

Section 6:

First Nation Consultations

Amherstburg Riverfront Festival Plaza and Marina Environmental Assessment

First Nations - Distribution List & Communications Inventory

First Nations

Communications Sent

Communications Received

	Date	Type	Description	Date	Type	Description
Aamjiwnaang First Nation 978 Tashmoo Avenue Sarnia, Ontario N7T 7H5 Attn: Chief Chris Plain chief.plain@aamjiwnaang.ca cc: Sharilyn Johnston Environment Coordinator sjohnston@aamjiwnaang.ca cc: Christine James Environment Consultant Worker cjames@aamjiwnaang.ca Courtney Jackson Environment Worker cjackson@aamjiwnaang.ca	19-Jun-18	E-mail	Invitation to observe Archaeological Assessment.	25-Jun-18	E-mail	Correspondence regarding monitoring contract.
	25-Jun-18	E-mail	Follow up - Invitation to observe Archaeological Assessment.	27-Jun-18	Phone	Wanda Maness (Tri-Tribal Monitoring Services) - Coordinate agreement for monitoring contract.
	27-Jun-18	E-mail	Sent monitoring agreement to be signed - Wanda Maness	29-Jun-18	Fax	Received signed monitoring agreement and insurance info.
	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment	25-Jul-18	E-mail	Request to submit Notice of Intent to Chief Plain (instead of Chief Joann Roger)
	13-Aug-18	E-mail	Project Information Package	08-Apr-19	Phone	Call from Courtney Jackson requesting to be sent most up to date info. Inquired if we would be softening the shoreline.
	28-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2	08-Apr-19	E-mail	E-mail from Courtney indicating that the project will be reviewed by the Environment Committee on April 16. Will reply with their comments after the meeting.
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution	14-May-19	E-mail	Requested more information on the shoreline improvements and inquired about sediment sampling in the marina.
	28-Nov-18	Phone	Left a message for Christine James and Sharilyn Johnston offering consultation.			
	21-Mar-19	Phone	Called and left voicemail messages for both the Chief and Christine James to offer consultation.			
	8-Apr-19	E-mail	Forwarded 30Oct18 e-mail to Courtney per phone request.			
	25-Apr-19	E-mail	Follow up with Courtney re: Environment Committee Meeting comments.			
	14-May-19	E-mail	Follow up with Courtney re: Environment Committee Meeting comments.			
	14-May-19	E-mail	Reply to Courtney's request for more information and attached report including sediment sampling information.			

First Nations**Communications Sent****Communications Received**

	Date	Type	Description	Date	Type	Description
Walpole Island First Nation Bkejwanong Territory R.R.#3 Wallaceburg, Ontario N8A 4K9 Attn: Mr. Dean Jacobs Consultation Manager dean.jacobs@wifn.org cc: Janet Macbeth Project Review Coordinator janet.macbeth@wifn.org cc: Chief Dan Miskokomon drskoke@wifn.org	19-Jun-18	E-mail	Invitation to observe Archaeological Assessment.	24-Sep-18	Phone	Spoke with Janet Macbeth. Janet will discuss the project internally. Advised that we may need an easement for the proposed works. She asked about opportunity for signage, art and employment during construction.
	25-Jun-18	E-mail	Follow up - Invitation to observe Archaeological Assessment.			
	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment			
	13-Aug-18	E-mail	Project Information Package			
	19-Sep-18	Phone	Spoke with Janet to offer consultation and discuss the project.			
	24-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2			
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution			
	28-Nov-18	Phone	Left a message for Dean Jacobs offering consultation.			
	21-Mar-19	Phone	Left a voicemail message for Janet offering opportunity for consultation.			
Chippewas of Kettle & Stoney Point First Nation 6247 Indian Lane Kettle & Stoney Point, FN, Ontario N0N 1J0 Attn: Chief Thomas Bressette Thomas.bressette@kettlepoint.org Attn: Ms. Valerie George Consultation Coordinator Valerie.george@kettlepoint.org	19-Jun-18	E-mail	Invitation to observe Archaeological Assessment.	25-Jun-18	Phone message	Received a message from Valerie regarding Archaeological Assessment.
	25-Jun-18	E-mail	E-mail reply to phone message regarding Archaeological Assessment	21-Mar-19	E-mail	Received e-mail from Valerie indicating that CKSP will not be making comment of this project. Directed us to contact Caldwell FN and Walpole Island FN.
	25-Jun-18	E-mail	Follow up - Invitation to observe Archaeological Assessment.			NO FURTHER CONSULTATION REQUIRED
	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment			
	13-Aug-18	E-mail	Project Information Package			
	28-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2			
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution			
	28-Nov-18	Phone	Spoke with Valerie. May need to wait until new Council to get a reply.			
	28-Nov-18	E-mail	Sent e-mail that contained all previous information sent to date and offered consultation.			
	21-Mar-19	Phone	Left a voicemail message for Valerie.			

First Nations**Communications Sent****Communications Received**

	Date	Type	Description	Date	Type	Description
Chippewas of the Thames First Nation 320 Chippewa Road, R.R. #1 Muncey, Ontario N0L 1Y0 Attn: Chief Myeengun Henry myeengun@cottfn.com Attn: Mr. Kelly Riley Acting Director - Lands and Environment kriley@cottfn.com Attn: Ms. Rochelle Smith Consultation Coordinator rsmith@cottfn.com Attn: Ms. Fallon Burch Consultation Coordinator consultation@cottfn.com	19-Jun-18	E-mail	Invitation to observe Archaeological Assessment.	25-Jun-18	E-mail	Received request for agreement to send monitor for the Archaeological Assessment.
	25-Jun-18	E-mail	Follow up - Invitation to observe Archaeological Assessment.	28-Jun-18	E-mail	Received signed monitoring agreement and insurance info.
	27-Jun-18	E-mail	Sent monitoring agreement to be signed.	26-Mar-19	E-mail	Received e-mail and attached letter from Fallon Burch requesting study information be sent to consultation@cottfn.com
	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment	03-Apr-19	Phone	Received phone call from Fallon Burch to discuss information requested.
	13-Aug-18	E-mail	Project Information Package			
	28-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2			
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution			
	28-Nov-18	Phone	Left a voicemail for Rochelle Smith offering consultation.			
	21-Mar-19	Phone	Left a voicemail message for both Kelly Riley and Rochelle Smith offering consultation.			
	2-Apr-19	Phone	Left message for Fallon Burch to discuss letter and information requested.			
	3-Apr-19	E-mail	Sent e-mail to Fallon Burch with link to download all of the project related studies.			
Caldwell First Nation 14 Orange St. Leamington, Ontario N8H 3W3 Attn: Chief Mary Duckworth chief.duckworth@caldwellfirstnation.ca cc: Nikki Orosz Executive Administrator nikki.orosz@caldwellfirstnation.ca	19-Jun-18	E-mail	Invitation to observe Archaeological Assessment.	28-Jun-18	E-mail	Received request for agreement to send monitor for the Archaeological Assessment.
	25-Jun-18	E-mail	Follow up - Invitation to observe Archaeological Assessment.	03-Jul-18	E-mail	Received signed monitoring agreement and insurance info.
	29-Jun-18	E-mail	Sent monitoring agreement to be signed.	28-Nov-18	E-mail	E-mail requesting us to contact Nikki by phone to discuss Information Package No. 2.
	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment	20-Apr-19	E-mail	E-mail from Nikki asking what date we are available to meet.
	13-Aug-18	E-mail	Project Information Package			
	28-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2			
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution			
	28-Nov-18	Phone	Spoke with Nikki Orosz. She will contact us with a date to meet for consultation.			
	11-Feb-19	E-mail	Follow up - Invitation to meet for consultation			
	21-Mar-19	Phone	Spoke with Shelley Birch and left a message with her for Nikki Orosz offering consultation.			
	21-Mar-19	E-mail	E-mail to Nikki Orosz offering consultation and highlighting items of potential interest.			
	22-Apr-19	E-mail	Reply to Nikki's e-mail with dates that we are available to meet.			
	9-May-19	E-mail	Follow up e-mail to Nikki regarding dates available to meet.			

First Nations**Communications Sent****Communications Received**

	Date	Type	Description	Date	Type	Description
Oneida Nation of the Thames First Nation 2210 Elm Avenue Southwold, Ontario N0L 2G0 Attn: Chief Jessica Hill jessica.hill@oneida.on.ca cc: Chief Randall Phillips (Pre October 18) randall.phillips@oneida.on.ca cc: Catherine Cornelius Political Chief Assistant catherine.cornelius@oneida.on.ca	19-Jun-18	E-mail	Invitation to observe Archaeological Assessment.	30-Oct-18	E-mail	E-mail for Catherine Cornelius no longer active (failed to send).
	25-Jun-18	E-mail	Follow up - Invitation to observe Archaeological Assessment.	21-Mar-19	E-mail	Received reply e-mail from Dawn Doxtator indicating they will get back to us shortly.
	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment			
	13-Aug-18	E-mail	Project Information Package			
	28-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2			
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution			
	28-Nov-18	E-mail	Sent e-mail update to new Chief Jessica Hill with all information previously sent. Offered consultation and said we would follow up. E-mail cc'd to Grant Doxtator (Councillor).			
	21-Mar-19	Online	Submitted online contact form to request call back and offer consultation.			
Munsee-Delaware Nation 289 Jubilee Road, R.R. #1 Muncey, Ontario N0L 1Y0 Attn: Chief Roger Thomas chief@munsee.ca cc: Glenn Forrest Band Manager glenn@munsee.ca Stacey Phillips Relationship Fund Coordinator consultation@munsee.ca	19-Jun-18	E-mail	Invitation to observe Archaeological Assessment.	2-Apr-19	E-mail	Reply from Stacey Phillips - would like to continue to receive information regarding possible impacts and FN recognition.
	25-Jun-18	E-mail	Follow up - Invitation to observe Archaeological Assessment.	14-May-19	E-mail	Reply from Stacey Phillips indicating their interest in potential impacts to the Detroit River and potential for FN recognition.
	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment			
	13-Aug-18	E-mail	Project Information Package			
	28-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2			
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution			
	28-Nov-18	Phone	Left a voicemail for Glenn Forrest offering consultation.			
	21-Mar-19	Phone	Receptionist directed us to send e-mail to Mr. Stacey Phillips (Relationship Fund Coordinator) with project information. Would not put us through to voicemail.			
	2-Apr-19	E-mail	Sent Information Package 2 to Stacey Phillips.			

First Nations**Communications Sent****Communications Received**

	Date	Type	Description	Date	Type	Description
Delaware Nation 14760 School House Line, R.R. #3 Thamesville, Ontario N0P 2K0 Attn: Chief Denise Stonefish denise.stonefish@delawarenation.on.ca General Inbox info@delawarenation.on.ca	19-Jun-18	E-mail	Invitation to observe Archaeological Assessment.			
	25-Jun-18	E-mail	Follow up - Invitation to observe Archaeological Assessment.			
	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment			
	13-Aug-18	E-mail	Project Information Package			
	28-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2			
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution			
	28-Nov-18	Phone	Left a voicemail for Chief Stonefish offering consultation.			
	21-Mar-19	Phone	Receptionist directed us to send e-mail to Colleen and the Chief to request consultation.			
Metis Nation of Ontario Community Relations 500 Old St. Patrick St., Unit D Ottawa, Ontario K1N 9G4 Attn: Region 9 Consultation Committee consultations@metisnation.org	25-Jul-18	E-mail	Notice of Intent and Invitation for Comment			
	13-Aug-18	E-mail	Project Information Package			
	28-Sep-18	E-mail	Invitation to comment - Drop-In Centre No.2			
	30-Oct-18	E-mail	Project Information Package 2 - Preferred Solution			

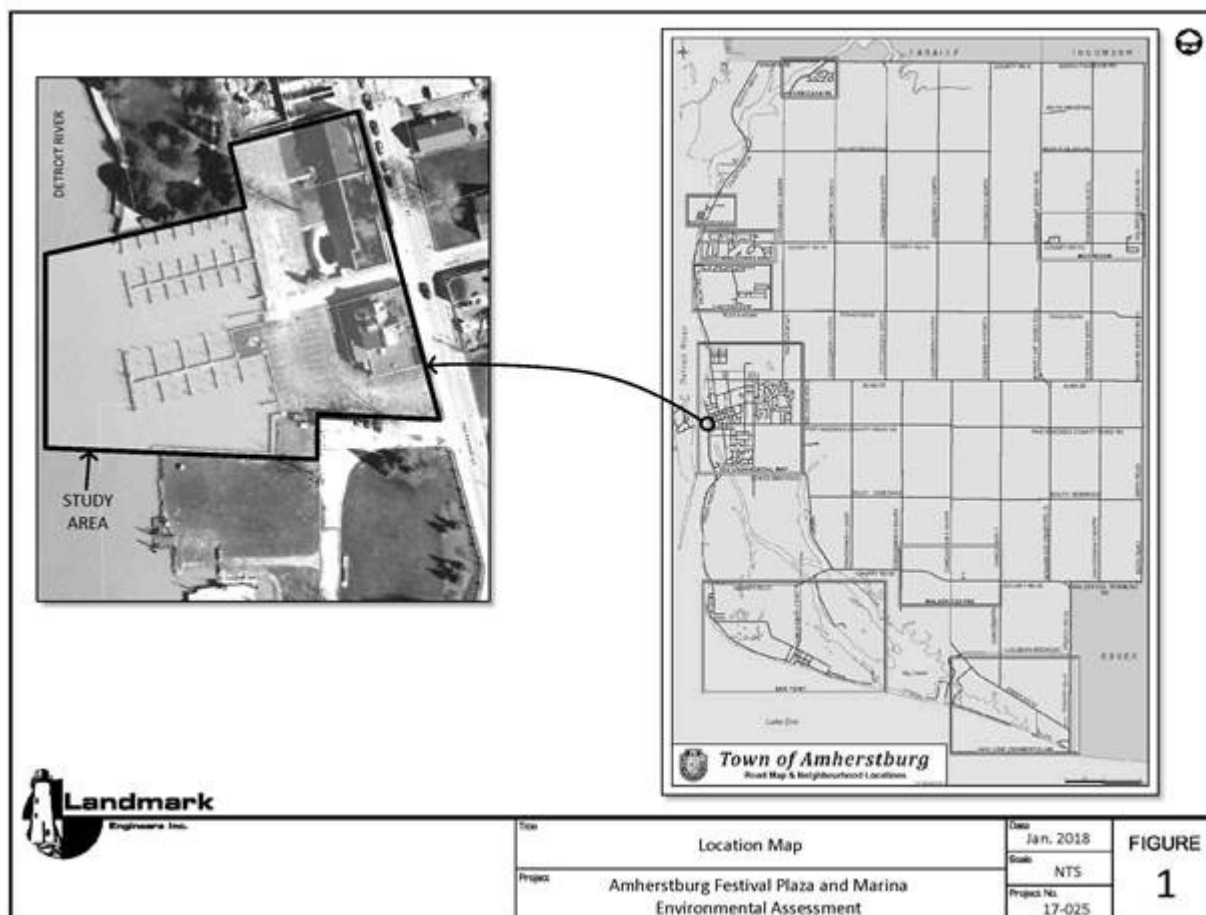
Aamjiwnaang First Nation Correspondence

Liz Michaud

From: Liz Michaud
Sent: June-19-18 10:53 AM
To: 'sjohnston@aamjiwnaang.ca'
Cc: 'cjames@aamjiwnaang.ca'; 'chief@aamjiwnaang.ca'
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential

environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 11:26 AM
To: 'chief@aamjiwnaang.ca'; 'sjohnston@aamjiwnaang.ca'; 'cjames@aamjiwnaang.ca'; 'drskoke@wifn.org'; 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'; 'Thomas.bressette@kettlepoint.org'; 'Valerie George'; 'myeengun@cottfn.com'; 'kriley@cottfn.com'; 'rsmith@cottfn.com'; 'chief.duckworth@caldwellfirstnation.ca'; 'nikki.orosz@caldwellfirstnation.ca'; 'Randall.phillips@oneida.on.ca'; 'catherine.cornelius@oneida.on.ca'; 'chief@munsee.ca'; 'glenn@munsee.ca'; 'denise.stonefish@delawarenation.on.ca'
Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud

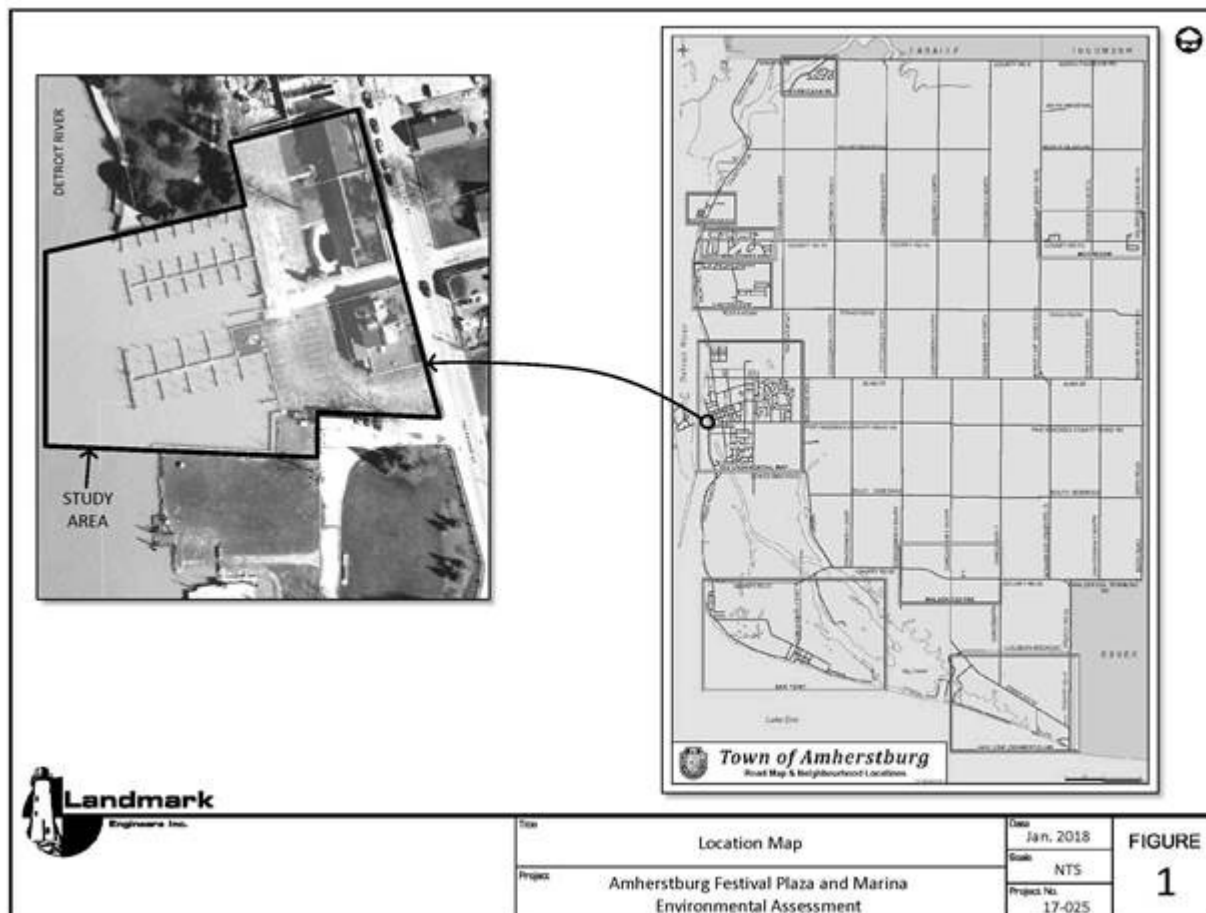


Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-29-18 2:30 PM
To: 'Email support'
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Hi Wanda,

I received the fax. I will see you out of site on Wednesday morning.

Have a good weekend,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Email support <wmaness@outlook.com>
Sent: June-29-18 2:06 PM
To: Liz Michaud <lmichaud@landmarkengineers.ca>
Subject: Re: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Hi Liz,

I have faxed the signed agreement.

I will be the monitor for this project.

Wanda Maness

cell 226-932-5517

From: Liz Michaud <lmichaud@landmarkengineers.ca>
Sent: 26 June 2018 10:54
To: tyler_stonefish_123@hotmail.com

Cc: Sharilyn Johnston; Email support

Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning Tyler,

The Archaeological assessment will be held on **July 4th at 9am** on our site located at 306 Dalhousie Street in Amherstburg. More project information can be found below in this e-mail chain. If you require an agreement for the monitoring services, please let me know at your earliest convenience so I can process that paperwork. If you require further information please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Email support <wmaness@outlook.com>

Sent: June-25-18 9:39 PM

To: Sharilyn Johnston <sjohnston@aamjiwnaang.ca>; Liz Michaud <lmichaud@landmarkengineers.ca>;
tyler_stonefish_123@hotmail.com

Subject: Re: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Hi Liz and Sharilyn

Tyler Stonefish will be the monitor on this project.

I have attached Tyler to this email.

Tyler contact number is 226-973-9173.

Thanks

Wanda

From: Sharilyn Johnston <sjohnston@aamjiwnaang.ca>

Sent: 25 June 2018 11:38

To: Email support

Subject: FW: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Hi Wanda,

I know you are in surgery and hope you are well. I don't want to bother you but I know you wouldn't want to miss our on any jobs.

Just checking to see if there is a monitor available or if we have someone for this job?

Sharilyn Johnston

Environment Coordinator,
Aamjiwnaang First Nation
978 Tashmoo Ave.,
Sarnia, ON N7T 7H5
(519) 336-8410
(519) 330-1245
sjohnston@aamjiwnaang.ca

From: Liz Michaud <lmichaud@landmarkengineers.ca>

Sent: June-25-18 11:26 AM

To: Chief Rogers <chief@aamjiwnaang.ca>; Sharilyn Johnston <sjohnston@aamjiwnaang.ca>; Christine James <cjames@aamjiwnaang.ca>; 'drskoke@wifn.org' <drskoke@wifn.org>; 'dean.jacobs@wifn.org' <dean.jacobs@wifn.org>; janet.macbeth@wifn.org; 'Thomas.bressette@kettlepoint.org' <Thomas.bressette@kettlepoint.org>; Valerie George <Valerie.George@kettlepoint.org>; myeengun@cottfn.com; kriley@cottfn.com; rsmith@cottfn.com; chief.duckworth@caldwellfirstnation.ca; nikki.orosz@caldwellfirstnation.ca; 'Randall.phillips@oneida.on.ca' <Randall.phillips@oneida.on.ca>; catherine.cornelius@oneida.on.ca; 'chief@munsee.ca' <chief@munsee.ca>; glenn@munsee.ca; denise.stonefish@delawarenation.on.ca

Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud



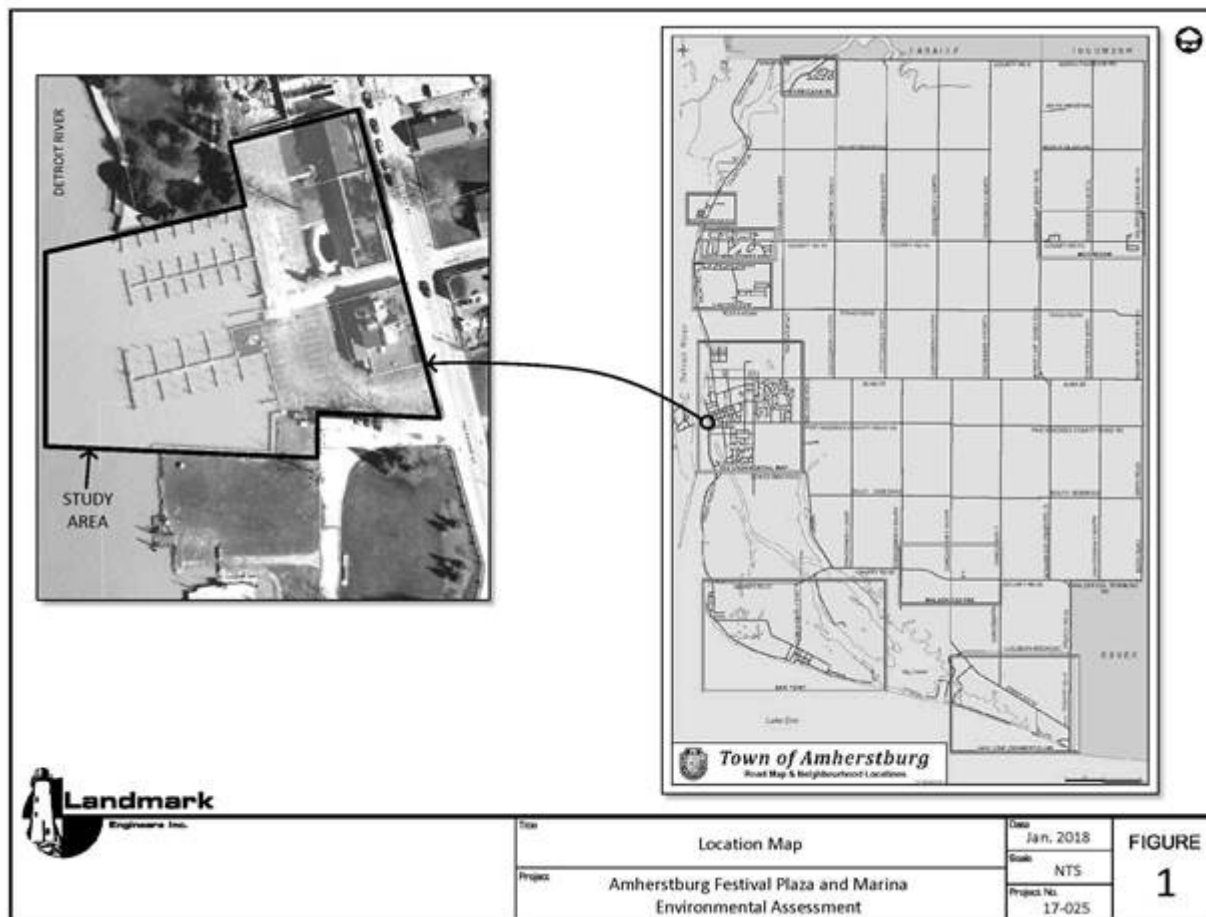
Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AGREEMENT FOR
ARCHAEOLOGICAL MONITORING SERVICES**

This agreement dated the 27th day of June in the year 2018

BETWEEN

Landmark Engineers Inc. (CONSULTANT)
2280 Ambassador Drive, Windsor, ON N9C 4E4
519-972-8052

Daniel M. Krutsch, P.Eng., President
dkrutsch@landmarkengineers.ca

AND

Tri-Tribal Monitoring Services, on behalf of Aamjiwnaang First Nation (CONTRACTOR)
1106 Tashmoo Avenue, Sarnia, ON N7T 7H5
519-334-0655
Ms. Wanda Maness, CEO, Tri-Tribal Monitoring Services
wmaness@outlook.com

Aamjiwnaang First Nation (hereinafter Contractor) hereby enters into a contract with Landmark Engineers Inc. (hereinafter Consultant) which provides for the furnishing of professional services with respect to the project know as the **Amherstburg Festival Plaza Environmental Assessment (EA)**, and in order to furnish these services, the Consultant requires the Contractor to deliver certain services, **monitoring of Archaeological Assessment** and the Contractor warrants to provide the Services on the following terms and conditions:

1. **Services:** Contractor will provide the Services as further detailed on the attached Schedule "A" – Services, and "B" – Rate of Remuneration. In performing the Services, Contractor will exercise the standard of services at the time and location where the Services are performed.
2. **Fees:** Consultant shall pay Contractor a fee, calculated on a time basis, for the services described as such in Schedule "A". Fees shall be computed on the basis of hourly billing rates as included in Schedule "B". No other charges, fees or consideration are due outside these fees and expenses.
3. **Payment:** Contractor shall invoice weekly, or at intervals otherwise agreed to during the term of this Agreement. Such invoices shall include timesheets detailing time worked by Contractor to deliver the Services and pre-approved expense claims, supported by original receipts.

Contractor shall be paid within 30 business days from the date properly submitted invoices are received.

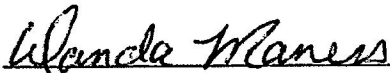
4. **Indemnification and Insurance:** Contractor shall indemnify and save harmless Consultant from and against all claims, losses, damages, costs, expenses, actions and other proceedings, occasioned by or attributable to any injury to or death of a person or damage to or loss of property arising from any willful or negligent act, omission or delay on the part of Contractor, its employees or agents in performing the Services or as a result of the Services. Contractor shall provide proof of certification or insurance as detailed on Schedule "A" prior to delivering the Services. Failure to provide the requested information may result in immediate termination of this contract.
5. **Confidentiality:** For the purposes of this Agreement, the term "Confidential Information" mean all information in whatever form, including without limitation, oral and written communications, reports, sketches, photographs, specifications, correspondence, and another other forms of documents and information that are indirectly or directly conceived, originated, prepared or received by Contractor as a result of the performance of the Services, except information falling into any of the following categories:
 - a. Information that at the time of disclosure or acquisition is already known to Contractor and was not acquired under any obligation of confidentiality or as a result of any work performed, directly or indirectly for Consultant;
 - b. Information that at the time of disclosure or acquisition is or thereafter becomes part of the public domain through no act or failure to act on the part of Contractor or on the part of any third party under an obligation of confidentiality with respect to the information; or
 - c. Information that is disclosed, either directly or indirectly to Contractor via a third party who did not acquire the information from Landmark or under an obligation of confidentiality.

Contractor shall refrain from directly or indirectly using or drawing upon the confidential information for any purpose, commercial or otherwise, other than the delivery of the Services. This section 5 shall survive for two years after the termination of this Agreement.

6. **Nature of Contract:** Contractor is an independent contractor and shall not be deemed to be a servant, employee or agent of Consultant. Contractor agrees that this is a contract for the provision of services and no rights, privileges or considerations are due to Contractor outside of the expressly agreed provisions of this Contract. Contractor further acknowledges that it has had the opportunity to obtain independent professional legal, accounting and tax advice in this regard.

7. **Governing Law:** This Agreement shall be governed in accordance with the laws and the jurisdiction where the majority of the Services are provided. Contractor shall observe and comply with all applicable laws.
8. **Entire Agreement:** This Agreement constitutes the sole and entire agreement between the Contractor and Consultant relating to the Project and supersedes all prior agreements between them, where written or oral respecting the subject matter hereof and no other terms, conditions or warranties, whether expressed or implied, shall form a part hereof. This Agreement may be amended only by written instrument signed by both Contractor and Consultant. All conflict between attachments and the terms and conditions of this Agreement, the terms and conditions of this Agreement take precedence.

CONTRACTOR



Wanda Maness

CEO, Tri-Tribal Monitoring Services

Date:

28 June, 2018

CONSULTANT



Daniel M. Krutsch, P.Eng.

President

Date:

27 JUNE 2018

Schedule A: Services

Attached to and forming part of the Agreement Between:

Tri-Tribal Monitoring Services, on behalf of Aamjiwnaang First Nation
(hereinafter called the "Contractor")

and

Landmark Engineers Inc. (hereinafter called "Landmark")

Effective: June 27, 2018

This Attachment details the Services, Fees, Pre-qualifications and additional attachments forming part of the above described Agreement.

Services:

To provide natural heritage and archeological monitoring services to Landmark in regard to activities associated with the Project. This agreement is terminable on 30-day(s) notice to Contractor by Landmark.

In connection with the delivery of the Services, the Contractor shall:

- Follow all Health & Safety protocols in place with respect to the Project, the Services, the site where the Contractor is providing Services, and attend and participate in any training requirements related to the Services or the Project. Failure to do so shall result in immediate termination of this agreement;
- Follow crew leader's direction with respect to delivery of the Services on the Project site;
- Participate in any required liaison with community members or clients, as deemed suitable by Landmark;
- Obtain input, advice and guidance from environmental resource specialists (where applicable);
- Advise the crew leader or other appointed Landmark liaison regarding timing of critical activities requiring monitoring;
- Establish and maintain a daily agenda of hours worked and a summary of work completed; and
- If required at the request of the crew lead or other Landmark representative, prepare a summary report at the conclusion of a project that summarizes the activities in relation to the above environmental requirements

(hereinafter called the 'Services')

Fees:

Unless otherwise authorized by Landmark, the above work and associated deliverables will be completed by Contractor for the following fees (excluding GST):

Rate	See Schedule "B"
Mileage	See Schedule "B"

Pre-Qualification Requirements:

Valid driver's licenses

Proof of vehicle insurance

Other client-specific requirements listed below: See Schedule "B"

Schedule B: Rate of Remuneration

- Payment will be based on actual time and expenses to complete the scope of services to a pre-approved upset limit of \$500.00 (excluding HST). The upset limit fee assumes 3 hours of on-site monitoring and 3 hours of travel time plus mileage (to and from the site). The upset limit fee shall not be exceeded without prior authorization from the Consultant. Additional services, authorized by the Consultant, not included in the fee will be paid according to the rates below.
- Payment will be based on a maximum rate of \$55.00 per hour for the Contractor monitor, as and when requested by Landmark or its designate, which is inclusive of any and all fees, deductions or other mark-ups, excluding HST if applicable.
- Each Contractor monitor will bill a minimum of three (3) hours for each day they are dispatched by Landmark to the Project location.
- Payment for the monitor's mileage will be at a rate of \$0.54 per km driving from the community to the Project site.
- Per Diem mileage rates will be paid to a maximum of \$125 per day.
- Contractor is requested to submit approved invoices in a timely manner. Invoices should include the full names of the monitor(s), hours worked and date range for the invoicing period. All invoices should be addressed directly to Landmark, and the relevant project should be noted in the text of each invoice.
- Landmark agrees to not disclose particulars about hourly charges or invoicing to the Contractor monitor.
- Contractor warrants that the Contractor monitor shall have Workplace Safety and Insurance Board coverage for the duration of the Project, and all other applicable withholding and other source deductions required by law, in connection with the Contractor monitor.

