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June 13, 2014
File: 121413262

Attention: Mr. Gord Helm, MPA, PMP
Manager - Solid Waste Resources
Halifax Regional Municipality

Dear Mr. Helm,

Reference: Final Report: Environmental Liability Assessment
New Era Technologies Compost Facility, Goodwood, Nova Scotia

Introduction

Further to your request, Stantec Consulting Ltd. (Stantec) is pleased to provide to Halifax Regional Municipality (HRM) the following Environmental Liability Assessment for the New Era Technologies Compost Facility in Goodwood, Nova Scotia, as per the proposed scope of work and budget sent by Stantec via email on May 26, 2014 and approved by HRM later that day.

Scope of Work

The approved scope of work regarding the New Era Technologies Compost Facility in Goodwood, Nova Scotia includes the following:

- review the existing Approval to Operate and three annual summary reports prepared by others and provided to Stantec by HRM;
- complete a high-level assessment of the surface water, groundwater and potable well chemistry data provided in the reports (including comparison to relevant regulatory criteria);
- evaluate the data to determine whether environmental liability associated with the operating compost facility currently exists, or is likely to exist in the future;
- if Stantec's evaluation determines current or future environmental liability, prepare a preliminary cost estimate to address the liability, based on the information contained in the reports provided to Stantec; and
- prepare a brief letter report outlining Stantec's findings.

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Data Assessment

A high level assessment was conducted on the groundwater, surface water and potable well chemistry provided in the 2011, 2012 and 2013 Annual Reports prepared by others and provided to Stantec by HRM.

Groundwater and potable water were compared to the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for Community (Drinking) Water (updated 2010) and the Nova Scotia Environment (NSE) Pathway Specific Drinking Water Quality Standards (contained in the Contaminated Sites Regulations [NSCSR], July 2013). Surface water was compared to the NSCSR Environmental Quality Standards (EQS) for freshwater surface water and the CCME water quality guidelines for the protection of freshwater aquatic life.

Groundwater

The guideline exceedences that could potentially represent environmental liability in groundwater at the Site are listed below in Table 1.

Table 1 – Groundwater Data Assessment Results

Location	Comments
MW1	**No issues identified -** Manganese exceeded the CCME guideline in 2005 to 2007 and 2009; however, this guideline was developed for aesthetic purposes only.
MW2	**No issues identified** – Arsenic exceeds CCME and/or NSE guidelines; however, the concentrations reported are consistent with naturally elevated arsenic levels found in Nova Scotia groundwater. Chloride, iron, manganese, sodium and total dissolved solids (TDS) also exceed CCME guidelines; however, these guidelines were developed for aesthetic purposes only. The pH levels were elevated above the applicable guideline range in 2005 to 2008 but appeared to have neutralized in the 2009 to 2013 results.
MW3	**No issues identified** – Arsenic exceeded CCME and NSE guidelines in 2005 to 2009 but was below guidelines from 2010 to 2013. Manganese exceeded the CCME guideline in 2007 and 2011; however, this guideline was developed for aesthetic purposes only. The pH value exceeded the applicable guideline range in the December 2013 results; however, this value is not consistent with overall site conditions and no increasing trend was visually observed for this parameter.
MW6	**No issues identified** - Manganese exceeded the CCME guideline between 2005 and 2013; however, this guideline was developed for aesthetic purposes only. Four pH results between 2006 and 2009 were reported below the CCME guidelines; however, the subsequent seventeen samples following the September 2009 result were within the acceptable CCME guideline range.

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MW7S	**No issues identified** – pH was below the acceptable CCME guideline range in June and December 2013, with values of 6.48 and 6.47, respectively. These values are marginally under the lower guideline limit and the calculated average pH for this location over the nine years of sampling (thirty six data points; did not include data from duplicate samples) is 7.01, which is within the acceptable CCME range.
MW7D	**No issues identified** – Manganese exceeded the CCME guideline between 2009 and 2013; however, this guideline was developed for aesthetic purposes only.
MW9	**No issues identified** – Arsenic exceeded CCME and/or NSE guidelines; however, the concentrations reported are consistent with naturally elevated arsenic levels found in Nova Scotia groundwater. Iron, manganese and TDS also exceed CCME guidelines; however, these guidelines were developed for aesthetic purposes only.

Groundwater analytical results indicate no impacts from site activity above CCME and/or NSE guidelines and parameters reported above applicable guidelines are consistent with natural conditions in Nova Scotia groundwater or are being compared to aesthetic guidelines and do not represent a risk to human or ecological health. There is no anticipated environmental liability associated with site groundwater.

