Coordinates (Zone)	COUNTY Mars	magain	
Vater Cuality Dissolved Oxygen (mg/L) Vater Temperature (°C) Vater Course Vidth Vater Course Vidth Vater Course Vidth Vater Course Vidth Vater Course Vater V	PS Cooldinated (1)	20	<u> </u>	
Vater Cuality Vissolved Oxygen (mg/L) Vater Temperature (°C) Vater T	escriptive Location 300 m 3000			
Nater Temperature (°C) Air Temperature (°C)	approx	401		
Nater Temperature (°C) Air Temperature (°C)	Veter Onality	Conductivity (µS/ci	m)	
Nater Temperature (**O) Imme in situ measurements taken Matercourse Dimensions & Morphology Mean Watercourse Width Mean Bankfull Width Mean Bankfull Width Mean Water Depth Me	valer duality	Air Tomperature (°C)		
Natercourse Dimensions & Morphology Wean Watercourse Width (m) Mean Water Depth (cm) Wean Bankfull Width (m) Wean Water Depth (cm) Wean Bankfull Width (m) Wean Water Depth (cm) Water Sand Silt Detritus Clay Mari Detritus In-water Cover Cover Types Present (circle): Undeptut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Depths Boulder Other Overhanging Vegetation Woody Depths Boulder Other Riparian Zone Riparian Zone Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Dominated by Aquatic Veg Dry Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.		All Temporators ()		
Watercourse Width (m) Maximum Pool Depth (cm) Mean Watercourse Width (m) Mean Water Depth (cm) Mean Bankfull Width (m) % Pool % Run % Flat Evidence of eroding banks, Comments on bank stability Substrate (% cover) Sand Silt Muck Bedrock Gravel Clay Mari Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg Overhanging Vegetation Woody Depris Boulder Other Overhanging Vegetation Woody Depris Boulder Other Riparian Zone Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoldal Channel Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Vater Temperature (0)			
Mean Watercourse with Mean Bankfull Width Weith Riffle Evidence of eroding banks, Comments on bank stability Substrate (% cover) Bedrock Gravel Boulder Clay Mart Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upweilings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Dominated by Aquatic Veg Dominated by Aquatic Veg Dominated by Aquatic Veg Other Habitat Notes, incidental Wildlife Observations, etc.	Time in situ measulemente			
Mean Watercourse with Mean Bankfull Width Weith Riffle Evidence of eroding banks, Comments on bank stability Substrate (% cover) Bedrock Gravel Boulder Clay Mart Detritus In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upweilings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Dominated by Aquatic Veg Dominated by Aquatic Veg Dominated by Aquatic Veg Other Habitat Notes, incidental Wildlife Observations, etc.	Morphology	Maximum Pool Depth	The second secon	
Mean Bankfull With % Riffle Evidence of eroding banks, Comments on bank stability Substrate (% cover)	At a constited WIGH			o/ Elat
Substrate (% cover) Substrate (% cover) Bedrock Bedrock Gravel Clay Mart Detritus In-water Cover Cover Types Present (circle): Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spayning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, lacidental Wildlife Observations, etc.	Mean Watercodisc (m)		un	⁷⁰ 1 lat
Substrate (% cover) Bedrock	Mean Bankium Vikum%	Pool		
Substrate (% cover) Bedrock Gravel Clay Boulder Gravel Clay Mart Detritus In-water Cover Cover Types Present (circle): Overhanging Vegetation Woody Debris Boulder Cover Types Present (circle): Overhanging Vegetation Woody Debris Boulder Other Other Cover Types Present (circle): Overhanging Vegetation Woody Debris Boulder Other Cover Types Present (circle): Other Clay Mart Cover Clay Mart Clay Mart Clay Matercress Aquatic Veg Riparian Zone	formation banks. Comments on bank	stability		
Substrate (% cover) Bedrock Boulder Gravel Boulder Boulder Gravel Boulder Gravel Boulder Clay Man Detritus In-water Cover Cover Types Present (circle): Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, incidental Wildlife Observations, etc.	Evidence of eroding barrier			
Substrate (% cover) Bedrock Gravel Gravel Clay Manl Detritus Boulder Gravel Clay Manl Detritus Boulder Cover Types Present (circle): Undercut Banks Deep Pool Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, incidental Wildlife Observations, etc.			0114	Muck
Boulder	Cubetrate (% cover)	Sand		
In-water Cover Cover Types Present (circle): Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spayning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.			<u>Mari</u>	-Neg was
In-water Cover Cover Types Present (circle): Undercut Banks Deep Pool Watercess Aquatic Veg Overhanging Vegetation Woody Debris Boulder Other Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional) Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, incidental Wildlife Observations, etc.				
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Natural Watercourse Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc.	Overhanging Vegetation Riparian Zone Riparian Zone Overhanging Vegetation Riparian Zone	minant vegetation, mature or ea	arty successional)	1
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Natural Watercourse Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc				
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwater upwellings) Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	Adjacent Land Use			
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Natural Watercourse Trapezoidal Channel Dominated by Aquatic Veg Dry Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	/ tojuce			
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Natural Watercourse Trapezoidal Channel Dominated by Aquatic Veg Dry Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc				
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Natural Watercourse Trapezoidal Channel Dominated by Aquatic Veg Dry Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	Fish Habitat Potential	roundwater upwellings)	•	
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Natural Watercourse Trapezoidal Channel Dominated by Aquatic Veg Dry Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	Critical Habitat (spawning or nursery areas, s		\	
Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc		1		
Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	Migratory Obstructions (seasonal, permanent	7		
Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	/			
Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry Other Habitat Notes, Incidental Wildlife Observations, etc	Note any fish observations	/		
Natural Watercourse Trapezoidal Channel Grassed Grade Gr	, total and			
Natural Watercourse Trapezoidal Channel Grassed Grade Gr		e d Cumb	a Burie	d Tile
Natural Watercourse Dugout Pond Dominated by Aquatio veg Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatio veg Other Habitat Notes, Incidental Wildlife Observations, etc	Waterbody Notes Transpoidal Ch			Dry_\
Other Habitat Notes, Incidental Wildlife Observations, etc.	Natural Watercourse	ut Pond Dominated by A	quado 109	
Other Habitat Notes, Incidental Wildlife Observations, etc. - entropy of the control of the con	Curficial Drainage (I.e. Iuliows)			
- entre held played a plant beller		hservations, etc		
- entre held plured a plant beller	Other Habitat Notes, Incidental Whitile Of	<i>V</i>	100/0	
-entre hele program beller	5 Mual Alleria	d & marked	MCDI	
Field Notes QA/QCed by feller	- and hold many	V. The state of th		
Field Notes QA/QCed by Form.doc				
Field Notes QA/QUed by		A A.	•	
	1/	annum freller	·	

W:\resource\Internal Info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



WIND I AIRIN	
Stantec	
	Project Name Niagara Wind
ation # R 1 1 T 0 78 - 3	Project #Project #
atercourse Name	Field Staff K & TU
otos	Time 11:30 Am
	aun 3 N 475 3360 Datum
eather conditions in previous 24 hrs	67663 N 475 3360 Datum
S Coordinates (Zone)	
escriptive Location	Ray Musharan 1-a
Muy 3 VIV GOWII	110
a Caralita	O Justicity (v.S/cm)
ater Quality	PHConductivity (μS/cm)
ssolved Oxygen (mg/L)	Air Temperature (°C)
ater Temperature (°C)	
me in situ measurements taken	
atercourse Dimensions & Morpholog	y
ean Watercourse Width (m)	Maximum Pool Depth (cm)
ean Watercoulso Watercoulso (m)	Mean water Deput
ean ballkioli Wilder	% P001
idence of emding banks. Comments of	n bank stability
vidence of eroding stample son	e name
	()
ubstrate (% cover)	Silt Muck Mart 20 Detritus
Hearnes	oble Sand Mari & Detritus avel Clay Mari
BoulderGra	
Adjacent Land Use	ed, dominant vegetation, mature or early successional)
Fish Habitat Potential Critical Habitat (spawning or nursery are	eas, groundwater devoicings,
none	annost)
Migratory Obstructions (seasonal, perm	allony
Note any fish observations	
NOTE AND THE PROPERTY OF THE P	
	n to diffe
Waterbody Notes Natural Watercourse Trapezoid Surficial Drainage (i.e. furrows) [Dugout Pond Bonimides a , ,
Other Habitat Notes, Incidental Wildi	life Observations, etc.
- CONFINAL Shallow	UNIVERSITY TOUS TOO BUT YOU
- Wandar MIV.	WYSINY AME
TOUTH CALABIO	
morralised	O. Plen
Sield Notes Authored by LC	Field Notes QA/QCed by Jee Mer.



	1
Stantec	Project Name Niagara Wind
tion # RIT099-1	Design # 1/2/08/08/09
tercourse Name unichair	Field Staff K. Clayton M. Farella
otos Se photo los	Field Stati
	Time 50
te June in provious 24 hrs	N 4749101 Datum Nad
eather conditions in previous 24 hrs	1900+
os Coordinates (2016)	Inman Road (IKM)
scriptive Location west of	
	pHConductivity (µS/cm)
ater Quality 370 c	oH 7.7Δ Conductivity (μS/cm)
ssolved Oxygen (mg/L) 3.70	Air Temperature (°C)
alor Temperalliel C)	75
me in situ measurements taken	
atercourse Dimensions & Morphology	Maximum Pool Depth (cm)
ean Watercourse Width	an Make Dooth ()
	% Run
% Riffle	% Pool Gables regerated
vidence of eroding banks, Comments on ba	ank stability
substrate (% cover)	Sand 40 Silt 0 Muck
Hearnest	Mari Deutic
Overhanging Vegetation Woody Debris	cut Banks Deep Pool Watercress Aquatic Ve
n-water Cover Cover Types Present (circle): Overhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded,	cut Banks Deep Pool Watercress Aquatic Ve
n-water Cover Cover Types Present (circle): Overhanging Vegetation Woody Debris	cut Banks Deep Pool Watercress Aquatic Version Boulder Other a gard dominant vegetation, mature or early successional)
n-water Cover Cover Types Present (circle): Diverhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, Adjacent Land Use	cut Banks Deep Pool Watercress Aquatic Version Boulder Other a gard dominant vegetation, mature or early successional)
n-water Cover Cover Types Present (circle): Diverhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, Adjacent Land Use	cut Banks Deep Pool Watercress Aquatic Version Boulder Other a gard dominant vegetation, mature or early successional)
n-water Cover Cover Types Present (circle): Diverhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, Adjacent Land Use	cut Banks Deep Pool Watercress Aquatic Version Boulder Other a gard dominant vegetation, mature or early successional)
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, a support of the country of the coun	dominant vegetation, mature or early successional) grasses economic successional grasses economic successional grasses economic successional grasses economic successional
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Woody Debris Riparian Zone Riparian Cover (% of watercourse shaded, a support of the country of the coun	dominant vegetation, mature or early successional) grasses economic successional grasses economic successional grasses economic successional grasses economic successional
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Riparian Zone Riparian Cover (% of watercourse shaded, and a continuous an	cut Banks Deep Pool Watercress Aquatic Version and Boulder Other and a grant and a grant successional) are seen and successional and seed are seen and successional and seed are seen and seed and seed are seen and seed are seed and seed are seen and seed are seed as a seed are seed as
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Riparian Zone Riparian Cover (% of watercourse shaded, and a continuous an	cut Banks Deep Pool Watercress Aquatic Version and Boulder Other and a grant and a grant successional) are seen and successional and seed are seen and successional and seed are seen and seed and seed are seen and seed are seed and seed are seen and seed are seed as a seed are seed as
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Riparian Zone Riparian Cover (% of watercourse shaded, and a continuous an	cut Banks Deep Pool Watercress Aquatic Version and Boulder Other and a grant and a grant successional) are seen and successional and seed are seen and successional and seed are seen and seed and seed are seen and seed are seed and seed are seen and seed are seed as a seed are seed as
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas Migratory Obstructions (seasonal, permane) Note any fish observations Waterbody Notes Natural Watercourse Industry Obstructions Natural Watercourse Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Note any fish observations Dugger Trapezoidal (Seasonal)	cut Banks Deep Pool Watercress Aquatic Version Boulder Other algae dominant vegetation, mature or early successional) grasses Pool Watercress Aquatic Version Boulder Other algae dominant vegetation, mature or early successional) groundwater upwellings) channel Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas Migratory Obstructions (seasonal, permane) Note any fish observations Waterbody Notes Natural Watercourse Industry Obstructions Natural Watercourse Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Note any fish observations Dugger Trapezoidal (Seasonal)	cut Banks Deep Pool Watercress Aquatic Version Boulder Other algae dominant vegetation, mature or early successional) grasses Pool Watercress Aquatic Version Boulder Other algae dominant vegetation, mature or early successional) groundwater upwellings) channel Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas Migratory Obstructions (seasonal, permane) Note any fish observations Waterbody Notes Natural Watercourse Industry Obstructions Natural Watercourse Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Note any fish observations Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal)	cut Banks Deep Pool Watercress Aquatic Version Boulder Other algae dominant vegetation, mature or early successional) grasses Pool Watercress Aquatic Version Boulder Other algae dominant vegetation, mature or early successional) groundwater upwellings) channel Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas Migratory Obstructions (seasonal, permane) Note any fish observations Waterbody Notes Natural Watercourse Industry Obstructions Natural Watercourse Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Note any fish observations Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal)	cut Banks Deep Pool Watercress Aquatic Version Boulder Other algae dominant vegetation, mature or early successional) grasses Pool Watercress Aquatic Version Boulder Other algae dominant vegetation, mature or early successional) groundwater upwellings) channel Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas Migratory Obstructions (seasonal, permane) Note any fish observations Waterbody Notes Natural Watercourse Industry Obstructions Natural Watercourse Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Note any fish observations Dugger Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal) Trapezoidal (Seasonal) Dugger Trapezoidal (Seasonal)	cut Banks Deep Pool Watercress Aquatic Version and Boulder Other and a grant and a grant successional) are seen and successional and seed are seen and successional and seed are seen and seed and seed are seen and seed are seed and seed are seen and seed are seed as a seed are seed as
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas Migratory Obstructions (seasonal, permane) Note any fish observations Waterbody Notes Natural Watercourse Natural Watercourse Other Habitat Notes, Incidental Wildlife	cut Banks Deep Pool Watercress Aquatic Veg Boulder Other a gard Aquatic Veg Boulder Other a gard Aquatic Veg Dry Dominated by Aquatic Veg Dry Dry Observations, etc.
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas Migratory Obstructions (seasonal, permane) Note any fish observations Waterbody Notes Natural Watercourse Natural Watercourse Other Habitat Notes, Incidental Wildlife	cut Banks Deep Pool Watercress Aquatic Veg Boulder Other a gard Aquatic Veg Boulder Other a gard Aquatic Veg Dry Dominated by Aquatic Veg Dry Dry Observations, etc.
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nursery areas Migratory Obstructions (seasonal, permane) Note any fish observations Waterbody Notes Natural Watercourse Natural Watercourse Note Habitat Notes, Incidental Wildlife	cut Banks Deep Pool Watercress Aquatic Veg Boulder Other a gard Aquatic Veg Boulder Other a gard Aquatic Veg Dry Dominated by Aquatic Veg Dry Dry Observations, etc.

ag field Riparian veg dominated by array head of REA duckweed R11T099-1 ag field. ag field InmanRoad



Statuet	1) in a d
Station # R 11 T 0 99 - 2	Project Name Niagara Wind
Vatercourse Name	Project # 160950269
Photos	Field Staff 16 - Clautten Historica
	Time
Neather conditions in previous 24 hrs	on, hot thunger and the
Neather conditions in previous 27 TE 06 A	0096 N 4749360 Datum Nad 5
aPS Cooldinates (2010)	man Road
Descriptive Location	
Water Quality	Conductivity (µS/cm) 870
Dissolved Oxygen (mg/L) 3 · 70 pr	
Water Temperature (°C) 18.08	Air Temperature (°C)
Time in situ measurements taken	0
Watercourse Dimensions & Morphology	Maximum Pool Depth OSO (cm)
Mean Watercourse Width	

Riparian Jeoj The same of the sa REA CPEA RITTO 99-2. Poad



RAPID ASSESSMENT FORM FOR AQUATIC HABITAT

Stanted

Project Nagara Wind Station # 18-6 Photos Taken GPS Coordinates 177 0625878 4750847 Descriptive Location Sauth of C	Project # 16.950269 Field Staff K. Masan M. Faiela. Date Oct 22/12. Time 11:35 anal bank Pd. Fast of
Dissolved Oxygen (mg/L) pH Water Temperature (°C)	Conductivity (μS/cm) Air Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width	Maximum Pool Depth(cm) Mean Water Depth(cm)% Run% Flat bility
	Boulder 50 Clay Cobble Marl Sand 5 Detritus
MuekGravel	BoulderClayCobble MarlSandDetritus
In-water Cover Cover Types Present (circle): Overhanging Vegetation Undercut Bank Woody Debris	s Deep Pool Vascular Plants Boulder Other
DownstreamAdjacent Land Use	nal, road, forest
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundw Upstream	
Other Habitat Notes, Incidental Wildlife Observation Channel deminated to Intermittent Flav	
Field Notes Authored by K. Masa. Field Notes Qu	A/QCed by Pageof



Station # 3-4 10 0	Project Name Nicegara wind
Watercourse Name unname of tributa	Project #
Priotos <u>331-336</u>	Field Staff K Mason, M Fait Va
Date Octaalla	Time 10 3
Weather conditions in previous 24 hrsSu	MNY JE°C
GPS Coordinates (Zone) TTE 0615	310 N 4764195 Datum Naci
Descriptive Location Off of Co	istor Grainsboraigh Taunline Sout
of Vaughan Road	
Water Quality	
Dissolved Oxygen (mg/L) 124 aH	7.99 Conductivity (µS/cm)
** Water Temperature (°C) 8 3 8	Air Temperature (°C) 15°C
Time in situ measurements taken/ O :	40 13 (
Watercourse Dimensions & Morphology	
Mean Watercourse Width (m)	Maximum Bart Bart A
Mean Bankfull Width (m)	Maximum Pool Depth 60 (cm)
% Riffle % Pox	Mean Water Depth 40 (cm) Startic
Evidence of eroding banks, Comments on bank sta	% Run% Flat
	- Stable
Substrate (% cover)	
Bedrock Cobble	
Boulder Gravel	SandSilt_5Muck
Comment of the control of the contro	
In-water Cover	du acur
Overhanging Vegetation Woody Debris	Soulder Other alace Aquatic veg
Riparian Zone Riparian Cover (% of watercourse shaded, dominan	it vegetation, mature or early successional)
Adjacent Land Use	oad as find
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, groundw	ater upwellings)
Migratory Obstructions (seasonal, permanent)	nido.
Note any fish observations none observations	
- AUROL OBECM	TCO
Waterbody Notes Natural Watercourse Trapezoidal Channel Surficial Drainage (i.e. furrows) Dugout Pond	Grassed Swale Buried Tile
	Dominated by Aquatic Veg Dry
Other Habitat Notes, Incidental Wildlife Observation	one etc. Pina ad
of Typha grasses willow) as Comprised
Connel a Culvert is very wide	(27m wide) havever narrays
In from culter to 22,	bhilds:
ield Notes Authored by L. Mason Field Notes QA	
	s\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



Watercourse Name unna	1000 0 -	Project Name	Nidera	ra Wind
Photos 337-340	mea whitery	Project #	09502	S 91
Date Oct as/la	•	Field Staff 1	Masan	1 Fair 11,
Weather conditions in previous	204 bas	Time 100	Ч	
GPS Coordinates (Zone)	s 24 hrs Sanny	15%		
Descriptive Location	E 06189	N	W7/11/256	Datum N
Descriptive Location	tot Kric		NSTA	Icho Rogo
	e) author	Vauahan	20	·
Water Quality		J	·	
Dissolved Oxygen (mg/L) 6	.93 pH 8.	38 Conducti		
Water Temperature (°C)			vity (µS/cm)	199
Time in situ measurements take	00	Air Temperature (°C)S^C	
	311	:0 (o		
Watercourse Dimensions & M	forphology	•		
Mean Watercourse Width		lavimum Bool Da		
Mean Bankfull Width	/ /	<i>l</i> aximum Pool De lean Water Deptt	pun	(cm)
% Riffle	·	•		(cm)
Evidence of eroding banks, Con	nments on bank stabil	ithe	% Run	%
			<u> </u>	Star 2
Substrate (% cover)				
Bedrock	Cobble			
Boulder	Cobble	Sand	Sitt	Muck
		Clay_	Marl	Detrit
Cover Types Present (circle): Overhanging Vegetation Wo	Undercut Banks body Debris Bo	Deep Pool Pulder Othe	Watercress	Aquatic Ve
Overhanging Vegetation Wo	oody Debris Bo	ulder Othe	r	
Overhanging Vegetation Work Riparian Zone Riparian Cover (% of watercourse	oody Debris Bo	oulder Othe	r	
Overhanging Vegetation Work Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use	e shaded, dominant v	egetation, mature	r	
Overhanging Vegetation Work Riparian Zone Riparian Cover (% of watercourse	e shaded, dominant v	oulder Othe	r	
Overhanging Vegetation Work Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use	e shaded, dominant v	egetation, mature	r	
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use	e shaded, dominant vo	egetation, mature	r	
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse	e shaded, dominant verbushlot,	egetation, mature	r	
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse	e shaded, dominant verbushlot,	egetation, mature	r	
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse Rigratory Obstructions (seasonal,	e shaded, dominant very areas, groundwater permanent)	egetation, mature	r	
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse	e shaded, dominant verbushlot,	egetation, mature	r	
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse Rigratory Obstructions (seasonal,	e shaded, dominant verbushlot, bushlot, bushlot, bushlot, permanent)	egetation, mature	r	
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse Aligratory Obstructions (seasonal,	e shaded, dominant verbushlot, bushlot, bushlot, bushlot, permanent)	egetation, mature	r	
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse digratory Obstructions (seasonal, acte any fish observations	e shaded, dominant very areas, groundwater permanent)	egetation, mature	or early succes	
Riparian Zone Riparian Cover (% of watercourse Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse Rigratory Obstructions (seasonal, Cete any fish observations Vaterbody Notes Ratural Watercourse Trace	e shaded, dominant very areas, groundwater permanent)	egetation, mature	or early succes	ssional)
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse digratory Obstructions (seasonal, acte any fish observations	e shaded, dominant very areas, groundwater permanent)	egetation, mature	or early succes	ssional)
Riparian Zone Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse digratory Obstructions (seasonal, lete any fish observations Yaterbody Notes atural Watercourse Trape urficial Drainage (i.e. furrows)	e shaded, dominant very areas, groundwate permanent) ezoidal Channel Dugout Pond	egetation, mature	or early succes	ssional)
Riparian Zone Riparian Cover (% of watercourse Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse Rigratory Obstructions (seasonal, Cete any fish observations Fish Habitat Potential Critical Habitat Potential Critical Habitat Potential Critical Habitat (spawning or nurse Rigratory Obstructions (seasonal, Cete any fish observations Fish Habitat Potential Critical Drainage (i.e. furrows) Caterbody Notes Caterbody	e shaded, dominant very areas, groundwater permanent) ezoidal Channel Dugout Pond	egetation, mature regetation, mature regetation, mature Grassed Sw Dominated by	or early succes	ssional)
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse Rigratory Obstructions (seasonal, Lete any fish observations Atterbody Notes Laterbody Notes Lat	e shaded, dominant very areas, groundwate permanent) ezoidal Channel Dugout Pond Vildlife Observations	egetation, mature regetation, mature regetation, mature Grassed Sw Dominated by	or early succes	ssional)
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse digratory Obstructions (seasonal, Lete any fish observations Atterbody Notes Caterbody Notes Cat	e shaded, dominant very areas, groundwate permanent) ezoidal Channel Dugout Pond Viidlife Observations	egetation, mature regetation, mature regetation, mature Grassed Sw Dominated by	or early succes	Buried Tile
Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse Rigratory Obstructions (seasonal, Lete any fish observations Atterbody Notes Laterbody Notes Lat	e shaded, dominant very areas, groundwate permanent) ezoidal Channel Dugout Pond Viidlife Observations	Grassed Sw. Dominated by	rale E Aquatic Veg	Buried Tile
Riparlan Zone Riparlan Zone Riparlan Cover (% of watercourse Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse digratory Obstructions (seasonal, Cete any fish observations Vaterbody Notes atural Watercourse Trape Inficial Drainage (i.e. furrows) Ther Habitat Notes, Incidental Waterbody Notes Additional Cover (% of watercourse Trape Trape Ther Habitat Notes, Incidental Watercourse Ther Habitat Notes, Incidental Watercourse	e shaded, dominant very areas, groundwate permanent) ezoidal Channel Dugout Pond Viidiife Observations	Grassed Sw. Dominated by	rale E Aquatic Veg	Buried Tile
Riparian Zone Riparian Zone Riparian Cover (% of watercourse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse ligratory Obstructions (seasonal, Cete any fish observations Adjacent Land Use Tish Habitat Potential Critical Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use Tish Habitat Potential Critical Habitat (spawning or nurse Adjacent Land Use	e shaded, dominant very areas, groundwate permanent) ezoidal Channel Dugout Pond Viidiife Observations	Grassed Sw. Dominated by	rale E Aquatic Veg	Buried Tile



Station #		# Liroinal #		
Watercourse Name White Photos 343 - 34		Project #	144720 01	29
Date Oct 22/12	}	Field Staff K	Mason, M.	Fairlia -
Weather conditions in previou	is 24 hrs Cun	111118 11114 15°C	<u>X</u>	
GPS Coordinates (Zone)		Tags N	4-1/110/24	Datum 6
Descriptive Location			Least of	Datum Va
west	DA 437	02017	A FOUT OF	Erick Po
Water Quality	1.60		mcanishi.	%
Dissolved Oxygen (mg/L)8		Conduc	tivity (µS/cm)	184
Water Temperature (°C) 9		Air Temperature	(°C) <u>15°C</u>	
Time in situ measurements tal	Ken	スプ		*
Watercourse Dimensions &	Morphology			
Mean Watercourse Width 🔍	<u>· 5 (</u> m)	Maximum Pool D	epth 50	(cm) < tarl
Mean Bankfull Width 🔼 📙	(m)	Mean Water Dep		(cm)
% Riffle	% Po		% Run	% F
Evidence of eroding banks, Co	omments on bank st	ability <u>Ctabl</u>	L - all a	-055-69
			J	
Substrate (% cover)				* · · · · · · · · · · · · · · · · · · ·
Bedrock	Cobble		_80 Sin	/O Muck
Boulder	Gravel	O Clay	Marl	
water Cover		50	a locat.) II k
	:: 1 boots a cons	000	alout.	
Cover Types Present (circle): Overhanging Vegetation Villparlan Zone	Voody Debris	Boulder Ott	er algaes	Aquatic Veg
Ilparian Zone Ilparian Cover (% of watercould	rse shaded, domina	Boulder Oth	re or early succes	*
Cover Types Present (circle): Overhanging Vegetation Veliparian Zone Iliparian Cover (% of watercould a continue of the county o	rse shaded, domina	Boulder Oth	re or early succes	Aquaic veg
Cover Types Present (circle): Diverhanging Vegetation Villparlan Zone liparlan Cover (% of watercound diacent Land Use Ish Habitat Potential ritical Habitat (spawning or nu	rse shaded, dominar	nt vegetation, matu	re or early succes	Aquaic veg
Cover Types Present (circle): Everhanging Vegetation Ve	rse shaded, dominar	Boulder Oth	re or early succes	Aquaic veg
Cover Types Present (circle): Everhanging Vegetation Ve	rse shaded, dominar granes, en rsery areas, groundy al, permanent)	Boulder Other Notice of the Poulder Other Notice of the Po	re or early succes	Aquatic Veg
Cover Types Present (circle): Diverhanging Vegetation Villparlan Zone liparlan Cover (% of watercound diacent Land Use Ish Habitat Potential ritical Habitat (spawning or nu	rse shaded, dominar	Boulder Other Notice of the Poulder Other Notice of the Po	re or early succes	Aquatic Veg
Ilparian Zone Ilparian Zone Ilparian Cover (% of watercound Idjacent Land Use Ish Habitat Potential Initical Habitat (spawning or number any fish observations	rse shaded, dominar granes, en rsery areas, groundy al, permanent)	Boulder Oth nt vegetation, maturates voad, vii water upwellings) on e	re or early succes	Aquaic Veg
Ilparian Zone Ilparian Zone Ilparian Cover (% of watercound diacent Land Use Ish Habitat Potential ritical Habitat (spawning or number any fish observations	rse shaded, dominar granes felds rsery areas, grounder al, permanent)	Mater upwellings)	ter algaes re or early succes ral resid	Aquaic Veg
Ilparian Zone Ilparian Zone Ilparian Cover (% of watercound Idjacent Land Use Ish Habitat Potential Initical Habitat (spawning or number any fish observations	rse shaded, dominar granes felds rsery areas, grounder al, permanent)	Mater upwellings)	ter algaes re or early succes ral resid	Aquaic Veg
Ilparian Zone Iliparian Zone Iliparian Cover (% of watercounce Iliparian Zone Iliparian	rse shaded, dominar Granes G	Boulder Ott nt vegetation, maturated water upwellings) Grassed S Dominated	re or early succes ral resid	Aquaic Veg
Ilparian Zone Iliparian Zone Iliparian Cover (% of watercounding Vegetation) Iliparian Cover (% of watercounding Cover (%	rse shaded, dominar granes felds rsery areas, groundy al, permanent) apezoidal Channel Dugout Pond Wildlife Observati	Boulder Ott nt vegetation, maturated water upwellings) Grassed Spominated lons, etc.	re or early succes ral resid	Aquaic Veg
Ilparian Zone Iliparian Zone Iliparian Cover (% of watercounce Iliparian Zone Iliparian	rse shaded, dominar grane 5 grane 6 grane 6 grane 7 grane 7 grane 7 grane 7 grane 8	Boulder Ott nt vegetation, maturated water upwellings) Grassed Spominated lons, etc.	re or early succes ral resid	Aquaic Veg
Ilparian Zone Iliparian Zone Iliparian Cover (% of watercounding Vegetation) Iliparian Cover (% of watercounding Cover (%	rse shaded, dominar grange shaded shade	Boulder Ott nt vegetation, maturated water upwellings) Grassed Spominated lons, etc.	re or early succes ral resid	Aquaic Veg
Ilparian Zone Iliparian Cover (% of watercount Iliparian Zone I	rse shaded, dominar grane 5 grane 6 grane 6 grane 7 grane 7 grane 7 grane 7 grane 8	Boulder Ott nt vegetation, maturated water upwellings) Grassed Spominated lons, etc.	re or early succes ral resid	Aquaic Veg
Ilparian Zone Iliparian Zone Iliparian Cover (% of watercounce Iliparian Zone Iliparian	rse shaded, dominar grane 5 grane 6 grane 6 grane 7 grane 7 grane 7 grane 7 grane 8	Boulder Ott nt vegetation, maturated voad virus vater upwellings) Grassed: Dominated lons, etc.	re or early succes ral resid	Aquaic Jeg