Liz Michaud

From: Liz Michaud
Sent: July-25-18 2:06 PM
To: chief@aamjiwnaang.ca
Cc: sharilyn Johnston; cjames@aamjiwnaang.ca
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Rogers,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

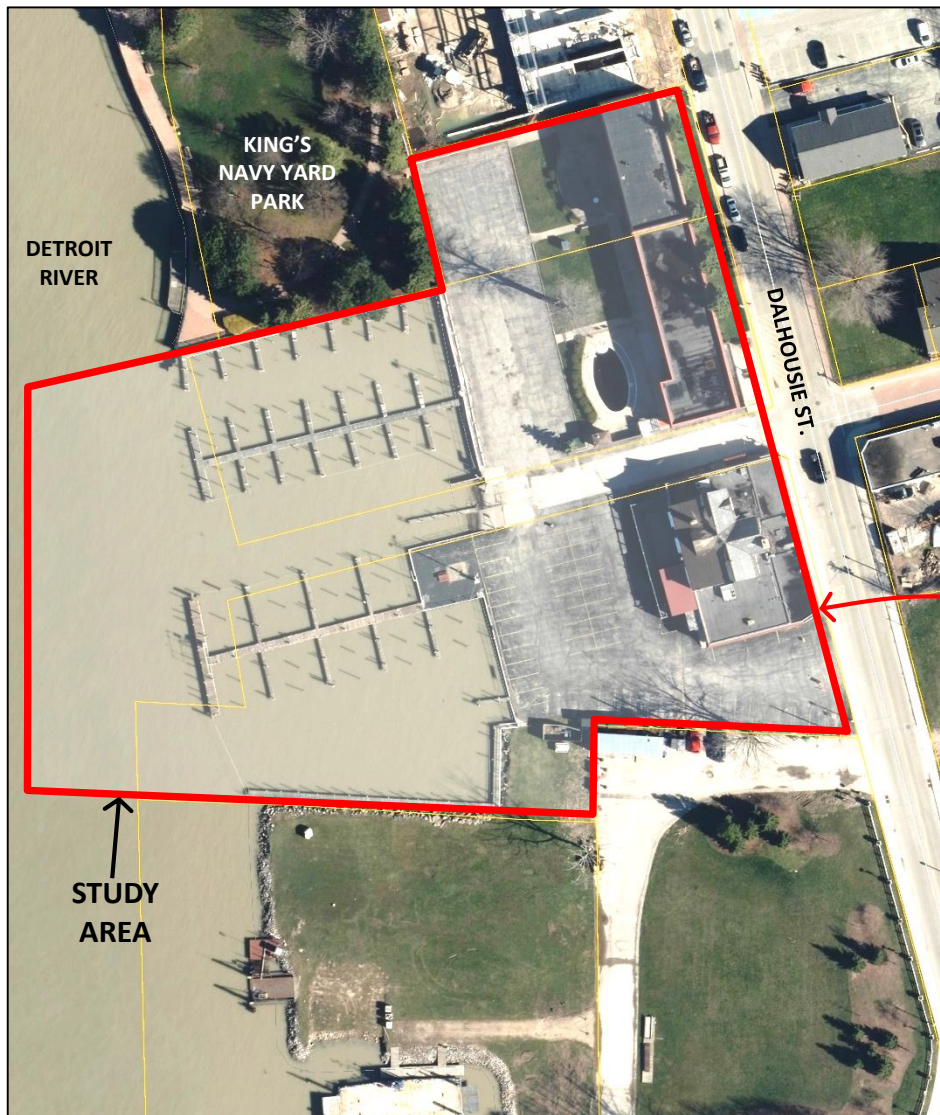
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

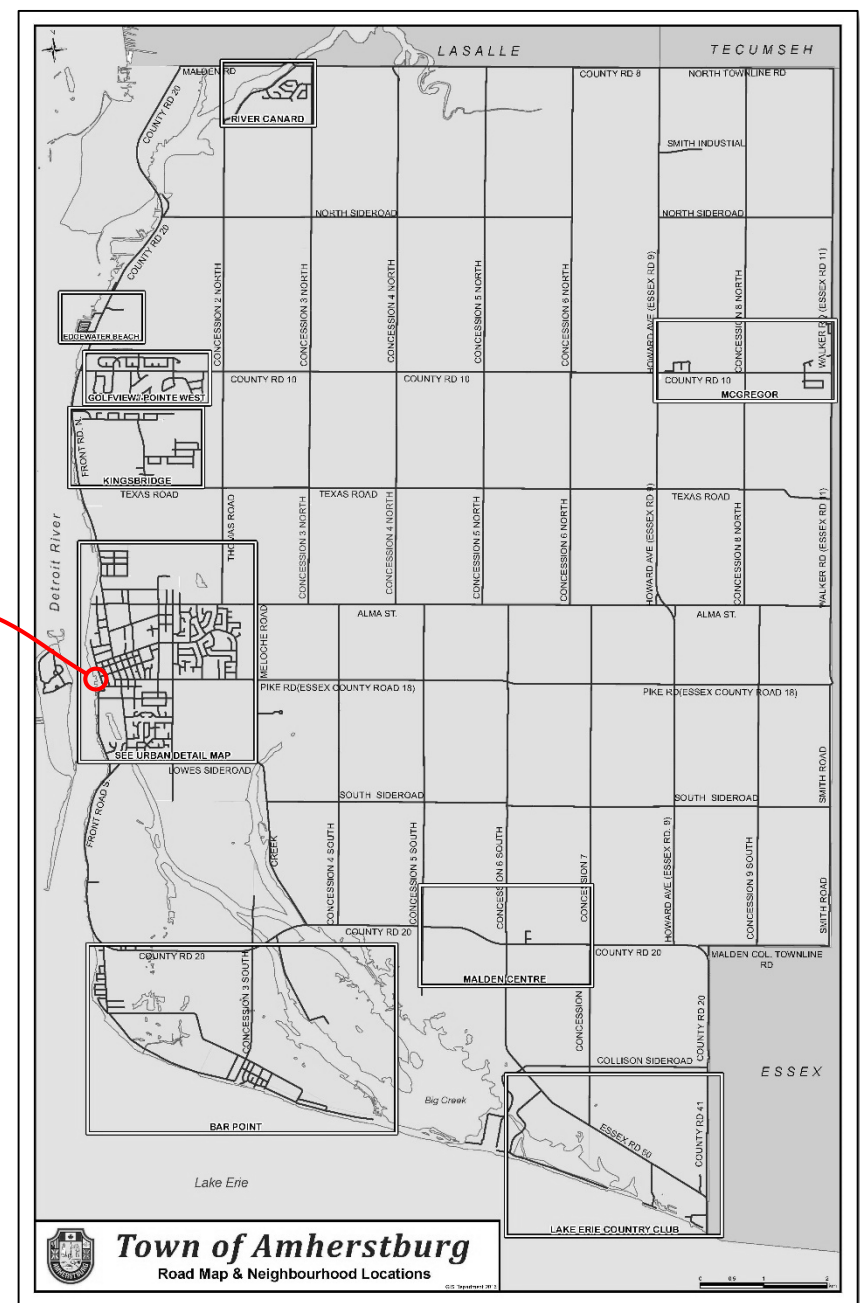
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

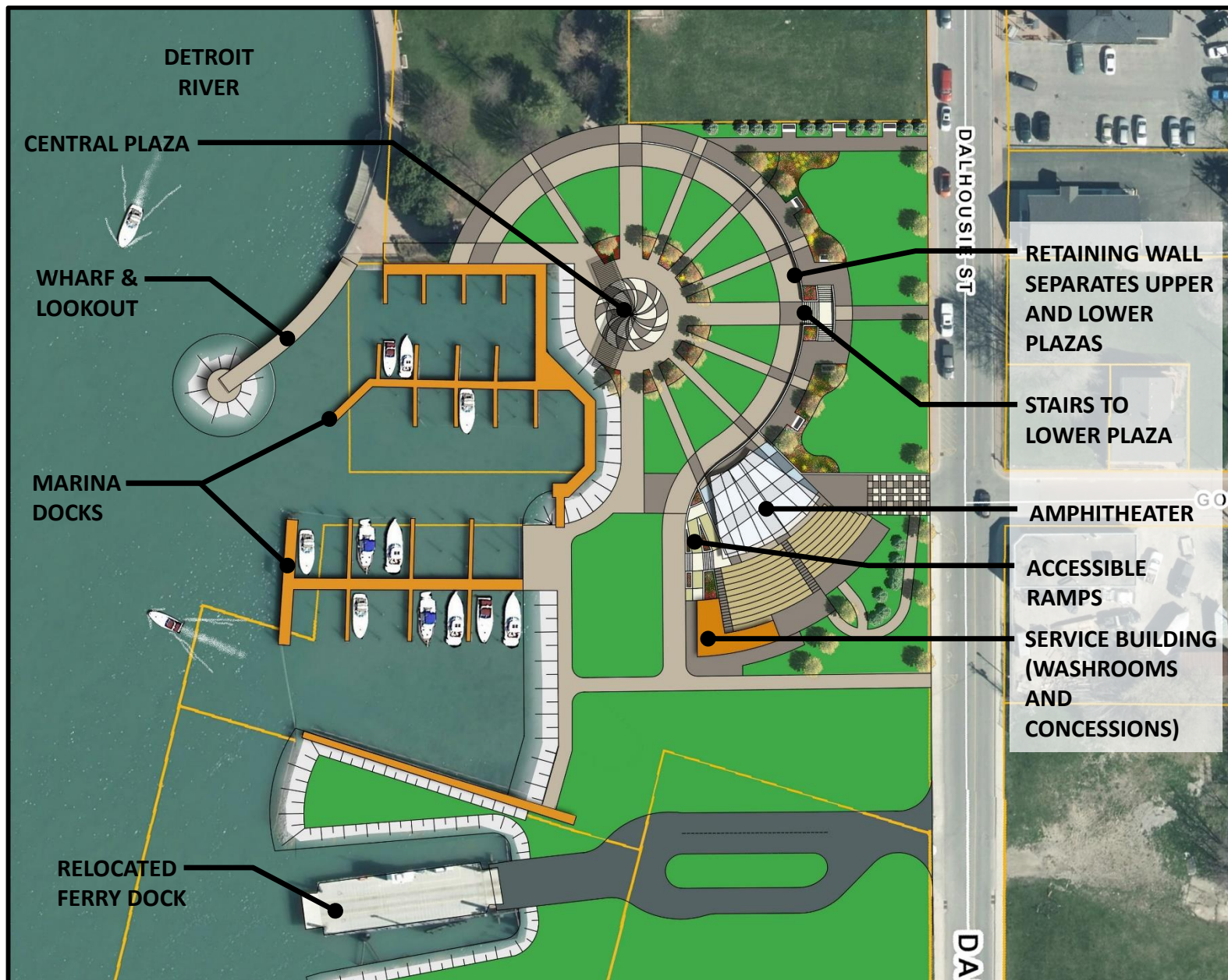
Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON





Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project		Scale	NTS	
		Project No.	17-025	
Amherstburg Festival Plaza and Marina Class Environmental Assessment				

Liz Michaud

From: Chief Rogers <chief@aamjiwnaang.ca>
Sent: July-25-18 2:07 PM
To: Liz Michaud
Subject: Automatic reply: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Please re-send your request to chief.plain@aamjiwnaang.ca. Thank you

Liz Michaud

From: Liz Michaud
Sent: July-25-18 2:53 PM
To: 'chief.plain@aamjiwnaang.ca'
Cc: sharilyn Johnston; 'cjames@aamjiwnaang.ca'
Subject: FW: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Plain,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Chief Rogers <chief@aamjiwnaang.ca>

Sent: July-25-18 2:07 PM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Subject: Automatic reply: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Please re-send your request to chief.plain@aamjiwnaang.ca. Thank you

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

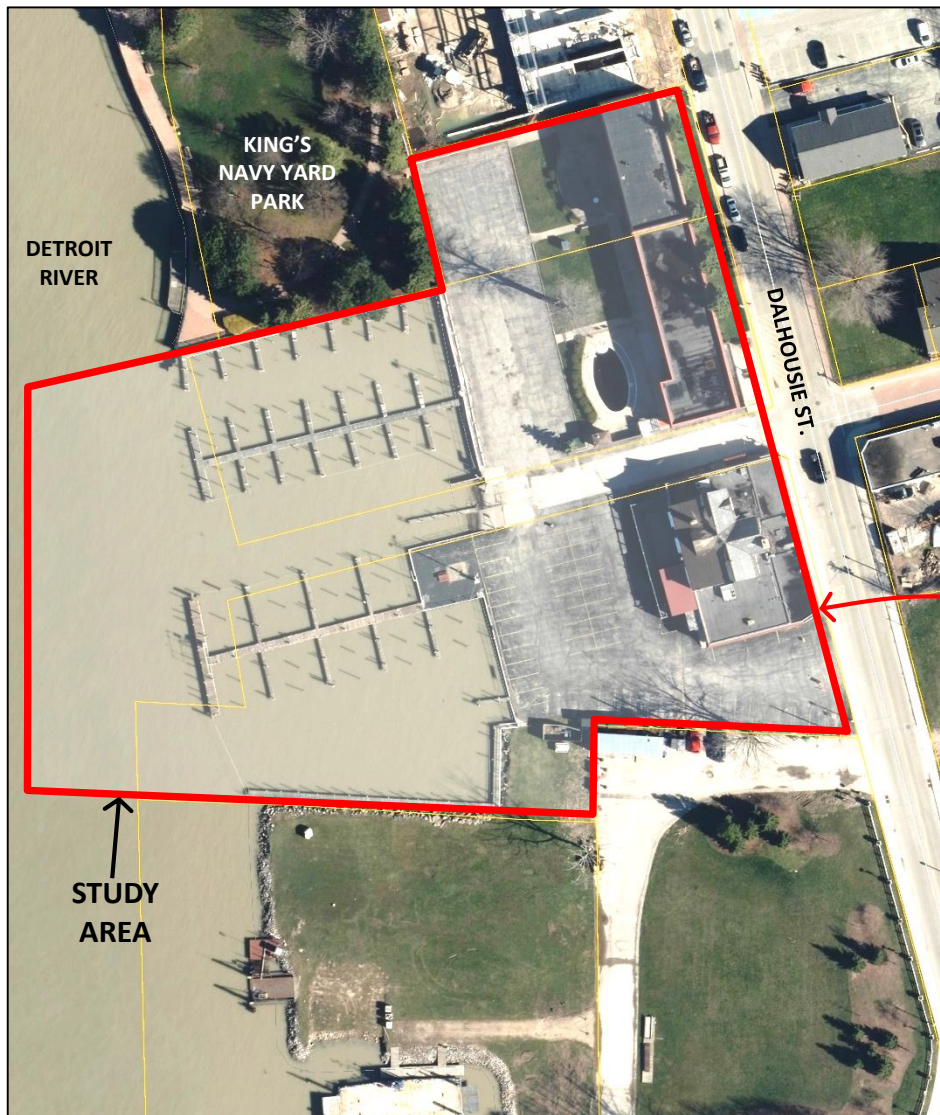
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

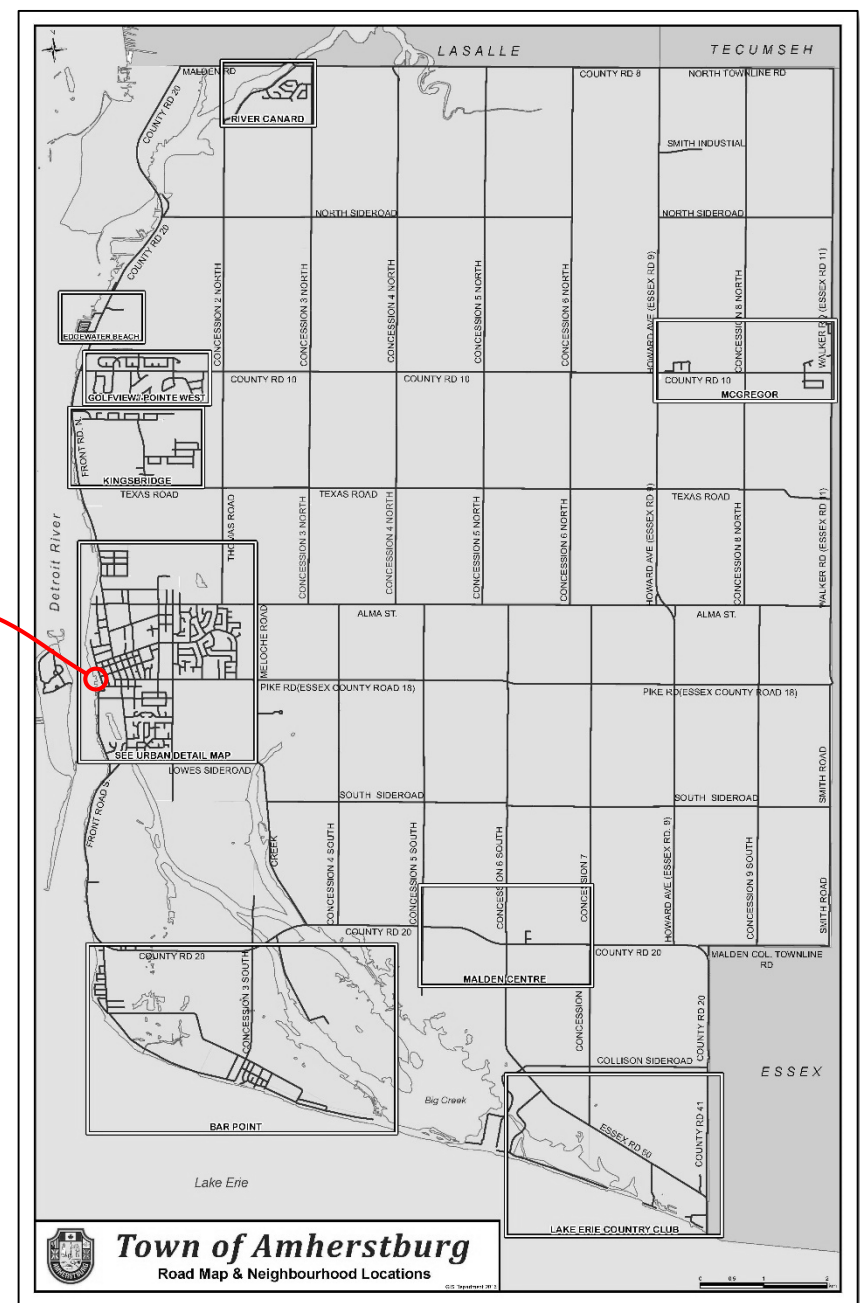
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

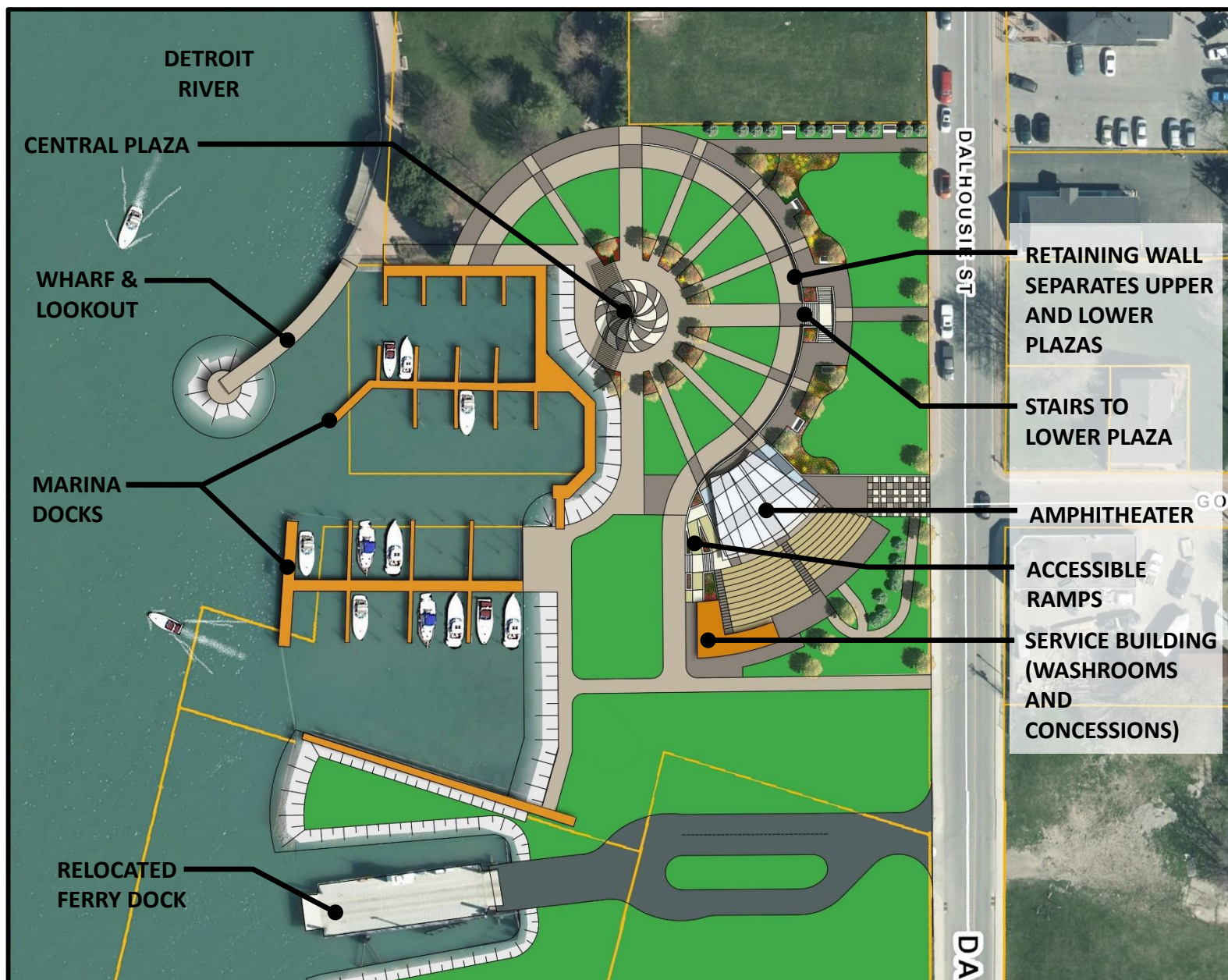
Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON



Title	Location Map	Date	July 2018	FIGURE 1
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale	NTS	
		Project No.	17-025	



Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale	NTS	
		Project No.	17-025	

Liz Michaud

From: Liz Michaud
Sent: August-13-18 2:36 PM
To: chief.plain@aamjiwnaang.ca
Cc: sharilyn Johnston; cjames@aamjiwnaang.ca
Subject: FW: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Plain,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

In order to protect the proposed marina, a breakwater that extends along the shoreline is proposed along the Detroit River. The breakwater will most likely be floating, and would be able to move in during the winter to protect it and the docks from ice. A new layout for the marina will be developed as part of this study to maximize the number of docks and maintain safe maneuvering fairways for boats. A copy of the preliminary concept plan is attached to the Notice of Intent.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

If you would prefer to receive the attached information by hard copy mail please let me know and I will have a copy mailed out to you. If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: July-25-18 2:53 PM
To: 'chief.plain@aamjiwnaang.ca' <chief.plain@aamjiwnaang.ca>
Cc: sharilyn Johnston <sjohnston@aamjiwnaang.ca>; 'cjames@aamjiwnaang.ca' <cjames@aamjiwnaang.ca>
Subject: FW: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Plain,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca


Environmental Inventory

Utilities & Adjacent Land Use

Utilities

All known utilities within the vicinity of the site are shown below.

The main utilities (water, storm and sanitary sewers) that service the site are located within the Dalhousie Street right-of-way.



Adjacent Land Use

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily owned commercial, but also contain private residences.

Landmark CONSULTANTS

Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMOCC Consultants Inc. Representatives from the First Nations were present during the Archaeological Assessment (Gallwey First Nations, Chippewas of the Thames First Nation and Anishnawabeg First Nations).

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.

Landmark CONSULTANTS

Evaluation of Alternatives

Alternative A : Passive Park

The passive park alternative would be an extension to King's Navy Yard Park with a view of the transient marina.

The connection to King's Navy Yard Park would be strengthened by filling in the north east corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.


The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Planting beds
- Open lawn areas
- Armour stone shoreline

CONSIDERATIONS

- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.

EXAMPLE IMAGES



Landmark CONSULTANTS

Design Considerations

Amphitheatre and Plaza

Amphitheatre

The Amphitheatre area will be defined with an area for seating and a stage / performance area. The following images present options for the types of structure that could be used over the performance area. The structure could be anything from an elaborate canopy design to a simple trellis. Seating could consist of built-in benches, paved concrete plaza or open lawn area.



Plaza Area

The plaza area should be large enough to accommodate vendor tents and food trucks during events. Open lawn area adjacent to the plaza would be suitable for large festival tents. The plaza area would consist mainly of coloured pavement paving, planting beds, retaining walls and stairs / ramps.



Landmark CONSULTANTS

Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMOCC Consultants Inc. Representatives from the First Nations were present during the Archaeological Assessment (Gallwey First Nations, Chippewas of the Thames First Nation and Anishnawabeg First Nations).

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.

Landmark CONSULTANTS

Evaluation of Alternatives

Alternative B : Expanded Marina


In June of 2018, a petition was received by the Town asking that a boat launch with appropriate number of parking spaces for vehicles, the boat trailers, a wharf and lookout (the shoreline fishing) and transient marina slips be incorporated into the final design of the site.

A preliminary design concept for such a facility is presented here, with parking and turn-around spaces provided, based on other similar-sized facilities in Essex County. To minimize the interference with the traffic on Dalhousie Street, a one-way / not in proposed, with ample room for trailers to turn and back into the boat launch within the site.

CONSIDERATIONS

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront as identified in the Parks Master Plan.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.

EXAMPLE IMAGES



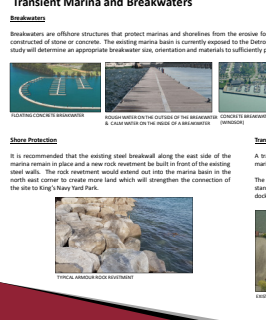
Landmark CONSULTANTS

Design Considerations

Transient Marina and Breakwaters


Breakwaters

Breakwaters are offshore structures that protect marinas and shorelines from the erosive force of waves. As shown in the example images below, they are typically constructed of stone or concrete. The existing marina basin is currently exposed to the Detroit River, with no breakwater to protect the marina from wave action. This study will determine an appropriate breakwater size, orientation and materials to sufficiently protect the proposed transient marina design.



Shore Protection


It is recommended that the existing steel breakwall along the east side of the marina remain in place and a new rock revetment be built in front of the existing steel walls. The rock revetment would extend out into the marina basin in the north east corner to create more land which will strengthen the connection of the site to King's Navy Yard Park.



Transient Marina

A transient marina offers temporary docking for boats and does not offer reserved slips. The marina would be available for boaters who wish to dock their boat while visiting Amherstburg.

The current layout of the 'transient' berthing docks does not meet the minimum standard for safe maneuvering of boats in and out of the marina. This study will develop a new dock layout that will meet current marina design guidelines for safe maneuvering.



Landmark CONSULTANTS

Evaluation of Alternatives

Alternative Solutions

The project team identified three alternatives that were considered as options for the site development; Active Park, Passive Park and Expanded Marina. The advantages and disadvantages for each option are presented below:

ALTERNATIVE A: PASSIVE PARK

Advantages:

- Walking trails
- Large lawn areas
- Landscaping
- Trails shade structures
- Transient marina
- Shoreline improvements

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.

ALTERNATIVE B: EXPANDED MARINA

Advantages:

- Boat launch
- Parking for boat trailers and cars
- Expanded transient marina
- Fishing pier
- Shoreline improvements

Disadvantages:

- Opportunity to increase the existing marina basin.
- Site would be available for use by the entire community.
- Opportunity to include a wharf with fishing area.

ALTERNATIVE C: ACTIVE PARK

Advantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Site would be available for use by the entire community.
- Identified in the Parks Master Plan as a need along the waterfront in the community (active park space).
- Potential to bring revenue to the downtown by attracting tourists as well as the local community.
- Opportunity to refurbish or update existing marina.

Disadvantages:

- Brings high volume of truck and trailer traffic to the downtown streets.
- Parking area will need to be built on waterfront land.
- Site is usable for only the boating community rather than the entire community.
- Does not satisfy the need for active parkland along the waterfront that was identified in the Parks Master Plan.

Landmark CONSULTANTS

Evaluation of Alternatives

Alternative C : Active Park

Landmark was retained by the Town in 2016 to prepare this preliminary concept plan. The plan has been presented to the public at two previous Public Information Centres for the Parks Master Plan and made available to the Town's website (Link the Burg) for consideration and comment.

This concept plan intends to strengthen the connection to King's Navy Yard Park by filling in the north east corner of the existing marina basin. The existing steel wall shoreline along the marina would be replaced with an armour stone treatment.

Due to the grade change from Dalhousie Street down to the shoreline (over 2m in elevation), retaining walls will be used to create a large flat plaza area on the site. A lawn area can be used for festival tents during events. An Amphitheatre and seating will be incorporated at the south side of the site.

The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Planting beds
- Open lawn areas
- Armour stone shoreline
- Wharf and lookout

CONSIDERATIONS

- The wharf and lookout as shown on this plan does not fit within the Town's property limits. It may not be feasible to obtain approval to build this particular configuration.
- Fishing breakwaters may be considered to shelter the marina docks.
- Opportunity to incorporate fishing structures along the breakwall.
- The size, type and location of the amphitheatre structure will be determined as part of this study.

EXAMPLE IMAGES



Landmark CONSULTANTS

Next Steps

➢ All comments received from today's meeting will be reviewed by the Project Team and used to help define the Preferred Solution.

➢ A second Public Drop-In Centre will be held in late September to present the Preferred Solution.

➢ All comments received from the second Drop-In Centre will be reviewed and used to help refine the Preferred Solution. The project website will then be updated and a Notice will be published, alerting the public that the 30-day public review period for this Class EA has commenced.

➢ Provided that all outstanding issues are resolved and no Part 9 Orders are requested, the project may proceed to final approvals and construction upon completion of the 30-day public review period.

We encourage you to fill out a comment sheet so that your issues and concerns can be addressed early in the planning process and to have your comments become part of the public record.

Thank you.

Privacy Information

All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public as described in section 37 of the Freedom of Information and Protection of Privacy Act.

Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416-327-2434.

Landmark CONSULTANTS

Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:04 PM
To: chief.plain@aamjiwnaang.ca
Cc: sharilyn Johnston; cjames@aamjiwnaang.ca
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Plain,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:15 PM
To: 'chief.plain@aamjiwnaang.ca'
Cc: sharilyn Johnston; 'cjames@aamjiwnaang.ca'
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Chief Plain,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:
<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

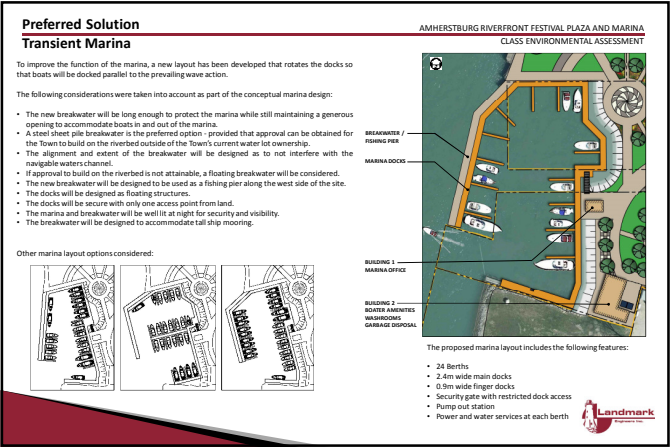
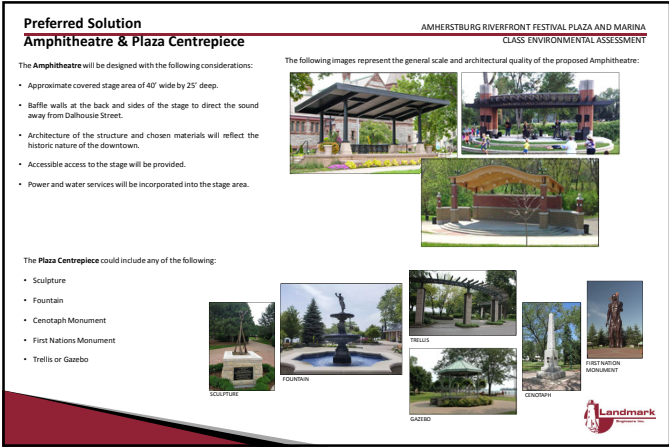
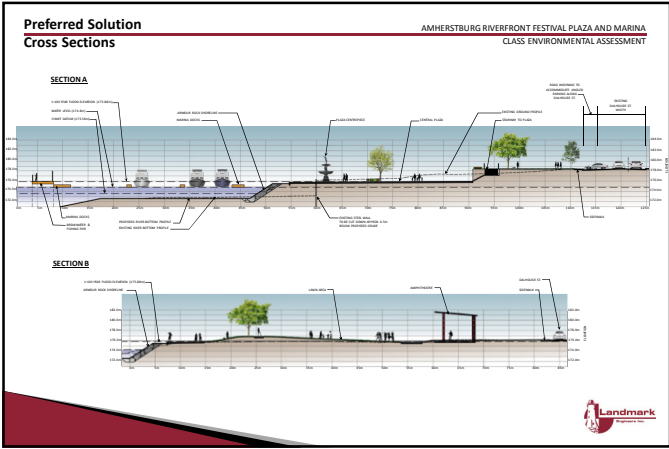
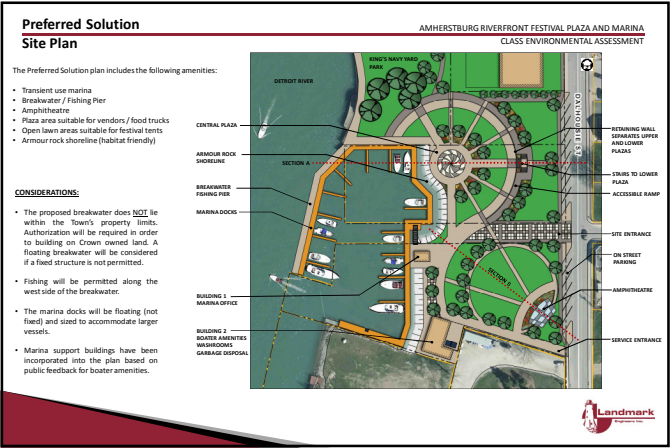
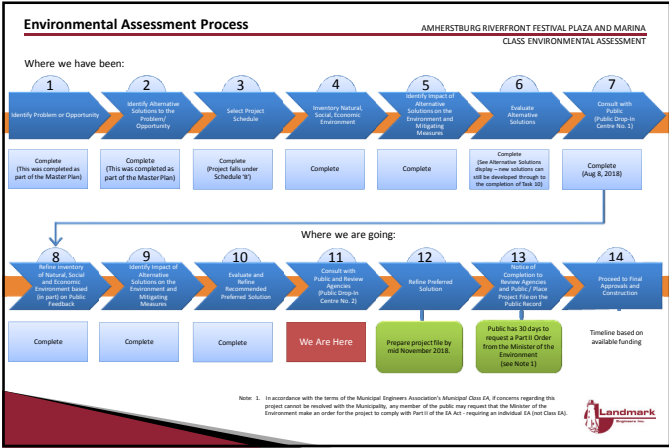
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.

Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.

Public Views

Boaters' Facilities

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Building 1: Office / ICE / BORDER SERVICES / SECURITY

Building 2: WASHROOM / SHOWER / FRESH DISPOSAL / LAUNDRY

RAMP TO DOCKS WITH SECURITY GATE

PHOTO / PICNIC AREA

FISHING PIER

Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN

NEW STEEL SHEET PILE WALL

BUILDING 1

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN

ARMOUR ROCK SHORELINE

STEEL SHEET PILE WALL

Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.