Potable Well Water

The guideline exceedences that could potentially represent environmental liability in potable well water at the Site are listed below in Table 2.

Table 2 – Potable Well Water Data Assessment Results

Location	Comments
Potable Well Water	**No issues identified** – Uranium exceeds CCME and/or NSE guidelines; however, according to the LVM Maritime Testing (1985) Limited Annual Report & Holding Tank Waste Water Sampling Monitoring Well Sampling Surface Water Sampling Results, dated 2013, the site is situated in an area that is underlain by granite bedrock and naturally elevated uranium concentrations (and radionuclides) in this geologic setting are well documented. Although uranium is naturally occurring, the water on the site should not be consumed. Manganese exceeded the CCME guideline between 2011 and 2013; however, this guideline was developed for aesthetic purposes only.

Potable well water analytical results indicate no impacts from site activity above CCME and/or NSE guidelines and parameters reported above applicable guidelines are consistent with natural conditions in Nova Scotia groundwater or are being compared to aesthetic guidelines and do not represent a risk to human or ecological health. There is no anticipated environmental liability associated with site potable well water; however, if the on-site water is required for drinking, there

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will be a cost associated with water treatment to reduce uranium concentrations to an acceptable level, or with supply of alternate sources.

Surface Water

The guideline exceedences that could potentially represent environmental liability in surface water at the Site are listed below in Table 3.

Table 3 – Surface Water Data Assessment Results

Location	Comments
SW5	Copper, iron and lead concentrations exceeded the applicable NSE and CCME guidelines. Exceedences and trends are described below: • There were six exceedences of NSE and/or CCME guidelines (2 µg/L and 2 -4 µg/L, respectively) reported for copper between 2005 and 2013, with a maximum concentration of 12.5 µg/L. A visual assessment of the data indicated an increase in copper concentrations at SW5 between 2010 and 2013. • There were seven exceedences of NSE and CCME guidelines (300 µg/L) reported for iron between 2005 and 2013, with a maximum concentration of 7,900 µg/L. A visual assessment of the data indicated that iron concentrations reported an incongruously high value in June 2009 (7,900 µg/L) and that concentrations between 2007 and 2013 increased when compared with data collected in 2005 and 2006. • There were three exceedences of NSE and/or CCME guidelines (1 µg/L and 1-7 µg/L, respectively) reported for lead between 2005 and 2013, with a maximum concentration of 4 µg/L. A visual assessment of the data indicated that lead values between 2009 and 2013 increased slightly from 2005 to 2008 data; however; data was generally observed to be inconsistent. One cadmium, zinc and phenol concentration exceeded the applicable NSE and/or CCME guidelines, for the December 2012 event; however, for each of the three parameters, the other twelve data points (did not include duplicate sample results), including the subsequent June 2013 sampling, indicated non-detect or below guideline levels of each parameters and overall concentrations below that of applicable guidelines, with the exception of phenol which had one additional exceedence in 2010. One mercury concentration exceeded NSE and CCME guidelines in June 2008; however, the other twelve data points (did not include duplicate sample results), including subsequent eight rounds of monitoring indicate non-detect or below guideline levels of mercury and an overall concentration below that of applicable guidelines. One pH value was reported below the CCME guideline range in December 2009; however, the other twelve data points

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	(did not include duplicate sample results) including the subsequent five rounds of monitoring indicates values within the acceptable CCME guideline range. No trends were identified from the visual data assessment for cadmium, zinc and phenol, with the exception of a slight increase in phenol concentrations between 2009 and 2013.
SW7	Cadmium, copper, iron, lead and phenol have concentrations which exceed the applicable CCME and/or NSE guidelines. Exceedences and trends are described below: • There were three exceedences of the NSE guideline (0.01 µg/L) reported for cadmium between 2005 and 2013, with a maximum concentration of 0.07 µg/L. Due to detection limits being reported as lower values in 2010, we are not able to comment on data trends as all reported concentrations between 2010 and 2013 are below the 2005 to 2009 reported detection limit. • There were five exceedences of NSE and/or CCME guidelines (2 µg/L and 2 -4 µg/L, respectively) reported for copper between 2005 and 2013, with a maximum concentration of 5.6 µg/L. A visual assessment of the data indicated an increase in copper concentrations at SW7 between 2011 and 2013. • There were seven exceedences of NSE and CCME guidelines (300 µg/L) reported for iron between 2005 and 2013, with a maximum concentration of 3,260 µg/L. A visual assessment of the data indicated that iron concentrations were consistently elevated between 2011 and 2013, compared with previously collected data at SW7. • There were four exceedences of NSE and/or CCME guidelines (1 µg/L and 1-7 µg/L, respectively) reported for lead between 2005 and 2013, with a maximum concentration of 2.48 µg/L. A visual assessment of the data indicated that lead values between 2011 and 2013 increased when compared with 2005 to 2010 data. • There were three exceedences of the CCME guideline (0.004 mg/L) reported for phenol between 2005 and 2013, with a maximum concentration of 0.007 mg/L. A visual assessment of the data indicated that phenol values between 2011 and 2013 increased when compared with 2005 to 2010 data. In addition, pH results have been inconsistent and three values were reported below the acceptable CCME guideline range.

