PORT WALLACE LAND SUITABILITY ANALYSIS

AGENDA

1. METHODOLOGY
2. SCORING
3. **FORESTED AREAS**
4. **WATERCOURSES**
5. **WETLANDS**
6. **SLOPES**
7. **CONTAMINATION SITES**
8. **HERITAGE & CULTURE**
9. CUMULATIVE ANALYSIS

SCORING

NATURAL FEATURES

- LAYER 1: FORESTED AREAS (VEGETATION)
- LAYER 2: WATERCOURSES
- LAYER 3: WETLANDS

NATURAL HAZARDS

- LAYER 4: SLOPES
- LAYER 5: CONTAMINATED SITES

HERITAGE AND CULTURAL LANDSCAPE

- LAYER 6: HERITAGE AND CULTURE

EVALUATION

SCORE	DEFINITION	MAP COLOUR
0 = Not Constrained	means land where the primary function is intended to support development	White (opaque)
1 = Minor Constraints	means land suitable for development where the purpose of the land is to be developed in response to natural and cultural landscape features	Green
2 = Marginally Constrained	means land somewhat suitable for development where some environmental and cultural conservation or mitigation efforts may be required in order to preserve ecological function and cultural function	Yellow
3 = Moderately Constrained	means land with features in support of ecological function and cultural function where additional studies may be required to verify the presence of significant land features prior to development	Orange
4 = Totally Constrained	means land where the primary function is intended to support environmental and cultural conservation efforts. Natural corridor, passive recreation, and some active recreation and infrastructure, such as bridges and roads, may be permitted where they do not undermine the ecological function and cultural functions of the land	Red

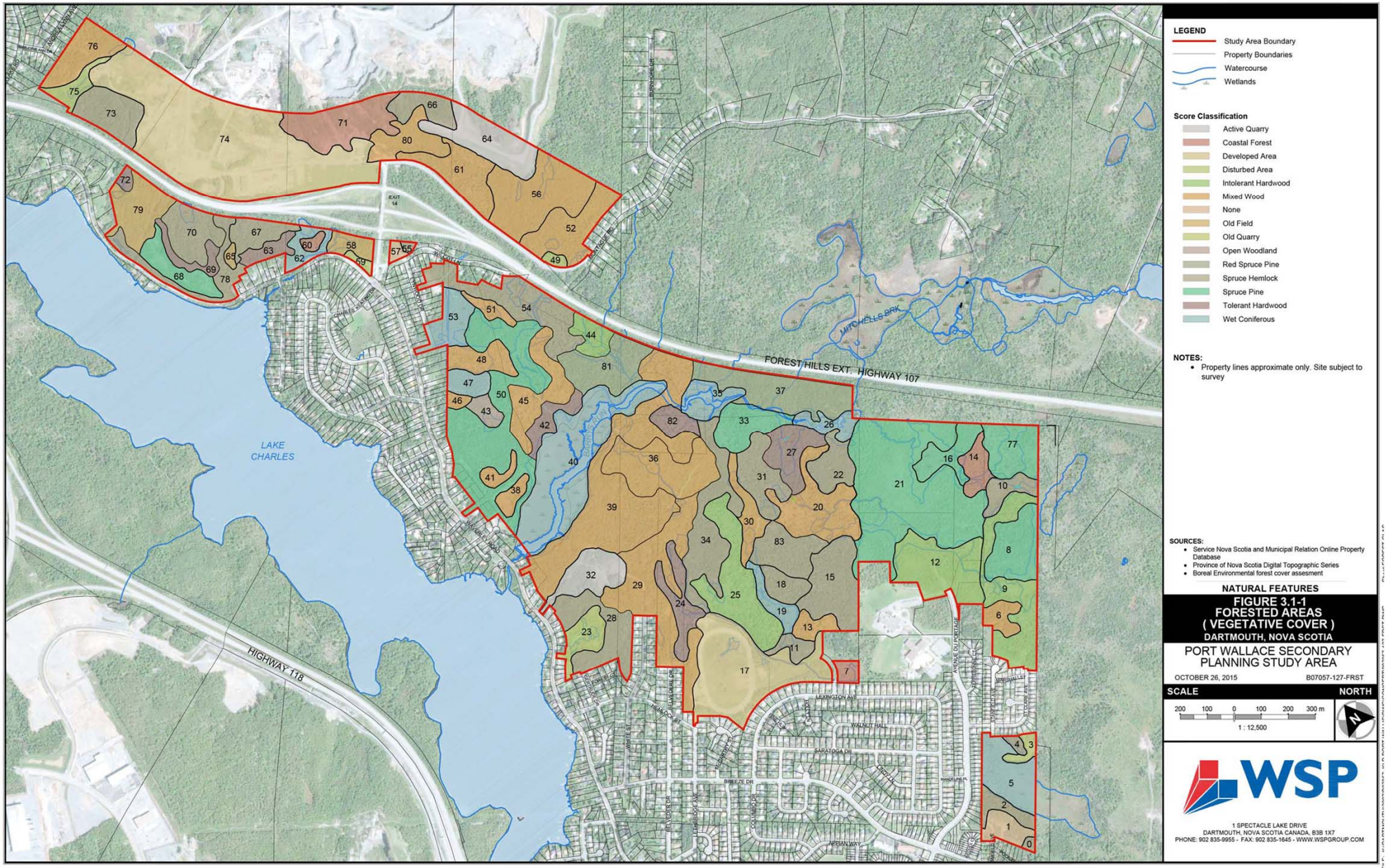
RESULTS

CUMULATIVE SCORE (SCALED VALUES)	CLASSIFICATION
0-2	0 = Not Constrained
3-5	1 = Minor Constraints
6-8	2 = Marginally Constrained
9-11	3 = Moderately Constrained
12-16	4 = Totally Constrained