Plaza Site Works:
The estimate includes items such as:

- Site Preparation (Removals and Servicing)
- Retaining Walls
- Ramps and Stairs
- Concrete Flatwork
- Lighting
- Landscaping
- Dalhousie Street Widening

Shoreline Improvements:
The estimate includes items such as:

- Cut down existing steel walls
- Armour Stone Shoreline
- Steel Sheet Pile Walls

Marinas:
The estimate includes items such as:

- Breakwater
- Floating Docks
- Lighting
- Dredging
- Servicing

Structures:
The estimate includes the following items:

- Amphitheatre
- Marina Building 1
- Marina Building 2

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$400K - \$450K

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$1.5M - \$2.5M

Total Preliminary Project Budget Estimate
\$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES:

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does NOT include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.

Liz Michaud

Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Attachments: 3 - 18100361-R02 _Nov 23 2018_Env Summary_FINAL.pdf; 1 - Preferred Solution Slides.pdf

From: Liz Michaud
Sent: May 14, 2019 12:09 PM
To: 'Courtney Jackson' <cjackson@aamjiwnaang.ca>
Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Thank you for the update Courtney.

We did have some sampling done as part of the environmental testing at the site. I have attached the report from Golder Associates that would include the findings of the sediment sampling. (See section 3.4 of the attached report – sediment sampling)

With regards to the shoreline improvements, the intention is to fill in a small portion of the existing marina in front of the existing steel sheet pile wall and create a new rock revetment. The existing wall is in very poor condition at this time. We would also like to gain a small area of land in the north corner of the Marina to strengthen the connection to the park adjacent to the North. This will be achieved by cutting down the old steel wall, filling in a small area in front and adding a rock revetment. The Rock shoreline will create some habitat within the marina as well as being a sustainable choice for the shoreline.

There is a small area shown on the plan that will remain as a steel sheet pile wall. New steel sheet piling will be added in front of the old throughout this section. The reason for keeping the steel at that location is to provide a more functional layout for the proposed marina. In total it will be a large reduction in total steel sheet piling shoreline.

I have attached the Preferred Solution slides here as well so that you can easily reference the area on the plan that we intend to add rock revetment.

We had a study completed by BioLogic regarding natural habitat at the site. As part of the report, we were given construction timing windows that would be appropriate for in-water work based on the species found at the site and approvals that would be required from MNRF. Please let me know if you would be interested in this report as well.

If you require any other information please don't hesitate to ask.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Courtney Jackson <cjackson@aamjiwnaang.ca>

Sent: May 14, 2019 11:39 AM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Hi Liz,

I apologize for not following up with you after April 16th, our Committee didn't cover the consultation files until last week. There wasn't any additional comments other than the committee requested more information on the shoreline improvements of the project and has there been any sediment sampling before any in water work is completed?

Thank you,
Courtney Jackson

Courtney Jackson

Environment Worker

Aamjiwnaang First Nation

978 Tashmoo Ave.

Sarnia, ON

N7T 7H5

Tel: (519) 336-8410

Fax: (519) 336-0382

<https://www.facebook.com/AamjiwnaangEnvironment>

www.aamjiwnaang.ca

"This email, including any attachments, is for the sole use of the intended recipient and may contain confidential information. If you are not the intended recipient, please immediately notify us by reply email or by telephone, delete this email and destroy any copies. Thank you."

From: Liz Michaud <lmichaud@landmarkengineers.ca>

Sent: Tuesday, May 14, 2019 11:04 AM

To: Courtney Jackson <cjackson@aamjiwnaang.ca>

Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Morning Courtney,

We are about to send out the Notice of Completion for our project later this week. I was wondering if there were any comments from the Environment Committee meeting that we should include in the project file?

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud

Sent: April 25, 2019 12:14 PM

To: Courtney Jackson <cjackson@aamjiwnaang.ca>

Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Morning Courtney,

I just wanted to follow up to see if there were any comments from the Environment Committee meeting on April 16th.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Courtney Jackson <cjackson@aamjiwnaang.ca>

Sent: April 8, 2019 11:25 AM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Cc: Christine James <cjames@aamjiwnaang.ca>; Sharilyn Johnston <sjohnston@aamjiwnaang.ca>

Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Morning Liz,

Thank you for providing the information requested. The information will be presented to our Environment Committee on April 16, 2019. I will contact you with any additional comments after April 16, 2019.

Thank you,
Courtney Jackson

Courtney Jackson

Environment Worker

Aamjiwnaang First Nation

978 Tashmoo Ave.

Sarnia, ON

N7T 7H5

Tel: (519) 336-8410

Fax: (519) 336-0382

<https://www.facebook.com/AamjiwnaangEnvironment>

www.aamjiwnaang.ca

"This email, including any attachments, is for the sole use of the intended recipient and may contain confidential information. If you are not the intended recipient, please immediately notify us by reply email or by telephone, delete this email and destroy any copies. Thank you."

From: Liz Michaud <lmichaud@landmarkengineers.ca>

Sent: Monday, April 8, 2019 11:19 AM

To: Courtney Jackson <cjackson@aamjiwnaang.ca>

Cc: Christine James <cjames@aamjiwnaang.ca>; Sharilyn Johnston <sjohnston@aamjiwnaang.ca>

Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Morning Courtney,

Thank you for returning our call and taking the time to review our project. As we discussed on the phone, I have forwarded the last e-mail that we sent back in October. I have attached a PDF that illustrates our Preferred Solution for the site which shows our plan to soften the shoreline along the east side of the marina with an armour stone revetment. If you have any other questions or would like to discuss the project further, please don't hesitate to call.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud

Sent: October 30, 2018 2:15 PM

To: chief.plain@aamjiwnaang.ca

Cc: sharilyn Johnston <sjohnston@aamjiwnaang.ca>; cjames@aamjiwnaang.ca

Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Plain,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:
<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

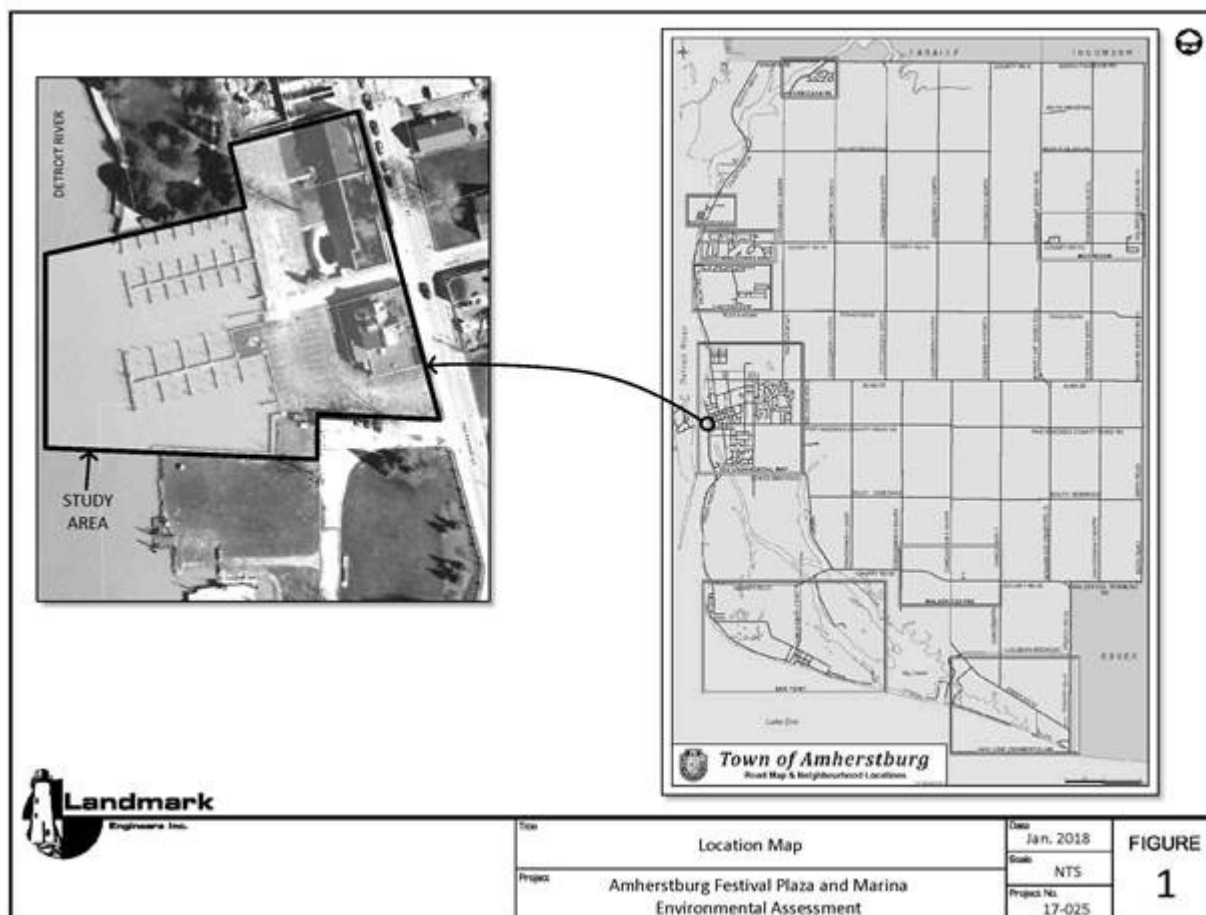
Caldwell First Nation
Correspondence

Liz Michaud

From: Liz Michaud
Sent: June-19-18 11:12 AM
To: 'nikki.orosz@caldwellfirstnation.ca'
Cc: 'chief.duckworth@caldwellfirstnation.ca'
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning Nikki,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential

environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 11:26 AM
To: 'chief@aamjiwnaang.ca'; 'sjohnston@aamjiwnaang.ca'; 'cjames@aamjiwnaang.ca'; 'drskoke@wifn.org'; 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'; 'Thomas.bressette@kettlepoint.org'; 'Valerie George'; 'myeengun@cottfn.com'; 'kriley@cottfn.com'; 'rsmith@cottfn.com'; 'chief.duckworth@caldwellfirstnation.ca'; 'nikki.orosz@caldwellfirstnation.ca'; 'Randall.phillips@oneida.on.ca'; 'catherine.cornelius@oneida.on.ca'; 'chief@munsee.ca'; 'glenn@munsee.ca'; 'denise.stonefish@delawarenation.on.ca'
Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud

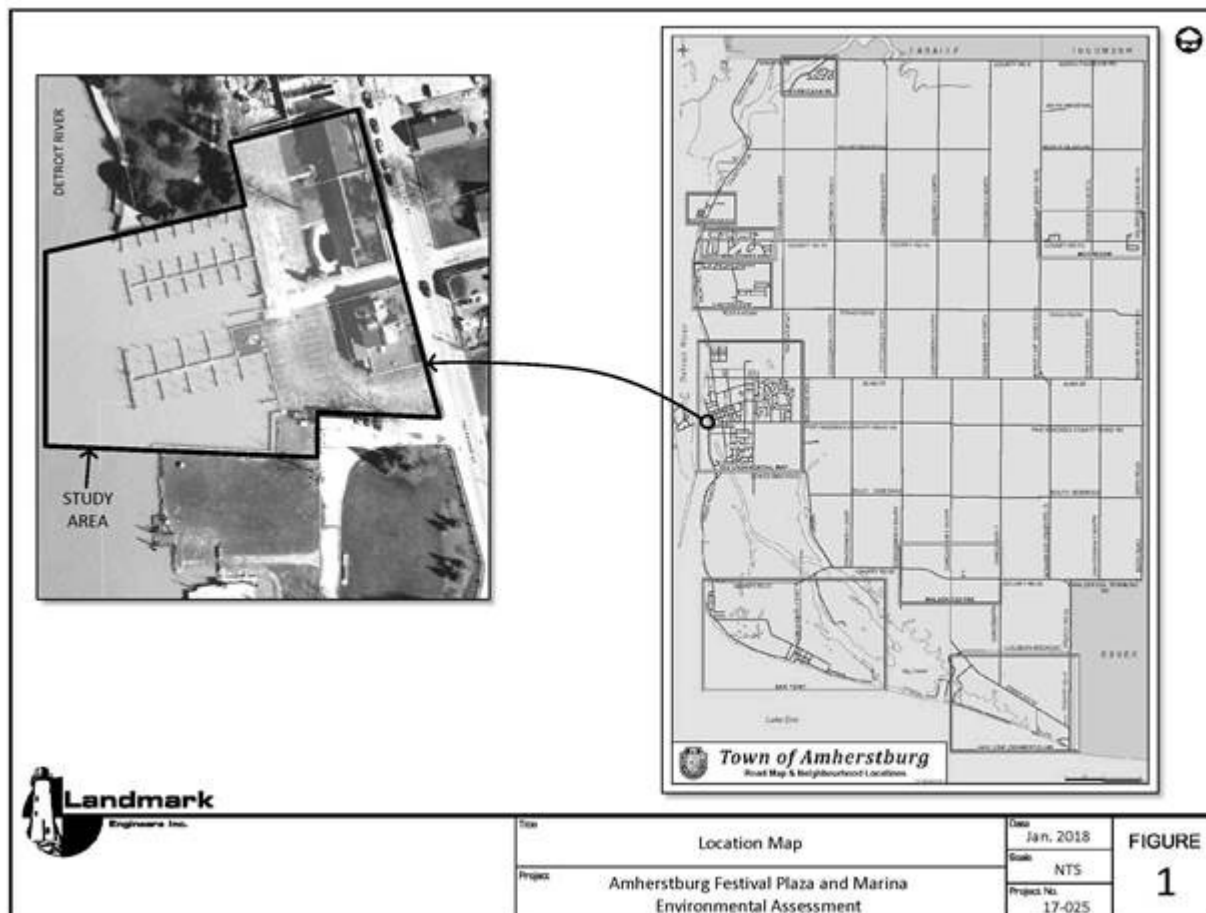


Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Mary Duckworth <chief.duckworth@caldwellfirstnation.ca>
Sent: June-25-18 11:26 AM
To: Liz Michaud
Subject: Leave of absence Re: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

I regretfully am on a leave of absence for an indeterminate length of time. Please forward correspondence to Nikki Orosz at nikki.orosz@caldwellfirstnation.ca.

Thank you, Miigwetch

Chief Mary Duckworth

--

Chi Miigwech



Mary Frances Duckworth
Ogiichi da kwe
Caldwell First Nation
14 Orange Street
Leamington, Ontario Canada
N8H 1P3

Tel: (519) 322 - 1766
Fax: (519) 322 - 1533
Toll: (800) 206 - 7522
chief.duckworth@caldwellfirstnation.ca

Confidentiality warning: If you have received this message in error, please notify the sender immediately and destroy this message. This email may contain confidential information. If you are not the intended recipient(s), you are notified that any review, distribution or copying of this message in part or in whole is strictly prohibited. Thank you for your understanding.

Avertissement de confidentialité: Si vous n'êtes pas le destinataire prévu de ce courriel, nous vous saurions gré de bien vouloir le détruire et de nous en aviser immédiatement. Ce courriel peut contenir des information confidentielles. Si vous n'êtes pas le destinataire prévu de ce courriel, soyez avisé maintenant que toute distribution, copie ou autre divulgation du contenu de cette transmission en partie ou on totalité est formellement interdite. Merci de votre compréhension.

Liz Michaud

Subject: FW: Archaeological Assessment Invitation - Amherstburg Festival Plaza
Attachments: 17-025 Caldwell Agreement.pdf

Good Morning,

Melody - Thank you for the agreement.

Shelley – We will be meeting at the site at 9am tomorrow. The site is located at 306 Dalhousie St. in Amherstburg. I will see you there.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Melody Watson <melody.watson@caldwellfirstnation.ca>
Sent: July-03-18 9:37 AM
To: Liz Michaud <lmichaud@landmarkengineers.ca>; Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>; Shelley Birch <clerk@caldwellfirstnation.ca>
Subject: Fwd: Land mark

Good morning Liz,

I have attached the signed agreement for the monitoring job for tomorrow. Please confirm the site address and time that our monitor Shelley Birch should be at tomorrow.

Miigwech,

Melody Watson
Senior Financial Officer
Caldwell First Nation
melody.watson@caldwellfirstnation.ca
519-322-1766 Work

From: Liz Michaud
Sent: June-29-18 10:01 AM
To: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>
Cc: Melody Watson <melody.watson@caldwellfirstnation.ca>
Subject: RE: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning Nikki,

I have attached an agreement for the Archaeological Monitoring. Please review and sign back if the terms are agreeable to you. If you have any questions or concerns, please don't hesitate to call.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Melody Watson <melody.watson@caldwellfirstnation.ca>

Sent: June-28-18 4:27 PM

To: Liz Michaud <lmichaud@landmarkengineers.ca>; Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>

Subject: Re: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Hello Liz,

They do not get travel time, only paid for on site work and Nikki will sign the contract.

Miigwech,

Melody Watson

Senior Financial Officer

Caldwell First Nation

melody.watson@caldwellfirstnation.ca

519-322-1766 Work

On Thu, Jun 28, 2018 at 4:22 PM, Liz Michaud <lmichaud@landmarkengineers.ca> wrote:

Thank you Melody.

I have a few questions for the agreement. Do your monitors get paid travel time at the \$45/hour or just their time on site? Who will be signing the agreement, Nikki or yourself?

I have drafted an agreement that I will send over as soon as I can input this information.

Regards,

Liz Michaud



Landmark Engineers Inc.

[2280 Ambassador Drive](#)

[Windsor, ON, N9C 4E4](#)

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Melody Watson <melody.watson@caldwellfirstnation.ca>

Sent: June-28-18 4:17 PM

To: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>

Cc: Liz Michaud <lmichaud@landmarkengineers.ca>; Ian Duckworth <ian.duckworth@caldwellfirstnation.ca>

Subject: Re: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Boozhoo everyone,

Caldwell First Nation charges \$45.00 per hour (minimum 4hrs) for each monitor and .54 per km round trip for each monitor.

Please ensure to provide all details for billing information to ensure a smooth process for both CFN and Landmark Engineers.

Let me know if anyone needs anything else.

Miigwech,

Melody Watson

Senior Financial Officer

Caldwell First Nation

melody.watson@caldwellfirstnation.ca

519-322-1766 Work

On Thu, Jun 28, 2018 at 2:16 PM, Nikki Orosz <nikki.orosz@caldwellfirstnation.ca> wrote:

Hi Liz,

Yes, we do require an agreement. I will ask Melody to respond to rates for Caldwell First Nation.

--

Nikki Orosz

Executive Administrator

Policy Analyst/Communications Officer

Caldwell First Nation

[14 Orange Street](#)

[Leamington | ON | N8H 1P5](#)

1-800-206-1722

T: 519-322-1766 | F: 519-332-1533

caldwellfirstnation.ca



From: Liz Michaud <lmichaud@landmarkengineers.ca>

Sent: June 28, 2018 12:18 PM

To: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>

Subject: RE: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Afternoon Nikki,

The site is small and the assessment is anticipated to only take a couple hours. I would assume that 1 monitor would be enough. Chippewas of the Thames and Aamjiwnaang First Nations will also be sending a monitor. Do you require an agreement for your monitor? If so, please send me your rates for remuneration and I can send you the agreement that we typically use for First Nation monitoring.

Thank you,

Liz Michaud



Landmark Engineers Inc.

[2280 Ambassador Drive](#)

[Windsor, ON, N9C 4E4](#)

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>

Sent: June-28-18 12:12 PM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Cc: Melody Watson <melody.watson@caldwellfirstnation.ca>; Ian Duckworth
<ian.duckworth@caldwellfirstnation.ca>

Subject: RE: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Importance: High

Hi Liz,

Yes, we are interested. Please let us know how many monitors we need and what the next steps are.

--

Nikki Orosz

Executive Administrator

Policy Analyst/Communications Officer

Caldwell First Nation

[14 Orange Street](#)

[Leamington | ON | N8H 1P5](#)

1-800-206-1722

T: 519-322-1766 | F: 519-332-1533

caldwellfirstnation.ca



**AGREEMENT FOR
ARCHAEOLOGICAL MONITORING SERVICES**

This agreement dated the 29th day of June in the year 2018

BETWEEN

Landmark Engineers Inc. (CONSULTANT)
2280 Ambassador Drive, Windsor, ON N9C 4E4
519-972-8052
Daniel M. Krutsch, P.Eng., President
dkrutsch@landmarkengineers.ca

AND

Caldwell First Nation (CONTRACTOR)
14 Orange St., Leamington, ON N8H 1P5
519-322-1766

Ms. Nikki Orosz, Executive Administrator, Policy Analyst/Communications Officer
nikki.orosz@caldwellfirstnation.ca

Caldwell First Nation (hereinafter Contractor) hereby enters into a contract with Landmark Engineers Inc. (hereinafter Consultant) which provides for the furnishing of professional services with respect to the project know as the **Amherstburg Festival Plaza Environmental Assessment (EA)**, and in order to furnish these services, the Consultant requires the Contractor to deliver certain services, **monitoring of Archaeological Assessment** and the Contractor warrants to provide the Services on the following terms and conditions:

1. Services: Contractor will provide the Services as further detailed on the attached Schedule "A" – Services, and "B" – Rate of Remuneration. In performing the Services, Contractor will exercise the standard of services at the time and location where the Services are performed.
2. Fees: Consultant shall pay Contractor a fee, calculated on a time basis, for the services described as such in Schedule "A". Fees shall be computed on the basis of hourly billing rates as included in Schedule "B". No other charges, fees or consideration are due outside these fees and expenses.
3. Payment: Contractor shall invoice monthly, or at intervals otherwise agreed to during the term of this Agreement. Such invoices shall include timesheets detailing time worked by Contractor to deliver the Services and pre-approved expense claims, supported by original receipts. Contractor shall be paid within 30 business days from the date properly submitted invoices are received.

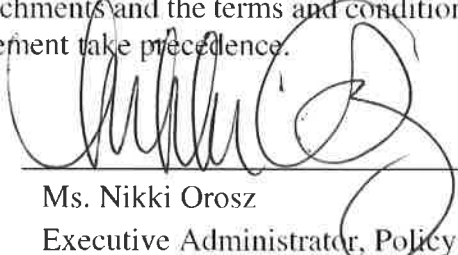
4. Indemnification and Insurance: Contractor shall indemnify and save harmless Consultant from and against all claims, losses, damages, costs, expenses, actions and other proceedings, occasioned by or attributable to any injury to or death of a person or damage to or loss of property arising from any willful or negligent act, omission or delay on the part of Contractor, its employees or agents in performing the Services or as a result of the Services. Contractor shall provide proof of certification or insurance as detailed on Schedule "A" prior to delivering the Services. Failure to provide the requested information may result in immediate termination of this contract.
5. Confidentiality: For the purposes of this Agreement, the term "Confidential Information" mean all information in whatever form, including without limitation, oral and written communications, reports, sketches, photographs, specifications, correspondence, and another other forms of documents and information that are indirectly or directly conceived, originated, prepared or received by Contractor as a result of the performance of the Services, except information falling into any of the following categories:
- a. Information that at the time of disclosure or acquisition is already known to Contractor and was not acquired under any obligation of confidentiality or as a result of any work performed, directly or indirectly for Consultant;
 - b. Information that at the time of disclosure or acquisition is or thereafter becomes part of the public domain through no act or failure to act on the part of Contractor or on the part of any third party under an obligation of confidentiality with respect to the information; or
 - c. Information that is disclosed, either directly or indirectly to Contractor via a third party who did not acquire the information from Landmark or under an obligation of confidentiality.

Contractor shall refrain from directly or indirectly using or drawing upon the confidential information for any purpose, commercial or otherwise, other than the delivery of the Services. This section 5 shall survive for two years after the termination of this Agreement.

6. Nature of Contract: Contractor is an independent contractor and shall not be deemed to be a servant, employee or agent of Consultant. Contractor agrees that this is a contract for the provision of services and no rights, privileges or considerations are due to Contractor outside of the expressly agreed provisions of this Contract. Contractor further acknowledges that it has had the opportunity to obtain independent professional legal, accounting and tax advice in this regard.

7. Governing Law: This Agreement shall be governed in accordance with the laws and the jurisdiction where the majority of the Services are provided. Contractor shall observe and comply with all applicable laws.
8. Entire Agreement: This Agreement constitutes the sole and entire agreement between the Contractor and Consultant relating to the Project and supersedes all prior agreements between them, where written or oral respecting the subject matter hereof and no other terms, conditions or warranties, whether expressed or implied, shall form a part hereof. This Agreement may be amended only by written instrument signed by both Contractor and Consultant. All conflict between attachments and the terms and conditions of this Agreement, the terms and conditions of this Agreement take precedence.

CONTRACTOR



Ms. Nikki Orosz

Executive Administrator, Policy Analyst/Communications Officer

Date:

June 29/18

CONSULTANT



Daniel M. Krutsch, P.Eng.
President

Date:

JUNE 29, 2018

Schedule A: Services

Attached to and forming part of the Agreement Between:

Caldwell First Nation (hereinafter called the "Contractor")

and

Landmark Engineers Inc. (hereinafter called "Landmark")

Effective: June 29, 2018

This Attachment details the Services, Fees, Pre-qualifications and additional attachments forming part of the above described Agreement.

Services:

To provide natural heritage and archeological monitoring services to Landmark in regard to activities associated with the Project. This agreement is terminable on 30-day(s) notice to Contractor by Landmark.

In connection with the delivery of the Services, the Contractor shall:

- Follow all Health & Safety protocols in place with respect to the Project, the Services, the site where the Contractor is providing Services, and attend and participate in any training requirements related to the Services or the Project. Failure to do so shall result in immediate termination of this agreement;
- Follow crew leader's direction with respect to delivery of the Services on the Project site;
- Participate in any required liaison with community members or clients, as deemed suitable by Landmark;
- Obtain input, advice and guidance from environmental resource specialists (where applicable);
- Advise the crew leader or other appointed Landmark liaison regarding timing of critical activities requiring monitoring;
- Establish and maintain a daily agenda of hours worked and a summary of work completed; and
- If required at the request of the crew lead or other Landmark representative, prepare a summary report at the conclusion of a project that summarizes the activities in relation to the above environmental requirements

(hereinafter called the 'Services')

Fees:

Unless otherwise authorized by Landmark, the above work and associated deliverables will be completed by Contractor for the following fees (excluding HST):

Rate	See Schedule "B"
Mileage	See Schedule "B"

Pre-Qualification Requirements:

Valid driver's licenses

Proof of vehicle insurance

Other client-specific requirements listed below: See Schedule "B"

Schedule B: Rate of Remuneration

- Payment will be based on actual time and expenses to complete the scope of services to a pre-approved upset limit of \$250.00 (excluding HST). The upset limit fee assumes 4 hours of on-site monitoring plus mileage (to and from the site). The upset limit fee shall not be exceeded without prior authorization from the Consultant. Additional services, authorized by the Consultant, not included in the fee will be paid according to the rates below.
- Payment will be based on a maximum rate of \$45.00 per hour for the Contractor monitor, as and when requested by Landmark or its designate, which is inclusive of any and all fees, deductions or other mark-ups, excluding HST if applicable.
- Each Contractor monitor will bill a minimum of four (4) hours for each day they are dispatched by Landmark to the Project location.
- Payment for the monitor's mileage will be at a rate of \$0.54 per km driving from the community to the Project site.
- Per Diem mileage rates will be paid to a maximum of \$125 per day.
- Contractor is requested to submit approved invoices in a timely manner. Invoices should include the full names of the monitor(s), hours worked and date range for the invoicing period. All invoices should be addressed directly to Landmark, and the relevant project should be noted in the text of each invoice.
- Landmark agrees to not disclose particulars about hourly charges or invoicing to the Contractor monitor.
- Contractor warrants that the Contractor monitor shall have Workplace Safety and Insurance Board coverage for the duration of the Project, and all other applicable withholding and other source deductions required by law, in connection with the Contractor monitor.

Liz Michaud

From: Liz Michaud
Sent: July-25-18 2:58 PM
To: 'chief.duckworth@caldwellfirstnation.ca'
Cc: Nikki Orosz
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Mary Duckworth,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

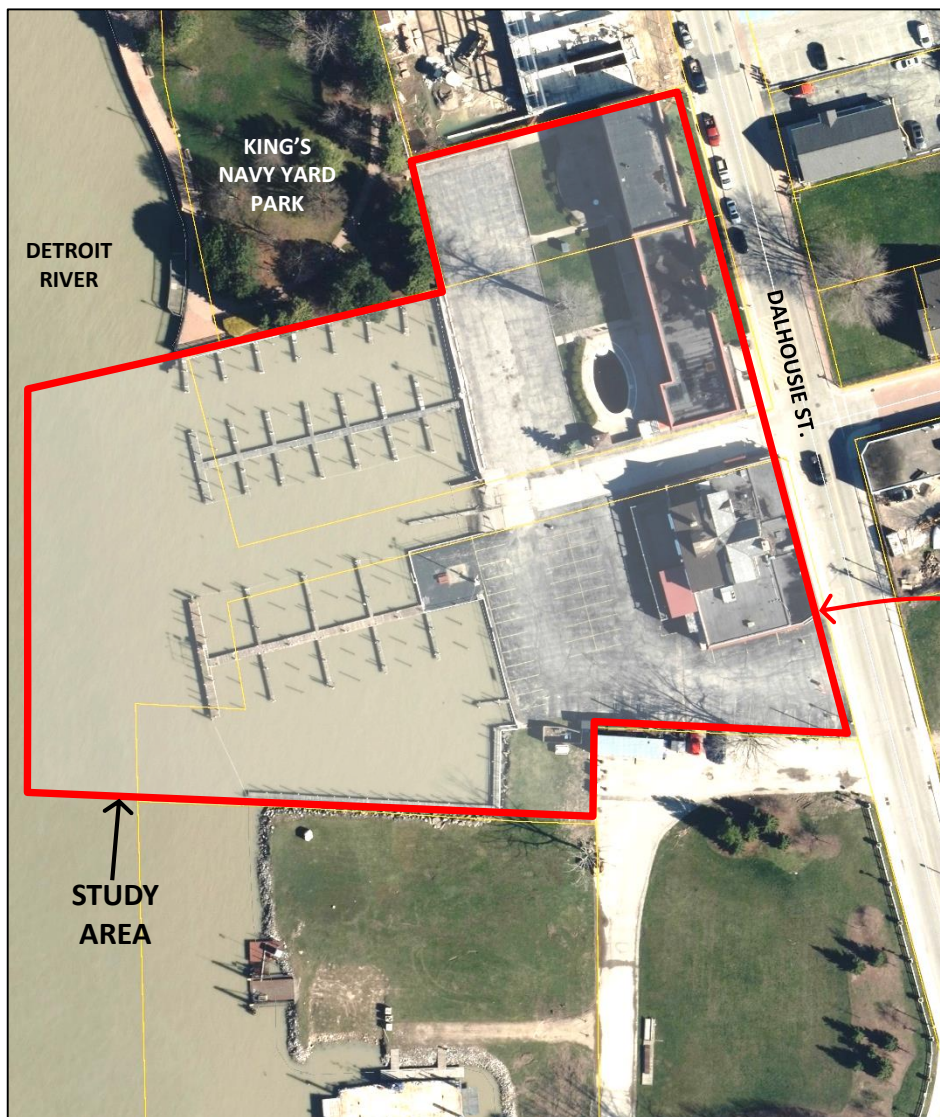
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

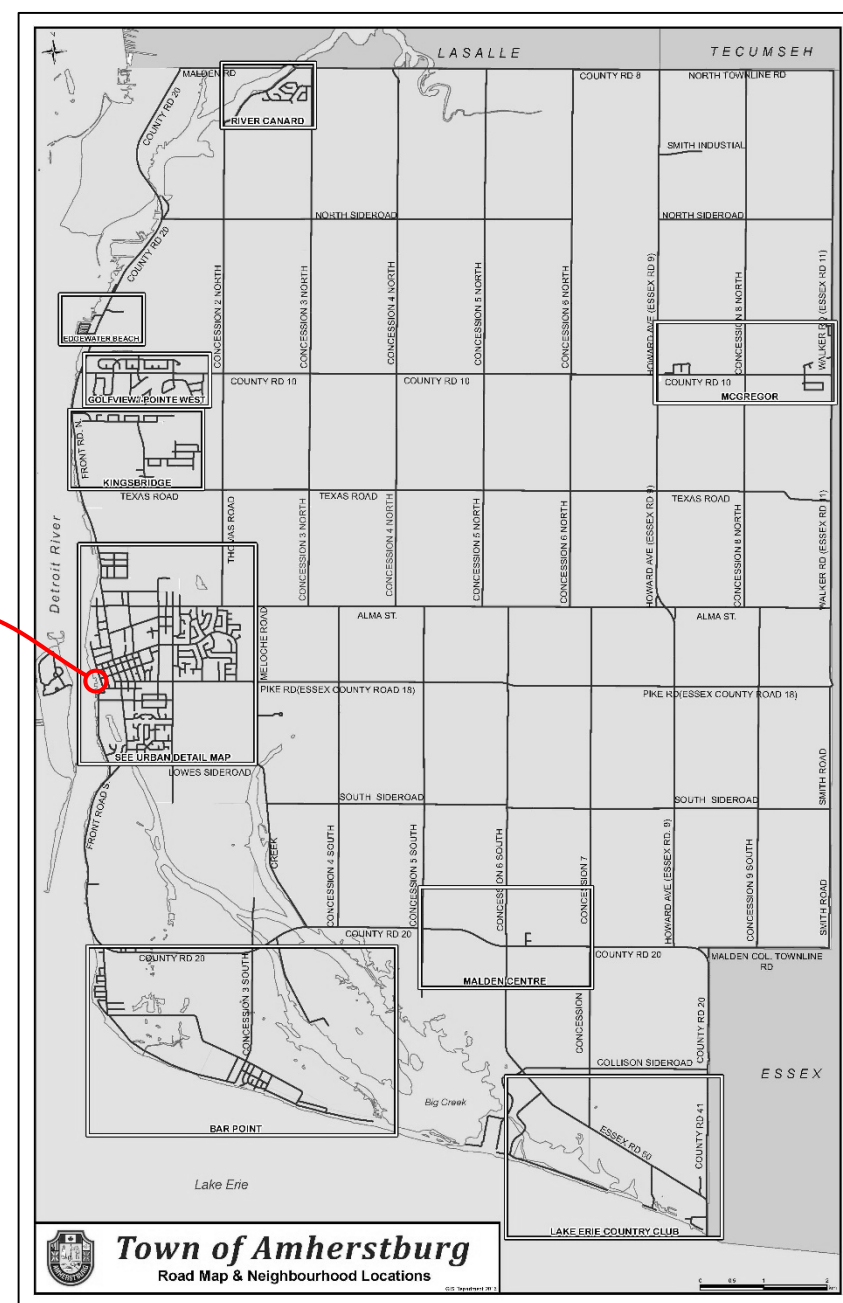
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

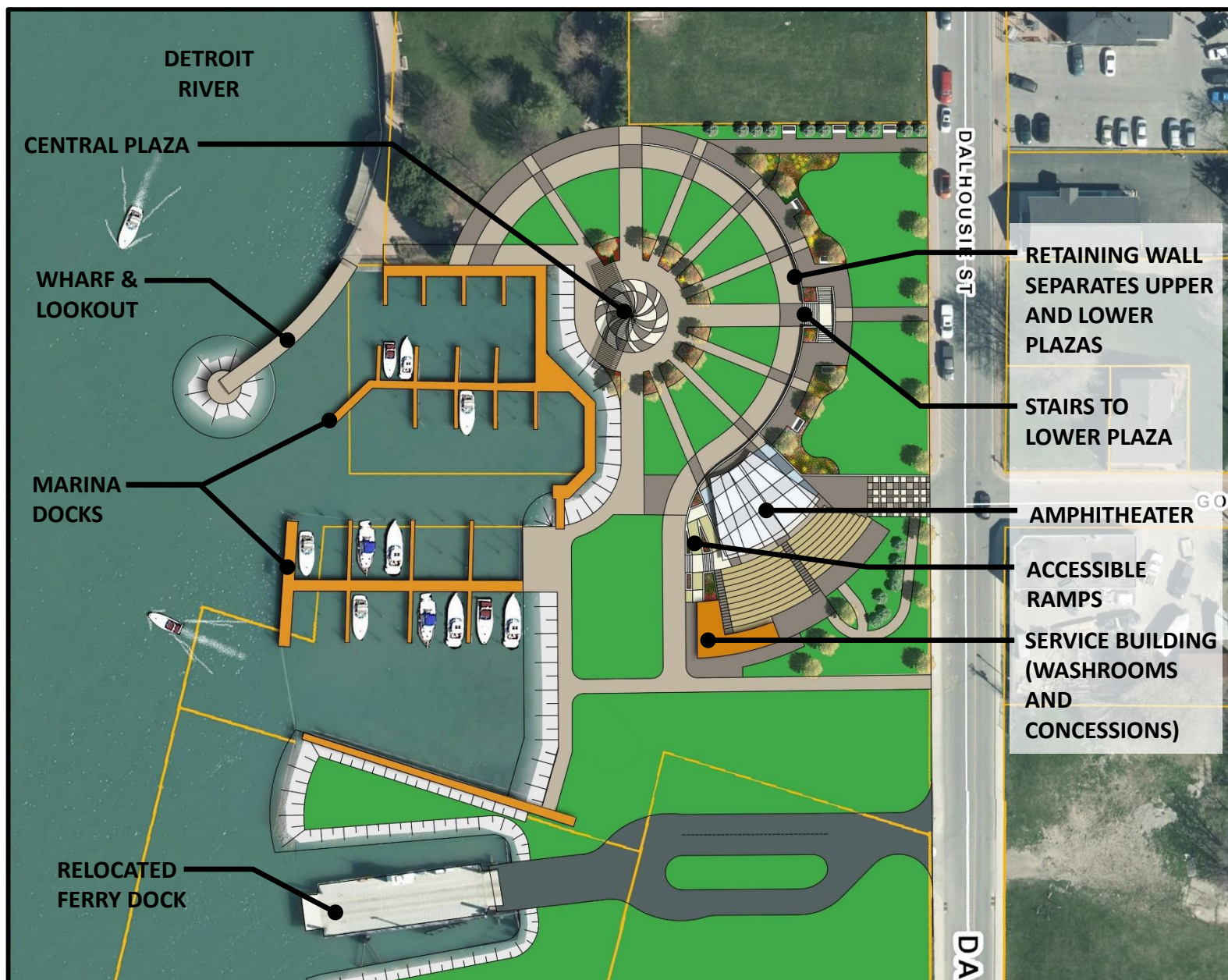
Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON





Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale	NTS	
		Project No.	17-025	

Liz Michaud

From: Mary Duckworth <chief.duckworth@caldwellfirstnation.ca>
Sent: July-25-18 2:59 PM
To: Liz Michaud
Subject: Leave of absence Re: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

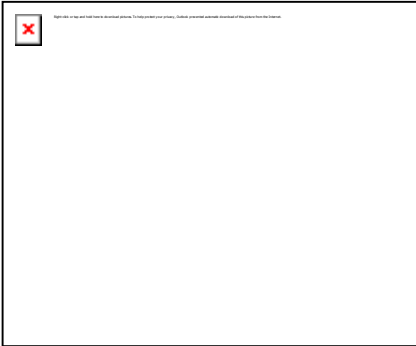
I regretfully am on a leave of absence for an indeterminate length of time. Please forward correspondence to Nikki Orosz at nikki.orosz@caldwellfirstnation.ca.