Station # 4-4 10 st		Project Name	Niagara	C (Wind
Watercourse Name \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	med Tributan	Project #[7	095026	Ā
Photos 349-39	52	Field Staff 1	Masan, M. Fa	iella
Date <u>೧೭+ みあいる</u>		Time	30	
Weather conditions in previous	24 hrs <u>Sunn</u>	11.150C		~~~~
GPS Coordinates (Zone)	TE 0619	735 N	4764957	<u>Datum Nad</u> రక
Descriptive Location	tt of Non	ghan ed.	fact of	4-2 102013
	coot ala f	er Visi		**************************************
Water Quality	/ not ugh f	_		
Dissolved Oxygen (mg/L)	pH	Conducti	vity (μS/cm)	
Water Temperature (°C)		Air Temperature ((°C) <u>\50</u> C_	
Time in situ measurements tak	en			
Watercourse Dimensions & M	~ -	•		1 /2
Mean Watercourse Width		Maximum Pool De		_(cm) _tard()
Mean Bankfull Width	(m)	Mean Water Dept		_(cm) 3 water
% Riffle	% Pool		% Run	% Flat
Evidence of eroding banks, Co	mments on bank sta	bility <u>Sta</u>	ble -utg	eta tien
Substrate (% cover)			The state of the s	:
Bedrock	Cobble	Sand	80 silt	/O Muck
Boulder	Gravel		Siii Mari	MANAGO MASAN MASAN MANAGO MANA
Overhanging Vegetation W Riparian Zone Riparian Cover (% of watercour	rse shaded, dominan	t vegetation, matu	re or early succes	sional)
Adjacent Land Use	70 grass			
voaa,	ruva resio	untial, To	rn, bushlo	outer
Fish Habitat Potential	• • • • • • • • • • • • • • • • • • •			
Critical Habitat (spawning or nu	rserv areas, groundy	ater upwellings)		
none	,, g	ato. upmoningo,		
Migratory Obstructions (season				
		N ENDATED		
Note any fish observations	UNL UBLEY UCD			
Waterbody Notes Natural Watercourse Transcription Surficial Drainage (i.e. furrows)_			Swale E by Aquatic Veg_	
Other Habitat Notes, Incidenta	Nidlife Observati	ons, etc. Vs s ee a Typ wordrean		rainage feat
Field Notes Authored by K. M. A.S.	Field Notes QA	VQCed by Mf		



Water Course Name
Field Staff
Weather conditions in previous 24 hrs
GPS Coordinates (Zone) Descriptive Location Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Water Depth % Riffle % Pool Evidence of eroding banks, Comments on bank stability Substrate (% cover) Bedrock Boulder Gravel In-water Cover
Descriptive Location Water Quality Dissolved Oxygen (mg/L) 9 9 9 Air Temperature (°C) Air Temperature (°C) Time in situ measurements taken Watercourse Dimensions & Morphology Mean Watercourse Width (m) Mean Water Depth (cm) % Riffle % Pool % Run % Full Mean Water Depth % Run % Full Mean Water Of Bedrock Cobble Sand Silt Muck Boulder Gravel Ociay Mari Detritution in-water Cover
Water Quality Dissolved Oxygen (mg/L) 919 pH 8.04 Conductivity (µS/cm) 13.89 Water Temperature (°C) 10.33 Air Temperature (°C) 50 Watercourse Dimensions & Morphology Mean Watercourse Width 5 (m) Maximum Pool Depth 6 (cm) Mean Bankfull Width 5 (m) Mean Water Depth 30 (cm) Watercourse Ording banks, Comments on bank stability Substrate (% cover) Bedrock Cobble Sand 8 Silt 5 Muck Boulder Gravel 0 Clay Marl 5 Detrituellers of the cover of the c
Dissolved Oxygen (mg/L) 9 9 9 PH 8 0 Conductivity (µS/cm) 389 Water Temperature (°C) 10 3 Air Temperature (°C) 5 C Time in situ measurements taken
Water Temperature (°C)
Watercourse Dimensions & Morphology Mean Watercourse Width (m) Maximum Pool Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) % Riffle % Pool % Run % Fundaments on bank stability Substrate (% cover) Bedrock Cobble Sand Silt Muck Boulder Gravel Clay Marl 5 Detritutions of the same o
Watercourse Dimensions & Morphology Mean Watercourse Width
Mean Watercourse Width (m) Maximum Pool Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Mean Water Depth (m) Mean Water Depth
Mean Watercourse Width (m) Maximum Pool Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm) Mean Water Depth (cm) Mean Water Depth (m) Mean Water Depth
Mean Bankfull Width
Evidence of eroding banks, Comments on bank stability Stable Well regulated Stable Substrate (% cover) Bedrock Cobble Sand Silt S Muck Boulder Gravel Clay Marl 5 Detritu
Substrate (% cover) Bedrock Cobble Sand Silt S Muck Boulder Gravel Clay Marl 5 Detritu
Bedrock Cobble Sand Silt 5 Muck Boulder Gravel O Clay Marl 5 Detritu
Bedrock Cobble Sand Silt 5 Muck Boulder Gravel O Clay Marl 5 Detritu
In-water Cover
In-water Cover
The first Devices and the second seco
Overhanging Vegetation Woody Debris Boulder Other
Riparian Zone Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
Adjacent Land Use
road ag. Field pasture
Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
Migratory Obstructions (seasonal, permanent)
Note any fish observations none observed
Waterbody Notes
Natural Watercourse // Trapezoidal Channel Grassed Swale Buried Tile Buried Tile Buried Tile Buried Tile Dry
Other Habitat Notes, Incidental Wildlife Observations, etc. Channel is winder a culti-
regetation water in channel is whenky a covered in du
eld Notes Authored by K. M. a. S. W. State Name Canal State Name Canad State Name Canal State Name Canal State Name Canal State Name Canal State Name Canad State Name Canal State Name Canad Sta



Station #(0-1	<u> </u>	Project No.	8 1	te de l'
Watercourse Name Whomas	Vince To V	Project Name	NIAGAVA	Wind
Photos 358-361	1111 2.	Project #(6.00	(0269	
Date Octabla		Field Staff K.M.	Man, H. Furt	1 a .
Weather conditions in previous 2	24 hrs Sun	Time (大り)		
GPS Coordinates (Zone)	17 E 7	13 //\ 17		
		7046 N		Datum Nod!
IN /		A D STORY : WANT		Lo Read.
- V	UT LUM	Stein Roa	<u> </u>	
Water Quality	, dry			
Dissolved Oxygen (mg/L)	Hq	Complement		
Water Temperature (°C)		Air Tomporeture (0.5	y (μS/cm)	
Time in situ measurements taken	<u> </u>	Air Temperature (°C	1_15	
Watercourse Dimensions & Mo				
1 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	/	1 dm		
Mean Bankfull Width 1.5	<u>(</u> m)	Maximum Pool Dept	h (c	:m)
% Riffle	(m) /	mean water Deoth	(0	m)
Evidence of eroding banks Cana			_% Run	% Flat
Evidence of eroding banks, Comn	nents on bank st	ability		
Substrate (% cover)				
Bedrock	.	ALE CONTRACTOR OF THE PARTY OF	*	
	Cobble	Sand	Silt	Muck
Boulder	Gravel	Clay	Marl	Detritus
In-water Cover			19 coil 6	
Overhanging Vegetation Wood Riparian Zone Riparian Cover (% of watercourse:	shaded, dominan	Boulder Other_	r garhe guagasian	
	sses ear	M	adily succession	aı)
Adjacent Land Use		unos		
ag hi	elds . va	<u>ad</u>		
Figh Mohites Basansi s	-7.			
Fish Habitat Potential	Á			
Critical Habitat (spawning or nurser	y areas, groundw	ater upwellings)		
Migratory Obstructions (seasonal, p	IV V. A. A. A.			
meratory obstructions (seasonal, p	ermanent)			
lote any fish observations	NON D		•	
	NONE			
Vaterbody Notes				
latural Watercourse Trapez	zoidal Channel	Granad Co.		
urficial Drainage (i.e. furrows)	Dugget Pond	Grassed Swal	e Buried	l Tile
				Dry
ther Habitat Notes, Incidental Wil	Idlifa Ohsarvatic	ne de Meial	Pia or e	. applic
definition - poss	Siplia iva ve	nia, atc. UCV M	ner chan	10
VIS SIDE IS PIBER	VY108	C DV	,	
d Notes Authored by V. MICON	Elald Mark and	<u>.</u> 1		
	Fleid Notes QA/	JUST BY		



Station #			ect Name _				
	aned tr		ect #1/0	09508	169	Wit	
Photos 362-361		Field	Staff Z	Masw.	Λ , Λ	Fair	ella.
Date Oct 23/	and the same of th	Time		2			
Weather conditions in previous		Sanny					
GPS Coordinates (Zone)		19064		4761	625	Datu	m Nad
Descriptive Location	0++ 0+	YVICK	<u> </u>	O. Sa	44	04	ZUMSt
	<u> </u>						
Water Quality							
Dissolved Oxygen (mg/L)		18.10	_ Conduct	ivity (uS/c	m) (o	10	
Nater Temperature (°C)	3 . 00	Air Te	emperature	(°C)	700		
Time in situ measurements tal	ken <u>l</u> 2	<u>L:15</u>	_	. ,			
Watercourse Dimensions &	Morphology	•					
Mean Watercourse Width	,5 (m)	Mayin	num Pool D	noth 3	\wedge	()	
Mean Bankfull Width	(m)	Mean	Water Dept	Papai		(cm)	dand h
% Riffle	%	Pool	Trator Dept	% Ru	<u></u>	(cm)	% Flat
vidence of eroding banks, Co	omments on bank	stability	Stable			n_e \ a!	
		-					depresent (S)
ubstrate (% cover)						:	
Bedrock	Cobble		Sand	QΛ	5	10	
Boulder	Gravel	1	_Sano _Clay	00	_Sitt	10	_Muck
			Clav		Marl		_Detritus
-water Cover			··· · · · · · · · · · · · · · · · · ·				000
over Types Present (circle): verhanging Vegetation William Vegetation		Boulde	Deep Pool r Oth	er	creșs	Aqu	auc veg
ver Types Present (circle): verhanging Vegetation W Iparlan Zone iparlan Cover (% of watercour	rse shaded, domi	Boulde	Deep Pool r Oth	ere or early	creșs ————————————————————————————————————	Aqu	auc veg
lparlan Cover (% of watercour	voody Debris	Boulde	Deep Pooler Other	ere or early	creșs ————————————————————————————————————	Aqu	
iparian Cover (% of watercourding Use Iparian Cover (% of watercourding Of Nurse)	rse shaded, domi	Boulde inant veget	Deep Pool or Oth ation, matur	ere or early	creșs ————————————————————————————————————	Aqu	auc veg
Iparlan Zone Iparlan Zone Iparlan Cover (% of watercour Idjacent Land Use sh Habitat Potential Initical Habitat (spawning or nur	rse shaded, domi ralses, ea feld, vi rsery areas, ground none al, permanent)	Boulde inant veget	Deep Pool or Oth ation, matur	ere or early	creșs ————————————————————————————————————	Aqu	auc veg
djacent Land Use	rse shaded, domi	Boulde inant veget	Deep Pool or Oth ation, matur	ere or early	creșs ————————————————————————————————————	Aqu	auc veg
iparian Zone iparian Cover (% of watercour iparian Cover (% of watercour djacent Land Use sh Habitat Potential ritical Habitat (spawning or nur igratory Obstructions (seasona ete any fish observations aterbody Notes tural Watercourse Tra rficial Drainage (i.e. furrows)	rse shaded, domi ralses, ea feld, vi rsery areas, ground al, permanent) al, permanent) apezoidal Channe Dugout Por	Boulde inant veget and	Deep Pool of Other ation, mature wellings) Grassed S Dominated b	ere or early	success	Aqu sional)	auc veg
Iparlan Zone Iparlan Zone Iparlan Zone Iparlan Cover (% of watercour Iparlan Cover (% of waterco	rse shaded, domi ralses, ea feld, vi rsery areas, ground al, permanent) al, permanent) apezoidal Channe Dugout Por	ndwater up	Deep Pool of Other ation, mature wellings) Grassed S Dominated b	ere or early	success	Aqu sional)	auc v'eg
Iparlan Zone Iparlan Zone Iparlan Zone Iparlan Cover (% of watercour Iparlan Cover (% of waterco	rse shaded, domi ralses ed realses ed realse	ndwater up	Deep Pool of Other	ere or early	success	Aqu sional)	auc v'eg



Watercourse Name Unnamed Photos 368-372		5-100		
Date Oct 22/12		Field Staff	C. Mason, 1	4 Faiella
Weather conditions in previous	24 hre	Time <u>/ 3 : 4</u>	-(3	
GPS Coordinates (Zone)	7 F 0(0			
Descriptive Location	f of Sid		14760425	
•		27528 14	- party o	f Concessi
Water Quality	/no w	ater.		
Dissolved Oxygen (mg/L)	pH_	Conduc	ctivity (u.S/cm)	
Water Temperature (°C)	*	Air Temperature	1°C) \8°	
Time in situ measurements take	en		()	
Watercourse Dimensions & N	lorphology /	moist		
Mean Watercourse Width	(m)	Maximum Pool ()enth	(am)
Mean Bankfull Width 🔝 🔍	(m)	Mean Water De	oth	(cm) (cm)
% Riffle	% Po	m!	% Run	(CIII) %
Evidence of eroding banks, Con	nments on bank s	tability <u>Stable</u>		assed tha
	to doar	L. L.		
Substrate (% cover)				· Agran
Bedrock	Cobble	Sand	Silt	100 Muck
over Types Present (circle): Overhanging Vegetation Uparlan Zone Iparlan Cover (% of watercours	oody Debris e shaded, domina	Boulder Ot	her	Aquatic Ve
In-water Cover Cover Types Present (circle): Overhanging Vegetation Wo Iparian Zone Iparian Cover (% of watercours Ipacent Land Use	Undercut Bal body Debris se shaded, domina	nks Deep Poo Boulder Ot	Watercress	Aquatic Ve
n-water Cover Cover Types Present (circle): Overhanging Vegetation Wo Ilparlan Zone Ilparlan Cover (% of watercours	Undercut Bal body Debris se shaded, domina	nks Deep Poo Boulder Ot	Watercress	Aquaiic Ve
n-water Cover Cover Types Present (circle): Overhanging Vegetation Wo Ilparlan Zone Ilparlan Cover (% of watercours diacent Land Use	Undercut Bar boody Debris se shaded, domina	nks Deep Poo Boulder Ot unt vegetation, matu	Watercress	Aquaiic Ve
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Wo Ilparian Zone Iliparian Cover (% of watercours diacent Land Use Food Coy Ish Habitat Potential ritical Habitat (spawning or nurs	Undercut Bal body Debris se shaded, domina www.alg.	nks Deep Poo Boulder Ot unt vegetation, matu	Watercress	Aquaus Ve
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Wo Ilparian Zone Iliparian Cover (% of watercours diacent Land Use	Undercut Bar boody Debris se shaded, domina week a ground sery areas, ground	nks Deep Poo Boulder Ot unt vegetation, matu	Watercress	Aquaus Ve
In-water Cover Cover Types Present (circle): Overhanging Vegetation Wolfparlan Zone Iliparlan Zone Iliparlan Cover (% of watercours diacent Land Use	Undercut Bar boody Debris se shaded, domina week al gr sery areas, ground permanent)	nks Deep Poo Boulder Ot unt vegetation, matu	Watercress	Aquaus Ve
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Wo Ilparian Zone Iliparian Cover (% of watercours diacent Land Use	Undercut Bar boody Debris se shaded, domina week al gr sery areas, ground permanent)	nks Deep Poo Boulder Ot unt vegetation, matu	Watercress	Aquatic Ve
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Wo Ilparian Zone Iliparian Cover (% of watercours diacent Land Use Voad Cov Ish Habitat Potential ritical Habitat (spawning or nurs igratory Obstructions (seasonal cite any fish observations	Undercut Bar boody Debris se shaded, domina week al gr sery areas, ground permanent)	nks Deep Poo Boulder Ot unt vegetation, matu	Watercress	Aquatic Ve
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Wo Ilparian Zone Iliparian Cover (% of watercours diacent Land Use	Undercut Bar body Debris se shaded, domina week al grand sery areas, ground permanent)	nks Deep Poo Boulder Ot ant vegetation, matu asses, early	Matercress her ure or early succe	Aquatic Ve
In-water Cover Cover Types Present (circle): Diverhanging Vegetation Iliparian Zone Iliparian Cover (% of watercours diacent Land Use Ish Habitat Potential ritical Habitat (spawning or nurs igratory Obstructions (seasonal cite any fish observations aterbody Notes atural Watercourse Trap	Undercut Bar body Debris se shaded, domina week al grand sery areas, ground permanent)	nks Deep Poor Boulder Ott unt vegetation, matural services and provided the control of the contr	Ner	Aquatic Ve
n-water Cover Cover Types Present (circle): Dverhanging Vegetation Wo Ilparian Zone Iliparian Cover (% of watercours diacent Land Use	Undercut Bar body Debris se shaded, domina week al grand sery areas, ground permanent)	nks Deep Poor Boulder Ott unt vegetation, matural services and provided the control of the contr	Ner	Aquaiic Ve
In-water Cover Cover Types Present (circle): Dverhanging Vegetation Wolfparlan Zone Iliparlan Zone Iliparlan Cover (% of watercours diacent Land Use Ish Habitat Potential ritical Habitat (spawning or nurs igratory Obstructions (seasonal ete any fish observations Atterbody Notes Intural Watercourse Trap Inficial Drainage (i.e. furrows)	Undercut Bal boody Debris se shaded, domina a reply all gr sery areas, ground permanent) a few for the pezoidal Channel of Dugout Pond	nks Deep Poor Boulder Other Int vegetation, matural section of the	Matercress her ire or early succe	Aquauc Ve
In-water Cover Cover Types Present (circle): Dverhanging Vegetation It parlan Zone It parlan Zone It parlan Cover (% of watercours djacent Land Use Cover Cover	Undercut Bal body Debris se shaded, domina week al grand sery areas, ground permanent) permanent) Dugout Pond	mks Deep Poor Boulder Ott Int vegetation, maturaises, early water upwellings) CK regetation Grassed Dominated ions, etc. Shall	Ner	Aquauc ve
In-water Cover Cover Types Present (circle): Dverhanging Vegetation Wolfparlan Zone Iliparlan Zone Iliparlan Cover (% of watercours diacent Land Use Ish Habitat Potential ritical Habitat (spawning or nurs igratory Obstructions (seasonal ete any fish observations Atterbody Notes Intural Watercourse Trap Inficial Drainage (i.e. furrows)	Undercut Bar body Debris se shaded, domina week all gr sery areas, ground permanent) permanent) pezoidal Channel Dugout Pond Wildlife Observat	mks Deep Poor Boulder Ott Int vegetation, maturaises, early water upwellings) CK regetation Grassed Dominated ions, etc. Shall	Swale	Aquauc ve
In-water Cover Cover Types Present (circle): Dverhanging Vegetation Wollparlan Zone Iliparlan Zone Iliparlan Cover (% of watercours diacent Land Use Solution Cover Solu	Undercut Bal body Debris se shaded, domina week al grand sery areas, ground permanent) permanent) Dugout Pond	mks Deep Poor Boulder Ott Int vegetation, maturaises, early water upwellings) CK regetation Grassed Dominated ions, etc. Shall	Ner	Aquauc ve
In-water Cover Cover Types Present (circle): Dverhanging Vegetation Wollparlan Zone Iliparlan Zone Iliparlan Cover (% of watercours diacent Land Use Solution Cover Solu	Undercut Bar body Debris se shaded, domina week all gr sery areas, ground permanent) permanent) pezoidal Channel Dugout Pond Wildlife Observat	mks Deep Poor Boulder Ott Int vegetation, maturaises, early water upwellings) CK regetation Grassed Dominated ions, etc. Shall	Swale	Aquauc ve



GPS Coordinates (Zone)	Project Na Project #_ Field Staff Time	160950 V. Masa V. S. G C N 4759	M. Faie	tum Nadi
Weather conditions in previous 24 hrs GPS Coordinates (Zone) TE Descriptive Location CACH Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C)	Field Staff Time 13 20 20 20 20 20 20 20 20 20 20 20 20 20	K. Masa C:56 C N 4759	M. Fair	tum Nad
Weather conditions in previous 24 hrs GPS Coordinates (Zone) TE Descriptive Location COCH Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C)	Time 13 Sunny 15 22342 Certical (c	N4759	602 Dat	tum Nad
GPS Coordinates (Zone) TE OLOGO Descriptive Location ROCH OF SCHOOL Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C)	22349 6 49 6 dr	N4759		
Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C)	duy (o			
Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C)	d 44.	west ,		
Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C)	0 44 dr	~ 1	·	7 2 2 2 2 2 1
Dissolved Oxygen (mg/L) pH Water Temperature (°C)	L Go	~ <i>A</i>		
Water Temperature (°C)			•	
Water Temperature (°C)	·	anductivity (
Time in situ measurements taken	Air Temper	enductivity (μS/c ature (°C)	an)	
	,		5 42	
Watercourse Dimensions & Morphology		1001		
Mean Watercourse Width(m)	Movies			
Mean Bankfull Width (m)	Maximum P	ool Depth		
% Riffle % p		r Depth		
Evidence of eroding banks, Comments on bank	/ 375-4111-411-411-411-411-411-411-411-411-4	% Ru		% Fl
		wellor	3-2-2-2-2-2	<u>a\</u>
Substrate (% cover)				
BedrockCobble_				
Boulder Gravel			_Sint_50_	Muck
	Clay_		Mart	Detritus
n-water Cover				Typ
over Types Present (circle): Undercut Batter Verhanging Vegetation Woody Debris	anks Deep Boulder	Pool Water	cress Ag	uauc /eq
iparian Cover (% of watercourse shaded, domin	lant vegetation, r	mature or early	successional)	
	THE STATE OF THE S	ar ur		
sh Habitat Potential				
itical Habitat (spawning or nursery areas, ground	dwater upwelling	rs)		
No commence of the first and t		,-, 		
gratory Obstructions (seasonal, permanent)	3			
ete any fish observations	- 1 thick	- 12geta	(Aira	
and they have been validitis		Ų.		
		-		
aterbody Notes				· · · · · · · · · · · · · · · · · · ·
tural Watercourse Trapezoidal Channel	Grae	and Cumba		•••
rficial Drainage (i.e. furrows) Dugout Pond	d Domine	ated by Agreeda	Buried T	
				Dry <u>V</u>
	itions, etc. R	MANA	0.00	
ier Habitat Notes, Incidental Wildlife Observa		THE ACTION OF	17/18 17 (ON NITH
ner Habitat Notes, Incidental Wildlife Observa	Na Monda	al man	1 1	
		W Marcia	20.	
		w specie		-
Mannel runs along contre	noon 6.	D Specie	3 F.	-
	noon 6.	D. Specit	2 [-



Station # 9-2	The state of the s	Project Name	Niagara wi	~d
Watercourse Name Nona	insolling	Project #	60950260	
Photos 380 - 384			K. Hason H. F	
Date Oct 3/13		Time /4	1/_	a TIO
Weather conditions in previous	s 24 hrs <u>Հար</u>	50 15°C		
GPS Coordinates (Zone)		5267 226 1776 52000	N 4758617	Datum Nad
Descriptive Location		a road +		conc. (
Water Quality				
Dissolved Oxygen (mg/L)	pH′	Condu	odhaite (a.O.)	
Water Temperature (°C)		Air Temporatur	ctivity (μS/cm) e (°C)	
Time in situ measurements tak	en	Air remperature	(G) <u>18 C</u>	
Watercourse Dimensions & I	Morphology	. ,	ν	
Mean Watercourse Width	(m)	Maximum Pool	Depth(cm)
Mean Bankfull Width 5	(m)	Mean Water De	pth (4	cm)
% Riffle	% Po	øl:	% Run	, % FI
Evidence of eroding banks, Co	mments on bank st		de banks -	ज्या .
		wegetateo		Typhad
Substrate (% cover)	-		meddan sp	ecuto.
Bedrock	Cobble	Sand	Silt	Muck
Boulder	Gravel	Clay	Marl	Detritus
п-water Cover		Soil		T
Cover Types Present (circle): Overhanging Vegetation W	Undercut Ban		Natercreșs (Aquauc veg
	end tock	7		nai)
pastu	e road	100 Sic		
Fish Habitat Potential Critical Habitat (spawning or nurs	sery areas, groundy	vater upwellings)		
ligratory Obstructions (seasona	I, permanent)	4		
cte any fish observations	none		egetanon.	
aterbody Notes atural Watercourse Trapurficial Drainage (i.e. furrows)	Dugout Pond_	Dominated	by Aquatic Veg	nd Tile
ther Habitat Notes, incidental	Wildlife Observati	ons, etc.	ply incised c	hannol-
d Notes Authored by K. MaSw				



Photos 385-390 Date Oct 32112	- A C Bry (RV)	PIDIOPT #		wind.
			(e09'50)	
Date Uct aalla		Time 4	Mason, M.	Faleila
Weather conditions in previous		WNA 15	60	
GPS Coordinates (Zone)	TT E 0600		4757736	0-4 6 1
Descriptive Location		e voced	14 Sart	Datum Na
Water Quality	7 W	ater qual	ity is from	va posta
Dissolved Oxygen (mg/L)	: <u>50</u> pH]	66 Conduc	tivity (uS/cm)	3470
Water Temperature (°C) 11/3 Time in situ measurements take		Air Temperature	(°C) 18°C	
Watercourse Dimensions & M			tanding ,	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Mean Watercourse Width			" The state of the	Matical
Mean Bankfull Width		Maximum Pool D	epth	(cm)
% Riffle	(/// %.Pool	Mean Water Dep		(cm)
Evidence of eroding banks, Corr	nments on bank stat		- % Run	% F
			DE OUT	LUGGETATEA
Substrate (% cover)				
Bedrock	Cobble	Sand	80 sitt	fam B. f.
Boulder	Gravel	Clay	XO Silt Mari	O Muck
1-water Cover				RC
l iparian Zone Iparian Cover (% of watercours	a shadad daminant			
liparian Cover (% of watercourse	e shaded, dominant	vegetation, matur	re or early succe	essional)
liparian Cover (% of watercourse \(\sum \) \(\sum \)	Man Trea	intern	re or early succe	essional)
djacent Land Use	e shaded, dominant mall tree thral field	intern	re or early succe	essional)
djacent Land Use Agricul Ish Habitat Potential	ery areas, groundwa	c, road	re or early succe	essional)
djacent Land Use Ish Habitat Potential ritical Habitat (spawning or nurse	ery areas, groundwa	c, voad	nediate	
djacent Land Use Ish Habitat Potential ritical Habitat (spawning or nurse) Igratory Obstructions (seasonal,	ery areas, groundwa	c, voad	nediate	
djacent Land Use Same Course Same Cours	ery areas, groundwa	c, voad	nediate	
Riparian Cover (% of watercourse dijacent Land Use Rish Habitat Potential Pritical Habitat (spawning or nurse ligratory Obstructions (seasonal, ete any fish observations	ery areas, groundwa permanent)	ter upwellings)	cueget	ation
Riparian Cover (% of watercourse dijacent Land Use Rish Habitat Potential difficult Habitat (spawning or nurse digratory Obstructions (seasonal, attentional test of the language of the lang	ery areas, groundwa permanent)	ter upwellings)	cueget	ation
Riparian Cover (% of watercourse diparian Cover (% of watercourse	ery areas, groundwa permanent)	ter upwellings)	cueget	ation
Riparian Cover (% of watercourse Adjacent Land Use Rish Habitat Potential Britical Habitat (spawning or nurse ligratory Obstructions (seasonal, ete any fish observations Trapartical Watercourse Traparticial Drainage (i.e. furrows)	ery areas, groundwa permanent) chan permanent ezoidal Channel Dugout Pond	der upwellings) Grassed S Dominated I	Swale	Buried Tile
Riparian Cover (% of watercourse Adjacent Land Use Rish Habitat Potential Pritical Habitat (spawning or nurse ligratory Obstructions (seasonal, ete any fish observations Trapartical Watercourse Trapartical Drainage (i.e. furrows) ther Habitat Notes. Incidental Watercourse The particular Principal Course Trapartical Drainage (i.e. furrows) ther Habitat Notes. Incidental Watercourse Trapartical Drainage (i.e. furrows) ther Habitat Notes. Incidental Watercourse Trapartical Drainage (i.e. furrows) therefore the particular to the particular trapartical Drainage (i.e. furrows) therefore trapartical Drainage (i.e	ery areas, groundwa permanent) — channel — Dugout Pond Mildlife Observation	Grassed S Dominated i	Swale	Buried Tile
Riparian Cover (% of watercourse Adjacent Land Use Rish Habitat Potential Britical Habitat (spawning or nurse ligratory Obstructions (seasonal, ete any fish observations Trapartical Watercourse Traparticial Drainage (i.e. furrows)	ery areas, groundwa permanent) — channel — Dugout Pond Mildlife Observation	Grassed S Dominated i	Swale	Buried Tile
Tish Habitat Potential Critical Habitat (spawning or nurse ligratory Obstructions (seasonal, cte any fish observations Taterbody Notes atural Watercourse Unficial Drainage (i.e. furrows)	ery areas, groundwa permanent) — channel — Dugout Pond Mildlife Observation	Grassed S Dominated i	Swale	Buried Tile
Riparian Cover (% of watercourse Adjacent Land Use Rish Habitat Potential Critical Habitat (spawning or nurse ligratory Obstructions (seasonal, ete any fish observations Trapartical Watercourse Traparticial Drainage (i.e. furrows) Cher Habitat Notes, Incidental V	ery areas, groundwa permanent) ezoidal Channel Dugout Pond Vildlife Observation	Grassed S Dominated I	Swale	Buried Tile
Riparian Cover (% of watercourse dijacent Land Use Ish Habitat Potential ritical Habitat (spawning or nurse ligratory Obstructions (seasonal, ete any fish observations Trapartical Watercourse Traparticial Drainage (i.e. furrows) ther Habitat Notes, Incidental V	ery areas, groundwa permanent) ezoidal Channel Dugout Pond Vildlife Observation	Grassed S Dominated I	Swale	Buried Tile
Riparian Cover (% of watercourse Adjacent Land Use Rish Habitat Potential Critical Habitat (spawning or nurse ligratory Obstructions (seasonal, ete any fish observations Raterbody Notes atural Watercourse Trapurficial Drainage (i.e. furrows)	ery areas, groundwa permanent) ezoidal Channel Dugout Pond Vildlife Observation	Grassed S Dominated I	Swale_ Dy Aquatic Veg_	Buried Tile



Station # 11-3	manyati wanth 1	Project Name N	iagara (
Watercourse Name wand		Project #		
Photos 394-398	*		COSM M	2
Date <u>0 c+ 2 2 / 1 2</u>		TimeHSO		Fare a.
Weather conditions in previous	us 24 hrs	4-r. r. v. 15°C		
GPS Coordinates (Zone)/_	JI E 062	RAAL NH	7-00/10	
Descriptive Location	tt of Wi		/A	Datum Nads
Can	cession 5	. North of		author
Water Quality	·	1 d. r.y		
Dissolved Oxygen (mg/L)	AR	Conductivity	(0 ()	
Water Temperature (°C)		Air Tompornture (90)	(μS/cm)	
Time in situ measurements ta	ken	Air Temperature (°C)	1690	
Watercourse Dimensions & Mean Watercourse Width		dny		
Mean Bankfull Width	(m)	Maximum Pool Depth	(c	em)
% Riffle	(m)	Mean Water Depth		em)
	% P∞		% Run	% Flat
Evidence of eroding banks, Co	omments on bank sta	bility 1+abl	Louner-	-well
Substrate (% cover)		Care of the care o		
	0.111		* *	
Bedrock Boulder	Cobble	Sand	Silt	Muck
bouker	Gravel	Clay	Marl	Detritus
In-water Cover		Soil	Lu-	RCG
Cover Types Present (circle):	Undercut Bank	S Doop South 1		- Commence of the Commence of
Overhanging Vegetation V	Voody Debris	s Deep Pool y Boulder Other	Vatercress .	Aquauc /eg
Riparian Zone				
Riparian Cover (% of watercour	rse shaded, dominant	vegetation, mature or	arty succession	ai)
Adjacent Land Use	grass O & Sma	Il Shrubs, Par	W/	
Q	n. / / .			
	11000	<i>70.4</i> ·	-	
ish Habitat Potential	*. *			
Critical Habitat (spawning or nur	SAIV areas aroundur	réag concealling and		
	appromotions	ater upweilings)		
digratory Obstructions (seasona				
lata and fish shares "	<u> dry</u>		•	
lete any fish observations	nome obs	wed		
		•		
/aterbody Notes				
atural Watercourse Tra	pezoidalChannel 🦶	Grassed Sunta	De out a c	4
urficial Drainage (i.e. furrows)_	Dugout Pond	Grassed Swale Dominated by Aq	uatic Veg	Dry
ther Habitat Notes, Incidental	Wildlife Observation	na etc Waterh	1	st sideo.
road grassed Si	vale on wes	La VIVI CIDA	y ar ra	JI VICKU
, J				
	The second of th			TVT CONTROL TO THE
· Masan				
ld Notes Authored by K. Ma San	Field Notes QA/Q	Ced by		

G:\01609\resource\internal info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rankt Assessment So.