1. FORESTED AREA

FORESTED AREA

FORESTED AREA



FORESTRY SCORING

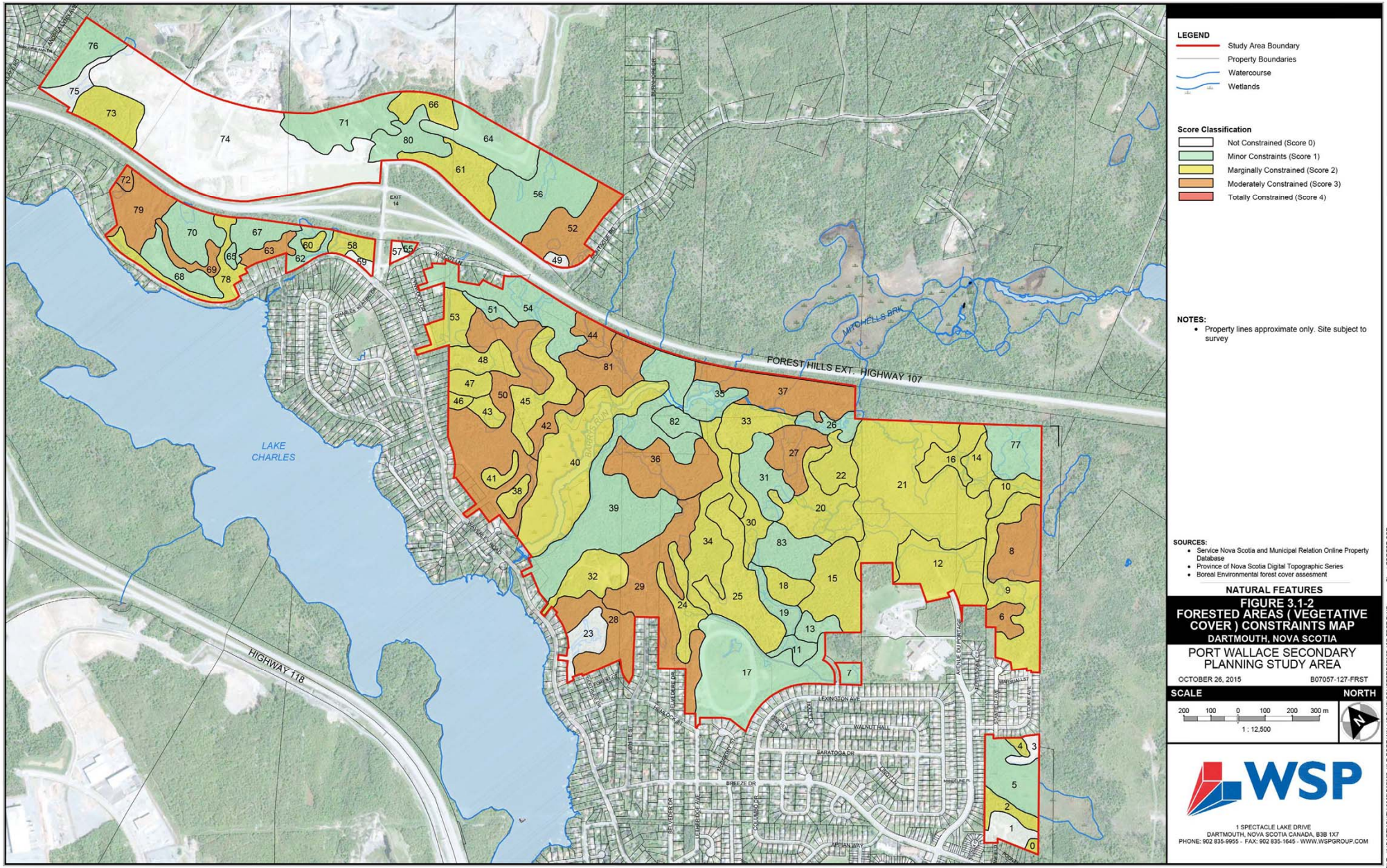
FOREST AGE	OBSERVED	DEFINED SCORE
i. No Stand Present	Yes/No	0
ii. Young	Yes/No	1
iii. Mature	Yes/No	2
iv. Old Growth	Yes/No	3
HABITAT	**MODEL RESULTS**	**ADDITIONAL SCORE**
i. Habitat Potential	No	0
ii. Habitat Potential	Yes	1
TOTAL SCORE POTENTIAL:		**0-4**

DEFINITIONS:	
Young	A young forest represents non merchantable timber. Young forests are generating biomass volume rapidly. This category includes forest stands that are classed as regenerating and sapling. Sapling refers to trees less than 3 m in height. Even though some species nest here, and some actually rely on this rapidly growing forest as a food resource, this age category generally provides less habitat quality or potential due to lack of certain food supplies and suitable dwelling habitat.
Mature	A mature forest is most easily noted by the size of merchantable timber that is present in the forest. The overall volume growth of the stand has slowed or is stable (growth and mortality about equal). This layer includes immature merchantable timber stands which are still growing, but much slower than young stands. Mature stands have an increased potential for diverse wildlife communities and are a part of a healthy ecosystem.
Old Growth	An old growth forest is most often associated with high wildlife diversity (i.e. number of species) and representative of a healthy landscape. The merchantable timber located in these stands are starting to die back leaving large openings for young forest, and the increased light to the forest floor produces chances for various species to flourish in the sunlight. It is true that the total forest biovolume is declining due to natural mortality, but this age class is preferred by many species due to the number of foraging and dwelling opportunities, habitat diversity and food supply that is available. Old growth, or 'overmature', stands are frequented by cavity nesting birds and small mammals.
Habitat Potential	The habitat for species at risk potential is built from the habitat modelling exercise **(Appendix C)** and is an estimate of the likelihood of species at risk being present in a particular forest stand.

FORESTRY RESULTS

FID	FOREST VEGETATION TYPE	FOREST VEGETATION TYPE SUBCLASS	AGE CLASS	FOREST SIZE (M^2)	NONE (0)	YOUNG FOREST (1)	MATURE FOREST (2)	OLD GROWTH FOREST (3)	HABITAT POTENTIAL (+1)	TOTAL
0	Spruce Hemlock	SH5	Mature	2150			2			2
1	Disturbed Area	None	None	16354	0					0
2	Spruce Hemlock	SH5	Mature	12692			2			2
3	Disturbed Area	None	None	6833	0					0
4	Spruce Hemlock	SH5	Mature	3363			2			2
5	Wet Coniferous	WC7	None	39024	0				1	1
6	Mixed Wood	MW2	Immature to Mature	13101			2		1	3
7	Coastal Forest	C06	Sapling	6918		1				1
8	Spruce Pine	SP5	Mature	41148			2		1	3
9	Intolerant Hardwood	IH6	Regenerating to Mature	62180		1			1	2
10	Spruce Hemlock	SH5	Mature	16061			2			2