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SW8	Cadmium, iron, lead and phenol have concentrations which exceed the applicable CCME and/or NSE guidelines. Exceedences and trends are described below: • There were six exceedences of the NSE guideline (0.01 µg/L) reported for cadmium between 2005 and 2013, with a maximum concentration of 0.05 µg/L. Due to detection limits being reported as lower values between 2010 and 2013, we are not able to comment on data trends as all reported concentrations between 2010 and 2013 are below the 2005 to 2009 reported detection limit. • There were eleven exceedences of NSE and CCME guidelines (300 µg/L) reported for iron between 2005 and 2013, with a maximum concentration of 661 µg/L. A visual assessment of the data indicated that iron concentrations were consistently elevated between 2009 and 2013, compared with previously collected data at SW7. • There were four exceedences of NSE and/or CCME guidelines (1 µg/L and 1-7 µg/L, respectively) reported for lead between 2005 and 2013, with a maximum concentration of 1.26 µg/L. A visual assessment of the data indicated a stable trend in lead, with concentrations ranging from 0.6 µg/L to 1.26 µg/L from 2005 to 2013. • There were four exceedences of the CCME guideline (0.004 mg/L) reported for phenol between 2005 and 2013, with a maximum concentration of 0.0064 mg/L. A visual assessment of the data indicated that phenol values between 2010 and 2013 increased when compared with 2005 to 2009 data. In addition, pH results have been consistently reported below the acceptable CCME guideline range. Ammonia, nitrate (as N) and nitrite have reported historical exceedences of the CCME guidelines; however, none of the three parameters have reported an exceedence since 2009 (ammonia), 2007 (nitrate (as N)) or 2005 (nitrite).
SW9	Copper, iron and phenol have concentrations which exceed the applicable CCME and/or NSE guidelines. Exceedences are described below: • There was one exceedence of NSE and/or CCME guidelines (2 µg/L and 2 -4 µg/L, respectively) reported for copper between 2005 and 2013, with a concentration of 2 µg/L. • There were four exceedences of NSE and CCME guidelines (300 µg/L) reported for iron between 2005 and 2013, with a maximum concentration of 1,500 µg/L. • There was one exceedence of the CCME guideline (0.004 mg/L) reported for phenol between 2005 and 2013, with a concentration of 0.004 mg/L. Lead and mercury have reported historical exceedences of the CCME and NSE guidelines; however, neither of the two parameters has reported exceedences since 2005. In addition, one pH result in 2005 was reported

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	below the acceptable CCME guideline range; however, pH was reported in the acceptable CCME guideline range between 2006 and 2011. Only one monitoring event successfully collected a surface water sample from 2007 to 2013, as such no trends were assessed for this location.

Surface water migrating off-site near locations SW7 and SW8 indicate a potential ecological risk as analytical results from these locations show multiple parameters that exceed CCME and/or NSE guidelines.

Sampling locations are shown on the attached site drawing.

The results of several parameters at the surface water sampling locations are shown in the table in Attachment 2. This table was provided by HRM and was not reviewed or altered by Stantec.

Environmental Liability

Groundwater analytical results indicate no impacts from site activity above CCME and/or NSE guidelines and parameters reported above applicable guidelines are consistent with natural conditions in Nova Scotia groundwater or are being compared to aesthetic guidelines and do not represent a risk to human or ecological health. There is no anticipated environmental liability associated with site groundwater.

Potable well water analytical results indicate no impacts from site activity above CCME and/or NSE guidelines and parameters reported above applicable guidelines are consistent with natural conditions in Nova Scotia groundwater or are being compared to aesthetic guidelines and do not represent a risk to human or ecological health. There is no anticipated environmental liability associated with site potable well water from the operation of the composting facility; however, if the on-site water is required for drinking, there will be a cost associated with water treatment to reduce uranium concentrations to an acceptable level, or with supply of an alternate source.