			A lina	, mag	win	d:
Station # 12-4		Project Name	3 10 00 00		1/	
Watercourse Name un na	med Trub.	Project #	19073		faire	110
Photos 408-413		rielu Stati	1 - V CAGCY		1 4 CX. 1. C	116
Date Octa3/12			:a5			
Weather conditions in previous	24 hrs \(\triangle	nny, 18°C	11-15-1	1010	Datum	Node
GPS Coordinates (Zone)	F ()00	<u>0225</u>	N 97/54	05	Datum	
Descriptive Location	It of Utill	W Jump	Road a	longad		<u> </u>
West	of Tour W	a Coad				
Water Quality				. 75	3	
Dissolved Oxygen (mg/L) 8.3	<u>√</u> pH_ <u>`</u>	<u>₹.88</u> Con	ductivity (µS/c	m) <u>~~</u>	<u>~</u> }	
Water Temperature (°C)	48	Air Temperat	ure (°C) <u>0</u> °	<u> </u>		
Time in situ measurements tak	ren Yuli	35				
		olated				
Watercourse Dimensions & I		Movimum De	ool Depth	9 5	(cm)	
Mean Watercourse Width	(m)	Mean Water	Denth @	1.0	(cm)	
MEGII Dalikidi TT.G.	(m) « p	enticological (Allinois	% Ru	ın	Residence	% Flat
% Riffle	100 % Po				Scaur	
Evidence of eroding banks, Co	mments on Dank s	lability <u>30 y</u>	TIE CAUSIC	/ Y Notes		
C						
Substrate (% cover)			112		10	A formula
Bedrock	Cobble	Sand				Muck
Boulder	Gravel	<u> </u>		Marl	10	Detritus
Overhanging Vegetation Riparian Zone Riparian Cover (% of watercou	irea shaded domin	ant vegetation.	mature or eart	v success	sional)	
Alpanan Cover (% of Watercook	racses et moi	adanchecin	v early			
Adjacent Land Use	t unmainte					
Fish Habitat Potential	<u>,</u>	*				
Critical Habitat (spawning or ne	ursery areas, groun	ıdwater upwellir	ıgs)			
	NON	. Same				
Migratory Obstructions (season	nal, permanent)					
	an water					
	IN AVAIL DOILD	$\mathcal{M}(\mathcal{L}, \mathcal{L})$	· · · · · · · · · · · · · · · · · · ·			
Note any fish observations	· · · · · · · · · · · · · · · · · · ·	•				
Note any fish observations						
Waterbody Notes					outed Ti	10
Waterbody Notes Natural Watercourse	Frapezoidal Channe	el Gra	ssed Swale_			
Waterbody Notes Natural Watercourse	Frapezoidal Channe	el Gra	ussed Swale_ nated by Aqua			le Dry
Waterbody Notes Natural Watereourse T Surficial Drainage (i.e. furrows	Frapezoidal Channe) Dugout Po	el Gra	nated by Aqua	tic Veg_		
Waterbody Notes Natural Watercourse	Frapezoidal Channe) Dugout Po	el Gra	nated by Aqua	tic Veg_		
Waterbody Notes Natural Watercourse	Frapezoidal Channe) Dugout Po	el Grand Domi	nated by Aqua	tic Veg_		
Waterbody Notes Natural Watercourse	Frapezoidal Channe) Dugout Por tal Wildlife Observ	el Grand Domi	nated by Aqua	tic Veg_		
Waterbody Notes Natural Watercourse	Frapezoidal Channe) Dugout Por tal Wildlife Observ	el Grand Domi	nated by Aqua	tic Veg_		
Waterbody Notes Natural Watercourse 7 Surficial Drainage (i.e. furrows) Other Habitat Notes, Incident	Frapezoidal Channe) Dugout Po tal Wildlife Obser	el Grand Domi	nated by Aqua	tic Veg_		

G:\01609\resource\internal info and Teams\Aquatic Resources\Field Sheets\Stantec\Form 02 Wind Farm Waterbody Rapid Assessment Form.doc



Watercourse Name and an arm of Proj Photos Photos Field Time Weather conditions in previous 24 hrs Sunny GPS Coordinates (Zone) E GPS Coordinates (Zone) E GPS Coordinates (Zone) Field Time Water Quality Physical Coordinates (Material Physical Phy	Conductivity Cemperature (°C)	953084 , we st	Datum	
Photos Field Date Octobrows in previous 24 hrs Weather conditions in previous 24 hrs GPS Coordinates (Zone) E Octobrows Descriptive Location Water Quality Dissolved Oxygen (mg/L) pH Water Temperature (°C) Air Time in situ measurements taken Watercourse Dimensions & Morphology	Staff V. Mar 1800 N 47 N 47 Ecoad Conductivity: Temperature (°C)	152084 , we st	Datum o —	Wad83
Vater Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken Time Water Quality Water Temperature (°C)	Pochan Conductivity: Temperature (°C)	153084 , we st we) (μS/cm)	Datum o —	Wad83
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken Water Quality Water Quality Water Temperature (°C)	N Chan Conductivity: Temperature (°C)	(μS/cm)	- G.4	
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken Watercourse Dimensions & Morphology	Conductivity Cemperature (°C)	(μS/cm)	- G.4	
Water Quality Dissolved Oxygen (mg/L) Water Temperature (°C) Time in situ measurements taken Watercourse Dimensions & Morphology	Conductivity Cemperature (°C)	(μS/cm)		<u> Dunn</u> va
Water Quality Dissolved Oxygen (mg/L) pH Air Time in situ measurements taken	Conductivity [emperature (°C)	(μS/cm)		
Water Quality Dissolved Oxygen (mg/L) pH Air Water Temperature (°C) Air Time in situ measurements taken	Conductivity [emperature (°C)	(μS/cm)		
Dissolved Oxygen (mg/L) pH	Conductivity [emperature (°C)	(μS/cm)		
Dissolved Oxygen (mg/L) pH	remperature (°C)	(ha/cm)		
Nater Temperature (°C) All Time in situ measurements taken Natercourse Dimensions & Morphology	-	-100		
Time in situ measurements taken				
Watercourse Dimensions & Morphology		in dian	~~el	
Watercourse Dimensions & Morphology	no water	IL, CAK	111 001	
	imum Pool Depth		(cm)	
Wear Watercourse wider	n Water Depth		(cm)	
Mean bankium Wkum	at tracer popu	% Run		% Flat
% Riffle% Pool% Pool	Same C	ACULA VOA		
Evidence of eroding banks, Comments on bank statemy				
			;	
Substrate (% cover)		Q() am	10	Muck
Bedrock Cobbie	Sand	<u>80_</u> Silt_		_wuck Detritus
BoulderGravel	Clay	Marl		_Dellillos
	early			
Adjacent Land Use				
Adjacent Land Ose ag field, vo				
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwate	r upwellings)			
Fish Habitat Potential Critical Habitat (spawning or nursery areas, groundwate	r upwellings)	ge tation		



Station # 3-5		Project Name N	agara	Lund	
Watercourse Nameunna	med	Project # 1609	50269		
Photos 420 - 423		Field Staff C Ma	JM, M. Fa	iella	
Date 00+ 23/1a		Time 9:57			
Weather conditions in previous		The second second			,e-
GPS Coordinates (Zone)		722 N	1752888	Datum	Nadsa
Descriptive Location <u>occ</u>	of Booker	Poad use	st of 13		20/a
& Dunnville/	Wainflest	auntine	•		
Water Quality		4			
Dissolved Oxygen (mg/L)	pH	Conductivit	y (μS/cm)		
Water Temperature (°C)		Air Temperature (°C	y (µo/cill)		
Time in situ measurements tak	en	- All remperature ("C	1		· · · · · · · · · · · · · · · · · · ·
Watercourse Dimensions & Mean Watercourse Width Mean Bankfull Width Riffle Evidence of eroding banks, Con	(m) 5(m) % Poo	***************************************	h	(cm) (cm)	_% Flat
Substrate (% cover)	_		•	;	
Bedrock	Cobble	Sand	Silt	100	Muck
Boulder	Gravel	Clay	Marl		Detritus Phyoghin
Overhanging Vegetation W Riparian Zone Riparian Cover (% of watercours	se shaded, dominan	Boulder Other_	Watercress	sional)	······································
Adjacent Land Use	Reld, road, b	thraginales, e	arty		
Fish Habitat Potential Critical Habitat (spawning or nurs	4. A				
Migratory Obstructions (seasona	I, permanent)	(resetation			
Note any fish observations	none	J. J. C. Carrey			
Waterbody Notes Natural Watereourse Tra Burficial Drainage (i.e. furrows)	Dugout Pond_	, .	Aquatic Veg	uried Tile	
Other Habitat Notes, Incidental Phy application The division of the second of the se	Wildlife Observation Riparian a etc	ns, etc. define	d Channe of Phre	dan	insted his
eld Notes Authored by $\mathcal{L}: Masa$	Sold Notes Call	m.l.			



Station # 13-6	Project Name Niagara was
Watercourse Name unnamed Trib	Project # 160950269
Photos 424-427	Field Staff K. Mason, M. Faiella
Date Oct 23/12	Time 10:07
Weather conditions in previous 24 hrsS GPS Coordinates (Zone) E E	V-14 18C
	23258 N 4752708 Datum Nad 83
* 1 \	rolcer Road, west of 13-2
a 15 of running a	Long bushlot (to the W)
Water Quality	oughfor YSI
pissoived Oxygen (mg/L)	Conductivity (µS/cm)
Water Temperature (°C)	Air Temperature (°C) 0° C
Time in situ measurements taken	7 Tomporature (C)
Watercourse Dimensions & Morphology	
Mean Watercourse Width (m)	Maximum Book Book
Mean Bankfull Width 2 (m)	Maximum Pool Depth S (cm) chanding
% Riffle % P	Mean Water Depth (cm)
Evidence of eroding banks, Comments on banks	7 Flat
	stability well vegetated.
Substrate (% cover)	
BedrockCobble	Sand 80 Sit 10 Must
BoulderGravel	SandSilt/O_Muck ClayMarl /O Detritus
In-water Cover Cover Types Present (circle): Undercut Ba Overhanging Vegetation Woody Debris	- Adualic ved
The second discount of the second of the sec	Boulder Other
Riparian Zone	
Riparian Cover (% of watercourse shaded, domina	ant vegetation, mature or early successional)
Adjacent Land Use	ecies & peplans, intermediate
road ag field, bu	*
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, ground	twater upwellings)
Migratory Obstructions (seasonal, permanent)	
Note any fich observations	
Note any fish observations none observa-	RO
Makadadadada	
Waterbody Notes	
Natural Watereourse Trapezoidal Channel	Grassed Swale Buried Tile
Surficial Drainage (i.e. furrows) Dugout Pond	Dominated by Aquatic Veg Dry
Ther Habitat Notes Inclidental Million	
Other Habitat Notes, Incidental Wildlife Observat	tions, etc. On Sath Side of Booker
O TO THE TABLE OF DUMA O	VI North ride.
Kiparian area Consists of	- poolars - Dogwoods, wasses modda
species etc.	
ield Notes Authored by K. Mason Field Notes O	
eld Notes Authored by Field Notes Q	AQCed by M-Y-Y-



Watercourse Name V rows		Project Name	Niagaro	ことうと
Photos 428-430		Project #(C	,09502C	09
Date 0(+33/13		Field Staff /	. Haron	M. mai
Weather conditions in previous	us 24 hrs Sax		39	
GPS Coordinates (Zone)	2 September 1	34 CQ D N	47528/21	
Descriptive Location 04	1	anville/was	52 SW 9 New 1	Datum
Sauth	of Rook	Road		\ a.mli
Water Quality			·	
Dissolved Oxygen (mg/L) 8	50 00	8.27		
Water Temperature (°C)	.69	8.32 Conduc	tivity (µS/cm)(258
Time in situ measurements ta	ken	1 Si Temperature	(°C) 0°C	
Watercourse Dimensions &	Vombolo			
Mean Watercourse Width			and a second	
Mean Bankfull Width	(m)	Maximum Pool D	epth 🗢 🗆	(cm)
% Riffle	with the second	Mean Water Dep		(cm)
Evidence of eroding banks, Co	omments on bank	stability well	% Run	
			of letat	<u> </u>
Substrate (% cover)	<i>¥</i>			
Bedrock	Cobble	Sand	C ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	:
Boulder	Gravel	40 Clay	<u>60</u> Silt	M
In-water Cover		olay	Mari	De
Cover Types Present (circle):	'I lodore a G			
	Undercut Ba loody Debris	inks Deep Pool Boulder Oth	Watercress	Aquauo
Riparian Zone		•		
Riparian Cover (% of watercour	se shaded, domin	ant vegetation, matur	or early success	sional)
Riparian Cover (% of watercour	se shaded, domin	ant vegetation, matur	e or early success	sional)
Riparian Cover (% of watercour	se shaded, domin day species	ant vegetation, mature	e or early success	
Riparian Cover (% of watercour	land, v	sad rura	tarky	
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or num	sery areas, ground	sad rura	tarky	
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or num	sery areas, ground	sad rura	tary veriden	tia
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or num	sery areas, ground	water upwellings)	tarky	tia
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nur	sery areas, ground	water upwellings)	tary veriden	+a
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nur.	sery areas, ground	water upwellings)	tary veriden	tia
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or number of the potential of the poten	sery areas, ground	water upwellings)	tary veriden	tia
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or num Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or num Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or num Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or num Adjacent Land Use	sery areas, ground	water upwellings)	tary veriden	tia
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or number of the control of	sery areas, ground il, permanent)	water upwellings) Secured Grassed Sy	residen Cypnni	tial
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or number of the control of	sery areas, ground il, permanent)	water upwellings) Secured Grassed Sy	residen Cypnni	d Sp.
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or number of the color of t	sery areas, ground II, permanent) pezoidal Channel Dugout Pond	water upwellings) Grassed Sy Dominated by	vale Bu	tial
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or number of the land	sery areas, ground II, permanent) pezoidal Channel Dugout Pond Wildlife Observet	water upwellings) Secured Grassed Sy Dominated by	vale Bu	d Sp.
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or number of the land Use) Alignatory Obstructions (seasonal lete any fish observations	sery areas, ground II, permanent) pezoidal Channel Dugout Pond Wildlife Observet	water upwellings) Secured Grassed Sy Dominated by	vale Bu	d Sp.
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse) Alignatory Obstructions (seasonal lete any fish observations Atterbody Notes atural Watercourse Trapurficial Drainage (i.e. furrows) ther Habitat Notes, incidental	sery areas, ground II, permanent) pezoidal Channel Dugout Pond Wildlife Observet	water upwellings) Secured Grassed Sy Dominated by	vale Bu	d Sp
Adjacent Land Use Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or number of the control of the contr	sery areas, ground II, permanent) pezoidal Channel Dugout Pond Wildlife Observet	water upwellings) Secured Grassed Sy Dominated by	vale Bu	d Sp.
Adjacent Land Use Fish Habitat Potential Critical Habitat (spawning or nurse) Alignatory Obstructions (seasonal lete any fish observations Atterbody Notes atural Watercourse Trapurficial Drainage (i.e. furrows) ther Habitat Notes, incidental	sery areas, ground il, permanent) pezoidal Channel Dugout Pond Wildlife Observat	iwater upwellings) Grassed Sy Dominated by Janan Ulgar Voced by Miles	vale Bu / Aquatic Veg Lincifed	dsp. Iried Tile Dry Channets of



Station # 3-8	Decinat Many Advisor /
Watercourse Name Unnamed	Project Name Niagara wind
Photos 431-435	Project # 60950269
Date Oct 23/12	Field Staff r Moson W Farella
Weather conditions in previous 24 hrs	Time 10:50
	My Sec
Descriptive Location	1946 N 4751930 Datum Nad
Soonpuve Location Street	Poth Road West of Dunavil
Nam-111-	antine.
Water Quality	. /
Dissolved Oxygen (mg/L) 9.8 pH	8.74
Water Temperature (°C) 11.92	8.74 Conductivity (μS/cm) 273-
Time in situ measurements taken	Air Temperature (°C) / 2°C
	10:22
Watercourse Dimensions & Morphology	
Mean Watercourse Width (m)	Marin Daniel Sand
Mean Bankfull Width (m)	Maximum Pool Depth 30 (cm)
A	Mean Water Depth (cm)
Evidence of eroding banks, Comments on banks	ool% Run% Fla
	stable banks- wellvege
0.4.4.	
Substrate (% cover)	
BedrockCobble	SandSilt /O Muck
BoulderGravel	On Clay
In-water Cover	Mari Detritus
Cover Types Present (circle): Undercut Ba	nke Door Ball was
Overhanging Vegetation Woody Debris	Adding Jan
The second secon	Boulder Other
Riparian Zone	,
Riparian Cover (% of watercourse shaded, domina	Int vegetation, mature or corty assessions in
609. meaday	TO I pine intermediate
Adjacent Land Use	THE HOLD WE ALCOHOLD
- road, as field	
Fish Habitat Potential	
Critical Habitat (spawning or nursery areas, ground	Water upwellings)
Migratory Obstructions (seasonal, permanent)	
as mater	thick grasser
Note any fish observations none observations	en red
Naterbody Notes	
Vatural Watercourse	
Vatural Watercourse Trapezoidal Channel _	
Surficial Drainage (i.e. furrows) Dugout Pond	Dominated by Aquatic Veg Dry
When Hebitet Meter built at the service	
Other Habitat Notes, Incidental Wildlife Observati	long, etc. Riparian area consistent
meadaup pine, Poplars	dominad & while has
	O C COMMANT
*/ 1 1 - ~ -	
eld Notes Authored by 1/ Mass. Field Notes Of	VOCed by m. f.



Station # 19-16 (m		Project Name	_Niagara	1.1
Watercourse Name	Sirre Sir Control	Project #	The second secon	
Photos 440-444		Field Staff	KHasan M	2950269
Date och 33/13	&	Time	(A	, Fa, 4.1 (4.1)
Weather conditions in previous	us 24 hrs	MAN Sec	***	
GPS Coordinates (Zone) Descriptive Location	LI EOGO	15305	N Colomy Com I may In I	Dotting Lad
Descriptive Location	et of Du	novillelu	ainfleo I	Datum Nado
U+ 1	0601020	1) & POTH	leood.	140/11/10 ,34
Water Quality	0	WHO F Rig	M+-of-W	ay
Dissolved Oxygen (mg/L)	pH	Condu	adhidh e e a e	
Water Temperature (°C)		Air Temperature	ctivity (µS/cm)	
Time in situ measurements ta	ken	van vernherature	e (°C)	
Watercourse Dimensions & Mean Watercourse Width Mean Bankfull Width	<u>∕</u> (m) <u>∕</u> (m)	Maximum Pool I Mean Water De	Depth 30	_(cm) stand
% Riffle	%P	!	% Run	(cm)
Evidence of eroding banks, Co	mments on bank s	stability 5+a	ble books	% Flat
Substrate (% cover)		tated		
Bedrock Boulder	Cobble	Sand		20 Muck
bodicer	Gravel	<u> </u>	Marl	Detritus
Riparian Zone Riparian Cover (% of watercours	se shaded, domina	int vegetation, matri	re or early succes	sional)
Adjacent Land Use	1. aa. C	eld tigra	wer, early	
Fish Habitat Potential Critical Habitat (spawning or nurs	sery areas, ground	water upwellings)		
Migratory Obstructions (seasonal				
Note any fish observations	- Utaltat	191 1916	Jaren	•
	evleance	rings		
Vaterbody Notes latural Watereourse Trap Surficial Drainage (i.e. furrows)	pezoidal Channel Dugout Pond_	Grassed S	Swale Bu	uried Tile
ther Habitat Notes, Incidental	Wildlife Observati	one de la la la	v body on	east side
eld Notes Authored by K. Mason	Flakt Nation Co	100-11 P.		
1/01609/resource/internal into and Trame!	_ Field Notes QA	/QCed by		



Station # 5-3	A Secondary	Project Name	1100	
Watercourse Name un nam	RO	Project #	160950	
Photos <u> </u>		Field Staff 🔽 M	0.500 M F	
Date Oct 23/12		Time 11 % 3		urila
Weather conditions in previous 24	hrs Sunny	18°C		
GPS Coordinates (Zone) 171		373 N	UTERRUT	Dotum Manual to
Descriptive Location	Saladi Calar D. I.	, , , , , , , , , , , , , , , , , , , ,	N-41224-	Datum Nad 8
Not intersection	n to Car	la bank	Val	
Water Quality				
Dissolved Oxygen (mg/L) 9.73	, au &		-	
Water Temperature (°C)	= Pu O	SS Conductiv	rity (μS/cm) <u>(</u>	08
Time in situ measurements taken	A	ir Temperature (°	C) <u>10° c</u>	
Watercourse Dimensions & Morr	hology			
Mean Watercourse Width	_(m) M	laximum Pool Der	oth 25	(cm)a_ad
Mean Bankfull Width	(m)M	ean Water Depth		_(cm) 14442
% Riffle	% Pool	CONTROL OF THE PROPERTY OF THE	% Run	(GII) % Flat
Evidence of eroding banks, Comme	ints on bank stabili	ty stable	Decoker	
		uchetz		
Substrate (% cover)		New York		
Bedrock	_Cobble	Sand	30 Sitt	
Boulder	_Gravel 4	O_Clay	~116	Muck
In-water Cover			Mari	<u>/O</u> Detritus
Cover Types Present (circle):	Undercut Banks	Deep Pool	Watercress	Aquaua /eg
Overhanging Vegetation Woody	Debris Bo	ulder Other		(riquant reg)
Riparian Zone				
Riparian Cover (% of watercourse sh	laded dominant w	rantation		
	1 pha , early	ayetation, mature	or early success	sional)
Adjacent Land Use	, ,			
- Canal v	oad corn			
Fish Habitat Potential	<u>.</u>			
Critical Habitat (spawning or nursery	areas, groundwate	f upwellings)		
Migratory Obstructions (seasonal, per	manent)			
Note any fish show that	e thick	- u-caetat	NO.	•
Note any fish observations	<i>*.</i>			
Waterbody Notes				
Natural Watercourse Transzoi	idal Channal			
Surficial Drainage (i.e. furrows)	Dugout Bond	Grassed Swa	ale Bu	ried Tile
Surficial Drainage (i.e. furrows)		_ Dominated by	Aquatic Veg	Dry
Other Habitat Notes, Incidental Wild	life Observations	- AMERICAN		**************************************
The state of the s		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20 m. and E S	m . D
- Channel domina	ina ChaelAatious	010.	Levaal do-	<u> </u>
- channel domina	Le ou c	a Hallin	Levaal Aso-	<u> </u>
Manul danno	Helby c	attair.	elaal ao-	
	Hed by c	attair.	elaal ao-	SV4
leld Notes Authored by K. Masan	rew ey	a Hair.		and the second s



Station # 15-34		
Watercourse Name Lunnam	Project Name N	<u>rgaralura</u>
Photos 452 -454		02469
Date /2c+33//3-	Field Staff 12 Ma	son M. Farella
Weather conditions in previous 24 hrs	Sunny Jee	~
GPS Coordinates (Zone)		
Descriptive Location		7.50584 Datum Nad8
Wainfleet	and Bank rd c	vest of Dunnville
Water Quality	, off of Righ	A-awa.
Dissolved Oxygen (mg/L)		
Water Temperature (°C)		(μS/cm)
Time in situ measurements taken	Air Temperature (°C)	1000
Watercourse Dimensions & Morphole	2004	
Mean Watercourse Width (m		
Mean Bankfull Width 4/5 (m	madaman oor Depar	<u>(cm)</u>
% Riffle		(cm)
Evidence of eroding banks, Comments	/8 FOOI	% Run % Fla
	*	banks-
	au gra	asee
Substrate (% cover)		the second second
BedrockCo	obleSand_	SO Silt O Muck
BoulderGra	velClay	Mari Detritus
In-water Cover		Dealids
	lercut Banks Deep Pool V	
Overhanging Vegetation Woody Del		Vatercress Aquaic Veg
	oris Boulder Other	
Riparian Zone	•	
Riparian Cover (% of watercourse shade	d, dominant vegetation, mature or	garty suggestion all
	cres etypha, early	daily successional)
Volgootit Fatia 029		
road, res	idental	
Fish Habitat Potential	4.	
	•	
Critical Habitat (spawning or nursery area	3, groundwater upwellings)	
Migratory Obstructions (seasonal, perman		
g. atory Coardelions (seasonal, perman	ent	
Note any fish observationsnane		
	Onesour	
Waterbody Notes		
Natural Watercourse Transpoidal	Channel Crescot Court	
Surficial Drainage (I.e. furrows) Dug	Out Pond Dominated by A	Buried Tile
Surficial Drainage (i.e. furrows) Dug	Dominated by Aq	uatic Veg Dry
Other Habitat Notes, incidental Wildlife	Theoryations at 100 a 100	
Other Habitat Notes, Incidental Wildlife	Justi valions, etc. Wight of	ran up to
Channel edge,	- yusprod (na	NYOI
eld Notes Authored by 16. Masan F	July Dul	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	BIG NOTES CA/C)Cod by ///: 1	



Watercourse Name unnar	<u> </u>	Project #	1609502	x Wind
Photos 455-456		Field Staff	Mary N	
Date Oct 23/12		Time >	03	T. Faielle
Weather conditions in previous 2	24 hrsCur	MV 1800		
GPS Coordinates (Zone) 17	I E 06041	739	v 4750255	Datum A
Descriptive Location	anal Bank	Highin.con	Road we	HOF
Water Quality		rightaw	ad (no a	21252
Dissolved Oxygen (mg/L)				
Water Temperature (°C)	μη	Conduc	tivity (µS/cm)	
Time in situ measurements taker	1.	Air Temperature	(°C) 10°C	
Watercourse Dimensions & Mo	rphology			
Mean Watercourse Width		Maximum Pool (Depth	(cm)
Mean Bankfull Width	(m)	wean water Det	oth	(cm)
Evidence of eroding banks, Comr	% Pool		% Run	
	ments on bank stat	oility <u>utill</u>	regetated	
Substrate (% cover)		cont in	rstigate.	:
Bedrock	Cobble	Sand	Silt	14
Boulder	Gravel	Clay	Siit Marl	Muc Detr
over Types Present (circle): verhanging Vegetation Woo	dy Debris	Soulder Ot	Ter	-
over Types Present (circle): Iverhanging Vegetation Woo Iparlan Zone Iparlan Cover (% of watercourse	dy Debris	Boulder Ot	Ter	-
over Types Present (circle): Iverhanging Vegetation Woo Iparlan Zone Iparlan Cover (% of watercourse	dy Debris	Soulder Ot	Ter	-
iver Types Present (circle): everhanging Vegetation Woo iparian Zone iparian Cover (% of watercourse djacent Land Use sh Habitat Potential itical Habitat (spawning or nurser	shaded, dominant fact and (ana) ry areas, groundwa	vegetation, matu	Ter	-
Iverhanging Vegetation Woo Iparlan Zone Iparlan Cover (% of watercourse Idjacent Land Use Ish Habitat Potential Iditical Habitat (spawning or nurser Igratory Obstructions (seasonal, p	shaded, dominant shaded, dominant can al can al ry areas, groundwa permanent)	vegetation, mature mature	re or early succes	sional)
iparian Zone iparian Cover (% of watercourse djacent Land Use sh Habitat Potential ritical Habitat (spawning or nurser gratory Obstructions (seasonal, p	shaded, dominant shaded, dominant language ry areas, groundwa permanent) Alalex zoidal Channel	vegetation, mature mature	re or early succes	sional)
Iparlan Zone Iparlan Zone Iparlan Zone Iparlan Cover (% of watercourse Idjacent Land Use Ish Habitat Potential Itical Habitat (spawning or nurser Igratory Obstructions (seasonal, parlany of the any fish observations Interbody Notes Itural Watercourse	shaded, dominant shaded, dominant and canal ry areas, groundwa permanent) Alale zoidal Channel Dugout Pond lidlife Observation	Grassed Dominated	re or early succes SwaleB by Aquatic Veg	uried Tile
iparian Zone iparian Cover (% of watercourse iparian Cover (% of watercourse djacent Land Use sh Habitat Potential ritical Habitat (spawning or nurser gratory Obstructions (seasonal, parian of the any fish observations aterbody Notes tural Watercourse Trape: rificial Drainage (i.e. furrows)	shaded, dominant shaded, dominant and canal ry areas, groundwa permanent) and coidal Channel Dugout Pond	Grassed Dominated	re or early succes SwaleB by Aquatic Veg	uried Tile
iparian Zone iparian Cover (% of watercourse iparian Cover (% of watercourse djacent Land Use sh Habitat Potential itical Habitat (spawning or nurser gratory Obstructions (seasonal, parter body Notes tural Watercourse Traper ificial Drainage (i.e. furrows) ner Habitat Notes, Incidental Wil	shaded, dominant shaded, dominant and canal ry areas, groundwa permanent) Alale zoidal Channel Dugout Pond lidlife Observation	Grassed Dominated 18, etc. Rigar Tomal	re or early succes SwaleB by Aquatic Veg	uried Tile