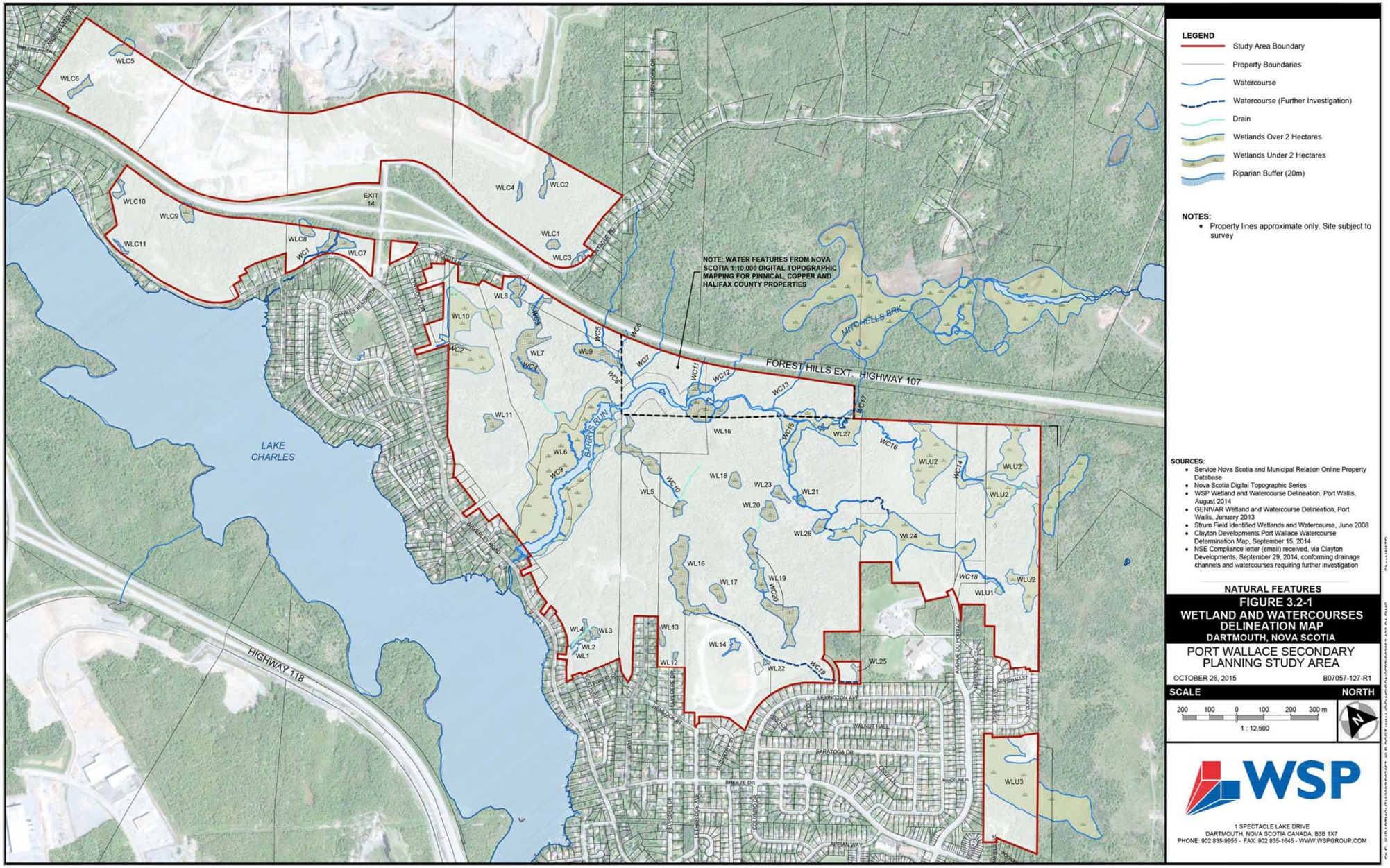
FORESTRY - CONSTRAINTS



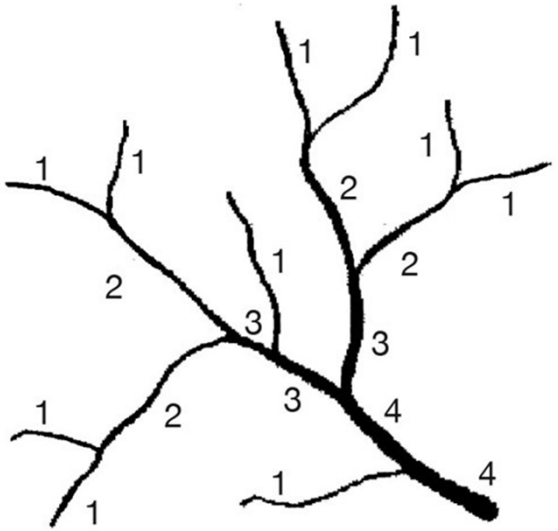
2. WATERCOURSES

WATERCOURSE

WATERCOURSE DELINEATION



WATERCOURSE SCORING



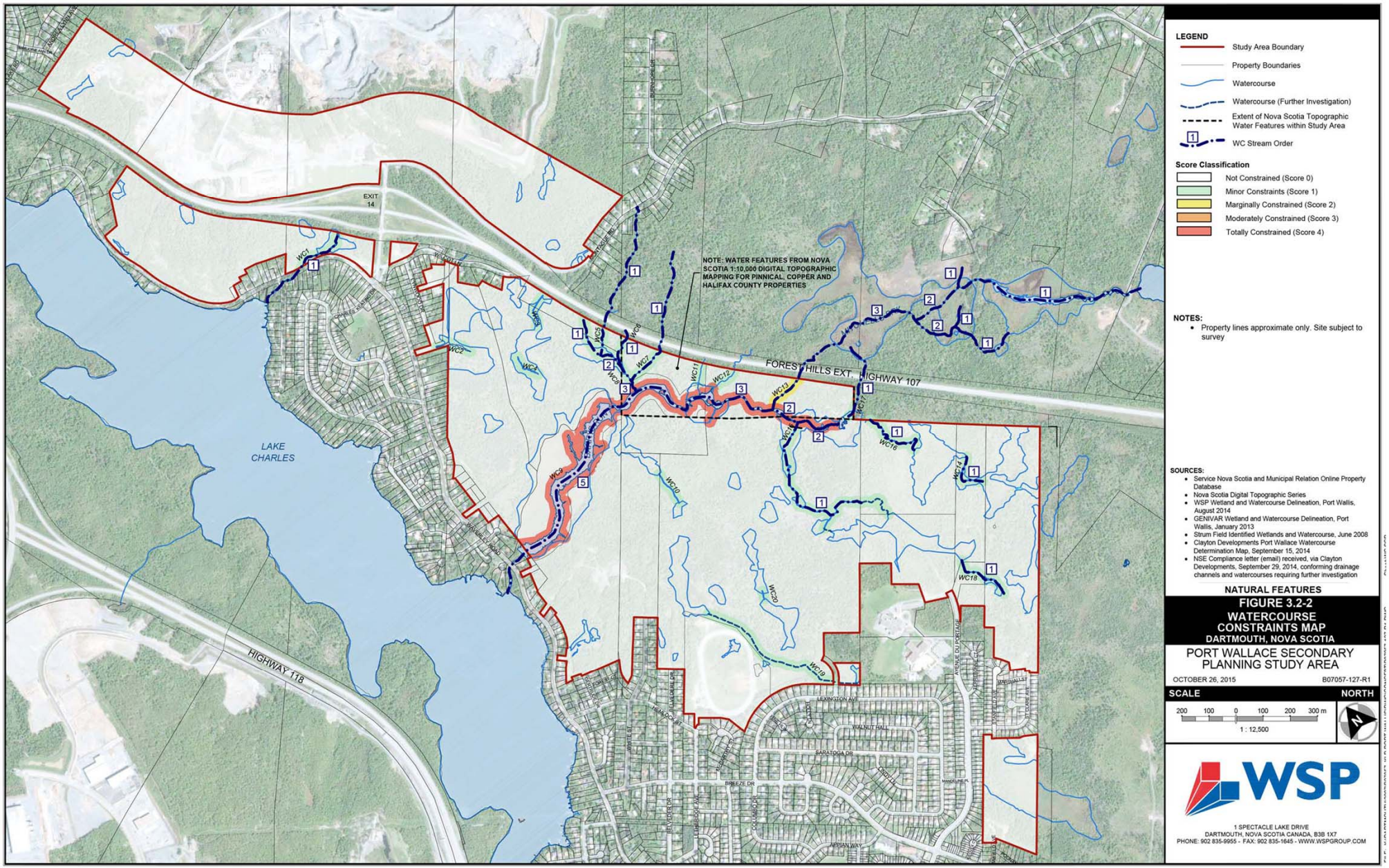
STREAM ORDER	OBSERVED	DEFINED SCORE
i. First Order Stream	Yes/No	1
ii. Second Order Stream	Yes/No	2
iii. Third Order Stream	Yes/No	3
HABITAT	**MODEL RESULTS**	**ADDITIONAL SCORE**
i. Habitat Potential	No	0
ii. Habitat Potential	Yes	1
TOTAL SCORE POTENTIAL:		**0-4**

