

Stantec

GRAND RENEWABLE ENERGY PARK

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

Appendix F

Wildlife Species List

Stantec

GRAND RENEWABLE ENERGY PARK

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

Appendix F1

Wildlife Species List - Wind Project

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status	
								PIF Priority Species	Comment
BUTTERFLIES									
Cabbage White	<i>Pieris rapae</i>	SNA	G5						
Clouded Sulphur	<i>Colias philodice</i>	S5	G5						
Spring Azure	<i>Celastrina ladon</i>	S5	G5						
Mourning Cloak	<i>Nymphalis antiopa</i>	S5	G5						
Monarch	<i>Danaus plexippus</i>	S4B, S2N	G5	SC	SC				
AMPHIBIANS									
American Toad	<i>Anaxyrus americanus</i>	S5	G5						
Tetraploid Gray Treefrog	<i>Hyla versicolor</i>	S5	G5						
Western Chorus Frog (carolinian)	<i>Pseudacris triseriata</i>	S4	G5	NAR	NAR				
Spring Peeper	<i>Pseudacris crucifer</i>	S5	G5						
Northern Green Frog	<i>Lithobates clamitans</i>	S5	G5						
Wood Frog	<i>Lithobates sylvatica</i>	S5	G5						
Northern Leopard Frog	<i>Lithobates pipiens</i>	S5	G5	NAR	NAR				
REPTILES									
Snapping Turtle	<i>Chelydra serpentina</i>	S3	G5	SC	SC				
Eastern Gartersnake	<i>Thamnophis sirtalis</i>	S5	G5						
BIRDS									
Canada Goose	<i>Branta canadensis</i>	S5	G5						
Wood Duck	<i>Aix sponsa</i>	S5	G5						
Mallard	<i>Anas platyrhynchos</i>	S5	G5						
Wild Turkey	<i>Meleagris gallopava</i>	S5	G5						
Great Blue Heron	<i>Ardea herodias</i>	S5	G5						
Turkey Vulture	<i>Cathartes aura</i>	S5B	G5						
Northern Harrier	<i>Circus cyaneus</i>	S4B	G5	NAR	NAR	55		X	Non-breeding; observed September 30
Sharp-shinned Hawk	<i>Accipiter striatus</i>	S5	G5	NAR	NAR	20-30			
Cooper's Hawk	<i>Accipiter cooperii</i>	S4	G5	NAR	NAR	4-50+			
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	G5	NAR	NAR				
Rough-legged Hawk	<i>Buteo lagopus</i>	S1B, S4N	G5	NAR	NAR				Non-breeding; observed December
American Kestrel	<i>Falco sparverius</i>	S5B	G5					X	
Sandhill Crane	<i>Grus canadensis</i>	S5B	G5	NAR	NAR				
Killdeer	<i>Charadrius vociferus</i>	S5B, S5N	G5						
Upland Sandpiper	<i>Bartramia longicauda</i>	S4B	G5			25			
American Woodcock	<i>Scolopax minor</i>	S4B	G5						
Ring-billed Gull	<i>Larus delawarensis</i>	S5B, S4N	G5						
Rock Pigeon	<i>Columba livia</i>	SNA	G5						
Mourning Dove	<i>Zenaidura macroura</i>	S5	G5						
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	S4B	G5						

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status PIF Priority Species	Comment
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	S5B	G5					X	
Great Horned Owl	<i>Bubo virginianus</i>	S5	G5						
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	S5B	G5						
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	S4	G5						
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S5B	G5			30-50			Non-breeding; observed September 30
Downy Woodpecker	<i>Picoides pubescens</i>	S5	G5						
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5			10			
Northern Flicker	<i>Colaptes auratus</i>	S4B	G5					X	
Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5	G5			30-50*			
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	G5					X	
Willow Flycatcher	<i>Empidonax traillii</i>	S5B	G5					X	
Least Flycatcher	<i>Empidonax minimus</i>	S4B	G5						
Eastern Phoebe	<i>Sayornis phoebe</i>	S5B	G5						
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	S4B	G5						
Eastern Kingbird	<i>Tyrannus tyrannus</i>	S4B	G5					X	
Blue-headed Vireo	<i>Vireo solitarius</i>	S5B	G5			100	6,7		Non-breeding; observed October 12
Warbling Vireo	<i>Vireo gilvus</i>	S5B	G5						
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	G5						
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5						
American Crow	<i>Corvus brachyrhynchos</i>	S5B	G5						
Horned Lark	<i>Eremophila alpestris</i>	S5B	G5						
Purple Martin	<i>Progne subis</i>	S4B	G5						
Tree Swallow	<i>Tachycineta bicolor</i>	S4B	G5						
Barn Swallow	<i>Hirundo rustica</i>	S4B	G5						
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	G5						
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S5	G5			0			
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5	G5			10			
House Wren	<i>Troglodytes aedon</i>	S5B	G5						
Golden-crowned Kinglet	<i>Regulus satrapa</i>	S5B	G5			0	7		Non-breeding; observed September 30
Eastern Bluebird	<i>Sialia sialis</i>	S5B	G5	NAR	NAR				
Veery	<i>Catharus fuscescens</i>	S4B	G5			10-20			
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	G5					X	
American Robin	<i>Turdus migratorius</i>	S5B	G5						
Gray Catbird	<i>Dumetella carolinensis</i>	S4B	G5						
Northern Mockingbird	<i>Mimus polyglottos</i>	S4	G5						Non-breeding; observed October 13
Brown Thrasher	<i>Toxostoma rufum</i>	S4B	G5					X	
European Starling	<i>Sturnus vulgaris</i>	SNA	G5						
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	G5						
Yellow Warbler	<i>Dendroica petechia</i>	S5B	G5						
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	S5B	G5						
American Redstart	<i>Setophaga ruticilla</i>	S5B	G5			20-30			
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	G5			20			

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status PIF Priority Species	Comment
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B	G5						
American Tree Sparrow	<i>Spizella arborea</i>	S4B	G5						Non-breeding; observed December 2
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	S4B	G5					X	
Chipping Sparrow	<i>Spizella passerina</i>	S5B	G5						
Field Sparrow	<i>Spizella pusilla</i>	S4B	G5					X	
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4B	G5					X	
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B	G5					X	
Song Sparrow	<i>Melospiza melodia</i>	S5B	G5						
Swamp Sparrow	<i>Melospiza georgiana</i>	S5B	G5						
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5B	G5			20			Non-breeding; observed September 30
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	S4B	G5						Non-breeding; observed September 28
Dark-eyed Junco	<i>Junco hyemalis</i>	S5B	G5				7		Non-breeding; observed October 28
Snow Bunting	<i>Plectrophenax nivalis</i>	SNA	G5						Non-breeding; observed December 18
Scarlet Tanager	<i>Piranga olivacea</i>	S4B	G5			20			
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5	G5						
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4B	G5					X	
Indigo Bunting	<i>Passerina cyanea</i>	S4B	G5						
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	G5	THR	THR-NS	10		X	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S5	G5						
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	G5					X	
Common Grackle	<i>Quiscalus quiscula</i>	S5B	G5						
Brown-headed Cowbird	<i>Molothrus ater</i>	S4B	G5						
Baltimore Oriole	<i>Icterus galbula</i>	S4B	G5					X	
House Finch	<i>Carpodacus mexicanus</i>	SNA	G5						
American Goldfinch	<i>Carduelis tristis</i>	S5B	G5						
House Sparrow	<i>Passer domesticus</i>	SNA	G5						

MAMMALS

Eastern Cottontail	<i>Sylvilagus floridanus</i>	S5	G5						
Grey Squirrel	<i>Sciurus carolinensis</i>	S5	G5						
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	S5	G5						
Coyote	<i>Canis latrans</i>	S5	G5						
Raccoon	<i>Procyon lotor</i>	S5	G5						
Striped Skunk	<i>Mephitis mephitis</i>	S5	G5						
White-tailed Deer	<i>Odocoileus virginianus</i>	S5	G5						

SUMMARY

Total Butterflies:	5
Total Amphibians:	7
Total Reptiles:	2
Total Birds:	88



COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status	
								PIF Priority Species	Comment

Total Breeding Birds:		77							
Total Mammals:		7							

SIGNIFICANT SPECIES

Global:	0
National:	1
Provincial:	1
Local:	17

Explanation of Status and Acronyms

COSSARO: Committee on the Status of Species at Risk in Ontario

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

REGION: Rare in a Site Region

S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)

S4: Apparently Secure—Uncommon but not rare

S5: Secure—Common, widespread, and abundant in the province

SX: Presumed extirpated

SH: Possibly Extirpated (Historical)

SNR: Unranked

SU: Unrankable—Currently unrankable due to lack of information

SNA: Not applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species

S#B- Breeding status rank

S#N- Non Breeding status rank

?: Indicates uncertainty in the assigned rank

G1: Extremely rare globally; usually fewer than 5 occurrences in the overall range

G1G2: Extremely rare to very rare globally

G2: Very rare globally; usually between 5-10 occurrences in the overall range

G2G3: Very rare to uncommon globally

G3: Rare to uncommon globally; usually between 20-100 occurrences

G3G4: Rare to common globally

G4: Common globally; usually more than 100 occurrences in the overall range

G4G5: Common to very common globally

G5: Very common globally; demonstrably secure

T: Denotes that the rank applies to a subspecies or variety

END: Endangered

THR: Threatened

SC: Special Concern



COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status PIF Priority Species	Comment
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2, 3 or NS after a COSEWIC ranking indicates the species is either on Schedule 2, Schedule 3 or No Schedule of the Species At Risk Act (SARA)

NAR: Not At Risk

IND: Indeterminant, insufficient information to assign status

DD: Data Deficient

6: Rare in Site Region 6

7: Rare in Site Region 7

Area: Minimum patch size for area-sensitive species (ha)

H- highly significant in Hamilton Region (i.e. rare)

m- moderately significant in Hamilton Region (i.e. uncommon)

L1- extremely rare locally (Toronto Region)

L2- very rare locally (Toronto Region)

L3- rare to uncommon locally (Toronto Region)

HR- rare in Halton Region, highly significant

HU- uncommon in Halton Region, moderately significant

* The Pileated Woodpecker will incorporate smaller woodlots into its homerange, therefore it may not be a true area-sensitive species (Naylor et al. 1996)

LATEST STATUS UPDATE

Butterflies: September, 2009

Amphibians: September, 2009

Reptiles: September, 2009

Birds: September, 2009

Mammals: September, 2009

S and G ranks and explanations: September, 2009

NOTE

All rankings for birds refer to breeding birds unless the ranking is followed by N

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COSSARO Status

Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. June 30 2008.

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COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status	
								PIF Priority	Species

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 TRCA. 2003. Revised Fauna Scores and Ranks, February 2003. Toronto Region Conservation Authority.

Area-sensitive information

Austen, M.J.W., M.D. Cadman, and R.D. James. 1994. Ontario birds at risk: status and conservation needs. Toronto and Port Rowan, ON: Federation of Ontario Naturalists and Long Point Bird Observatory. 165 pp.

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Robbins, C.S. 1979. Effect of forest fragmentation on bird populations. Pp. 198-212 in DeGraaf, R.M., and K.E. Evans, eds. Management of northcentral and northeastern forests for nongame birds. United States Department of Agriculture, Forest Service General Technical Report NC-51. 268 pp.

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GRAND RENEWABLE ENERGY PARK

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

Appendix F2

Wildlife Species List - Solar Project

COMMON NAME	SCIENTIFIC NAME	GLOBAL STATUS		COSSARO	COSEWIC	AREA (ha)	REGION	Local Status PIF Priority Species	Comment
		ONTARIO STATUS	STATUS						
AMPHIBIANS									
American Toad	<i>Anaxyrus americanus</i>	S5	G5						
Northern Green Frog	<i>Lithobates clamitans</i>	S5	G5						
Northern Leopard Frog	<i>Lithobates pipiens</i>	S5	G5	NAR	NAR				
REPTILES									
Eastern Gartersnake	<i>Thamnophis sirtalis</i>	S5	G5						
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S3	G5	SC	SC			Dead on Wilson Road, 6cm long	
BIRDS									
Wood Duck	<i>Aix sponsa</i>	S5	G5						
Wild Turkey	<i>Meleagris gallopava</i>	S5	G5						
Turkey Vulture	<i>Cathartes aura</i>	S5B	G5						
Osprey	<i>Pandion haliaetus</i>	S5B	G5				7		
Northern Harrier	<i>Circus cyaneus</i>	S4B	G5	NAR	NAR	55		X	Non-breeding; observed September 30
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	G5	NAR	NAR				
Killdeer	<i>Charadrius vociferus</i>	S5B, S5N	G5						
American Woodcock	<i>Scolopax minor</i>	S4B	G5						
Ring-billed Gull	<i>Larus delawarensis</i>	S5B, S4N	G5						
Rock Pigeon	<i>Columba livia</i>	SNA	G5						
Mourning Dove	<i>Zenaidura macroura</i>	S5	G5						
Great Horned Owl	<i>Bubo virginianus</i>	S5	G5						
Short-eared Owl	<i>Asio flammeus</i>	S2N, S4B	G5	SC	SC-3	75		X	Non-breeding; observed December 2-3
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	S5B	G5						
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	S4	G5						
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S5B	G5			30-50			Non-breeding; observed September 30
Downy Woodpecker	<i>Picoides pubescens</i>	S5	G5						
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5			10			
Northern Flicker	<i>Colaptes auratus</i>	S4B	G5					X	
Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5	G5			30-50*			
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	G5					X	
Alder Flycatcher	<i>Empidonax alnorum</i>	S5B	G5						
Willow Flycatcher	<i>Empidonax traillii</i>	S5B	G5					X	
Eastern Phoebe	<i>Sayornis phoebe</i>	S5B	G5						
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	S4B	G5						
Eastern Kingbird	<i>Tyrannus tyrannus</i>	S4B	G5					X	
Northern Shrike	<i>Lanius excubitor</i>	SNA	G5						
Warbling Vireo	<i>Vireo gilvus</i>	S5B	G5						
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	G5						
Blue Jay	<i>Cyanocitta cristata</i>	S5	G5						
American Crow	<i>Corvus brachyrhynchos</i>	S5B	G5						
Horned Lark	<i>Eremophila alpestris</i>	S5B	G5						
Tree Swallow	<i>Tachycineta bicolor</i>	S4B	G5						

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status PIF Priority Species	Comment
Barn Swallow	<i>Hirundo rustica</i>	S4B	G5						
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	G5						
White-breasted Nuthatch	<i>Sitta carolinensis</i>	S5	G5			10			
House Wren	<i>Troglodytes aedon</i>	S5B	G5						
Golden-crowned Kinglet	<i>Regulus satrapa</i>	S5B	G5			0	7		Non-breeding; observed September 30
Ruby-crowned Kinglet	<i>Regulus calendula</i>	S4B	G5				6,7		Non-breeding; observed October 19
Eastern Bluebird	<i>Sialia sialis</i>	S5B	G5	NAR	NAR				
Veery	<i>Catharus fuscescens</i>	S4B	G5			10-20			
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	G5					X	
American Robin	<i>Turdus migratorius</i>	S5B	G5						
Gray Catbird	<i>Dumetella carolinensis</i>	S4B	G5						
Northern Mockingbird	<i>Mimus polyglottos</i>	S4	G5						Non-breeding; observed October 13
European Starling	<i>Sturnus vulgaris</i>	SNA	G5						
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5B	G5						
Northern Parula	<i>Parula americana</i>	S4B	G5			100	6,7		Non-breeding; observed September 24
Yellow Warbler	<i>Dendroica petechia</i>	S5B	G5						
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	G5			20			
Common Yellowthroat	<i>Geothlypis trichas</i>	S5B	G5						
Chipping Sparrow	<i>Spizella passerina</i>	S5B	G5						
Field Sparrow	<i>Spizella pusilla</i>	S4B	G5					X	
Vesper Sparrow	<i>Pooecetes gramineus</i>	S4B	G5					X	
Savannah Sparrow	<i>Passerculus sandwichensis</i>	S4B	G5					X	
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B	G5					X	
Song Sparrow	<i>Melospiza melodia</i>	S5B	G5						
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5B	G5			20			Non-breeding; observed September 30
Scarlet Tanager	<i>Piranga olivacea</i>	S4B	G5			20			
Northern Cardinal	<i>Cardinalis cardinalis</i>	S5	G5						
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4B	G5					X	
Indigo Bunting	<i>Passerina cyanea</i>	S4B	G5						
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	G5	THR	THR-NS	10		X	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S5	G5						
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	G5					X	
Common Grackle	<i>Quiscalus quiscula</i>	S5B	G5						
Brown-headed Cowbird	<i>Molothrus ater</i>	S4B	G5						
Baltimore Oriole	<i>Icterus galbula</i>	S4B	G5					X	
American Goldfinch	<i>Carduelis tristis</i>	S5B	G5						
MAMMALS									
Star-nosed Mole	<i>Condylura cristata</i>	S5	G5						
Eastern Cottontail	<i>Sylvilagus floridanus</i>	S5	G5						
Grey Squirrel	<i>Sciurus carolinensis</i>	S5	G5						
Muskrat	<i>Ondatra zibethicus</i>	S5	G5						
Raccoon	<i>Procyon lotor</i>	S5	G5						
White-tailed Deer	<i>Odocoileus virginianus</i>	S5	G5						

COMMON NAME	SCIENTIFIC NAME	GLOBAL		COSSARO	COSEWIC	AREA (ha)	REGION	Local Status PIF Priority Species	Comment
		ONTARIO STATUS	STATUS						
SUMMARY									
Total Butterflies:									
Total Amphibians:									
Total Reptiles:									
Total Birds:		1							
Total Breeding Birds:									
Total Mammals:									
SIGNIFICANT SPECIES									
Global:									
National:									
Provincial:									
Regional:									
Local:									
Explanation of Status and Acronymns									
COSSARO: Committee on the Status of Species at Risk in Ontario									
COSEWIC: Committee on the Status of Endangered Wildlife in Canada									
REGION: Rare in a Site Region									
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)									
S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),									
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)									
S4: Apparently Secure—Uncommon but not rare									
S5: Secure—Common, widespread, and abundant in the province									
SX: Presumed extirpated									
SH: Possibly Extirpated (Historical)									
SNR: Unranked									
SU: Unrankable—Currently unrankable due to lack of information									
SNA: Not applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.									
S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species									
S#B- Breeding status rank									
S#N- Non Breeding status rank									
?: Indicates uncertainty in the assigned rank									
G1: Extremely rare globally; usually fewer than 5 occurrences in the overall range									
G1G2: Extremely rare to very rare globally									
G2: Very rare globally; usually between 5-10 occurrences in the overall range									
G2G3: Very rare to uncommon globally									
G3: Rare to uncommon globally; usually between 20-100 occurrences									
G3G4: Rare to common globally									
G4: Common globally; usually more than 100 occurrences in the overall range									

COMMON NAME	SCIENTIFIC NAME	GLOBAL ONTARIO STATUS	STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status PIF Priority Species	Comment
G4G5: Common to very common globally									
G5: Very common globally; demonstrably secure									
T: Denotes that the rank applies to a subspecies or variety									
END: Endangered									
THR: Threatened									
SC: Special Concern									
2, 3 or NS after a COSEWIC ranking indicates the species is either on Schedule 2, Schedule 3 or No Schedule of the Species At Risk Act (SARA)									
NAR: Not At Risk									
IND: Indeterminant, insufficient information to assign status									
DD: Data Deficient									
6: Rare in Site Region 6									
7: Rare in Site Region 7									
Area: Minimum patch size for area-sensitive species (ha)									
H- highly significant in Hamilton Region (i.e. rare)									
m- moderately significant in Hamilton Region (i.e. uncommon)									
L1- extremely rare locally (Toronto Region)									
L2- very rare locally (Toronto Region)									
L3- rare to uncommon locally (Toronto Region)									
HR- rare in Halton Region, highly significant									
HU- uncommon in Halton Region, moderately significant									
* The Pileated Woodpecker will incorporate smaller woodlots into its homerange, therefore it may not be a true area-sensitive species (Naylor et al. 1996)									
LATEST STATUS UPDATE									
Butterflies: September, 2009									
Amphibians: September, 2009									
Reptiles: September, 2009									
Birds: September, 2009									
Mammals: September, 2009									
S and G ranks and explanations: September, 2009									
NOTE									
All rankings for birds refer to breeding birds unless the ranking is followed by N									
REFERENCES									
COSSARO Status									
Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. June 30 2008.									
COSEWIC Status									
COSEWIC. 2007. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada. September 11, 2007 with updates from COSEWIC Assessments November 2007, April 2008									
Local Status									

COMMON NAME	SCIENTIFIC NAME	GLOBAL ONTARIO STATUS	STATUS	COSSARO	COSEWIC	AREA (ha)	REGION	Local Status PIF Priority Species	Comment
Dwyer, Jill K. 2003. Nature Counts Project Hamilton Natural Areas Inventory 2003. Species Checklists. Hamilton Naturalists Club.									
Halton Natural Areas Inventory 2006: Volume 2 Species Checklists (ISBN 0-9732488-7-4)									
Ontario Partners in Flight. 2006. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), Priorities, Objectives and Recommended Actions. Environment Canada and Ontario Ministry of Natural Resources. Draft, February 2006.									
Region of Waterloo. 1996. Regionally Significant Breeding Birds.									
TRCA. 2003. Revised Fauna Scores and Ranks, February 2003. Toronto Region Conservation Authority.									
Area-sensitive information									
Austen, M.J.W., M.D. Cadman, and R.D. James. 1994. Ontario birds at risk: status and conservation needs. Toronto and Port Rowan, ON: Federation of Ontario Naturalists and Long Point Bird Observatory. 165 pp.									
Dunn, Erica H. and David J. Agro. 1995. Black Tern (<i>Chlidonias niger</i>), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/147									
Herkert, J.R. 1991. An ecological study of the breeding birds of grassland habitats within Illinois. Ph.D. dissertation. University of Illinois, Urbana, IL. 112 pp.									
Hejl, S.J., J.A. Holmes, and D.E. Kroodsmma. 2002. Winter Wren (<i>Troglodytes troglodytes</i>). In Poole, A., and F. Gill, eds. The birds of North America, No. 623. Philadelphia, PA: The Birds of North America, Inc. 31 pp.									
Naylor, B. J., J. A. Baker, D. M. Hogg, J. G. McNicol and W. R. Watt. 1996. Forest Management Guidelines for the Provision of Pileated Woodpecker Habitat. Ontario Ministry of Natural Resources, Forest Management Branch, Sault Ste. Marie, Ontario. 26 pp.									
Page, A.M., and M.D. Cadman. 1994. Status report on the Acadian Flycatcher <i>Empidonax virescens</i> in Canada. Prepared for the Committee on the Status of Endangered Wildlife in Canada. 27 pp									
Robbins, C.S. 1979. Effect of forest fragmentation on bird populations. Pp. 198-212 in DeGraaf, R.M., and K.E. Evans, eds. Management of northcentral and northeastern forests for nongame birds. United States Department of Agriculture, Forest Service General Technical Report NC-51. 268 pp.									
Sandilands, A. 2005. Birds of Ontario. Habitat Requirements, Limiting Factors and Status. UBC Press.									

Appendix G

List of Breeding Birds by Feature

COMMON NAME	SCIENTIFIC NAME	ONTARIO STATUS	GLOBAL STATUS	COSSARO	COSEWIC	AREA (ha)	Local Status PIF Priority Species	Feature 4	Feature 7	Feature 10	Feature 14	Feature 19	Feature 22	Feature 30	Feature 31	Feature 32	Feature 34	Feature 39	Feature 42	Feature 51	Feature 54	Feature 55	Feature 58	Feature 66	Feature 68	Feature 73	Feature 79		
Explanation of Status and Acronyms																													
COSSARO: Committee on the Status of Species at Risk in Ontario																													
COSEWIC: Committee on the Status of Endangered Wildlife in Canada																													
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S5: Secure—Common, widespread, and abundant in the province																													
SX: Presumed extirpated																													
SH: Possibly Extirpated (Historical)																													
SNR: Unranked																													
SU: Unrankable—Currently unrankable due to lack of information																													
SNA: Not applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.																													
S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species																													
S#B- Breeding status rank																													
S#N- Non Breeding status rank																													
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G4: Common globally; usually more than 100 occurrences in the overall range																													
G4G5: Common to very common globally																													
G5: Very common globally; demonstrably secure																													
T: Denotes that the rank applies to a subspecies or variety																													
END: Endangered																													
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2, 3 or NS after a COSEWIC ranking indicates the species is either on Schedule 2, Schedule 3 or No Schedule of the Species At Risk Act (SARA)																													
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HR- rare in Halton Region, highly significant																													
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* The Pileated Woodpecker will incorporate smaller woodlots into its homerange, therefore it may not be a true area-sensitive species (Naylor et al. 1996)																													
LATEST STATUS UPDATE																													
Butterflies: September, 2009																													
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REFERENCES																													
COSSARO Status																													
Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. June 30 2008.																													
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Local Status																													
Dwyer, Jill K. 2003. Nature Counts Project Hamilton Natural Areas Inventory 2003. Species Checklists. Hamilton Naturalists Club.																													