-	-			
•		-	•	•
	ш	н	ш	

Station # 1-2		Project Name Nia	arera William	1
Watercourse Name why a	$\overline{\Omega}$	Project #	JA21291	
Photos		Field Staff	uten J. Ce	QVQ.
Photos June 22/2		Time		***************************************
Weather conditions in previous 24	hrs look &	humid 2329		£
GPS Coordinates (Zone)	F 0600		3044 Dat	um Nad 8'
Descriptive Location	tho of in-	terceotion i	OF CHERNI	
Maintai	the second	Ou o'.		
Water Quality				
-	pH	Conductivity (uS/cm)	
Dissolved Oxygen (mg/L) Water Temperature (°C)		Air Temperature (°C)	2000	
Time <i>in situ</i> measurements taken_		7.11 10111porataro (0) _		
/	/	p		
Watercourse Dimensions & Morp		Marriagona Da al Dandh	lam	.,
Mean Watercourse Width Mean Bankfull Width	(m) //	Maximum Pool Depth_	(Cri	l) .\
Mean Bankfull Width	(m)/	Mean Water Depth	(cm	
	% Poc			
Evidence of eroding banks, Comm	ents on bank sta	idility		
Substrate (% cover)	Cobble	Sand	Silt	Muck
Bedrock	Gravel	Sand Clay	Siit Marl	Wdck Detritus
Boulder	Graver	Clay	IVIAII	Demus
In-water Cover				
Cover Types Present (circle):	Undercut Ban	ks Deep Pool	Watercress A	Aquatic Veg
Overhanging Vegetation Wood				3
	.,			
Riparian Zone				
Riparian Cover (% of watercourse	shaded, domina	nt vegetation, mature o	r early succession	ai)
·	SCHUPN	1 register a	· · · · · · · · · · · · · · · · · · ·	
Adjacent Land Use	IN C	· · · · · · · · · · · · · · · · · · ·		
Peside	NUG! TO	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u> </u>	
man a sa a sa a man a casa d		*		
Fish Habitat Potential		المستور المست		
Critical Habitat (spawning or nurse	ry areas, ground	iwater upweilings)		
Migratory Obstructions (seasonal,	nermanent)			
,	• . •			
Note any fish observations	4 6 6 6			
Note any lish observations	V Latine			
	-			
Waterbody Notes	iala I Obaaaaa l	Crossed Curels	Durind Tile C	`oon
Natural Watercourse Trapezo	idai Channei	Grassed Swale	Buried Tile S	seeb
Surficial Drainage (i.e. furrows)	Dugout Pon	d Dominated by	Aquatic veg	_ Dry
Other Habitat Notes, Incidental V	Wildlife Observ	ations etc		
Other Habitat Notes, mordental		ationo, oto.	7	
Field Notes Authored by & caute	Field Notes	QA/QCed by		
THORUTAL TOLOGO AND THE TOLOGO AND T				



REA

Stantec

Station # 1-3 Project Name, Niagara Wind
Watercourse Name What Project # 100950369
Photos Field Staff Jreene, V. Clauter
Date June 20/13 Time 11:15
Weather conditions in previous 24 hrs Not shamid 232°C
GPS Coordinates (Zone) TE 0632116 N 478193 Datum Nacis
Descriptive Location New Medicate Card of Greenlane &
Water Quality
Dissolved Oxygen (mg/L) 8 10 pH 8 40 Conductivity (μS/cm) 55
Dissolved Oxygen (mg/L) 8 0 pH 8 70 Conductivity (μS/cm) Air Temperature (°C) 3 0 10
Time in situ measurements taken
Watercourse Dimensions & Morphology
Mean Watercourse Width (m) Maximum Pool Depth (cm) Mean Bankfull Width (m) Mean Water Depth (cm)
Mean Bankfull Width 75 (m) Mean Water Depth (cm) % Riffle % Pool % Run % Flat
Evidence of eroding banks, Comments on bank stability
Substrate (% cover)
Bedrock_ Cobble Sand Silt Muck
Boulder O Gravel Clay Marl Detritus
In-water Cover
Cover Types Present (circle): Undercut Banks Deep Pool Watercress Aquatic Veg
Overhanging Vegetation Woody Debris Boulder Other
Riparian Zone
Riparian Cover (% of watercourse shaded, dominant vegetation, mature or early successional)
1330, trees grasses intermediate
Adjacent Land Use
Koaa, ag land
Fish Habitat Potential
Critical Habitat (spawning or nursery areas, groundwater upwellings)
partial good about the
Migratory Obstructions (seasonal permanent)
Migratory Obstructions (seasonal, permanent)
Migratory Obstructions (seasonal, permanent)
Migratory Obstructions (seasonal, permanent) Note any fish observations
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Seep
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Seep Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Seep
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Seep Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry
Migratory Obstructions (seasonal, permanent) Note any fish observations Waterbody Notes Natural Watercourse Trapezoidal Channel Grassed Swale Buried Tile Seep Surficial Drainage (i.e. furrows) Dugout Pond Dominated by Aquatic Veg Dry



	WIND FARM W	VATERBODY	RAPI	D ASSES	SMENT	FORM		KEH
Stantec	2-10 mil							
Station #	5-2-		Project	Name Name	ia a a	ra la	ind	
Watercourse Nar	me unknow	<u> </u>	Project	# 1/20	95026	9		
Photos Sec	shorte 10%.		Field S	taff M	E,MF			
Date June	1 20/12.		Time _	taff M) 5			
Weather conditio	ns in previous 24 h	rs hotahu	mid					
GPS Coordinates	s (Zone) 171			Μ̈́			Datum	Nad8
Descriptive Loca	tion On Book	4 10 ~	Km u	orst at	rownline.	Ounn	Wair	
Water Quality								
Dissolved Oxyge	n (mg/L) <u>5.56</u> ure (°C) <u>λ.57</u>	_ pH_ <i>-</i> 7	.90	Conductiv	ity (μS/cm) <u>499</u>	}	
Water Temperatu	ure (°C) <u> </u>		Air Ten	nperature (°	C)2 °	100		
Time in situ meas	surements taken	10:10						
Watercourse Di	mensions & Morp	hology						
Mean Watercours	se Width 1.75 /idth 3.0 Riffle ling banks, Comme	_(m)	Maximu	ım Pool De	pth2	>	_(cm)	
Mean Bankfull W	'idth3.©	_(m)	Mean V	Vater Depth	1/ ≤	1	_(cm)	 -
%	Riffle	<u>50 </u> % Роо	la 11ta .		% Rur	1	50	% Fla
Evidence of erod	ing banks, Comme	nts on bank sta	Dility	NON.	well &	010		
Substrate (% co	ver)				160		11.5	
Be	edrock oulder	_Cobble	white No.	Sand	40	_Silt	40	Muck
B0	oulder	_Gravei	20	Clay		Mari		_Detritus
In-water Cover							Anna and a second	
	sent (circle):					cress	Aqua	atic Veg
Overhanging Vec	getation Woody	y Debris	Boulde	r Oth	er			
Riparian Zone								
Riparian Cover (% of watercourse s	haded, dominar	nt vegeta	atioņ, matur	e or early	success	sional)	
70% mat	ure/imactice p	oplars, willo	iw, st	1/vbs.				
Adjacent Land Us	se							
as ra								
Fish Habitat Pot	tential							
	pawning or nursery	areas, ground	water up	wellings)				
	ctions (seasonal, po		•					
lack of	ua tec							
Note any fish obs	servations <u>school</u>	of yoy o	E possi	ble broo	e stick	le bac	. K .	
Waterbody Note				7 		····		
Natural Waterco	urse Trapez	zoidal Channel		Grassed	Swale	F	Buried T	ile
Surficial Drainage	e (i.e. furrows)	_ Dugout Pond						Dry
						· · · - · - · · · · · · · · · · · · · ·		
Other Habitat No	otes, Incidental Wi	ildlife Observa	tions, e	tc. <u>೨၈//</u>	bird Sp			

Field Notes QA/QCed by ______ Field Notes Authored by __



	10.754	Chamilton and the second of th
Watercourse Name www.	amod Trib	Project Name Niagara wand
Photos 424-42	7	Froject #(669\$6266
Date Oct 33/12	-	
Weather conditions in previou	s 24 hrs	Time 10:07
GPS Coordinates (Zone)	- conspirate	2228 448
Descriptive Location		TI SA 7C8 Datum No. a K
4 3 - 1	Lond-ad!	ora bush of the state of 2-2
Water Quality	- was	
Dissolved Oxygen (mg/L)	Ind eno	ough for YSI
Water Temperature (°C)	pH	Conductivity (µS/cm)
Time in situ measurements tak		Air Temperature (°C)
Watercourse Dimensions & N	Vorphology	
Mean Watercourse Width	<u>(m)</u>	Maximum Pool Donat
Mean Bankfull Width	(m)	Maximum Pool Depth (cm) Mean Water Depth (cm)
% Riffle	W Pa	
Evidence of eroding banks, Cor	mments on bank st	- 76 run % Flat
		tability well vegetated.
Substrate (% cover)		
Bedrock	Cobble	0.3
Boulder	Cobble Gravel	Sand80Silt/0 Muck
	Graver	Clay Mari / O Detritus
n-water Cover		RCG_
Cover Types Present (circle):	Undercut Ban	Va Dana Dana Dana Dana Dana Dana Dana Da
Overhanging Vegetation Wo	oody Debris	Boulder Other
Riparian Zone		· Outor
Riparian Cover (% of watercourse	e chodod domini	
7590 Me	d do 1 50 64	nt vegetation, mature or early successional)
djacent Land Use	was a prec	coes & paplars, intermediate
- road aa	Airld bus	111
		A COTT TO THE PART OF THE PART
ish Habitat Potential	*. *	
ritical Habitat (spawning or nurs	erv areas, groundu	votas umuallimant
		rater upweilings)
innata Ot	permanent)	
igratory Obstructions (seasonal,		
almost conte		
ilas water		• 0
ilan water	one observe	ed .
ete any fish observations		eol .
aterbody Notes	one observa	
aterbody Notes atural Watereourse Trape	ezoidal Channel	Consider
aterbody Notes atural Watereourse Trape	ezoidal Channel	Grassed Swale Buried Tile
aterbody Notes atural Watereourse Trap	ezoidal Channel Dugout Pond	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry
aterbody Notes atural Watereourse Trapulational Drainage (i.e. furrows)	ezoidal Channel Dugout Pond_ VIIdiife Observation	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry Waterbady
aterbody Notes atural Watereourse Trapulatical Drainage (i.e. furrows)	ezoidal Channel Dugout Pond	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry Waterbady
aterbody Notes atural Watereourse Trapper of the Incidental Water	ezoidal Channel Dugout Pond VIIdiife Observation	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry Waterbady
aterbody Notes atural Watercourse Trapporticial Drainage (i.e. furrows) her Habitat Notes, Incidental V	ezoidal Channel Dugout Pond VIIdiife Observation	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry Waterbady
aterbody Notes atural Watercourse Trapportional Drainage (i.e. furrows) ther Habitat Notes, Incidental Watercourse Area	ezoidal Channel Dugout Pond VIIdiife Observation	Grassed Swale Buried Tile Dominated by Aquatic Veg Dry Dons, etc. On Saith Side of Booker Anthoride = reach 15-2 Paplars, Dogwoods, grasses, medda.



, ,				: \ > -	
Station # \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Pro	oject Name _	Viaga	raWir	101
Watercourse Name_unknaum	Pro	oject # <u> (</u>	2042999	<u>99</u>	
Photos			J. Yeen	ie, reli	4 Clartor
Date June 21/12.	Tin	ne <u> </u>	SY		
Weather conditions in previous 24 hrs _			. 13-7-96-77		
GPS Coordinates (Zone) 17T E	61794	<u>0 N</u>	147 <u>69</u> 9	<u>1 / </u>	tum Nad 83
Descriptive Location off of Po	1400 Rd	Road	<u> </u>		1624
Water Quality		water			
Dissolved Oxygen (mg/L)	pH	Conduc	ctivity (uS/cr	m)	
Water Temperature (°C)	Δir	Conductor Temperature	2 (°C) 2		
Time in situ measurements taken					
Watercourse Dimensions & Morpholo	gy				
Mean Watercourse Width (m		ximum Pool	Depth	(cn	n)
		ean Water De	pth	(cn	
% Riffle	% Pool		% Ru	ın	% Flat
Evidence of eroding banks, Comments	on bank stabilit	У			
Substrate (% cover)	^ ~				
Bedrock Co	oble 20	Sand	40	Silt	Muck
	avel	Clay		Mari	Detritus
In-water Cover Cover Types Present (circle): Un	dercut Banks	Deep Po		rcress	Aquatic Veg
Overhanging Vegetation Woody De	bris Bo	oulaer C	Other		
Riparian Zone Riparian Cover (% of watercourse shad	ed, dominant v	egetation, ma	ature or earl	v succession	al)
1009 RCC	o Paal	3 дола ног , гла			
Adjacent Land Use	× 1 C	1 4			-
residen	$M_{1}+0$	rmlance			
Fish Habitat Potential					
Critical Habitat (spawning or nursery are	as, groundwat	er upwellings	s)		
Migratory Obstructions (seasonal, perm	•				
Note any fish observations					
Waterbody Notes	al Obanasi	Cross	and Curala	Duri	ind Tile
Natural Watercourse Trapezoid Surficial Drainage (i.e. furrows) [al Channel ugout Pond	Grass Domina	sed Swale ated by Aqua	atic Veg	Dry
Other Habitat Notes, Incidental Wildli	e Observatio	ns, etc. <u>· n</u>	arrau x - no	Channo Water	1 full of
Field Notes Authored by K. Clayton.	Field Notes QA/	QCed by	E		

Stantec

NIAGARA REGION WIND FARM

WATER ASSESSMENT AND WATER BODY REPORT

Appendix D

DFO Operational Statements

HIGH-PRESSURE DIRECTIONAL DRILLING

Fisheries and Oceans Canada Ontario Operational Statement

Version 3.0

For the purpose of this Operational Statement, the term High-Pressure Directional Drilling (HPDD) means trenchless methods of crossing a watercourse using pressurized mud systems. HPDD is used to install cables and pipelines for gas, telecommunications, fibre optics, power, sewer, oil and water lines underneath watercourses and roads. This method is preferable to open-cut and isolated crossings since the cable or pipeline is drilled underneath the watercourse with very little disturbance to the bed or banks. HPDD involves drilling a pilot bore hole underneath the watercourse towards a surface target, back-reaming the bore hole to the drill rig while pulling the pipe along through the hole. This process typically uses the freshwater gel mud system composed of a mixture of clean, freshwater as the base, bentonite (clay-based drilling lubricant) as the viscosifier and synthetic polymers.

The general order of preference for carrying out a cable or pipeline stream crossing in order to protect fish and fish habitat is: a) a punch or bore crossing (see *Punch & Bore Crossings* Operational Statement), b) HPDD crossing, c) dry open-cut crossing, and d) isolated open-cut crossing (see *Isolated or Dry Open-cut Stream Crossings* Operational Statement). This order must be balanced with practical considerations at the site.

One of the risks associated with HPDD is the escape of drilling mud into the environment as a result of a spill, tunnel collapse or the rupture of mud to the surface, commonly known as "frac-out". A frac-out is caused when excessive drilling pressure results in drilling mud propagating toward the surface. The risk of a frac-out can be reduced through proper geotechnical assessment practices and drill planning and execution. The extent of a frac-out can be limited by careful monitoring and having appropriate equipment and response plans ready in the event that one occurs. HPDD can also result in excessive disturbance of riparian vegetation and sedimentation and erosion due to operation of equipment on the shoreline or fording to access the opposite bank.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your

high-pressure directional drill project without a DFO review when you meet the following conditions:

- the crossing technique will not damage the stream bed and thereby negatively impact fish or fish habitat,
- the crossing is not a wet open-cut crossing,
- you have an emergency frac-out response plan and a contingency crossing plan in place that outline the protocol to monitor, contain and clean-up a potential frac-out and an alternative method for carrying out the crossing, and
- you incorporate the Measures to Protect Fish and Fish Habitat when High-Pressure Directional Drilling listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the Species at Risk Act (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Ontario Operational Statement notification form (www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when High-Pressure Directional Drilling

- Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.
- Design the drill path to an appropriate depth below the watercourse to minimize the risk of frac-out and to a depth



to prevent the line from becoming exposed due to natural scouring of the stream bed. The drill entry and exit points are far enough from the banks of the watercourse to have minimal impact on these areas.

- While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the road or utility right-of-way.
- 4. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Stream Crossing* Operational Statement is also available.
 - 4.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
 - **4.2.** Grading of the stream banks for the approaches should not occur.
 - 4.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
 - **4.4.** Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Ontario In-Water Construction Timing Windows*).
 - **4.5.** Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
- Operate machinery on land above the ordinary high water mark (see definition below) and in a manner that minimizes disturbance to the banks of the watercourse.
 - **5.1.** Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
 - **5.2.** Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.
 - **5.3.** Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
 - **5.4.** Restore banks to original condition if any disturbance occurs.
- 6. Construct a dugout/settling basin at the drilling exit site to contain drilling mud to prevent sediment and other deleterious substances from entering the watercourse. If this cannot be achieved, use silt fences or other effective sediment and erosion control measures to prevent drilling mud from entering the watercourse. Inspect these measures regularly during the course of construction and make all necessary repairs if any damage occurs.
 - **6.1.** Dispose of excess drilling mud, cuttings and other waste materials at an adequately sized disposal

facility located away from the water to prevent it from entering the watercourse.

 Monitor the watercourse to observe signs of surface migration (frac-out) of drilling mud during all phases of construction.

Emergency Frac-out Response and Contingency Planning

- 8. Keep all material and equipment needed to contain and clean up drilling mud releases on site and readily accessible in the event of a frac-out.
- 9. Implement the frac-out response plan that includes measures to stop work, contain the drilling mud and prevent its further migration into the watercourse and notify all applicable authorities, including the closest DFO office in the area (see Ontario DFO office list). Prioritize clean up activities relative to the risk of potential harm and dispose of the drilling mud in a manner that prevents re-entry into the watercourse.
- 10. Ensure clean up measures do not result in greater damage to the banks and watercourse than from leaving the drilling mud in place.
- 11. Implement the contingency crossing plan including measures to either re-drill at a more appropriate location or to isolate the watercourse to complete the crossing at the current location. See *Isolated or Dry Open-cut Stream Crossings* Operational Statement for carrying out an isolated trenched crossing.
- 12. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.
- 13. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
 - 13.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

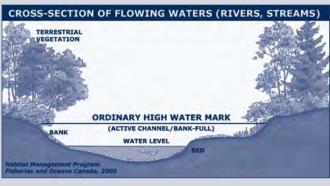
Definition:

Ordinary high water mark – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial

vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO's Fish Habitat and Determining the High Water Mark on Lakes.





FISHERIES AND OCEANS CANADA OFFICES IN ONTARIO Southern Ontario District

Burlington

Fisheries and Oceans Canada 3027 Harvester Road, Suite 304 P.O. Box 85060

Burlington, ON L7R 4K3 Telephone: (905) 639-0188 Fax: (905) 639-3549

Email: ReferralsBurlington@DFO-MPO.GC.CA

Londor

Fisheries and Oceans Canada 73 Meg Drive London, ON N6E 2V2 Telephone: (519) 668-2722

Fax: (519) 668-1772

Email: ReferralsLondon@DFO-MPO.GC.CA

Eastern Ontario District

Peterborough

Fisheries and Oceans Canada 501 Towerhill Road, Unit 102 Peterborough, ON K9H 7S3 Telephone: (705) 750-0269 Fax: (705) 750-4016

Email: ReferralsPeterborough@DFO-MPO.GC.CA

Prescott

Fisheries and Oceans Canada 401 King Street West Prescott, ON K0E 1T0 Telephone: (613) 925-2865 Fax: (613) 925-2245

Email: ReferralsPrescott@DFO-MPO.GC.CA

Northern Ontario District

Parry Sound

Fisheries and Oceans Canada 28 Waubeek Street Parry Sound, ON P2A 1B9 Telephone: (705) 746-2196 Fax: (705) 746-4820

Email: ReferralsParrySound@DFO-MPO.GC.CA

Sudbury and Sault Ste. Marie

Fisheries and Oceans Canada 1500 Paris Street, Unit 11 Sudbury, ON P3E 3B8 Telephone: (705) 522-2816 Fax: (705) 522-6421

Email: ReferralsSudbury@DFO-MPO.GC.CA

Thunder Bay and Kenora

Fisheries and Oceans Canada Thunder Bay Office 100 Main Street, Suite 425 Thunder Bay, ON P7B 6R9 Telephone: (807) 346-8118

Fax: (807) 346-8545

Email: ReferralsThunderBay@DFO-MPO.GC.CA

Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_f.asp

DFO/2007-1329

NOTIFICATION FORM

Fisheries and Oceans Canada Ontario Operational Statement

Version 3.1

PROPONENT INFORMAT	ION			
NAME: CITY/TOWN: TEL. NO. (RESIDENCE): FAX NO:	STREET ADDRESS: PROVINCE/TERRITORY: TEL. NO. (WORK): EMAIL ADDRESS:	POSTAL CODE:		
CONTRACTOR INFORMA	ATION (provide this information if a Contractor i	s working on behalf of the Proponent)		
NAME: CITY/TOWN: TEL. NO. (RESIDENCE): FAX NO:	STREET ADDRESS: PROVINCE/TERRITORY: TEL. NO. (WORK): EMAIL ADDRESS:	POSTAL CODE:		
PROJECT INFORMATION				
Select Operational Statements that are	being used (check all applicable boxes):			
 □ Beach Creation for Residential Use □ Beaver Dam Removal □ Bridge Maintenance □ Clear-Span Bridges □ Culvert Maintenance □ Dock and Boathouse Construction □ High-Pressure Directional Drilling 	 □ Ice Bridges and Snow Fills □ Isolated Pond Construction □ Isolated or Dry Open-cut Stream Crossings □ Maintenance of Riparian Vegetation in Existing Rights-omegation □ Mineral Exploration Activities □ Moorings □ Overhead Line Construction 	☐ Public Beach Maintenance ☐ Punch & Bore Crossings ☐ Routine Maintenance Dredging of-Way ☐ Submerged Log Salvage ☐ Temporary Stream Crossing ☐ Underwater Cables		
Select the type of water body or water River, Stream, Creek Lake (8 hectares or greater)	☐ Marine (Ocean or Sea) ☐ Pond or wetland (pond is less than 8 hectares)	☐ Estuary		
PROJECT LOCATION (S) multiple project locations on an add	(fill out this section if the project location is differ ditional sheet if necessary)	rent from Proponent Information; append		
Name of water body or watercourse	Coordinates of the Proje Minutes, Seconds), if ave Easting: Latitude:	oct (UTM co-ordinate or Degrees, ailable Northing: Longitude:		
Legal Description (Plan, Block, Lot, Concession, Township)		Directions to Access the Project Site (i.e., Route or highway number, etc.)		
Proposed Start Date (YYYY/MM/DD):	Proposed Completion Da (YYYY/MM/DD):	ate		
We ask that you notify DFO, preferably 10 worki your area. This information is requested in order	ng days before starting your work, by filling out and sending in, by to evaluate the effectiveness of the work carried out in relation to	/ mail or by fax, this notification form to the DFO office in the Operational Statement.		
l, knowledge, correct and complete.	(print name) certify that the informa	tion given on this form is, to the best of my		
Signature	Date			
Note: If you cannot meet all of the conditions and cannot and you could be subject to enforcement action. In this	ot incorporate all of the measures in the Operational Statement then your proj case, you should contact your Conservation Authority, or the DFO office in yo	ect may result in a violation of subsection 35(1) of the Fisheries Actour area (see Ontario DFO office list), or Parks Canada if the project		

is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain more information on the possible options you should consider to avoid contravention of the Fisheries Act. For activities carried out under the Crown Forest Sustainability Act, the requirements of the applicable Operational Statements are addressed through an existing agreement and the Ontario Ministry of Natural Resources is the first point of contact.

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the Fisheries Act for the purpose of administering the fish habitat protection provisions of the Privacy Act, and will be extend in the Personal Information Pool Contact.

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the Fisheries Act for the purpose of administering the fish habitat protection provisions of the Fisheries Act. Personal information will be protected under the provisions of the Privacy Act and will be stored in the Personal Information Bank DFO-SCI-605. Under the Privacy Act, individuals have a right to, and on request shall be given access to, any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada's Info Source publications available at www.infosource.gc.ca or in Government of Canada offices. Information other than "personal" information may be accessible or protected as required by the provisions of the Access to Information Act.



FISHERIES AND OCEANS CANADA OFFICES IN ONTARIO

Southern Ontario District

Burlington

Fisheries and Oceans Canada 3027 Harvester Road, Suite 304 P.O. Box 85060 Burlington, ON L7R 4K3

Telephone: (905) 639-0188 Fax: (905) 639-3549

Email: ReferralsBurlington@DFO-MPO.GC.CA

London

Fisheries and Oceans Canada 73 Meg Drive London, ON N6E 2V2 Telephone: (519) 668-2722

Fax: (519) 668-1772

Email: ReferralsLondon@DFO-MPO.GC.CA

Eastern Ontario District

Peterborough

Fisheries and Oceans Canada 501 Towerhill Road, Unit 102 Peterborough, ON K9H 7S3 Telephone: (705) 750-0269

Fax: (705) 750-4016

Email: ReferralsPeterborough@DFO-MPO.GC.CA

Prescott

Fisheries and Oceans Canada 401 King Street West Prescott, ON K0E 1T0 Telephone: (613) 925-2865

Fax: (613) 925-2245

Email: ReferralsPrescott@DFO-MPO.GC.CA

Northern Ontario District

Parry Sound

Fisheries and Oceans Canada 28 Waubeek Street Parry Sound, ON P2A 1B9 Telephone: (705) 746-2196

Fax: (705) 746-4820

Email: ReferralsParrySound@DFO-MPO.GC.CA

Sudbury and Sault Ste. Marie

Fisheries and Oceans Canada 1500 Paris Street, Unit 11 Sudbury, ON P3E 3B8 Telephone: (705) 522-2816 Fax: (705) 522-6421

Email: ReferralsSudbury@DFO-MPO.GC.CA

Thunder Bay and Kenora

Fisheries and Oceans Canada Thunder Bay Office 100 Main Street, Suite 425 Thunder Bay, ON P7B 6R9 Telephone: (807) 346-8118

Fax: (807) 346-8545

Email: ReferralsThunderBay@DFO-MPO.GC.CA

Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_f.asp



ISOLATED OR DRY OPEN-CUT STREAM CROSSINGS

Fisheries and Oceans Canada Ontario Operational Statement

Version 1.0

For the purpose of this Operational Statement, the term "Isolated Crossing" means a temporary stream crossing technique that allows work (e.g., trenched pipeline or cable installation) to be carried out "in-the-dry" while diverting the natural flow around the site during construction. These types of open trenched crossings are isolated using flume or dam and pump techniques (see Pipeline Associated Watercrossings, 2005 at http://www.capp.ca/default.asp?V_DOC_ID=763&PubID=96717). The term "Dry Open-cut Stream Crossing" means a temporary stream crossing work (e.g., trenched pipeline or cable installation) that is carried out during a period when the entire stream width is seasonally dry or is frozen to the bottom.

The risks to fish and fish habitat associated with isolated open cut stream crossings include the potential for direct damage to substrates, release of excessive sediments, loss of riparian habitat, stranding of fish in dewatered areas, impingement/entrainment of fish at pump intakes, and disruption of essential fish movement patterns. Similarly, dry open-cut stream crossings pose a risk to fish and fish habitat due to potential harmful alteration of substrates, loss of riparian habitat, and release of excessive sediment once stream flows resume.

The order of preference for carrying out a cable or pipeline stream crossing, in order to protect fish and fish habitat, is: a) punch or bore crossing (see Punch & Bore Crossings Operational Statement); b) high-pressure directional drill crossing (see High-Pressure Directional Drilling Operational Statement); c) dry opencut crossing; and d) isolated open-cut crossing. This order must be balanced with practical considerations at the site.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the Fisheries Act no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the Fisheries Act.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your isolated or dry open-cut stream crossing project without a DFO review when you meet the following conditions:

if working within the Thames River, Sydenham River, Ausable River, Grand River, or Maitland River, you have contacted your Conservation Authority or local DFO Office (see Ontario

DFO office list) to ensure that your project will not impact Schedule I mussel species at risk under the federal Species at Risk Act (SARA), before proceeding,

- for dry, open-cut crossings the watercourse is dry or frozen completely to the bottom at the site,
- for isolated crossings, the channel width of the watercourse at the crossing site is less than 5 meters from ordinary high water mark to ordinary high water mark (HWM) (see definition below),
- the isolated crossing does not involve the construction or use of an off-stream diversion channel, or the use of earthen dams,
- the isolated crossing ensures that all natural upstream flows are conveyed downstream during construction, with no change in quality or quantity,
- the site does not occur at a stream location involving known fish spawning habitat, particularly if it is dependent on groundwater upwelling,
- the use of explosives is not required to complete the crossing, and
- you incorporate the Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated or Dry Open-cut Stream Crossing listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the Fisheries Act and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the Fisheries Act.

You are required to respect all municipal, provincial and federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with SARA (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work, by filling out and sending the Ontario Operational Statement notification form (www.dfo-mpo.gc.ca/ regions/central/habitat/os-eo/prov-terr/index_e.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.



Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated or Dry Open-Cut Stream Crossing

- Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.
- Locate crossings at straight sections of the stream, perpendicular to the banks, whenever possible. Avoid crossing on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in the erosion and scouring of the stream bed.
- Complete the crossing in a manner that minimizes the duration of instream work.
- Construction should be avoided during unusually wet, rainy or winter thaw conditions.
- 5. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the utility right-of-way.
- **6.** Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use. Operational Statements are also available for *Ice Bridges and Snow Fills*, *Clear-Span Bridges*, and *Temporary Stream Crossing*.
 - 6.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
 - **6.2.** Grading of the stream banks for the approaches should not occur.
 - 6.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
 - **6.4.** Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Ontario In-Water Construction Timing Windows*).
 - 6.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
- Operate machinery in a manner that minimizes disturbance to the watercourse bed and banks.
 - 7.1. Protect entrances at machinery access points (e.g., using swamp mats) and establish single site entry and exit.
 - **7.2.** Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

- 7.3. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent deleterious substances from entering the water.
- **7.4.** Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
- 8. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.
- 9. Stabilize any waste materials removed from the work site, above the HWM, to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.
- 10. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent soil erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
 - Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Measures to Protect Fish and Fish Habitat when Carrying Out an <u>Isolated Crossing</u>

Temporary isolation is used to allow work "in-the-dry" while maintaining the natural downstream flow by installing dams up and downstream of the site and conveying all of the natural upstream flow into a flume, or pumping it around the isolated area. In addition to measures 1 to 10, the following measures should be carried out when conducting an isolated stream crossing:

- **11.** Time isolated crossings to protect sensitive fish life stages by adhering to fisheries timing windows (see Measure 6.4).
- 12. Use dams made of non-earthen material, such as water-inflated portable dams, pea gravel bags, concrete blocks, steel or wood wall, clean rock, sheet pile or other appropriate designs, to separate the dewatered work site from flowing water.
 - 12.1. If granular material is used to build dams, use clean or washed material that is adequately sized (i.e., moderately sized rock and not sand or gravel) to withstand anticipated flows during the construction. If necessary, line the outside face of dams with heavy poly-plastic to make them impermeable to water. Material to build these dams should not be taken from below the HWM of any water body.
 - **12.2.** Design dams to accommodate any expected high flows of the watercourse during the construction period.

- **13.** Before dewatering, rescue any fish from within the isolated area and return them safely immediately downstream of the worksite.
 - 13.1. You will require a permit from DFO to relocate any aquatic species that are listed as either endangered or threatened under SARA. Please contact your Conservation Authority or the DFO office in your area to determine if an aquatic species at risk is in the vicinity of your project and, if appropriate, use the DFO website at www.dfo-mpo.gc.ca/species-especes/permits/sarapermits-e.asp to apply for a permit.
- 14. Pump sediment laden dewatering discharge into a vegetated area or settling basin, and prevent sediment and other deleterious substances from entering any water body.
- **15.** Remove accumulated sediment and excess spoil from the isolated area before removing dams.
- **16.** Stabilize the **streambed** and restore the original channel shape, bottom gradient and substrate to pre-construction condition before removing dams.
- 17. Ensure banks are stabilized, restored to original shape, adequately protected from erosion and re-vegetated, preferably with native species.
- 18. If rock is used to stabilize banks, it should be clean, free of fine materials, and of sufficient size to resist displacement during peak flood events. The rock should be placed at the original stream bank grade to ensure there is no infilling or narrowing of the watercourse.
- 19. Gradually remove the downstream dam first, to equalize water levels inside and outside of the isolated area and to allow suspended sediments to settle.
- **20.** During the final removal of dams, restore the original channel shape, bottom gradient and substrate at these locations.

21. Pumped Diversion

Pumped diversions are used to divert water around the isolated area to maintain natural downstream flows and prevent upstream ponding.

- 21.1. Ensure intakes are operated in a manner that prevents streambed disturbance and fish mortality. Guidelines to determine the appropriate mesh size for intake screens may be obtained from DFO (e.g., Freshwater Intake End-of-Pipe Fish Screen Guideline (1995), available at www.dfo-mpo.gc.ca/Library/223669.pdf).
- 21.2. Ensure the pumping system is sized to accommodate any expected high flows of the watercourse during the construction period. Pumps should be monitored at all times, and back-up pumps should be readily available on-site in case of pump failure.
- 21.3. Protect pump discharge area(s) to prevent erosion and the release of suspended sediments downstream, and remove this material when the works have been completed.

Measures to Protect Fish and Fish Habitat when Carrying Out a <u>Dry Open-Cut Stream Crossing</u>

In addition to measures 1 to 10, the following measures should be carried out when conducting a dry open-cut stream crossing:

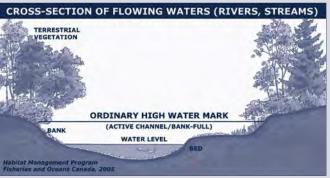
- Stabilize the streambed and restore the original channel shape, bottom gradient and substrate to pre-construction condition.
- 23. Ensure banks are stabilized, restored to original shape, adequately protected from erosion and re-vegetated, preferably with native species.

Definition:

Ordinary high water mark (HWM) - The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO's Fish Habitat and Determining the High Water Mark on Lakes.





FISHERIES AND OCEANS CANADA OFFICES IN ONTARIO

Southern Ontario District

Burlington

Fisheries and Oceans Canada 3027 Harvester Road, Suite 304

P.O. Box 85060

Burlington, ON L7R 4K3 Telephone: (905) 639-0188 Fax: (905) 639-3549

Email: ReferralsBurlington@DFO-MPO.GC.CA

London

Fisheries and Oceans Canada 73 Meg Drive London, ON N6E 2V2 Telephone: (519) 668-2722

Fax: (519) 668-1772 Email: ReferralsLondon@DFO-MPO.GC.CA

Eastern Ontario District

Peterborough

Fisheries and Oceans Canada 501 Towerhill Road, Unit 102 Peterborough, ON K9H 7S3 Telephone: (705) 750-0269 Fax: (705) 750-4016

Email: ReferralsPeterborough@DFO-MPO.GC.CA

Prescott

Fisheries and Oceans Canada 401 King Street West Prescott, ON K0E 1T0 Telephone: (613) 925-2865

Fax: (613) 925-2245

Email: ReferralsPrescott@DFO-MPO.GC.CA

Northern Ontario District

Parry Sound

Fisheries and Oceans Canada 28 Waubeek Street Parry Sound, ON P2A 1B9 Telephone: (705) 746-2196

Fax: (705) 746-4820

Email: ReferralsParrySound@DFO-MPO.GC.CA

Sudbury and Sault Ste. Marie

Fisheries and Oceans Canada 1500 Paris Street, Unit 11 Sudbury, ON P3E 3B8 Telephone: (705) 522-2816

Fax: (705) 522-6421

Email: ReferralsSudbury@DFO-MPO.GC.CA

Thunder Bay and Kenora

Fisheries and Oceans Canada Thunder Bay Office 100 Main Street, Suite 425 Thunder Bay, ON P7B 6R9 Telephone: (807) 346-8118

Fax: (807) 346-8545

Email: ReferralsThunderBay@DFO-MPO.GC.CA

Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/ modernizing-moderniser/epmp-pmpe/index_f.asp

DFO/2007-1329



OVERHEAD LINE CONSTRUCTION

Fisheries and Oceans Canada Ontario Operational Statement

Version 3.0

Overhead lines are constructed for electrical or telecommunication transmission across many watercourses that range in size from small streams and ponds to large rivers, lakes and reservoirs. This Operational Statement applies to selective removal of vegetation along the right-of-way to provide for installation and safe operation of overhead lines, and passage of equipment and materials across the water body.

Although fish habitat occurs throughout a water system, it is the riparian habitat that is most sensitive to overhead line construction. Riparian vegetation occurs adjacent to the watercourse and directly contributes to fish habitat by providing shade, cover, and spawning and food production areas. It is important to design and build your overhead line project to meet your needs while also protecting riparian areas. Potential impacts to fish and fish habitat include excessive loss of riparian vegetation, erosion and sedimentation resulting from bank disturbance and loss of plant root systems, rutting and compaction of stream substrate at crossing sites, and disruption of sensitive fish life stages.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the Fisheries Act no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the Fisheries Act.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your overhead line project without a DFO review when you meet the following conditions:

- it does not require the construction or placement of any temporary or permanent structures (e.g. islands, poles, crib works, etc.) below the ordinary high water mark (HWM) (see definition below), and
- vou incorporate the Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the Fisheries Act and you could be subject to enforcement action. In this case,

you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the Fisheries Act.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the Species at Risk Act (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Ontario Operational Statement notification form (www.dfo-mpo.gc.ca/ regions/central/habitat/os-eo/prov-terr/index_e.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines

- 1. Installing overhead lines under frozen conditions is preferable in all situations. On wet terrains (e.g., bogs), lines should be installed under frozen conditions, where possible, or using aerial methods (i.e., helicopter).
- 2. Design and construct approaches so that they are perpendicular to the watercourse wherever possible to minimize loss or disturbance to riparian vegetation.
- Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or overhead line structures.
 - **3.1.** Wherever possible, locate all temporary or permanent structures, such as poles, sufficiently above the HWM to prevent erosion.
- 4. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to accommodate the overhead line. This removal



should be kept to a minimum and within the road or utility right-ofway.

- 5. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Stream Crossing* Operational Statement is also available.
 - 5.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
 - **5.2.** Grading of the stream banks for the approaches should not occur.
 - 5.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
 - **5.4.** Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Ontario In-Water Construction Timing Windows*).
 - **5.5.** Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
- Operate machinery on land and in a manner that minimizes disturbance to the banks of the watercourse.
 - **6.1.** Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
 - **6.2.** Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.
 - **6.3.** Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
 - **6.4.** Restore banks to original condition if any disturbance occurs.
- Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.
 - 7.1. Avoid work during wet, rainy conditions or use alternative techniques such as aerial methods (i.e., helicopter) to install overhead lines.
- 8. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.
- 9. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g.,

cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

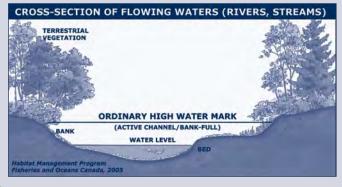
9.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO's Fish Habitat and Determining the High Water Mark on Lakes.





FISHERIES AND OCEANS CANADA OFFICES IN ONTARIO

Southern Ontario District

Burlington

Fisheries and Oceans Canada 3027 Harvester Road, Suite 304 P.O. Box 85060 Burlington, ON L7R 4K3 Telephone: (905) 639-0188

Fax: (905) 639-3549

Email: ReferralsBurlington@DFO-MPO.GC.CA

London

Fisheries and Oceans Canada 73 Meg Drive London, ON N6E 2V2 Telephone: (519) 668-2722

Fax: (519) 668-1772

Email: ReferralsLondon@DFO-MPO.GC.CA

Eastern Ontario District

Peterborough

Fisheries and Oceans Canada 501 Towerhill Road, Unit 102 Peterborough, ON K9H 7S3 Telephone: (705) 750-0269

Fax: (705) 750-4016

Email: ReferralsPeterborough@DFO-MPO.GC.CA

Prescott

Fisheries and Oceans Canada 401 King Street West Prescott, ON K0E 1T0 Telephone: (613) 925-2865

Fax: (613) 925-2245

Email: ReferralsPrescott@DFO-MPO.GC.CA

Northern Ontario District

Parry Sound

Fisheries and Oceans Canada 28 Waubeek Street Parry Sound, ON P2A 1B9 Telephone: (705) 746-2196

Fax: (705) 746-4820

Email: ReferralsParrySound@DFO-MPO.GC.CA

Sudbury and Sault Ste. Marie

Fisheries and Oceans Canada 1500 Paris Street, Unit 11 Sudbury, ON P3E 3B8 Telephone: (705) 522-2816

Fax: (705) 522-6421

Email: ReferralsSudbury@DFO-MPO.GC.CA

Thunder Bay and Kenora

Fisheries and Oceans Canada Thunder Bay Office 100 Main Street, Suite 425 Thunder Bay, ON P7B 6R9 Telephone: (807) 346-8118

Fax: (807) 346-8545

Email: ReferralsThunderBay@DFO-MPO.GC.CA

Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_f.asp

DFO/2007-1329

PUNCH & BORE CROSSINGS

Fisheries and Oceans Canada Ontario Operational Statement

Version 3.0

For the purpose of this Operational Statement, the term punch and bore refers to a trenchless crossing method which involves the excavation of a vertical bell hole or shallow depression on either side of the watercourse. Horizontal punching or boring between the two points, at an appropriate depth below the watercourse, completes the creation of a passage-way for the crossing. Punch and bore crossings allow cables and pipelines to be installed under watercourses without imparting any disturbance to the bed and banks. Punch and bore crossings differ from high-pressure directional drilled crossings, in that no pressurized mud systems are required, thereby avoiding the risk of sediment release due to frac-out.

Punch and bore crossings can negatively impact fish and fish habitat due to erosion and sedimentation from site disturbance and dewatering of bell holes or the collapse of the punch or bore hole under the stream. Disturbing riparian vegetation can reduce important shoreline cover, shade and food production areas. Machinery fording the stream can disturb bottom and bank substrates, disrupt sensitive fish life stages, and introduce deleterious substances if equipment is not properly maintained. Impacts can be reduced if an emergency response plan and clean-up materials are in place.

The general order of preference for carrying out a cable or pipeline stream crossing in order to protect fish and fish habitat is: a) a punch or bore crossing, b) high-pressure directional drill crossing (see *High-Pressure Directional Drilling* Operational Statement), c) dry open-cut crossing, and d) isolated open-cut crossing (see *Isolated or Dry Open-cut Stream Crossings* Operational Statement). This order must be balanced with practical considerations at the site.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to be incorporated into your project in order to avoid negative impacts to fish habitat. You may proceed with your punch or bore crossing project without a DFO review when you meet the following conditions:

the crossing is not a wet open-cut crossing,

- the crossing technique will not damage the stream bed or bank and thereby negatively impact fish or fish habitat,
- the site does not occur at a stream location involving known fish spawning habitat, particularly if it is dependent on groundwater upwelling, and
- you incorporate the Measures to Protect Fish and Fish Habitat when Conducting Punch and Bore Crossings, listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact your Conservation Authority, or the DFO office in your area (see Ontario DFO office list) or Parks Canada if the project is located within its jurisdiction, including the Trent-Severn Waterway and the Rideau Canal, if you wish to obtain an opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the Species at Risk Act (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact one of the agencies listed above.

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Ontario Operational Statement notification form (www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Conducting Punch and Bore Crossings

- A punch or bore crossing can be conducted at any time of the year provided there is not a high risk of failure and it does not require in-water activities such as machinery fording.
- Design the punch or bore path for an appropriate depth below the watercourse to prevent the pipeline or cable from becoming exposed due to natural scouring of the stream bed.



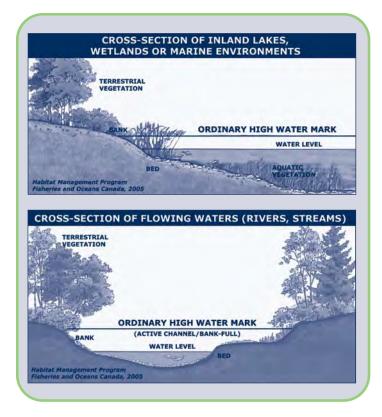
- While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site and to excavate the bell holes. This removal is to be kept to a minimum and within the utility right-of-way.
- Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the water body. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.
- 5. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Stream Crossing* Operational Statement is also available.
 - 5.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
 - **5.2.** Grading of the stream banks for the approaches should not occur.
 - 5.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
 - **5.4.** Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Ontario In-Water Construction Timing Windows*).
 - 5.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.
- 6. Operate machinery on land above the ordinary high water mark (HWM) (see definition below) and in a manner that minimizes disturbance to the banks of the watercourse.
 - **6.1.** Machinery is to arrive on-site in a clean condition and is to be maintained free of fluid leaks.
 - **6.2.** Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.
 - **6.3.** Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
- Excavate bell holes beyond the HWM, far enough away from any watercourse to allow containment of any sediment or deleterious substances above the HWM.
 - 7.1. When dewatering bell holes, remove suspended solids by diverting water into a vegetated area or settling basin, and prevent sediment and other deleterious substances from entering the watercourse.

- 7.2. Stabilize any waste materials removed from the work site (including bell holes) to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.
- **7.3.** After suitably backfilling and packing the bell holes, vegetate any disturbed areas (see Measure 11).
- **8.** Monitor the watercourse to observe signs of malfunction during all phases of the work.
- For the duration of the work, keep on-site and readily accessible, all material and equipment needed to contain and clean-up releases of sediment-laden water and other deleterious substances.
- 10. Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance. This plan is to include measures to: a) stop work, contain sediment-laden water and other deleterious substances and prevent their further migration into the watercourse; b) notify all applicable authorities in the area, including the closest DFO office; c) promptly clean-up and appropriately dispose of the sediment-laden water and deleterious substances; and d) ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse.
- 11. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
 - Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

For the Great Lakes this refers to the 80th percentile elevation above chart datum as described in DFO's Fish Habitat and Determining the High Water Mark on Lakes.



FISHERIES AND OCEANS CANADA OFFICES IN ONTARIO **Southern Ontario District**

Burlington

Fisheries and Oceans Canada 3027 Harvester Road, Suite 304 P.O. Box 85060 Burlington, ON L7R 4K3

Telephone: (905) 639-0188 Fax: (905) 639-3549

Email: ReferralsBurlington@DFO-MPO.GC.CA

London

Fisheries and Oceans Canada 73 Meg Drive London, ON N6E 2V2

Telephone: (519) 668-2722 Fax: (519) 668-1772

Email: ReferralsLondon@DFO-MPO.GC.CA

Eastern Ontario District

Peterborough

Fisheries and Oceans Canada 501 Towerhill Road, Unit 102 Peterborough, ON K9H 7S3 Telephone: (705) 750-0269 Fax: (705) 750-4016

Email: ReferralsPeterborough@DFO-MPO.GC.CA

Prescott

Fisheries and Oceans Canada 401 King Street West Prescott, ON K0E 1T0 Telephone: (613) 925-2865 Fax: (613) 925-2245

Email: ReferralsPrescott@DFO-MPO.GC.CA

Northern Ontario District

Parry Sound

Fisheries and Oceans Canada 28 Waubeek Street Parry Sound, ON P2A 1B9 Telephone: (705) 746-2196

Fax: (705) 746-4820

Email: ReferralsParrySound@DFO-MPO.GC.CA

Sudbury and Sault Ste. Marie

Fisheries and Oceans Canada 1500 Paris Street, Unit 11 Sudbury, ON P3E 3B8 Telephone: (705) 522-2816

Fax: (705) 522-6421

Email: ReferralsSudbury@DFO-MPO.GC.CA

Thunder Bay and Kenora

Fisheries and Oceans Canada Thunder Bay Office

100 Main Street, Suite 425 Thunder Bay, ON P7B 6R9 Telephone: (807) 346-8118

Fax: (807) 346-8545

Email: ReferralsThunderBay@DFO-MPO.GC.CA

Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/ modernizing-moderniser/epmp-pmpe/index f.asp

Stantec

NIAGARA REGION WIND FARM

WATER ASSESSMENT AND WATER BODY REPORT

Appendix E

Curricula vitae

Aquatic Ecologist / Project Manager



Kathleen's experience is focused in aquatic biology, including stream, lake and wetland assessments, benthic macroinvertebrate identification and biomonitoring, and fisheries habitat studies. She has experience conducting environmental impact studies, environmental effects monitoring programs, baseline studies and watershed plans. Using ecosystem based approaches, typical multidisciplinary project involvement includes Class EAs and infrastructure siting/routing studies, evaluating alternative design concepts and developing mitigative solutions to minimize impacts to the natural environment.

Kathleen has acquired an understanding of federal and provincial legislation, policies and procedures for natural heritage features, particularly regarding working in and around fish habitat in Ontario. She is experienced in the Fisheries Act Authorization process, including evaluating the effects of development on aquatic habitat, designing fish habitat mitigation measures, and negotiating Fisheries Compensation Strategies. In addition, Kathleen serves as a team leader for aquatic science staff in Ontario, including professionals in the fields of fisheries biology, fluvial geomorphology, and aquatic invertebrate taxonomy.

EDUCATION

M.Sc., Watershed Ecosystems, Trent University, Peterborough, Ontario, 2003

B.Sc. (Env.), Environmental Sciences, University of Guelph, Guelph, Ontario, 1997

Certified in the Ecological Land Classification (ELC) System for Southern Ontario, Ontario Ministry of Natural Resources, Turkey Point, Ontario, 2000

Qualified Southern and Northern Ontario Wetlands Evaluator, Ontario Ministry of Natural Resources, North Bay, Ontario, 2000

Fisheries Assessment Specialist and Fisheries Contracts Specialist, MTO/DFO/OMNR Fisheries Protocol Course, Downsview, Ontario, 2006

Ontario Freshwater Mussel Identification Workshop / Fisheries and Oceans Canada, Burlington, Ontario, 2008

Qualified Electrofishing Operator (Class 2), Ontario Ministry of Natural Resources, Guelph, Ontario, 2010

MEMBERSHIPS

Member, North American Benthological Society

PROJECT EXPERIENCE

Environmental Assessments

Northwest Area Planning and Servicing Review, Welland, Ontario* (Environmental Scientist)

Conducted a review of natural heritage features and identified development-related constraints in a newly designated urban area.

Willoughby Lands Golf Course Facility, Niagara Region, Ontario* (Aquatic Ecologist)

Obtained Fisheries Act Authorization for development of a golf course facility. Supervised an underwater dive investigation to survey aquatic habitat along a series of alternative Niagara River water intake pipe alignments. The study lands also support habitat for a rare aquatic plant and an extensive program was proposed to ensure its protection. Environmental monitoring during construction was conducted.

Aquatic Ecologist / Project Manager

Municipal Water and Wastewater EAs, Various Sites, Ontario* (Aquatic Ecologist)

Evaluated natural heritage features in terms of ecological sensitivity and watermain and/or trunk sewer construction feasibility options (tunnel vs. open cut). Aquatic habitat conditions were assessed at all potential watercourse crossings and recommendations were provided regarding Fisheries Act requirements, construction mitigation measures and timing restrictions on in-water works. Also responsible for siting a chlorine booster station, surface water treatment plants and pumping stations, and mitigating impacts from emergency overflow of chlorinated water into adjacent watercourses. Water and wastewater experience includes:

- City of Barrie, Surface Water Treatment Plant Class EA & Impact Assessment
- Region of Niagara (Point Abino), Water Supply Class EA
- Region of Peel (Brampton), West Brampton Reservoir, Pumping Station & Watermain Class EA
- Region of York (Etobicoke), Steeles Avenue West Forcemain Class EA
- Region of York (Markham), Southeast Collector Trunk Sewer Class EA

Natural Sciences & Heritage Resources Environmental Impact Studies for Land Development, Various Sites, Ontario (Project Manager)

Assessed potential environmental impacts from land development proposals. Conducted ecological community inventories in watercourses, wetlands and woodlots. Prepared Environmental Management Plans providing net effects analyses, mitigation solutions to minimize impacts to the natural environment, buffer zone recommendations, and re-vegetation and restoration activities. Participated in consultation to address agency concerns. EIS experience includes:

- Block 34 East Landowners Group Inc., Block 34 East Natural Environment Report, Vaughan, Ontario
- Block 41-28W Development Group Inc., Block 41 Natural Environment Report, Vaughan, Ontario
- Boca East Investments Limited, Block 64 Master Environmental Servicing Plan (Natural Environment Chapter), Vaughan, Ontario
- Georgian International Land Corp., Buffalo Springs Development Environment Report, Township of Oro-Medonte
- Keirland Developments Inc., Meadows of Bear Creek Subdivision Phases 2 & 3 EIS, Barrie, Ontario
- Kleinburg Heights Holdings Inc., Kleinburg Heights Natural Environment Report, Vaughan, Ontario

Environmental Impact Studies for Land Development, Various Sites, Ontario* (Project Manager)

Assessed potential environmental impacts from land development proposals. Conducted ecological community inventories in watercourses, wetlands and woodlots. Prepared Environmental Management Plans providing net effects analyses, mitigation solutions to minimize impacts to the natural environment, buffer zone recommendations, re-vegetation and restoration activities, proposed trail routes and community stewardship programs. Participated in public open houses to address the concerns of local residents. Where required, environmental monitoring during construction was conducted. EIS experience includes:

- City of London, Dearness Home for Seniors Redevelopment EIS, London, Ontario
- Fieldgate Developments, Tresstown Subdivision EIS, Stouffville, Ontario
- Grey Gables School, Proposed Private School Site, Ecological Assessment, St. Catharines
- Lebovic-Fieldgate Developments, Functional Servicing Plan, Ecological Component, Stouffville, Ontario
- Norwest Land Corp., Kains Road East Development EIS, London, Ontario
- Quinte's Isle Campark, Scoped EIS, Prince Edward County, Ontario
- Sifton Properties Ltd., Equestrian Condominium Communities, Development Assessment Reports, Township of Middlesex Centre & Municipality of West Middlesex
- Sifton Properties Ltd., River Bend Community Phases 1&2 EIS, London, Ontario
- St. Joseph's Health Care Centre, Parkwood Hospital Scoped EIS, London, Ontario
- Westhill Redevelopment Company Limited, Aurora Golf Course Community ElS, Aurora, Ontario

River Bend Community Phases 1 & 2, Environmental Monitoring Protocol & Baseline Study*, London, Ontario (Environmental Scientist)

Established baseline aquatic, terrestrial and soils conditions in the vicinity of a golf course community. Subsequently, the Environmental Monitoring Program - Year 1 and, later, Year 3, were submitted to document any potential impacts.

^{*} denotes projects completed with other firms

Aquatic Ecologist / Project Manager

Ecological Risk Assessment of Residual Heavy Oil in a Wetland*, Drumbo, Ontario (Environmental Scientist)

Analyzed stream and wetland data to determine potential aquatic food chain impacts of a historical heavy oil release. Analyzed invertebrate community structure and identified exposure pathways and community end-points. Considered site remediation options on the basis of these data.

Proposed Acton Quarry Extension, Dufferin Aggregates, Acton, Ontario (Aquatic Ecologist / Project Manager)

The extension of the existing Acton Quarry is proposed to meet the need for additional close-to-market aggregate resources of high quality Amabel Dolostone. The area of focus encompasses approximately 615 ha, across two Conservation Authority watersheds within the Regional Municipality of Halton Hills. Kathleen has participated in extensive ecological field work, including aquatic species surveys and habitat assessments, inventories for potential Species at Risk habitat, and aquatic rehabilitation planning. She has co-authored technical reports produced in accordance with the PPS and ARA application requirements, as well as participated in interdisciplinary consultation with agencies and agency-appointed committees.

Otonabee Landfill Site Biological Assessment Study*, Peterborough, Ontario (Wetlands Ecologist)

Prepared a 'Surface Water Quality Study' to address background water quality and aquatic habitat conditions and a 'Natural Environment Report' to identify baseline wetland and terrestrial environment conditions. The study was designed to identify potential impacts from existing landfill operations and to predict future impacts from proposed landfill site expansion.

Forest City Industrial Lands, Wetland Evaluation & Environmental Assessment*, London, Ontario (Wetlands Ecologist)

Evaluated a locally significant wetland according to the Ontario Wetland Evaluation System and revised the existing boundaries of a provincially significant wetland in cooperation with MNR.

West Nile Virus Information Package, Ballantrae, Ontario (Environmental Scientist)

Designed a pamphlet to educate residents and golfers regarding West Nile virus, the status of the virus in York Region, and the client's proactive mosquito monitoring program.

Confidential Client, Environmental Baseline and Feasibility Study for a Decommissioned Gold Mine*, Northern, Ontario (Environmental Scientist)

Conducted aquatic and terrestrial habitat inventories to determine the environmental feasibility of re-opening a gold mine. Assessed streams, wetlands and woodlots. Conducted invertebrate and fish collections, avifauna and wildlife surveys, and vegetation community inventories.

Transportation Planning

MTO Aquatic and Terrestrial Biology Retainer Services, Southwestern Ontario (Project Manager / Fisheries Specialist)

Under the terms of two 2-year Retainer Agreements (2004-2006, 2007-2009) eleven individual assignments were completed, involving: characterizing existing ecological conditions, assessing site sensitivities and impacts related to proposed bridge/culvert repairs and highway improvements, recommending environmental mitigation measures, and conducting during/post-construction monitoring. Value added components included: fluvial geomorphological services, design and implementation of bio-engineered slope stabilization solutions, Permit to Take Water applications, and site rehabilitation and Planting Plans. Extensive agency liaison was required with staff from numerous Conservation Authority, MNR and DFO offices.

Municipal Road Improvement Projects, Various Sites, Ontario (Environmental Scientist)

Collected aquatic and terrestrial habitat field data, conducted environmental impact assessments, and obtained required agency approvals related to municipal transportation projects, including:

- City of Hamilton, Bridge & Culvert Master Plan*
- City of London, Airport Road Widening*
- City of London, Bradley Avenue Extension
- City of London, Western Road Widening
- Town of Markham, Woodbine Avenue By-Pass*
- Township of Wilmot, Haysville Bridge Replacement*

Natural Sciences Reports Related to MTO Highway Improvement Works, Various Sites, Ontario (Fisheries Specialist)

Produced numerous Natural Sciences reports related to highway improvement works. Where required, Fisheries Act Authorization was obtained and Fish Habitat Compensation Plans were developed. Potential impacts to aquatic habitat, terrestrial vegetation, wetlands and wildlife were described for the following studies:

^{*} denotes projects completed with other firms

Aquatic Ecologist / Project Manager

- Highway 6 (Flamborough)*
- Highway 6 (Guelph)
- Highway 6 By-Pass (Caledonia)*
- Highway 7 (Marmora)*
- Highway 7 (Peterborough)*
- Highway 7A/28/115 (Peterborough)*
- Highway 8 (Dublin)*
- Highways 11/17 (North Bay)
- Highways 11/17 (Thunder Bay)
- Highways 11/101 (Matheson)
- Highway 17 (Stonecliffe)*
- Highway 17/Municipal Road 55 (Sudbury)
- Highway 17 Southwest By-Pass (Sudbury)
- Highways 17/531 (North Bay)*
- Highway 21 (Bluewater)
- Highway 21 (Grand Bend)
- Highway 23 (Palmerston)
- Highway 24 Interchange Improvements (Cambridge)
- Highway 26 (Meaford)
- Highway 26 (Owen Sound)
- Highway 63 (Bancroft)*
- Highway 63 (North Bay)*
- Highway 401/403 (Woodstock)
- Highway 401/County Road 41 (Napanee)*
- Highway 518 (Orrville)*

West Nile Virus Surveillance Program, Various Sites, Central Ontario (Aquatic Ecologist)

Evaluating the potential for MTO owned/managed properties (e.g. stormwater ponds) to be mosquito breeding habitats, and recommended suitable strategies to curtail mosquito breeding success.