DEFINITIONS:	
First Order Stream	A first order stream is the smallest of the study area streams and consists of small tributaries. These are the streams that flow into and "feed" larger streams but do not normally have any water flowing into them. In addition, first and second order streams generally form on steep slopes and flow quickly until they slow down and meet the next order watercourse. First through third order streams are also called headwater streams and constitute any waterways in the upper reaches of the watershed. It is estimated that over 80% of the world's waterways are these first through third order, or headwater streams.
Second Order Stream	A second order stream is a combination of two first order streams. These watercourses are still very small, and present little fish habitat.
Third Order Stream (and up)	Strictly speaking, a third order stream is a watercourse combined from two second order streams. This size watercourse does not have much size or strength. Going up in size and strength, streams that are classified as fourth through sixth order are medium streams while anything larger (up to 12th order) is considered a river. For example, to compare the relative size of these different streams, the Ohio River in the United States is an eighth order stream while the Mississippi River is a tenth order stream. The world's largest river, the Amazon in South America, is considered a 12th order stream.
Habitat Potential	The habitat for species at risk potential is built from the habitat modelling exercise **(Appendix C)** and is an estimate of the likelihood of species at risk being present in a particular watercourse.

WATERCOURSE RESULTS

WATERCOURSE	OVERALL STREAM ORDER	FIRST ORDER (1)	SECOND ORDER (2)	THIRD ORDER (+) (3)	HABITAT POTENTIAL (+1)	TOTAL
WC1	1	1				1
WC2	1	1				1
WC3	1	1				1
WC4	1	1				1
WC5	1	1				1
WC6	1	1				1
WC7	1	1				1
WC8	2		2			2
WC9	3			3	1	4
WC10	1	1				1
WC11	1	1				1
WC12	1	1				1
WC13	3			3		3
WC14	1	1				1
WC15	2		2			2
WC16	1	1				1
WC17	1	1				1
WC18	1	1				1
WC19	1	1				1
WC20	1	1				1