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Ontario Partners in Flight. 2006. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), Priorities, Objectives and Recommended Actions. Environment Canada and Ontario Ministry of Natural Resources. Draft, February 2006.																											
Region of Waterloo. 1996. Regionally Significant Breeding Birds.																											
TRCA. 2003. Revised Fauna Scores and Ranks, February 2003. Toronto Region Conservation Authority.																											
Area-sensitive information																											
Austen, M.J.W., M.D. Cadman, and R.D. James. 1994. Ontario birds at risk: status and conservation needs. Toronto and Port Rowan, ON: Federation of Ontario Naturalists and Long Point Bird Observatory. 165 pp.																											
Dunn, Erica H. and David J. Agro. 1995. Black Tern (<i>Chlidonias niger</i>). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/147																											
Herkert, J.R. 1991. An ecological study of the breeding birds of grassland habitats within Illinois. Ph.D. dissertation. University of Illinois, Urbana, IL. 112 pp.																											
Naylor, B. J., J. A. Baker, D. M. Hogg, J. G. McNicol and W. R. Watt. 1996. Forest Management Guidelines for the Provision of Pileated Woodpecker Habitat. Ontario Ministry of Natural Resources, Forest Management Branch, Sault Ste. Marie, Ontario. 26 pp.																											
Page, A.M., and M.D. Cadman. 1994. Status report on the Acadian Flycatcher <i>Empidonax vireescens</i> in Canada. Prepared for the Committee on the Status of Endangered Wildlife in Canada. 27 pp																											
Robbins, C.S. 1979. Effect of forest fragmentation on bird populations. Pp. 198-212 in DeGraaf, R.M., and K.E. Evans, eds. Management of northcentral and northeastern forests for nongame birds. United States Department of Agriculture, Forest Service General Technical Report NC-51. 268 pp.																											
Hejl, S.J., J.A. Holmes, and D.E. Kroodsmma. 2002. Winter Wren (<i>Troglodytes troglodytes</i>). In Poole, A., and F. Gill, eds. The birds of North America, No. 623. Philadelphia, PA: The Birds of North America, Inc. 31 pp.																											
Sandilands, A. 2005. Birds of Ontario. Habitat Requirements, Limiting Factors and Status. UBC Press.																											

Stantec

GRAND RENEWABLE ENERGY PARK

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

Appendix H

Curricula Vitae

Shannon D. Catton M.Sc.

Terrestrial Ecologist / Project Manager



Shannon completed her undergraduate degree with honours in Sociology and Biology and her Masters degree in Botany at the University of Guelph. Her M.Sc. focused on quarry rehabilitation using alvar ecosystems as a restoration target.

Shannon is certified in Ontario Ministry of Natural Resources Ecological Land Classification (ELC) and in Ontario Wetland Evaluation Systems (OWES), adding to her experience in habitat assessments, vegetation surveys, vegetation and soil sampling, vascular plant identification and statistical analysis. Shannon possesses strong skills in public relations with both the public and private sectors: she has presented her research at both national and international conferences; she has been a Teaching Assistant for several University of Guelph courses including Biology, Ecology and Plants in the Ontario Landscape; and she has presented project-related results at various workshops and seminars for governing agencies and local interest groups regarding a large scale environmental assessment.

Shannon also is a published author for various publications including articles in the journals Canadian Reclamation and Applied Vegetation Science.

EDUCATION

M.Sc., University of Guelph / Botany, Guelph, Ontario, 2006

B.A., B.Sc., University of Guelph / Sociology and Biology (Hons), Guelph, Ontario, 2003

Certificate, Ontario Ministry of Natural Resources Ontario Wetland Evaluation Systems (OWES) Training Course, North Bay, Ontario, 2008

Certificate, Ontario Ministry of Natural Resources Ecological Land Classification for Southern Ontario (ELC), Turkey Point, Ontario, 2006

PROJECT EXPERIENCE

Aggregate Services

Terrestrial Surveys for Various Pit and Quarry Implementation and Extension Projects, Ontario (Terrestrial Ecologist)

Terrestrial surveys for the following projects included habitat assessments, floral inventories, tree surveys, American Hart's Tongue Fern surveys (a species at risk), winter wildlife surveys, salamander egg mass surveys and reptile hibernacula surveys.

- Proposed Duntroon Quarry Extension, Duntroon, ON;
- Proposed Hillsburgh Quarry, Hillsburgh, ON;
- Proposed Flamborough Quarry, Hamilton, ON;
- Proposed West Montrose Quarry, West Montrose, ON.

Dufferin Aggregates Acton Quarry Extension, Acton, Ontario (Terrestrial Ecologist, Project Coordinator)

Terrestrial surveys included salamander migration surveys, salamander egg mass surveys, salamander tissue sampling (in conjunction with OMNR), and amphibian calling surveys. Coordination of project includes proposed additional fieldwork, technical reporting and species at risk permit applications.

Electrical Power Distribution

Coote's Paradise Transmission Reinforcement Project, Hamilton, Ontario (Terrestrial Lead, Technical Reporting)

Terrestrial surveys included vegetation community assessments, floral inventory and species at risk habitat assessments. Technical reporting and species at risk assessment in conjunction with local Conservation Authority.

Bruce to Milton Transmission Reinforcement Project Environmental Assessment Report, Southern Ontario (Lead Terrestrial Ecologist)

Terrestrial surveys included vegetation community assessments, floral inventories, winter wildlife and species at risk habitat assessments. Technical reporting and development of a comprehensive terrestrial monitoring and mitigation report.

Natural Sciences & Heritage Resources

Nature Counts Natural Areas Inventory, Hamilton Conservation Authority* (Ecological Land Classification Coordinator)

Provided the Hamilton Conservation Authority and the City of Hamilton with current vegetation inventories and identified and classified Areas of Natural and Scientific Interest (ANSI) using Ecological Land Classification (ELC). Other tasks included habitat mapping, air photo interpretation, orienteering, GPS, ground truthing, mineral and organic soil description and identification and soil moisture regimes and drainage.

* denotes projects completed with other firms

Shannon D. Catton M.Sc.

Terrestrial Ecologist / Project Manager

Oil & Gas

Proposed Bickford to Dawn Pipeline Project, Chatham, Ontario (Terrestrial Lead, Technical Reporting)

Terrestrial surveys included vegetation community assessments, floral inventory and species at risk habitat assessments. Study design and development in conjunction with local OMNR district for Eastern Foxsnake, including a species at risk 17b permit application.

Highway 21 Rehabilitation, Bayfield to St. Joseph, Ontario (Terrestrial Ecologist, Technical Reporting)

Terrestrial surveys included vegetation community assessments, floral inventory, incidental wildlife and nest searches and structure assessments in compliance with the Migratory Bird Act.

Renewable Energy

Melancthon I Wind Plant Project, Shelburne, Ontario (Terrestrial Ecologist)

Terrestrial surveys included winter raptor surveys (pre- and post-construction) and bird and bat mortality monitoring.

Wolfe Island Wind Power Project - 86 Turbines, 197.6 MW, Wolfe Island, Ontario (Terrestrial Ecologist)

Terrestrial surveys included winter raptor surveys (pre- and post-construction).

Research / Laboratories

Biophysical Comparisons of Quarry Floors and Alvars of Southern Ontario, University of Guelph* (Researcher and Technician)

Examined the ecological similarities and differences of abandoned limestone quarry floors and alvars to determine whether alvar habitat could be a potential restoration target for abandoned limestone quarry floors. Developed sampling designs, identified lichens, mosses and vascular plants and performed statistical analyses on descriptive and multi-variate data.

Residential Development

Natural Heritage Evaluations for Various Residential Development Projects, Ontario

Environmental Impact Studies for various residential development projects in the Oak Ridges Moraine (ORM) planning area.

Transportation Planning

Highway 11, Preliminary Design Study, Access Review from Powassan to Callander, Ontario (Technical Reporting)

Highway 3 Rehabilitation, Detail Design, Renton to Jarvis, Ontario (Technical Reporting)

* denotes projects completed with other firms

Shannon D. Catton M.Sc.

Terrestrial Ecologist / Project Manager

PUBLICATIONS

Matthes, U., P.J. Richardson, S. Catton, C.D. Stabler, D.W. Larson. The quarry-to-alvar initiative: Creating new alvar habitat from abandoned limestone quarries. *Canadian Reclamation*, 2:10-15, 2009.

Tomlinson, S., U. Matthes, P.J. Richardson, D.W. Larson. The ecological equivalence of quarry floors to alvars. *Applied Vegetation Science*, 11:73-82, 2008.

A comparison of the biophysical characteristics and seed banks of abandoned limestone quarry floors in southern Ontario and alvars. *M.Sc. Thesis, Department of Biology, University of Guelph, Ontario, 2006.*

A comparative analysis of the seed bank, vegetation and environmental conditions of abandoned limestone quarry floors of southern Ontario and alvars on the Bruce Peninsula, Canada. *Presentation to the World Conference on Ecological Restoration by the Society of Ecological Restoration (SER), Spain, 2005.*

Biological and physical comparisons of quarry floors and alvars. *Presentation to the Aggregate Producers' Association of Ontario Pit and Quarry Restoration Workshop, Hamilton, Ontario, 2005.*

Using alvars as a reference ecosystem to restore abandoned limestone quarries. *Poster Presentation at the A.D. Latornell Conservation Symposium, Alliston, Ontario, 2004.*

A comparative analysis of the seed bank, vegetation and environmental characteristics of abandoned limestone quarry floors of southern Ontario and alvars on the Bruce Peninsula. *Presentation to the Ontario Ecology and Ethology Colloquium (OEEC), Mississauga, Ontario, 2004.*

The quarry-to-alvar initiative: progress report. *The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2004.*

The quarry-to-alvar initiative: progress report. *The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2003.*

The quarry-to-alvar initiative: restoring value to abandoned quarries. *The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2002.*

James Heslop

Bird Surveyor



James Heslop has thirty (30) years experience birding and record-keeping experience. He has volunteered with the Audubon Christmas Bird Censuses in Pickering, Hamilton, Fisherville, St. Catharines, and 25 years at Long Point. James was a volunteer for the Ontario Breeding Bird Atlas from 1981 to 1985, and from 2001 to 2005 (including point counts). He has also been involved with Ontario Forest Bird Monitoring of the Dundas Valley, was past recording secretary of the Norfolk Field Naturalists (NFN), past president of the Pickering Field Naturalists (PFN), was a Founding Member and is a Life Member of the Ontario Field Ornithologists (OFO), was the past lead editor of OFO News, past publicity director of the Hamilton Naturalists' Club (HNC), is the current treasurer of the HNC, is the leader of field outings for the NFN, PFN, HNC and OFO, and is a current member of Hamilton Waterfront Trust Eastport Drive Trail Project Advisory Group.

EDUCATION

Birding Courses, Sheridan College, Ontario, 1980

Commerce and Finance, University of Toronto, Ontario, 1972

PROJECT EXPERIENCE

Environmental Management

Migratory and Breeding Bird Surveys*

Migratory and breeding bird surveys for Positive Power Cooperative Inc, Dougan and Associates, Trow Associates

Field Surveys*

Study of hooded warblers, acadian flycatchers and invasive plants for Bird Studies Canada

Bird Strike Surveys*, Burlington Beach, Ontario (Bird Surveying and Monitoring)

Environment Canada

* denotes projects completed with other firms

Brandon Holden

Environmental Scientist



Stantec

Brandon joined Stantec in 2008. He has been birding extensively in Ontario and Eastern North America since 1997. Having recorded 344 species in Ontario, Brandon has a keen personal interest in finding vagrant bird species; highlighted last year by finding and photographing the first Black-tailed Gull (*Larus crassirostris*) for the province. A recent accomplishment was being voted onto the Ontario Bird Records Committee; the youngest member in its 30 year history. At Stantec, Brandon is responsible for carrying out seasonal bird and wildlife field surveys throughout Ontario, including some lengthy programs at remote sites.

EDUCATION

Lambton College, Sarnia, Ontario, 2007

PROFESSIONAL ASSOCIATIONS

Voting Member, Ontario Bird Record Committee (OBRC)

Member, Bird Studies Canada

Member, Ontario Field Ornithologists

Member, American Birding Association

AWARDS

Finalist, Veolia Wildlife Photographer of the Year, London England, 2009

NatureScapes.net Image of the Week - Multiple Weeks, 2006-2009

Ross Thompson Trophy for Proficiency in Ornithology - 2004

Doug Tarry Young Ornithologist Award - 2002

Hamilton Civic Award - 2002

Ross Thompson Trophy for Proficiency in Ornithology - 2002

PROJECT EXPERIENCE

Research

Port Alma Wind Project, Municipality of Chatham-Kent, Ontario (Environmental Scientist)

Brandon conducted migratory bird surveys.

Sault Ste. Marie Wind Power Project, Algoma District, Ontario (Environmental Scientist)

Brandon conducted migratory bird surveys.

Thunder Bay Wind Power Project, Thunder Bay District, Ontario (Environmental Scientist)

Brandon conducted migratory bird surveys.

Melancthon Wind Project, Dufferin County, Ontario (Environmental Scientist)

Brandon conducted breeding bird surveys.

Ostrander Point Wind Energy Park, Prince Edward County, Ontario (Environmental Scientist)

Brandon conducted surveys on breeding, migratory and wintering birds.

Wolfe Island Wind Project, Wolfe Island, Ontario (Environmental Scientist)

Brandon conducted surveys on breeding, migratory and wintering birds.

* denotes projects completed with other firms

Brandon Holden

Environmental Scientist

Sports, Recreation & Leisure

Volunteer Work, Multiple Locations* (Volunteer)

Annual leader of guided hikes for the Ontario Field Ornithologists, including a featured hike leader for two of the past three annual conventions. Brandon continues to volunteer by donating photographs to various provincial and local organizations. He also volunteers with the Hamilton Naturalists Club assisting with the Fall Bird Counts since 2001, and worked with the Haldimand Bird Observatory with bird banding.

Peregrine Prints, Multiple Locations* (Photographer)

Brandon established and maintains his own website, www.peregrineprints.com, showcasing his natural history photography and information. In 2010 the site has attracted over 23,000 visits and captured 800,000 hits as of June 1, 2010.

Emergency Planning / Response

Emergency Medical Care Training, Multiple Locations*

Brandon has taken extensive medical training; starting with general First Aid many years ago. He has upgraded this to Standard First Aid, First Responder and in 2008 obtained certification as an Emergency Medical Responder - the highest level available below Paramedic. Brandon also holds a (60 hour) Emergency Patient Care certificate from Lambton College.

** denotes projects completed with other firms*

James completed his Bachelor of Environmental Studies at the University of Waterloo, with a focus on applied ecology and environmental policy. He has successfully completed numerous certificate workshops, such as wetland evaluation and Ecological Land Classification (ELC) and is a designated health assessor of Endangered butternut trees, issued by the Ontario Ministry of Natural Resources.

James has acquired a variety of terrestrial and aquatic field skills, including winter wildlife surveys, herpetofauna identification (egg mass / call / specimen), bat monitoring, raptor surveys, spawning and stream flow surveys, and has assisted with backpack and boat electrofishing. James specializes in vegetation assessments, particularly plant identification, ELC, wetland delineation, and vegetation monitoring. Additionally, he has gained experience writing natural heritage components of Environmental Impact Studies, Environmental Assessments, and Natural Environment Technical Reports.

James provides expertise in a variety of sectors, including aggregate extraction, energy, urban lands development, and highway infrastructure. He has led or assisted in project tasks pertaining to forest restoration, ecological monitoring, and field research of rare species, among others.

EDUCATION

Certificate, Ontario Wetland Evaluation System, North Bay, Ontario, 2009

Certificate, Ecological Monitoring and Assessment Network, Turkey Point, Ontario, 2008

Certificate, Ecological Land Classification for Southern Ontario, Kingston, Ontario, 2007

Certificate, Butternut Health Assessment, Burlington, Ontario, 2009

B.E.S., University of Waterloo / Environmental Studies / Geography, Waterloo, Ontario, 2006

Certificate, Humboldt Field Research Institute / Applied Field Identification of Grasses and Sedges, Steuben, Maine, 2010

PROFESSIONAL ASSOCIATIONS

Member, Botanical Society of America

Member, Field Botanists of Ontario

PROJECT EXPERIENCE

Aggregate Services

Proposed Duntroon Quarry Expansion, Duntroon, Ontario (Terrestrial Ecologist)

Designed and conducted a multi-year research program to assess the habitat characteristics of American hart's-tongue fern – a federal and provincial Special Concern species. Research examined various features of soil, ambient air, tree canopy cover, associate species, and snow depth. The purpose of this research was to compare and contrast known habitat with potential transplant locations. A preliminary transplant of over 500 ferns was conducted where post-transplant monitoring studies are ongoing. Unrelated surveys conducted onsite include butternut health assessments and forest plot assessments using protocols outlined in the Ecological Monitoring and Assessment Network (EMAN).

Proposed Flamborough Quarry, Hamilton, Ontario (Ecologist)

Aquatic surveys included stream flow discharge and uploading of data loggers. Terrestrial surveys included winter wildlife surveys and health assessments of over 100 butternut trees using 2009 OMNR guidelines.

Acton Quarry Environmental Review, Acton, Ontario (Terrestrial Ecologist)

Assist with extensive amphibian surveys to identify significant wildlife habitat, species composition, and presence or absence of pure Jefferson salamander specimens. Surveys included call-counts, egg mass surveys, pit and aquatic trapping, and tail clippings of potential Jefferson species (in conjunction with the OMNR). Assisted with surveys in 2007 and thereafter, which remain ongoing.

James Leslie B.E.S.

Terrestrial Ecologist

Environmental Mitigation and Monitoring

Various Urban Lands Projects, Waterloo and Oakville, Ontario (Terrestrial Ecologist)

Monitor vegetation communities using Ecological Monitoring and Assessment Network (EMAN) and local Conservation Authority guidelines. Field surveys consisted of identifying vascular plants growing within pre-determined plots and determining their respective cover; photographic records were compiled each year for temporal comparison. Data analysis included calculation of frequency, dominance, and importance value.

Georgia Pacific PCB Remediation, Thorold, Ontario (Terrestrial Ecologist)

ELC; mapping and evaluation of species at risk (Butternut); develop vegetation monitoring plots to determine density, frequency, dominance, and importance value; data synthesis, and technical memorandum.

Oil & Gas

Union Gas Lobo Compressor Station Expansion, Strathroy, Ontario (Terrestrial Ecologist)

Assist with Project Management of a proposed compressor station expansion, including proposal and budget; conduct/delegate appropriate field surveys; compile background data through review of Official Plan, Significant Wildlife Habitat Technical Guide, Ontario Provincial Policy Statement, etc.; agency consultation. Deliverables consisted of an Environmental Impact Study report.

Power Transmission & Distribution

Bruce to Milton Transmission Project, Milton, Ontario (Terrestrial Ecologist)

180 km linear study area of proposed hydro transmission lines from Bruce Nuclear to Milton, Ontario. Assisted with ELC, butternut health assessments, flora inventories, and winter wildlife surveys.

Renewable Energy

Terrestrial Surveys for Wind and Solar Projects, Various Municipalities, Ontario (Terrestrial Ecologist)

Conducted numerous site assessments based on the Renewable Energy Approvals (REA) process for proposed layouts near Belwood, Port Dover, Sydenham, Whittington, St. Columban, and Prince Edward County. Field work included ELC, wetland delineations and evaluations using the Ontario Wetland Evaluation System (OWES), floral and faunal species inventories, and identification of significant wildlife habitat. Study areas included proposed turbine locations, access roads, and transmission corridors. Data analysis and summaries were provided in the respective Natural Heritage Assessment Reports.

Island Falls Energy Project, Smooth Rock Falls, Ontario (Terrestrial Ecologist)

Field work component of a proposed hydroelectric dam in Northern Ontario. Assist with ELC, botanical inventory, and soil surveys in remote areas.

Avian Surveys for Wind and Solar Projects, Various Municipalities, Ontario (Terrestrial Ecologist)

Avian monitoring was conducted at Kingsbridge, Melancthon, Ostrander, Parkhill, and Plateau wind energy locations. Field work consisted of installation, troubleshooting, and data retrieval of Anabat SD1 monitoring devices. Received training for data interpretation and isolation of bat calls based on digital graph patterns. Post-construction surveys of avian mortality under active wind turbines were completed for the Kingsbridge and Melancthon locations.

Terrestrial Assessments

Master Service Plan, Cayuga and Jarvis, Ontario (Terrestrial Ecologist)

Develop ELC mapping for the towns of Jarvis and Cayuga. The purpose was to update natural heritage data for the respective Master Service Plan revisions. Data analysis included ecological constraints mapping and authoring a technical memorandum.

Transportation Planning

Highway 3 Rehabilitation, Detail Design, Renton to Jarvis, Ontario (Terrestrial Ecologist)

This work was conducted to identify natural features where road widening and culvert replacement was proposed. Performed ELC and compiled records of local flora and fauna. The study area included Endangered butternut trees and a variety of forested, wetland, and cultural communities. A Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitat. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines.

Highway 69, Preliminary Design, Patrol Yard Selection, Parry Sound to Sudbury, Various Sites, Ontario (Terrestrial Ecologist)

This study was undertaken in order to assess a number of alternative locations for patrol yards within the study area, and to identify preferred alternatives at three locations. Performed ELC, compiled records of local flora and fauna, and identified significant wildlife habitat. Natural heritage features consisted of numerous wetland communities, large, contiguous forests, significant wildlife habitat and observations of a Threatened species. Fieldwork and reporting were conducted in accordance with MTO regulations and guidelines.

* denotes projects completed with other firms

James Leslie B.E.S.

Terrestrial Ecologist

Highway 17, Preliminary Design, Sudbury Southwest Bypass, Sudbury, Ontario (Terrestrial Ecologist)

The purpose of this study was to identify a four-lane highway plan for a section of Highway 17 through the Sudbury area, with access restricted to interchange locations only. Performed ELC, compiled records of local flora and fauna, and identified significant wildlife habitat. The study area included a variety of upland and wetland habitats, including Areas of Natural and Scientific Interest. Fieldwork and reporting were conducted in accordance with MTO regulations and guidelines.

Highway 11, Preliminary Design Study, Access Review from Powassan to Callander, Ontario (Terrestrial Ecologist)

This project was part of a study to upgrade the highway to 'full freeway standard', which included eliminating at-grade intersections and entrances and providing access to highway only at interchanges. Performed ELC, compiled records of local flora and fauna, and identified significant wildlife habitat. The study area included a variety of upland and wetland habitats. Fieldwork and reporting were conducted in accordance with MTO regulations and guidelines.

Highway 401 and Highway 8 Improvements, Preliminary Design, Kitchener, Ontario (Terrestrial Ecologist)

This study was undertaken to assess proposed interchange improvements in the cities of Kitchener and Cambridge along Highway 401 and Highway 8. Performed ELC, compiled records of local flora and fauna, and identified significant wildlife habitat. The study area included rare flora, Provincially and Locally Significant Wetland, and an Area of Natural and Scientific Interest (ANSI). A Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats. The preliminary impact assessment included constraint ratings of each ELC unit and the calculation of the areas potentially affected by the Preferred Plan. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines.

Highway 11, Preliminary Design Study, Improvements North of Highway 144, Huntsville, Ontario (Terrestrial Ecologist)

The purpose of this study was to undertake the Planning, Preliminary Design and Environmental Assessment for improvements to Highway 11 from 1 km north of Highway 141, northerly for 5.5 km. Performed ELC, compiled records of local flora and fauna, and identified significant wildlife habitat. The study area included a rare vegetation community not previously documented and a variety of upland and wetland habitat. A Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats. Fieldwork and reporting were conducted in accordance with MTO regulations and guidelines.

Highway 11, Preliminary Design Study, South Entrance to Powassan, Powassan, Ontario (Terrestrial Ecologist)

This study was carried out to update a Preliminary Design Report that recommended interchange locations for this stretch of Highway 11. Performed ELC, compiled records of local flora and fauna, and identified significant wildlife habitat. The study area included significant features, a variety of habitats, and cultural communities. Fieldwork and reporting were conducted in accordance with MTO regulations and guidelines.

Municipal Road Improvement Projects, Various Sites, Ontario (Terrestrial Ecologist)

Conducted ELC and wetland delineations using OMNR protocols. Identified wildlife habitat and determined potential impacts and mitigation options.
- City of London, Southdale Road Widening
- City of London, Hamilton Road Improvements

Victoria Road North Class EA, Guelph, Ontario (Terrestrial Ecologist)

Assist with Task Management for a proposed road widening, including background data review of applicable legislation and guidelines; conduct or delegate appropriate field surveys; agency consultation; prepare a draft Natural Environment Technical Report and constraints analysis for a proposed parking area.

* denotes projects completed with other firms

Shari Muscat has over 10 years of experience in environmental resource planning and management. Shari is responsible for planning and coordinating environmental impact assessments and biological inventories in support of urban land development, transportation and watershed restoration projects. With a background in environmental resources planning, Shari has been involved in the implementation of the natural heritage and natural hazards policies of the Provincial Policy Statement, Conservation Authorities Regulations and municipal planning documents. Shari has developed a thorough understanding of the complex and evolving policy framework in the Province and a comprehensive understanding of the interconnections between the physical and the natural environment, and maintains a good working relationship with the review and approval agencies. Formerly with the Grand River Conservation Authority, she developed an extensive working knowledge of watershed management, environmental assessment and natural resources planning through input into the development of GRCA policies, public consultation and coordinating the review and approval of development applications, permits, aggregate applications and Environmental Assessments.

EDUCATION

Bachelor of Arts, Honours, Carleton University, Ottawa, Ontario, 1993

Bachelor of Environmental Studies, Urban and Regional Planning, University of Waterloo, Waterloo, Ontario, 1996

PROJECT EXPERIENCE

Approval Authority Review and Coordination Waterloo West Side Lands*, Waterloo, Ontario (Resource Planner)

Resource Planner with the GRCA responsible for reviewing and commenting and approving a proposed residential draft plan of subdivision in the City of Waterloo. Duties included coordinating the internal review of draft submissions, consulting with municipal staff and their consultants, preparing position statements on the proposed subdivision and resolving outstanding conflicts.

Environmental Assessments

Activa Weiss Environmental Impact Study, City of Kitchener, Ontario (Task Manager)

Task Manager responsible for the completion of an Environmental Impact Study to recommend measures to protect the natural features and functions in the area to support a residential site plan and zone change application. An EIS was prepared that considered the proposed plan of development adjacent to a significant woodlot and wetland, consolidated field investigation results pertaining to vegetation and wildlife assessments, identified the potential environmental impacts and discussed mitigation measures for each potential impact. Preparation of this report required the coordination of technical staff and active involvement with other study team members and approval agencies.