Bridge Widening, CN Rail Mile 119.6*, Kingston, Ontario (Aquatic Ecologist)

Procured federal Fisheries Act Authorization related to a rail line widening project over a warmwater creek. Conducted a post-construction monitoring program to confirm the viability of the habitat compensation measures.

Environmental Data Collection, CN Rail Corridor*, Toronto to Hornepayne, Ontario (Environmental Scientist)

Identified, collected and assessed secondary source natural heritage data for a study area that followed the CNR corridor from Toronto to Hornepayne. The data were then transferred to a GIS database, to be used during emergency planning.

Water Resources Management

Minnow Lake Restoration*, Sudbury, Ontario (Aquatic Ecologist)

Coordinated a lake-wide monitoring program to evaluate the degree of water pollution resulting from stormwater discharge to an urban lake. Participated in frequent public consultation to liaise with residents of the Minnow Lake Restoration Group.

Fort Creek Restoration*, Sault Ste. Marie, Ontario (Aquatic Ecologist)

In consultation with DFO, completed a restoration plan for an urban creek that outlets to Lake Huron and provides salmon spawning habitat. Habitat enhancement involved the removal of in-stream debris, channel stabilization, riparian plantings, substrate enhancement, and creation of refuge areas. Fisheries Act Authorization was obtained, and environmental monitoring during construction was conducted.

Environmental Effects Monitoring Programs for Mining Sector Clients, Various Sites, Canada (Benthic Ecologist)

Contributed benthic ecology chapter to numerous EEM reports for Canadian metal mines. Analyzed and reported on invertebrate data to determine whether the respective mine effluent was resonsible for an aquatic community level effect. EEM experience includes:

- Hudson Bay Mining & Smelting Co. Ltd., Chisel North Mine, Snow Lake, Manitoba
- Hudson Bay Mining & Smelting Co. Ltd., Snow Lake Mill / Anderson Tailings, Snow Lake, Manitoba
- Hudson Bay Mining & Smelting Co. Ltd., Flin Flon Tailings Impoundment System and Trout Lake Mine, Flin Flon, Manitoba
- Hudson Bay Mining & Smelting Co. Ltd., Ruttan Mine, Leaf Rapids, Manitoba
- Hudson Bay Mining & Smelting Co. Ltd., Konuto Lake Mine, Denare Beach, Saskatchewan
- SMC (Canada) Ltd., McAlpine Mill, Cobalt, Ontario

Environmental Effects Monitoring Programs for Pulp and Paper Sector Clients, Various Sites, Canada (Benthic Ecologist)

Contributed the benthic ecology chapter to numerous EEM reports for Canadian pulp and paper mills. Statistically analyzed and reported on invertebrate data, according to Environment Canada biological monitoring protocols, to determine whether the respective mill effluent was responsible for an aquatic community level effect. EEM project experience includes:

- Cascades Fine Papers Group Thunder Bay Inc., Lake Superior, Thunder Bay, Ontario

^{*} denotes projects completed with other firms

Kathleen R. O. Todd M.Sc.

Aquatic Ecologist / Project Manager

- Georgia-Pacific Canada Inc., Lake Gibson, Thorold, Ontario
- Kimberly-Clark Incorporated, Lake Superior, Terrace Bay, Ontario
- Marathon Pulp Inc., Lake Superior, Marathon, Ontario
- Nexfor Fraser Papers, Saint John River, Edmunston, New Brunswick
- Norampac Inc., Lake Superior, Red Rock, Ontario
- Spruce Falls Inc., Kapuskasing River, Kapuskasing, Ontario
- Stora Enso Port Hawkesbury Limited, Strait of Canso, Port Hawkesbury, Nova Scotia
- Tembec Industries Inc., Mattagami River, Smooth Rock Falls, Ontario

Watershed Based Biomonitoring Program for Urban Development, Oakville, Ontario (Benthic Ecologist)

Sampled and analyzed the Fourteen Mile Creek invertebrate community to establish baseline conditions, prior to the development of a housing subdivision. Six subsequent years of during-construction monitoring were conducted.

North and South Meade Creeks Subwatershed Plan*, Peterborough, Ontario (Aquatic Ecologist)

Conducted fish collections and population analyses, invertebrate sampling and identification, and collected and analyzed water chemistry samples. The information was used to predict the ecological sensitivity of Meade Creek and to provide recommendations regarding the extent and type of future development permitted in the watershed.

Pike River Aquatic Impact Assessment*, Field, Ontario (Benthic Ecologist)

Sampled fish, invertebrates and benthic sediments within the vicinity of a chlorinated discharge zone to determine the extent of chlorine related effects to the aquatic environment.

Biological Impact Assessment of a Closed Landfill on the Maitland River, Wingham, Ontario (Benthic Ecologist)

Analyzed Maitland River invertebrate community data within the vicinity of a closed landfill to determine the potential impact of landfill leachate.

Receiver Biomonitoring Program, Elmira, Ontario (Benthic Ecologist)

Analyzed invertebrate community data to determine the viability of an industrial contaminated groundwater collection and treatment system which discharges treated water to Canagagique Creek.

Shekak River Post Impoundment Environmental Monitoring for the Shekak-Nagagami Hydroelectric Development, Hearst, Ontario (Aquatic Ecologist)

Addressed agency concerns regarding environmental monitoring in the headpond area of a river impoundment. Evaluated shoreline erosion and the viability of fish habitat compensation measures, including a walleye spawning shoal and aquatic invertebrate enhancement works.

Environmental Effects Monitoring Program for the Antamina Mine & Port Facility, Peru (Benthic Ecologist)

Analyzed biological (metal concentrations in fish and shellfish tissues, fish health, benthic invertebrate community structure) and physical (water and sediment chemistry) data collected in the vicinity of both an inland mine (freshwater environment) and a coastal mining port facility (marine environment) to determine if the local ecosystems were being adversely affected by mining/shipping operations.

Benthic Invertebrate Monitoring Program*, Caledonia, Ontario (Benthic Ecologist)

Assessed the Fox Creek invertebrate community to determine if the stream habitat was being adversely affected by adjacent mining effluent discharge.

^{*} denotes projects completed with other firms

Kathleen R. O. Todd M.Sc.

Aquatic Ecologist / Project Manager

PUBLICATIONS

Todd, K.R.O., M.G. Fox and D.C. Lasenby. Presented at the 52nd Annual Meeting of the North American Benthological Society. Seasonal influence of riparian vegetation on stream macroinvertebrate community structure. North American Benthological Society, Vancouver, B.C. (June 6-10), 2004.

Todd, K.R.O. The Influence of Deciduous and Coniferous Riparian Vegetation on Aquatic Macroinvertebrate Community Structure in Low Order Streams of South Central Ontario. M.Sc. Thesis, Trent University, 2003.

Fisheries Biologist / Project Manager



Mark has 14 years of experience designing, coordinating, and implementing small and large scale aquatic habitat and impact assessments, encompassing numerous habitat types including lakes, ponds, large rivers, warmwater and coldwater streams. Mark has also developed and implemented many monitoring, mitigation, compensation and inventory processes. Past employment with Fisheries and Oceans Canada (DFO), and both the Grand River and St. Clair Region Conservation Authorities contributes to Mark's extensive working experience with regulatory and approvals processes related to the Fisheries Act, the Conservation Authorities Act and the Drainage Act. Mark's familiarity with Fisheries Act mitigation and compensation includes an understanding of the Habitat Alteration Assessment Tool (HAAT). He has extensive experience involving permitting and issues resolution related to the federal Species at Risk Act and the provincial Endangered Species Act. His experience also includes several transportation-related Environmental Assessments.

EDUCATION

Honours B.Sc. (Agriculture), University of Guelph / Natural Resources Management, Guelph, Ontario, 2000

Royal Ontario Museum / Freshwater Fish Identification Course, Toronto, Ontario, 2011

Class 1 Electrofishing Certificate / Ministry of Natural Resources, Waterloo, Ontario, 2010

Ontario Freshwater Mussel Identification Workshop / Fisheries and Oceans Canada - Canada Centre for Inland Waters, Burlington, Ontario, 2007

Fisheries Assessment Specialist and Fisheries Contracts Specialist, MTO/DFO/OMNR Fisheries Protocol Course, Downsview, Ontario, 2006

PROJECT EXPERIENCE

Environmental Assessments

Locks 24 and 25 – VLH Turbine Installation, Canadian Projects Limited, Lakefield, Ontario (Aquatic Biologist) Conducted aquatic assessments including walleye and bass spawning and habitat surveys in support of an Environmental Assessment (EA) for the installation of Very Low Head (VLH) turbines at Dams 24 and 25 on the Otonabee River. As part of the EA, will provide an analysis of impacts to walleye and bass spawning habitat and habitat use by small-bodied fish. The impact assessment will also be used as during the assessment of the project using the Fisheries & Oceans Canada (DFO) Risk Management Framework.

Pier 27 Dockwall and Dredging, Hamilton Port Authority, Hamilton, Ontario (Aquatic Biologist)

Coordinated and conducted aquatic assessments in support of the installation of a new dockwall and dredging to facilitate shipping traffic. Coordinated with DFO regarding need for Fisheries Act approval.

Pier 22 Environmental Assessment, Hamilton Port Authority, Hamilton, Ontario (Aquatic Biologist)

Coordinated and conducted aquatic assessments in support of site improvements. Negotiated compensation measures and drafted letter of intent in pursuit of Fisheries Act Authorization.

Bruce to Milton Transmission Line, Various, Ontario (Fisheries Biologist)

Planned, coordinated and assisted with execution of large-scale fisheries field program to assess potential impacts of proposed hydroelectric corridor reinforcement project and provided relevant input to the provincial environmental assessment process as well as the Fisheries Act and Conservation Authorities Act permitting processes. Managed data entry, analysis and completed reporting of aquatic resources sections. Coordination of multi-disciplinary team and regulatory agencies for acquisition of appropriate permits and approvals.

Yellow Falls Hydroelectric Project, Smooth Rock Falls, Ontario (Aquatic Biologist)

Planned, coordinated and assisted with execution of fisheries field program to assess potential impacts of proposed hydroelectric dam project. Facilitated acquisition of permits and approvals from relevant agencies. Assisted with fish, benthos, habitat, water and sediment sampling. Authored significant portions of the technical appendix related to aquatic study results.

Fisheries Biologist / Project Manager

Environmental Impact Assessments

Georgia Pacific Thorold Cycle 4 EEM, Thorold, Ontario (Aquatic Ecologist)

Assisted in field sampling of fish, benthos, water and sediment for federally regulated pulp and paper environmental effects monitoring.

Spruce Falls Cycle 4 EEM, Kapuskasing, Ontario (Aquatic Ecologist)

Assisted in field sampling of fish, benthos, water and sediment for federally regulated pulp and paper environmental effects monitoring.

Smooth Rock Falls Cycle 4 EEM, Smooth Rock Falls, Ontario (Aquatic Ecologist)

Assisted in field sampling of fish, benthos, water and sediment for federally regulated pulp and paper environmental effects monitoring.

Highway and Transportation

King Street and Fountain Street Improvements Class Environmental Assessment Study, Cambridge, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. Data collected during field investigations was used to assess potential impacts of preferred option. Drafted text for relevant sections of Class EA document.

Franklin Boulevard Widening Class Environmental Assessment Study, Cambridge, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. Data collected during field investigations was used to assess potential impacts of preferred option. Drafted text for relevant sections of Class EA document.

Highway 69 - Patrol Yards between Parry Sound and Sudbury, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourses within the project study area. Data collected during field investigations was used to assess potential impacts of proposed maintenance patrol yards located adjacent to Highway 69. Drafted text for inclusion in Fisheries and Aquatic Ecosystems Report. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006).

Highway 11 - High Falls Road Access Improvements Class Environmental Assessment, Bracebridge, Ontario (Fisheries Biologist)

Planned and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006).

Highway 11 - Intersection Improvements, Powassan, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. Data collected during field investigations was used to assess potential impacts of preferred option, including potential impacts to Brook Trout. Drafted text for inclusion in Fisheries and Aquatic Ecosystems Report. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006).

Highway 3 - Rehabilitation between Jarvis and Renton, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess aquatic habitat at watercourse crossings within the project study area. Data collected during field investigations was used to assess potential impacts of preferred option, including potential impacts to Brook Trout. Drafted Fisheries and Aquatic Ecosystems Report. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006), and included preparation and submission of "no HADD forms" to satisfy Fisheries Act requirements.

Highway 69 - Key River Bridge Replacement, Britt, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess aquatic habitat in Key River at proposed location of bridge replacement. Data collected during field investigations was used to assess potential impacts of bridge replacement activities. Drafted Fisheries and Aquatic Ecosystems Report. All work was conducted in accordance with the MTO/DFO/MNR Protocol (2006), and included preparation and submission of "no HADD forms" to satisfy Fisheries Act requirements.

Replacement of Coutts Line Bridge over Baptiste Creek, Tilbury, Ontario (Fisheries Biologist)

Facilitated acquisition of provincial Endangered Species Act (ESA) approval (letter of advice) through provision of advice regarding construction techniques. Planned, coordinated and conducted field investigations to assess freshwater mussel community and habitat at bridge site.

^{*} denotes projects completed with other firms

Fisheries Biologist / Project Manager

Replacement of Dawn Mills Bridge over Sydenham River Creek, Dresden, Ontario (Fisheries Biologist)

Dawn Mills Bridge is located over a reach of the Sydenham River known to contain one of the largest number of taxa of federally regulated Species at Risk fish and mussels in Canada. Facilitated acquisition of federal approvals (Fisheries Act and Species at Risk Act, letter of advice) through provision of advice regarding construction techniques. Planned, coordinated and conducted field investigations to assess freshwater mussel habitat at bridge site.

Chinguacousy Road Widening, Brampton, Ontario (Fisheries Biologist)

Conducted fish community assessment to determine presence of Redside Dace (a provincially Endangered species). Drafted applications for Fisheries Act Authorization, Conservation Authorities Act approval, and Endangered Species Act approval. Provided input to engineering design for compensation measures related to Redside Dace habitat.

Detroit Windsor Truck Ferry Improvements (Design) (GWP 3071-06-00), Windsor, Ontario (Fisheries Biologist)

Provided aquatic community and habitat assessment services as well

as input regarding project design, construction staging and silt and sediment control planning. Acquired approvals under Fisheries Act and Conservation Authorities Act related to fish habitat. Negotiated compensation measures with Conservation Authority prior to project design change, resulting in no HADD.

Highway 24 - Intersection Improvements, Cambridge, Ontario (Fisheries Biologist)

Provided fish rescue services. Performed environmental inspection duties related to implementation of the Fisheries Act compensation plan and resolution of onsite issues related to construction.

Detroit Windsor Truck Ferry Improvements (Contract Administration) (WP 3071-06-00), Windsor, Ontario (Fisheries Biologist)

Construction monitoring services related to Fisheries Act implications (fish removals, species at risk identification training for contract staff, staging and implementation design review), provision of advice regarding alternative staging/construction operations to prevent impacts to aquatic habitat/organisms.

Fanshawe Park Road Widening, London, Ontario (Fisheries Biologist)

Facilitated acquisition of approvals from DFO for the realignment of Heard Drain/Snake creek during the expansion of Fanshawe Park Road. Performed construction inspection services, resolved onsite implementation issues related to the Fisheries Act.

Natural Resource Services

Municipal Drain Classification Program*, Various, Ontario (Drain Assessment Technician)

Planned and implemented large scale sampling protocol designed by DFO to assess the sensitivity of various municipal drains to disturbance. Sampling program encompassed all drains within the Grand River watershed and consisted of habitat, thermal and fish community characterization based on extensive field sampling. Analyzed substantial quantities of field data, summarized results and produced interim and final reports.

Fish Habitat Study*, Strathroy, Ontario (Biological Technician)

Planned and implemented field program to sample fish community in reservoirs managed by the St. Clair Region Conservation Authority. Responsible for writing final report concerning existing fish habitat status and providing recommendations based on field data. Participated in water quality and benthic community field sampling programs.

Various Environmental Assessments*, Sarnia, Ontario (Fish Habitat Biologist)

Assessed project proposals for impacts to fish habitat as defined in the Fisheries Act. Issued Letters of Advice and Authorization under the Fisheries Act. Carried out screening level environmental assessments of proposed projects under the Canadian Environmental Assessment Act. Participated in outreach programs and inter-agency work groups regarding Species at Risk recovery. Acquired familiarity with the Habitat Alteration Assessment Tool (HAAT).

Renewable Energy

St. Columban Wind Project, Huron County, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of fifteen turbines. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09.

^{*} denotes projects completed with other firms

Fisheries Biologist / Project Manager

Plateau Wind Project, Grey County, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to update previous field work to assess potential aquatic impacts resulting from proposed wind project consisting of eighteen turbines. Drafted relevant sections of the Environmental Screening Report (ESR) as mandated under Ontario Reg. 116/01. Provided advice concerning provincial species at risk concerns.

Grand Renewable Energy Park, Haldimand County, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess potential aquatic impacts resulting from proposed wind and solar project consisting of sixty-seven turbines and 425,000 solar panels. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09.

Springwood Wind Project, Belwood, Ontario (Fisheries Biologist)

Conducted field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of and assisted with draft Water Assessment and Water Body Report under Ontario Reg. 359/09.

Whittington Wind Project, Dufferin County, Ontario (Fisheries Biologist)

Planned and coordinated field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of three turbines. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09.

Fairview Wind Project, Stayner, Ontario (Fisheries Biologist)

Planned and coordinated field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of eight turbines. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09.

White Pines Wind Project, Prince Edward County, Ontario (Fisheries Biologist)

Planned, coordinated and conducted field investigations to assess potential aquatic impacts resulting from proposed wind project consisting of twenty-nine turbines. Drafted Water Assessment and Water Body Report as mandated under Ontario Reg. 359/09 (in progress).

Urban Land

Berczy Dam Removal, Markham, Ontario (Fisheries Biologist)

Provided fish rescue services, including resolution of issues related to Species at Risk.

Medway Sanitary Trunk Sewer Extension, London, Ontario (Fisheries Biologist)

Drafted Fisheries Act application and Endangered Species Act application for pipeline crossing of Medway Creek.

Coordinated and completed aquatic habitat assessment and relocation of freshwater mussels. Negotiated compensation measures prior to project design change, resulting in no HADD.

Fox Hollow Subdivision, London, Ontario (Fisheries Biologist)

Facilitated acquisition of approvals from DFO for the realignment of the Heard Drain/Snake Creek and the installation of a stormwater management pond in relation to construction of the Fox Hollow Subdivision. Performed construction inspection services, resolved onsite implementation issues related to the Fisheries Act.

^{*} denotes projects completed with other firms



Katie Easterling is an Aquatic Ecologist with Stantec's Environmental Services group in Kitchener. She has approximately 6 years of field experience in both the aquatic and terrestrial disciplines. Previous fieldwork includes: fish habitat assessments, fish community sampling, fish salvages, REA water body assessments, trout spawning surveys, walleye spawning surveys and baseline aquatic surveys for various pipeline, rail line, transportation, renewable energy and municipal projects. Furthermore, she has experience conducting preliminary or baseline terrestrial habitat assessments, Species at Risk surveys, and breeding bird surveys. Reporting skills include: aquatic existing conditions reports, REA water assessment and water body reports, terrestrial existing conditions reports, Environmental Screening/Review Reports, Natural Heritage Evaluations (NHE) and Environmental Impact Statements (EIS). Additionally, Katie has consulted with First Nations, municipal, provincial and federal government agencies as part of fieldwork or reporting activities.

Katie is proficient in a variety of fish sampling techniques, including: Fall Walleye Index Netting (FWIN), Near Shore Community Index Netting (NSCIN), fyke netting, seine netting, gill netting and boat and backpack electrofishing. She has experience PIT tagging, anesthetizing fish, weighing, measuring, sexing, determining gonadal condition, removing aging structures (otoliths and scales) and aging fish. She also holds a certificate in radio telemetry and is certified in Ecological Land Classification (ELC). Her educational background focused on terrestrial, wildlife and aquatic biology, and includes a degree in Zoology and a Fish and Wildlife diploma. Prior to joining Stantec, Katie worked as an Ecological Research Assistant with Parks Canada, a Conservation Interpreter with the Long Point Region Conservation Authority and has previous consulting experience working as a Research Assistant for The Impact Group and a Biologist for URS. She also spent a summer work term at the OPG Nanticoke Plant working as an Assistant Mechanical Maintainer.

EDUCATION

Diploma – Fish and Wildlife Technician, Fleming College, Lindsay, Ontario, 2007

Hon.B.Sc– Major Zoology, Minor Biology, University of Toronto, Toronto, Ontario, 2003

PROFESSIONAL ASSOCIATIONS

Canadian Environmental Certifications and Approvals Board – Environmental Professional-in-Training (EPt) 2009-present

MEMBERSHIPS/ASSOCIATIONS

American Fisheries Society, Ontario Chapter Member, 2007 – present

American Fisheries Society, Ontario Chapter Executive Committee – Treasurer, 2011 - present

SPECIALIZED TRAINING

MTO/DFO/OMNR Fisheries Protocol Training Session for Fisheries Specialists, 2011

ROM Fish Identification Course, 2011

MNR Renewable Energy Natural Heritage Assessment Training, 2011

MNR Bat Monitoring Workshop for Wind Power Projects, 2010

Certified Traffic Control Technician, 2010

Class Two (II) Electrofishing Crew Leader Certification Course, 2006 and 2009

Contractor Orientation Course, CN Rail, 2009

Bat Acoustic Analysis Course, 2008



Ecological Land Classification, 2006

Wetland Classification, 2006

PROJECT EXPERIENCE

Ministry of Transportation (MTO)

Aquatic

Detail Design, Highway 35, WP 102-99-01 Trent Canal Bridge Rehabilitation, Site 32-065 (Rosedale), MTO Eastern Region (2011 & 2012) (Role: Aquatic Ecologist)

Prepared the Aquatic Existing Conditions Report as part of the Detailed Design process for the Highway 35 site at the Trent Severn Waterway.

Detail Design, Highway 35, WP 4166-09-01 Corben Creek Structural Culvert Replacement, Site 32-165C, WP 4165-09-01 Martin Creek Structural Culvert Rehabilitation, Site 32-063BC and WP 4075-09-01 South McLaren Creek Structural Culvert Rehabilitation, Site 32-072BC, MTO Eastern Region (2011 & 2012) (Role: Aquatic Ecologist)

Conducted fish habitat and fish community assessments at 3 locations in the area surrounding Hwy 35 outside Lindsay, Ontario. This involved using a backpack electrofisher or minnow traps (where applicable) to determine fish species and habitat present in order to assess the community structure and supplement watercourse sensitivity information provided by the MNR. Reporting tasks included the Aquatic Existing Conditions Report

Detail Design, Highway 7, WP 4007-08-01/02 Mariposa Creek Structural Culvert Rehabilitation, Site 32-124BC and Mariposa Brook Structural Culvert Replacement, Site 32-161C, MTO Eastern Region (2011 & 2012) (Role: Aquatic Ecologist)

Conducted fish habitat and fish community assessments at 2 locations in the area surrounding Hwy 7 outside Lindsay Ontario. This involved using a backpack electrofisher or minnow traps (where applicable) to determine fish species and habitat present in order to assess the community structure and supplement watercourse sensitivity information provided by the MNR. Reporting tasks included the Aquatic Existing Conditions Report

Radio Telemetry Certificate, 2006

Pleasure Craft Operators Course, 2006

Route Planning – Highway 144 Bypass around Chelmsford (GWP 5023-03-00), MTO Northeast Region (2011) (Role: Aquatic Ecologist)

Conducted fish habitat and fish community assessments at 63 locations in the area surrounding Hwy 144 near Chelmsford, Ontario. This involved using a backpack electrofisher or minnow traps (where applicable) to determine fish species and habitat present in order to assess the community structure and supplement watercourse sensitivity information provided by the MNR. Reporting tasks included the Aquatic Existing Conditions Report

Route Planning – Hwy 17 Sudbury to Markstay (GWP 5031-09-00), MTO Northeast Region (2011) (Role: Aquatic Ecologist)

Prepared the Aquatic Existing Conditions Report as part of the preliminary route planning study for Highway 17 between Sudbury and Markstay.

Highway 3, 6 and 24 Fish Community and Fish Habitat Assessment for Detailed Design (GWP 3115-09-00, GWP 3048-03-00 and GWP 362-98-00), MTO Southwest Region (2011) (Role: Aquatic Ecologist)

Conducted a detailed spring, summer and fall fish community and fish habitat assessment of 20 watercourse crossings for the rehabilitation/resurfacing of Highways 3, 6 and 24 surrounding the communities of Simcoe, Delhi and Port Dover. Reporting tasks included the Aquatic Existing Conditions Report and Impact Assessment Report for each highway.

Hwy 6 Fish Salvage, MTO Southwest Region (2009) (Role: Project Biologist)

Conducted a fish salvage as part of an MTO highway widening project located along Hwy 6 near Varney, ON. Fish collected were identified, measured and released downstream of the inwater work area.



Terrestrial

Route Planning – Hwy 144 Bypass around Chelmsford (GWP 5023-03-00), MTO Northeast Region (2011) (Role: Project Biologist)

Classified the vegetation communities within the Study Area based on FEC and ELC guidelines in addition to identifying potential SAR habitat for a proposed bypass route around Chelmsford.

Highway 401 Interchanges GWP 3070-09-00, MTO Southwest Region (2011) (Role: Project Biologist)

Prepared the terrestrial existing conditions report as part of the detail design stage for three Highway 401 interchanges between Woodstock and London.

Windsor-Essex Parkway Owner's Engineer, MTO Southwest Region (2010-2011) (Role: Project Biologist).*

Project Biologist for the acquisition of a Design, Build, Finance and Maintain consortia for the Windsor-Essex Parkway (WEP) which extends Highway 401 through Windsor below grade and includes an at-grade Highway 3. Conducted and reported on the Ecological Land Classification (ELC) and habitat availability for plant Species at Risk within the Windsor-Essex Parkway footprint as a requirement of ESA 17(2) B, ESA 17(2) C and ESA 17(2) D permits. Assisted with the preparation of Management, Monitoring and Habitat Restoration Plans for multiple Species at Risk, as required in the ESA 17 D permit. Co-ordinated and participated in one of the largest transplantation efforts for plant Species at Risk, which involved locating and identifying various plant Species at Risk within the Windsor-Essex Parkway footprint and transplanting to a region outside the area of impact.

Hwy 11 Madill-Church Road Interchange, MTO Northeast Region (2011) (Role: Project Biologist).*

Compiled and reported on the effectiveness of various wildlife detection/avoidance systems as part of a value added study for MTO.

Renewable Energy Aquatic

Niagara Region Wind Corporation (2012) (Role: Aquatic Ecologist)

Conducted the REA water assessment at multiple locations across the project area.

Hydroelectric Facilities - Lock 24 and 25 Dams on the Trent-Severn Waterway, Coastal HydroPower (2012) (Role: Aquatic Ecologist)

Conducted 4 Walleye spawning surveys at Lock 24 and 25 to determine if suitable habitat is present at the locks and the number of staging/spawning Walleye within the project footprint.

Cedar Point REA Water Body Assessment, Suncor Energy Products Inc. (2011) (Role: Aquatic Ecologist)

Conducted the REA water body assessment for a renewable energy project, which involved fish habitat assessments at 99 locations across the Study Area.

Adelaide REA Water Body Assessment, Suncor Energy Products Inc. (2011) (Role: Aquatic Ecologist)

Conducted the REA water assessment and prepared the water body report for a renewable energy project, which involved fish habitat assessments at 41 locations across the Study Area.

Napier Wind Project REA Water Body Assessment, wpd Canada Corporation (2011) (Role: Aquatic Ecologist)

Conducted the REA water assessment and prepared the water body report for a renewable energy project, which involved fish habitat assessments at 3 locations across the Study Area.

Amherst Island REA Water Body Assessment, Windlectric Inc. (2011) (Role: Aquatic Ecologist)

Conducted the REA water assessment and prepared the water body report for a renewable energy project on Amherst Island, which involved fish community and a preliminary fish habitat assessment at 39 locations across the Island.



Fish Habitat Assessment, SkyPower (2009) (Role: Project Biologist)

As part of a wind farm Environmental Assessment under O.Reg. 116, a fish habitat assessment was conducted to determine the baseline conditions and watercourse sensitivity according to the DFO matrix at each of the proposed watercourse crossings.

Terrestrial

Pre-Construction Bat Monitoring Surveys, Clients included Suncor Energy Products Inc., Acciona, RES Canada and SkyPower (2007-2009) (Role: Project Biologist)

Under O.Reg. 116 AnaBat detectors were installed on MET towers and design/constructed/installed multiple ground AnaBat detector units at various wind farms in Southern Ontario. Monitored pre-construction bat activity and identified species using spectrogram analysis to report on the activity level surrounding the proposed wind farms.

Post-Construction Bird and Bat Mortality Monitoring, Suncor (2008) and Enbridge (2009 and 2010) (Role: Project Biologist)

Conducted post-construction bird and bat mortality monitoring, scavenger impact trials and searcher efficiency trials at the Ripley and Enbridge Ontario Wind Farms near Kincardine, Ontario as a requirement under O.Reg. 116.

Winter Bird Surveys, Suncor Energy Products Inc. (2009) (Role: Project Biologist)

As a requirement of O.Reg.116, avian monitoring surveys were conducted to characterize the bird community of two sites in Southern Ontario during the over-wintering period.

Oil and Gas Pipeline

Aquatic

Detailed Fish Habitat Assessment and Reporting, Nova Chemicals (2011) (Role: Aquatic Ecologist)

Fish habitat was assessed at 9 proposed crossings for a pipeline route and existing conditions were summarized as part of an EA.

Detailed Fish Habitat Assessment and Reporting, TransCanada Pipeline Ltd (2009 & 2011) (Role: Project Biologist)

As part of a pipeline expansion project, a detailed fish habitat survey was conducted following MTO protocols at 10 watercourse crossings. Methodology included detailed habitat mapping 50 m upstream and 100 m downstream. Fish habitat conditions were summarized and watercourse sensitivity determined according to the DFO matrix in the Fish and Fish Habitat Assessment Report as part of a CEAA Environmental Assessment.

Baseline Aquatic Survey, Enbridge Gas Distribution Inc. (2009) (Role: Project Biologist)

As part of the Pipeline to Serve York Energy Centre LP Environmental Assessment, aquatic baseline conditions at all watercourse crossings were summarized as part of the preliminary assessment of reasonable routing opportunities for the proposed pipeline.