Surface water migrating off-site in drainage ditches or streams near locations SW7 and SW8 indicate a potential ecological risk as analytical results from these locations show multiple parameters that exceed applicable CCME and/or NSE guidelines. However, elevated copper, iron, lead, cadmium, and phenols can be naturally occurring in surface waters in Nova Scotia. In addition, SW7 is located near a roadway, where other potential sources of metals may exist and SW8 is located at some distance from the Site in a stream that may be receiving other inputs. In order to fully assess whether the facility is impacting surface water in the area, additional assessment is needed to determine background conditions and to confirm surface water quality exiting the Site. Therefore, we recommend that surface water monitoring at SW8 be increased to quarterly, and one sample location up-stream and one sample location down-stream from the Site (SW8) be established and also sampled quarterly. The surface water samples should be analyzed for metals, general chemistry and phenols. After one year of monitoring, the results should be assessed, and if exceedences still exist at SW8 that are shown to be associated with the

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composting facility, an ecological risk assessment should be undertaken to determine if the concentrations seen at SW8 are creating ecological impacts.

We recommend you allocate an initial environmental liability budget for surface water of $15,000, to undertake the quarterly surface water sampling at three locations and the ecological risk assessment.

This calculated environmental liability should be considered a minimum, as the monitoring and assessment program may recommend additional work, depending on the results of analytical testing and the site visit during the ecological risk assessment.

Limitations

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the Halifax Regional Municipality or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of Halifax Regional Municipality and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact

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location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by James Lamond, P.Eng., and reviewed by Don Carey, M.Sc., P.Eng.

Regards,

STANTEC CONSULTING LTD.

[redacted]

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Attachments: Site Drawing
New Era Technologies - Surface Water Analytical Results

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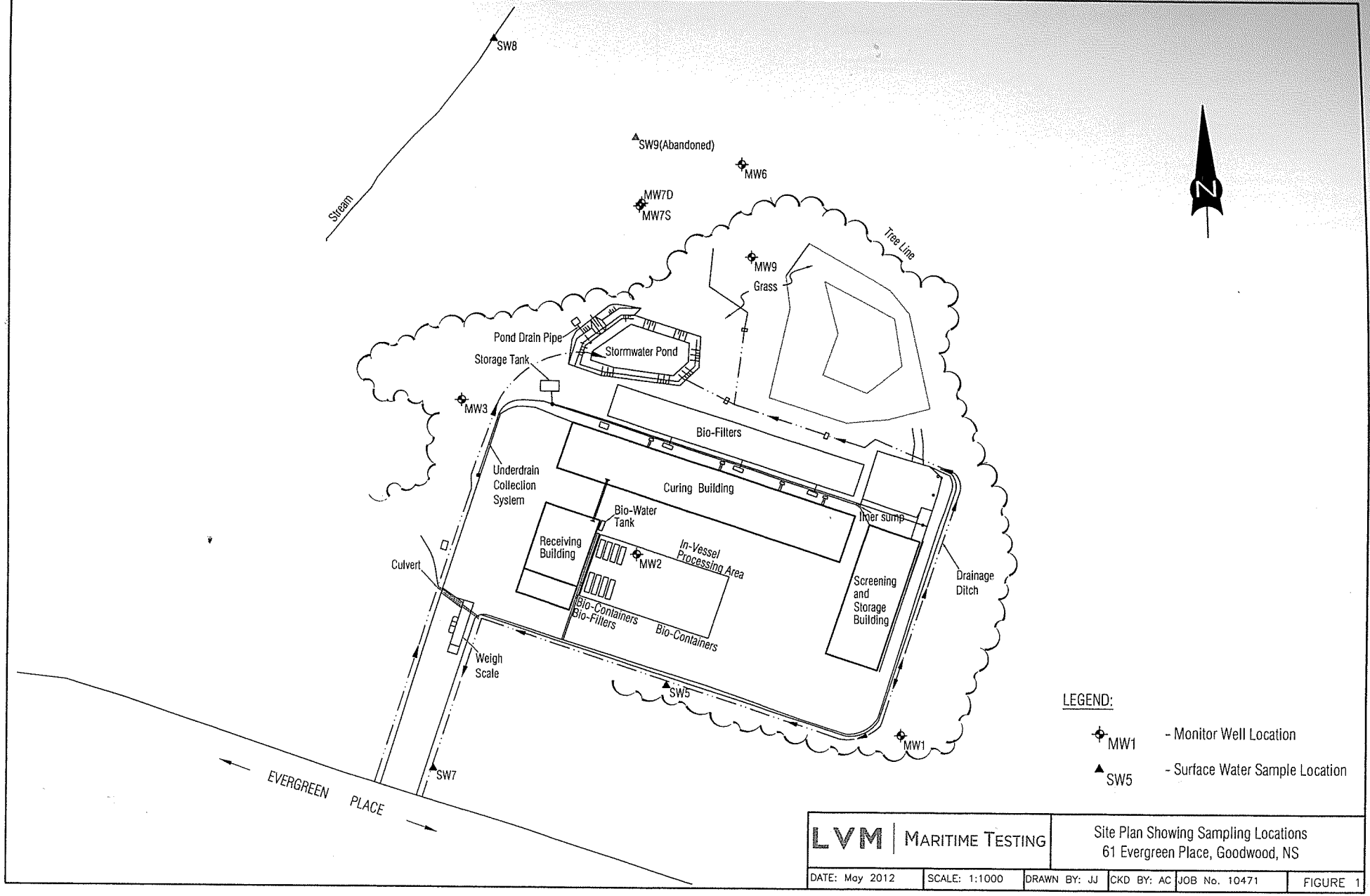