King and Fountain Streets Class EA, Cambridge, Ontario (Task Manager)

Environmental Planner responsible for the completion of a Natural Environment Report in support of a Class Environmental Assessment for the selection of a roadway alignment for King and Fountain Streets to alleviate road congestion.. In addition to writing the report, my role included agency consultation, corresponding with engineering staff, consolidating field investigation results pertaining to vegetation, wildlife and aquatic assessments to identify opportunities and constraints to be considered during the evaluation of route alternatives

Laurel Creek and Sanitary Sewer EA, Waterloo, Ontario (Task Manager)

Environmental Planner responsible for the completion of a Natural Environment Report in support of a Class Environmental Assessment for the selection of a preferred route for the construction of a trunk sanitary sewer alignment . In addition to writing the report, my role includes agency and public consultation, corresponding with engineering staff, consolidating field investigation results pertaining to vegetation, wildlife and aquatic and fluvial geomorphology assessments to identify opportunities and constraints to be considered during the evaluation of route alternative and recommend opportunities for rehabilitation.

Columbia Lake Environmental Assessment*, Waterloo, Ontario (Resource Planner)

Resource Planner with the GRCA and member of the technical Steering Committee responsible for coordinating the technical review, consulting with DFO, and providing advice to the City of Waterloo for the rehabilitation of Columbia Lake. This involvement focused on providing input to identify environmental constraints and opportunities for improving water quality and enhancing the existing ecological conditions of the lake.

* denotes projects completed with other firms

Shari L. Muscat B.A., B.E.S.

Project Manager

Tullis Estates Butler Pit Application for Aggregate Extraction*, Cambridge, Ontario (Resource Planner)
Resource Planner with the GRCA responsible for coordinating the review of a proposed below water table aggregate extraction application under the Aggregate Resources Act in the Township of North Dumfries. Duties included coordinating the internal review of submissions including operation and rehabilitation plans, consulting with Township and Regional staff, Ministry of Natural Resources and consultants, preparing positions statements on the proposed extraction and resolving outstanding conflicts.

Bridge Street and Bridgeport Bridge EA*, Kitchener, Ontario (Resource Planner)
Resource Planner with the GRCA responsible for coordinating the technical review, consulting with DFO and providing advice to the Region of Waterloo as input to the Environmental Assessment and GRCA permit process for the rehabilitation of the Bridgeport Bridge over the Grand River. This involvement focussed on ensuring the natural hazards associated with flooding and erosion were not aggravated and the natural heritage features and functions were protected from the impacts and design of the new bridge.

Clair Lake Environmental Assessment*, Waterloo, Ontario (Resource Planner)
Resource planner with the GRCA and member of the technical steering committee responsible for coordinating the technical review, consulting with DFO, providing input to the public participation process and providing advice to the City of Waterloo for the rehabilitation of Clair Lake. This involvement focused on providing input to identify environmental constraints and opportunities for improving water quality and enhancing existing ecological conditions of the lake and its upstream reaches.

Fairway Road Extension Class Environmental Assessment*, Kitchener, Ontario (Resource Planner)
Resource Planner with the GRCA responsible for coordinating the technical review, consulting with DFO and providing advice to the Region of Waterloo as input to the Environmental Assessment and GRCA permit process for the extension of Fairway Road over the Grand River. This involvement focussed on ensuring the natural hazards associated with flooding and erosion were not aggravated and the natural heritage features and functions were protected from the impacts and design of the new road and bridge.

Environmental Impact Assessments
Hearthwood Subdivision Environmental Impact Study, Kitchener, Ontario (Task Manager)

Task Manager responsible for the completion of an Environmental Impact Study to recommend measures to protect the natural features and functions in the area to support a residential plan of subdivision. An EIS is currently being prepared that considers the proposed plan of development adjacent to a woodlot and Provincially Significant Wetland, consolidates field investigation results pertaining to vegetation and wildlife assessments, identifies the potential environmental impacts and discusses mitigation measures for each potential impact. Preparation of this report requires the coordination of technical staff and active involvement with other study team members and approval agencies.

Winzen Developments on Myers Rd. Environmental Impact Study, Cambridge, Ontario (Task Manager)
Task Manager responsible for the completion of an Environmental Impact Study to recommend measures to protect the natural features and functions in the area to support a residential plan of subdivision. An EIS is currently being prepared that considers the proposed plan of development adjacent to a significant woodlot and wetland, consolidates field investigation results pertaining to vegetation and wildlife assessments, identifies the potential environmental impacts and discusses mitigation measures for each potential impact. Preparation of this report requires the coordination of technical staff and active involvement with other study team members and approval agencies.

Clerview Stables Environmental Impact Study, Guelph, Ontario (Environmental Planner)
Environmental Planner responsible for the completion of an Environmental Impact Study to recommend measures to protect the natural features and functions in the area to support a residential site plan of subdivision. An EIS was prepared that considered the proposed plan of development adjacent to a Provincially Significant Wetland and aquatic habitat features, identified the potential environmental impacts and discussed mitigation measures for each potential impact. Preparation of this report required involvement with other study team members and approval agencies.

* denotes projects completed with other firms

Shari L. Muscat B.A., B.E.S.

Project Manager

Sunningdale Meadows Scope Environmental Impact Study, London, Ontario (Environmental Planner)

Environmental Planner responsible for the completion of an Environmental Impact Study to recommend measures to protect the natural features and functions in the area to support a residential site plan of subdivision. An EIS was prepared that considered the proposed plan of development adjacent to an Environmentally Sensitive Area, wetland and aquatic habitat features, identified the potential environmental impacts and discussed mitigation measures for each potential impact. Preparation of this report required the coordination of technical staff and active involvement with other study team members and approval agencies.

Campbellvale Estates Development Assessment Report, Municipality of Strathroy-Caradoc, Ontario (Task Manager)

Task Manager responsible for the completion of a Development Assessment Report to recommend measures to protect the natural features and functions in the area to support a residential severance and zone change application. A report was prepared that considered the proposed plan of development adjacent to a significant woodlot, identified the potential environmental impacts and discussed mitigation measures for each potential impact. Preparation of this report required the coordination of technical staff and active involvement with other study team members and approval agencies

Safety Kleen Site Expansion, Township of Woolwich, Ontario (Task Manager)

Task Manager responsible for the completion of an Environmental Impact Study recommending measures to protect the natural features and functions in the area to support the expansion of an industrial use adjacent to wetland and aquatic habitat features. An EIS was prepared that considered the proposed plan of development, the potential environmental impacts and discussed mitigation measures for each potential impact. Preparation of this report required the coordination of technical staff, field investigations and active involvement with other study team members and approval agencies.

Environmental Planning

London Psychiatric Hospital Lands Area Plan, City of London, Ontario (Environmental Planner)

Performed a preliminary environmental constraints analysis for the subject lands, using published resources and initial field investigations, including Chimney Swift surveys, to identify constraints to development. Information was presented to the client in report format

Bridgeport Industrial Subdivision Environmental Impact Study, Kitchener, Ontario (Task Manager)

Task Manager responsible for the completion of an Environmental Impact Study to recommend measures to protect the natural features and functions in the area. An EIS was prepared that considered the proposed plan of development, the potential environmental impacts and discussed mitigation measures for each potential impact. Preparation of this report required the coordination of technical staff and active involvement with other study team members.

Lackner Boulevard and Fairway Road – Environmental Constraint & Opportunities Report, Kitchener, Ontario (Environmental Planner)

Performed a preliminary environmental constraints analysis for the subject lands, using published resources and initial field investigations to identify constraints to development. Information was presented to the client in report format.

North Waterloo Subwatershed Study*, Waterloo, Ontario (Resource Planner)

Resource Planner and Steering Committee member representing the GRCA in support of completing a subwatershed study for the Northwest corner of Waterloo. Duties included providing input into the preparation of the terms of reference for the study. This study was initiated to support future urban expansion for residential development in the City of Waterloo.

* denotes projects completed with other firms

Chris Powell is the Team Lead for the Assessment, Permitting and Compliance Group with the Environmental Management Division in Kitchener. Chris has over 9 years experience in environmental resource planning and management and has successfully managed or participated in more than 80 projects at Stantec. He is responsible for planning and coordinating environmental impact assessments, natural environment field programs and biological inventories in support of development, transportation and watershed restoration projects. His thorough understanding of the complex and evolving policy framework in the Province combined with a comprehensive understanding of the interconnections between the physical, biological and hydrological environments provides strategic direction as an effective member of many study teams.

Formerly with the Grand River Conservation Authority, he developed an extensive working knowledge of watershed management, environmental assessment, natural heritage and hazardland planning and policy implementation. He coordinated the GRCA subwatershed planning program and was actively involved with the development of GRCA policies, public consultation and coordination of the review and approval of development applications, permits and Environmental Assessments. This sound foundation combined with his experience as a project manager has allowed Chris to identify, assess and overcome potential conflicts to affect project outcomes, while maintaining a good working relationship with review agencies.

EDUCATION

B.A., University of Western Ontario, London, Ontario, 1999

M.A., University of Western Ontario, London, Ontario, 2003

PROJECT EXPERIENCE

Ecological Monitoring

UWO Gibbons Environmental Monitoring, London, Ontario (Project Manager)

As a condition of draft plan approval, annual monitoring for potential impacts or development was required based on an environmental monitoring program established through an EIS. Chris was responsible for coordinating the field monitoring program for aquatic habitat, benthic invertebrates, terrestrial vegetation plots, fluvial geomorphological changes, water quality and general site conditions. He was also responsible for consolidating study findings into a standing report that compared current findings to previous observations, assessed potential impacts and attributed causal factors, where feasible.

Environmental Assessments

Lake Huron Water Transmission Pipeline Twinning Class Environmental Assessment, Middlesex County, Ontario (Natural Environment Advisor)

Stantec was retained to complete a Class Environmental Assessment (Class EA) to identify alternative measures and alignments for maintaining the integrity of the existing watermain that conveys surface water from Lake Huron to the City of London and surrounding areas. Chris acted as an environmental advisor for junior staff to strategically identify constraints, future field work and permit requirements and methods to avoid direct environmental impacts.

Huron Street Watermain Emergency Repairs, London, Ontario (Environmental Coordinator)

In response to a perched watermain within the water column of the Thames River, Stantec was retained to design and obtain approvals for emergency works to protect against possible failure of a large watermain in London. Chris was responsible for coordinating and undertaking agency consultation for this project, including UTRCA, MNR, DFO and Navigable Waters, to ensure compliance with relevant legislation while recognizing the emergency situation. By proactively consulting with these agencies and providing the necessary field observations and background information necessary to facilitate agency review, protection of the watermain was implemented in a timely fashion with due regard for the protection of several aquatic species at risk, shoreline stability, and impact mitigation during construction.

* denotes projects completed with other firms

Chris J. Powell M.A.

Project Manager / Environmental Planner

Dorchester South Stormwater Drainage Area Class Environmental Assessment, Dorchester, Ontario (Natural Environment Lead)

Stantec was retained to complete a Class Environmental Assessment (Class EA) for the identification and assessment of stormwater management (SWM) approaches to service the future development of the southern portion of Dorchester. As part of this study, Chris was responsible for coordinating the completion of the fieldwork monitoring program to identify natural heritage constraints for consideration during the future evaluation of SWM alternatives. Consideration for the protection of Dorchester Creek (coldwater), adjacent Provincially Significant Wetland, significant woodlands and source water protection area was identified through a review of background reports, completion of field investigations and agency consultation with UTRCA, MNR and the municipality.

Mayfield Road Improvements Class Environmental Assessment, Peel Region, Ontario (Natural Environment Lead)

Stantec was retained to complete a Class Environmental Assessment (Class EA) for the identification of traffic improvement alternatives along Mayfield Road from Airport Road to Coleraine Road in the Region of Peel. As part of this study, Chris was responsible for coordinating the completion of the Natural Environment Report to identify natural heritage and hazardland constraints for consideration during the evaluation of roadway improvement alternatives. Through consultation with TRCA and MNR staff, the results of aquatic habitat assessments and vegetation surveys were reviewed to confirm constraints, mitigation and permitting requirements. Specific surveys for Redside Dace (Endangered) were approved through Permit from the MNR and in consultation with the Royal Ontario Museum.

Franklin Boulevard Class Environmental Assessment, Cambridge, Ontario (Natural Environment Lead)

Stantec was retained to complete a Class Environmental Assessment (Class EA) for the identification of traffic improvement alternatives along Franklin Blvd. from the 401 to Myers Road in Cambridge. Potential environmental impacts and an assessment of various roadway improvement alternatives were completed based on the Natural Environment Report (NER), which Chris coordinated to identify and assess the existing woodlands, wetlands and watercourse crossings, including Mill Creek and Moffat Creek.

Fox Hollow Sanitary and Stormwater Management Class Environmental Assessment Addendum, London, Ontario (Natural Environment Lead)

An addendum to an approved Municipal Class Environmental Assessment (Class EA) was completed to consider the environmental implications of realigning a portion of the Heard Drain channel for stormwater management (SWM). This enlarged stormwater channel and associated off-line SWM Ponds were approved to provide water quality, quantity and erosion control to protect the downstream environment from the potential impacts of development. Chris coordinated the completion of aquatic and terrestrial habitat assessments and reviewed relevant findings with MNR, UTRCA and City staff to assess potential impacts on the natural heritage system and to recommend mitigation, restoration and enhancement measures for incorporation into the design, construction and monitoring of the proposed facility to provide a net environmental benefit to the Snake Creek subwatershed and associated ecosystem.

Victoria Park Lake Improvements Class Environmental Assessment, Kitchener, Ontario (Natural Environment Lead)

A Class Environmental Assessment (Class EA) was completed to identify improvement alternatives to address water quality concerns in, and upstream of, Victoria Park Lake in Kitchener. As part of the study team, Chris coordinated the Natural Environment Report to identify, characterize and assess the natural environment conditions that contribute to the water quality and sedimentation problems in the lake, which is an on-line lake in the Strasburg Creek with historic and cultural significance. As a member of the steering committee, Chris' role included coordination and summary of aquatic, terrestrial, groundwater, water quality and surface flow investigations, input to the identification of evaluation criteria, identification of alternative measures to improve water quality in the lake, evaluation of upstream and in-lake alternatives, consultation with agency staff, members of the public and the public liaison committee, and input to the selection and preliminary design of the preferred alternative.

South Strasburg Sanitary Sewer Class Environmental Assessment, Kitchener, Ontario (Task Manager)

As input to the Class Environmental Assessment (Class EA) for the selection of a preferred route for the construction of a trunk sanitary sewer to service southwest Kitchener, Chris was responsible for the completion of a Natural Environment Report. Through coordination of the field work program and assessment of environmental constraints based on vegetation, wildlife and aquatic habitat assessments, environmental opportunities and constraints were identified and implications of potential impacts evaluated for each of the route alternatives. Chris was also responsible for agency and public consultation and presentation to the Environmental Advisory Committee.

* denotes projects completed with other firms

Chris J. Powell M.A.

Project Manager / Environmental Planner

Rosedale Channel Stabilization Class Environmental Assessment, Brantford, Ontario (Natural Environment Lead)

A Municipal Class Environmental Assessment (Class EA) was completed to recommend opportunities to restore and enhance an eroding watercourse channel within the City of Brantford. In cooperation with Stantec's Water Resources Team, the morphology, capacity and habitat characteristics on two watercourse channels were assessed and appropriate restoration measures recommended, designed and constructed to stabilize the channels while maintaining the natural character and functions they provide. Chris was responsible for completing the Natural Environment Report to describe and assess aquatic, terrestrial and fluvial geomorphological characteristics within the study area, providing input to the evaluation of alternatives, participating at public information centre and consultation with municipal and GRCA staff.

Bridge Street and Bridgeport Bridge EA Natural Environment Report, Kitchener, Ontario (Environmental Planner)

Chris acted as an Environmental Planner responsible for the completion of a Natural Environment Report to characterize the natural environment, identify potential impacts, evaluate alternatives and identify mitigation measures for the roadway and bridge improvements over the Grand River in Kitchener. Responsibilities included agency consultation, coordination of field staff, impact identification and review of the final report to be included as part of the Environmental Study Report for the Class EA.

Environmental Impact Assessments

Safety Kleen Expansion Environmental Impact Study, Breslau, Ontario (Environmental Planner)

Chris coordinated the initiation of an Environmental Impact Study (EIS) in support of the proposed expansion of an industrial use in Breslau. Based on background information, field investigations and agency input, Chris identified and assessed the aquatic and terrestrial features within the study area and recommended appropriate mitigation measures for their protection through the proposed expansion. His role included preparing a terms of reference, reviewing site conditions with GRCA staff, coordinating field investigations and facilitating the completion of the EIS. For this project, a stringent health and safety program was imposed by the adjacent land owner, which was implemented during all field investigations. Chris provided guidance and senior level review of the EIS prepared by other members of the study team.

Bridgeport Business Park Environmental Impact Study, Kitchener, Ontario (Environmental Planner)

As an Environmental Planner, Chris was responsible for the completion of an Environmental Impact Study (EIS) in support of a commercial development adjacent to the Grand River in Kitchener. His primary responsibility included coordinating the completion of the EIS through consultation with GRCA and municipal staff, consolidating background information, preparing the terms of reference, coordinating field investigations, assessing the significance of local natural features and recommending appropriate mitigation measures to protect the Grand River, steep valley slopes, wetlands and fish habitat in the area. Chris provided guidance and senior level review of the EIS prepared by other members of the study team.

Edgewater Residential Development Environmental Impact Study, Kilworth, Ontario (Environmental Planner)

As an Environmental Planner, Chris was responsible for the completion of an Environmental Impact Study (EIS) in support of a residential subdivision within a gravel pit along Thames River in Kilworth. His role included a review of background information, consultation with UTRCA, MNR and municipal staff, preparation of a terms of reference, coordination of field investigations, assessing the significance of local natural features and ecological functions and recommending appropriate mitigation measures for incorporation into the proposed draft plan of subdivision. Recommendations included protection of the adjacent significant valleyland, Area of Natural and Scientific Interest (ANSI), Provincially Significant Wetland, adjacent Provincial Park and downstream habitat of aquatic species at risk. As follow-up to the submission of the EIS, Chris was responsible for addressing agency comments and presentation of findings during a public information centre.

Wonderland Pumping Station, London, Ontario (Natural Environment Lead)

To implement the recommendations of a Class Environmental Assessment, Stantec was retained to complete the design of the proposed Wonderland Pumping Station. As part of the project team, Chris was responsible for the completion of an EIS for the construction and operation of a new pumping station in southwest London adjacent to Medway Creek. Based on site specific aquatic and terrestrial habitat assessments, appropriate mitigation measures and site restoration recommendations were incorporated into the design and location of the proposed station to protect adjacent aquatic habitat and secure approvals from the UTRCA.

* denotes projects completed with other firms

Chris J. Powell M.A.

Project Manager / Environmental Planner

London Psychiatric Hospital Lands Area Plan, London, Ontario (Natural Environment Lead)

As part of a multi-disciplinary team working for the Ontario Realty Corporation (ORC), Chris is coordinating the completion of the Natural Heritage Study as input to the identification and evaluation of land use scenarios for the re-development of an institutional property in London. Through site specific field investigations, including monitoring of Chimneys Swift (Threatened species) activity within the structures on the property, natural heritage constraints and opportunities were identified for protection and consideration during future development plans. Chris participated in public information centers, consulted with agency staff and provided input to the SWM Class EA process being completed in conjunction with this project.

West Elgin Water Treatment Plant and Constructed Wetland, Elgin County, Ontario (Natural Environment Lead)

Chris coordinated the completion of an Environmental Impact Study (EIS) as input to the background studies influencing the location and design of a proposed water treatment plant. Using available background information and site specific field data, Chris identified and assessed significant natural heritage features within the study area, identified potential impacts and recommended appropriate mitigation measures (buffers, setbacks) to prevent hydrologic, hydrogeologic and ecologic impacts to the adjacent Provincially Significant Wetland, significant woodland and habitat of a Threatened plant species. A constructed wetland feature was recommended as a means of managing wastewater from the plant and enhancing the functions of the adjacent wetland and woodland through re-vegetation and habitat structures.

Thorndale Wastewater Treatment Plant Design and Permitting, Thorndale, Ontario (Environmental Coordinator)

To implement the recommendations of a Class Environmental Assessment, Siantec was retained to undertake the design and construction of a new wastewater treatment plant for the community of Thorndale. Chris managed the environmental impact assessment and approvals component of the project through consultation with UTRCA and MNR staff, coordination of the field work program, and input to the design and impact mitigation plan. Due to the presence of aquatic species at risk in the Thames River, an assessment of habitat characteristics and species surveys were completed with due regard for species protection. Engagement of the First Nations community allowed for the incorporation of Traditional Environmental Knowledge into the impact assessment.

Penetanguishene Mental Health Centre Natural Heritage Study, Penetanguishene, Ontario (Project Manager)

As input to an Optimal Use Study, Chris coordinated the completion of a Natural Heritage Study through a review of existing natural environment features and functions on the subject property. The NHS identified environmental constraints and opportunities for the future re-development of the property, including natural heritage and hazardland constraints associated with the woodlands, wetlands, slopes and adjacent Severn Sound. This information was obtained through agency consultation, a review and assessment of background studies and completion of site specific field investigations.

Craigholme Estates Environmental Impact Study, Belmont, Ontario (Project Manager)

Chris acted as the Environmental Planner responsible for completing an Environmental Impact Study in support of a residential development adjacent to a natural valleyland associated with Kettle Creek. His role included coordinating terrestrial field investigations, identifying and mitigating potential impacts, identifying restoration opportunities and negotiating with agency staff to address environmental concerns and obtain support for the development.

Nash Neighbourhood Environmental Impact Study, Hamilton, Ontario (Project Manager)

As an Environmental Planner, Chris was responsible for the completion of a Scoped Environmental Impact Study (EIS) in support of a mixed use subdivision adjacent to the Niagara Escarpment in Hamilton. This involved scoping the field program through consultation with municipal, NPCA and Niagara Escarpment Commission staff, coordinating aquatic and terrestrial field investigations, assessing potential impacts and recommending appropriate mitigation measures in accordance with the Nash Neighbourhood Secondary Plan.

Heritage Lake Environmental Implementation Report, Puslinch, Ontario (Task Manager)

In support of proposed residential plan of condominium south of Guelph, Chris acted as an Environmental Planner responsible for the completion of an Environmental Implementation Report (EIR) to document how the proposed mitigation, restoration and enhancement measures would be implemented. Adjacent natural features included two coldwater streams, Provincially Significant Wetland and a lake created as a result of former aggregate extraction. His role included the coordinating the establishment of a groundwater and surface water monitoring program, input to landscape restoration plans, preparation of an environmental stewardship guide for future home owners and consultation with Township, MNR and GRCA staff to obtain draft plan approval and clearance of draft plan conditions.

* denotes projects completed with other firms

Chris J. Powell M.A.

Project Manager / Environmental Planner

Franklin Pond Meadows Phase 2 Environmental Review Addendum, Cambridge, Ontario (Project Manager)

Chris acted as an Environmental Planner responsible for the completion of an Addendum to the Environmental Impact Study (EIS) prepared in support of the draft plan of subdivision to address agency concerns with the hydrologic impact of the proposed development and road extension on an adjacent Provincially Significant Wetland in Cambridge. The EIS Addendum specifically identified how the hydrologic conditions supporting the wetland and hydrologic functions provided by the wetland would be maintained through the proposed development in order to obtain draft plan approval and to clear draft plan conditions. .

Woodstock North Lands Environmental Impact Study, Woodstock, Ontario (Task Manager)

As an Environmental Planner, Chris was responsible for the completion of an Environmental Implementation Study (EIS) to recommend measures for the protection of aquatic habitat, significant woodlands and Butternut (Endangered) in the area in accordance with the recommendations of the Oxford Natural Heritage Study. This EIS was the first attempt at implementing the ONHS and involved coordination with UTRCA, MNR and City staff, discussions with study team members, public consultation and coordination of technical staff to describe the environment, assess potential impacts and recommend appropriate protection and mitigation measures. Chris also assisted in the preparation of a Permit under the Endangered Species Act to relocate several Butternut trees to avoid potential impacts.

Meadows in the Glen Environmental Implementation Report, Glen Williams, Ontario (Task Manager)

In support of a proposed draft plan of subdivision, Chris acted as an Environmental Planner to complete an Environmental Implementation Report (EIR) that demonstrated how subwatershed study recommendations and Low Impact Development (LID) measures would be implemented to protect and maintain the natural features associated with the Credit River. This project was a Pilot Study for LID in conjunction with the CVC. Chris role included preparation of EIR, coordination of technical staff, input to the study team and negotiations with CVC staff.

Environmental Planning

Peer Review of the South West London Area Plan, London, Ontario (Environmental Planner)

On behalf of an area landowners group, Chris completed a review and assessment of the Natural Heritage Study and corresponding recommendations for the South West London Area Plan. Chris provided environmental planning advice regarding the findings and study methodology undertaken by others based on his local experience, study area conditions and current provincial and municipal natural heritage system policies.

Peer Review of the Natural Heritage System Design for the Boyne Secondary Plan, Milton, Ontario (Environmental Planner)

As input to the Milton Phase 3 Landowner Group's (MP3LG) review of the Boyne Secondary Plan, Chris was retained by a member of the MP3LG to review and evaluate the proposed Natural Heritage System Framework. Based on the natural heritage system policies of the Provincial Policy Statement and current research into the establishment of natural corridors, Chris provided environmental planning advice regarding the approach and requirements for establishing natural corridors along 16 Mile Creek.

Opportunity / Constraint Analysis

Bostwick West Community Plan Natural Environment Report, London, Ontario (Natural Environment Lead)

As an Environmental Planner, Chris was responsible for the completion of a Natural Environment Report (NER) in support of a proposed community plan for the Bostwick West planning area in London. Chris responsibilities included preparation of the NER terms of reference, consultation with municipal and UTRCA staff, coordinating the aquatic and terrestrial field investigations, and identifying environmental constraints and opportunities for future consideration during the preparation of the land use concepts, impact mitigation and environmental management strategy for future development.

Chris J. Powell M.A.