Fish Salvage and Construction Monitoring, Enbridge Pipelines (2008 and 2009) (Role: Project Biologist)

In-water construction work was monitored and fish salvages were conducted at various watercourses across Ontario as part of a pipeline maintenance or repair project. The fish collected were identified, measured and released downstream of the inwater work area.

Baseline Aquatic Habitat Survey, TransCanada Pipeline Ltd (2009) (Role: Project Biologist)

As part of an Environmental Assessment for the proposed Thorold Sales Meter Station to connect the TransCanada Mainline to the Enbridge Gas Distribution pipeline, baseline aquatic conditions were assessed as part of the report.

Terrestrial

Ecological Land Classification, TransCanada Pipelines Ltd (2011) (Role: Biologist)

Ecological Land Classification (ELC) surveys were conducted along the proposed pipeline expansion route, which documented the vegetation communities present.



Species at Risk Survey, TransCanada Pipelines Ltd (2009) (Role: Project Biologist)

Species at Risk surveys were conducted at four work areas along a pipeline right-of-way between Belleville and Brockville, Ontario. Surveys included looking for and assessing possible habitat conditions for Butternut, Henslow's Sparrow, Grey Fox, Blanding's Turtle, Eastern Milksnake and Eastern Ratsnake.

Herptile Rescue, Enbridge Pipeline Inc. (2009) (Role: Project Biologist)

As part of a large pipeline maintenance project situated within a beaver pond located near the Ganaoque River, a herptile rescue was performed to remove any snakes, turtles and frogs from the trench-box once in-filling was started. All species found within or immediately adjacent to the trench-box were removed and relocated within the beaver pond but outside of the work zone.

Terrestrial Assessment, Enbridge Pipelines Inc. (2008) (Role: Project Biologist)

Preliminary aquatic and terrestrial assessments of various dig sites along a pipeline in Southern Ontario were conducted to establish the existing baseline conditions. Surveys involved recording bird species observed, vegetation cover species found at the dig site and assessing any aquatic habitat found on-site.

Nesting Bird Surveys, TransCanada Summer (2007) (Role: Project Biologist)

Nesting bird surveys were performed at various remote locations throughout Northern Ontario, which included finding and identifying any active and inactive nests within and surrounding the proposed work area along a pipeline right-ofway.

Railroad Aquatic

Fish Salvage and Construction Monitoring, Canadian National Railway (2010) (Role: Project Biologist)

As part of a railway expansion project, in-water construction work was monitored and multiple fish salvages were performed at various bridge and culvert construction locations.

Detailed Fish Community and Habitat Surveys and Reporting, Canadian National Railway (2009) (Role: Project Biologist)

As part of a railway expansion project, detailed fish community and habitat surveys were conducted following MTO protocols at over 20 watercourse crossings. Methodology included detailed habitat mapping 50 m upstream and 100 m downstream, electrofishing to determine fish community present in the stream and water chemistry sampling. Fish community and habitat conditions were summarized and watercourse sensitivity determined according to the DFO matrix in the Fish and Fish Habitat Assessment Report as part of a CEAA Environmental Screening.

Fish Habitat Surveys and Reporting, Canadian Pacific (CP) Railway (2009) (Role: Project Biologist)

As part of a CEAA Environmental Screening Report, a fish habitat and aquatic baseline survey was conducted along a proposed rail siding within a wetland. The assessment consisted of a visual assessment of water depth, aquatic vegetation, available cover, substrate and the presence of barriers to fish movement within the area of the proposed siding.

Terrestrial

Nesting Bird Surveys, Canadian National Railway (2010) (Role: Project Biologist)

Nesting bird surveys were performed along various stretches of CN's RoW to find and identify any active or inactive nests within the proposed work area.

Municipal

Aquatic

Arkell Well Field Adaptive Management Plan (AMP), City of Guleph (2011) (Role: Aquatic Ecologist)

As part of a yearly monitoring program, fish habitat was assessed using the OSAP protocol at four monitoring stations outside the city of Guelph.



Trout Spawning Surveys (2010) (Role: Project Biologist)

Conducted multiple trout spawning surveys along two coldwater creeks in the eastern region of the GTA for two municipal road expansion projects. Fieldwork involved surveying the creeks 50 m upstream and 100 m downstream to determine if Rainbow Trout were staging or spawning in the creek and within the vicinity of the bridge.

Aquatic Habitat Surveys, Town of Ajax (2009-2010) (Role: Project Biologist)

The Town of Ajax is committed to improving water quality along its Lake Ontario waterfront and in Duffins Creek and Duffins Marsh. As part of this, preliminary fieldwork was conducted to assess the existing conditions at each of the stormwater outfalls, including terrestrial and aquatic habitat. The assessment consisted of a visual assessment of water depth, aquatic and terrestrial vegetation, available cover, substrate and the presence of barriers to fish movement upstream or downstream.

Baseline Aquatic Survey, Regional Municipality of York (2009) (Role: Project Biologist)

As part of an Environmental Assessment for Cole Engineering Group Limited (Cole Engineering), a baseline terrestrial and aquatic survey was conducted for the Fairy Lake Garden Pond Maintenance Project in the Town of Newmarket. The assessment consisted of a visual assessment of water depth, aquatic vegetation, available cover, substrate and the presence of barriers to fish movement upstream or downstream of Garden Pond; which was used to assess Garden Pond's function as fish habitat both within the pond and the pond's function within the Fairy Lake/East Holland River watershed.

Fish Sampling, Durham-York Region (2008) (Role: Project Biologist)

Various stations along Tooley Creek in Durham Region were electrofished to obtain composite samples of whole fish that were identified, weighed, measured and bagged for a metals analysis as part of a human health risk report for the proposed Durham-York Residual Waste Study.

Terrestrial

Habitat Assessment, Durham-York Region July (2007) (Role: Project Biologist)

Multiple sites around the regions were assessed for wildlife usage, fisheries and ideal browse, nesting and cover habitat Recommendations for a preferred site were given based on a combination of these factors and how the potential loss of habitat through development would affect the local wildlife.

Other Experience

Aquatic

Phase 3 Environmental Effects Monitoring (EEM): Periodic Monitoring, Kirkland Lake, ON (2011) (Role: Aquatic Ecologist)

This EEM program began in 2010 (continuing through 2012) and involved the collection of water, sediment, fish and benthos to assess possible environmental effects caused by the mine and followed federal Metal Mining Effluent Regulation (MMER) guidelines. Fyke nets and a boat electrofisher were used to capture target small-bodied species. The fish were dissected, sexed, livers and gonads were weighed and eggs were collected.

Lake Gibson Angler Survey, Ontario Power Generation, Thorold, Ontario (2011) (Role: Aquatic Ecologist)

Lake Gibson is a hydro-electric reservoir owned and operated by Ontario Power Generation (OPG). As detailed in the OPG Risk Management Plan, OPG is required to monitor the persistence of sediment contamination and its expression in the environment within Lake Gibson. The program was designed to identify, quantify and compare the levels of contamination over time and the impact on sediments, water, benthic invertebrates, and fish in the system. Katie was involved as a field biologist interviewing anglers at Lake Gibson to assess the effectiveness of OPG's communication with the public regarding the contamination of Lake Gibson sediment and fishes.

Piles Development (Keswick) Corporation - DFO authorization PE 07-0957 (2011) (Role: Aquatic Ecologist)

An evaluation of fish habitat, fish passage and the fish community was conducted within the channel realignment to confirm the compensation measures and structures are



functioning as designed and are providing fish habitat. Fish community sampling was conducted using a backpack electrofisher.

Box Grove - DFO Authorization for Works Affecting Fish and Fish Habitat No. BU-04-3082 (2011) (Role: Aquatic Ecologist)

This survey was conducted to satisfy conditions included in the Department of Fisheries and Oceans (DFO) Authorization for Works Affecting Fish and Fish Habitat (DFO Authorization No. BU-04-3082). Condition 4.2 of the Authorization is to enhance fish passage through the creation of a low flow channel following the removal of a 30 m long culvert. The culvert removal and new channel construction were completed in spring 2010. This survey was conducted as part of the post construction monitoring program required by the DFO Authorization.

Benthic Invertebrate and Water Quality Sampling, Fox Meadows Estates (2009) (Role: Project Biologist)

Benthic invertebrate sampling was conducted following the OBBN protocol and water quality samples were collected and submitted for testing. Results from the sampling effort were summarized and compared to previous years in an effort to gage and mitigate potential impacts from a residential development expansion.

Fish Community Survey (2006) (Role: Fisheries Field Biologist)*

FWIN, NSCIN, gill netting and Seine netting techniques were used to perform a fish surveys on a lake and rivers in the Kawartha Lakes system. Processing of the sampled fish included weighing, measuring, sexing, determining gonadal condition, removing aging structures and aging.

Terrestrial

Preliminary Aquatic and Terrestrial Assessment, Canada Post (2008) (Role: Project Biologist)

Preliminary aquatic and terrestrial assessments of various sites in Southern Ontario were conducted to establish the existing baseline conditions. Surveys involved recording bird species observed, vegetation cover species found on the site and assessing potential impacts on nearby Valued Ecosystem Components (VECs) and any aquatic systems.

Category B Class EA, Ontario Realty Corporation (ORC) (2008) (Role: Project Biologist)

Conducted the background research and evaluation of existing natural heritage baseline conditions for multiple ORC properties situated across Ontario.

Preliminary Aquatic and Terrestrial Assessment, Canada Post (2008) (Role: Project Biologist).

Preliminary aquatic and terrestrial assessments of various sites in Southern Ontario were conducted to establish the existing baseline conditions. Surveys involved recording bird species observed, vegetation cover species found on the site and assessing potential impacts on nearby Valued Ecosystem Components (VECs) and aquatic systems.

Ecological Receptors of Concern Surveys, Various Clients. (2008) (Role: Project Biologist).

Conducted biological surveys of flora and fauna on potentially contaminated sites to assess the current site conditions.

Soil Sampling Survey, Brampton Brick (2007) (Role: Project Biologist)

Collected soil samples to assess the impact of emissions on the surrounding terrestrial environment as part of the phytotoxicology assessment of the Brampton Brick facility.

Forest and Wetland Classification, Parks Canada (2006) (Role: Ecological Research Assistant)*

Performed rapid assessments of 400 m forest plots and 100 m wetland plots to evaluate and classify sites along the Trent-Severn Waterway from Rice Lake to Canal Lake. Classification was based on biological features such as flora and fauna present and physiological features such as soil and drainage. Data collected was used to create a mapping inventory of the Trent-Severn system for Parks Canada and the Ministry of Natural Resources.

*Denotes experience with other firms

Joel L. Keene B.Sc., M.Sc. (Aqua)

Aquatic Ecologist / Benthic Taxonomist



Joel (Joe) Keene has 14 years of extensive marine and freshwater experience, including mark recapture studies and species inventory projects investigating fish population stability, species identification, measurement and marking of fish collected. He has processed over 11,000 samples from over 400 freshwater and marine projects, both in Canada and internationally. Joe has performed fecundity analysis on several fish species and marine mussels, and is experienced in the collection of soil, sediments, water, fish, crayfish, clam and benthic samples in the field using a variety of techniques and equipment. In addition, Joe is experienced with morphological and histological analysis, as well as detailed necropsies and dissection. He has been involved with a number of projects involving freshwater mussel species at risk (SAR) in Ontario and is familiar with both provincial and federal approvals processes for surveys and moves related to these organisms.

Joe's expertise includes compilation and statistical analysis of benthic data to derive various biological indices, including, but not limited to, Hilsenhoff Biodiversity Index, Percent Model Affinity, Simpson's Diversity and Evenness indices, EPT indices and BioMAP. He has researched and prepared scientific reports, studies, presentations and reviews relating to benthic studies and aquatic biology including Environmental Effects Monitoring (EEM) programs.

EDUCATION

M.Sc., University of Guelph / Aquaculture, Guelph, Ontario, 1997

B.Sc. (Specialized Honours), University of Guelph / Marine Biology, Guelph, Ontario, 1994

Certificate, Royal Ontario Museum / Fish Identification, Toronto, Ontario, 2001

Certification, Ontario Freshwater Mussel Identification Workshop, Guelph, Ontario, 2008

Class 2 Electrofishing Crew Leader, Class 2 Electrofishing Training Course, Guelph, Ontario, 2010

MEMBERSHIPS

Member, North American Benthological Society

PROJECT EXPERIENCE

Aquatic Ecology

Middle - Grand River WWTP Assimilative Capacity Study, Kitchener, Ontario (Aquatic Ecologist)

Joe assisted with the planning and implementation of a field program to map and quantitatively sample aquatic vegetation to provide estimates of macrophyte biomass, used in the GRCA's GRSM Model in support of the ACS for the Kitchener wastewater treatment plant. Joe was involved in completing routine surface water sampling on the Grand River as part of this project.

Proposed Burlington Quarry Expansion, Burlington, Ontario (Aquatic Ecologist)

Joe participated in the implementation and delivery of a multi year Natural Environment Existing Conditions program and report. The report was included as part of the application for the proposed Burlington Quarry expansion. The program involved the establishment of appropriate sampling stations for fish, benthos, water, thermal conditions and discharge.

Periodic Monitoring EEM Program, Kirkland Lake, Ontario (Benthic Taxonomist / Aquatic Ecologist)

Joe conducted the analysis, interpretation and reporting of benthic data produced for the Environmental Effects Monitoring (EEM) program in 2008 which was conducted to assess the impacts of mine effluent on the receiving waters at the KLG site. He was also involved in the interpretation and reporting of water quality, sediment and fisheries data.

Magnitude and Extent Environmental Effects Monitoring, Flin Flon and Snow Lake, Manitoba (Aquatic Ecologist / Field Crew / Benthic Taxonomist)

Joe was involved in the planning and benthic site selection for three Environmental Effects Monitoring (EEM) projects in the Flin Flon and Snow Lake areas of Manitoba for Hudson Bay Mining and Smelting. He collected benthic, sediment and water samples and processed, enumerated and identified organisms from the benthic samples. He performed the QA/QC and statistical analysis of the benthic data for each of the three EEM programs. Joe also assisted with the design and implementation of a tissue metal concentration study in amphipods (Hyalella) collected from several sites in the Flin Flon and Snow Lake areas.

Aquatic Ecologist / Benthic Taxonomist

Georgia-Pacific Cycle 5 Environmental Effects Monitoring - Investigation of Cause, Thorold, Ontario (Aquatic Ecologist/Field Crew Leader)

As part of an Environmental Effects Monitoring (EEM) program on Beaverdams Creek and Lake Gibson in Thorold, Ontario, Joe was involved in the planning, experimental design and site selection for a caged bivalve study to determine the effects of pulp and paper mill effluent on growth, survival and reproductive success in mussels (Lasmigona compressa). He collected water samples during the collection, deployment and retrieval of the mussels to test for a variety of parameters including metals, pH, conductivity, turbidity, nutrients and chlorophyll. He also conducted an effluent plume delineation survey within Lake Gibson.

Freshwater Mussel Detection and Relocation in Medway Creek and the Grand River, London, Ontario (Aquatic Ecologist)

Involved in the identification and relocation of freshwater mussel species at risk from Medway Creek in London, Ontario and the Grand River in Kitchener-Waterloo, Ontario.

Environmental Youth Corps, University of Guelph, Guelph, Ontario* (Aquatic Ecologist)

Conducted histological analyses of Sea lamprey (Petromyzon marinus) for use in fecundity and sex determination studies.

Mark Recapture and Species Inventory Project*, North Shore of Lake Ontario (Aquatic Ecologist)

Electrofished several rivers, investigating the effects of low head barrier dams on fish distribution. Performed species identification, measuring and marking of fish, and collection of stream physical data.

American eel (Anguilla rostrata) downstream migration and discrimination study for New York Power Authority*, New York (Aquatic Ecologist)

Performed eel collection using hoop nets and electrofishers, morphological analysis of external characteristics, and detailed necropsies including the collection of otoliths, blood, ovary and eel muscle tissues. He also conducted histological analysis of ovary tissue, focusing on oocyte developmental stage and diameters.

Mark Recapture Study and Species Inventory Project, Mill Creek, Guelph, Ontario* (Aquatic Ecologist)

Participated in project investigating fish population stability. Performed species identification, measuring, weighing and marking of fish collected using an electrofisher.

Benthic Services

Spencer Creek Invertebrate Study, Flamborough, Ontario (Benthic Taxonomist/Field Crew Leader)

Joe has coordinated the field program of benthic sampling in Spencer Creek near Flamborough, Ontario from 2006 to 2010 which monitors effects of a housing development on the benthic communities in the area. He has been responsible for the sorting and identification of benthic macroinvertebrates from the site and has performed the analysis of the resulting data. He was responsible for quality assurance/quality control analysis and the production of reports summarizing current conditions for each year, as well as an analysis of trends or changes over time

14 Mile Creek Invertebrate Study, Oakville, Ontario (Benthic Taxonomist/Field Crew Leader)

Joe has coordinated the field program of benthic sampling in 14 Mile Creek near Oakville, Ontario from 2006 to 2010 which monitors effects of a housing development on the benthic communities in the area. He has been responsible for the sorting and identification of benthic macroinvertebrates from the site and has performed the analysis of the resulting data. He was responsible for quality assurance/quality control analysis and the production of reports summarizing current conditions for each year, as well as an analysis of trends or changes over time

DFO Small Bodied Fish Gut Content Analysis, Ontario (Benthic Taxonomist)

Joe conducted gut content analysis on 736 small bodied fish for Fisheries and Oceans, Canada. The study involved weights and measures of fish and gut contents as well as detailed identification and enumeration of benthic macroinvertebrates from the stomach and intestinal tract of dissected fish. Data will be used to compare resident fish diets both before and after Round Goby introduction.

Acton Quarry Expansion, Acton, Ontario (Aquatic Biologist)

As an Aquatic Biologist, Joe participated in field studies for a multi-year Natural Environment Existing Conditions program and report. The report was included as a part of the application for the proposed Acton Quarry expansion. The program involved establishing appropriate sampling stations for baseline monitoring of fish, benthos, water, thermal conditions and discharge. He was also responsible for the sorting and identification of benthic macroinvertebrates collected as part of the multi-year field surveys, as well as the subsequent analysis and reporting of benthic community data.

^{*} denotes projects completed with other firms

Aquatic Ecologist / Benthic Taxonomist

Proposed Burlington Quarry Expansion, Burlington, Ontario (Aquatic Ecologist)

Joe participated in the implementation and delivery of a multi year Natural Environment Existing Conditions program and report. The report was included as part of the application for the proposed Burlington Quarry expansion. The program involved the establishment of appropriate sampling stations for fish, benthos, water, thermal conditions and discharge.

Mount Forest Waste Water Treatment Plant (WWTP) Study*, Mount Forest, Ontario (Benthic Taxonomist / Field Crew)

Joe was responsible for the collection and identification of benthic macroinvertebrates upstream and downstream of existing and proposed Waste Water Treatment Plant (WWTP) discharge locations to establish baseline environmental conditions on the South Saugeen River.

2006 Biomonitoring-Crompton, Elmira, Ontario (Benthic Taxonomist)

Joe participated in the field program of benthic sampling in Canagagigue Creek near Elmira, Ontario from 2006 to 2008 which monitors effects of a polluted site near the creek on the benthic communities in the area. He has been responsible for the sorting and identification of benthic macroinvertebrates from the site and has performed the analysis of the resulting data. He was responsible for quality assurance/quality control analysis and the production of reports summarizing current conditions for each year, as well as an analysis of trends or changes over time. Prior to 2006, he was responsible for the sorting and identification of the benthic samples through a different firm.

Tembec Enterprises Inc. Cycle 5 EEM, Kapuskasing, Ontario (Benthic Taxonomist)

As part of an Environmental Effects Monitoring (EEM) program on the Kapuskasing River, Ontario, Joe was involved in the planning, collection, sorting and identification of benthic samples for the purpose of characterizing the benthic communities upstream and downstream of a pulp and paper mill on the Kapuskasing River. He also collected water and sediment samples at each benthic station and assessed physical parameters such as pH, conductivity, dissolved oxygen, temperature and flows. He has performed statistical analysis of the resulting benthic data and produced reports summarizing current conditions for each year, as well as an analysis of trends or changes over time.

Proposed Quarry, Flamborough, Flamborough, Ontario (Benthic Taxonomist/Field Crew)

Joe has been involved in several aspects of the surface water monitoring of lands adjacent to the proposed quarry in an effort to provide a picture of the background ecology and hydrology. He has collected, processed, identified and analyzed benthic samples from Flamboro and Mountsberg Creeks and their tributaries over several years. He has conducted bimonthly monitoring of a number of surface water stations in the area for water depth, flow and water quality. He has also taken part in a pump test which required daily assessments of flow, depth, turbidity, pH, temperature, dissolved oxygen, conductivity, metals and bacterial samples and was responsible for coordinating daily laboratory water sample deliveries and dissemination of results to stakeholders.

Wescast Invertebrate Study, Wingham, Ontario (Benthic Taxonomist/Field Crew Leader)

Joe has coordinated the field program of benthic sampling in the Maitland River near Wingham, Ontario from 2006 to 2009 which monitors effects of a historic landfill on the benthic communities in the area. He has been responsible for the sorting and identification of benthic macroinvertebrates from the site and has performed the analysis of the resulting data. He was responsible for quality assurance/quality control analysis and the production of reports summarizing current conditions for each year, as well as an analysis of trends or changes over time. Prior to 2006, he was responsible for the sorting and identification of the benthic samples through a different firm.

Bridge Street Bridge Rehabilitation, Kitchener, Ontario (Field Crew Leader/Benthic Taxonomist)

Joe was involved in the identification, collection and relocation of freshwater mussels from the Grand River in Kitchener, Ontario. This mussel move was performed to minimize impacts of bridge reconstruction and repair on local mussel populations which included the wavyrayed lampmussel (Lampsilis fasciola); a freshwater species at risk (SAR). Joe was involved in the planning, collection, identification and relocation aspects of this mussel move.

Extensive Variety of Taxonomic Experience, 1999-2011 (Aquatic Invertebrate Taxonomist)

Joe has processed over 11,000 samples from over 400 projects in 12 years. Joe is skilled in the identification of benthic macroinvertebrates from lentic and lotic environments. His experience encompasses marine and freshwater systems across Canada and internationally.

^{*} denotes projects completed with other firms

PUBLICATIONS

Sonnenberg, H., J. Keene, R. Park, K. Bernard, and S. Dickieson. Challenges overcome and lessons learned from using freshwater bivalves during two Investigation of Cause (IOC) Environmental Effects Monitoring (EEM) studies. Presented at the 37th Annual Aquatic Toxicity Workshop, Toronto, Ontario, 2010.

Are the costs to meet environmental effects monitoring (EEM) benthic sample precision and accuracy criteria justified? Proceedings of the 32nd Annual Aquatic Toxicity Workshop, 2005.

Holloway, A.C., J. Keene, D.G. Noakes, R.D. Moccia. Effects of clove oil and MS-222 on blood hormone profiles in rainbow trout, *Oncorhynchus mykiss* (Walbaum). *Aquaculture Research*, *35*: 1025-1030, 2004.

Keene, J.L., D.L.G. Noakes, R.D. Moccia, C.G. Soto. The efficacy of clove oil as an anaesthetic for rainbow trout, *Oncorhynchus mykiss* (Walbaum). *Aquaculture Research*, 29: 89-101, 1998.

Ecologist



Kelly Clayton is a member of the Environmental Management Group at Stantec Consulting with four years of industry experience. She has a Graduate Certificate in Ecosystem Restoration and a Bachelor of Environmental Science, majoring in environmental geography and area of emphasis in biotic systems. Kelly has gained valuable experience through her formal employment and her extensive participation in volunteer projects in Ontario, as well as the United States of America. Her experience at teaching college-level environmental monitoring has imbued Kelly with a practical ability to apply Ecological Monitoring and Assessment Network (EMAN) and Ontario Stream Assessment Protocol (OSAP) protocols.

Kelly has conducted a wide array of environmental monitoring that includes bird migration surveys, salmon spawning counts, butterfly and odonate surveys, as well as fish assessment and vegetation surveys. She is familiar with the use of all manner of such survey equipment as GPS and radio telemetry equipment, seine nets, hoop nets, gill nets, fyke nets, minnow traps, basking traps and spring haul traps. Kelly is experienced at the identification of flora and fauna, and is capable of handling wildlife. Certified in ELC (Ecological Land Classification), Class II Electrofishing, and Ontario Benthic Biomonitoring Network, Kelly has the ideal background to support a wide variety of both Terrestrial and Aquatic natural heritage studies. Her laboratory experience has honed Kelly's skills in data processing and analysis, and she has a demonstrated ability to interpret and report findings accurately.

EDUCATION

B.Sc. (Env.), University of Guelph / Environmental Science, Guelph, Ontario, 2007

Graduate Certificate, Niagara College / Ecosystem Restoration, Niagara-on-the-Lake, Ontario, 2009

Class II Electrofishing Certificate, Niagara College / Ecosystem Restoration, St. Catharines, Ontario, 2008

Ontario Benthic Biomonitoring Network Certificate, Niagara College / Ecosystem Restoration, St. Catharines, Ontario, 2009

Certificate, Ecological Land Classification (ELC), Lindsay, Ontario, 2010

Certificate, Tallgrass Ontario / Seed Collector, Burlington, Ontario, 2010

Certificate, Ontario Wildlife Rehabilitation Network (OWREN), London, Ontario, 2010

Certificate, St. Johns Ambulance / CPR and First Aid, Burlington, Ontario, 2010

Workplace Hazardous Materials Information System (WHMIS), Burlington, Ontario, 2010

Licence, Boat Smart / Pleasure Craft Operators, Orangeville, Ontario, 2008

Certificate, ROM / Ontario Fish Identification Workshop, Toronto, Ontario, 2011

PROJECT EXPERIENCE

Education

Niagara College Environmental Monitoring Program*, Niagara-on-the-Lake, Ontario (Part-time Teacher)

Taught two sections of students at a second-year, college level. Demonstrated and explained Ontario Stream Assessment Protocol (OSAP) and Ontario Benthic Biomonitoring (OBBN) protocols. Discussed proper field and lab sampling/analysis techniques for water, sediment, and benthos. Prepared assignments, lectures, and exams (both written and practical). Evaluated students based on performance.

Linear Infrastructure

Thunder Bay Generating Station Pipeline Project, Thunder Bay, Ontario (Aquatic Ecologist)

Researched and summarized data for existing conditions report as part of the EA process.

Ecologist

Union Gas Pipeline Construction, Nanticoke, Ontario (Aquatic Ecologist)

Researched and summarized data for existing conditions report as part of the EA process.

Mining

Environmental Effects Monitoring (EEM) Program: Vale Inco, Sudbury, Ontario (Aquatic Ecologist)

Collected fish and water samples for toxicity testing.

Environmental Effects Monitoring (EEM) Program: Hudson Bay Mining and Smelting, Flin Flon, Manitoba (Aquatic Ecologist)

Collected Hyalella, water samples and sediment samples for toxicity testing.

Natural Sciences & Heritage Resources

Proposed Melancthon Quarry, Melancthon, Ontario (Aquatic Ecologist)

Conducted fish community surveys (electrofishing).

New Hamburg Oxbow, New Hamburg, Ontario (Aquatic Ecologist)

Collected water samples and water quality data twice monthly.

Blue Springs Creek Ground and Surface Water Monitoring, Arkell, Ontario (Aquatic Ecologist)

Downloaded weekly temperature and water level data and performed stream discharge measurements.

Ontario Power Generation - Lake Gibson Project, Thorold, Ontario (Aquatic Ecologist)

Collected benthic invertebrate and water samples. Safety boat operator.

Mill Creek Surface Water Monitoring Program, Milton, Ontario (Aquatic Ecologist)

Performed monthly stream discharge measurements and downloaded water level and temperature logger data. Graphed hydrological data.

Greenhouse Effluent Filtration Design Team, Niagara College*, Niagara-on-the-Lake, Ontario (Biologist)

Conducted environmental impact assessment on receiving stream and suggested several filtration design methods.

Bird Studies Canada Marsh Monitoring Program*, Hamilton, Ontario (Volunteer)

Conducted amphibian surveys on Royal Botanical Gardens property. Aided in the development of the BSC database.

Species at Risk Inventory at Legends on the Niagara Golf Course*, Chippewa, Ontario (Student Consultant)

Designed and conducted survey methods. Produced research and consultant proposals. Made recommendations for further restoration efforts.

St. Clair River Horizontal Directional Drill, Sarnia, Ontario (Aquatic Ecologist)

Performed analysis and presentation of in-situ and laboratory water quality data. Reported on results of water quality monitoring program.

Island Lake Conservation Area, Credit Valley Conservation*, Orangeville, Ontario (Conservation Technician)

Served as a client services representative, which entailed conservation awareness education. Maintained conservation area grounds.

Royal Botanical Gardens*, Hamilton, Ontario (Restoration Ecologist)

Coordinated summer students and assisted in the planning and implementation of restoration activities. Participated in habitat rehabilitation strategies (cattail and waterlily plantings). Maintained floodplain connections.

Assisted the Species at Risk Biologist in the creation of snake hibernacula. Assisted in turtle monitoring using radio telemetry, basking traps and hoop nets. Assisted Terrestrial Ecologist with Prairie grassland rehabilitation techniques (Prescribed burns and Prairie plantings). Conducted environmental monitoring (salmon spawning count, waterfowl migration count, aquatic vegetation surveys, butterfly and odonate counts).

Performed wildlife population management (carp (Cyprinus carpio) seining in Cootes Paradise Marsh and RBG ponds, electrofishing for carp), and beaver dam maintenance.

Operated Cootes Paradise Fishway carp barrier (to separate non-native species from native) and ran educational presentations at Cootes Paradise Fishway.

Collected water quality measurements and performed data entry, data quality control and analysis, in addition to report writing. Assisted in development of educational materials (pamphlets and signage).

^{*} denotes projects completed with other firms

Ecologist

Various Environmental Effects Monitoring (EEM) Studies, Ontario (Aquatic Ecologist)

Conducted fish population monitoring, benthic invertebrate identification and report writing/data management in support of various EEM studies for both Mining and Pulp and Paper industry projects.

Renewable Energy

White Pines Wind Farm, Picton, Ontario (Aquatic Ecologist)

Performed water-body assessments on mapped watercourses.

Fairview Wind Farm, Stayner, Ontario (Aquatic Ecologist)

Performed water-body assessments on mapped watercourses.

Pristine Power Wind Power, St. Columban, Ontario (Aquatic Ecologist)

Conducted fish community surveys (electrofishing).

Algonquin Power Wind Project, Amherst Island, Ontario (Aquatic Ecologist)

Conducted shoreline habitat mapping and fish community surveys.