WATERCOURSE CONSTRAINTS



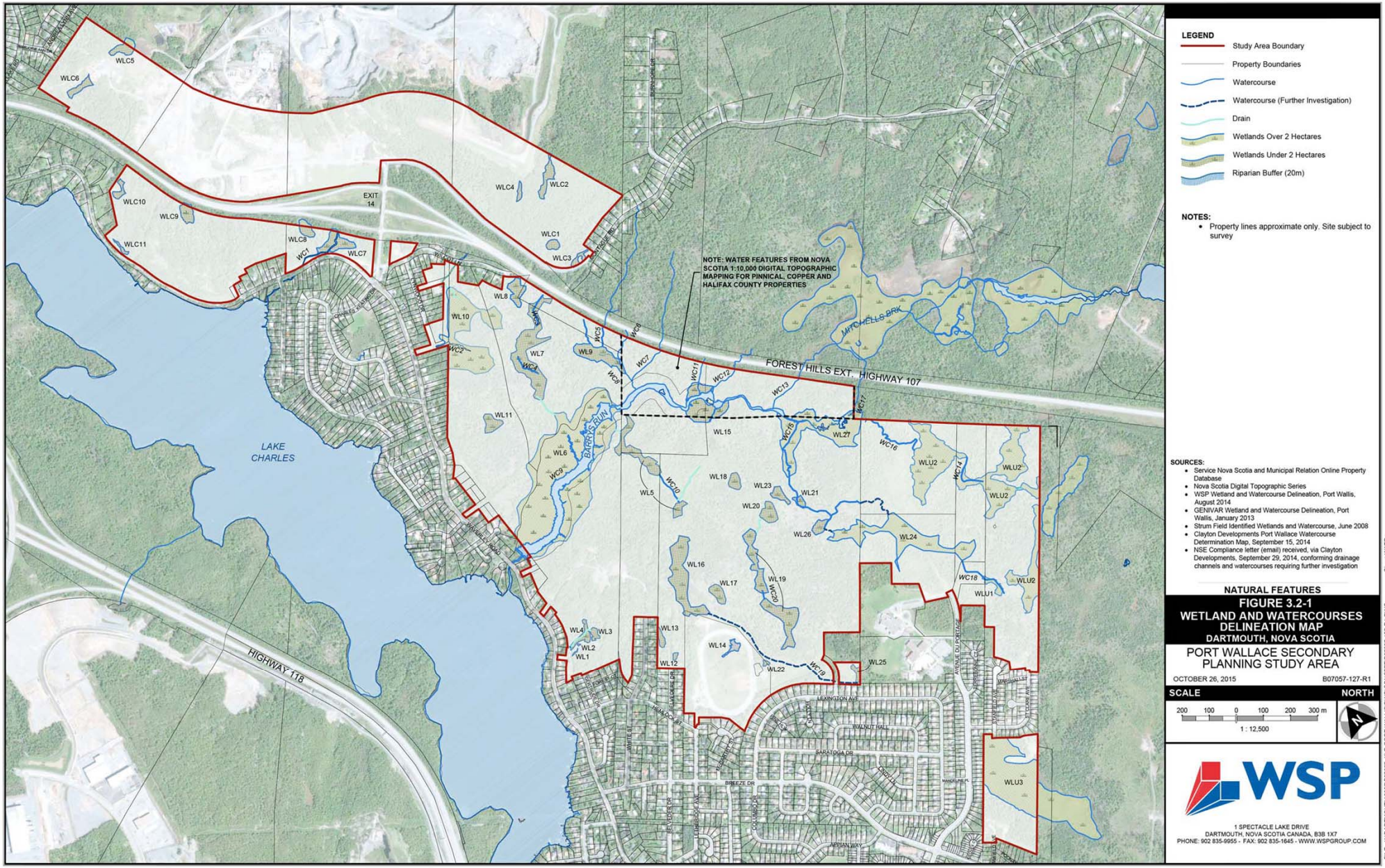
3. WETLANDS

WETLAND DELINEATION






WETLAND DELINEATION



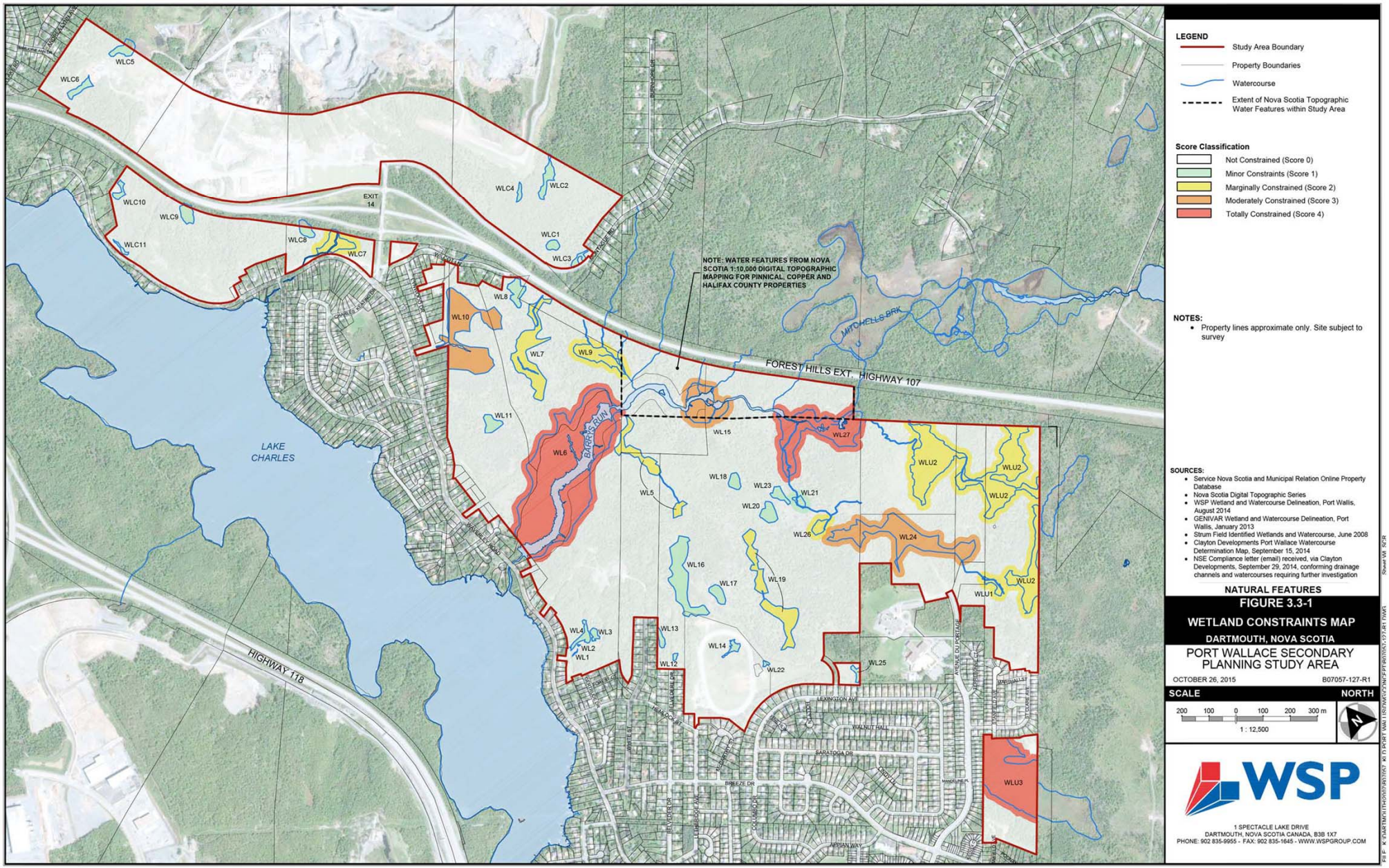
WETLAND SCORING

WETLANDS < 2,000M2	OBSERVED	SCORE
v. Size < 2,000m2	Yes/No	1
vi. Habitat Potential	Yes/No	1
TOTAL SCORE POTENTIAL:		**0-2**
Wetlands > 2,000m2	**Observed**	**Score**
i. Size > 2,000m2	Yes/No	1
ii. Connected to a Watercourse	Yes/No	1
iii. Ground Water Recharge	Yes/No	1
iv. Habitat Potential	Yes/No	1
TOTAL SCORE POTENTIAL:		**0-4**
DEFINITIONS:		
Size	The size of a wetland is a significant contributor to its ability to have and maintain ecological functions in the environment. The official size limit for EA applications is 2 hectares, or 20,000 m^2. However, according to HRM Policy E-15, all wetlands greater than 2,000m^2 are viewed as having higher value.	
Connected to a Watercourse	Having a watercourse connection is a feature of some wetlands that increases their ecological value. Wetlands that have permanent watercourse connections increase the opportunity for exchange of water, nutrients, and species, increasing the diversity and ecological health of the wetland. Small, intermittent watercourses are likely to have decreased.	
Ground Water Recharge	Groundwater recharge is a characteristic of some wetlands. A groundwater recharge situation exists in specific situations when wetlands hold water long enough such that some of the water is recharged directly into an underground aquifers. These wetlands are important features within the hydrological cycle.	
Habitat Potential	The habitat for species at risk potential is built from the habitat modelling exercise **(Appendix C)** and is an estimate of the likelihood of species at risk being present in a particular wetland.	