Project Manager / Environmental Planner

Policy Planning

Ausable Bayfield Conservation Authority Stormwater Management Policy Update, Bayfield, Ontario (Policy Advisor)

On behalf of the Ausable Bayfield Conservation Authority (ABCA), Stantec was retained to undertake an update to their existing stormwater management (SWM) policy and guideline document. As a Policy Advisor, Chris was responsible for summarizing the evolution and current practice of SWM in terms of the approach, guidelines, policies and implementation in Ontario. This included assisting engineering staff through a review of available background studies, agency policies, SWM technologies and academic journals, consultation with various conservation authorities, municipalities and practitioners and coordination with ABCA staff to review existing policies, recommend improvements and prepare a consolidated update to their SWM policies, guidelines and targets for implementation.

Watershed Planning

Upper Strasburg Creek Class Environmental Assessment*, Kitchener, Ontario (Project Manager, GRCA)

In coordination with the Alder Creek Watershed Study and Upper Strasburg Creek Subwatershed Plan Update, a Class Environmental Assessment was completed to explore opportunities to alleviate existing flood hazards for Strasburg Creek at Fischer-Hallman Road in Kitchener. On behalf of the GRCA, Chris acted as the Project Manager to coordinate the completion and review of the Class EA through liaison with project consultants, agency staff and internal technical advisors. The results of this study were circulated for public review and presented at public information centres, the outcome of which were recorded and incorporated into the final report.

Blair Creek Watershed Monitoring Program*, Cambridge / Kitchener, Ontario (Subwatershed Planning Coordinator, GRCA)

In support of GRCA's on-going monitoring responsibilities recommended as part of the Blair, Bechtel, Bauman Subwatershed Study, and as input to the Upper Blair Creek Functional Drainage Study, Chris was responsible for coordinating the aquatic habitat, water quality and fluvial geomorphological monitoring program. His duties included coordinating field staff, allocating resources, preparing an annual monitoring report, participation at public liaison meetings and general project administration for the GRCA.

Nichol Drain No. 1 Subwatershed Study*, Fergus, Ontario (Technical Advisor, GRCA)

Chris acted as a Technical Advisor and Steering Committee member representing the GRCA in support of a developer driven subwatershed study for a coldwater tributary of Irvine Creek, which was initiated in support of expanding the Town of Fergus boundaries for future residential development. His responsibilities included providing input to the terms of reference, coordinating the collection of aquatic habitat information (in-kind contribution), and reviewing draft versions of the report in regard to natural heritage and hazard land implications.

East Side Subwatersheds Studies*, Region of Waterloo, Ontario (Project Manager, GRCA)

In response to future development pressures, the Region of Waterloo in conjunction with the GRCA and area municipalities initiated the East Side Subwatersheds Study in 2005. On behalf of the GRCA, Chris acted as the Project Manager and Chair of the Steering Committee (2006-2007) and was responsible for coordinating the watershed characterization of the Hopewell, Chilligo, and Freeport Creeks and the Randall and Breslau Drains subwatersheds. His primary duty included developing and coordinating the completion of the subwatershed monitoring program, which included aquatic habitat assessments, benthic invertebrate sampling, flow monitoring, fluvial geomorphological assessments, and water quality sampling. This also included public liaison (access, agreements), consultation with RMOW, MNR and GRCA (internal) staff, coordination of field personnel and general project administration (budgets, contract administration). This project provided firsthand knowledge of the natural heritage system in the area and direct experience with the implementation of subwatershed planning and coordination as acting Subwatershed Planning Coordinator for the GRCA.

Alder Creek Watershed Study and Upper Strasburg Creek Subwatershed Plan Update*, Kitchener, Ontario (Project Manager, GRCA)

As an update to the Strasburg Creek Master Watershed Plan Study, and in response to growing development pressure along the west side of Kitchener, the GRCA, Region of Waterloo and City of Kitchener initiated a subwatershed study (SWS) to manage future growth and balance competing resource interests. This study was initiated to alleviate flooding in Strasburg Creek and to protect sensitive environmental features, groundwater recharge and municipal water supply in anticipation of future urban development.

* denotes projects completed with other firms

Chris J. Powell M.A.

Project Manager / Environmental Planner

On behalf of the GRCA, Chris acted as the Project Manager and Chair of the Steering Committee (2006-2007) responsible for the completion of the subwatershed study to characterize existing natural heritage, groundwater and hydrologic conditions within the two watersheds, identify constraints and opportunities for future development, and establish watershed policies and implementation strategy. His primary responsibility included coordinating the completion and review of the SWS report for the GRCA, including liaison with project consultants, assisting with report writing and consulting with agency staff, stakeholders, and the general public prior to formal circulation for public review. Other duties included preparation and presentation at public information centres, presentation of findings to the GRCA Board, and coordination of public and stakeholder comments based on a review of the final draft report.

Chris J. Powell M.A.

Project Manager / Environmental Planner

PUBLICATIONS

Wetland management: An analysis of past practice and recent policy changes in Ontario. *Journal of Environmental Management* v. 82:1 (83-94), 2007.

Melissa A. Straus B.Sc., M.Sc.

Ecologist



Melissa Straus is a Terrestrial Ecologist with experience in various sectors, including renewable energy and development. Her experience involves implementation of the Migratory Birds Convention Act and Species at Risk Act. Melissa is a skilled birder and has field experience conducting bird surveys (e.g., breeding bird surveys, nest searching) and post-construction monitoring at wind farms. She also has experience in wildlife habitat assessment and recently obtained her Ecological Land Classification certificate.

EDUCATION

B.Sc. in Environmental Sciences, Co-op Program,
University of Guelph, Guelph, Ontario, 2003

M.Sc. in Biology, Trent University, Peterborough,
Ontario, 2009

Certified in the Ecological Land Classification System for
Southern Ontario, Ontario Ministry of Natural Resources,
Kemptville, Ontario, 2010

PROFESSIONAL ASSOCIATIONS

Member, Peterborough Field Naturalists

Member, Guelph Field Naturalists

Member, Society of Canadian Ornithologists

Member, American Ornithologists' Union

PROJECT EXPERIENCE

Natural Sciences & Heritage Resources

Conservation Planning*, Mississauga, Ontario
(Conservation Planning Assistant)

Created conservation plans for private landowners in the Credit Valley Watershed and inventoried vegetation using the Ecological Land Classification for Southern Ontario protocol.

Forestry Impacts on Regeneration Rates and Bird
Communities Research*, East Lansing, Michigan (Field
Assistant)

Performed avian point counts in the upper peninsula of Michigan, counted White-tailed Deer pellets along transects to estimate densities, and completed specialized vegetation surveys to assess forest regeneration rates.

Forest Bird Research*, London, Ontario (Project
Biologist)

Prepared a manuscript on the nesting success of cavity-nesting birds in woodlots subjected to silviculture, conducted a meta-analysis of edge effects on nesting success of songbirds, and created fact sheets for a landowner stewardship guide. Conducted salamander mark and recapture surveys, nest searching and monitoring, completed numerous vegetation surveys, located and reported avian and vegetative species at risk, collected and identified invertebrates to Order.

Alder Downs, East Gwillimbury, Ontario (Ecologist)

Conducted pre-construction breeding bird surveys.

White Pines, Picton, Ontario (Ecologist)

Conducted evening amphibian and crepuscular bird auditory surveys.

Melancthon Ecopower Centre, Melancthon Township,
Ontario (Ecologist)

Participated in environmental monitoring of post-construction wind turbine impacts on bird and bat mortalities.

Hydro One Bruce X Milton Transmission Reinforcement,
Bruce County, Ontario (Ecologist)

Located and protected active bird nests during land clearing to ensure client compliance with the Migratory Birds Convention Act.

* denotes projects completed with other firms

Melissa A. Straus B.Sc., M.Sc.

Ecologist

PUBLICATIONS

Reproductive success of cavity-nesting birds in partially harvested woodlots in southwestern Ontario. Melissa A. Straus, Kata Bavrlic, Erica Nol, Dawn M. Burke, and Ken A. Elliott. *Canadian Journal of Forest Research*, 2011.

The effects of partial harvesting on cavity-nesting bird communities in southwestern Ontario, Melissa Straus. *Society of Canadian Ornithologists (SCO-SOC) Conference Poster*, 2007.

Peterborough Field Naturalists Guest Speaker. *Impacts of partial harvesting on cavity-nesting birds in southwestern Ontario*, 2006.

Carolinian forests of southern Ontario: Species at risk and cavity-nesters, Melissa Straus. *Guelph Field Naturalists Guided Hike*, 2006.

Andrew Taylor is a knowledgeable terrestrial ecologist and project manager. He has successfully managed both small and large projects, including environmental impact statements, constraint analyses and environmental implementation reports. In addition, he has coordinated natural heritage components of Environmental Assessments. These projects involve the implementation of natural heritage policies of the Ontario Provincial Policy Statement, Greenbelt Plan and municipal policy documents. Andrew also has experience with policies pertaining to Threatened and Endangered Species including Butternut.

Andrew has strong field skills including identification of vascular plants, breeding amphibians (calling frogs and toads), breeding salamanders (adult and egg studies), reptiles and bats, with a particular emphasis on birds, butterflies and dragonflies. He is skilled at assessing wildlife habitat, applying Ecological Land Classification (ELC) and delineating wetland boundaries. Andrew is experienced at analyzing natural heritage features for the presence of Significant Woodlands or Significant Wildlife Habitat using guidance documents such as the 'Natural Heritage Reference Manual, How Much Habitat is Enough?' and the 'Significant Wildlife Habitat Technical Guide'.

Andrew has provided terrestrial ecology expertise in a wide range of sectors, including urban lands, energy (including renewable energy), recreational development, infrastructure and aggregate extraction.

EDUCATION

B.Sc. (Hons), University of Guelph / Environmental Toxicology, Guelph, Ontario, 2001

Certificate, Ecological Land Classification for Southern Ontario, Turkey Point, Ontario, 2006

AWARDS

2000 University of Guelph, Dean's List

1997 University of Guelph, Dean's List

PROJECT EXPERIENCE

Aggregate Services

St. Marys Cement (SMC) Flamborough Quarry License Environmental Impact Study and Level 2 Natural Environment Technical Report (Ecologist)

Identification and impact assessment of natural heritage features, compensation and management plan for Species at Risk (Butternut), water balance to maintain provincially significant wetland, salamander habitat and migration study, assessment of provincially significant woodland and significant wildlife habitat, environmental impacts of transportation.

Linear Infrastructure

Natural Science Reports Related to MTO Highway Improvement Works, Various Sites, Ontario (Terrestrial Ecologist)

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 terrestrial vegetation, wetlands and wildlife were described for the following studies:

- Highway 3 (Essex County): Preliminary Design Study;
- Highway 40 (Municipality of Chatham-Kent): Detail Design Study;
- Highway 401 (Kitchener): Post-construction Compliance Monitoring;
- Highway 401 (Essex County, near Comber): Post-construction Compliance Monitoring;
- Highway 26 (County of Grey): Post-construction Compliance Monitoring;
- Highway 17 (Sudbury): Preliminary Design Study;
- Highway 9 (Municipality of South Bruce): Post-construction Compliance Monitoring.

Multi-Unit / Family Residential

Crates Marina, Keswick, Ontario (Project Manager / Ecologist)

Environmental policies, approvals and design. Identification of natural heritage features and sensitive species.

Andrew Taylor B.Sc.

Ecologist

Kortright East Development, Guelph, Ontario (Project Manager / Ecologist)

Environmental Implementation Report. Vegetation buffers, wildlife corridor, tree conservation plan, planning and design of invasive species removal, design of compliance and performance monitoring program.

Southeast Sutton Development Area Plan, Sutton, Ontario (Project Manager / Ecologist)

Environmental policies, approval and design. Identification of natural heritage features and constraints for Development Area Plan. Plan of Subdivision forest buffers, mitigation of impacts to forest resources, sensitive vegetation and Species at Risk. Participation in Ontario Municipal Board discussions.

Natural Sciences & Heritage Resources

Fourteen Mile Creek Development, Oakville, Ontario (Ecologist)

Natural Heritage Monitoring Program Director - directed monitoring program of vegetation communities, change in species composition, avian wildlife, aquatic Species at Risk, benthic invertebrate communities, hydrogeology, geomorphology and erosion.

Activa Waterloo East, Waterloo, Ontario (Ecologist)

Terrestrial and Aquatic Monitoring Program - monitoring of vegetation communities, changes in species composition and disturbance levels were undertaken, interpreted and reported. Directed monitoring of benthic invertebrate communities.

Power

Wolfe Island Wind Project Environmental Assessment - 86 Turbines, 197.6 MW, Wolfe Island, Ontario (Ecologist)

Study design, coordination and conducting of monitoring for spring migratory birds, fall migrating raptors, staging waterfowl, winter raptors and grassland bird populations. Design and conducting specific studies to target avian Species at Risk. Assessment of amphibian populations, mammal populations, wildlife corridor and migratory bat populations. Preparation of technical report appendix to the Environmental Screening Report.

Melancthon Wind Plant - 45 Turbines, 67.5 MW, Melancthon and Amaranth Townships, Ontario (Ecologist)

Completion of post-construction monitoring program to assess direct mortality and potential avoidance impacts to breeding birds within the wind power facility. Technical reporting.

Kingsbridge I Wind Plant - 22 Turbines, 39.6 MW, Goderich, Ontario (Ecologist)

Phase I wind farm post-construction monitoring. Assessment of direct mortality of avian and bat species. Assessment of potential avoidance behaviour by migratory birds. Technical reporting.

Proton Wind Program - 50 Turbines, 100 MW, Southgate Township, Ontario (Ecologist)

Coordinating and conducting monitoring of migratory and breeding birds for wind turbine development, preparation of comprehensive technical appendix to the Environmental Screening Report.

Port Alma Wind Power Project - 44 Turbines, 101.2 MW, Municipality of Chatham-Kent, Ontario (Ecologist)

Coordinating and conducting monitoring of winter raptors, spring migratory shorebirds, breeding birds, fall migrating raptor and avian Species at Risk populations for wind turbine development. Prepared comprehensive technical report appendix to the Environmental Screening Report.

Kingsbridge II Wind Project Environmental Assessment - 69 Turbines, 158.7 MW, Goderich, Ontario (Ecologist)

Coordinating and conducting monitoring of migratory and breeding bird populations for wind turbine development. Prepared comprehensive technical report appendix to the Environmental Screening Report.

Melancthon II Wind Project Environmental Assessment - 88 Turbines, 132 MW, Melancthon & Amaranth Townships, Ontario (Ecologist)

Conducted monitoring of breeding bird populations or wind turbine development.

Research / Laboratories

Rice Lake Plains Joint Initiative*, Northumberland County, Ontario (Ecologist)

Tallgrass prairie research program. Identification and detailed cataloging of remnant tallgrass prairie sites, landowner liaison and education, development of tallgrass prairie management plans, reporting of findings.

Alderville First Nations Black Oak Savannah*, Alderville, Ontario (Ecologist)

Tallgrass prairie and black oak savannah research program. Technical reporting. Vegetation monitoring, tallgrass prairie reconstruction, wildlife monitoring, Species at Risk reintroduction.

* denotes projects completed with other firms

Andrew Taylor B.Sc.

Ecologist

Sports, Recreation & Leisure

Sunnidale Park Master Plan, Barrie, Ontario (Ecologist)

*Identification and delineation of ecological management units.
Design of management plans for ecological units, wetland and
forest habitat rehabilitation. Technical reporting.*

Gwendolyn A. Weeks B.Sc. (Env)

Environmental Scientist



Gwendolyn is a graduate of the University of Guelph, with a degree in Environmental Science. She has particular knowledge in the fields of ecology and terrestrial biology. Gwendolyn is certified in both the Ontario Ministry of Natural Resources Ecological Land Classification (ELC) and Wetland Evaluation systems.

Through past work experience, Gwendolyn has gained strong field skills in plant and wildlife identification, terrestrial monitoring, applying ELC and wetland evaluation principles, and she possesses a strong understanding of planning regulations and policies in a natural heritage context. She is experienced in a broad range of environmental services, including terrestrial monitoring and assessment, wildlife inventory, floral inventory, habitat assessment, agency liaison, and client relations.

Gwendolyn has authored of a number of environmental impact statements, environmental assessments, natural heritage reviews, environmental constraints analyses, and letters of compliance for a variety of sectors, including residential developments, recreational developments, and energy projects (including renewable energy). She has also provided terrestrial ecology expertise on a wide range of projects, including work for government agencies and the aggregate industry.

EDUCATION

B.Sc. (Env.), Environmental Sciences, University of Guelph, Guelph, Ontario, 2004

Wetland Evaluation Course Certificate, Ontario Ministry of Natural Resources, North Bay, Ontario, 2005

Ecological Land Classification for Southern Ontario, Training Course Certificate, Ontario Ministry of Natural Resources, Turkey Point, Ontario, 2004

PROJECT EXPERIENCE

Environmental Assessments

Gordon Creek Developments, Guelph, Ontario (Project Manager)

Designed a fieldwork program in order to assess natural heritage features within the study area, and presented the Terms of Reference for the study to the City of Guelph Environmental Advisory Committee. Provided input to the project design based on findings of the field program, and authored and Environmental Impact Statement for the proposed development. The site contained a number of significant features, including Provincially Significant Wetland and wildlife corridors. Liaised with City and Conservation Authority.

Clerview Environmental Constraints Analysis and EIS, Guelph, Ontario (Ecologist, Project Manager)

Performed a preliminary environmental constraints analysis for the subject lands, using published resources and an initial field investigation to identify constraints to development. Wetland boundaries on site were delineated according to the methodology outlined in the Ontario Wetland Evaluation System. Information was presented to the client in report format. The constraints analysis was used in the production of the draft plan of subdivision, for which an EIS was prepared. The field program and report format for the EIS was presented to and negotiated with the Guelph Environmental Advisory Committee (EAC). A full three-season field program was undertaken, and findings were reported in the EIS. The draft plan was reviewed to identify potential environmental impacts to the adjacent natural areas, and mitigation measures were recommended. The final EIS will be presented to the Guelph EAC.

Simpson Lands EIS and Terrestrial Monitoring, Waterloo, Ontario (Ecologist)

Designed a terrestrial monitoring program for the subject lands based on City of Waterloo and GRCA guidelines. Monitoring of vegetation communities, changes in species compositions, and disturbance levels was undertaken, interpreted, and reported. Requirements for the EIS field program were designed and discussed with relevant agencies. An EIS was prepared that considered the proposed plan of development, the potential environmental impacts related to the plan, and discussed mitigation measures for each potential impact.

* denotes projects completed with other firms

Gwendolyn A. Weeks B.Sc. (Env)

Environmental Scientist

University of Waterloo Northwest Campus EIS, Waterloo, Ontario (Ecologist)

Undertook a review and assessment of the natural heritage components associated with the subject lands, including floral, faunal and community investigations. The information gathered was used to create an updated Greenspace System on the subject lands and to propose trail linkages between the site and adjacent lands. Reviewed the draft plan of development in relation to the subject lands in order to identify potential environmental effects and recommend mitigation measures.

Activa Branchton - Dundas Lands Environmental Impact Statement, Cambridge, Ontario (Ecologist, Task Manager)

Compiled three seasons worth of field data, including information on flora and fauna. Reviewed field data in conjunction with the preliminary design plan in order to recommend changes to elements of the plan to reflect consideration for the surrounding natural environment. Identified potential environmental effects related to the final design plan and recommend mitigation measures in the final Environmental Impact Statement.

Dallan Lands Environmental Impact Assessment, Guelph, Ontario (Ecologist, Project Manager)

Upon receipt of a preliminary design plan, a Terms of Reference was prepared and submitted to the City of Guelph Environmental Advisory Committee outlining the proposed approach for a complete Environmental Assessment for the proposed development. Three-season field inventories related to flora and fauna were performed, and wetland boundaries were evaluated in co-operation with the Grand River Conservation Authority. Review of potential impacts was undertaken and presented in an Environmental Impact Statement.

Victoria South Golf Course Environmental Constraints Analysis and Impact Statement, Guelph, Ontario (Ecologist, Project Manager)

Completed a natural heritage review of the subject lands, and inventoried the site using Ecological Land Classification, as well as collecting data on flora and fauna. Completed an Environmental Constraints Analysis to present the findings of both the review and field inventories for consideration during preliminary site design for a recreational golf facility. Upon receipt of the preliminary design plan, a Terms of Reference was prepared and submitted to the City of Guelph Environmental Advisory Committee outlining the proposed approach for a complete Environmental Assessment for the proposed development. Review of potential impacts was undertaken and presented in an Environmental Impact Statement.

Castleberg EIS, Caledon, Ontario (Project Manager)

Undertook a natural heritage review of a lot for residential development, and authored an Environmental Impact Statement based on the Toronto and Region Conservation Authority's guidelines, including recommendations for mitigation of impacts.

Aurora Compliance Letter, Aurora, Ontario (Project Manager)

Responsible for client contact and project coordination. Performed ELC and a full natural heritage review on a residential lot in order to demonstrate that a proposed development was in compliance with existing land use designations and the Oak Ridges Moraine Conservation Plan. Deliverables included mapping of natural heritage resources and associated regulation boundaries, as well as a letter of compliance.

Simmonds Checklist EIS, Grimsby, Ontario (Ecologist)

Performed a natural heritage review of an existing lot for development potential. Reporting was in the form of an Environmental Impact Statement Checklist, as required by the Region of Niagara.

Natural Sciences & Heritage Resources

Century Acquisitions Ltd. Environmental Constraints Analysis, Markham, Ontario (Ecologist, Project Manager)

An investigation of the subject lands was undertaken in the field and through review of published materials to identify environmental constraints to development. Information on flora, vegetation communities, wildlife and wildlife habitat, as well as environmental functions of the site was recorded. The subject lands were located within both the Greenbelt and Rouge North Management Plan Areas and, as such, discussions on the relevant policies were included in the final report.

Dean Golf Facility Natural Heritage Review, Whitchurch-Stouffville, Ontario (Ecologist, Project Manager)

The subject lands were reviewed to identify existing natural heritage features, including flora, vegetation communities, fauna, wildlife habitat, and environmental functions. The proposed land use was reviewed, and potential environmental impacts to the subject lands were identified. The subject lands were located within the Greenbelt, and so additional discussions related to Greenbelt policy compliance were also undertaken as part of the Natural Heritage Review.

* denotes projects completed with other firms

Gwendolyn A. Weeks B.Sc. (Env)

Environmental Scientist

Buffalo Springs EIS Update and Homeowners' Manual, Oro-Medonte, Ontario (Ecologist & Project Manager)
Designed and undertook fieldwork in order to update an out-dated Environmental Impact Assessment for a large residential development in Oro-Medonte in order to clear Ontario Municipal Board conditions for the project. Authoring of the updated EIS as well as an Environmental Stewardship Guide for new homeowners, which aimed to acquaint residents with their natural surroundings and educate them as to how to protect those areas through their daily actions. Liaised with the Ministry of Natural Resources and local Conservation Authority throughout this project.

Activa Waterloo West Side Lands, Waterloo, Ontario (Ecologist)
*Pre-construction monitoring on the subject lands was initiated in 1999 and continued during pre-construction years, with the intention of providing baseline environmental information prior to area grading and construction. This program addressed the City of Waterloo's development monitoring requirements, implemented for Laurel Creek and other watercourses within the City.
The scope of work for the terrestrial monitoring included photographic and descriptive inventories of 22 stations on the subject lands. Terrestrial monitoring was conducted once per year with results analyzed, catalogued and compared with previous observations where applicable.*

Kingsbridge II Wind Project - Natural Heritage Component, Goderich, Ontario (Ecologist)
Undertook a review of natural heritage features within the study area for the Kingsbridge II Wind Project near Goderich, Ontario. Various agencies were contacted to obtain information on significant natural features within the study area. This information, along with data collected in the field, was presented in a Technical Appendix that formed part of the larger Environmental Screening Report for this project.

Melancthon II Wind Project - Natural Heritage Component, Shelburne, Ontario (Ecologist)
Completed a review of the natural heritage features within the study area for the Melancthon II Wind Project for Canadian Hydro Developers Inc. Work included contact and discussion with various agencies to obtain information on significant natural features. Also, field reconnaissance was undertaken within the study area to apply Ecological Land Classification for Southern Ontario. Prepared a Technical Appendix on the Natural Heritage features of the study area, to support the Environmental Screening Report for this project.

Richmond Hill Subdivisions Monitoring, Richmond Hill, Ontario (Project Manager)
Collected data and samples for a monitoring program. Tasks include dealing with an analytical laboratory, following protocol, using technical equipment, flora identification. Both terrestrial and aquatic monitoring tasks were performed. Compiled reports that presented and analysed the monitoring data for 2004, 2005 and 2006 monitoring years.

Stream Assessment and Rehabilitation Strategy*, Beaver Valley, Ontario (Project Co-Manager, Ecologist)
Designed a study to determine the relative physical, chemical and biological health of a degraded reach of the Beaver River, in relation to the undisturbed upper reaches. Based on this comparison, a rehabilitation strategy was designed for the subject reach. The report was presented to the landowner, Trout Unlimited and the Grey-Sauble Conservation Authority.

Nature Counts*, Hamilton, Ontario (Ecological Land Classification Technician)
Performed ELC within the City of Hamilton's boundary, from Ancaster to Puslinch. Designated Areas of Natural and Scientific Interest (ANSI) were inventoried for flora, fauna and disturbance level, and classified using ELC. Other tasks included air photo interpretation, field navigation and leadership.

Transportation Planning

Highway 69 Site Selection of Highway Maintenance Patrol Yards - MTO, Parry Sound to Sudbury (Terrestrial Ecologist)
*This study was undertaken in order to assess a number of alternative locations for patrol yards within the study area, and to identify preferred alternatives at three locations. Performed Ecological Land Classification within each identified patrol yard alternative. Identification of flora and fauna, and habitat description. The study area contained significant features including Provincially Significant Wetlands, habitat for significant species, and variety of habitats. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines.
Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages.*

Highway 11 at the South Entrance of Powassan - MTO (Terrestrial Ecologist)
This study was carried out to update a Preliminary Design Report that recommended interchange locations for this stretch of Highway 11.