LVM | MARITIME TESTING	Site Plan Showing Sampling Locations 61 Evergreen Place, Goodwood, NS				
DATE: May 2012	SCALE: 1:1000	DRAWN BY: JJ	CKD BY: AC	JOB No. 10471	FIGURE 1

New Era Technologies - Surface Water Analytical Results

SW5		NSE EQS	CCME	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Dec-08	Jun-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11	Jun-12	Dec-12	Jun-13	Dec-13
	Copper	2	2-4	3.4		<2	<2	2		<2	<2	2	<2	3	3	4.5			12.5	2.2	
	Iron	300	300	610		270	230	720		900	<50	7900	340	1800	56	656			1800	1100	
	Lead	1	1-7	0.6	Frozen	<0.5	<0.5	<0.5	Frozen	<0.5	<0.5	1.8	<0.5	2	<0.5	0.91	Frozen	Dry	4	0.81	Frozen
	Cadmium	0.01	0.017	<0.3		<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.02	<0.02	<0.017			0.045	<0.017	
	Phenol	NG	0.004	<0.001		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	0.002	0.008	0.004	0.003			0.0045	0.0037	

SW7		NSE EQS	CCME	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Dec-08	Jun-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11	Jun-12	Dec-12	Jun-13	Dec-13
	Copper	2	2-4			<2	<2			3		2	<2	2	<2	2.9	2.3		3.5	5.6	
	Iron	300	300			750	210			<50		1900	300	940	270	3260	1140		3240	3210	
	Lead	1	1-7	Dry	Frozen	0.7	<0.5	Dry	Frozen	<0.5	Frozen	0.7	<0.5	<0.5	<0.5	2.47	1.06	Dry	2.26	2.48	Frozen
	Cadmium	0.01	0.017			<0.3	<0.3			<0.3		<0.3	<0.3	<0.02	<0.02	0.07	<0.017		0.05	0.02	
	Phenol	NG	0.004			<0.001	<0.001			<0.001		<0.001	0.001	0.003	0.003	0.007	<0.001		0.0061	0.0043	

SW8		NSE EQS	CCME	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Dec-08	Jun-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11	Jun-12	Dec-12	Jun-13	Dec-13
	Copper	2	2-4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Iron	300	300	240	210	310	250	120	160	400	240	390	380	440	310	418	445	525	489	661	280
	Lead	1	1-7	0.7	0.7	1	0.8	0.6	0.6	0.6	0.9	0.6	0.9	0.8	0.6	1	0.79	0.99	1.01	1.26	0.64
	Cadmium	0.01	0.017	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.02	<0.02	0.027	0.018	0.021	0.033	0.05	0.04
	Phenol	NG	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002	0.005	0.006	<0.001	0.0029	0.0064	0.0056	<0.005

SW9		NSE EQS	CCME	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Dec-08	Jun-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11	Jun-12	Dec-12	Jun-13	Dec-13
	Copper	2	2-4	<2		<2	<2									2					
	Iron	300	300	1500		560	370									615					
	Lead	1	1-7	1	Frozen	<0.5	<0.5	Dry	Frozen	Dry	Frozen	Dry	Frozen	Dry	Frozen	0.53	Dry	Not in Use	Not in Use	Not in Use	Not in Use
	Cadmium	0.01	0.017	<0.3		<0.3	<0.3									<0.017					
	Phenol	NG	0.004	<0.001		<0.001	<0.001									0.004					

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Exceeds both crieria