WETLAND RESULTS

WETLAND	AREA (HA)	< 2000 M2 (+1)	>2000 M2 (+1)	WATERCOURSE CONNECTION (+1)	GROUND WATER RECHARGE (+1)	HABITAT POTENTIAL (+1)	TOTAL
Conrad land							
WLC1	0.15	1	0	0	0	0	**1**
WLC2	0.36	0	1	0	0	0	**1**
WLC3	0.13	0	1	0	0	0	**1**
WLC4	0.09	1	0	0	0	0	**1**
WLC5	0.33	0	1	0	0	0	**1**
WLC6	0.23	0	1	0	0	0	**1**
WLC7	0.6	0	1	1	0	0	**2**
WLC8	0.35	0	1	0	0	0	**1**
WLC9	0.3	0	1	1	0	0	**2**
WLC10	0.14	1	0	0	0	0	**1**
WLC11	0.06	1	0	0	0	0	**1**
Unia land							
WLU1	0.16	1	0	1	0	0	**2**
WLU2	1.3	0	1	1	1	0	**3**
WLU3	3.1	0	1	0	1	0	**4***

WETLAND CONSTRAINTS



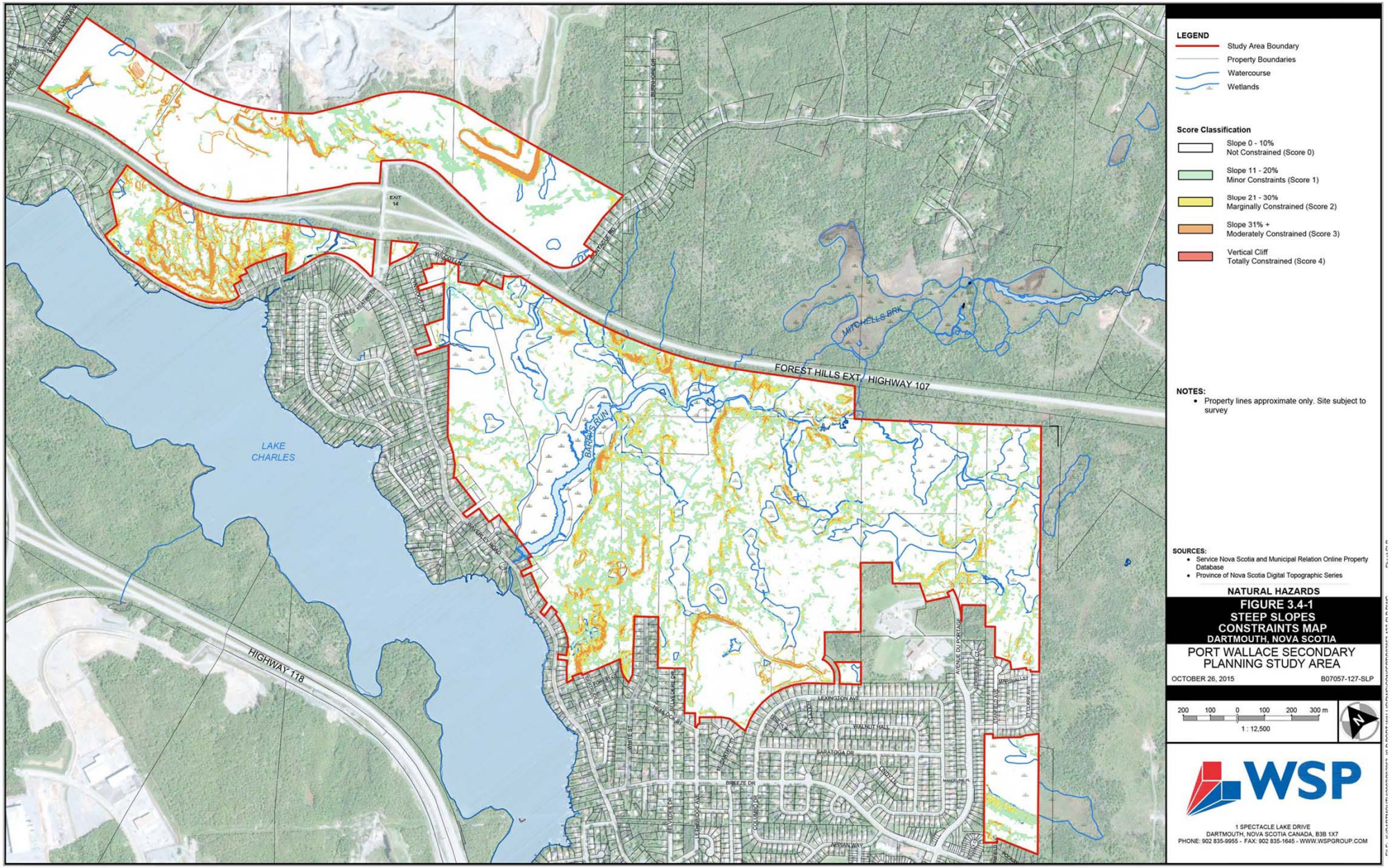
4. SLOPES

SLOPES

SLOPES SCORING

SLOPES	OBSERVED	DEFINED SCORE
i. 0-10%	Yes/No	0
ii. 11-20%	Yes/No	1
iii. 21-30%	Yes/No	2
iv. 30% +	Yes/No	3
v. Vertical Cliff Face	Yes/No	4
TOTAL SCORE POTENTIAL:		**0-4**