* denotes projects completed with other firms

Gwendolyn A. Weeks B.Sc. (Env)

Environmental Scientist

Performed Ecological Land Classification along the study corridor. Identification of flora and fauna, and habitat description. The study area contained significant features, a variety of habitats, and cultural communities. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines.

Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages.

Veuve River Bridge and Amable du Fond River Bridges in Sudbury and North Bay - MTO, Multiple Sites, Ontario (Terrestrial Ecologist)

This study was carried out as part of the preliminary design for improvements to these two bridges located on Highways 535 and 630, respectively. Terrestrial investigations characterized vegetation communities in the vicinity of each bridge according to Ecological Land Classification (ELC) for southern Ontario, and the Forest Ecosystems of Central Ontario. Observations of ecological linkages, wildlife and wildlife habitats were also made. Fieldwork and reporting were undertaken according to MTO regulations and guidelines.

Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages. Fieldwork and reporting were undertaken according to MTO regulations and guidelines.

Highway 6 (Hanlon Expressway) Improvements from South of Maltby Road to the Speed River - MTO, Guelph, Ontario (Terrestrial Ecologist)

This study was undertaken as part of the Planning, and Preliminary Design phase of the proposed improvements. Field investigations focused on characterizing vegetation communities in the study area using Ecological Land Classification (ELC) for southern Ontario. Other observations of ecological linkages, wildlife and wildlife habitat were also made. The study area contained significant natural features, including provincially significant wetlands and known occurrences of rare species. Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages. Fieldwork and reporting were undertaken according to MTO regulations and guidelines.

Highway 17 at the West Junction of Municipal Road 55 - MTO, Sudbury, Ontario (Terrestrial Ecologist)

The purpose of this study was to identify the location and configuration for a new interchange to provide access to the west junction of Sudbury Municipal Road 55 from Highway 17. This work also included the planning for the future four-lane alignment of Highway 17, and the preliminary design of an interim two-lane Highway 17.

Performed Ecological Land Classification along the study corridor. Identification of flora and fauna, and habitat description. The study area contained a wide range of upland forest habitats, wetlands, an agricultural reserve, and cultural communities. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines.

Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages.

Highway 17 Southwest By-Pass - MTO, Sudbury, Ontario (Terrestrial Ecologist)

The purpose of this study was to identify a four-lane highway plan for this section of Highway 17, through the Sudbury area, with access restricted to interchange locations only.

Performed Ecological Land Classification along the study corridor. Identification of flora and fauna, and habitat description. The study area contained a variety of upland and wetland habitats, including Areas of Natural and Scientific Interest. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines.

Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages.

Future Highway 11/17 - MTO, North Bay, Ontario (Terrestrial Ecologist)

This study was carried out to update previous studies that have been undertaken since the early 1960s to investigate ways to increase safety and efficiency on Highway 11/17 through the North Bay area.

Performed Ecological Land Classification along the study corridor. Identification of flora and fauna, and habitat description. The study area contained significant features including Provincially Significant Wetlands, a variety of upland habitats, and cultural communities. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines.

Gwendolyn A. Weeks B.Sc. (Env)

Environmental Scientist

Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages.

Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages.

Aquatic and Terrestrial Biology Retainer Services, Southern Ontario (Ecologist)

Provided terrestrial biology support for Natural Sciences work associated with ten proposed culvert repair projects, located throughout the Southwestern Region. The purpose of the assignment was to document the existing aquatic ecological features and to provide an assessment of migratory bird use in the vicinity of each culvert. Agency and field data were then considered in terms of the proposed culvert repairs, and recommendations for appropriate environmental protection measures were provided.

Highway 23 Widening - MTO, Palmerston to Harriston, Ontario (Terrestrial Ecologist)

The purpose of this project was to identify any improvements necessary to ensure that Highway 23, between Palmerston and the West limits of Harriston, met expected operational needs and standards.

Performed Ecological Land Classification along the study corridor. Identification of flora and fauna, and habitat description. The study area consisted mainly of agricultural land with remnant upland deciduous forest. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines. Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages.

Highway 26 Widening - MTO, Thornbury to Meaford, Ontario (Terrestrial Ecologist)

Retained by the Ministry to assess possible design alternatives and develop the preliminary design for recommended improvements to Highway 26 in the study area. The project included the review and assessment of pavement condition, drainage, intersections, entrances, illumination, and highway alignment.

Performed Ecological Land Classification along the study corridor. Identification of flora and fauna, and habitat description. The study area contained Areas of Natural and Scientific Interest, prominent valleys, cliff features, and high-quality fruit-crop lands. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines.

Valerie Wyatt is a knowledgeable field ecologist and project manager with fourteen years of professional experience. Valerie has successfully managed or directed dozens of projects including impact assessments, community plans and biological inventories. These projects involved the implementation of natural heritage policy of the Ontario Provincial Policy Statement, Greenbelt Plan, Oak Ridges Moraine Act and municipal policy documents for numerous municipal draft plan applications throughout southern Ontario. Valerie's expertise includes field inventories of vegetation communities, breeding birds and other wildlife; analysis of community significance, terrestrial linkages, habitat assessment and ecological land classification; integration of engineering, hydrogeological, planning and geomorphological studies; and review agency liaison. Valerie has served on the Technical Committee for Guelph's Natural Heritage Strategy, the Steering Committee for Environment Canada's and the Canadian Wind Association's Bird Monitoring Database Project and has appeared as an expert witness before the Ontario Municipal Board.

EDUCATION

B.Sc., University of Guelph, Guelph, Ontario, 1994

M.Sc. (Specialized Honors), University of Guelph, Guelph, Ontario, 1996

Certificate, Ecological Land Classification Training Course, Southern Ontario, Ontario, 2001

PROJECT EXPERIENCE

Linear Infrastructure

Highway 401, Oxford County Road 3 to Cedar Creek Road, Ontario (Avian Specialist)

Inspected bridge culvert sites and ensured compliance with contract and Migratory Bird Act requirements, reporting to Senior Environmental Inspector.

Vector Pipeline, Sarnia, ON (Terrestrial Ecologist)

Conducted breeding bird surveys during pipeline construction in accordance with National Energy Board requirements; prepared nest preservation plans and installed appropriate buffer zones; monitored buffer effectiveness and nest success.

Power

Plateau Wind Power Project Environmental Assessment (Team Lead - Technical Reporting)

Port Alma Wind Power Project Environmental Assessment (Team Lead - Technical Reporting)

Ostrander Point Wind Energy Park Environmental Assessment (Team Lead - Technical Reporting)

Gosfield-Comber Wind Power Project Environmental Assessment (Team Lead - Technical Reporting)

Wolfe Island Wind Power Project Environmental Assessment (Team Lead - Technical Reporting)

St. Leon II Wind Power Project Environmental Assessment (Team Lead - Technical Reporting)

Kingsbridge II Wind Power Project Environmental Assessment (Team Lead - Technical Reporting)

Melancthon II Wind Power Project Environmental Assessment (Team Lead - Technical Reporting)

Kingsbridge I Wind Plant Post-construction Monitoring (Project Manager)

Melancthon I Wind Plant Post-construction Monitoring (Project Manager)

Research / Laboratories

Canadian Wildlife Service Forest Bird Monitoring Program*, Ontario (Technician)

This ongoing program seeks to determine the status and trends of forest birds in Ontario. Valerie was responsible for database coordination, quality control and analysis of information collected by a large network of volunteers

Niagara Escarpment Forest Bird Productivity Study*, Niagara Escarpment, Ontario (Project Coordinator)

A three-year study in conjunction with the Niagara Escarpment Commission examined the effects of forest fragmentation and development on breeding bird productivity

Residential Development

Brentwood Post-development Monitoring (Project Manager)

* denotes projects completed with other firms

Valerie E. Wyatt M.Sc.

Senior Project Manager

Creditview Environmental Implementation Report (EIR)
(Project Manager)

Springbrook Creek Environmental Implementation Report
(EIR) (Project Manager)

Cedar Hills Subdivision, Shelburne, ON (Project
Manager)

Ballymore Homeowners' Guide (Project Manager)

Renaissance Estates EIS, Aurora, Ontario (Project
Manager)

Richmond Hill Post Construction Monitoring, Richmond
Hill, Ontario (Project Manager)

*Prepared, coordinated and conducted post-construction
monitoring program of wetland vegetation, wildlife and water
quality following residential development of two large sites
adjacent to locally and provincially significant wetlands*

Brentwood Subdivision, Aurora, Ontario (Project
Manager)

Monora Adult Lifestyle Community, Orangeville, Ontario
(Project Manager)

Stoney Creek North Subdivision, London, Ontario
(Project Manager)

Retail / Commercial

First Professional Management Commercial
Development, Huntsville, Ontario (Project Manager)

First London North Commercial Development, London,
Ontario (Project Manager)

Sports, Recreation & Leisure

Cardinal Landing Golf Course Expansion EIS (Project
Manager)

Puslinch Township Driving Range EIS (Project Manager)

Eagle's Nest Golf Course, Vaughan, Ontario (Project
Manager)

*Coordinated environmental design and obtained approvals
relating to forest buffers, tree preservation, naturalized
stormwater management, turf and water management, ESA and
ANSI impacts, cold water stream protection; prepared
Environmental Management and Maintenance Protocol.*

Georgian Bay Club Environmental Impact Assessment,
Town of the Blue Mountains, Ontario (Terrestrial
Ecologist)

*Conducted field surveys, environmental impact assessment and
consultation with agencies, including the Niagara Escarpment
Commission, regarding significant wildlife habitat, significant
valleylands and fish habitat*

Grand Niagara Resort Environmental Impact Report,
Niagara Falls, Ontario (Project Manager)

*Preparation of Environmental Impact Assessments for two golf
courses and associated resort and conference centre
development, addressing the effects on two Provincially
Significant Wetlands, three watercourses and a host of locally,
regionally and provincially significant plant species to the
satisfaction of the City, Region and Ministry of Natural
Resources*

Castle Glen Golf Course and Resort, Town of the Blue
Mountains, Ontario (Project Manager)

*Coordination of extensive field inventory program, including
vegetation community classification, vascular plants, breeding
birds, amphibians; coordinated searches and mapping of
Endangered butternut specimens; prepared constraints analyses
and Environmental Impact Assessments*

Valerie E. Wyatt M.Sc.

Senior Project Manager

PUBLICATIONS

Rose-breasted Grosbeak (*Pheucticus ludovicianus*). *Atlas of the Breeding Birds of Ontario*, 2007.

Challenges and Rewards of Birding in the Remote North. *Birding*, 2004.

Rose-breasted Grosbeak (*Pheucticus ludovicianus*). *The Birds of North America*, 2002.

Extent of double-brooding and seasonal movement of nesting females in northern population of Wood Thrushes. *Wilson Bulletin*, 2000.

Pairing success of Wood Thrushes in a fragmented agricultural landscape. *Wilson Bulletin*, 1999.

Nest reuse by Wood Thrush and Rose-breasted Grosbeak. *Wilson Bulletin*, 1999.

Wildlife Watchers: Report on Monitoring Issue 5. *Ministry of the Environment, supplement to Seasons*, 1999.

Forest Bird productivity in the Credit Valley Watershed. *Presentation to Credit Valley Conservation, Orangeville, Ontario*, 1998.

Forest Bird productivity on the Niagara Escarpment - Halton Section. *Niagara Escarpment Commission*, 1998.

Zen and the art of Wood Thrush maintenance. *Conserving Forest Birds in Southern Ontario. Long Point Bird Observatory Special Publication*, 1998.

Wildlife Watchers: Report on Monitoring Issue 4. *Ministry of the Environment, supplement to Seasons*, 1998.

Use of *Anenome canadensis* in Rose-breasted Grosbeak nests. *Ontario Birds*, 1997.

Re-use of a Wood Thrush nest. *Ontario Birds*, 1997.

Drag and shear stress partitioning in sparse desert creosote communities. *Canadian Journal of Earth Science*, 1997.

Wildlife Watchers: Report on Monitoring Issue 3. *Ministry of the Environment, supplement to Seasons*, 1997.

Is the Niagara Escarpment a source for songbirds? A case study of the Wood Thrush. *Presentation to the Leading Edge 1997, Burlington, Ontario*, 1997.

The impact of domestic cats on wildlife populations. *Presentation to the Ontario Wildlife Rehabilitators Education Network, Toronto, Ontario*, 1997.

Sediment flux and airflow on the stoss slope of barchan dune. *Geomorphology*, 1996.

Stantec

GRAND RENEWABLE ENERGY PARK

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

Appendix I

Site Details and Photographs



Photo 1: Existing farm laneway crossing through deciduous forest (Feature 22) looking north to proposed turbine location



Photo 1: Existing farm laneway crossing through deciduous swamp (Feature 55) looking north.



Photo 2: Existing farm laneway crossing looking south.



Photo 1: Existing farm laneway crossing of deciduous swamp (Feature 69) looking north.



Photo 2: Existing farm laneway crossing of deciduous swamp looking south.





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Legend

Zone of Investigation

Constructable Area

Wind Project Location

Proposed Turbine Location
Access Road
Turbine Laydown Area
Overhead Collector Line
Underground Collector Line

Solar Project Location

Solar Fence
Solar Panel Unit
Transmission Line
Overhead Transmission Line

Underground Transmission Line
Electrical Transmission Component

Wetland (MNR)
Provincially Significant Wetland
Non-Provincially Significant Wetland

Significant Natural Features

Significant Woodland
Significant Wetland
Significant Valleyland

Significant Wildlife Habitat

Deer Wintering Area
Habitat for Declining/Area-Sensitive Grassland Species
Seep

Vernal Pool
Rare Vegetation Community
Snapping Turtle Habitat
Animal Movement Corridor
Waterfowl Stopover
Migratory Landbird Habitat
Habitat for Declining Woodland Species
Area-Sensitive Species Woodland Habitat
Tree Removal Area
Naturalized Buffer

Culverts

Wildlife Culvert
Culvert

Client/Project

SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.

I-1

Title

SITE DETAILS
Feature 8



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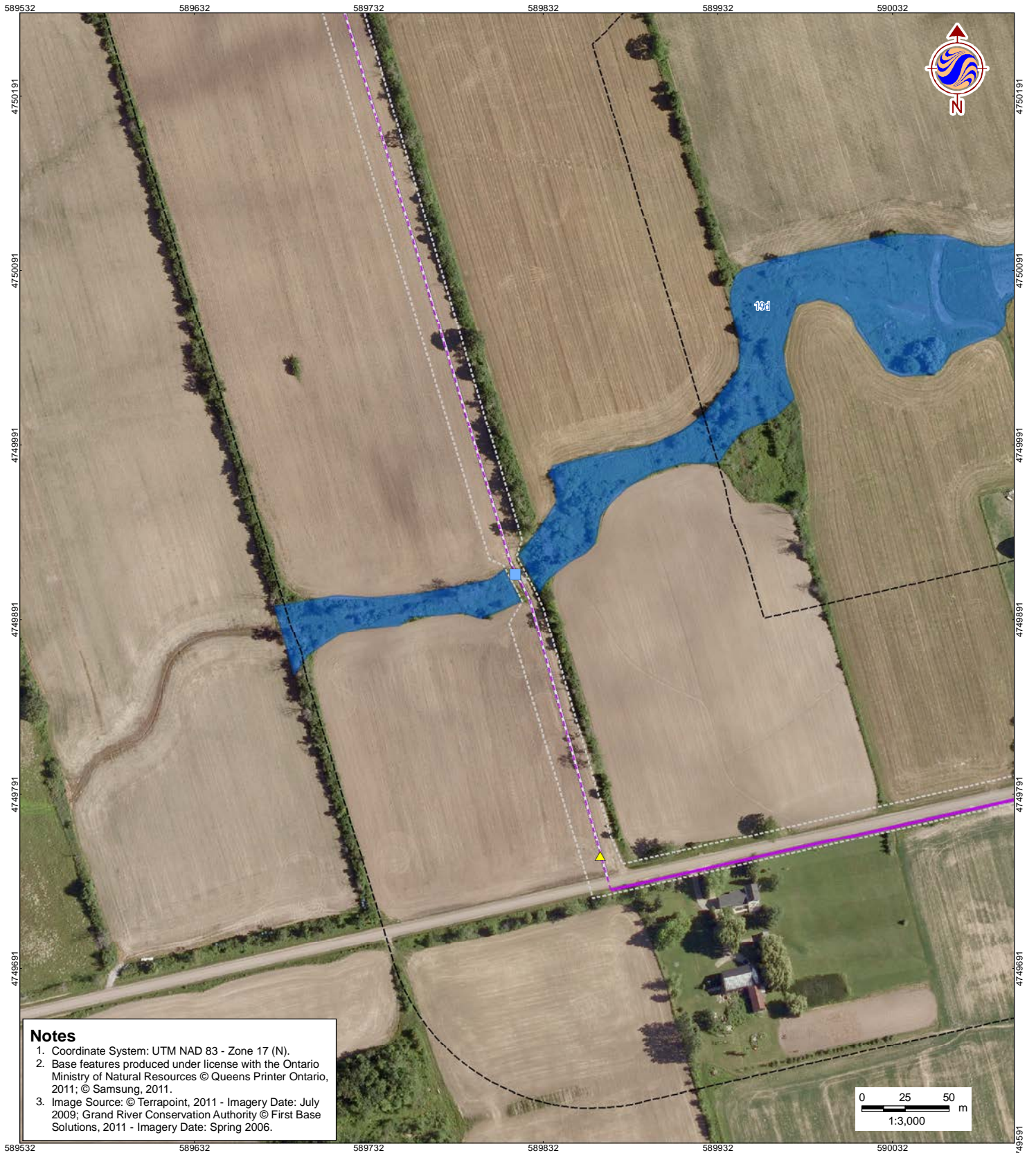
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| <ul style="list-style-type: none"> Zone of Investigation Constructable Area Wind Project Location Proposed Turbine Location Access Road Turbine Laydown Area Overhead Collector Line Underground Collector Line Solar Project Location Solar Fence Solar Panel Unit Transmission Line Overhead Transmission Line Underground Transmission Line Electrical Transmission Component Wetland (MNR) Provincially Significant Wetland Non-Provincially Significant Wetland Significant Natural Features Significant Woodland Significant Wetland Significant Valleyland Significant Wildlife Habitat Deer Wintering Area Habitat for Declining/Area-Sensitive Grassland Species Seep Vernal Pool Rare Vegetation Community Snapping Turtle Habitat Animal Movement Corridor Waterfowl Stopover Migratory Landbird Habitat Habitat for Declining Woodland Species Area-Sensitive Species Woodland Habitat Tree Removal Area Naturalized Buffer Culverts Wildlife Culvert Culvert |
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Client/Project
**SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK**

Figure No.
I-2

Title
**SITE DETAILS
Feature 5**



Notes

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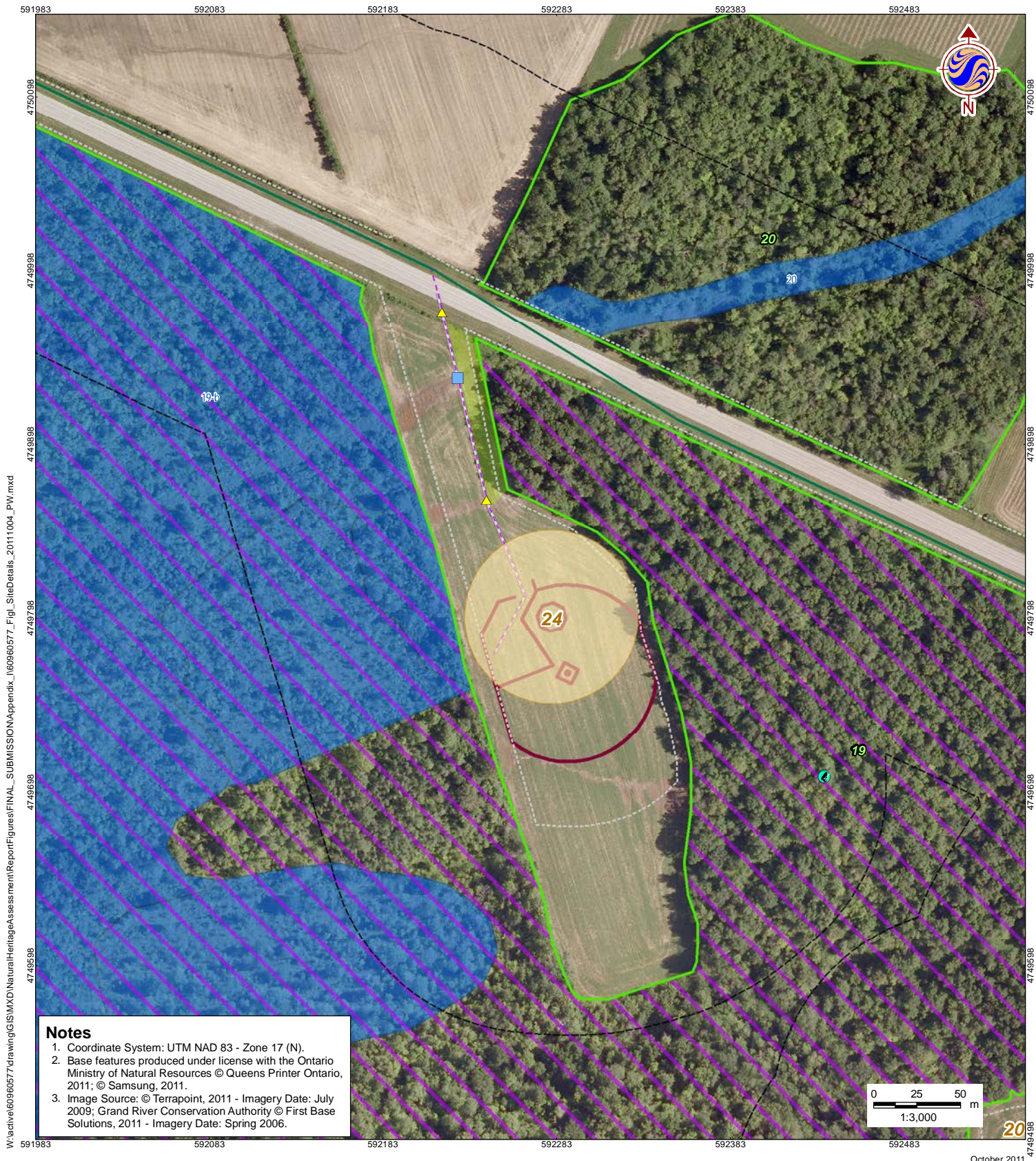
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| Zone of Investigation | Underground Transmission Line | Vernal Pool |
| Constructable Area | Electrical Transmission Component | Rare Vegetation Community |
| Wind Project Location | | |
| Proposed Turbine Location | Provincially Significant Wetland | Snapping Turtle Habitat |
| Access Road | Non-Provincially Significant Wetland | Animal Movement Corridor |
| Turbine Laydown Area | Significant Natural Features | |
| Overhead Collector Line | Significant Woodland | Waterfowl Stopover |
| Underground Collector Line | Significant Wetland | Migratory Landbird Habitat |
| Solar Project Location | | |
| Solar Fence | Significant Valleyland | Habitat for Declining Woodland Species |
| Solar Panel Unit | Significant Wildlife Habitat | Area-Sensitive Species Woodland Habitat |
| Transmission Line | Deer Wintering Area | Tree Removal Area |
| Overhead Transmission Line | Habitat for Declining/Area-Sensitive Grassland Species | Naturalized Buffer |
| | Seep | Culverts |
| | | Wildlife Culvert |
| | | Culvert |

Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.
I-3

Title
SITE DETAILS
Feature 90



Notes

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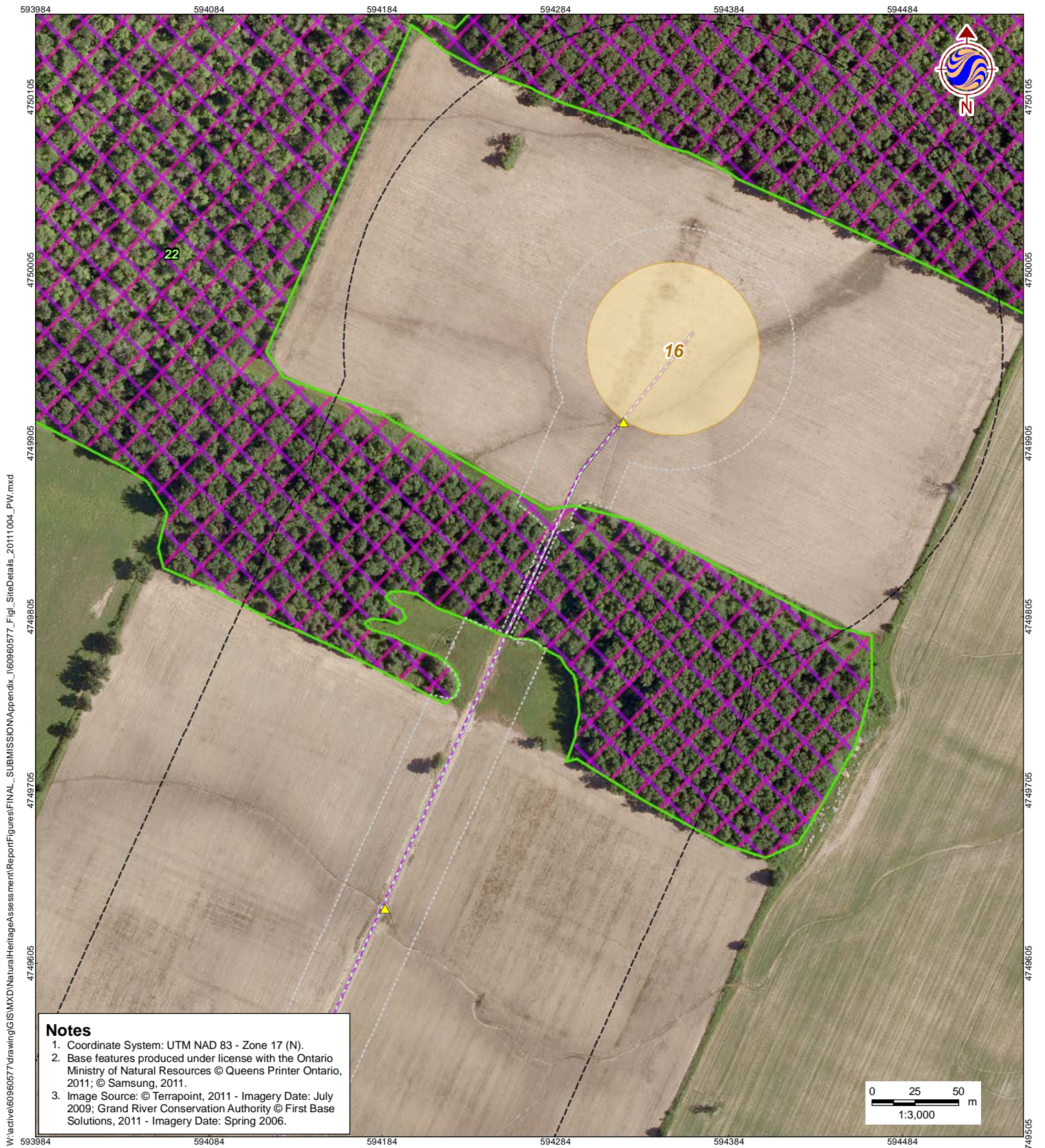
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Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