Thank you, Miigwetch

Chief Mary Duckworth

--

Chi Miigwech



Mary Frances Duckworth
Ogiichi da kwe
Caldwell First Nation
14 Orange Street
Leamington, Ontario Canada
N8H 1P3

Tel: (519) 322 - 1766
Fax: (519) 322 - 1533
Toll: (800) 206 - 7522
chief.duckworth@caldwellfirstnation.ca

Confidentiality warning: If you have received this message in error, please notify the sender immediately and destroy this message. This email may contain confidential information. If you are not the intended recipient(s), you are notified that any review, distribution or copying of this message in part or in whole is strictly prohibited. Thank you for your understanding.

Liz Michaud

From: Liz Michaud
Sent: August-13-18 3:21 PM
To: Nikki Orosz
Cc: chief.duckworth@caldwellfirstnation.ca
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Ms. Orosz,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

In order to protect the proposed marina, a breakwater that extends along the shoreline is proposed along the Detroit River. The breakwater will most likely be floating, and would be able to move in during the winter to protect it and the docks from ice. A new layout for the marina will be developed as part of this study to maximize the number of docks and maintain safe maneuvering fairways for boats. A copy of the preliminary concept plan is attached to the Notice of Intent.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

If you would prefer to receive the attached information by hard copy mail please let me know and I will have a copy mailed out to you. If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: July-25-18 2:58 PM
To: 'chief.duckworth@caldwellfirstnation.ca' <chief.duckworth@caldwellfirstnation.ca>
Cc: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Mary Duckworth,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Welcome to the Public Drop-In Centre No. 1

> All relevant information regarding this project (including the display material presented today) is available for public review on the Town of Amherstburg's website (www.amherstburg.ca).

> Please sign to record your attendance.

> Please review the display material and provide any comments on the sheet provided. You may submit your comments by mail / fax / e-mail or you may place them in the Comment Box located on the sign-in table.


> All comments for this Drop-In Centre must be received by **August 13th, 2018** to be given consideration in the development of the preferred solution for this project. Contact information for the Project Team is available below, and also on the comment sheet provided.

> The Project Team members present will be pleased to discuss any questions you may have.


Project Team

This study has been initiated by the Town of Amherstburg. Landmark Engineers Inc. has been retained by the Town to serve as the Lead Consultant on the project.


Any comments, questions or suggestions relevant to this study should be directed to the following primary members of the Project Team:



David M. Krutusch, PEng
Landmark Engineers Inc.
2380 Ambleside Drive
Windsor, Ontario N9C 4K4
Phone: (519) 972-8022
Fax: (519) 972-8644
Email: dkrutusch@landmarkengineers.ca



Mark W. Goleis, PEng
Town of Amherstburg
3250 Melville Rd.
Amherstburg, Ontario N0V 2T6
Phone: (519) 756-5458
Fax: (519) 756-7111
Email: mgoles@amherstburg.ca



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process

Amherstburg Parks Master Plan

Master Plan use in EA Process

The Municipal Class EA document specifically addresses the use of Master Plans.

Master Plans are defined as:

A long range plan which integrates infrastructure requirements for existing and future land use with environmental assessment principles. At a minimum, a Master Plan addresses Phases 1 and 2 of the Municipal Class EA process.

	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Landmark Engineers Inc.	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓

Parks Master Plan Project

> The Town of Amherstburg retained Montha Brown Planning Consultants (MBPC) to undertake the Parks Master Plan project.

> Two Public Information sessions for the Parks Master Plan were held in October 2017 by MBPC.

> MBPC also conducted stakeholder interviews (November 2017), monitored an online public engagement forum (www.townofamherstburg.ca), and conducted an online community survey (September – November 2017) to obtain feedback regarding the Parks Master Plan.


Community Engagement Feedback Highlights

> 62% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.

> In an online poll, 94% of respondents were in support of the proposed redevelopment plan for the Duffy's site.

> Waterfront parks and facilities were listed as greatest importance in Amherstburg Parks for 88% of the respondents (over playgrounds, splashpads, and sports facilities).

> Festivals and fairs were the second highest response (72%) when asked what type of events respondents participate in outdoors. (Highest response was use of trails / parks for walking / jogging).



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

Site Location

Study Area Context

The aerial photos of the study area (along the water) will be extended to include the limits of the existing docks.

Aerial Photos

The aerial photos depicted in these images were taken in the spring of 2017. The buildings that existed on the property have since been demolished.







AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Background and Project Objectives

Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property on the Detroit River waterfront as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was conducted in September 2017, aimed at soliciting stakeholder feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project and the potential environmental impacts it may have, an environmental assessment needs to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

In January 2018, Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.


Project Objectives

> Prepare a site plan that incorporates a park with an amphitheatre.


> Assess the condition of the existing marina.

> Create a marina layout that is more functional and has a larger capacity than the existing marina.

> Design a breakwater to improve the function of the marina and mitigate wave action.



EXISTING SITE LOOKING NORTH



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process

Where we have been:

1. Identify Problem or Opportunity
2. Develop Assessment / Transient / Temporary / Permanent
3. Develop Project / Temporary / Permanent
4. Develop Assessment / Transient / Temporary / Permanent
5. Develop Assessment / Transient / Temporary / Permanent
6. Develop Assessment / Transient / Temporary / Permanent
7. Develop Assessment / Transient / Temporary / Permanent

Where we are going:


8. Develop Assessment / Transient / Temporary / Permanent
9. Develop Assessment / Transient / Temporary / Permanent
10. Develop Assessment / Transient / Temporary / Permanent
11. Develop Assessment / Transient / Temporary / Permanent
12. Develop Assessment / Transient / Temporary / Permanent
13. Develop Assessment / Transient / Temporary / Permanent
14. Develop Assessment / Transient / Temporary / Permanent

Date to be Determined (September 2018)

Present project file by end October 2018

Public has 30 days to request a Public Hearing from the Minister of the Environment (see Notice 1)

Timeline based on Amherstburg Planning



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

Physical Environment

Site Topography

The subject property generally slopes down from north to south and from east to west. Due to the high level of historic disturbance on the site, it is unclear where the historic shoreline was originally located, but it is believed that some of the lower portions of the site was filled in to create more land adjacent to the marina.

When the buildings were demolished in 2017, affected portions of the site were filled and graded to drain toward the Detroit River.

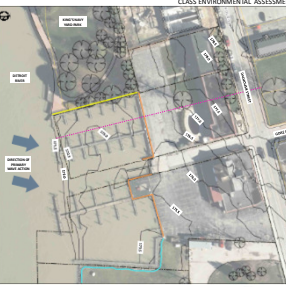
Marina Bathymetry

The river bottom throughout the existing marina is generally flat and appears to drop off into the channel near the west end of the docks.


At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.

Marina Climate

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.



Legend:
North
East
West
South
North
East
West
South
North
East
West
South



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Purpose, Problem and Process

Purpose

This Drop-In Centre is intended to:

> Present the Problem / Opportunity Statement for the Project.

> Introduce the members of the Project Team.

> Present the scope of the Class Environmental Assessment (Class EA) process.

Problem / Opportunity Statement


"This study intends to achieve a design for a public festival plaza and transient marina that will improve the existing vacant land, enhance the connection to King's Navy Yard Park and restore the existing dilapidated marina."

Environmental Assessment (EA) Process

> This project will follow the planning process set out in the Municipal Engineers Association's Municipal Class Environmental Assessment (Class EA). A copy of this document, which sets out the details of the approved Planning and Design Process for municipal projects (such as this), is on-site and is available for review by the public.

> Since the Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment will be focusing on new construction of a plaza and marina, the Project Team has concluded that this project falls under Schedule "B" of the Municipal Class EA.

> For "Schedule B" projects, only one point of Public Consultation is required. Given the high-profile nature of this project, however, the Project Team has elected to increase the level of public consultation (over and above the minimum requirement), and host an extra Public Drop-In Centre, creating a total of two Public Consultations for this project.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

The following displays are intended to present the Environmental Inventory of the Study Area that has been compiled by the Project Team. This inventory documents the existing conditions of the site in terms of the following categories:

Physical Environment




- Site Location
- Physical Infrastructure (e.g.: utilities, existing marina condition, etc.)
- Topography
- Bathymetry and Wave Climate


Natural Environment

- Aquatic Habitat
- Species at Risk

Social / Economic Environment

- Land Ownership
- Adjacent Land Use
- Heritage & Archaeological Resources



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

Physical Environment

Existing Shore Protection

The existing steel sheet pile breakwater along the north side of the marina, adjacent to King's Navy Yard Park, has been impacted and appears to be in poor condition.

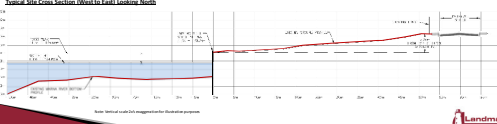
The rock shore protection along the south portion of the basin is in fair condition.


Marina Docks

Since the closure of the Marina, the docks have not been maintained and are generally in poor condition. Some of the docks may be repaired for reuse.

The layout of the "Tentative" between the existing docks does not meet the minimum standard recommended for safe mooring of boats in and out of a marina. It is recommended that the marina docks be removed and reconfigured according to current marina design standards.

Physical Site Cross Section (Viewed to East Looking North)





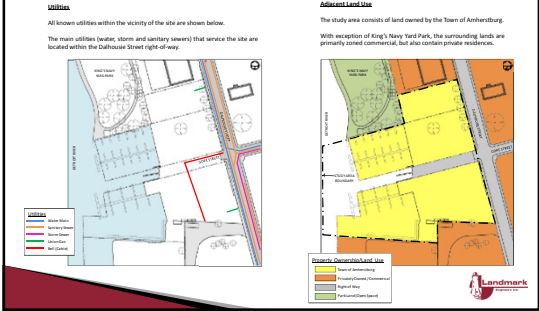
Environmental Inventory

Utilities & Adjacent Land Use

Utilities

All known utilities within the vicinity of the site are shown below.

The main utilities (water, storm and sanitary sewers) that service the site are located within the Dalhousie Street right-of-way.

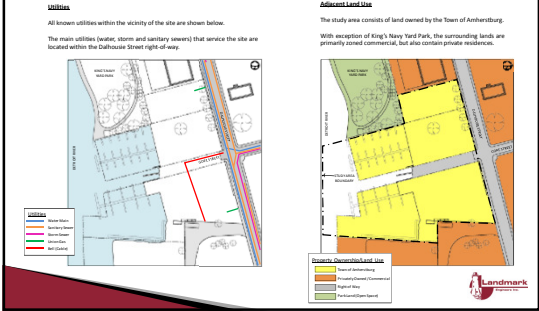


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Adjacent Land Use

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily zoned commercial, but also contain private residences.



Evaluation of Alternatives

Alternative A : Passive Park

The passive park alternative would be an extension to King's Navy Yard Park with a view of the transient marina.

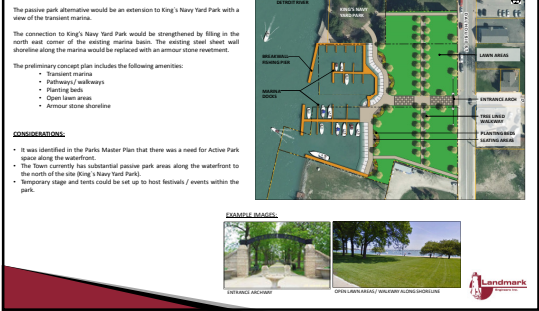
The connection to King's Navy Yard Park would be strengthened by filling in the north east corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn areas
- Armour stone shoreline

CONSIDERATIONS:

- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.

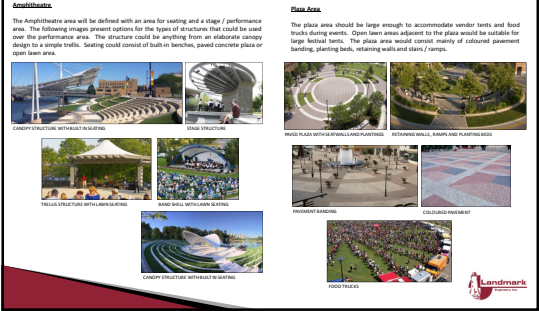


Design Considerations

Amphitheatre and Plaza

Amenities

The Amphitheatre area will be defined with an area for seating and a stage / performance area. The following images present options for the types of structure that could be used over the performance area. The structure could be anything from an elaborate canopy design to a simple built-in seating. Seating could consist of built-in benches, paved concrete plaza or open lawn area.

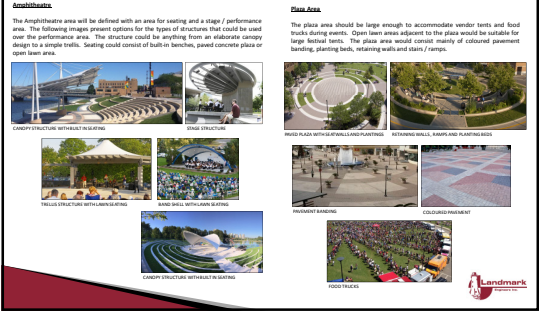


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Place Area

The place area should be large enough to accommodate vendor tents and food trucks during events. Open lawn area adjacent to the plaza would be suitable for large festival tents. The place area would consist mainly of coloured pavement paving, planting beds, retaining walls and stairs / ramps.



Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMOX Consultants Inc. Representatives from the Town of Amherstburg were present during the Archaeological Assessment (Guided) First Nations. Chippewa of the Thames First Nation and Anishinaabe First Nations.

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Geotechnical Investigation

Golden Associates Inc. was retained to complete a geotechnical assessment of the site as part of the Class EA. Golden's findings included the following:

Subsurface Conditions: Boreholes advanced across the site encountered variable fill material (silty sand, sand and gravel, sandy silt (clay) to depths ranging from 0.5m to 4m below grade). Below the fill, the native soils encountered were comprised primarily of cohesive sandy silt/clays.

Groundwater Quality: Based on the results of the investigations carried out to date, no environmental impacts to on-site groundwater quality have been identified.

Soil Quality: The impacts to soil quality that have been identified at the site have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.

Sediment Quality: Based on the results of the sediment sampling, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (1 sample) and bismuth (2 samples), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples analyzed.

Risk Management Measures:

1. Impacted soil can be addressed through implementation of risk management measures, including construction of a lift cap (layer of clean soil) or hard cap (concrete) over the site. Any metals soil that would need to be removed from the site would likely be considered "non-hazardous" and could be disposed of at the local landfill.
2. In the event that dredging of the sediments in the existing marina basin becomes necessary, the sediments would be characterized as "non-hazardous" and could be disposed of at the local landfill.

Evaluation of Alternatives


Alternative B : Expanded Marina

In June of 2018, a petition was received by the Town asking that a boat launch with appropriate number of parking spaces for vehicles, the boat trailers, a wharf and lookout (the shoreline fishing) and transient marina slips be incorporated into the final design of the site.

A preliminary design concept for such a facility is presented here, with parking and turn-around spaces provided, based on other similar-sized facilities in Essex County. To minimize the interference with the traffic on Dalhousie Street, a one-way / not in proposed, with ample room for trailers to turn and back into the boat launch within the site.

CONSIDERATIONS:

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront as identified in the Parks Master Plan.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.




Design Considerations

Transient Marina and Breakwaters

Breakwaters

Breakwaters are offshore structures that protect marinas and shorelines from the erosive force of waves. As shown in the example images below, they are typically constructed of stone or concrete. The existing marina basin is currently exposed to the Detroit River, with no breakwater to protect the marina from wave action. This study will determine an appropriate breakwater size, orientation and materials to sufficiently protect the proposed transient marina design.




AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Transient Marina

A transient marina offers temporary docking for boats and does not offer reserved slips. The marina would be available for boaters who wish to dock their boat while visiting Amherstburg.

The current layout of the "transient" marina within the existing docks does not meet the minimum standard for safe maneuvering of boats in and out of the marina. This study will develop a new dock layout that will meet current marina design guidelines for safe maneuvering.



Evaluation of Alternatives

Alternative Solutions

The project team identified three alternatives that were considered as options for the site development; Active Park, Passive Park and Expanded Marina. The advantages and disadvantages for each option are presented below:

ALTERNATIVE A: PASSIVE PARK

Advantages:

- Walking trails
- Large lawn areas
- Landscaping
- Trails shade structures
- Transient marina
- Shoreline improvements

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.

Disadvantages:

- Does not satisfy the need for active parkland along the waterfront that was identified in the Parks Master Plan.

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

ALTERNATIVE B: EXPANDED MARINA

Advantages:

- Boat launch
- Parking for boat trailers and cars
- Expanded transient marina
- Fishing pier
- Shoreline improvements

Disadvantages:

- Opportunity to increase the existing marina basin.
- Site would be available for use by the entire community.
- Opportunity to include a wharf with fishing area.

Disadvantages:

- Brings high volume of truck and trailer traffic to the downtown streets.
- Parking area will need to be built on waterfront land.
- Site is usable for only the boating community rather than the entire community.
- Does not satisfy the need for active parkland along the waterfront that was identified in the Parks Master Plan.

Evaluation of Alternatives

Alternative C : Active Park

Landmark was retained by the Town in 2016 to prepare this preliminary concept plan. The plan has been presented to the public at two previous Public Information Centres for the Parks Master Plan and made available to the Town's website (link the Burg for consideration and comment).

This concept plan intends to strengthen the connection to King's Navy Yard Park by filling in the north west corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

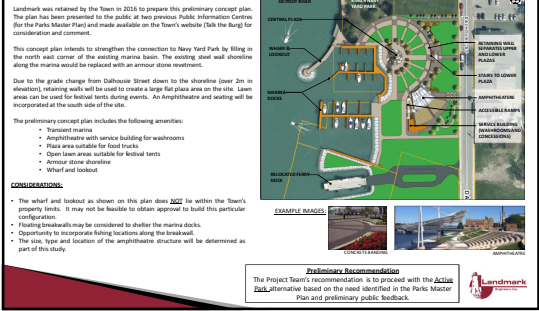
Due to the grade change from Dalhousie Street down to the shoreline (over 2m in elevation), retaining walls will be used to create a large flat place area on the site. Large areas can be used for festival tents during events. An Amphitheatre and seating will be incorporated at the south side of the site.

The preliminary concept plan includes the following amenities:

- Transient marina
- Amphitheatre with service building for washrooms
- Place area suitable for food trucks
- Open lawn areas suitable for festival tents
- Armour stone shoreline
- Wharf and Lookout

CONSIDERATIONS:

- The wharf and lookout as shown on this plan does not fit within the Town's property limits. It may not be feasible to obtain approval to build this particular configuration.
- Fishing breakwaters may be considered to shelter the marina docks.
- Opportunity to incorporate fishing structures along the breakwater.
- The size, type and location of the amphitheatre structure will be determined as part of this study.



Next Steps

- All comments received from today's meeting will be reviewed by the Project Team and used to help define the Preferred Solution.
- A second Public Drop-in Centre will be held in late September to present the Preferred Solution.
- All comments received from the second Drop-in Centre will be reviewed and used to help refine the Preferred Solution. The project website will then be updated and a Notice will be published, alerting the public that the 30-day public review period for this Class EA has commenced.
- Provided that all outstanding issues are resolved and no Part II Orders are requested, the project may proceed to final approvals and construction upon completion of the 30-day public review period.

We encourage you to fill out a comment sheet so that your issues and concerns can be addressed early in the planning process and to have your comments become part of the public record.

Thank you.

Privacy Information

All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public as described in section 37 of the Freedom of Information and Protection of Privacy Act.

Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416-327-2434.

Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:16 PM
To: Nikki Orosz
Cc: 'chief.duckworth@caldwellfirstnation.ca'
Subject: FW: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Ms. Orosz,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:17 PM
To: Nikki Orosz
Cc: 'chief.duckworth@caldwellfirstnation.ca'
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Ms. Orosz,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:

<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

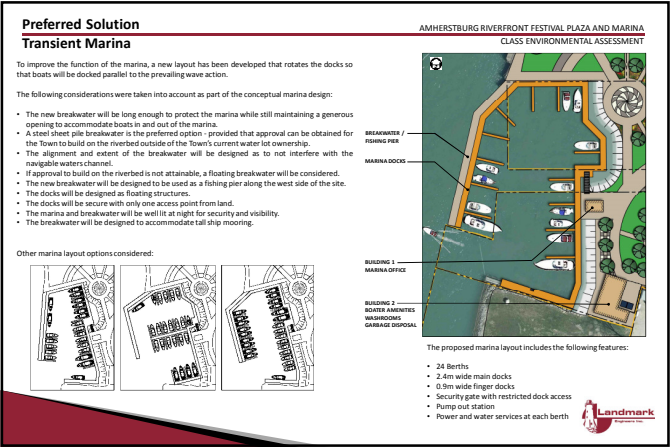
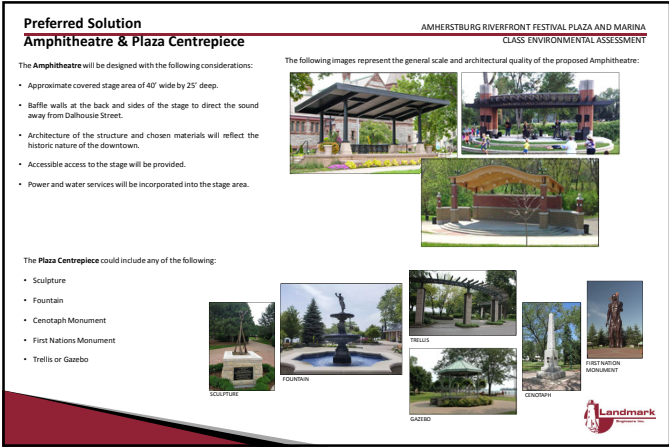
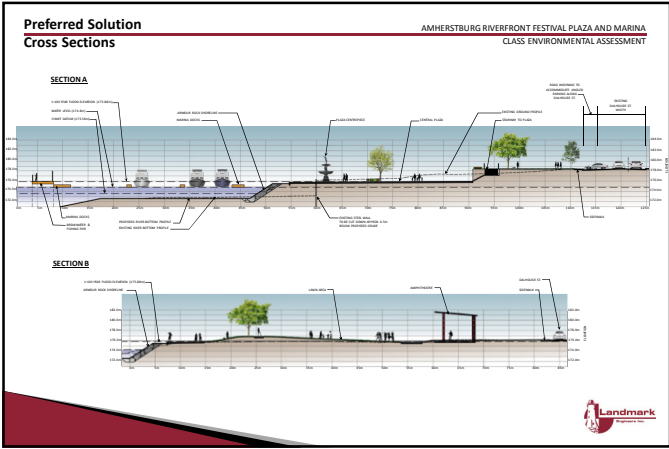
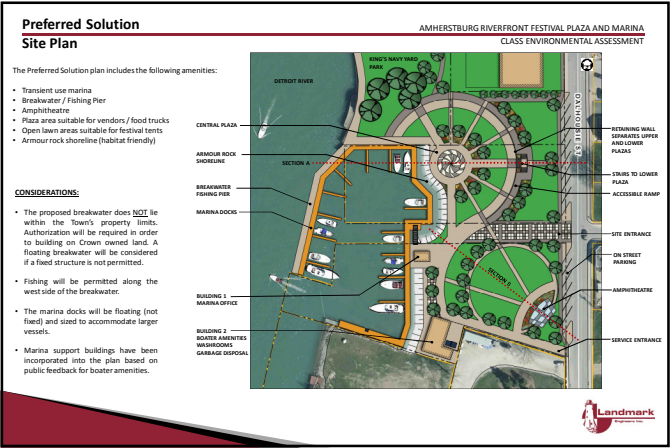
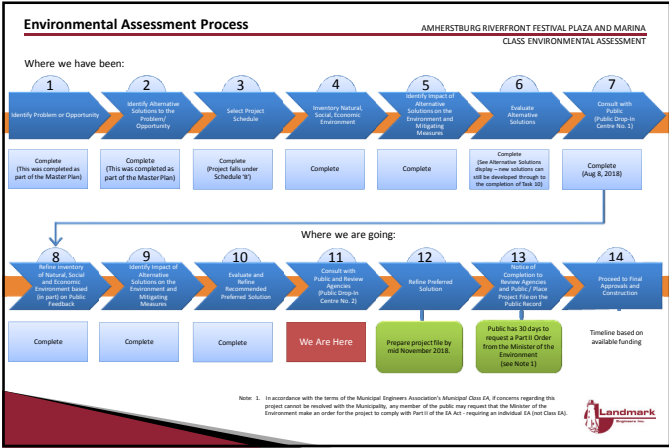
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.





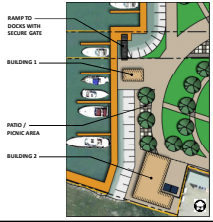
Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

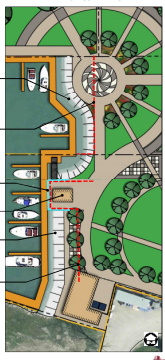


Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.

Plaza Site Works:
The estimate includes items such as:

- Site Preparation (Removals and Servicing)
- Retaining Walls
- Ramps and Stairs
- Concrete Flatwork
- Lighting
- Landscaping
- Dalhousie Street Widening

Shoreline Improvements:
The estimate includes items such as:

- Cut down existing steel walls
- Armour Stone Shoreline
- Steel Sheet Pile Walls

Marinas:
The estimate includes items such as:

- Breakwater
- Floating Docks
- Lighting
- Dredging
- Servicing

Structures:
The estimate includes the following items:





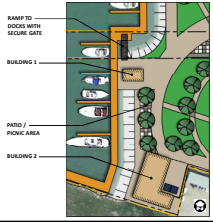
- Amphitheatre
- Marina Building 1
- Marina Building 2

Total Preliminary Project Budget Estimate
\$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES:

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does NOT include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

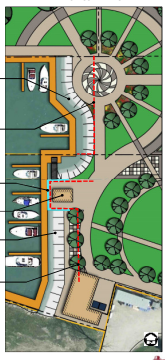


Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Liz Michaud

From: Liz Michaud
Sent: February-11-19 3:43 PM
To: Nikki Orosz
Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Nikki,

Back in late November, we discussed coming out to meet with you to present our project and discuss any issues or concerns you may have with the proposed plan. Would you still be interested in setting a meeting? I know we said we would touch base in the new year as you were not sure about schedule.

We would be happy to meet with you at your earliest convenience. Feel free to call or e-mail and we can arrange a time.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>

Sent: November-28-18 11:30 AM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Cc: chief.duckworth@caldwellfirstnation.ca

Subject: Re: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Hi Liz,

Is this the project you called about? Can you call me at (226) 236-1108?

Thank you,

Nikki

On Tue, Oct 30, 2018 at 2:17 PM Liz Michaud <lmichaud@landmarkengineers.ca> wrote:

Good Afternoon Ms. Orosz,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:
<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

--

Nikki Orosz
Executive Administrator
Policy Analyst/Communications Officer

Caldwell First Nation
14 Orange Street
Leamington | ON | N8H 1P5

1-800-206-1722
T: 519-322-1766 | F: 519-332-1533
caldwellfirstnation.ca

Liz Michaud

From: Liz Michaud
Sent: March 22, 2019 2:42 PM
To: Nikki Orosz
Cc: Shelley Birch
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Ms. Orosz,

Per our discussion this morning with Shelly Birch, we are following up with an e-mail to present the findings of the project and offer consultation, if desired.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

All of the project information that has been prepared to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>
A copy of the Preferred Solution for the project has been attached as well.

As indicated in the attachment, the Preferred Solution for the project site includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. **We believe the following items may be of interest to your community:**

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you to present the highlights of the project, if desired.

If you do not require further consultation, could you please reply to this e-mail to indicate that Caldwell First Nation takes no exception to the project proceeding.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

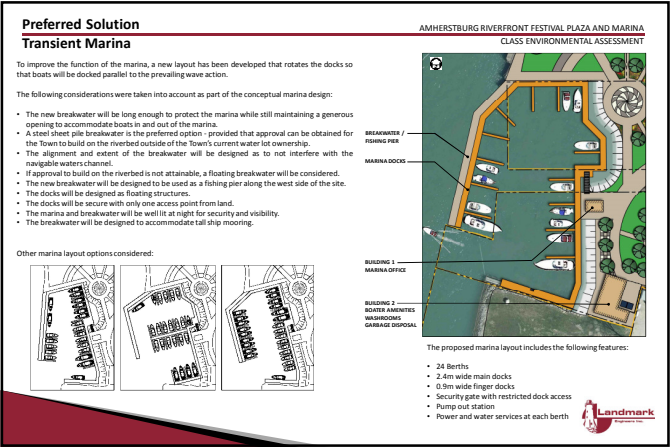
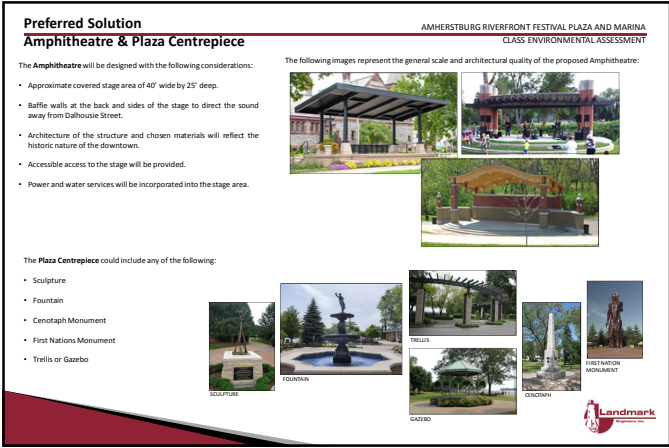
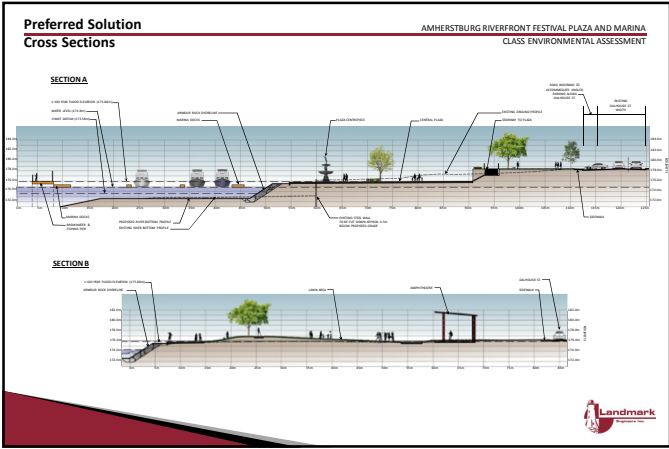
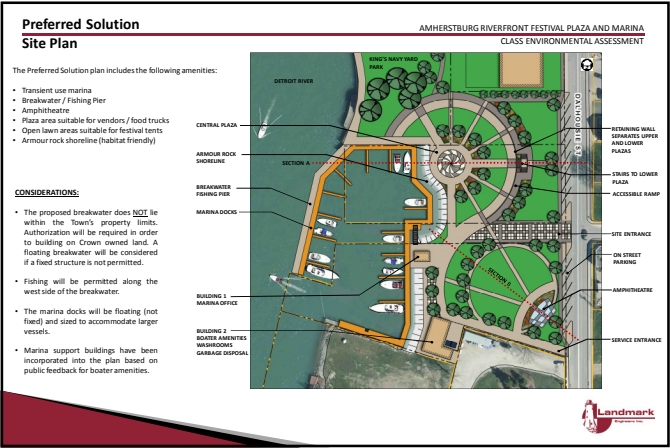
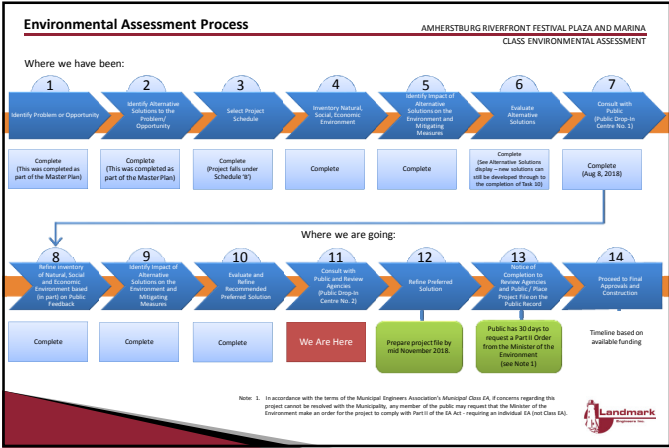
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.

Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.

Public Views

Boaters' Facilities

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Building 1: Office / ICE / BORDER SERVICES / SECURITY

Building 2: WASHROOM / SHOWER / FRESH DISPOSAL / LAUNDRY

RAMP TO DOCKS WITH SECURITY GATE

PHOTO / PICNIC AREA

FISHING PIER

Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN

NEW STEEL SHEET PILE WALL

BUILDING 1

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN

ARMOUR ROCK SHORELINE

STEEL SHEET PILE WALL

Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.

Plaza Site Works:
The estimate includes items such as:

- Site Preparation (Removals and Servicing)
- Retaining Walls
- Ramps and Stairs
- Concrete Flatwork
- Lighting
- Landscaping
- Dalhousie Street Widening

Shoreline Improvements:
The estimate includes items such as:

- Cut down existing steel walls
- Armour Stone Shoreline
- Steel Sheet Pile Walls

Marinas:
The estimate includes items such as:

- Breakwater
- Floating Docks
- Lighting
- Dredging
- Servicing

Structures:
The estimate includes the following items:

- Amphitheatre
- Marina Building 1
- Marina Building 2

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$400K - \$450K

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$1.5M - \$2.5M

Total Preliminary Project Budget Estimate
\$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES:

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does NOT include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.

Liz Michaud

Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

From: Liz Michaud

Sent: May 9, 2019 2:16 PM

To: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>

Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Nikki,

I just wanted to follow up again to ask if there are any specific dates or times that work best for you? We will make every attempt to make it work for our schedule as well.

We were approved by Amherstburg Town Council on Monday to go ahead and issue the Notice of Completion which would start the 30-day review period for our project. Once the 30-day review period is complete we would be finished with the Environmental Assessment (EA) Process. I would like to have comments and feedback from Caldwell First Nations prior to the expiry of the EA process if possible so that we can include them in the project file.

We will be sending out the Notice of Completion sometime in the next 2 weeks. Please feel free to call if you have any questions.

Look forward to hearing from you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud

Sent: April 22, 2019 9:46 AM

To: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>

Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Morning Nikki,

We are going to Town Council on May 6th. Is there any possibility of meeting before then? I would like to be able to update Council on our meeting and any concerns or follow-up that may be requested. Would you be able to meet May 2nd or 3rd?

Thank you,

Liz Michaud
Landmark Engineers Inc.
p (519) 972-8052

From: Nikki Orosz <nikki.orosz@caldwellfirstnation.ca>

Sent: April 20, 2019 12:58 AM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Hi Liz,

When would you like to meet? I have availability in May. After we meet, it may be determined that Council will want a follow-up.

Looking forward to hearing from you,

Nikki Orosz

Director of Operations

Caldwell First Nation

14 Orange Street

Leamington | ON | N8H 1P5

Office: (519) 322-1766

Mobile: (226) 236-1108

nikki.orosz@caldwellfirstnation.ca

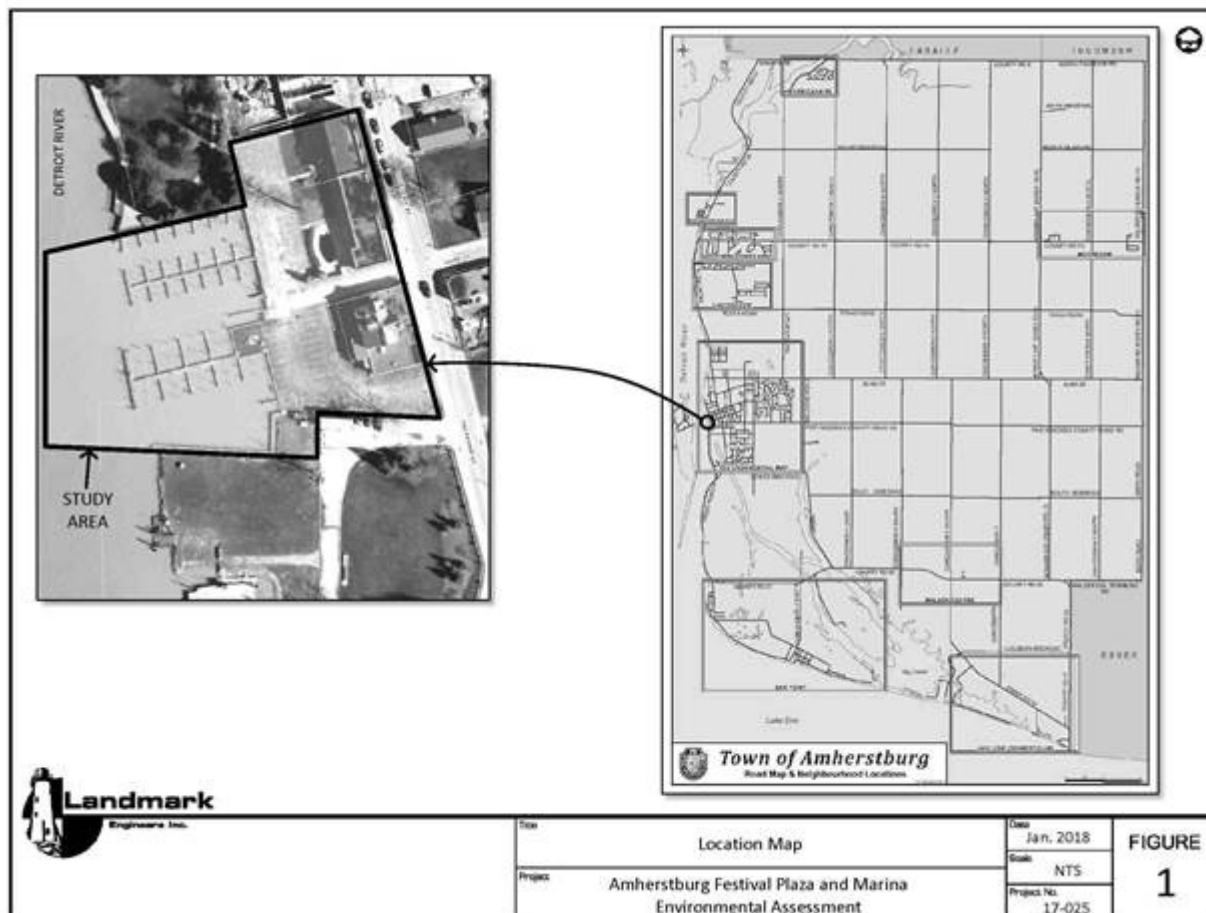
Chippewa of Kettle and Stoney Point
First Nation
Correspondence

Liz Michaud

From: Liz Michaud
Sent: June-19-18 11:03 AM
To: 'Thomas.bressette@kettlepoint.org'; 'Valerie George'
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed

in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 10:40 AM
To: 'Valerie George'
Subject: RE: Update: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Thank you Valerie.

We sent invitations to 8 First Nations (attached below is the contact list we received from the Ministry of the Environment).

Any or all of the invited First Nations may send their monitors if they have interest in doing so. At this time I have not received confirmation from any of the First Nations that they will be sending monitors. I can let you know if I receive any requests this week.

Liz Michaud
Landmark Engineers Inc.
p (519) 972-8052

Aamjiwnaang First Nation	Aamjiwnaang First Nation 978 Tashmoo Ave. Sarnia, ON N7T 7H5 519-336-8410 Chief Joanne Rogers chief@aamjiwnaang.ca <u>Other Contacts:</u> Sharilyn Johnston, Environment Coordinator sjohnston@aamjiwnaang.ca Christine James, Environment Worker cjames@aamjiwnaang.ca (same mailing address for all)
Bkejwanong Territory (Walpole Island First Nation)	Bkejwanong Territory 117 Tahgahoning Road R.R.#3 Wallaceburg, ON N8K 4K9 519-627-1481 Chief Dan Miskokomon drskoke@wifn.org <u>Other Contacts:</u> Dean Jacobs, Consultation Manager Walpole Island Heritage Centre 2185 River Road R.R.#3 Wallaceburg, ON N8K 4K9 519-627-1475 dean.jacobs@wifn.org and Janet Macbeth, Project Review Coordinator janet.macbeth@wifn.org
Chippewas of Kettle and Stony Point First Nation	Chippewas of Kettle and Stony Point First Nation 6247 Indian Lane, R.R.#2 Forest, ON N0N 1J1 519-786-2125 Chief Tom Bressette thomas.bressette@kettlepoint.org Other Contact: Valerie George Consultation Coordinator valerie.george@kettlepoint.org

Chippewas of the Thames First Nation	<p>Chippewas of the Thames First Nation 320 Chippewa Rd., Muncey, ON N0L 1Y0 519-289-5555 Chief Myeengun Henry myeengun@cottfn.com <u>Other Contacts:</u> Kelly Riley, Acting Director - Lands & Environment kriley@cottfn.com 519-289-2662 ext. 209 Rochelle Smith, Consultation Coordinator rsmith@cottfn.com 519-289-2662 ext 213</p>
Caldwell First Nation	<p>Caldwell First Nation 14 Orange St. Leamington, ON N8H 3W3 519-322-1766 or 1-800-206-7522 Chief Mary Duckworth chief.duckworth@caldwellfirstnation.ca Executive Administrator Nikki Orosz nikki.orosz@caldwellfirstnation.ca</p>
Oneida Nation of the Thames ONYOTA'A:KA	<p>Oneida Nation of the Thames 2212 Elm Ave. Southwold, ON N0L 2G0 519-652-3244 Chief Randall Phillips randall.phillips@oneida.on.ca Other Contact: Political Chief Assistant: Catherine Cornelius catherine.cornelius@oneida.on.ca</p>
Munsee-Delaware Nation	<p>Munsee-Delaware Nation 289 Jubilee Rd R.R.#1 Muncey, ON N0L 1Y0 519-289-5396 Chief Roger Thomas chief@munsee.ca Other Contact: Glenn Forrest, Band Manager glenn@munsee.ca</p>
Delaware Nation	<p>Delaware Nation 14760 School House Line R.R.#3 Thamesville, ON N0P 2K0 519-692-3936 Chief Denise Stonefish denise.stonefish@delawarenation.on.ca</p>

From: Valerie George <Valerie.George@kettlepoint.org>

Sent: June-25-18 10:35 AM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Subject: RE: Update: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Thank you Liz for the follow up. I will reply by Friday morning on possible attendance. In the meantime, had any First Nation monitors for this assessment been requested?

Valerie

From: Liz Michaud [<mailto:lmichaud@landmarkengineers.ca>]

Sent: June-25-18 10:23 AM

To: Valerie George <Valerie.George@kettlepoint.org>

Subject: Update: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning Valerie,

Thank you for reaching out regarding the upcoming Archaeological Assessment. Our Archaeologist said that they will begin at 9am (July 4th) and if the entire site is disturbed as they believe, it should only take a few hours.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 11:26 AM
To: 'chief@aamjiwnaang.ca'; 'sjohnston@aamjiwnaang.ca'; 'cjames@aamjiwnaang.ca'; 'drskoke@wifn.org'; 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'; 'Thomas.bressette@kettlepoint.org'; 'Valerie George'; 'myeengun@cottfn.com'; 'kriley@cottfn.com'; 'rsmith@cottfn.com'; 'chief.duckworth@caldwellfirstnation.ca'; 'nikki.orosz@caldwellfirstnation.ca'; 'Randall.phillips@oneida.on.ca'; 'catherine.cornelius@oneida.on.ca'; 'chief@munsee.ca'; 'glenn@munsee.ca'; 'denise.stonefish@delawarenation.on.ca'
Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud

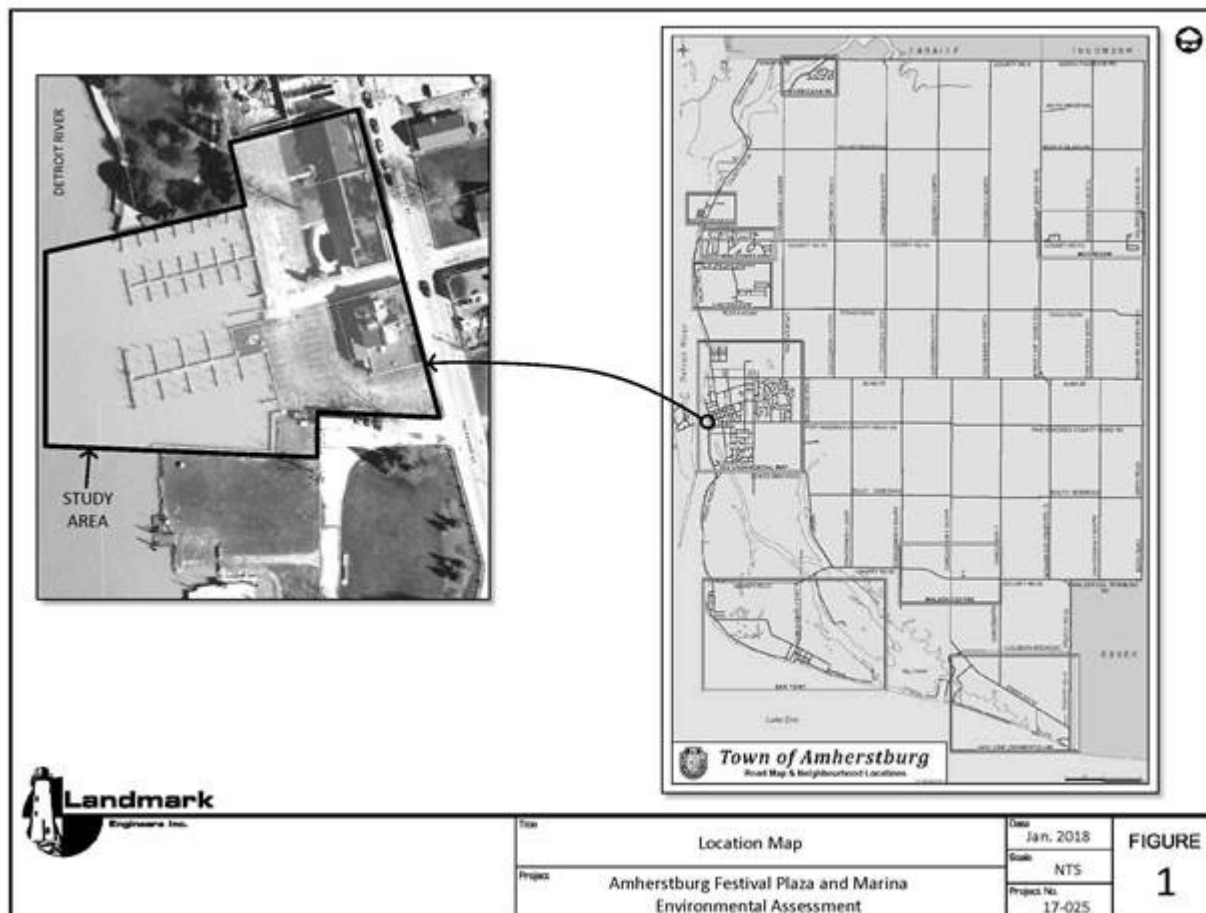


Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: July-25-18 2:56 PM
To: 'Thomas.bressette@kettlepoint.org'
Cc: 'Valerie George'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Bressette,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

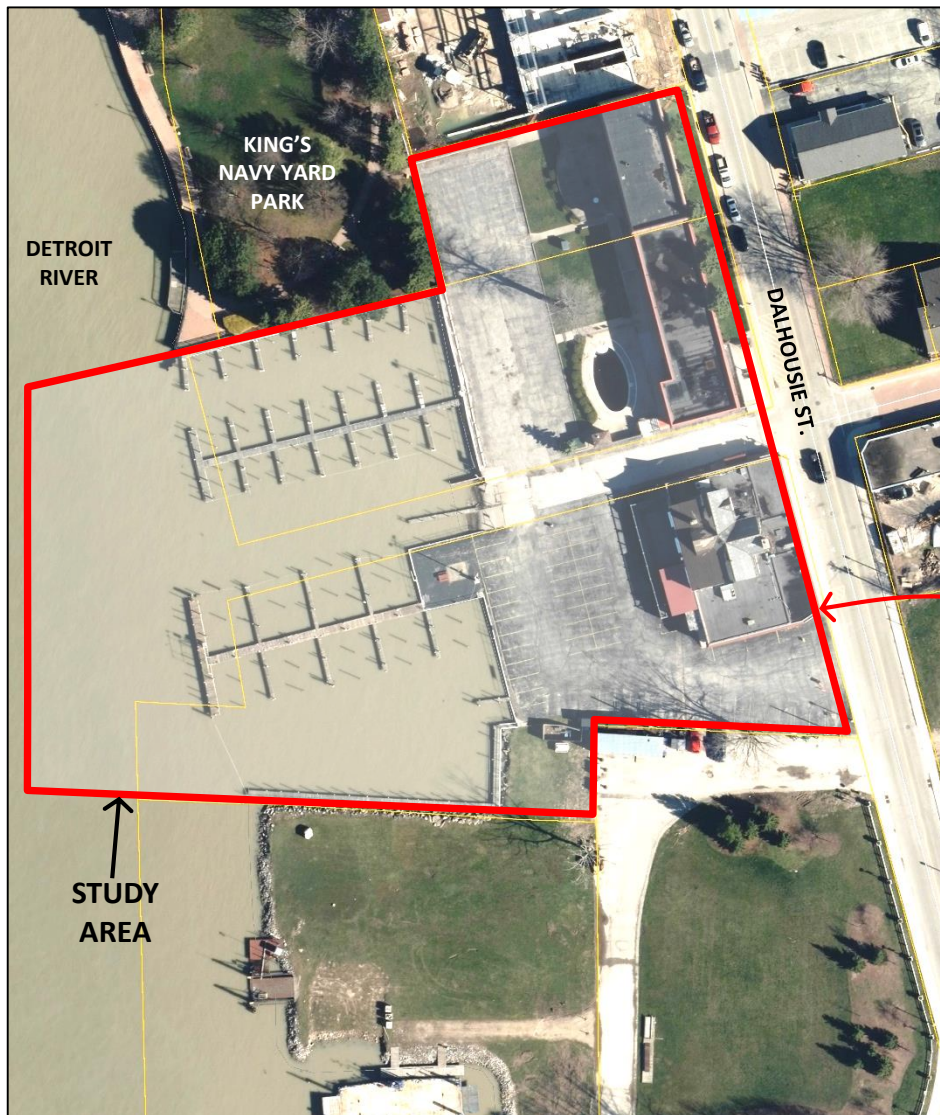
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

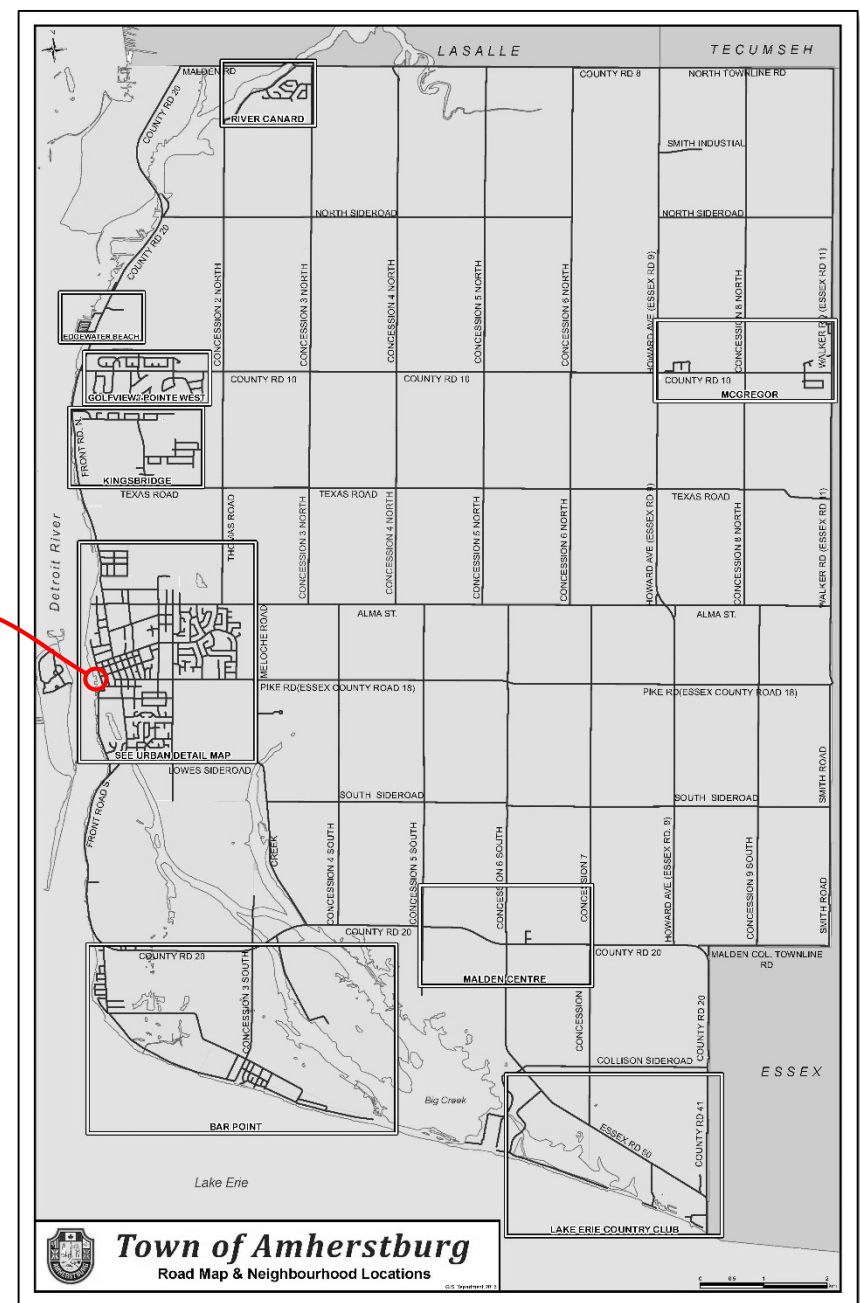
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

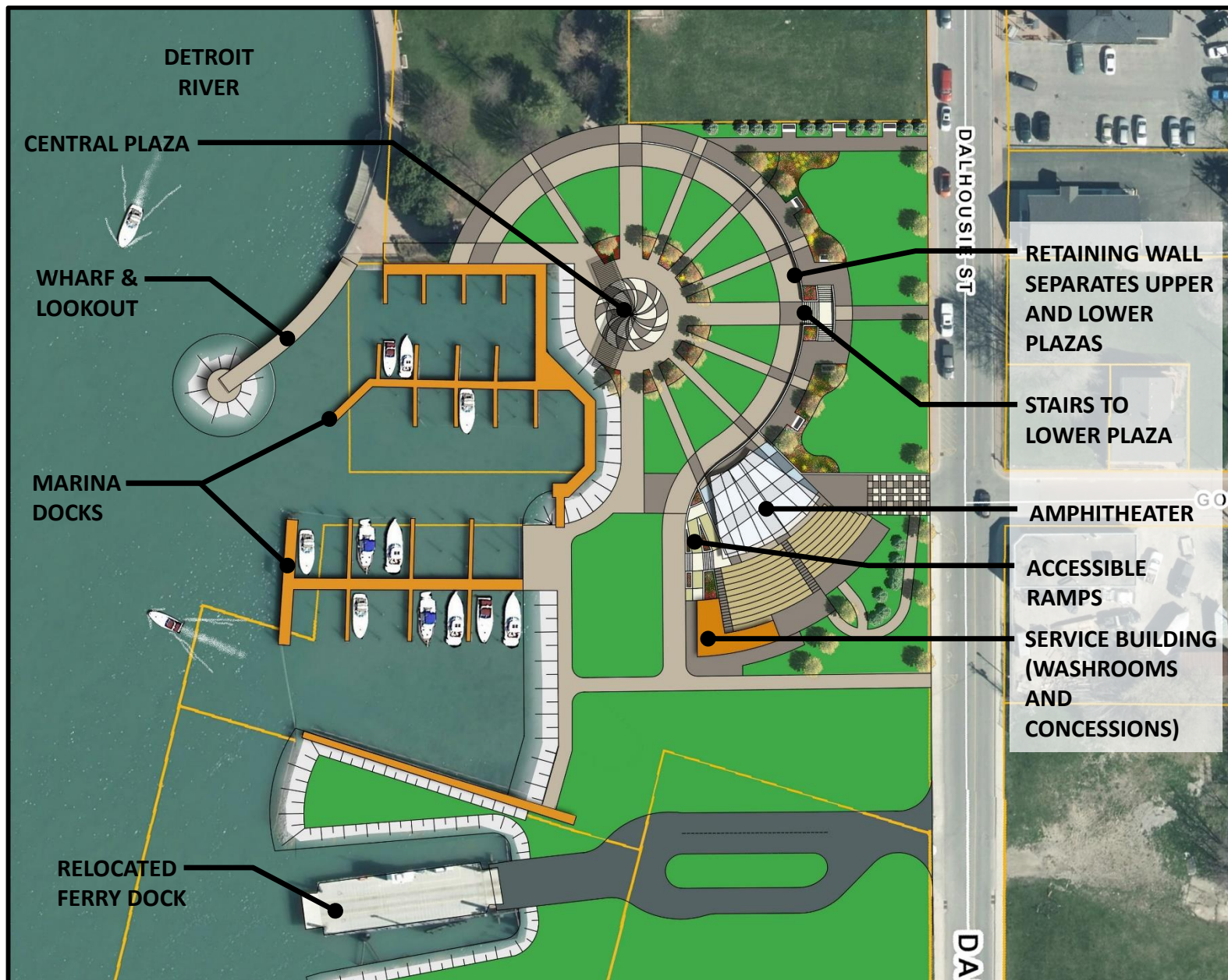
Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON



Title	Location Map	Date	July 2018	FIGURE 1
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale	NTS	
		Project No.	17-025	



Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project		Scale	NTS	
		Project No.	17-025	
Amherstburg Festival Plaza and Marina Class Environmental Assessment				

Liz Michaud

From: Liz Michaud
Sent: August-13-18 3:08 PM
To: Valerie George
Cc: 'Thomas.bressette@kettlepoint.org'
Subject: FW: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Ms. George,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

In order to protect the proposed marina, a breakwater that extends along the shoreline is proposed along the Detroit River. The breakwater will most likely be floating, and would be able to move in during the winter to protect it and the docks from ice. A new layout for the marina will be developed as part of this study to maximize the number of docks and maintain safe maneuvering fairways for boats. A copy of the preliminary concept plan is attached to the Notice of Intent.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

If you would prefer to receive the attached information by hard copy mail please let me know and I will have a copy mailed out to you. If you have any questions or require further details, please don't hesitate to contact me.

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: July-25-18 2:56 PM
To: 'Thomas.bressette@kettlepoint.org' <Thomas.bressette@kettlepoint.org>
Cc: 'Valerie George' <Valerie.George@kettlepoint.org>
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Bressette,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Welcome

Welcome to the Public Drop-In Centre No. 1

> All relevant information regarding this project (including the display material presented today) is available for public review on the Town of Amherstburg's website (www.amherstburg.ca).

> Please sign to record your attendance.

> Please review the display material and provide any comments on the sheet provided. You may submit your comments by mail / fax / e-mail or you may place them in the Comment Box located on the sign-in table.


> All comments for this Drop-In Centre must be received by **August 13th, 2018** to be given consideration in the development of the preferred solution for this project. Contact information for the Project Team is available below, and also on the comment sheet provided.

> The Project Team members present will be pleased to discuss any questions you may have.


Project Team

This study has been initiated by the Town of Amherstburg. Landmark Engineers Inc. has been retained by the Town to serve as the Lead Consultant on the project.


Any comments, questions or suggestions relevant to this study should be directed to the following primary members of the Project Team:



Daniel M. Krutusch, PEng
Landmark Engineers Inc.
2380 Ambleside Drive
Windsor, Ontario N9C 4A4
Phone: (519) 972-8022
Fax: (519) 972-8444
Email: dkrutusch@landmarkengineers.ca



Mark W. Golin, PEng
Town of Amherstburg
3250 Melville Rd.
Amherstburg, Ontario N0V 2T6
Phone: (519) 756-5408
Fax: (519) 756-7111
Email: mgo@amherstburg.ca



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process

Amherstburg Parks Master Plan

Master Plan use in EA Process

The Municipal Class EA document specifically addresses the use of Master Plans.

Master Plans are defined as:

A long range plan which integrates infrastructure requirements for existing and future land use with environmental assessment principles. At a minimum, a Master Plan addresses Phases 1 and 2 of the Municipal Class EA process.

	PHASE 1	PHASE 2	PHASE 3	PHASE 4
Land Use	✓	✓	✓	✓
Infrastructure	✓	✓	✓	✓
Environment	✓	✓	✓	✓
Community	✓	✓	✓	✓

> The Town of Amherstburg retained Montha Brown Planning Consultants (MBPC) to undertake the Parks Master Plan project.

> Two Public Information sessions for the Parks Master Plan were held in October 2017 by MBPC.

> MBPC also conducted stakeholder interviews (November 2017), monitored an online public engagement forum (www.townofamherstburg.ca), and conducted an online community survey (September – November 2017) to obtain feedback regarding the Parks Master Plan.

Parks Master Plan Project

> 60% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.


> 80% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.

> In an online poll, 84% of respondents were in support of the proposed redevelopment plan for the Duffy's site.

> Waterfront parks and facilities were listed as greatest importance in Amherstburg Parks for 88% of the respondents (over playgrounds, splashpads, and sports facilities).

> Festivals and fairs were the second highest response (72%) when asked what type of events respondents participate in outdoors.

(Highest response was use of trails / parks for walking / jogging).



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

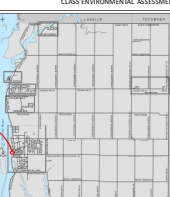

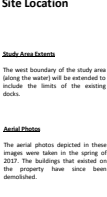
Site Location


Study Area Context

The aerial photos of the study area (along the water) will be extended to include the limits of the existing docks.

Aerial Photos

The aerial photos depicted in these images were taken in the spring of 2017. The buildings that existed on the property have since been demolished.





AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Background and Project Objectives

Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property on the Detroit River waterfront as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was conducted in September 2017, aimed at soliciting stakeholder feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project and the potential environmental impacts it may have, an environmental assessment needs to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

In January 2018, Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.


Project Objectives

> Prepare a site plan that incorporates a park with an amphitheatre.


> Assess the condition of the existing marina.

> Create a marina layout that is more functional and has a larger capacity than the existing marina.

> Design a breakwater to improve the function of the marina and mitigate wave action.



EXISTING SITE LOOKING NORTH



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process

Where we have been:

1. Identify Problem or Opportunity
2. Develop Assessment Terms of Reference
3. Select Project Team
4. Develop Preliminary Assessment
5. Develop Assessment Objectives and Scope
6. Develop Assessment Methodology
7. Develop Assessment Plan

Where we are going:

8. Develop Assessment Plan
9. Develop Assessment Methodology
10. Develop Assessment Objectives and Scope
11. Develop Assessment Methodology
12. Develop Assessment Objectives and Scope
13. Develop Assessment Methodology
14. Develop Assessment Objectives and Scope


At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.

Legend:

- North
- East
- West
- South
- Water
- Land
- Buildings
- Infrastructure
- Vegetation
- Other

Note: In accordance with the terms of the Municipal Engineers Association's Membership EA, if necessary regarding this assessment, the assessment will be completed by the end of the assessment period. The assessment will be completed by the end of the assessment period.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

Physical Environment

Site Topography

The subject property generally slopes down from north to south and from east to west. Due to the high level of historic disturbance on the site, it is unclear where the historic shoreline was originally located, but it is believed that some of the lower portions of the site were filled in to create more land adjacent to the marina.

When the buildings were demolished in 2017, affected portions of the site were filled and graded to drain toward the Detroit River.

Marina Bathymetry

The river bottom throughout the existing marina is generally flat and appears to drop off into the channel near the west end of the docks.

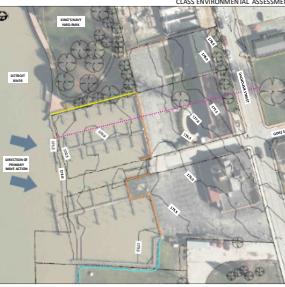
At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.


Marina Condition

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.

Legend:

- North
- East
- West
- South
- Water
- Land
- Buildings
- Infrastructure
- Vegetation
- Other





AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Purpose, Problem and Process

Purpose

This Drop-In Centre is intended to:

- > Present the Problem / Opportunity Statement for the Project.
- > Introduce the members of the Project Team.
- > Present the scope of the Class Environmental Assessment (Class EA) process.

> Present the design alternatives that are being considered.

> Obtain feedback from local residents and community groups.

Problem / Opportunity Statement


"This study intends to achieve a design for a public festival plaza and transient marina that will improve the existing vacant land, enhance the connection to King's Navy Yard Park and restore the existing dilapidated marina."

Environmental Assessment (EA) Process

> This project will follow the planning process set out in the Municipal Engineers Association's Municipal Class Environmental Assessment (Class EA). A copy of this document, which sets out the details of the approved Planning and Design Process for municipal projects (such as this), is on-site and is available for review by the public.

> Since the Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment will be focusing on new construction of a plaza and marina, the Project Team has concluded that this project falls under Schedule "B" of the Municipal Class EA.

> For "Schedule B" projects, only one point of Public Consultation is required. Given the high-profile nature of this project, however, the Project Team has elected to increase the level of public consultation (over and above the minimum requirement), and host an extra Public Drop-In Centre, creating a total of two Public Consultations for this project.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

The following displays are intended to present the Environmental Inventory of the Study Area that has been compiled by the Project Team. This inventory documents the existing conditions of the site in terms of the following categories:

Physical Environment


- Site Location
- Physical Infrastructure (e.g.: utilities, existing marina condition, etc.)
- Topography
- Bathymetry and Wave Climate

Natural Environment


- Aquatic Habitat
- Species at Risk

Social / Economic Environment


- Land Ownership
- Adjacent Land Use
- Heritage & Archaeological Resources



REMANENT PARKING AREA



GRASSY AREA ADJACENT TO FERRY DOCK



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

Physical Environment

Existing Shore Protection

The existing steel sheet pile breakwater along the north side of the marina, adjacent to King's Navy Yard Park, has been impacted and appears to be in poor condition.