SLOPES RESULTS



5. CONTAMINATION SITES

POTENTIAL CONTAMINATION

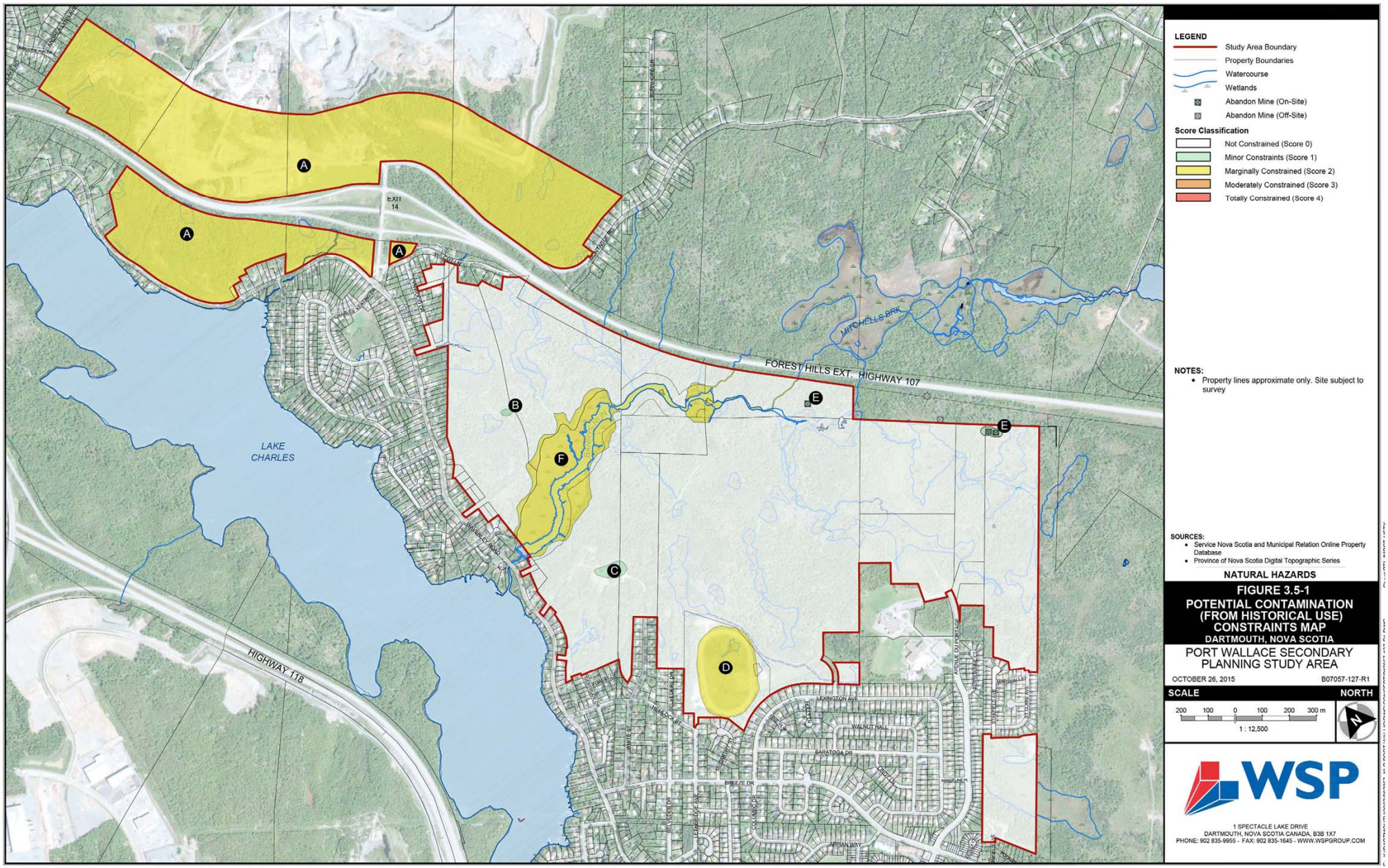
POTENTIAL CONTAMINATION SCORING

LEVEL OF CONTAMINATION	OBSERVED	ADDED SCORES
i. ASTs / USTs	Yes/No	1
ii. Known Industrial Uses	Yes/No	1
iii. Contamination	Yes/No	1
iv. Area Dangerous to Human Health	Yes/No	1
TOTAL SCORE POTENTIAL:		**0-4**
DEFINITIONS:		
ASTs / USTs	Unknown or suspected underground storage tanks (USTs) or above ground storage tanks (ASTs). Contamination can occur not just from leaking storage tanks, but also from spills and overfills that occurred when the tanks were in use.	
Known Industrial Uses	Past industrial or commercial uses and/or heavy equipment operation. Such activities often resulted in chemicals and other toxic materials being spilled or deposited on land	
Contaminated Soils	Geologically influenced contamination, due to leaching of potentially toxic metal ions from disturbed rock or past mining activities, into soils or groundwater. Contaminated soils or groundwater contain total concentrations of elements which exceed the natural background levels. They may or may not pose a health hazard, depending on the amount and type of contamination. However, if concentrations of an element exceed regulatory guidance levels, it may impair human or environmental health. Dumping of household and other waste may also contain harmful chemicals that can leach out and contaminate groundwater, or be spread by wind and rain.	
Area Dangerous to Human Health	Dangerous area may posed a threat to human health (ex. Abandoned Mine Openings (AMO) hazards range from extremely dangerous to no significant hazard).	

POTENTIAL CONTAMINATION RESULTS

Contaminated Site	ASTs / USTs (+1)	Known Industrial Uses (+1)	Contaminated Soils (+1)	Danger to Human Health (+1)	Total Score
A - Conrad Brothers Quarry	1	1			2
B - Dump Site			1		1
C - Excavation Pit			1		1
D - Whebby Horse Track	1	1			2
E - Abandoned Mine Sites				1	1
F - Historic Gold Mining (Barry's Run/Mitchell's Brook)			1	1	2