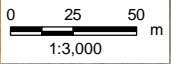
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1-4

Title
SITE DETAILS
Feature 19



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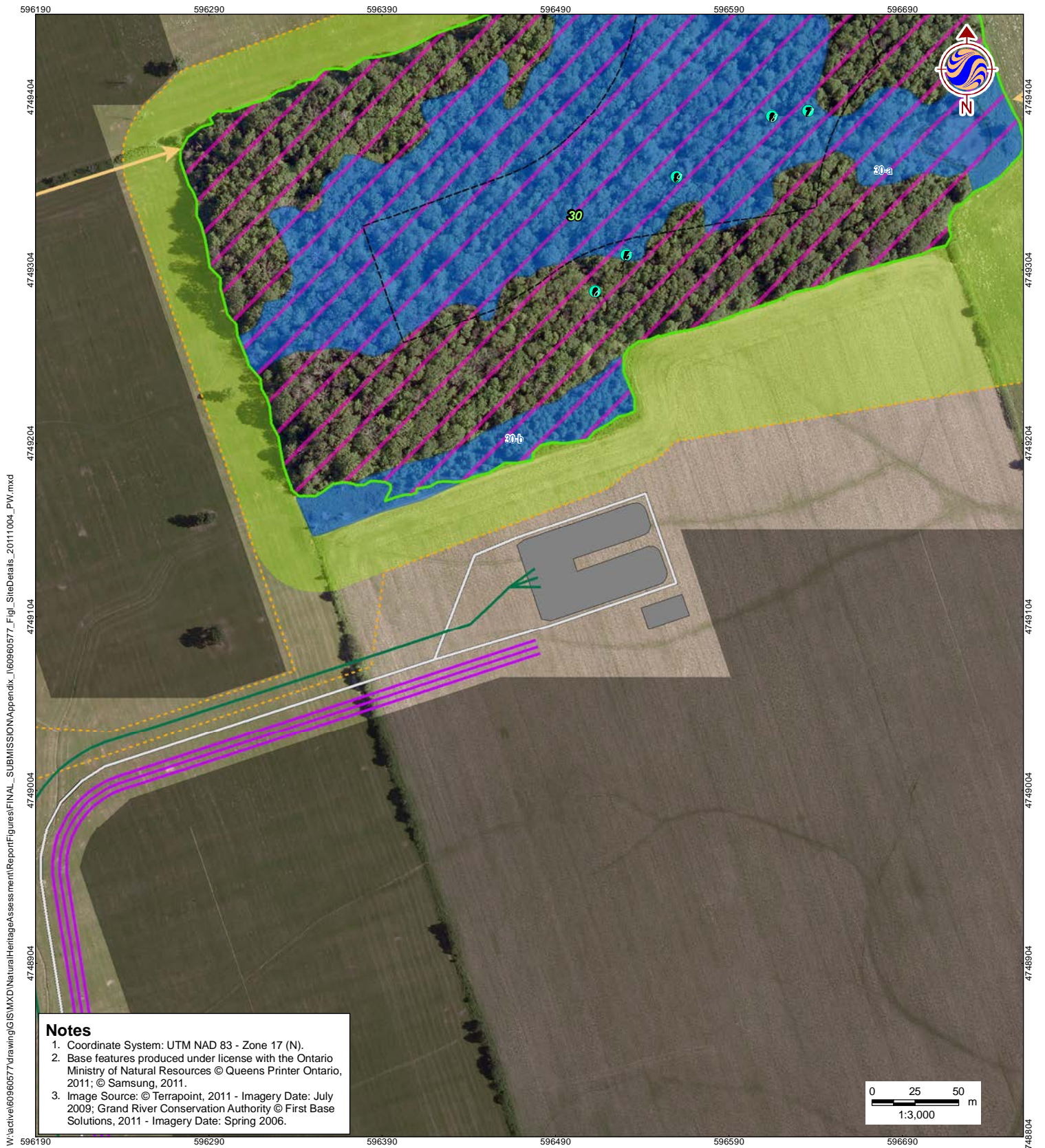
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Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.
I-5

Title
SITE DETAILS
Feature 22



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Client/Project
**SAMSUNG, PATTERN & KEPCO (SPK)
 GRAND RENEWABLE ENERGY PARK**

Figure No.
I-6

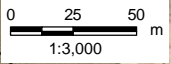
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**SITE DETAILS
 Feature 30**

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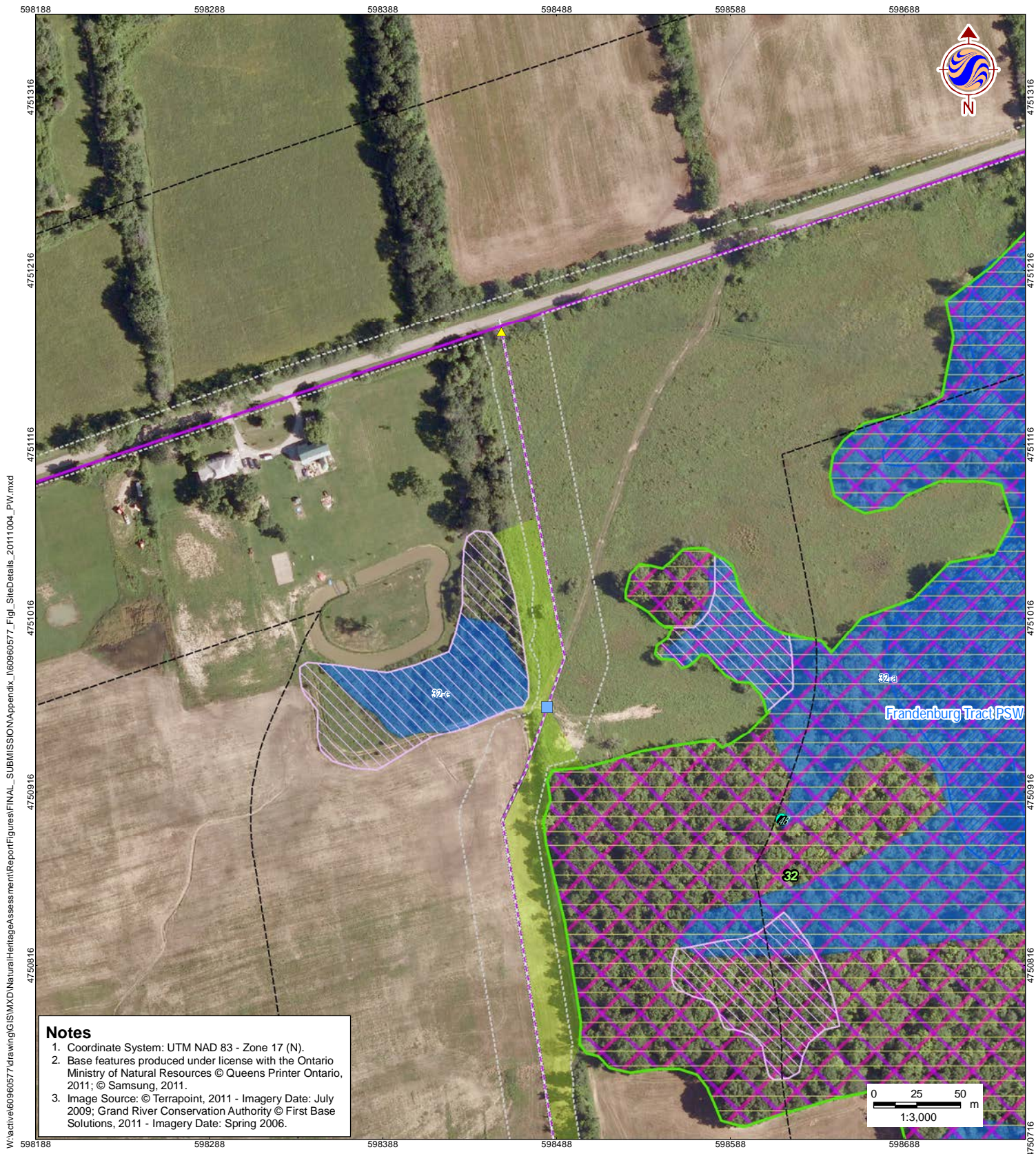
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| <ul style="list-style-type: none"> Zone of Investigation Constructable Area Wind Project Location Proposed Turbine Location Access Road Turbine Laydown Area Overhead Collector Line Underground Collector Line Solar Project Location Solar Fence Solar Panel Unit Transmission Line Overhead Transmission Line | <ul style="list-style-type: none"> Underground Transmission Line Electrical Transmission Component Wetland (MNR) Provincially Significant Wetland Non-Provincially Significant Wetland Significant Natural Features Significant Woodland Significant Wetland Significant Valleyland Significant Wildlife Habitat Deer Wintering Area Habitat for Declining/Area-Sensitive Grassland Species Seep | <ul style="list-style-type: none"> Vernal Pool Rare Vegetation Community Snapping Turtle Habitat Animal Movement Corridor Waterfowl Stopover Migratory Landbird Habitat Habitat for Declining Woodland Species Area-Sensitive Species Woodland Habitat Tree Removal Area Naturalized Buffer Culverts Wildlife Culvert Culvert |
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Client/Project
**SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK**

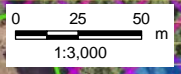
Figure No.
I-7

Title
**SITE DETAILS
Feature 38**



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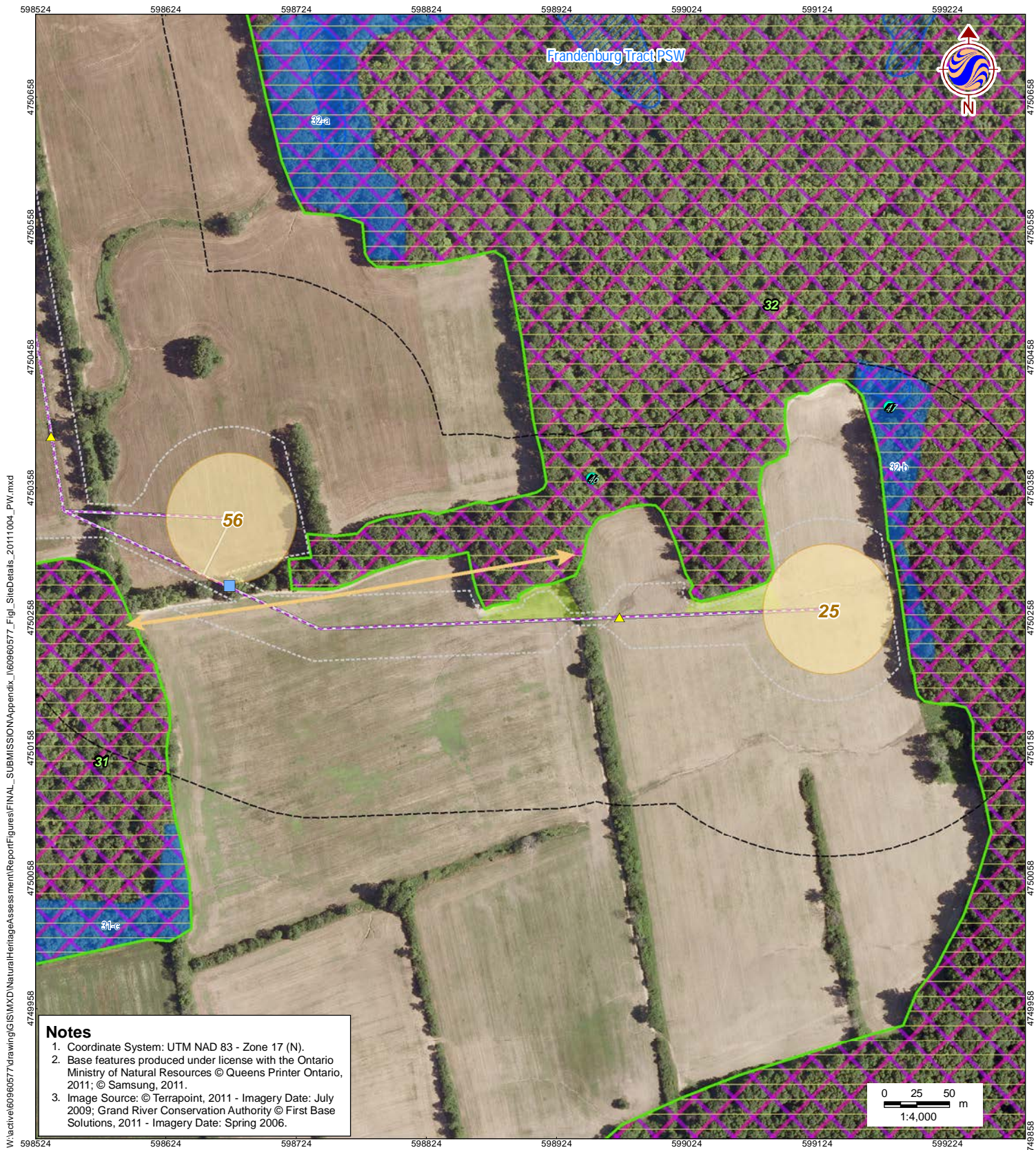
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Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

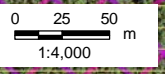
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I-8

Title
SITE DETAILS
Feature 32



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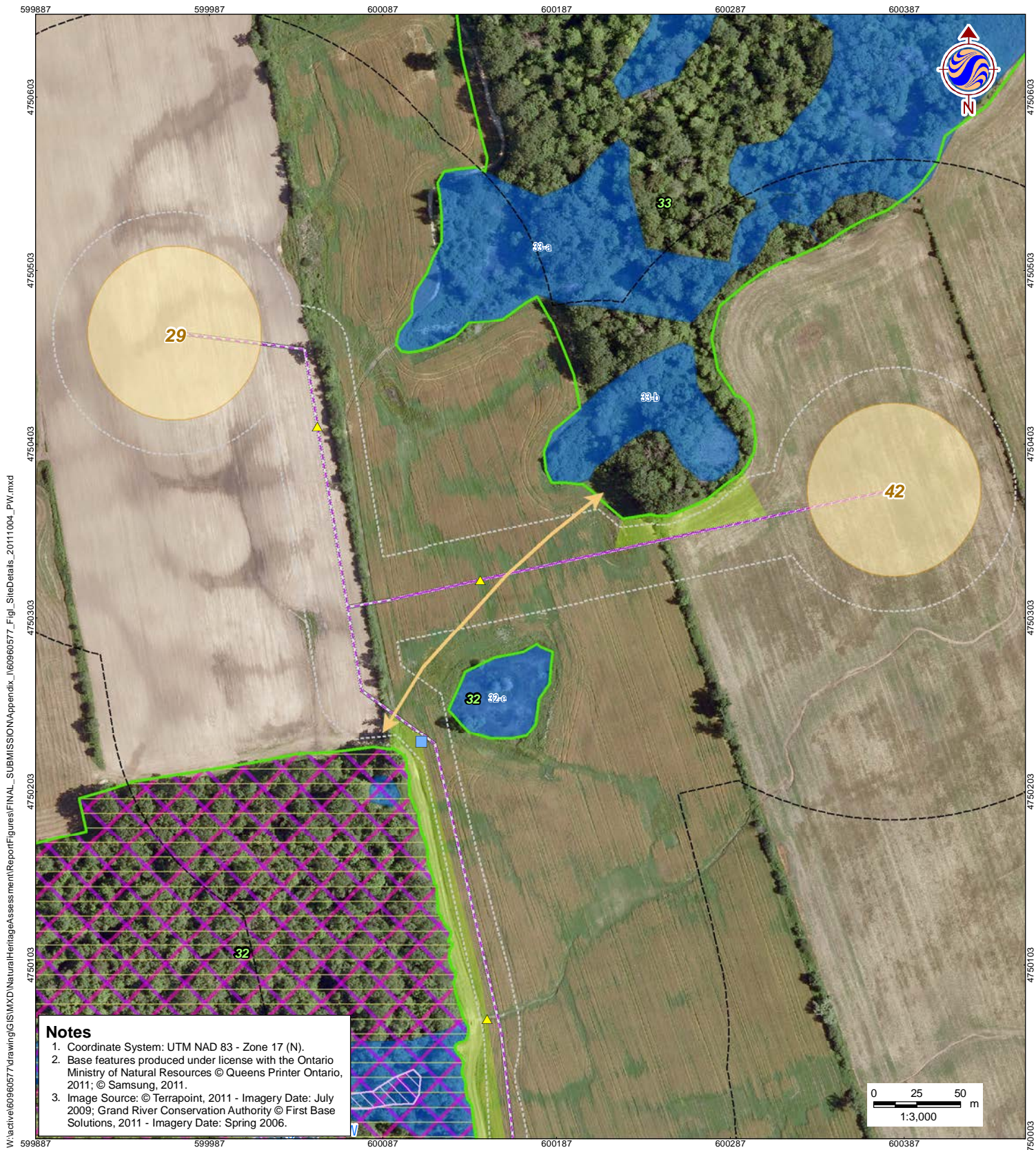
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|--|--|---|

Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.
I-9

Title
SITE DETAILS
Feature 32



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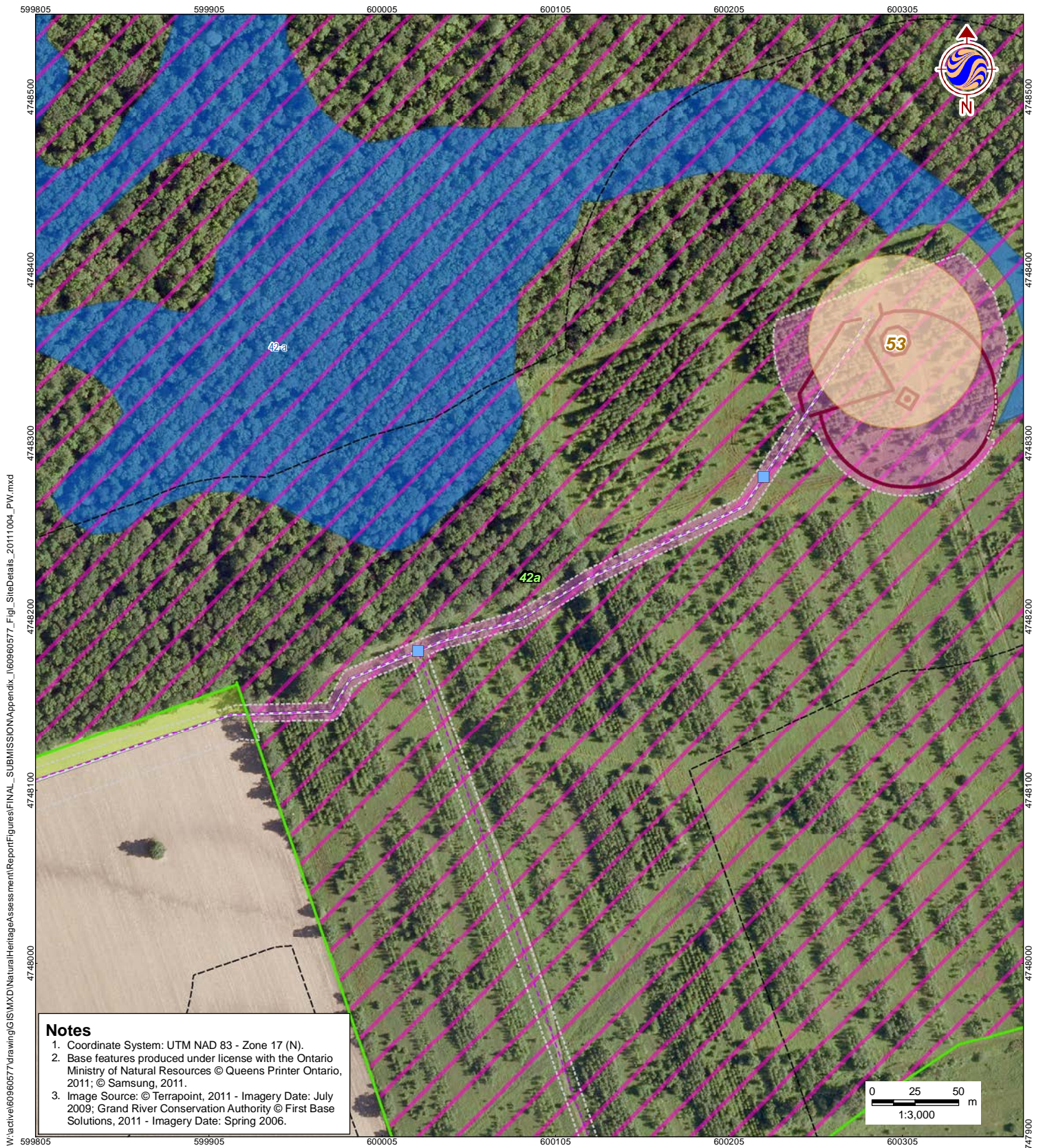
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| <ul style="list-style-type: none"> Zone of Investigation Constructable Area Wind Project Location Proposed Turbine Location Access Road Turbine Laydown Area Overhead Collector Line Underground Collector Line Solar Project Location Solar Fence Solar Panel Unit Transmission Line Overhead Transmission Line | <ul style="list-style-type: none"> Underground Transmission Line Electrical Transmission Component Wetland (MNR) Provincially Significant Wetland Non-Provincially Significant Wetland Significant Natural Features Significant Woodland Significant Wetland Significant Valleyland Significant Wildlife Habitat Deer Wintering Area Habitat for Declining/Area-Sensitive Grassland Species Seep | <ul style="list-style-type: none"> Vernal Pool Rare Vegetation Community Snapping Turtle Habitat Animal Movement Corridor Waterfowl Stopover Migratory Landbird Habitat Habitat for Declining Woodland Species Area-Sensitive Species Woodland Habitat Tree Removal Area Naturalized Buffer Culverts Wildlife Culvert Culvert |
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Client/Project
**SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK**

Figure No.
I-10

Title
**SITE DETAILS
Features 32 & 33**



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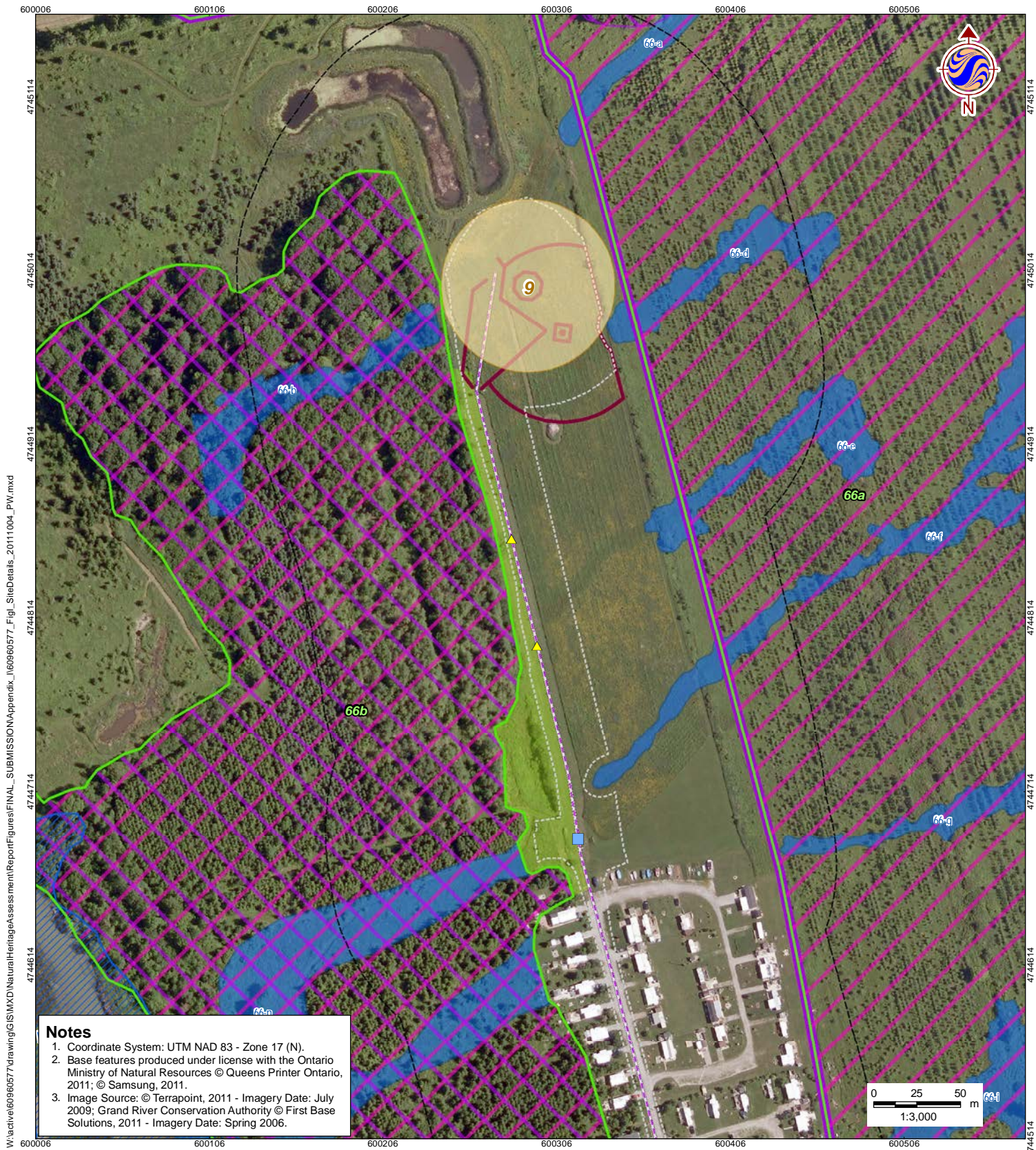
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| Zone of Investigation | Underground Transmission Line | Vernal Pool |
| Constructable Area | Electrical Transmission Component | Rare Vegetation Community |
| Wind Project Location | | |
| Proposed Turbine Location | Provincially Significant Wetland | Snapping Turtle Habitat |
| Access Road | Non-Provincially Significant Wetland | Animal Movement Corridor |
| Turbine Laydown Area | Significant Natural Features | |
| Overhead Collector Line | Significant Woodland | Waterfowl Stopover |
| Underground Collector Line | Significant Wetland | Migratory Landbird Habitat |
| Solar Project Location | | |
| Solar Fence | Significant Valleyland | Habitat for Declining Woodland Species |
| Solar Panel Unit | Significant Wildlife Habitat | Area-Sensitive Species Woodland Habitat |
| Transmission Line | Deer Wintering Area | Tree Removal Area |
| Overhead Transmission Line | Habitat for Declining/Area-Sensitive Grassland Species | Naturalized Buffer |
| | Seep | Culverts |
| | | Wildlife Culvert |
| | | Culvert |

Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.
I-11

Title
SITE DETAILS
Feature 42



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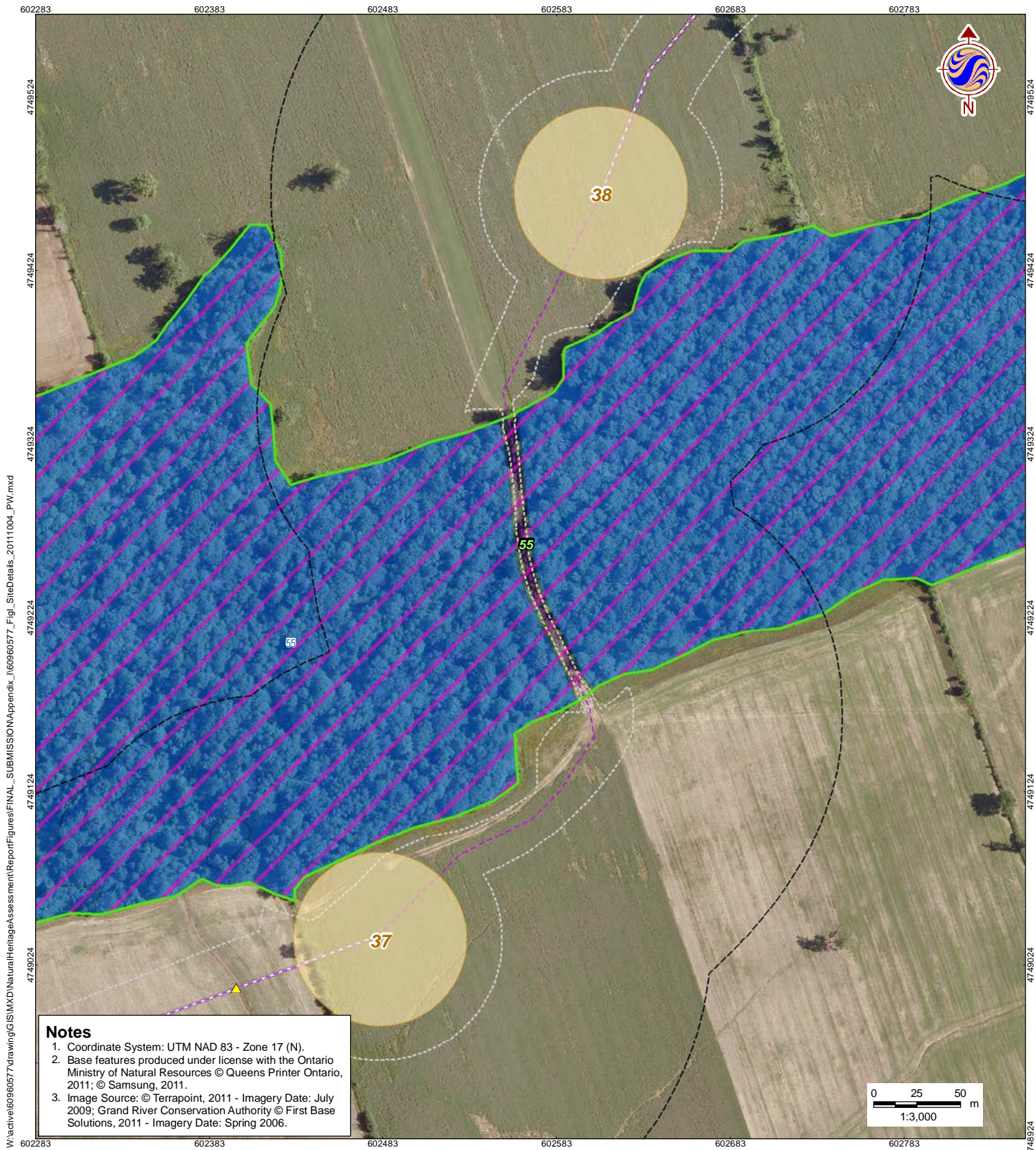
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| <ul style="list-style-type: none"> Zone of Investigation Constructable Area Wind Project Location Proposed Turbine Location Access Road Turbine Laydown Area Overhead Collector Line Underground Collector Line Solar Project Location Solar Fence Solar Panel Unit Transmission Line Overhead Transmission Line | <ul style="list-style-type: none"> Underground Transmission Line Electrical Transmission Component Wetland (MNR) Provincially Significant Wetland Non-Provincially Significant Wetland Significant Natural Features Significant Woodland Significant Wetland Significant Valleyland Significant Wildlife Habitat Deer Wintering Area Habitat for Declining/Area-Sensitive Grassland Species Seep | <ul style="list-style-type: none"> Vernal Pool Rare Vegetation Community Snapping Turtle Habitat Animal Movement Corridor Waterfowl Stopover Migratory Landbird Habitat Habitat for Declining Woodland Species Area-Sensitive Species Woodland Habitat Tree Removal Area Naturalized Buffer Culverts Wildlife Culvert Culvert |
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Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

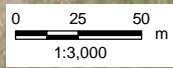
Figure No.
I-12

Title
SITE DETAILS
Feature 66



Notes

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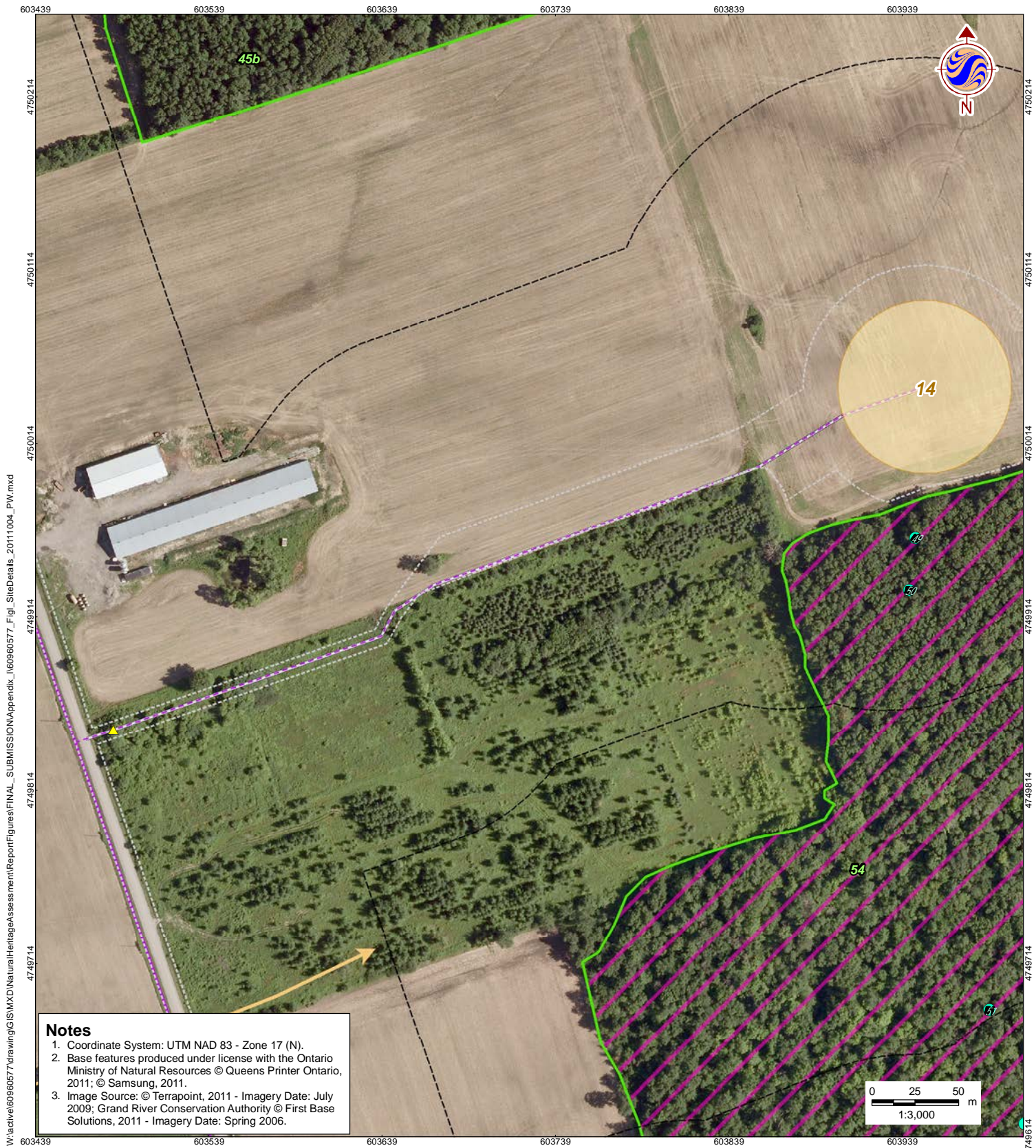
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| Zone of Investigation | Underground Transmission Line | Vernal Pool |
| Constructable Area | Electrical Transmission Component | Rare Vegetation Community |
| Wind Project Location | Wetland (MNR) | Snapping Turtle Habitat |
| Proposed Turbine Location | Provincially Significant Wetland | Animal Movement Corridor |
| Access Road | Non-Provincially Significant Wetland | Waterfowl Stopover |
| Turbine Laydown Area | Significant Natural Features | Migratory Landbird Habitat |
| Overhead Collector Line | Significant Woodland | Habitat for Declining Woodland Species |
| Underground Collector Line | Significant Wetland | Area-Sensitive Species Woodland Habitat |
| Solar Project Location | Significant Valleyland | Tree Removal Area |
| Solar Fence | Significant Wildlife Habitat | Naturalized Buffer |
| Solar Panel Unit | Deer Wintering Area | Wildlife Culvert |
| Transmission Line | Habitat for Declining/Area-Sensitive Grassland Species | Culvert |
| Overhead Transmission Line | Seep | |

Client/Project
**SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK**

Figure No.
I-13

Title
**SITE DETAILS
Feature 55**



Notes

1. Coordinate System: UTM NAD 83 - Zone 17 (N).
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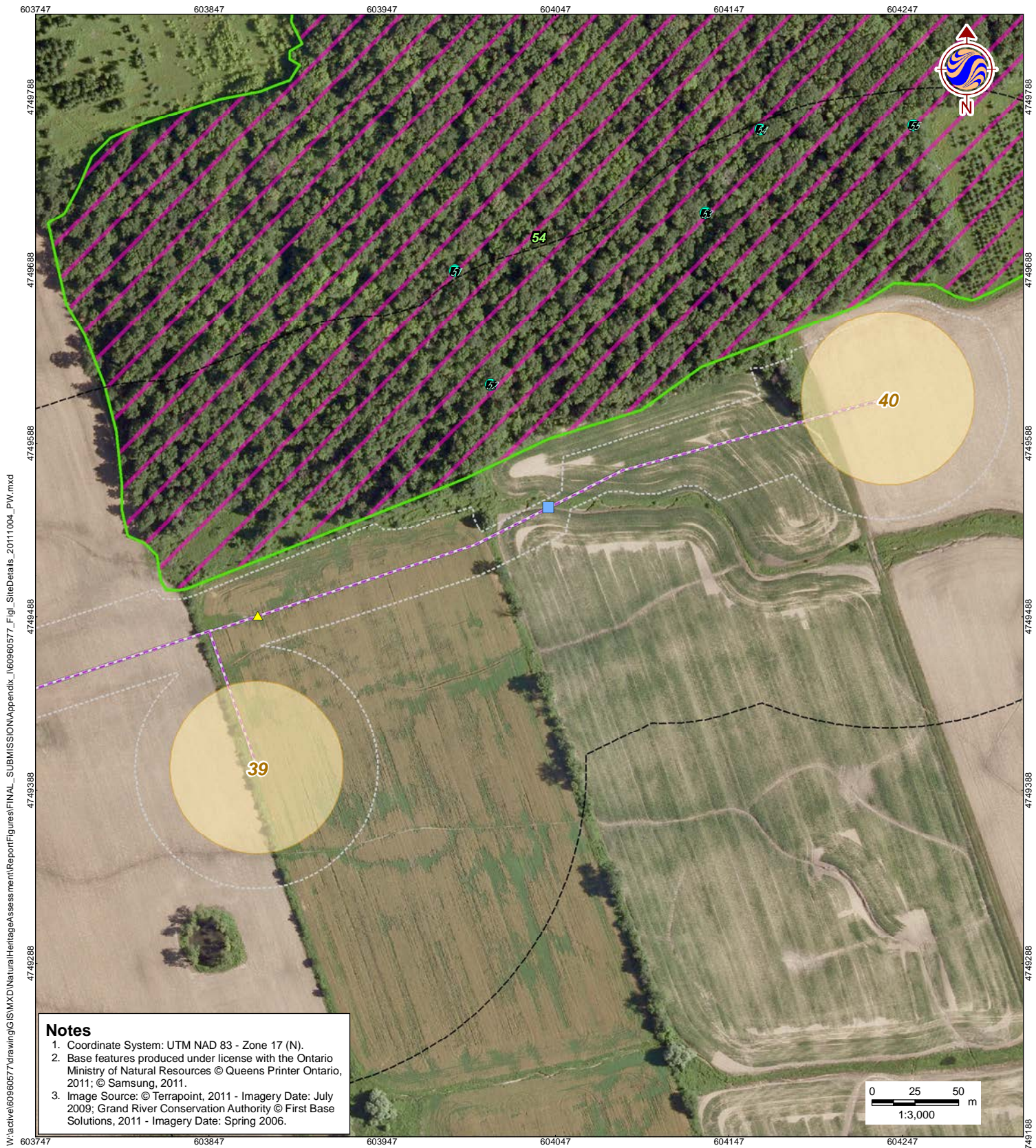
Legend

- | | | |
|-------------------------------|--|---|
| Zone of Investigation | Underground Transmission Line | Vernal Pool |
| Constructable Area | Electrical Transmission Component | Rare Vegetation Community |
| Wind Project Location | | |
| Proposed Turbine Location | Provincially Significant Wetland | Snapping Turtle Habitat |
| Access Road | Non-Provincially Significant Wetland | Animal Movement Corridor |
| Turbine Laydown Area | Significant Natural Features | |
| Overhead Collector Line | Significant Woodland | Waterfowl Stopover |
| Underground Collector Line | Significant Wetland | Migratory Landbird Habitat |
| Solar Project Location | | |
| Solar Fence | Significant Valleyland | Habitat for Declining Woodland Species |
| Solar Panel Unit | Significant Wildlife Habitat | Area-Sensitive Species Woodland Habitat |
| Transmission Line | Deer Wintering Area | Tree Removal Area |
| Overhead Transmission Line | Habitat for Declining/Area-Sensitive Grassland Species | Naturalized Buffer |
| | Seep | Culverts |
| | | Wildlife Culvert |
| | | Culvert |

Client/Project
SAMSUNG, PATTERN & KEPKO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.
I-14

Title
SITE DETAILS
Feature 54



Notes

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Legend

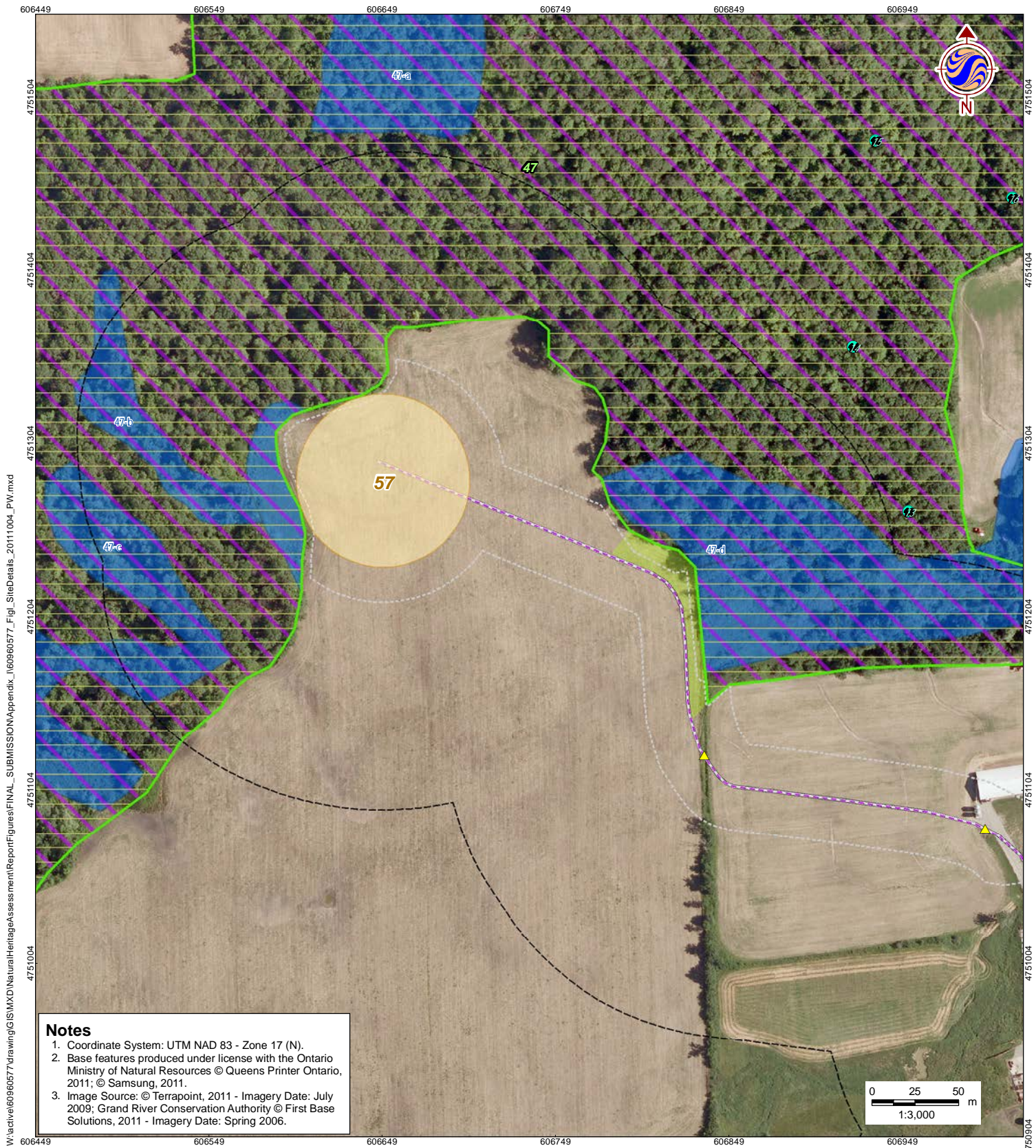
- | | | |
|-------------------------------|--|---|
| Zone of Investigation | Underground Transmission Line | Vernal Pool |
| Constructable Area | Electrical Transmission Component | Rare Vegetation Community |
| Wind Project Location | Wetland (MNR) | Snapping Turtle Habitat |
| Proposed Turbine Location | Provincially Significant Wetland | Animal Movement Corridor |
| Access Road | Non-Provincially Significant Wetland | Waterfowl Stopover |
| Turbine Laydown Area | Significant Natural Features | Migratory Landbird Habitat |
| Overhead Collector Line | Significant Woodland | Habitat for Declining Woodland Species |
| Underground Collector Line | Significant Wetland | Area-Sensitive Species Woodland Habitat |
| Solar Project Location | Significant Valleyland | Tree Removal Area |
| Solar Fence | Significant Wildlife Habitat | Naturalized Buffer |
| Solar Panel Unit | Deer Wintering Area | Culverts |
| Transmission Line | Habitat for Declining/Area-Sensitive Grassland Species | Wildlife Culvert |
| Overhead Transmission Line | Seep | Culvert |

Client/Project
**SAMSUNG, PATTERN & KEPCO (SPK)
 GRAND RENEWABLE ENERGY PARK**

Figure No.
I-15

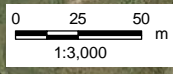
Title
**SITE DETAILS
 Feature 54**





Notes

1. Coordinate System: UTM NAD 83 - Zone 17 (N).
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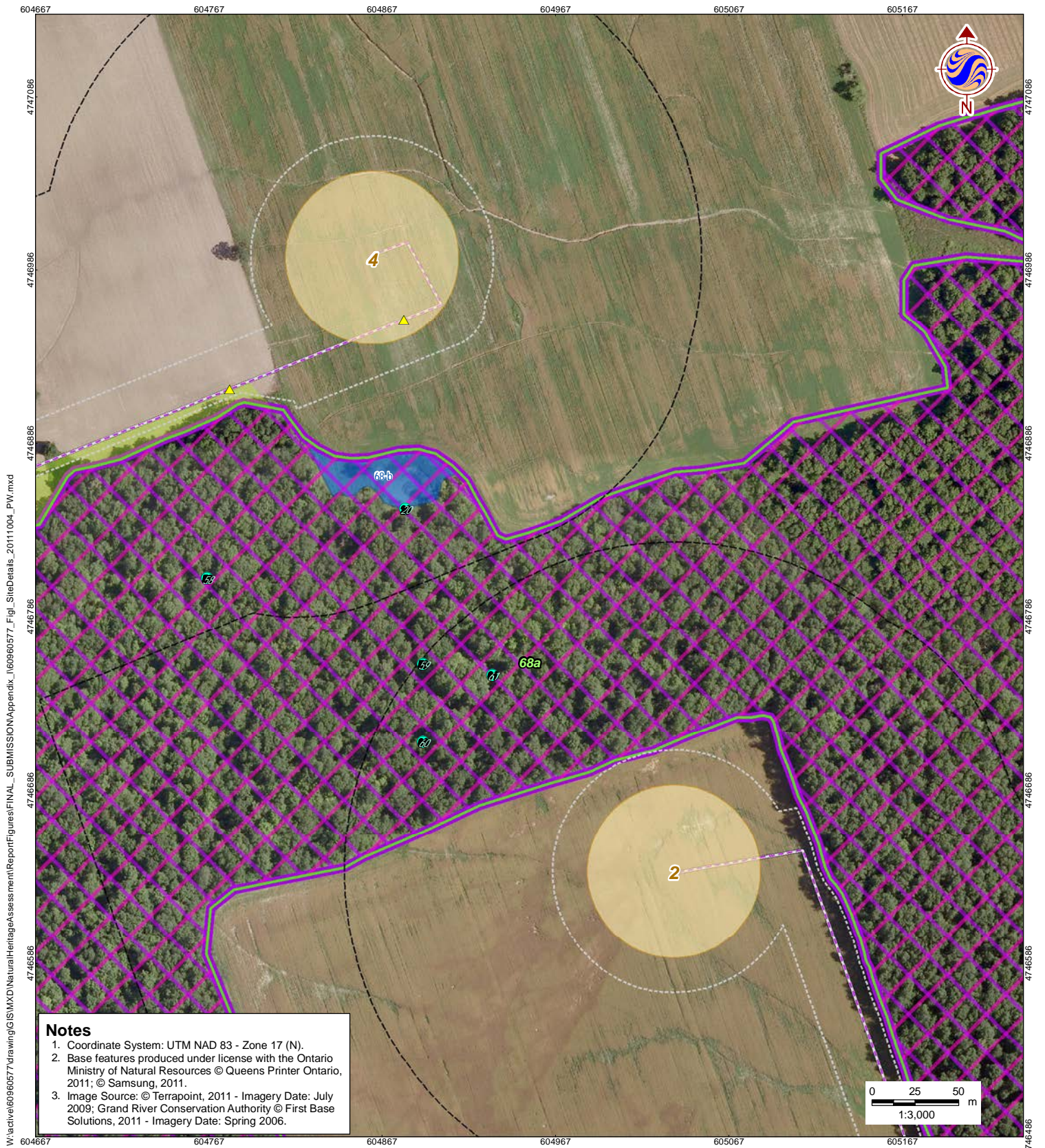
Legend

- | | | |
|-------------------------------|--|---|
| Zone of Investigation | Underground Transmission Line | Vernal Pool |
| Constructable Area | Electrical Transmission Component | Rare Vegetation Community |
| Wind Project Location | Wetland (MNR) | Snapping Turtle Habitat |
| Proposed Turbine Location | Provincially Significant Wetland | Animal Movement Corridor |
| Access Road | Non-Provincially Significant Wetland | Waterfowl Stopover |
| Turbine Laydown Area | Significant Natural Features | Migratory Landbird Habitat |
| Overhead Collector Line | Significant Woodland | Habitat for Declining Woodland Species |
| Underground Collector Line | Significant Wetland | Area-Sensitive Species Woodland Habitat |
| Solar Project Location | Significant Valleyland | Tree Removal Area |
| Solar Fence | Significant Wildlife Habitat | Naturalized Buffer |
| Solar Panel Unit | Deer Wintering Area | Culverts |
| Transmission Line | Habitat for Declining/Area-Sensitive Grassland Species | Wildlife Culvert |
| Overhead Transmission Line | Seep | Culvert |

Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.
I-16

Title
SITE DETAILS
Feature 47



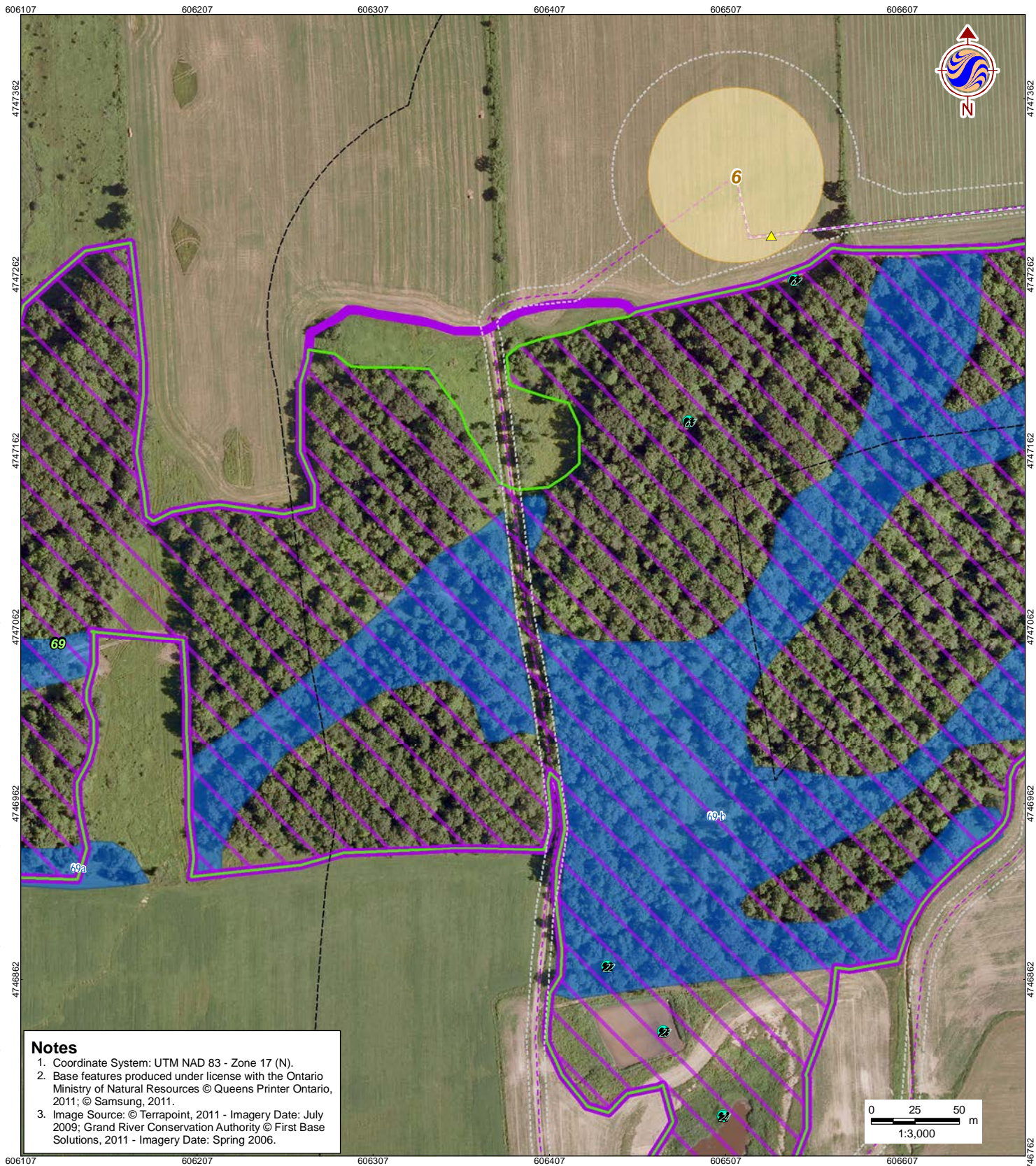
Legend

- | | | |
|-------------------------------|--|---|
| Zone of Investigation | Underground Transmission Line | Vernal Pool |
| Constructable Area | Electrical Transmission Component | Rare Vegetation Community |
| Wind Project Location | Wetland (MNR) | Snapping Turtle Habitat |
| Proposed Turbine Location | Provincially Significant Wetland | Animal Movement Corridor |
| Access Road | Non-Provincially Significant Wetland | Waterfowl Stopover |
| Turbine Laydown Area | Significant Natural Features | Migratory Landbird Habitat |
| Overhead Collector Line | Significant Woodland | Habitat for Declining Woodland Species |
| Underground Collector Line | Significant Wetland | Area-Sensitive Species Woodland Habitat |
| Solar Project Location | Significant Valleyland | Tree Removal Area |
| Solar Fence | Significant Wildlife Habitat | Naturalized Buffer |
| Solar Panel Unit | Deer Wintering Area | Culverts |
| Overhead Transmission Line | Habitat for Declining/Area-Sensitive Grassland Species | Wildlife Culvert |
| | Seep | Culvert |

Client/Project
**SAMSUNG, PATTERN & KEPCO (SPK)
 GRAND RENEWABLE ENERGY PARK**

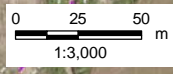
Figure No.
I-17

Title
**SITE DETAILS
 Feature 68**



Notes

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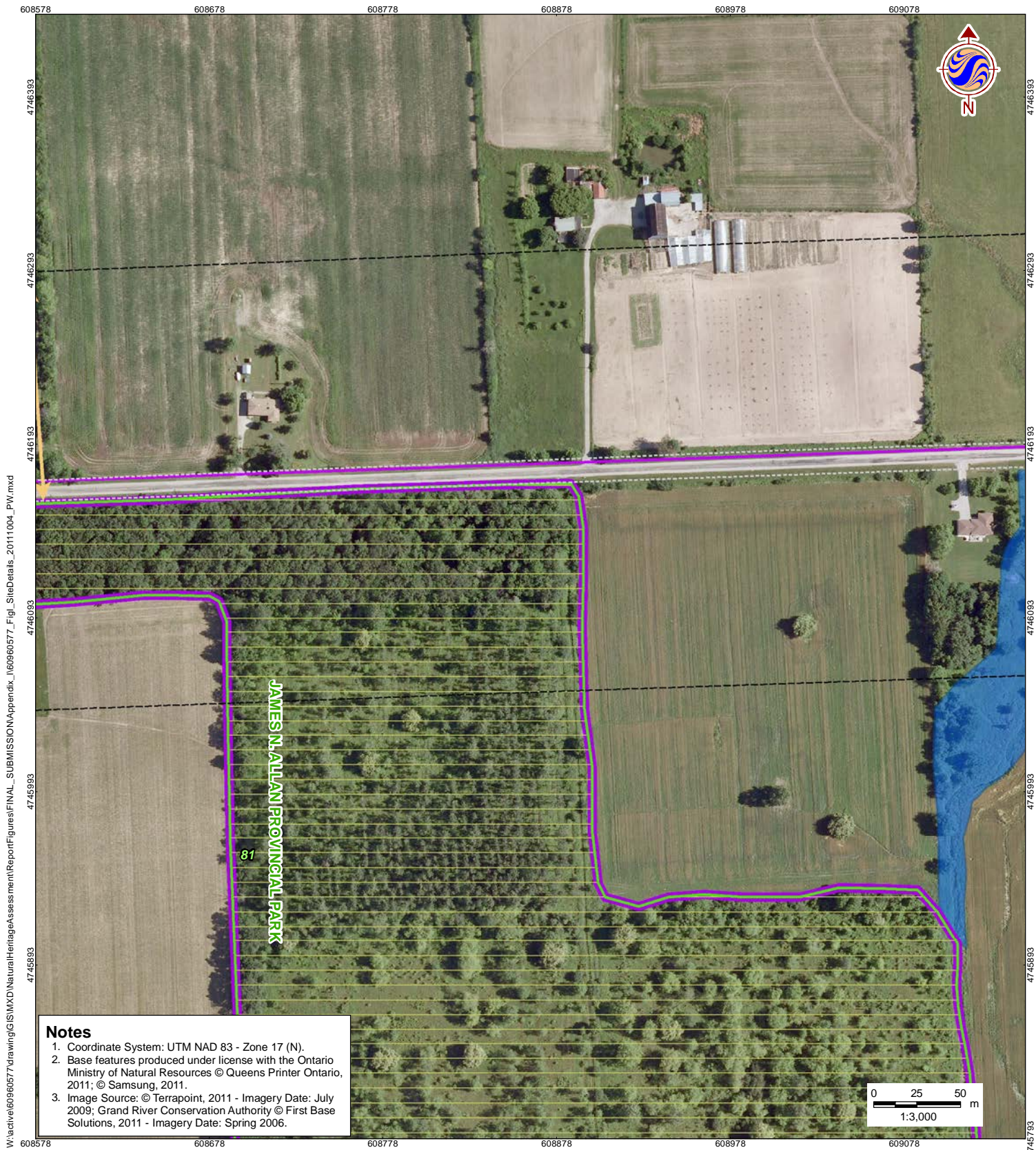
Legend

- | | | |
|-------------------------------|--|---|
| Zone of Investigation | Underground Transmission Line | Vernal Pool |
| Constructable Area | Electrical Transmission Component | Rare Vegetation Community |
| Wind Project Location | | |
| Proposed Turbine Location | Provincially Significant Wetland | Snapping Turtle Habitat |
| Access Road | Non-Provincially Significant Wetland | Animal Movement Corridor |
| Turbine Laydown Area | Significant Natural Features | |
| Overhead Collector Line | Significant Woodland | Waterfowl Stopover |
| Underground Collector Line | Significant Wetland | Migratory Landbird Habitat |
| Solar Project Location | | |
| Solar Fence | Significant Valleyland | Habitat for Declining Woodland Species |
| Solar Panel Unit | Significant Wildlife Habitat | Area-Sensitive Species Woodland Habitat |
| Transmission Line | | |
| Overhead Transmission Line | Deer Wintering Area | Tree Removal Area |
| | Habitat for Declining/Area-Sensitive Grassland Species | Naturalized Buffer |
| | Seep | Culverts |
| | | Wildlife Culvert |
| | | Culvert |

Client/Project
SAMSUNG, PATTERN & KEPCO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.
I-18

Title
SITE DETAILS
Feature 69



Notes

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Legend

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Zone of Investigation Constructable Area Wind Project Location Proposed Turbine Location Access Road Turbine Laydown Area Overhead Collector Line Underground Collector Line Solar Project Location Solar Fence Solar Panel Unit Transmission Line Overhead Transmission Line | <ul style="list-style-type: none"> Underground Transmission Line Electrical Transmission Component Wetland (MNR) Provincially Significant Wetland Non-Provincially Significant Wetland Significant Natural Features Significant Woodland Significant Wetland Significant Valleyland Significant Wildlife Habitat Deer Wintering Area Habitat for Declining/Area-Sensitive Grassland Species Seep | <ul style="list-style-type: none"> Vernal Pool Rare Vegetation Community Snapping Turtle Habitat Animal Movement Corridor Waterfowl Stopover Migratory Landbird Habitat Habitat for Declining Woodland Species Area-Sensitive Species Woodland Habitat Tree Removal Area Naturalized Buffer Culverts Wildlife Culvert Culvert |
|--|--|---|

Client/Project
**SAMSUNG, PATTERN & KEPCO (SPK)
 GRAND RENEWABLE ENERGY PARK**

Figure No.
I-19

Title
**SITE DETAILS
 Feature 81**

Stantec

SAMSUNG GRAND RENEWABLE ENERGY PARK

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

Appendix J

Conceptual Design - Culvert Estimations

Grand River Energy Park

Appendix J: Conceptual Design - Culvert Estimations

Based on plans prepared by C.Coghlan

Figure No.	Turbine No.	Catchment Size (ha)	# of Culverts Required										
			400 mm Circular		600 mm Circular		900 mm Circular		1200 mm Circular		1500 mm Circular	2130 mm x 1220 mm box	
			Normal	Normal	Counter-sunk	Normal	Counter-sunk	Normal	Counter-sunk	Counter-sunk	Normal	Counter-sunk	
W1	33, 36		4	1	1								
W2	34, 41, 45	-		1									
		5.21		1									
		19.54				1							
		48.69							1				
W2	18	28.79				1							
		-	1	1									
W2	43	154.39									1		
W4	58	-	2	1									
		359.97		1									
W3	23, 28	-		1									
		64.81	5					1					
		244.34										1	
		17.64				1							
W3	46	-	1	1									
		47.17							1				
W4	24	202.54							1				
		-		1									
W4	20	49.37								1			
W4	20	22.22		1				1					
W5	13	-	3	1									
W5	48	-	2	1									
		12.09				1							
W5	16	-	4	1	1								
W6	10	-		1									
		10.8		1									
W7	25, 56	-	2	1	2								
		11.04		1									
W8	17	-		1									
W8	27, 44	-		1									
W7	29, 42	-	4	1	1								

Figure No.	Turbine No.	Catchment Size (ha)	# of Culverts Required											
			400 mm Circular		600 mm Circular		900 mm Circular		1200 mm Circular		1500 mm Circular	2130 mm x 1220 mm box		
			Normal	Counter-sunk	Normal	Counter-sunk	Normal	Counter-sunk	Normal	Counter-sunk	Counter-sunk	Normal	Counter-sunk	
W7	22	- 1.64	1	1	1									
W8	52, 53	-	2	1	2									
W8	55	- 4.99	2	1	1									
W9	12	-	1	1										
W10	9	- 11.82	2	1			1							
W10	51	-	1	1										
W11	47	- 24.01	1	1		1								
W11	37, 68	-	3	1										
		11.34		1										
		10.38					1							
W11	35, 38	-	3	1										
W11	39, 40	-		2										
		7.66		1										
W12	11	-	1	1										
W13	14	-		1										
W10	21	-	1	1										
W10	5	-	3	1										
W18	4	-	2	1										
W18	2	-	1	1										
W14	19	-	4	1	1									
W13	57	-	4	1										
		605.23												2
W13	30	-	2	1										
		43.88				1								
W14	26	-	1	1										
		13.53				1								
W14	7	-		1										
W15	6, 69, 8	-	3	2										

Figure No.	Turbine No.	Catchment Size (ha)	# of Culverts Required										
			400 mm Circular		600 mm Circular		900 mm Circular		1200 mm Circular		1500 mm Circular	2130 mm x 1220 mm box	
			Normal	Counter-sunk	Normal	Counter-sunk	Normal	Counter-sunk	Normal	Counter-sunk	Counter-sunk	Normal	Counter-sunk
W15	1, 3, 54	- 74.06	5	2						1			
W14	15, 49, 50	- 11.35	4	1			1						
W16	65, 66, 67	- 142.06	3	3							1		
W17	59, 60, 61, 62, 63, 64	-	3	1									
Total			81	55	8	8	3	4	1	1	4	2	
Total Requiring Rip-Rap			0	8	0	8	3	4	1	1	4	2	

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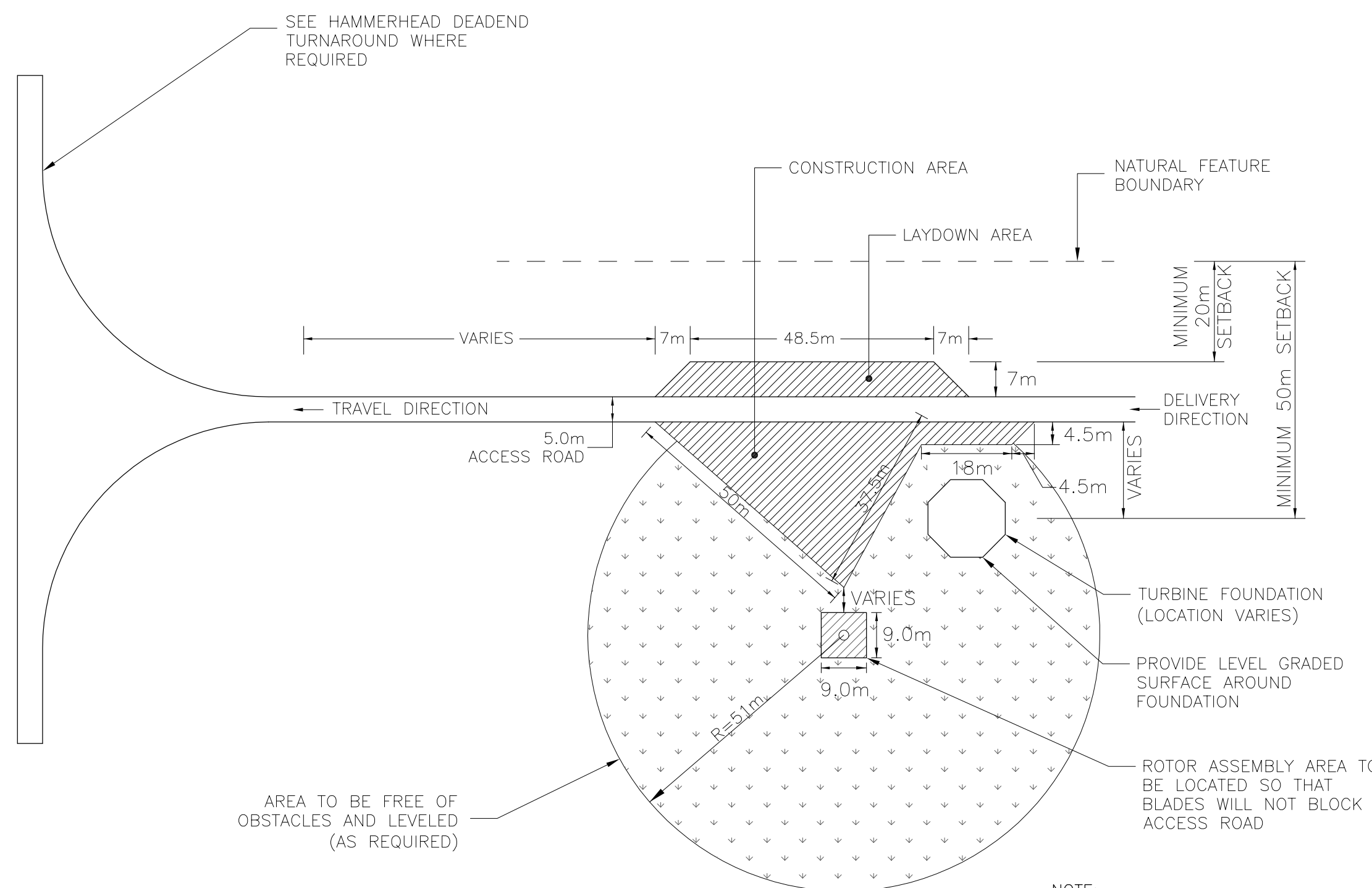
GRAND RENEWABLE ENERGY PARK

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

Appendix K

Typical Turbine Installation Plan

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 The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing – any errors or omissions shall be reported to Stantec without delay.
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SEE HAMMERHEAD DEADEND TURNAROUND WHERE REQUIRED

CONSTRUCTION AREA
 LAYDOWN AREA
 NATURAL FEATURE BOUNDARY

VARIES 7m 48.5m 7m
 MINIMUM 20m SETBACK
 TRAVEL DIRECTION
 ACCESS ROAD 5.0m
 DELIVERY DIRECTION
 MINIMUM 50m SETBACK

TURBINE FOUNDATION (LOCATION VARIES)

PROVIDE LEVEL GRADED SURFACE AROUND FOUNDATION

ROTOR ASSEMBLY AREA TO BE LOCATED SO THAT BLADES WILL NOT BLOCK ACCESS ROAD

AREA TO BE FREE OF OBSTACLES AND LEVELED (AS REQUIRED)

- NOTE:
1. INSTALLATION AREA/LAYOUT IS DEPENDENT UPON POSITION OF THE TURBINE FOUNDATION IN RELATION TO THE ACCESS ROAD AND PREFERRED DELIVERY DIRECTION. ROTATE/MIRROR INSTALLATION AREA ORIENTATION TO SUIT FIELD CONDITIONS.
 2. DIMENSIONS SHOWN ON THIS DRAWING MAY VARY DEPENDING ON CONTRACTOR/ERECTION CRANE REQUIREMENTS.

TYPICAL TURBINE INSTALLATION PLAN

N.T.S.

PRELIMINARY
 NOT FOR CONSTRUCTION

Revision		By	Appd.	YY.MM.DD
PRELIMINARY Issued		By	Appd.	11.03.07 YY.MM.DD
File Name: TURBINE INSTALLATION	RCL	MG	MG	11.03.07
	Dwn.	Chkd.	Desgn.	YY.MM.DD
Permit-Seal				

Client/Project
SAMSUNG RENEWABLE ENERGY INC
 GRAND RENEWABLE ENERGY PARK
 HALDIMAND COUNTY, Ontario

Title
WIND FARM TYPICAL TURBINE INSTALLATION PLAN

Project No. 161010646 Scale NTS
 Drawing No. Sheet Revision

2.36-C3 0

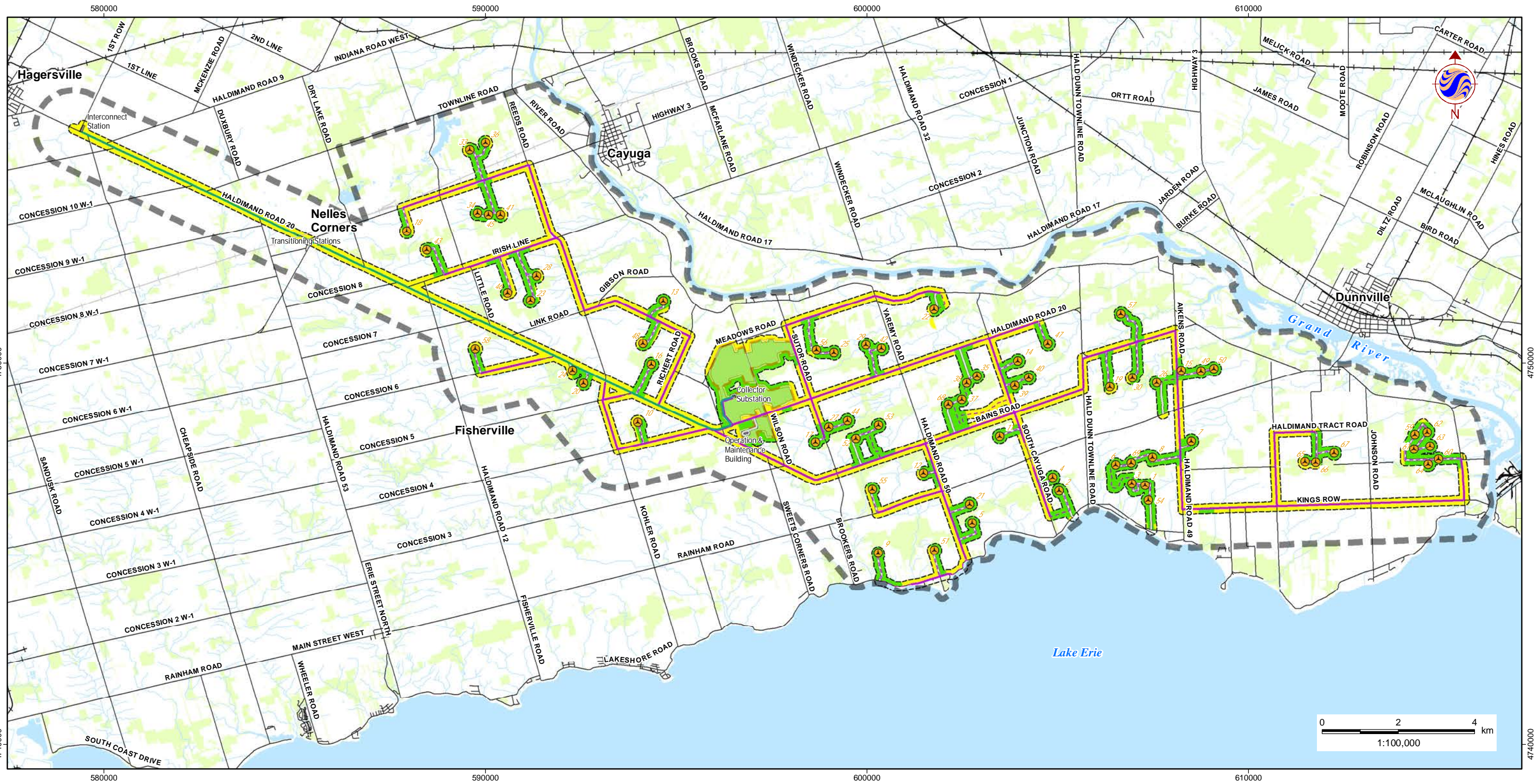
Stantec

GRAND RENEWABLE ENERGY PARK

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

Appendix L

Alternative Site Investigations



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Legend

- | | | |
|-------------------------------|-----------------------------------|------------------------|
| Study Area | Transmission Line | Waterbody (MNR) |
| Zone of Investigation | Underground Transmission Line | Wooded Area (MNR) |
| Wind Project Location | Electrical Transmission Component | Property Access |
| Proposed Turbine Location | Road | Physical Visit |
| Access Road | Railway | Roadside |
| Overhead Collector Line | Abandoned Railway | |
| Underground Collector Line | Watercourse (MNR) | |
| Solar Project Location | | |
| Solar Lands | | |

Notes

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Client/Project
SAMSUNG, PATTERN & KEPKO (SPK)
GRAND RENEWABLE ENERGY PARK

Figure No.
L-1

Title
ALTERNATIVE SITE INVESTIGATIONS