The remaining steel sheet pile breakwater (along the east side of the marina basin) are in poor condition.

The rock shore protection along the south portion of the basin is in fair condition.

Marina Docks

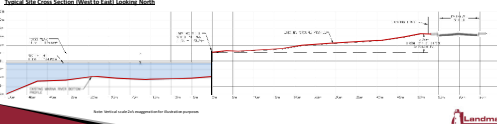
Since the closure of the Marina, the docks have not been maintained and are generally in poor condition. Some of the docks may be repaired for reuse.


The layout of the "Taleway" between the existing docks does not meet the minimum standard recommended for safe maneuvering of boats in and out of a marina. It is recommended that the marina docks be removed and reconfigured according to current marina design standards.

Physical Site Cross Section (West to East Looking North)

Legend:

- North
- East
- West
- South
- Water
- Land
- Buildings
- Infrastructure
- Vegetation
- Other





Environmental Inventory

Utilities & Adjacent Land Use

Utilities

All known utilities within the vicinity of the site are shown below.

The main utilities (water, storm and sanitary sewers) that service the site are located within the Dalhousie Street right-of-way.

Adjacent Land Use

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily zoned commercial, but also contain private residences.

Evaluation of Alternatives

Alternative A : Passive Park

The passive park alternative would be an extension to King's Navy Yard Park with a view of the transient marina.

The connection to King's Navy Yard Park would be strengthened by filling in the north east corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn area
- Armour stone shoreline

CONSIDERATIONS:

- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.

Design Considerations

Amphitheatre and Plaza

Amenities

The Amphitheatre area will be defined with an area for seating and a stage / performance area. The following images present options for the types of structure that could be used over the performance area. The structure could be anything from an elaborate canopy design to a simple built-in seating. Seating could consist of built-in benches, paved concrete plaza or open lawn area.

Plaza Area

The plaza area should be large enough to accommodate vendor tents and food trucks during events. Open lawn area adjacent to the plaza would be suitable for large festival tents. The plaza area would consist mainly of coloured pavement paving, planting beds, retaining walls and stairs / ramps.

Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMOX Consultants Inc. Representatives from the Town of Amherstburg were present during the Archaeological Assessment (Guided) First Nations. Chippewa of the Thames First Nation and Anishinaabe First Nations.

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.

Geotechnical Investigation

Golden Associates Inc. was retained to complete a geotechnical assessment of the site as part of the Class EA. Golden's findings included the following:

Subsurface Conditions: Boreholes advanced across the site encountered variable fill material (silty sand, sand and gravel, sandy silt (clay) to depths ranging from 0.5m to 4m below grade). Below the fill, the native soils encountered were comprised primarily of cohesive sandy silt/clays.

Groundwater Quality: Based on the results of the investigations carried out to date, no environmental impacts to on-site groundwater quality have been identified.

Soil Quality: The impacts to soil quality that have been identified at the site have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.

Sediment Quality: Based on the results of the sediment sampling, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (1 sample) and bismuth (2 samples), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples analyzed.

Risk Management Measures:

1. Impacted soil can be addressed through implementation of risk management measures, including construction of a lift cap (layer of clean soil) or hard cap (concrete) over the site. Any metals soil that would need to be removed from the site would likely be considered "non-hazardous" and could be disposed of at the local landfill.
2. In the event that dredging of the sediments in the existing marina basin becomes necessary, the sediments would be characterized as "non-hazardous" and could be disposed of at the local landfill.

Evaluation of Alternatives

Alternative B : Expanded Marina

In June of 2018, a petition was received by the Town asking that a boat launch with appropriate number of parking spaces for vehicles, the boat trailers, a wharf and lookout (the shoreline fishing) and transient marina slips be incorporated into the final design of the site.

A preliminary design concept for such a facility is presented here, with parking and turn-around spaces provided, based on other similar-sized facilities in Essex County. To minimize the interference with the traffic on Dalhousie Street, a one-way / not in proposed, with ample room for trailers to turn and back into the boat launch within the site.

CONSIDERATIONS:

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront as identified in the Parks Master Plan.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.

Design Considerations

Transient Marina and Breakwaters

Breakwaters

Breakwaters are offshore structures that protect marinas and shorelines from the erosive force of waves. As shown in the example images below, they are typically constructed of stone or concrete. The existing marina basin is currently exposed to the Detroit River, with no breakwater to protect the marina from wave action. This study will determine an appropriate breakwater size, orientation and materials to sufficiently protect the proposed transient marina design.

Shore Protection

It is recommended that the existing steel breakwall along the east side of the marina remain in place and a new rock revetment be built in front of the existing steel walls. The rock revetment would extend out into the marina basin in the north east corner to create more land which will strengthen the connection of the site to King's Navy Yard Park.

Transient Marina

A transient marina offers temporary docking for boats and does not offer reserved slips. The marina would be available for boaters who wish to dock their boat while visiting Amherstburg.

The current layout of the "transient" berthing docks does not meet the minimum standard for safe maneuvering of boats in and out of the marina. This study will develop a new dock layout that will meet current marina design guidelines for safe maneuvering.

Evaluation of Alternatives

Alternative Solutions

The project team identified three alternatives that were considered as options for the site development; Active Park, Passive Park and Expanded Marina. The advantages and disadvantages for each option are presented below:

ALTERNATIVE A: PASSIVE PARK

Advantages:

- Walking trails
- Large lawn areas
- Landscaping
- Trails shade structures
- Transient marina
- Shoreline improvements

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.

Disadvantages:

- Does not satisfy the need for active parkland along the waterfront that was identified in the Parks Master Plan.

ALTERNATIVE B: EXPANDED MARINA

Advantages:

- Boat launch
- Parking for boat trailers and cars
- Expanded transient marina
- Fishing pier
- Shoreline improvements

Disadvantages:

- Opportunity to increase the existing marina basin.
- Site would be available for use by the entire community.
- Opportunity to include a wharf with fishing area.

Disadvantages:

- Brings high volume of truck and trailer traffic to the downtown streets.
- Parking area will need to be built on waterfront land.
- Site is usable for only the boating community rather than the entire community.
- Does not satisfy the need for active parkland along the waterfront that was identified in the Parks Master Plan.

ALTERNATIVE C: ACTIVE PARK

Advantages:

- Passive park
- Low area for turn-around
- Amphitheatre / stage area
- Shade structures / trails
- Landscaping
- Transient marina
- Shoreline improvements

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Site would be available for use by the entire community.
- Identified in the Parks Master Plan as a need along the waterfront in the community (active park space).
- Potential to bring revenue to the downtown by attracting tourists as well as the local community.
- Opportunity to refurbish or update existing marina.

Disadvantages:

- Is not compatible with boat launch.
- Highest initial capital cost.

Evaluation of Alternatives

Alternative C : Active Park

Landmark was retained by the Town in 2016 to prepare this preliminary concept plan. The plan has been presented to the public at two previous Public Information Centres for the Parks Master Plan and made available to the Town's website (link the Burg) for consideration and comment.

This concept plan intends to strengthen the connection to King's Navy Yard Park by filling in the north east corner of the existing marina basin. The existing steel sheet shoreline along the marina would be replaced with an armour stone treatment.

Due to the grade change from Dalhousie Street down to the shoreline (over 2m in elevation), retaining walls will be used to create a large flat plaza area on the site. A lawn area can be used for festival tents during events. An Amphitheatre and seating will be incorporated at the south side of the site.

The preliminary concept plan includes the following amenities:

- Transient marina
- Amphitheatre with service building for washrooms
- Plaza area suitable for food trucks
- Open lawn area suitable for festival tents
- Armour stone shoreline
- Wharf and lookout

CONSIDERATIONS:

- The wharf and lookout as shown on this plan does not fit within the Town's property limits. It may not be feasible to obtain approval to build this particular configuration.
- Fishing breakwaters may be considered to shelter the marina docks.
- Opportunity to incorporate fishing structures along the breakwall.
- The size, type and location of the amphitheatre structure will be determined as part of this study.

Next Steps

- All comments received from today's meeting will be reviewed by the Project Team and used to help define the Preferred Solution.
- A second Public Drop-In Centre will be held in late September to present the Preferred Solution.
- All comments received from the second Drop-In Centre will be reviewed and used to help refine the Preferred Solution. The project website will then be updated and a Notice will be published, alerting the public that the 30-day public review period for this Class EA has commenced.
- Provided that all outstanding issues are resolved and no Part II Orders are requested, the project may proceed to final approvals and construction upon completion of the 30-day public review period.

We encourage you to fill out a comment sheet so that your issues and concerns can be addressed early in the planning process and to have your comments become part of the public record.

Thank you.

Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416-327-2434.

Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:09 PM
To: 'Thomas.bressette@kettlepoint.org'
Cc: 'Valerie George'
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Bressette,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:16 PM
To: 'Valerie George'
Cc: 'Thomas.bressette@kettlepoint.org'
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Ms. George,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:

<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

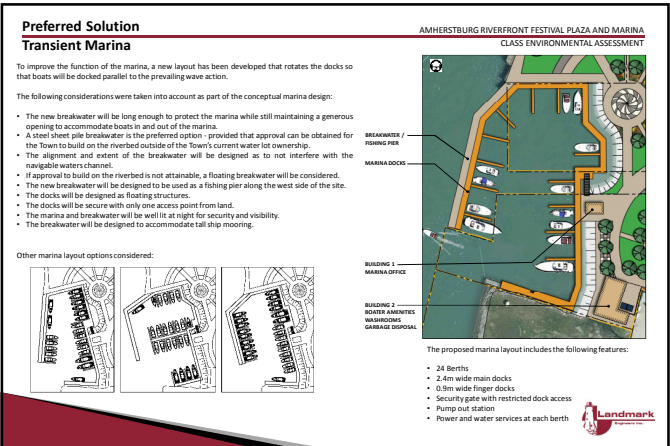
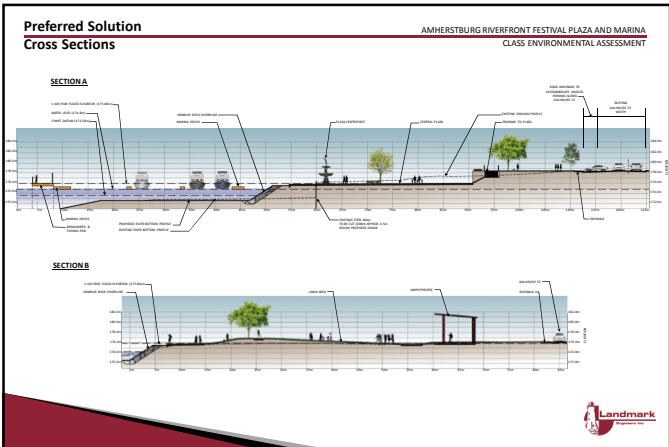
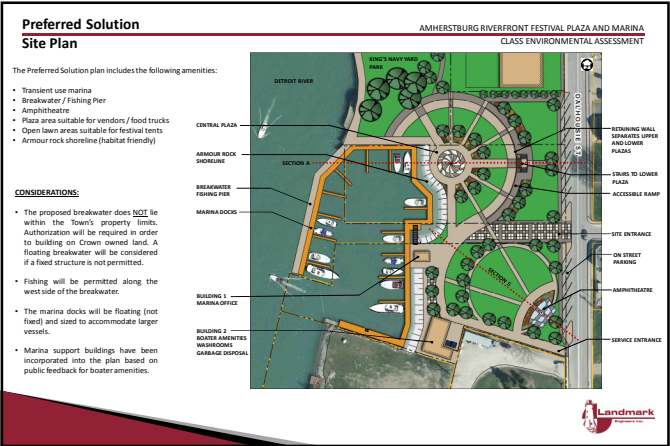
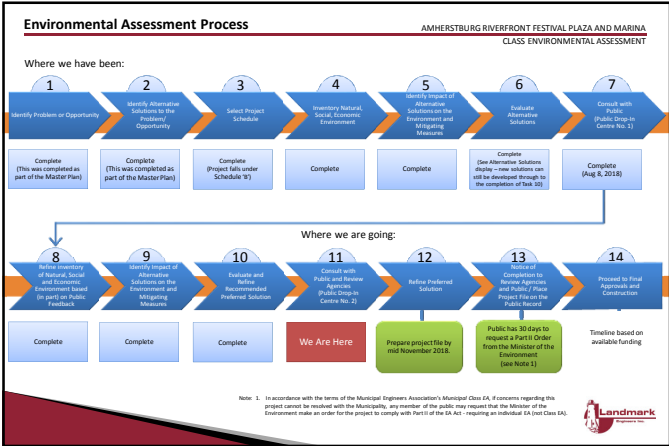
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.





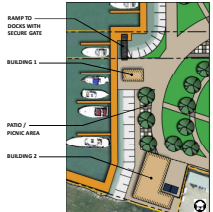
Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

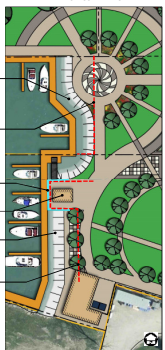


Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.


Category	Items	Preliminary Budget Estimate
Plaza Site Works:	The estimate includes items such as: <ul style="list-style-type: none">• Site Preparation (Removals and Servicing)• Retaining Walls• Ramps and Stairs• Concrete Flatwork• Lighting• Landscaping• Dalhousie Street Widening	Preliminary Budget Estimate \$2.5M - \$3M
	Shoreline Improvements:	The estimate includes items such as: <ul style="list-style-type: none">• Cut down existing steel walls• Armour Stone Shoreline• Steel Sheet Pile Walls
Marinas:		The estimate includes items such as: <ul style="list-style-type: none">• Breakwater• Floating Docks• Lighting• Dredging• Servicing
	Structures:	The estimate includes the following items: <ul style="list-style-type: none">• Amphitheatre• Marina Building 1• Marina Building 2

Total Preliminary Project Budget Estimate \$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does NOT include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.



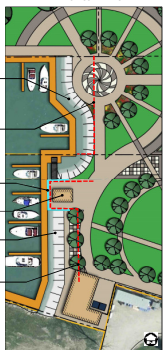


Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Liz Michaud

From: Liz Michaud
Sent: November-28-18 11:18 AM
To: Valerie George
Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf; 17-025 Notice of Intent & Location Map.pdf

Good Morning Ms. George,

Thank you for taking the time to talk with me this morning. Per our conversation, I have attached our preferred solution plan to this e-mail and included all of the previously sent e-mails below for your review.

If you have any questions please don't hesitate to call or e-mail.
Thank you,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: October-30-18 2:16 PM
To: 'Valerie George' <Valerie.George@kettlepoint.org>
Cc: 'Thomas.bressette@kettlepoint.org' <Thomas.bressette@kettlepoint.org>
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Ms. George,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.

- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Good Afternoon Chief Bressette,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Good Afternoon Ms. George,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

In order to protect the proposed marina, a breakwater that extends along the shoreline is proposed along the Detroit River. The breakwater will most likely be floating, and would be able to move in during the winter to protect it and the docks from ice. A new layout for the marina will be developed as part of this study to maximize the number of docks and maintain safe maneuvering fairways for boats. A copy of the preliminary concept plan is attached to the Notice of Intent.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

If you would prefer to receive the attached information by hard copy mail please let me know and I will have a copy mailed out to you. If you have any questions or require further details, please don't hesitate to contact me.

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud

Sent: July-25-18 2:56 PM

To: 'Thomas.bressette@kettlepoint.org' <Thomas.bressette@kettlepoint.org>

Cc: 'Valerie George' <Valerie.George@kettlepoint.org>

Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Bressette,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Valerie George <Valerie.George@kettlepoint.org>
Sent: March 21, 2019 4:48 PM
To: Liz Michaud
Subject: RE: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2

Hello Liz

I am pleased that you are still carrying through with your consultations. That being said, I do want to make it clear that although our First Nation is not providing comment on this project, we do not intend it to be construed as any form of approval.

Again, thank you for reaching out.

Valerie George
Consultation Officer
Chippewas of Kettle and Stony Point First Nation

From: Liz Michaud [mailto:lmichaud@landmarkengineers.ca]
Sent: March-21-19 4:31 PM
To: Valerie George <Valerie.George@kettlepoint.org>
Subject: RE: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2

Good Afternoon Valerie,

Thank you for the quick reply. We will update our project file to reflect that the Chippewas of Kettle and Stony Point First Nation do not require further consultation regarding this project. We are currently in the process of contacting both Caldwell First Nation and Walpole Island First Nation (as well as 5 other First Nations) to offer consultation before we wrap up our Environmental Assessment process.

I appreciate your time and consideration.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Valerie George <Valerie.George@kettlepoint.org>
Sent: March 21, 2019 4:16 PM
To: Liz Michaud <lmichaud@landmarkengineers.ca>
Subject: RE: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2

Good afternoon

The Chippewas of Kettle and Stony Point First Nation will not be making comment on this particular project. However, we do strongly recommend that you be certain to make contact with the Caldwell First Nation, and Walpole Island First Nation.
Thank you for reaching out.

Valerie George
Consultation Officer
Chippewas of Kettle and Stony Point First Nation

From: Liz Michaud [<mailto:lmichaud@landmarkengineers.ca>]
Sent: September-28-18 12:11 PM
To: Thomas Bressette <Thomas.Bressette@kettlepoint.org>
Cc: Valerie George <Valerie.George@kettlepoint.org>
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2

Good Afternoon Chief Bressette,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud

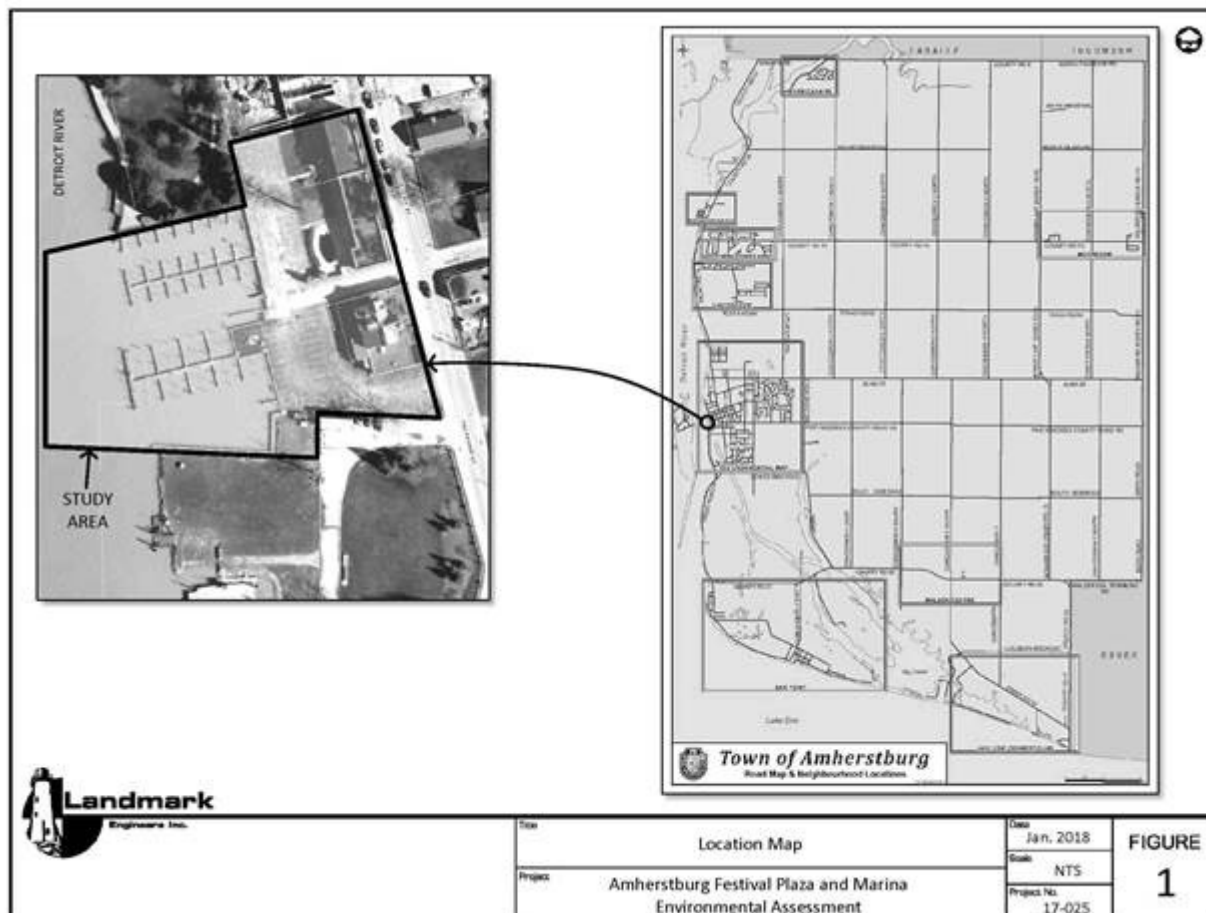
Chippewas of the Thames First Nation Correspondence

Liz Michaud

From: Liz Michaud
Sent: June-19-18 11:05 AM
To: rsmith@cottfn.com
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning Rochelle,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed

in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 11:26 AM
To: 'chief@aamjiwnaang.ca'; 'sjohnston@aamjiwnaang.ca'; 'cjames@aamjiwnaang.ca'; 'drskoke@wifn.org'; 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'; 'Thomas.bressette@kettlepoint.org'; 'Valerie George'; 'myeengun@cottfn.com'; 'kriley@cottfn.com'; 'rsmith@cottfn.com'; 'chief.duckworth@caldwellfirstnation.ca'; 'nikki.orosz@caldwellfirstnation.ca'; 'Randall.phillips@oneida.on.ca'; 'catherine.cornelius@oneida.on.ca'; 'chief@munsee.ca'; 'glenn@munsee.ca'; 'denise.stonefish@delawarenation.on.ca'
Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud

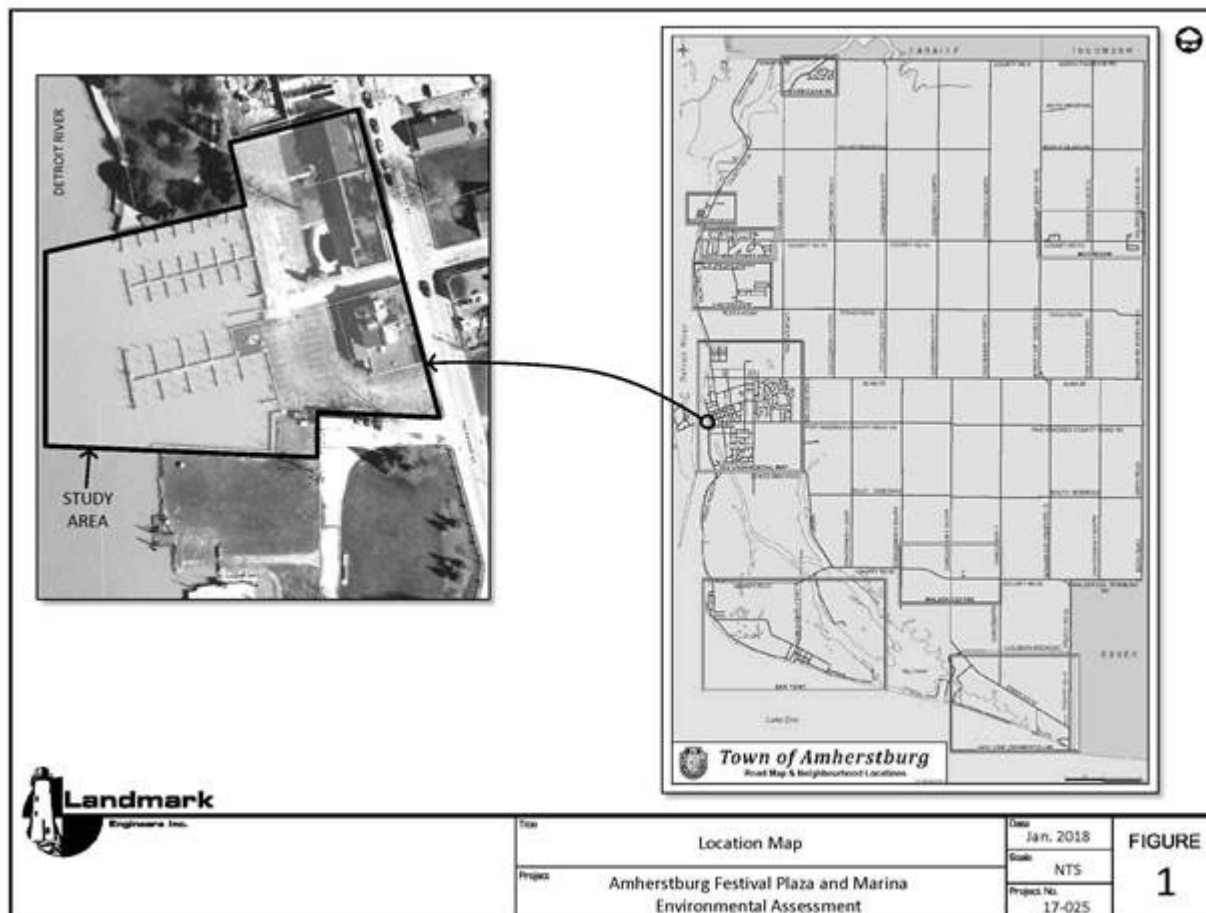


Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

To: Liz Michaud
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

From: Rochelle Smith <rsmith@cottfn.com>
Sent: June-29-18 11:25 AM
To: Liz Michaud <lmichaud@landmarkengineers.ca>
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good morning Liz,

Fred Albert will be the monitor representing Chippewa in the field Wednesday, July 4th at 9am at 306 Dalhousie St. in Amherstburg, ON.

Fred can be reached at 226-234-0629 should anything arise.
I have also forwarded Marilyn Cornies contact information to Fred.

Kind regards,
Rochelle Smith



Rochelle Smith
Consultation Coordinator, Chippewas of the Thames First Nation
320 Chippewa Rd Muncney, ON N0L 1Y0 | 519-289-5555 | www.cottfn.com

This email or documents accompanying this email contain information belonging to the Chippewas of the Thames First Nation. Which may be confidential and/or legally privileged. The information is intended only for the addressed recipients(s). If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this email. Is strictly prohibited. If you have received this email in error, please advise my office and delete it from your system.

From: Liz Michaud <lmichaud@landmarkengineers.ca>
Sent: June 28, 2018 3:04 PM
To: Rochelle Smith <rsmith@cottfn.com>
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Thank you Rochelle.

We will be meeting at the Site - located at 306 Dalhousie St. in Amherstburg. The start time will be 9am.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Rochelle Smith <rsmith@cottfn.com>
Sent: June-28-18 2:38 PM
To: Liz Michaud <lmichaud@landmarkengineers.ca>
Cc: Consultation <consultation@cottfn.com>
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good afternoon Liz,

I have attached the certificate of insurance and the signed agreement.
Could you please forward the meeting place address and start time as well.
Once provided, I will call a monitor out.

Kind regards,
Rochelle Smith



Rochelle Smith
Consultation Coordinator, Chippewas of the Thames First Nation
320 Chippewa Rd Muncey, ON N0L 1Y0 | 519-289-5555 | www.cottfn.com

This email or documents accompanying this email contain information belonging to the Chippewas of the Thames First Nation. Which may be confidential and/or legally privileged. The information is intended only for the addressed recipients(s). If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this email. Is strictly prohibited. If you have received this email in error, please advise my office and delete it from your system.

From: Liz Michaud <lmichaud@landmarkengineers.ca>
Sent: June 28, 2018 1:29 PM
To: Rochelle Smith <rsmith@cottfn.com>
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Afternoon Rochelle,

The contact information for AMICK, our Archaeological Consultant is below:

Marilyn Cornies
AMICK Consultants Limited
(519) 432-4435

Marilyn will be the one on site next Wednesday.

Let me know if you require anything else from us.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Rochelle Smith <rsmith@cottfn.com>

Sent: June-26-18 3:17 PM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Currently, our monitors don't receive time for travel. This may be something we will be incorporating in the future once policies are amended.

Kind regards,
Rochelle Smith



Rochelle Smith

Consultation Coordinator, Chippewas of the Thames First Nation

320 Chippewa Rd Muncey, ON N0L 1Y0 | 519-289-5555 | www.cottfn.com

This email or documents accompanying this email contain information belonging to the Chippewas of the Thames First Nation. Which may be confidential and/or legally privileged. The information is intended only for the addressed recipients(s). If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this email. Is strictly prohibited. If you have received this email in error, please advise my office and delete it from your system.

From: Liz Michaud <lmichaud@landmarkengineers.ca>

Sent: June 26, 2018 2:55 PM

To: Rochelle Smith <rsmith@cottfn.com>

Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Thanks Rochelle,

We were unclear if you wanted \$45/hour travel time each way added to the 3 hours we plan to be on site or if the travel time is built into the \$125max per diem.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Rochelle Smith <rsmith@cottfn.com>
Sent: June-26-18 11:34 AM
To: Liz Michaud <lmichaud@landmarkengineers.ca>
Cc: Consultation <consultation@cottfn.com>
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good morning Liz,

Per our agreement, for each monitor dispatched we will bill a minimum of 3 hours, mileage and the admin fee. If you only plan to be in the field for only 3 hours, then your calculations are correct.

Kind regards,
Rochelle Smith



Rochelle Smith
Consultation Coordinator, Chippewas of the Thames First Nation
320 Chippewa Rd Muncey, ON N0L 1Y0 | 519-289-5555 | www.cottfn.com

This email or documents accompanying this email contain information belonging to the Chippewas of the Thames First Nation. Which may be confidential and/or legally privileged. The information is intended only for the addressed recipients(s). If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this email. Is strictly prohibited. If you have received this email in error, please advise my office and delete it from your system.

From: Liz Michaud <lmichaud@landmarkengineers.ca>
Sent: June 26, 2018 11:16 AM
To: Rochelle Smith <rsmith@cottfn.com>
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning Rochelle,

We are finishing up the agreement and just wanted to make sure we calculated for Fees correctly.

We anticipate the monitor to be on site for 3 hours.
 $45 \times 3 \text{ (hours)} + 125 \text{ (mileage)} \times 15\% \text{ service fee} = \300

We would advise that the \$300 is the upset limit and that if unforeseen circumstances increased the time on site we would pay the extra time at the rates outlined in the remunerations table.

Please let me know if that is agreeable and I will finalize the agreement.

Thank you for your help,

Liz Michaud
Landmark Engineers Inc.
p (519) 972-8052

From: Rochelle Smith <rsmith@cottfn.com>
Sent: June-25-18 3:34 PM
To: Liz Michaud <lmichaud@landmarkengineers.ca>
Cc: Consultation <consultation@cottfn.com>
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good afternoon Liz,

Appreciate you following up. I look forward to reviewing the agreement.

Kind regards,
Rochelle Smith



Rochelle Smith
Consultation Coordinator, Chippewas of the Thames First Nation
320 Chippewa Rd Muncey, ON N0L 1Y0 | 519-289-5555 | www.cottfn.com

This email or documents accompanying this email contain information belonging to the Chippewas of the Thames First Nation. Which may be confidential and/or legally privileged. The information is intended only for the addressed recipients(s). If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this email. Is strictly prohibited. If you have received this email in error, please advise my office and delete it from your system.

From: Liz Michaud <lmichaud@landmarkengineers.ca>
Sent: June 25, 2018 3:03 PM
To: Rochelle Smith <rsmith@cottfn.com>
Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Afternoon Rochelle,

Thank you for following up. I do have a copy of the agreement that you previously sent. We are in the process of preparing an agreement and will get it to you hopefully tomorrow.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Rochelle Smith <rsmith@cottfn.com>
Sent: June-25-18 1:33 PM
To: Liz Michaud <lmichaud@landmarkengineers.ca>

Cc: Consultation <consultation@cottfn.com>; jmiceli@amherstburg.ca

Subject: RE: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good afternoon Liz,

As discussed previously, Chippewa of the Thames First Nation (COTTFN) would be pleased to send a monitor. We will have to arrange an agreement for us to send a monitor. In order to properly engage with proponents, COTTFN requires some capacity.

As your project will be taking place in the McKee Treaty of 1790, to which COTTFN is a signatory. We take deep consideration in what is happening within our treaty and traditional territory. Archaeology holds a significant value to our history, it tells a story that has yet to be written. COTTFN would be please to send a monitor. If you don't have an agreement, I can forward one.

We look forward to continuing this open line of communication. To implement meaningful consultation, COTTFN has developed its own protocol — a document and a process that will guide positive working relationships. We would be happy to meet with you to review COTTFN's Consultation Protocol.

If you have any questions, please don't hesitate to ask. I look forward to engaging further with you and the Town of Amherstburg.

Kind regards,
Rochelle Smith



Rochelle Smith

Consultation Coordinator, Chippewas of the Thames First Nation

320 Chippewa Rd Muncey, ON N0L 1Y0 | 519-289-5555 | www.cottfn.com

This email or documents accompanying this email contain information belonging to the Chippewas of the Thames First Nation. Which may be confidential and/or legally privileged. The information is intended only for the addressed recipient(s). If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this email. Is strictly prohibited. If you have received this email in error, please advise my office and delete it from your system.

From: Liz Michaud <lmichaud@landmarkengineers.ca>

Sent: June 25, 2018 11:26 AM

To: chief@aamjiwnaang.ca; sjohnston@aamjiwnaang.ca; cjames@aamjiwnaang.ca; 'drskoke@wifn.org' <drskoke@wifn.org>; 'dean.jacobs@wifn.org' <dean.jacobs@wifn.org>; janet.macbeth@wifn.org; 'Thomas.bressette@kettlepoint.org' <Thomas.bressette@kettlepoint.org>; Valerie George <Valerie.George@kettlepoint.org>; Myeengun Henry <myeengun@cottfn.com>; Kelly Riley <kriley@cottfn.com>; Rochelle Smith <rsmith@cottfn.com>; chief.duckworth@caldwellfirstnation.ca; nikki.orosz@caldwellfirstnation.ca; 'Randall.phillips@oneida.on.ca' <Randall.phillips@oneida.on.ca>; catherine.cornelius@oneida.on.ca; 'chief@munsee.ca' <chief@munsee.ca>; glenn@munsee.ca; denise.stonefish@delawarenation.on.ca

Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AGREEMENT FOR
ARCHAEOLOGICAL MONITORING SERVICES**

This agreement dated the 27th day of June in the year 2018

BETWEEN

Landmark Engineers Inc. (CONSULTANT)
2280 Ambassador Drive, Windsor, ON N9C 4E4
519-972-8052
Daniel M. Krutsch, P.Eng., President
dkrutsch@landmarkengineers.ca

AND

Chippewas of the Thames First Nation (CONTRACTOR)
320 Chippewa Rd., Muncey, ON N0L 1Y0
519-289-5555
Mr. Kelly Riley, Acting Lands & Environment Director
kriley@cottfn.com

Chippewas of the Thames First Nation (hereinafter Contractor) hereby enters into a contract with Landmark Engineers Inc. (hereinafter Consultant) which provides for the furnishing of professional services with respect to the project know as the **Amherstburg Festival Plaza Environmental Assessment (EA)**, and in order to furnish these services, the Consultant requires the Contractor to deliver certain services, **monitoring of Archaeological Assessment** and the Contractor warrants to provide the Services on the following terms and conditions:

1. Services: Contractor will provide the Services as further detailed on the attached Schedule "A" – Services, and "B" – Rate of Remuneration. In performing the Services, Contractor will exercise the standard of services at the time and location where the Services are performed.
2. Fees: Consultant shall pay Contractor a fee, calculated on a time basis, for the services described as such in Schedule "A". Fees shall be computed on the basis of hourly billing rates as included in Schedule "B". No other charges, fees or consideration are due outside these fees and expenses.
3. Payment: Contractor shall invoice monthly, or at intervals otherwise agreed to during the term of this Agreement. Such invoices shall include timesheets detailing time worked by

Contractor to deliver the Services and pre-approved expense claims, supported by original receipts. Contractor shall be paid within 30 business days from the date properly submitted invoices are received.