POTENTIAL CONTAMINATION



6. HERITAGE & CULTURE

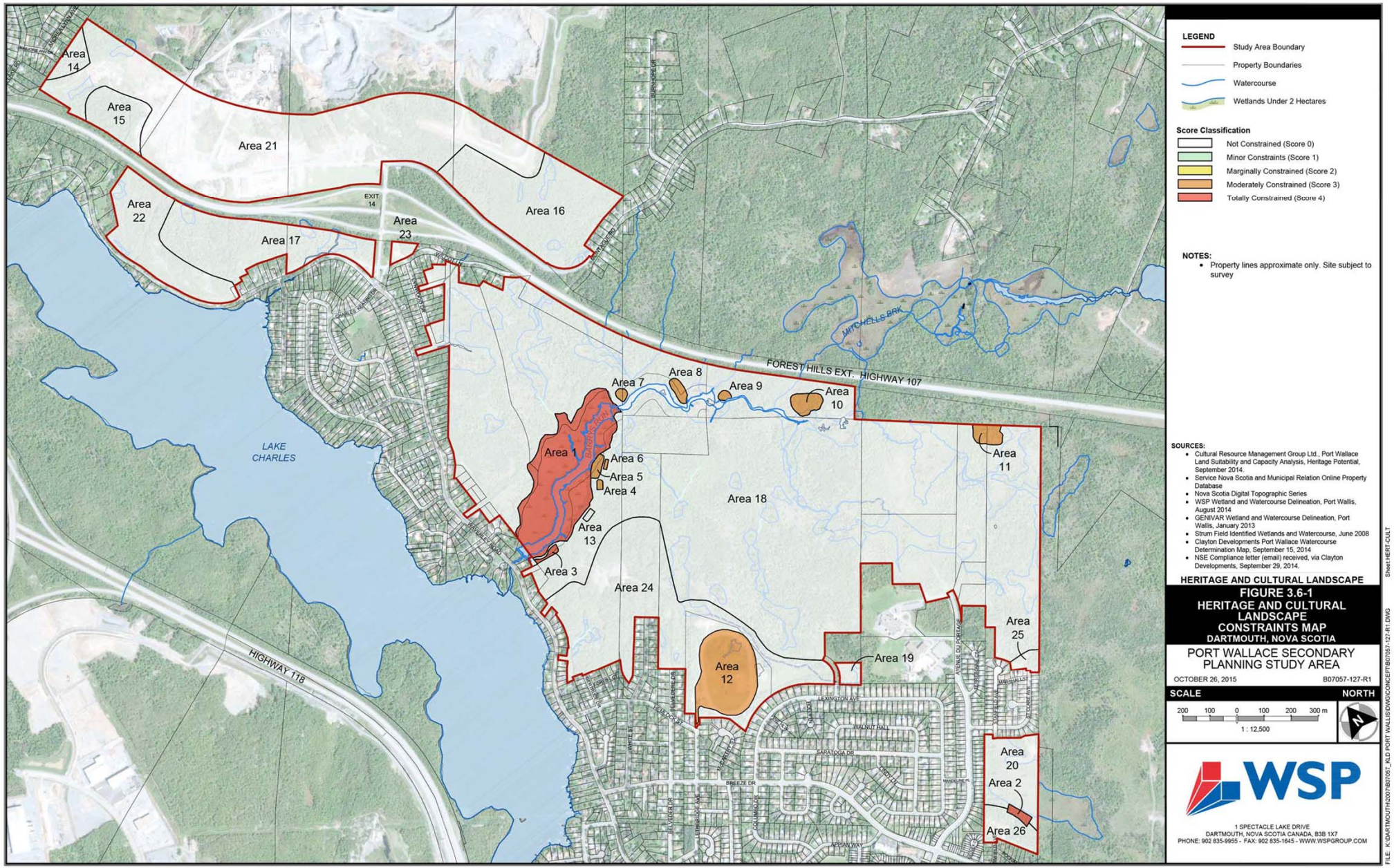
HERITAGE & CULTURE

HERITAGE & CULTURE SCORING

1. **LAND USE**
2. **TRADITIONAL PRACTICES**
3. **LAND PATTERNS**
4. **SPACIAL ORGANIZATION**
5. **VISUAL RELATIONSHIPS**
6. **CIRCULATION**
7. **ECOLOGICAL FEATURES**
8. **VEGETATION**
9. **LANDFORMS**
10. **WATER FEATURES**
11. **BUILT FEATURES**

Details on Page 17

HERITAGE & CULTURE RESULTS



7. CUMULATIVE CONSTRAINTS

CUMULATIVE SCORING

Layer Number	Feature: Barry's Run	Score
1	Forest	2
2	Watercourse	4
3	Wetland	4
4	Slope	0
5	Potential Contamination	2
6	Heritage & Cultural Landscape	4
Cumulative Total		**16**

CUMULATIVE RESULTS

CUMULATIVE SCORE (SCALED VALUES)	CLASSIFICATION	DEFINITION	MAP COLOUR
0-2	0 = Not Constrained	means land where the primary function is intended to support development	White (opaque)
3-5	1 = Minor Constraints	means land suitable for development, where the purpose of the land is to be developed in response to natural and cultural landscape features	Green
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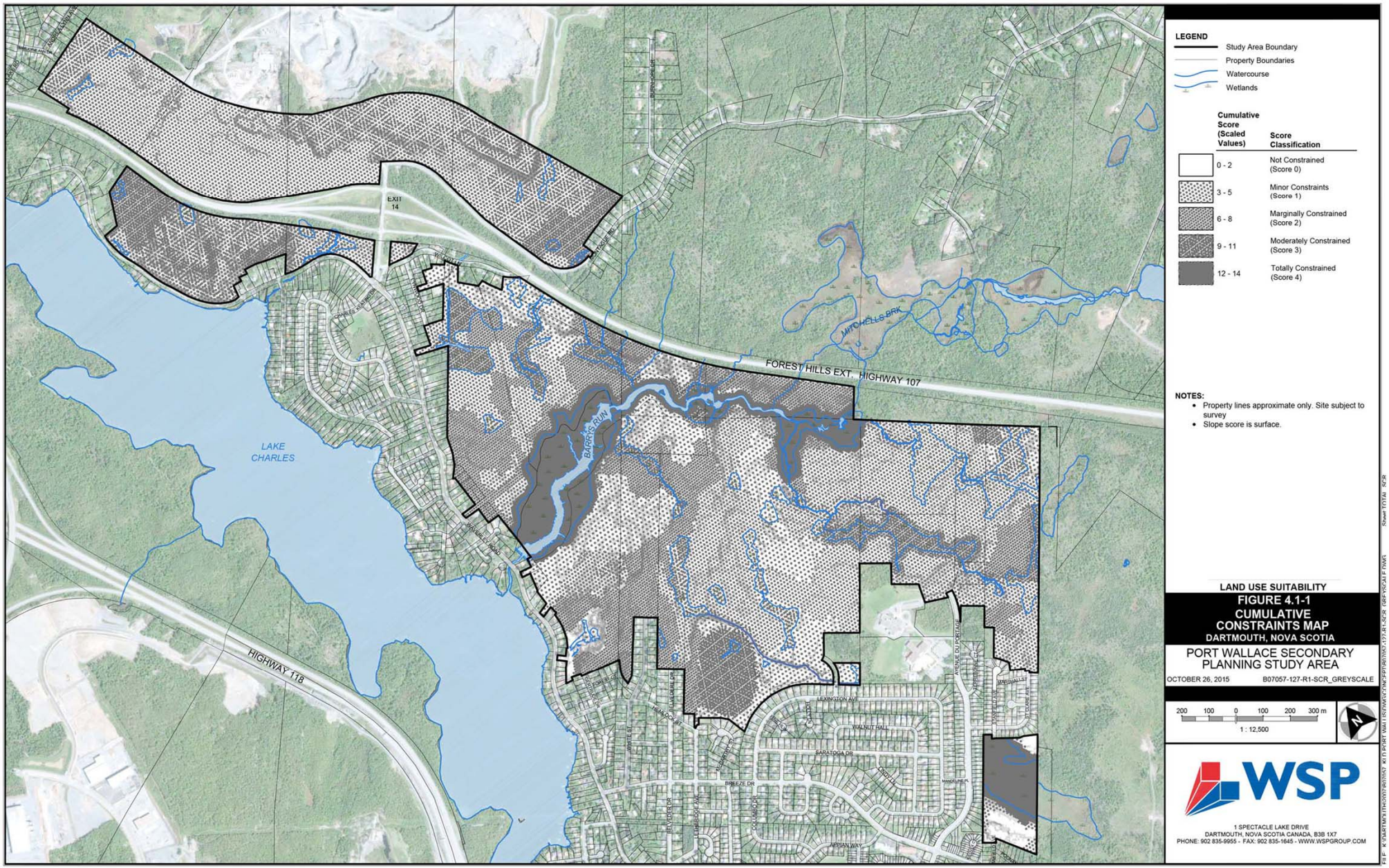
12-16	4 = Totally Constrained	means land where the primary function is intended to support environmental and cultural conservation efforts. Natural corridor, passive recreation, and some active recreation and infrastructure, such as bridges and roads, may be permitted where they do not undermine the ecological function and cultural function of the land	Red

CUMULATIVE CONSTRAINTS



THANK YOU

WSP