Solar Power Plan Design Team, University of Guelph, City of Guelph*, Guelph, Ontario (Student)

Designed a solar power plan for the City of Guelph to coordinate with Community Energy Plan. Conducted public surveys on solar power interest. Coordinated with key stakeholders. Conducted cost/benefit analysis, baseline research regarding solar power use, prepared proposal, and presented plan to key stakeholders.

Port Dover Wind Farm, Port Dover, Ontario (Assistant Aquatic Ecologist)

Fish population monitoring (electrofishing).

Melancthon Wind Power Project, Melancthon and Amaranth Townships, Ontario (Biologist)

Conducted bat and bird mortality monitoring studies and raptor monitoring (winter raptor counts) as well as habitat assessments and data analysis.

Transportation Planning

MTO Highway 3, 6 and 24, Simcoe, Ontario (Aquatic Ecologist)

Conducted fish community surveys (electrofishing).

^{*} denotes projects completed with other firms

Ecologist

PUBLICATIONS

Fuller, M.M., K. Clayton, N. Ward. Project Paradise Season Summary Report 2009. *Royal Botanical Gardens. Hamilton, Ontario. RBG Report No. 2010-01*, 2010.

Clayton, K. Carroll's Bay Recovery and Management Strategy. *Royal Botanical Gardens. Hamilton, Ontario*, 2010.

Clayton, K. Recovery and Management Strategy for Carroll's Bay Marsh. *Presentation at the Project Paradise Workshop*, 2010.

Environmental Technician



Marc Faiella's experience has included industry and development sector projects. He has conducted field investigations, liaised with representatives of government agencies, regulators and worked with First Nations, synthesized data and produced reports. Marc's specific areas of expertise include Environmental Effects Monitoring (EEM), Environmental Impact Studies (EIS) and Fish Habitat Assessments. He has assessed potential impacts to aquatic habitats at a number of mining and development-related sites, such as metal mines, quarries, pulp and paper mills, subdivisions, city drainage systems and wind energy projects. Marc's technical experience has focused mainly on aquatic habitats. He has conducted fisheries inventories and Species at Risk project surveys based on provincial protocols, trout spawning surveys, collected benthic invertebrate samples, and collected water, sediment and non-lethal and lethal fish tissue samples for mercury. Marc has gained practical experience with all construction phases of DFO applied work sites. In addition, Marc has on-site experience at remote northern sites where access is gained via helicopter, ATV, boat and hiking.

EDUCATION

Tech. Dipl., Sir Sanford Fleming College / Ecosystem Management, Lindsay, Ontario, 2005

Training Certificate, Royal Ontario Museum Fish Identification Workshop, Royal Ontario Museum, Ontario, 2006

Certificate, MTO/DFO/OMNR Protocol, Toronto, Ontario, 2006

Certificate, St. John Ambulance / First Aid and CPR, Guelph, Ontario, 2010

P.A.L. and Firearms, Brampton, Ontario, 2005

Sir Sanford Fleming College / Short Wave Radio, Lindsay, Ontario, 2004

Sir Sanford Fleming College / Chainsaw Operator, Lindsay, Ontario, 2004

Certificate, Pleasure Craft Operator, Toronto, Ontario, 2005

Training Certificate, Class 1 Electrofishing Certificate, MNR, Ministry of Natural Resources, Ontario, 2012

Fisheries and Oceans Canada / Ontario Freshwater Mussel Identification Workshop, Burlington, Ontario, 2011

MEMBERSHIPS

Canadian Environmental Practitioner In Training (CEPIT), Canadian Environmental Certification Approvals Board

PROJECT EXPERIENCE

Environmental Assessments

Communal Irrigation Study, Township of Melancthon, Ontario (Crew Lead)

Obtained appropriate licences to conduct presence / absence and fish utility surveys within the Pine and Noisy River watersheds. Served as crew lead, overseeing fish surveys that were conducted in 2008 and preparations for proposed surveys in the spring / summer of 2009. Responsible for assembling report figures, maps and analysis of collected fisheries data, in tandem with Stantec's in-house GIS / graphics department.

Bruce to Milton Transmission Reinforcement Project, Multiple Sites, Ontario (Crew Lead)

Key member of the study team for the proposed hydro corridor expansion from Bruce Nuclear to a Milton, Ontario. Liaised with several Ministry of Natural Resources offices to coordinate issuance of permits and processing of historical fisheries data requests. Worked directly with the project manager to complete a work plan to safely and efficiently complete spring and summer fisheries surveys along the approximate 180 km corridor. Led a 2-person crew to conduct stream cross section surveys used to determine appropriate sizing of culverts. Coordinated production of detailed mapping and figures upon completion of the surveys, in tandem with Stantec's in-house GIS / graphics department, and was key in production of the independent Class EA report.

Environmental Technician

Port Alma Wind Power Project, Port Alma, Ontario (Field Crew / Data Analyst)

Exclusively responsible for conducting background topography research. Performed tree measurements for entire survey area, identified and mapped tree species locations using aerial photo base. Constructed tests for future heights (software) and produced reports detailing results. These results had significant bearing on wind turbine selection and placement.

Brampton MESP, Phase I, Springdale Environmental Site Assessment, Brampton, Ontario (Habitat Assessor)

Responsible for obtaining background information and conducted field work to assess study area. Compiled field notes and detailed data using an air photo base. Prepared final technical memorandum for submission.

Environmental Site Management

Randall Drain Branch A Restoration, Environment Inspection and Post-construction Monitoring, Waterloo, Ontario (Environmental Inspector)

Responsible for overseeing that approved plans to remediate a damaged watercourse on the City of Waterloo's airport property, as outlined by The Department of Fisheries and Oceans, Grand River Conservation Authority and Stantec Consulting Ltd., were carried out accordingly. Works included properly diverting flow downstream, efficiently dewatering the damaged area and relocating any stranded aquatic species downstream. Worked closely with the construction crew to ensure all remediation phases met Fisheries Act requirements. Prepared final report.

Mining

Vale Technology Development - Hydrology and Aquatic Assessment, Sudbury, Ontario (Aquatic Technician)

Marc was part of a two person crew that conducted a fishery presence/absence survey in a number of lakes associated with mining practices. Fish were identified, measured and tissue samples were collected for laboratory analysis.

Environmental Effects Monitoring (EEM) Program: Periodic Monitoring Phase, Hudson Bay Mining and Smelting, 2007, Flin Flon, Manitoba (Aquatic Technician)

Participated in metal mine EEM Periodic Monitoring phase, involving fisheries and benthic invertebrate surveys. Collected benthic and water samples in the field as well as fish, using various collection techniques. Completed habitat assessments, plume measurements and fish necropsies. Upon completion of field work, performed data analysis and reporting for the EEM report.

Environmental Effects Monitoring (EEM) Program: Focused Monitoring Phase, Hudson Bay Mining and Smelting, 2009, Flin Flon, Manitoba (Aquatic Technician)

Participated in metal mine EEM Focused Monitoring phase, involving fisheries and benthic invertebrate surveys. Collected benthic and water samples in the field as well as fish, using various collection techniques. Completed habitat assessments, plume measurements and fish necropsies. Upon completion of field work, performed data analysis and reporting for the final EEM report.

Environmental Effects Monitoring (EEM) Program: Periodic Monitoring Phase, Hudson Bay Mining and Smelting, 2007, Snow Lake, Manitoba (Aquatic Technician)

One of a 2-person crew stationed in Snow Lake for metal mine EEM Periodic Monitoring phase, involving fisheries and benthic invertebrate surveys. Collected benthic and water samples in the field as well as fish, using various collection techniques. Completed habitat assessments, plume measurements and fish necropsies. Upon completion of field work, performed data analysis and reporting for the EEM report.

Environmental Effects Monitoring (EEM) Program: Focused Monitoring Phase, Hudson Bay Mining and Smelting, 2009, Snow Lake, Manitoba (Aquatic Technician)

One of a 2-person crew stationed in Snow Lake for metal mine EEM Focused Monitoring phase, involving fisheries and benthic invertebrate surveys. Collected benthic and water samples in the field as well as fish, using multiple collection techniques. Completed habitat assessments, plume measurements and fish necropsies. Upon completion of field work, performed data analysis and reporting for the final EEM report.

Natural Sciences & Heritage Resources

Hydro One Series Capacitor Station (Project Manager) Responsible for a fisheries sampling survey to determine the presence or absence of fish species near a proposed capacitor station. Secured a Fish Collection Licence from OMNR, compiled maps to assist in field investigations, assembled field staff, initiated survey and prepared report for internal and external circulation.

^{*} denotes projects completed with other firms

Environmental Technician

Melancthon Wind Energy Project Tree Surveys, Melancthon, Ontario (Aquatic Technician)

Measured tree heights and the species identified with use of a laser-sighted measuring device. Performed a desktop exercise, whereby heights were projected over a 20 year period. These projections were then synthesized on aerial photos, showing potential hazards to turbines, thus assisting with selection of wind turbine placement and selection of site-appropriate turbine models.

Oil & Gas

Enbridge Pipeline Crossing, Sarnia, Ontario (Aquatic Construction Monitor)

Marc was responsible for monitoring the St. Clair River for "frakouts" that may occur during the horizontal drilling and pipe line installation under the St. Clair River. Marc was also responsible for collecting water samples for laboratory analysis and recording current river conditions using a YSI water quality meter.

Power

Biological Monitoring for the Shekak-Nagagami Generating Station, Hearst, Ontario (Field Crew Lead)

Responsible for compiling appropriate field gear to complete the Year-13 monitoring study along the Shekak and Nagagami Rivers in the vicinity of a hydroelectric dam. Participated in surveys, which included: fish inventories through electrofishing, fish tissue collection via gillnets, benthic sampling and water quality and sediment quality collection through several collection techniques. Performed data analysis and completion of the report. Worked closely with Brookfield Power, the MNR and Hearst employees to obtain necessary information and data to complete the project.

Hydro One Series Capacitor Station, Huntsville, Ontario (Project Management / Crew Leader)

Undertook a fisheries sampling survey to determine the presence or absence of fish species near a proposed capacitor station. Duties included securing fisheries permits from related agencies, compilation of maps to assist with surveys, assembly of staff, planned and implemented the field program and prepare report for internal and external circulation.

Yellow Falls Hydroelectric Project, Smooth Rock Falls, Ontario (Aquatic Technician)

Crew member responsible for extensive fish, benthic, water and habitat surveys along the Matagami River. Fish surveys included setting and retrieving gillnets, electrofishing, identification of fish species, retrieving age indicators from fish, characteristic measurements and collecting non-lethal samples for mercury analysis. Collected benthic invertebrates using various sampling techniques for later sorting and identification. Collected water samples and substrate samples using various sampling techniques and equipment for lab testing. Worked closely with a First Nations crew member for the duration of the project and, upon completion of the field surveys, performed data analysis and report writing.

Roads and Highways

Highway 11 Access Improvements. Preliminary Design. MTO Northeastern Region, Huntsville, Ontario (Fisheries Specialist)

Marc conducted an inventory of aquatic resources adjacent to the existing highway. The fish and fish habitat investigations were completed on three watercourses in the Study Area, and were conducted in accordance with the 2006 MTO/DFO/OMNR Protocol

Highway 11 Access Improvements. Preliminary Design. MTO Northeastern Region, Huntsville, Ontario (Fisheries Specialist)

Marc conducted an inventory of aquatic resources adjacent to the existing highway. The fish and fish habitat investigations were completed on three watercourses in the Study Area, and were conducted in accordance with the 2006 MTO/DFO/OMNR Protocol

Highway 8 and Highway 401 Interchange Improvements. Preliminary Design. MTO Southwestern Region, Kitchener, Ontario (Fisheries Specialist)

Marc conducted an inventory of aquatic resources within the study area. The fish and fish habitat investigations were completed following the 2006 MTO/DFO/OMNR Protocol. An exception to this occurred at the Grand River, where fish inventories were not conducted in order to avoid disturbances to mussel Species at Risk that are known to occur in the area

Highway 3 Rehabilitation, Renton to Jarvis. Detail Design. MTO West Region, Ontario (Fisheries Specialist)

Marc participated in detailed Natural Heritage features assessments and a Fish Habitat Existing Conditions Report in accordance with the 2006 MTO/DFO/OMNR Protocol. Three major water crossings (Nanticoke Creek and two crossings of Black Creek) were assessed in addition to other smaller crossings

^{*} denotes projects completed with other firms

Environmental Technician

Wind Power

White Pines Wind Energy, Prince Edward County, Ontario (Field Crew Lead)

Marc conducted aquatic habitat assessments and a fisheries presence/absence surveys to determine aquatic features under REA (Renewable Energy Act). He also assisted in producing a photo log and figures that assisted in the application process for construction work permits.

Fairview Wind Energy, Staynor, Ontario (Field Crew Lead)

Marc conducted aquatic habitat assessment surveys to assess their designation under the REA (Renewable Energy Act). In addition, Marc conducted electrofishing surveys to assess the presence or absence of fish species and was also part responsible for producing a photo log and figures to assist in the application process for associated construction work permits.

Port Dover Wind Energy, Port Dover, Ontario (Aquatic Technician)

Marc conducted field surveys to assess aquatic features and to determine its designation under the REA (Renewable Energy Act). Marc was also part responsible for producing reports, photo logs and figures to aid in the application process to gain associated construction work permits.

Amherst Island Wind Energy, Amherst, Ontario (Field Crew Lead)

Responsible for collecting fisheries habitat characteristics along the proposed shoreline of Lake Ontario to aid in obtaining associated construction work permits. Marc was also responsible for conducting a presence/absence survey using several capture methods such as, gill nets, boat electrofishing, Fyke nets and minnow traps.

^{*} denotes projects completed with other firms

Mitch Ellah Tech. Dipl., B.Sc. (Hons.)

Aquatic Ecologist



Mitch Ellah is an aquatic ecologist who serves Stantec's Environmental Services group. He has significant experience conducting field research in the Canadian Arctic and various locations in southern and northern Ontario and Quebec. Mitch has been involved in all aspects of aquatic and terrestrial projects, including the review of background data, correspondence with government agencies, site investigation and data collection, and report writing. He is knowledgeable in, and proficient at field surveys and standardized protocols involving data collection for water quality and quantity, benthic macroinvertebrates, fish, bird, herpetofauna, aquatic plants and forest communities. Mitch has performed vegetation surveys using Ecological Land Classification (ELC) and Ontario Wetland Evaluation (OWES) protocols. He has excellent fish identification skills, and is proficient at conducting aquatic habitat and fish community assessments using electrofishing equipment, gill nets, fyke nets, seine nets and minnow traps. Mitch worked progressively for three field seasons in the Canadian Arctic investigating treatment wetlands in Nunavut and NWT Inuit communities. Mitch's knowledge of ecology and biotic identification, his strong communication skills and proven abilities at multi-discipline teamwork are complemented by his research experience, providing him with valuable technical expertise to meet a variety of project needs.

EDUCATION

B.Sc. (Honours), Trent University / Environmental Resource Science, Peterborough, Ontario, 2011

Tech. Dipl., Sir Sandford Fleming College / Environmental Technologist Diploma, Lindsay, Ontario, 2009

Tech. Dipl., Sir Sandford Fleming College / Environmental Technician Diploma, Lindsay, Ontario, 2008

Certificate, Ministry of Natural Resources / Ontario Wetland Evaluation System (OWES), Lindsay, Ontario, 2009

Certificate, Royal Ontario Museum / Fish Identification Workshop, Toronto, Ontario, 2011

Certificate, Stantec Consulting Ltd. / Class 2 Electrofishing Training, Guelph, Ontario, 2012

PROJECT EXPERIENCE

Natural Sciences & Heritage Resources

Hydro One Clarington Transformer Station, Clarington, Ontario (Field Ecologist)

Conducted fisheries and aquatic habitat assessment for proposed transformer station development

Shell Oil and Gas, Montreal, Quebec (Field Ecologist)
Conducted site investigation for amphibian and reptile

Conducted site investigation for amphibian and reptile populations, and amphibian breeding call surveys

Natural Heritage Site Inventories and Reporting*, Various Locations (Field Ecologist)

Bat maternity roost surveys in forest settings, various wildlife surveys including amphibians, reptiles, mammals, and birds; data collection and report writing for renewable energy REA environmental assessment projects; ELC vegetation community and wildlife habitat assessments; online database research for technical report preparation, including MNR Biodiversity Index and various atlases

Proposed Melancthon Quarry, Melancthon, Ontario (Field Ecologist)

Conducted species at risk surveys targeting Whip-poor-will using standardized MNR protocol

Mitch Ellah Tech. Dipl., B.Sc. (Hons.)

Aquatic Ecologist

Proposed Simpson's Quarry EA, Bancroft, Ontario (Field Ecologist)

Conducted field sampling, including breeding bird, waterfowl breeding, and amphibian surveys, aquatic assessments, habitat characterizations, as well as species at risk surveys that included Blanding's Turtle and Whip-poor-will

Renewable Energy

Niagara Region Wind Corp. Wind Farm, Niagara Region, Ontario (Field Ecologist)

Conducted aquatic assessments using REA water body designations, fish community presence/absence study and habitat characterization related to proposed wind farm

Bow Lake Wind Farm, Montreal River Harbour, Ontario (Field Ecologist)

Conducted fieldwork related to natural heritage terrestrial assessment that included locating bat maternity roosts, amphibian surveys, and habitat delineation. Aquatic fieldwork included habitat characterization and water body determination congruent with the Renewable Energy Act (REA) and fish community assessments

Cedar Point Wind Farm, Middlesex County, Ontario (Field Ecologist)

Conducted snake cover board searches to determine presence/absence of snake population and diversity

Capital Power (K2) Wind Farm, Goderich, Ontario (Field Ecologist)

Conducted aquatic assessments using REA water body designations, fish community presence/absence study and habitat characterization related to proposed wind farm

Research / Laboratories

Centre for Alternative Wasewater Treatement (CAWT), Sir Sandford Fleming College*, Baker Lake, Nunavut (Arctic Field and Laboratory Research Technician)

Remote study site in Baker Lake, NU; researcher for an International Polar Year project and United Nations Environmental Program

Centre for Alternative Wastewater Treatment (CAWT), Sir Sandford Fleming College*, Various Sites, Nunavut and Northwest Territories (Arctic Field and Laboratory Research Technologist)

Remote study sites in Baker Lake, NU, Gjoa Haven, NU and Holman, NT; results used for the continuation of the International Polar Year research project

Centre for Alternative Wastewater Treatment (CAWT), Sir Sandford Fleming College*, Alert, Nunavut (Arctic Field and Laboratory Research Technician)

A partnership project with Department of National Defense and Environment Canada Wastewater Division; remote study site in Alert, NU; sole researcher to plan, research, organize equipment, work with partners and set-up laboratory; conducted bird surveys for Environment Canada

Water

Komoka Wastewater Treatment Plant, Komoka, Ontario (Field Ecologist)

Conducted benthic macroinvertebrate and water quality sampling for wastewater treatment plant discharge

Fox Meadow Subdivision EEM, Peterborough, Ontario (Field Ecologist)

Conducted benthic macroinvertebrates and water quality sampling for EEM of subdivision encroachment on PSW

Canagagigue Creek EEM, Elmira, Ontario (Field Ecologist)

Water quality and quantity measuring, benthic macroinvertebrate, and fish community assessment at chemical plant discharge site

Blue Springs EEM, Guelph, Ontario (Field Ecologist)

Routine flow measurement, monitoring and maintenance of rain gauges, Barologgers, air temperature loggers and in-stream water level loggers to assess potential effects of aggregate operations and groundwater draw down on fish habitat in a coldwater stream

Mill Creek EEM, Guelph, Ontario (Field Ecologist)

Routine flow measurement, monitoring and maintenance of rain gauges, Barologgers, air temperature loggers and in-stream water level loggers to assess potential effects of aggregate operations and groundwater draw down on fish habitat in a coldwater stream

^{*} denotes projects completed with other firms

Mitch Ellah Tech. Dipl., B.Sc. (Hons.)

Aquatic Ecologist

PUBLICATIONS

Chemical and Biological Changes in an Arctic Treatment Watershed to Assess the Value of Macroinvertebrate Biomonitoring. *Undergraduate Thesis, Trent University, Peterborough, Ontario,* 2011.

Trevor Chandler MSC

Fluvial Systems Specialist



Trevor Chandler is a geomorphologist, with 18 years experience, working in concert with Stantec's Aquatic Group. He has participated in a number of environmental and fluvial investigations that have included Environmental Effects Monitoring and effluent plume delineations for Pulp and Paper and Mining Sector clients, natural channel design and restoration, channel stability studies, erosion threshold and meander belt assessments for planning, and post impoundment monitoring and fisheries mortality investigations at hydroelectric facilities. Current projects include delineation of mining effluent in central Manitoba, the restoration of a degraded urban watercourse to support Redside Dace, an at-risk fish species, meander belt assessments, channel stability and fluvial erosion threshold analyses, and an investigation of meander planform evolution along a large southern Ontario river.

EDUCATION

M.Sc., University of Guelph / Fluvial Geomorphology, Guelph, Ontario, 1992

B.E.S. (Honors Co-op), University of Waterloo / Environmental Studies, Waterloo, Ontario, 1990

Certificate, Wildland Hydrology Inc. / River Morphology & Applications (Level II), Asheville, North Carolina, 2011

Wildland Hydrology Inc. / Applied Fluvial Geomorphology Course (Level I), Guelph, Ontario, 1993

PROJECT EXPERIENCE

Environmental Assessments

Plume Delineation Investigation, Spruce Falls, Ontario (Environmental Scientist)

In situ conductivity and river and effluent discharge records were used to delineate the effluent plume concentrations along the Kapuskasing River over a period of one year.

Sedimentation Investigation, Humber Arm, Newfoundland (Environmental Scientist)

Custom sedimentation towers were designed, constructed and deployed for two weeks to collect inorganic sediments in a 40 m deep marine environment. The towers consisted of an array of duplicate collectors spaced at four different depths in the water column. One array was deployed in the vicinity of pulp and paper and municipal discharges and the other in an undisturbed reference area.

Environmental Effects Monitoring (EEM) Plume Investigations, Various Sites, Ontario, Quebec and Newfoundland (Environmental Scientist)

Eight separate plume investigations, using rhodamine WT as an active tracer, were conducted at eight pulp and paper mills in Ontario, Quebec and Newfoundland. Receiving environments included large rivers, lakes, tidal estuaries, and marine environments.

Environmental Effects Monitoring (EEM), Flin Flon, Manitoba (Environmental Scientist)

Mining effluent plume investigations, using in situ conductivity, were undertaken along an effluent plume flowpath that extended over 100 km from the end-of-pipe through a variety of hydraulic environments.

Geomorphologic Assessments

Estimated Meander Belt Delineation, Credit Valley Watershed*, Southwestern Ontario (Geomorphologist)

All permanent and intermittent watercourses within the Credit River System upstream of Mississauga, ON were delineated into distinct reaches. Meander belts were estimated along all reaches using detailed topographic mapping and high resolution aerial photography.

Sydenham River Fluvial Geomorphology Assessment*, Southwestern Ontario (Geomorphologist)

The mainstem and all tributary watercourses in the basin were delineated into geomorphically and hydrologically distinct reaches and the stability of each reach assessed by field survey. Recommendations were made to enhance channel stability and improve water quality.

Trevor Chandler M Sc

Fluvial Systems Specialist

Mini-Regional Curve Analysis, Brampton, Ontario (Geomorphologist)

A series of small to medium-sized streams west of Brampton were surveyed to develop a regional curve. The purpose of the analysis was to develop a tool to predict appropriate bankfull and inner-berm dimensions for the restoration of highly disturbed watercourses.

Ontario Stream Assessment Protocol, Highland Creek*, Toronto, Ontario (Geomorphologist)

Fisheries habitat was systematically inventoried throughout the watershed in each of 22 channel reaches.

Highland Creek Geomorphology Study*, Toronto, Ontario (Geomorphologist)

A series of detailed geomorphological field investigations were systematically undertaken in each of the 22 delineated reaches in the watershed. Measurements in each reach included total station survey of 10 cross-sections of channel and floodplain, long profile survey, Wolman pebble counts and bank geometry and materials characterization.

Waterloo Creek Geomorphic Inventory*, Waterloo, Ontario (Geomorphologist)

All watercourses within the City were identified and delineated into distinct morphological and hydrological reaches. All watercourses were walked, erosion sites identified, and reach stability assessed using Rapid Geomorphic Assessment technique.

Greater Toronto Airports Authority (GTAA) Fluvial Geomorphology Study, Etobicoke, Ontario (Geomorphologist)

A fluvial geomorphology study of the Etobicoke Creek was undertaken to address creek stability issues that posed a potential risk to runways and other airport infrastructure.

Problem areas were identified and potential solutions presented.

Shekak-Nagagami Erosion Assessment, Hearst, Ontario (Geomorphologist)

Fluvial investigations for a hydroelectric generating station, monitoring design and implementation of the field program (e.g. fishing efforts, water/sediment sampling and erosion pin installation), desktop analyses and historical assessment of the Shekak and Nagagami Rivers for the purpose of quantifying system-wide, long-term bank erosion rates and directions.

Mining

Effluent Plume Study, Lake Gibson, St. Catharines, Ontario (Environmental Scientist)

Effluent concentrations were measured using in situ conductivity in a highly modified receiving environement affected by artifical pumping.

Mine Closure Investigations, Poirier and Selbaie, Quebec (Environmental Scientist)

Mining effluent concentrations were measured using in situ conductivity throughout the baseline and post-closure monitoring phases of the project.

Environmental Effects Monitoring (EEM), Snow Lake, Manitoba (Environmental Scientist)

Mining plume delineation surveys were conducted using in situ conductivity conductivity on an embayment on a large inland lake. Effluent discharge rates and weather conditions were monitored to determine the effect on the concentration, size, and shape of the effluent plume in the receiving environment.

Environmental Effects Monitoring (EEM), Snow Lake, Manitoba (Environmental Scientist)

A mining plume delineation survey, using in situ conductivity, was undertaken along the effluent flow path which traversed a variety of hydraulic environments ranging from a small watercourse to large lakes.

Stream Restoration

Northrup Creek Channel Restoration, Greece, New York (Geomorphologist)

A two kilometre section of watercourse is being re-aligned in order to alleviate the effects of long term fill placement within the floodplain. The field investigations involved geomorphic assessments conducted to determine appropriate watercourse dimensions. The Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) models were utilized to assess existing bank stability and potential for future erosion. The restored watercourse will exhibit a natural planform that alleviates flooding and incorporates a variety of natural hydraulic habitats, such as woody debris bank treatments and rock constructed riffles.

^{*} denotes projects completed with other firms

Trevor Chandler M.Sc.

Fluvial Systems Specialist

Laurel Creek Geomorphic Assessment, Waterloo, Ontario (Geomorphologist)

A 400 metre section of watercourse is being restored which will involve the removal of a channel constriction and vertical gabion banks, improvements to floodplain connection and the installation of a rock constructed riffle over an existing exposed sanitary sewer crossing. BEHI and NBS models were applied to isolate sections of the watercourse where bank treatments were deemed necessary.

Snake Road Tributary Restoration, Burlington, Ontario (Geomorphologist)

A fluvial assessment and topographical survey were undertaken to restore a small section of watercourse affected by erosion that had exposed a formerly buried gas pipeline.

Tributary to Grand River Culvert Removal, Cambridge, Ontario (Geomorphologist)

A derelict corrugated steel pipe culvert is being removed and the channel and floodplain are being restored to a natural condition. A topographical survey of the stable watercourse upstream and downstream of the crossing was utilized to guide the restoration.

Tributary to Fairchild Creek, Brantford, Ontario (Geomorphologist)

A fluvial geomophological investigation and topographical survey was undertaken to restore fish passage to a watercourse affected by invasive exotic vegetation growth.

Tributary to Nichol Drain Restoration, Elora, Ontario (Geomorphologist)

An existing online pond is to be filled and the pre-existing channel restored to reduce thermal imapets to the watercourse. Water levels in an existing upstream wetland feature are to be maintained.

Fourteen Mile Creek W2 Tributary Restoration, Oakville, Ontario (Geomorphologist)

An unstable section of the tributary was restored using a combination of pools, riffles and log drop structures to dissipate energy. The design incorporates natural materials and live woody vegetation to further control bank erosion.

Credit River Tributary Restoration, Brampton, Ontario (Geomorphologist)

A 260 m section of concrete-lined watercourse is being restored using the principles of natural channel design. The restored watercourse will exhibit a variety of natural hydraulic habitats, such as woody debris bank treaments and riffles, functional over a range of flows. The design includes deep pools and other habitat features considered beneficial to Redside Dace, an atrisk fish species.

^{*} denotes projects completed with other firms

Trevor Chandler M.Sc.

Fluvial Systems Specialist

PUBLICATIONS

Chandler, T.J., M. Geenen, D. Bidelspach, and D. Charlton. Specialized Stream Restoration Software Tools Applied to an Unstable Urban Watercourse, Brampton, Ontario. Proceedings of the 4th International Conference on Natural Channel Systems, Mississauga, Ontario, 2010.

Chandler, T.J. Erosion Threshold Analysis of Lucky Creek, Town of Sutton, ON. *Report to Sutton Landowners Group*, 2007.

Aquafor Beech Ltd. Fluvial Processes along the Nagagami River in the Vicinity of Shekak-Nagagami Hydroelectric Generating Station. *Report for Beaver Power Corporation*, 2005.

Chandler, T.J. and M. Prent-Pushkar. Estimated Meander Belt Delineation: Credit Valley Watershed. *Report to Credit Valley Conservation*, 2005.

Chandler, T.J. and M. Prent-Pushkar. Estimated Slope Hazard Mapping 2005. *Report to Credit Valley Conservation*, 2005.

Chandler, T.J. and J. Parish. Errol Creek Restoration Study. Report to St. Clair Conservation Authority, 2001.

Chandler, T.J. and J.Parish. Fluvial Geomorphology Study of Etobicoke and Spring Creek within the grounds of Lester B. Pearson International Airport. *Report to the Greater Toronto Airports Authority*, 2000.

Chandler, T.J., and J. Parish. Sydenham River Fluvial Geomorphology Assessment. Report to Ontario Ministry of Natural Resources and St.Clair Region Conservation Authority, 2000. Anderson, P.G., C.H.J. Franklin and T.J. Chandler. Natural gas pipeline crossing of a coldwater stream: impacts and recovery. *Proceedings of the 6th International Symposium, Environmental Concerns in Right-of-Way Management*, 1997.

Chandler, T.J. and R.A. Kostaschuk. A test of selected bed-material transport models, Nottawasaga River, Ontario, Canada. *Canadian Journal of Civil Engineering*. 21:770-777, 1994.