4. Indemnification and Insurance: Contractor shall indemnify and save harmless Consultant from and against all claims, losses, damages, costs, expenses, actions and other proceedings, occasioned by or attributable to any injury to or death of a person or damage to or loss of property arising from any willful or negligent act, omission or delay on the part of Contractor, its employees or agents in performing the Services or as a result of the Services. Contractor shall provide proof of certification or insurance as detailed on Schedule "A" prior to delivering the Services. Failure to provide the requested information may result in immediate termination of this contract.
5. Confidentiality: For the purposes of this Agreement, the term "Confidential Information" mean all information in whatever form, including without limitation, oral and written communications, reports, sketches, photographs, specifications, correspondence, and another other forms of documents and information that are indirectly or directly conceived, originated, prepared or received by Contractor as a result of the performance of the Services, except information falling into any of the following categories:
 - a. Information that at the time of disclosure or acquisition is already known to Contractor and was not acquired under any obligation of confidentiality or as a result of any work performed, directly or indirectly for Consultant;
 - b. Information that at the time of disclosure or acquisition is or thereafter becomes part of the public domain through no act or failure to act on the part of Contractor or on the part of any third party under an obligation of confidentiality with respect to the information; or
 - c. Information that is disclosed, either directly or indirectly to Contractor via a third party who did not acquire the information from Landmark or under an obligation of confidentiality.

Contractor shall refrain from directly or indirectly using or drawing upon the confidential information for any purpose, commercial or otherwise, other than the delivery of the Services. This section 5 shall survive for two years after the termination of this Agreement.

6. Nature of Contract: Contractor is an independent contractor and shall not be deemed to be a servant, employee or agent of Consultant. Contractor agrees that this is a contract for the provision of services and no rights, privileges or considerations are due to Contractor outside of the expressly agreed provisions of this Contract. Contractor further acknowledges that it

has had the opportunity to obtain independent professional legal, accounting and tax advice in this regard.

7. Governing Law: This Agreement shall be governed in accordance with the laws and the jurisdiction where the majority of the Services are provided. Contractor shall observe and comply with all applicable laws.
8. Entire Agreement: This Agreement constitutes the sole and entire agreement between the Contractor and Consultant relating to the Project and supersedes all prior agreements between them, where written or oral respecting the subject matter hereof and no other terms, conditions or warranties, whether expressed or implied, shall form a part hereof. This Agreement may be amended only by written instrument signed by both Contractor and Consultant. All conflict between attachments and the terms and conditions of this Agreement, the terms and conditions of this Agreement take precedence.

CONTRACTOR


Mr. Kelly Riley

A/Lands & Environment Director

Date:

June 28/18

CONSULTANT



Daniel M. Krutsch, P.Eng.
President

Date:

27 JUNE 2018

Schedule A: Services

Attached to and forming part of the Agreement Between:

Chippewas of the Thames First Nation (hereinafter called the "Contractor")

and

Landmark Engineers Inc. (hereinafter called "Landmark")

Effective: June 27, 2018

This Attachment details the Services, Fees, Pre-qualifications and additional attachments forming part of the above described Agreement.

Services:

To provide natural heritage and archeological monitoring services to Landmark in regard to activities associated with the Project. This agreement is terminable on 30-day(s) notice to Contractor by Landmark.

In connection with the delivery of the Services, the Contractor shall:

- Follow all Health & Safety protocols in place with respect to the Project, the Services, the site where the Contractor is providing Services, and attend and participate in any training requirements related to the Services or the Project. Failure to do so shall result in immediate termination of this agreement;
- Follow crew leader's direction with respect to delivery of the Services on the Project site;
- Participate in any required liaison with community members or clients, as deemed suitable by Landmark;
- Obtain input, advice and guidance from environmental resource specialists (where applicable);
- Advise the crew leader or other appointed Landmark liaison regarding timing of critical activities requiring monitoring;
- Establish and maintain a daily agenda of hours worked and a summary of work completed; and
- If required at the request of the crew lead or other Landmark representative, prepare a summary report at the conclusion of a project that summarizes the activities in relation to the above environmental requirements

(hereinafter called the 'Services')

Fees:

Unless otherwise authorized by Landmark, the above work and associated deliverables will be completed by Contractor for the following fees (excluding GST):

Rate	See Schedule "B"
Mileage	See Schedule "B"

Pre-Qualification Requirements:

Valid driver's licenses

Proof of vehicle insurance

Other client-specific requirements listed below: See Schedule "B"

Schedule B: Rate of Remuneration

- Payment will be based on actual time and expenses to complete the scope of services to a pre-approved upset limit of \$300.00 (excluding HST). The upset limit fee assumes 3 hours of on-site monitoring plus mileage (to and from the site) and applicable 15% administration fee. The upset limit fee shall not be exceeded without prior authorization from the Consultant. Additional services, authorized by the Consultant, not included in the fee will be paid according to the rates below.
- Payment will be based on a maximum rate of \$45.00 per hour for the Contractor monitor, as and when requested by Landmark or its designate, which is inclusive of any and all fees, deductions or other mark-ups, excluding HST if applicable.
- Each Contractor monitor will bill a minimum of three (3) hours for each day they are dispatched by Landmark to the Project location.
- Payment for the monitor's mileage will be at a rate of \$0.54 per km driving from the community to the Project site.
- Per Diem mileage rates will be paid to a maximum of \$125 per day.
- Contractor is requested to submit approved invoices in a timely manner. Invoices should include the full names of the monitor(s), hours worked and date range for the invoicing period. All invoices should be addressed directly to Landmark, and the relevant project should be noted in the text of each invoice.
- Landmark agrees to not disclose particulars about hourly charges or invoicing to the Contractor monitor.
- Contractor warrants that the Contractor monitor shall have Workplace Safety and Insurance Board coverage for the duration of the Project, and all other applicable withholding and other source deductions required by law, in connection with the Contractor monitor.

Liz Michaud

From: Liz Michaud
Sent: July-25-18 2:57 PM
To: 'myeengun@cottfn.com'
Cc: 'kriley@cottfn.com'; 'Rochelle Smith'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Myeengun Henry,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

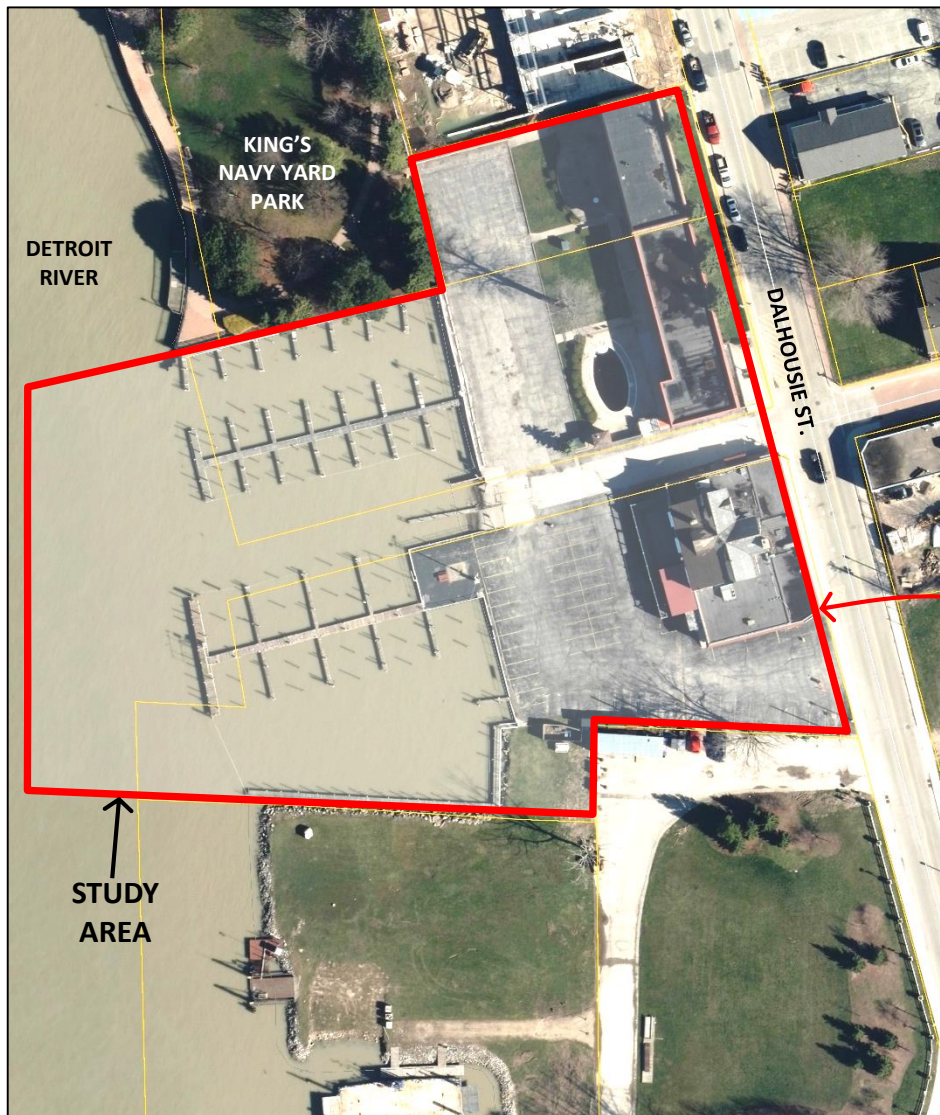
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

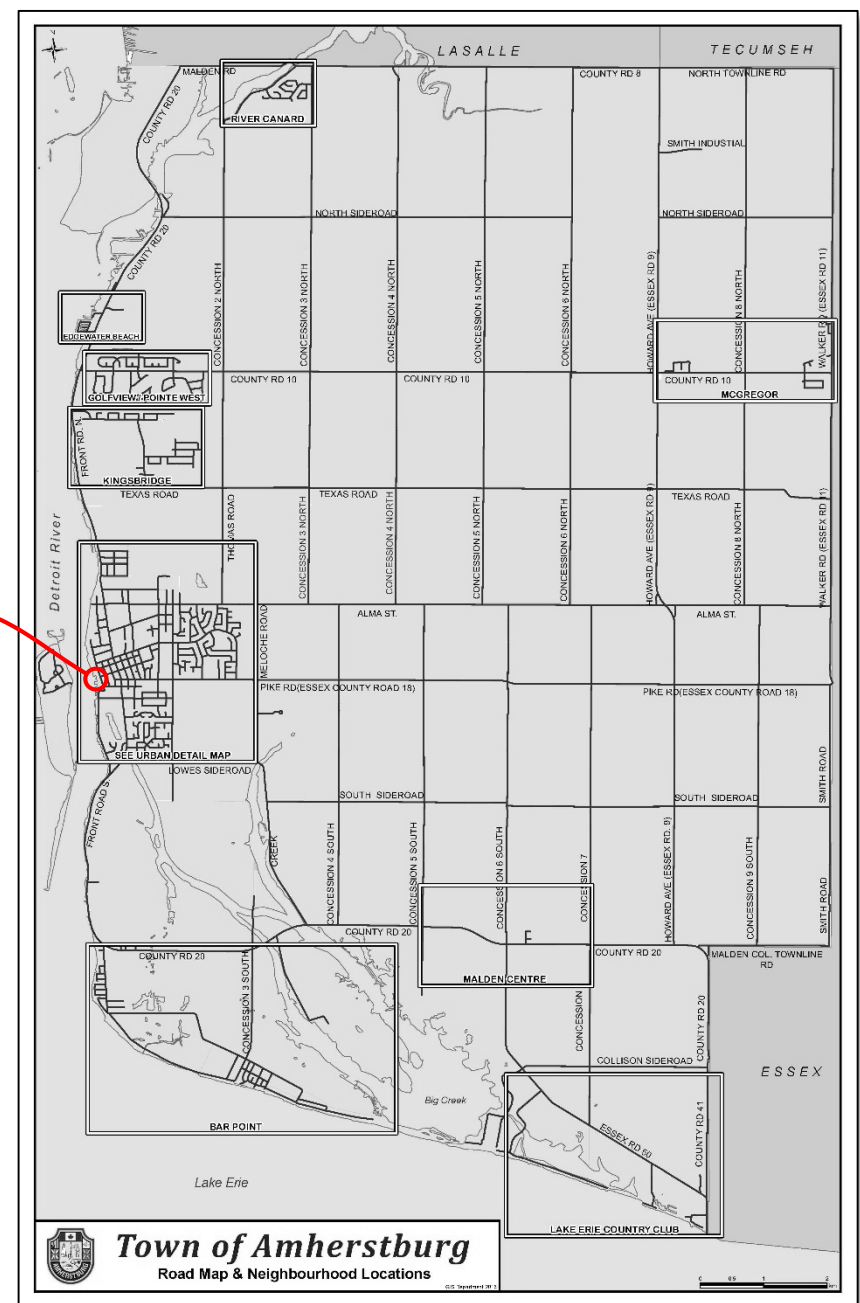
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

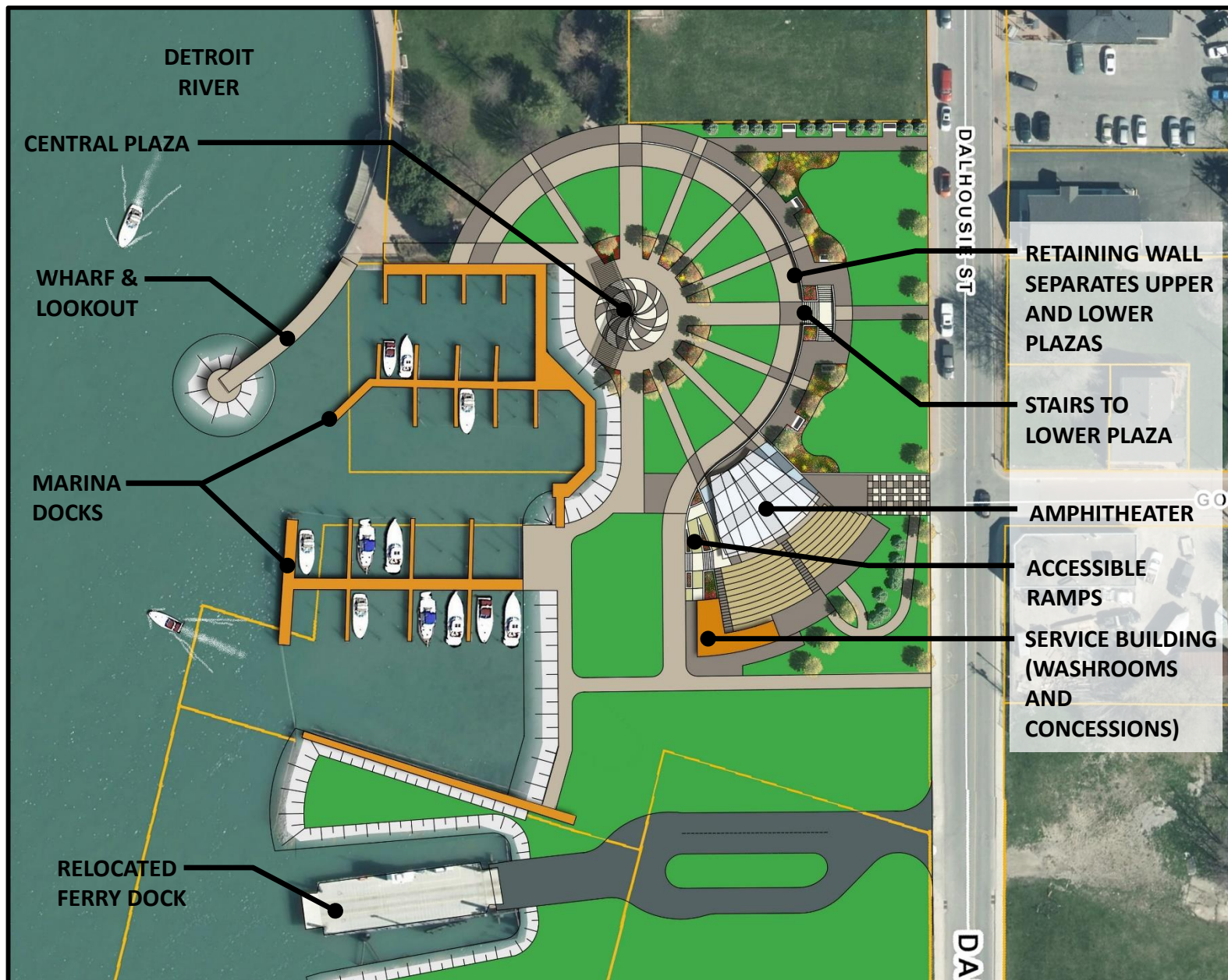
Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON



Title	Location Map	Date July 2018	FIGURE 1
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale NTS	
		Project No. 17-025	



Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project		Scale	NTS	
		Project No.	17-025	
Amherstburg Festival Plaza and Marina Class Environmental Assessment				

Liz Michaud

From: Liz Michaud
Sent: August-13-18 3:38 PM
To: 'myeengun@cottfn.com'
Cc: 'kriley@cottfn.com'; 'Rochelle Smith'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Myeengun Henry,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

In order to protect the proposed marina, a breakwater that extends along the shoreline is proposed along the Detroit River. The breakwater will most likely be floating, and would be able to move in during the winter to protect it and the docks from ice. A new layout for the marina will be developed as part of this study to maximize the number of docks and maintain safe maneuvering fairways for boats. A copy of the preliminary concept plan is attached to the Notice of Intent.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

If you would prefer to receive the attached information by hard copy mail please let me know and I will have a copy mailed out to you. If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: July-25-18 2:57 PM
To: 'myeengun@cottfn.com' <myeengun@cottfn.com>
Cc: 'kriley@cottfn.com' <kriley@cottfn.com>; 'Rochelle Smith' <rsmith@cottfn.com>
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Myeengun Henry,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Welcome to the Public Drop-In Centre No. 1

> All relevant information regarding this project (including the display material presented today) is available for public review on the Town of Amherstburg's website (www.amherstburg.ca).

> Please sign to record your attendance.

> Please review the display material and provide any comments on the sheet provided. You may submit your comments by mail / fax / e-mail or you may place them in the Comment Box located on the sign-in table.


> All comments for this Drop-In Centre must be received by **August 13th, 2018** to be given consideration in the development of the preferred solution for this project. Contact information for the Project Team is available below, and also on the comment sheet provided.

> The Project Team members present will be pleased to discuss any questions you may have.


Project Team

This study has been initiated by the Town of Amherstburg. Landmark Engineers Inc. has been retained by the Town to serve as the Lead Consultant on the project.


Any comments, questions or suggestions relevant to this study should be directed to the following primary members of the Project Team:



David M. Krutusch, PEng
Landmark Engineers Inc.
2380 Ambleside Drive
Windsor, Ontario N9C 4A4
Phone: (519) 972-8022
Fax: (519) 972-8644
Email: dkrutusch@landmarkengineers.ca



Mark W. Golin, PEng
Town of Amherstburg
3250 McIntosh Rd.
Amherstburg, Ontario N0V 2T6
Phone: (519) 756-5458
Fax: (519) 756-7111
Email: mgo@amherstburg.ca



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process Amherstburg Parks Master Plan

Master Plan use in EA Process

The Municipal Class EA document specifically addresses the use of Master Plans.

Master Plans are defined as:

A long range plan which integrates infrastructure requirements for existing and future land use with environmental assessment principles. At a minimum, a Master Plan addresses Phases 1 and 2 of the Municipal Class EA process.


	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Landmark Engineers Inc.	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓
Amherstburg Class EA Process	✓	✓	✓	✓	✓

Parks Master Plan Project

- The Town of Amherstburg retained Montha Brown Planning Consultants (MBPC) to undertake the Parks Master Plan project.
- Two Public Information sessions for the Parks Master Plan were held in October 2017 by MBPC.
- MBPC also conducted stakeholder interviews (November 2017), monitored an online public engagement forum (www.townofamherstburg.ca), and conducted an online community survey (September – November 2017) to obtain feedback regarding the Parks Master Plan.

Community Engagement Feedback Highlights

- 62% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.
- Waterfront parks and facilities were listed as greatest importance in Amherstburg Parks for 88% of the respondents (over playgrounds, splashpads, and sports facilities).
- Festivals and fairs were the second highest response (72%) when asked what type of events respondents participate in outdoors.
- Highest response was use of trails / parks for walking / jogging.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Site Location

Study Area Context

The aerial photos of the study area (along the water) will be extended to include the limits of the existing docks.

Aerial Photos

The aerial photos depicted in these images were taken in the spring of 2017. The buildings that existed on the property have since been demolished.







AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Background and Project Objectives

Background


The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property on the Detroit River waterfront as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was conducted in September 2017, aimed at soliciting stakeholder feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project and the potential environmental impacts it may have, an environmental assessment needs to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.


In January 2018, Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Project Objectives

- Prepare a site plan that incorporates a park with an amphitheatre.
- Assess the condition of the existing marina.
- Create a marina layout that is more functional and has a larger capacity than the existing marina.
- Design a breakwater to improve the function of the marina and mitigate wave action.



EXISTING SITE LOOKING NORTH



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process

Where we have been:

1. Identify Problem or Opportunity
2. Identify Stakeholders / Interested Parties
3. Select Project Location
4. Develop Preliminary Conceptual Design
5. Develop Preliminary Environmental Assessment
6. Develop Preliminary Environmental Assessment
7. Develop Preliminary Environmental Assessment

Where we are going:

8. Complete (This was completed as part of the Master Plan)
9. Complete (This was completed as part of the Master Plan)
10. Complete (Project has been scheduled for 2018)
11. Complete
12. Complete
13. Complete (This was completed as part of the Master Plan)
14. Complete (This was completed as part of the Master Plan)


We Are Here

Date to be Determined (September 2018)

Project progress file to be completed October 2018

Public has 30 days to request a Public Hearing from the Minister of the Environment (see Notice 1)

Timeline based on Amherstburg Planning



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Site Topography

The subject property generally slopes down from north to south and from east to west. Due to the high level of historic disturbance on the site, it is unclear where the historic shoreline was originally located, but it is believed that some of the lower portions of the site was filled in to create more land adjacent to the marina.

When the buildings were demolished in 2017, affected portions of the site were filled and graded to drain toward the Detroit River.

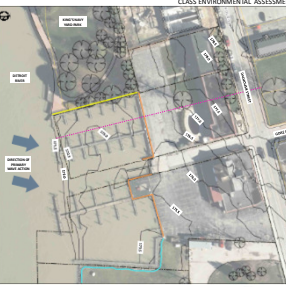
Marina Bathymetry

The river bottom throughout the existing marina is generally flat and appears to drop off into the channel near the west end of the docks.

At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.


Marina Climate

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.



Legend:

- North - West Direction
- East - East Direction
- West - West Direction
- South - South Direction
- North - North Direction
- East - East Direction
- West - West Direction
- South - South Direction



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Purpose, Problem and Process

Purpose

This Drop-In Centre is intended to:


- Present the Problem / Opportunity Statement for the Project.
- Introduce the members of the Project Team.
- Present the scope of the Class Environmental Assessment (Class EA) process.

Problem / Opportunity Statement

"This study intends to achieve a design for a public festival plaza and transient marina that will improve the existing vacant land, enhance the connection to King's Navy Yard Park and restore the existing disused marina."

Environmental Assessment (EA) Process

- This project will follow the planning process set out in the Municipal Engineers Association's Municipal Class Environmental Assessment (Class EA). A copy of this document, which sets out the details of the approved Planning and Design Process for municipal projects (such as this), is on-site and is available for review by the public.
- Since the Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment will be focusing on new construction of a plaza and marina, the Project Team has concluded that this project falls under Schedule "B" of the Municipal Class EA.
- For "Schedule B" projects, only one point of Public Consultation is required. Given the high-profile nature of this project, however, the Project Team has elected to increase the level of public consultation (over and above the minimum requirement), and host an extra Public Drop-In Centre, creating a total of two Public Consultations for this project.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

The following displays are intended to present the Environmental Inventory of the Study Area that has been compiled by the Project Team. This inventory documents the existing conditions of the site in terms of the following categories:

Physical Environment



- Site Location
- Physical Infrastructure (e.g.: utilities, existing marina condition, etc.)
- Topography
- Bathymetry and Wave Climate


Natural Environment

- Aquatic Habitat
- Species at Risk

Social / Economic Environment

- Land Ownership
- Adjacent Land Use
- Heritage & Archaeological Resources



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Existing Shore Protection

The existing steel sheet pile breakwater along the north side of the marina, adjacent to King's Navy Yard Park, has been impacted and appears to be in poor condition.

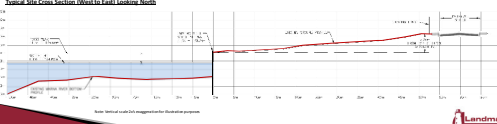
The rock shore protection along the south portion of the basin is in fair condition.


Marina Docks

Since the closure of the Marina, the docks have not been maintained and are generally in poor condition. Some of the docks may be repaired for reuse.

The layout of the "Taleway" between the existing docks does not meet the minimum standard recommended for safe maneuvering of boats in and out of a marina. It is recommended that the marina docks be removed and reconfigured according to current marina design standards.

Physical Site Cross Section (West to East Looking North)





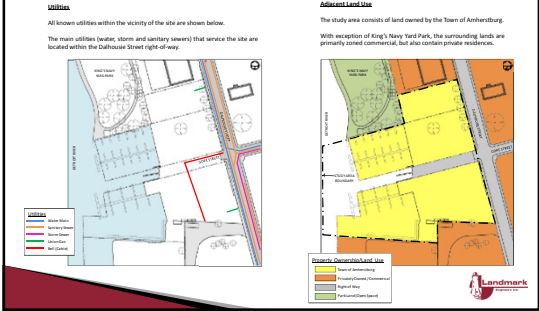
Environmental Inventory

Utilities & Adjacent Land Use

Utilities

All known utilities within the vicinity of the site are shown below.

The main utilities (water, storm and sanitary sewers) that service the site are located within the Dalhousie Street right-of-way.

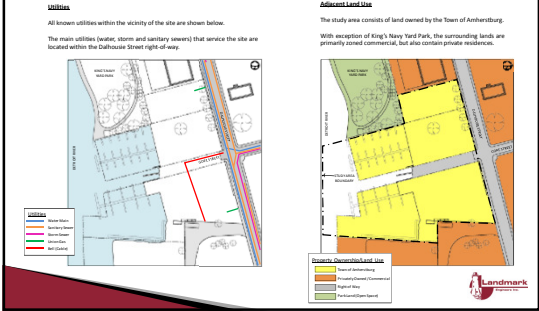


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Adjacent Land Use

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily zoned commercial, but also contain private residences.



Evaluation of Alternatives

Alternative A : Passive Park

The passive park alternative would be an extension to King's Navy Yard Park with a view of the transient marina.

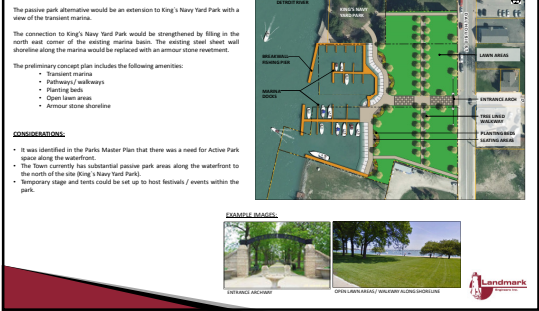
The connection to King's Navy Yard Park would be strengthened by filling in the north east corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn area
- Armour stone shoreline

CONSIDERATIONS:

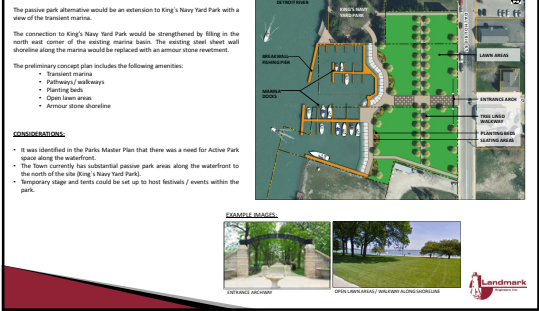
- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

EXAMPLE IMAGES

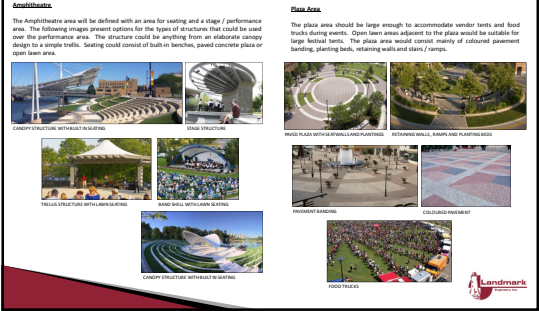


Design Considerations

Amphitheatre and Plaza

Amenities

The Amphitheatre area will be defined with an area for seating and a stage / performance area. The following images present options for the types of structure that could be used over the performance area. The structure could be anything from an elaborate canopy design to a simple trellis. Seating could consist of built-in benches, paved concrete plaza or open lawn area.

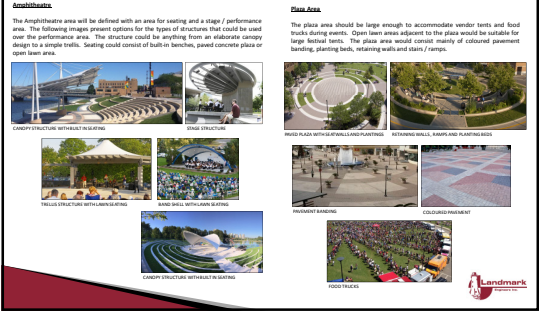


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Plaza Area

The plaza area should be large enough to accommodate vendor tents and food trucks during events. Open lawn area adjacent to the plaza would be suitable for large festival tents. The plaza area would consist mainly of coloured pavement paving, planting beds, retaining walls and stairs / ramps.



Environmental Inventory

Natural and Social Environments

Natural Environment:

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

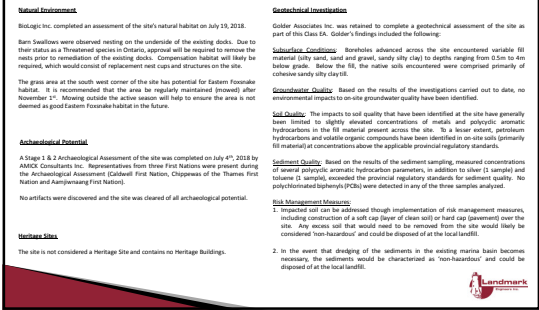
Archaeological Potential:

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMOX Consultants Inc. Representatives from the First Nations were present during the Archaeological Assessment (Gallwey First Nations, Chippewas of the Thames First Nation and Anishnawabeg First Nations).

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites:

The site is not considered a Heritage Site and contains no Heritage Buildings.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Geotechnical Investigation

Golden Associates Inc. was retained to complete a geotechnical assessment of the site as part of the Class EA. Golden's findings included the following:

Subsurface Conditions: Boreholes advanced across the site encountered variable fill material (silty sand, sand and gravel, sandy silt (clay) to depths ranging from 0.5m to 4m below grade). Below the fill, the native soils encountered were comprised primarily of cohesive sandy silt/clays.

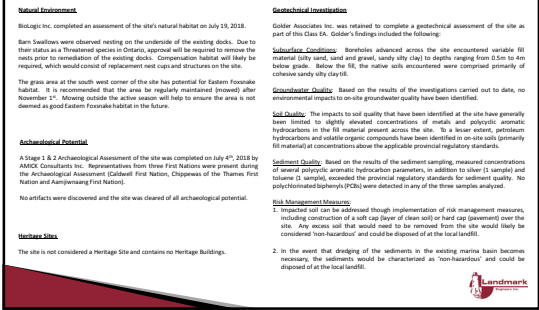
Groundwater Quality: Based on the results of the investigations carried out to date, no environmental impacts to on-site groundwater quality have been identified.

Soil Quality: The impacts to soil quality that have been identified at the site have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.

Sediment Quality: Based on the results of the sediment sampling, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (1 sample) and bismuth (2 samples), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples analyzed.

Risk Management Measures:

1. Impacted soil can be addressed through implementation of risk management measures, including construction of a lift cap (layer of clean soil) or hard cap (concrete) over the site. Any metals soil that would need to be removed from the site would likely be considered 'non-hazardous' and could be disposed of at the local landfill.
2. In the event that dredging of the sediments in the existing marina basin becomes necessary, the sediments would be characterized as 'non-hazardous' and could be disposed of at the local landfill.



Evaluation of Alternatives


Alternative B : Expanded Marina

In June of 2018, a petition was received by the Town asking that a boat launch with appropriate number of parking spaces for vehicles, the boat trailers, a wharf and lookout (the shoreline fishing) and transient marina slips be incorporated into the final design of the site.

A preliminary design concept for such a facility is presented here, with parking and turn-around spaces provided, based on other similar-sized facilities in Essex County. To minimize the interference with the traffic on Dalhousie Street, a one-way / not in proposed, with ample room for trailers to turn and back into the boat launch within the site.

CONSIDERATIONS:

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront as identified in the Parks Master Plan.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

EXAMPLE IMAGES




Design Considerations

Transient Marina and Breakwaters

Breakwaters

Breakwaters are offshore structures that protect marinas and shorelines from the erosive force of waves. As shown in the example images below, they are typically constructed of stone or concrete. The existing marina basin is currently exposed to the Detroit River, with no breakwater to protect the marina from wave action. This study will determine an appropriate breakwater size, orientation and materials to sufficiently protect the proposed transient marina design.




AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Transient Marina

A transient marina offers temporary docking for boats and does not offer reserved slips. The marina would be available for boaters who wish to dock their boat while visiting Amherstburg.

The current layout of the 'Transient' marina during the existing docks does not meet the minimum standard for safe maneuvering of boats in and out of the marina. This study will develop a new dock layout that will meet current marina design guidelines for safe maneuvering.



Evaluation of Alternatives

Alternative Solutions

The project team identified three alternatives that were considered as options for the site development; Active Park, Passive Park and Expanded Marina. The advantages and disadvantages for each option are presented below:

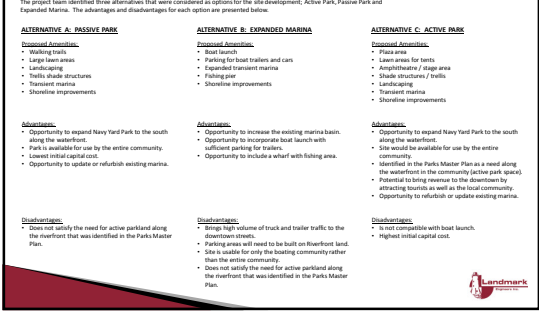
ALTERNATIVE A: PASSIVE PARK

Advantages:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn area
- Armour stone shoreline

Disadvantages:

- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

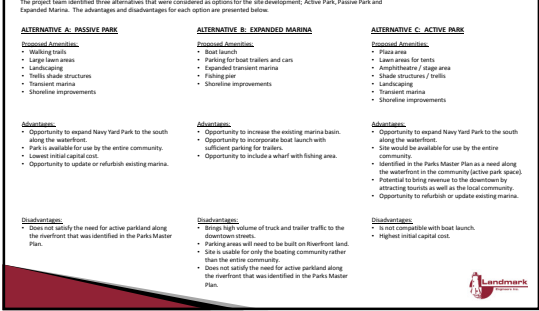
ALTERNATIVE B: EXPANDED MARINA

Advantages:

- Boat launch
- Parking spaces for trailers and cars
- Ferryed transient marina
- Fishing pier
- Shoreline improvements

Disadvantages:

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.



Evaluation of Alternatives

Alternative C : Active Park

Landmark was retained by the Town in 2016 to prepare this preliminary concept plan. The plan has been presented to the public at two previous Public Information Centres for the Parks Master Plan and made available to the Town's website (link the Burg for consideration and comment).

This concept plan intends to strengthen the connection to Navy Yard Park by filling in the north west corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

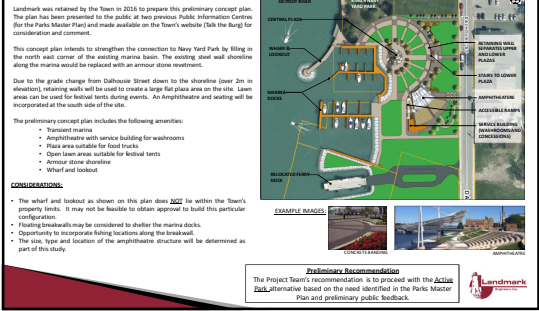
Due to the grade change from Dalhousie Street down to the shoreline (over 2m in elevation), retaining walls will be used to create a large flat plaza area on the site. A lawn area can be used for festival tents during events. An Amphitheatre and seating will be incorporated at the south side of the site.

The preliminary concept plan includes the following amenities:

- Transient marina
- Amphitheatre with service building for washrooms
- Plaza area suitable for food trucks
- Open lawn area suitable for festival tents
- Armour stone shoreline
- Wharf and lookout

CONSIDERATIONS:

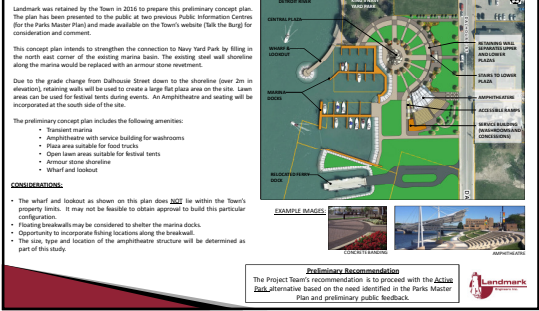
- The wharf and lookout as shown on this plan does not fit within the Town's property limits. It may not be feasible to obtain approval to build this particular configuration.
- Fishing breakwaters may be considered to shelter the marina docks.
- Opportunity to incorporate fishing structures along the breakwater.
- The size, type and location of the amphitheatre structure will be determined as part of this study.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

EXAMPLE IMAGES



Next Steps

- All comments received from today's meeting will be reviewed by the Project Team and used to help define the Preferred Solution.
- A second Public Drop-in Centre will be held in late September to present the Preferred Solution.
- All comments received from the second Drop-in Centre will be reviewed and used to help refine the Preferred Solution. The project website will then be updated and a Notice will be published, alerting the public that the 30-day public review period for this Class EA has commenced.
- Provided that all outstanding issues are resolved and no Part II Orders are requested, the project may proceed to final approvals and construction upon completion of the 30-day public review period.

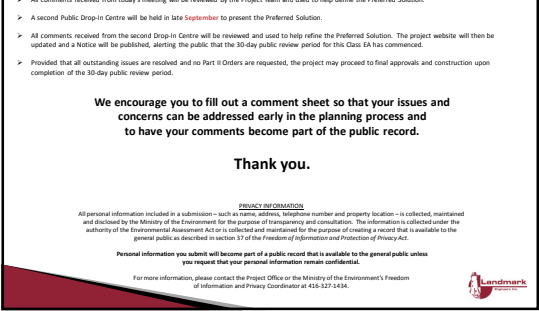
We encourage you to fill out a comment sheet so that your issues and concerns can be addressed early in the planning process and to have your comments become part of the public record.

Thank you.

All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public as described in section 37 of the Freedom of Information and Protection of Privacy Act.

Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416-327-2434.



Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:12 PM
To: 'myeengun@cottfn.com'
Cc: 'kriley@cottfn.com'; 'Rochelle Smith'
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Myeenngun Henry,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:18 PM
To: 'myeengun@cottfn.com'
Cc: 'kriley@cottfn.com'; 'Rochelle Smith'
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Chief Myeengun Henry,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:

<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

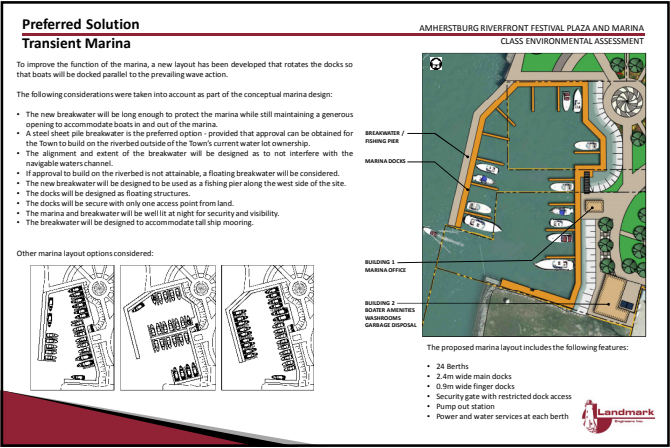
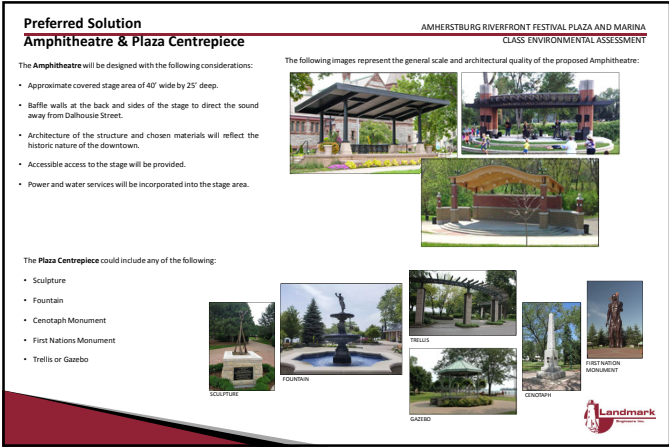
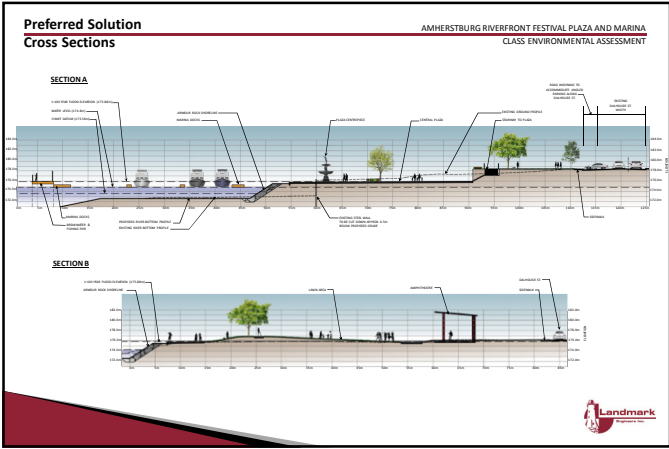
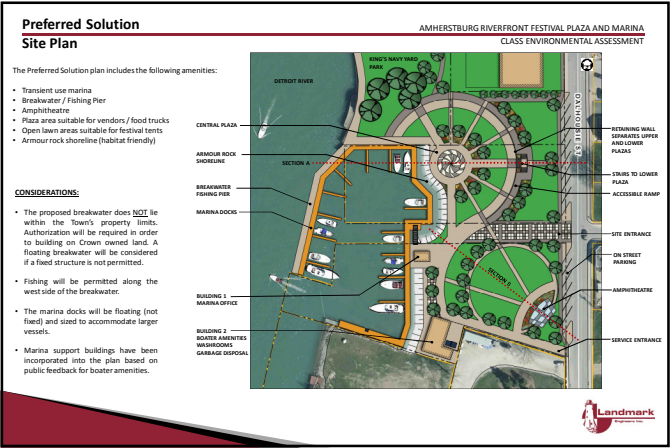
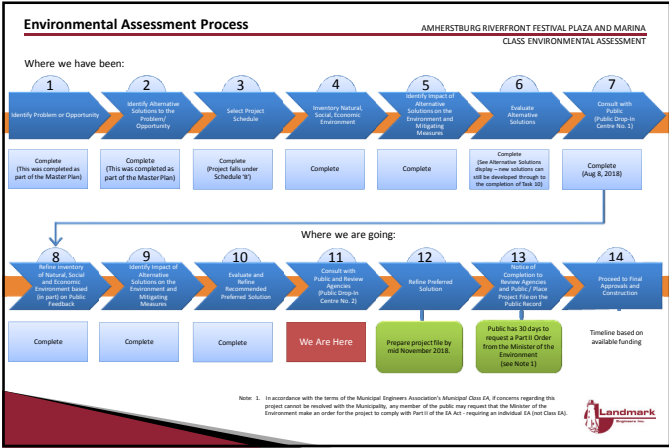
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.

Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.

Public Views

Boaters' Facilities

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Building 1: Office / ICE / BORDER SERVICES / SECURITY

Building 2: WASHROOM / SHOWER / FRESH DISPOSAL / LAUNDRY

RAMP TO DOCKS WITH SECURITY GATE

PHOTO / PICNIC AREA

FISHING PIER

Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN

NEW STEEL SHEET PILE WALL

BUILDING 1

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN

ARMOUR ROCK SHORELINE

STEEL SHEET PILE WALL

Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.

Plaza Site Works:
The estimate includes items such as:

- Site Preparation (Removals and Servicing)
- Retaining Walls
- Ramps and Stairs
- Concrete Flatwork
- Lighting
- Landscaping
- Dalhousie Street Widening

Shoreline Improvements:
The estimate includes items such as:

- Cut down existing steel walls
- Armour Stone Shoreline
- Steel Sheet Pile Walls

Marinas:
The estimate includes items such as:

- Breakwater
- Floating Docks
- Lighting
- Dredging
- Servicing

Structures:
The estimate includes the following items:

- Amphitheatre
- Marina Building 1
- Marina Building 2

Landmark

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$400K - \$450K

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$1.5M - \$2.5M

Total Preliminary Project Budget Estimate
\$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES:

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does NOT include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.

Liz Michaud

From: Dan Krutsch
Sent: March 26, 2019 10:20 AM
To: Liz Michaud
Subject: FW: Amherstburg Riverfront Festival Plaza and Marina
Attachments: LTR_Consultation_Amherstburg Festival Plaza_20190326.pdf

See below and attached. Let's discuss next steps with COTTFN.

From: Fallon Burch <fburch@cottfn.com>
Sent: March-26-19 10:17 AM
To: Dan Krutsch <dkrutsch@landmarkengineers.ca>
Cc: Rochelle Smith <rsmith@cottfn.com>; mgalvin@amherstburg.ca
Subject: Amherstburg Riverfront Festival Plaza and Marina

Good morning Daniel,

I have attached a letter of response on behalf of Chippewas of the Thames First Nation. As requested in the letter to determine if there are any concerns with your project, I will need to review the final copy of your Environmental Assessment based on this review I will provide comments or recommendations. I look forward to continuing this open line of communication. If you have any questions, please do not hesitate to contact me.

Thanks,



Fallon Burch
Consultation Coordinator, Chippewas of the Thames First Nation
320 Chippewa Rd Muncey, ON N0L 1Y0 | 519-289-5555 | www.cottfn.com/consultation

This email or documents accompanying this email contain information belonging to the Chippewas of the Thames First Nation. Which may be confidential and/or legally privileged. The information is intended only for the addressed recipients(s). If you are not an intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this email. Is strictly prohibited. If you have received this email in error, please advise my office and delete it from your system.



CHIPPEWAS OF THE THAMES FIRST NATION

March 25, 2019

VIA EMAIL

Daniel M. Krutsch, P.Eng
Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4

RE: Amherstburg Riverfront Festival Plaza and Marina

Dear Daniel,

The proposed project is located within the McKee Treaty (1790) area, to which Chippewas of the Thames First Nation (COTTfN) is a signatory. It is also allocated within the Big Bear Creek Additions to Reserve (ATR) land selection area, as well as COTTfN's Traditional Territory.

I have reviewed the Public Drop-In Centre No. 2 Information. To determine if there are any impacts or concerns with your project, we would need to review all completed studies. Please forward the Final Completed Environmental Assessment Report to consultation@cottfn.com.

We look forward to continuing this open line of communication. To implement meaningful consultation, COTTfN has developed our protocol- a document and a process that will guide positive working relationships. We would be happy to meet with you to review COTTfN's Consultation Protocol. For your convenience the protocol is available at www.cottfn.com/consultation.

Please do not hesitate to contact me if you need further clarification of this letter.

Thank you,

Fallon Burch
Consultation Coordinator
Chippewa of the Thames First Nation
(519) 289-5555 Ext. 251

Revision: N/A

EMS-CA-03

320 Chippewa Road, Muncey, ON, N0L 1Y0
Ph. 519-289-5555 Fax. 519-289-2230
info@cottfn.com www.cottfn.com

Liz Michaud

From: Liz Michaud
Sent: April 3, 2019 10:34 AM
To: 'consultation@cottfn.com'
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Project File Studies

Good Morning Ms. Burch,

As per our conversation this morning, I am forwarding all of the studies that were completed as part of the Environmental Assessment. Due to the size of the files I was unable to attach them to the e-mail. Please use the link provided below to download the files by April 10, 2019.

<https://spaces.hightail.com/receive/ZSwm5jqZLa>

The link contains the following files:

- Archaeological Checklist and Report
- Cultural Heritage Checklist and Report
- Marine Archaeological Checklist
- Natural Heritage Report
- Geotechnical Report
- Geo-Environmental Report

Please don't hesitate to contact me if you have any questions regarding any of the information provided.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

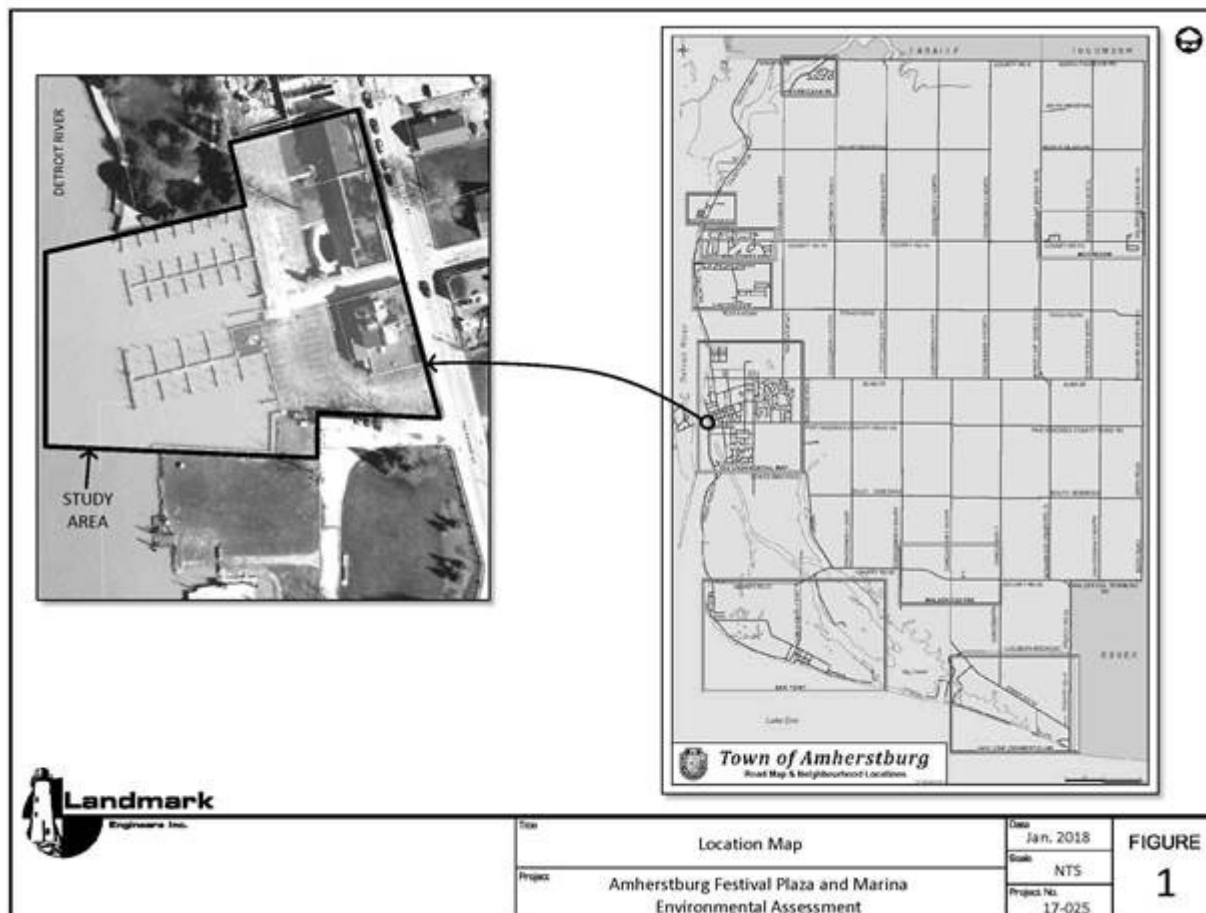
Delaware First Nation
Correspondence

Liz Michaud

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: 'denise.stonefish@delawarenation.on.ca'
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed

in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 11:26 AM
To: 'chief@aamjiwnaang.ca'; 'sjohnston@aamjiwnaang.ca'; 'cjames@aamjiwnaang.ca'; 'drskoke@wifn.org'; 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'; 'Thomas.bressette@kettlepoint.org'; 'Valerie George'; 'myeengun@cottfn.com'; 'kriley@cottfn.com'; 'rsmith@cottfn.com'; 'chief.duckworth@caldwellfirstnation.ca'; 'nikki.orosz@caldwellfirstnation.ca'; 'Randall.phillips@oneida.on.ca'; 'catherine.cornelius@oneida.on.ca'; 'chief@munsee.ca'; 'glenn@munsee.ca'; 'denise.stonefish@delawarenation.on.ca'
Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud

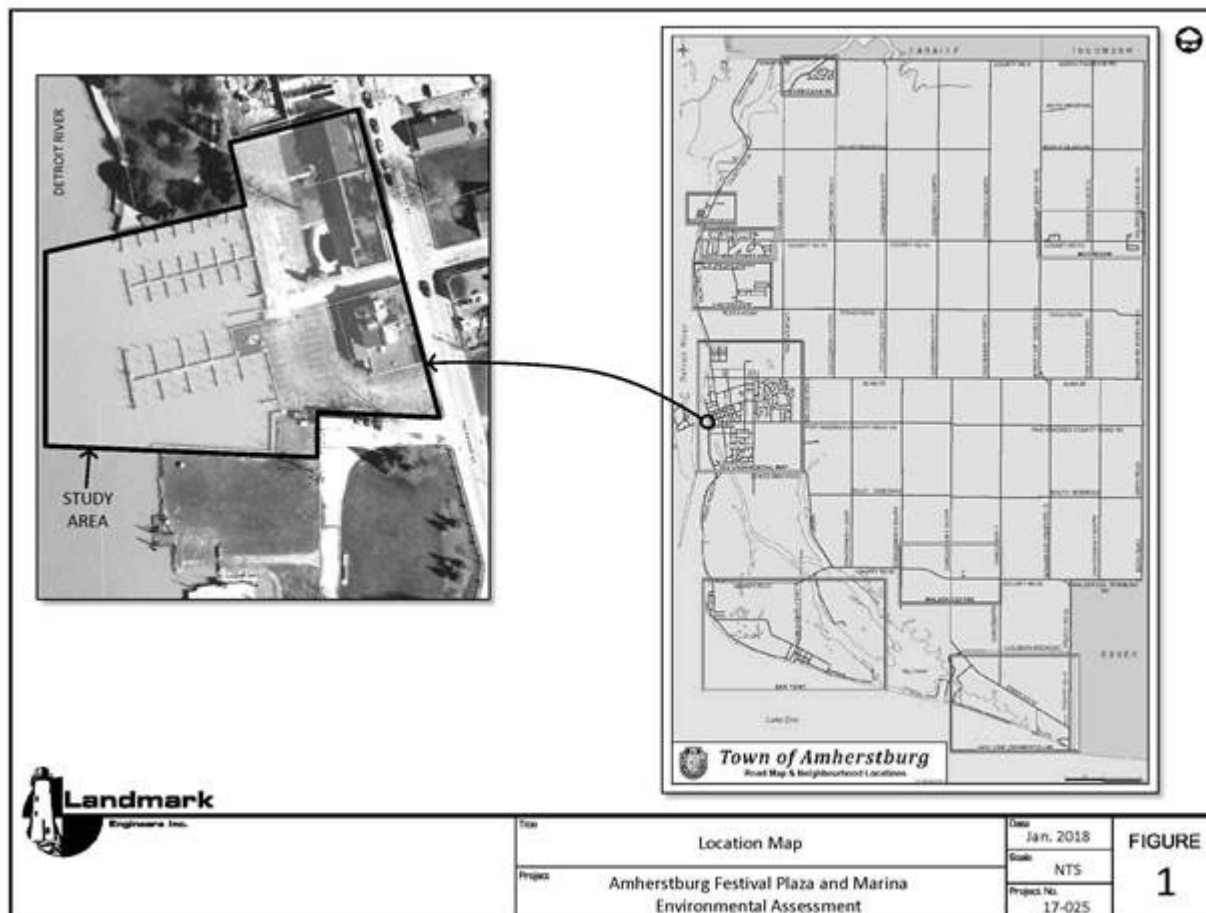


Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: July-25-18 3:28 PM
To: denise.stonefish@delawarenation.on.ca
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Denise Stonefish,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

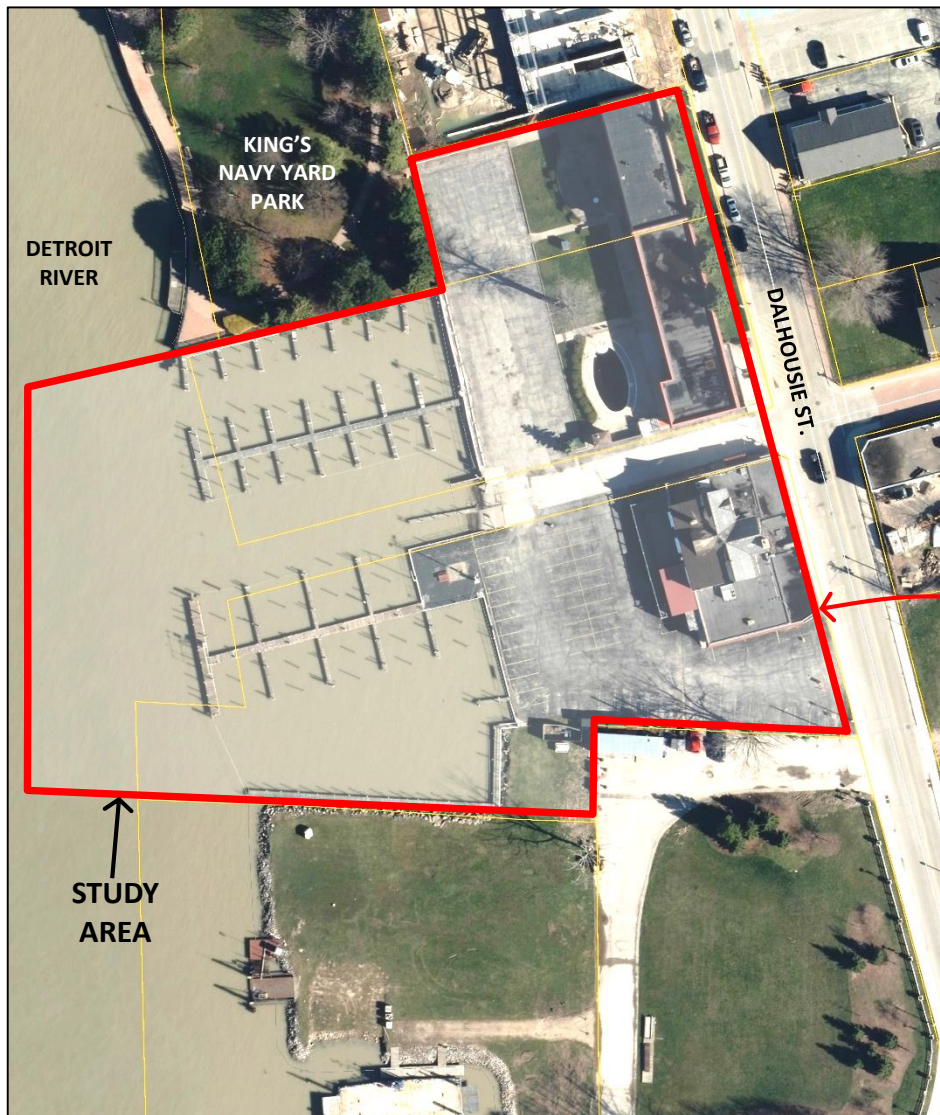
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

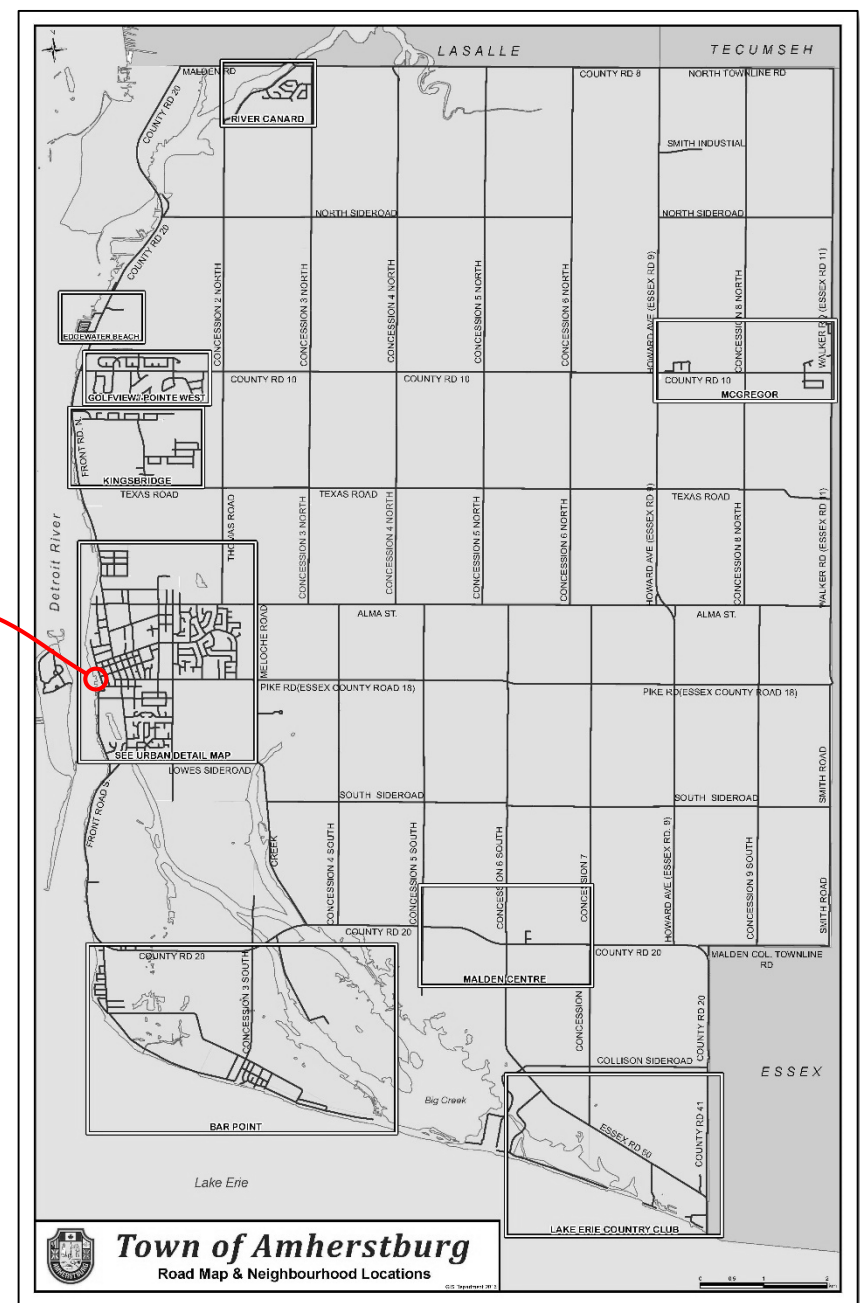
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

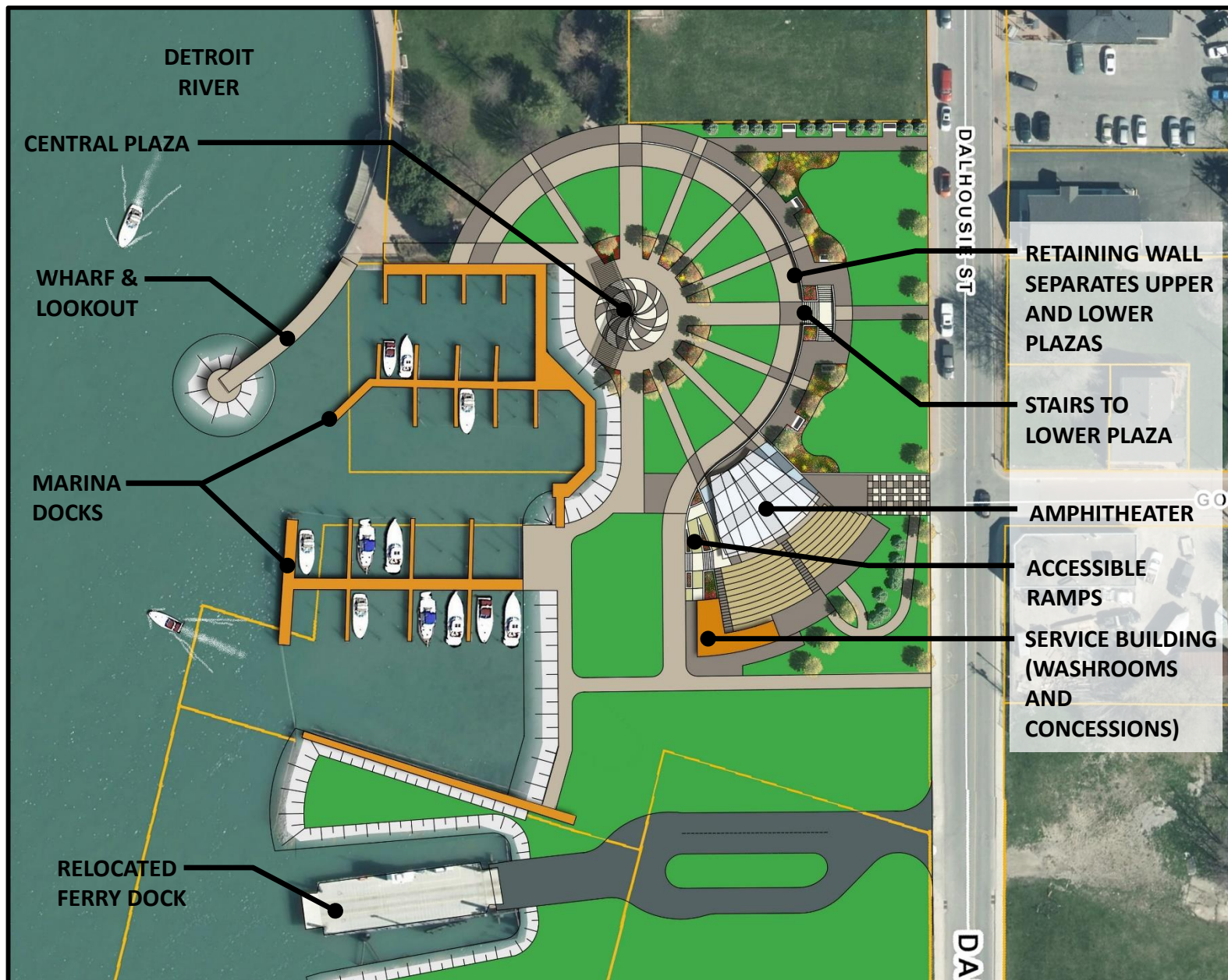
Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON





Liz Michaud

From: Liz Michaud
Sent: August-13-18 4:03 PM
To: denise.stonefish@delawarenation.on.ca
Subject: FW: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Denise Stonefish,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

In order to protect the proposed marina, a breakwater that extends along the shoreline is proposed along the Detroit River. The breakwater will most likely be floating, and would be able to move in during the winter to protect it and the docks from ice. A new layout for the marina will be developed as part of this study to maximize the number of docks and maintain safe maneuvering fairways for boats. A copy of the preliminary concept plan is attached to the Notice of Intent.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 218.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

If you would prefer to receive the attached information by hard copy mail please let me know and I will have a copy mailed out to you. If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: July-25-18 3:28 PM
To: denise.stonefish@delawarenation.on.ca
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Denise Stonefish,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Welcome to the Public Drop-In Centre No. 1

> All relevant information regarding this project (including the display material presented today) is available for public review on the Town of Amherstburg's website (www.amherstburg.ca).

> Please sign to record your attendance.

> Please review the display material and provide any comments on the sheet provided. You may submit your comments by mail / fax / e-mail or you may place them in the Comment Box located on the sign-in table.


> All comments for this Drop-In Centre must be received by **August 13th, 2018** to be given consideration in the development of the preferred solution for this project. Contact information for the Project Team is available below, and also on the comment sheet provided.

> The Project Team members present will be pleased to discuss any questions you may have.


Project Team

This study has been initiated by the Town of Amherstburg. Landmark Engineers Inc. has been retained by the Town to serve as the Lead Consultant on the project.


Any comments, questions or suggestions relevant to this study should be directed to the following primary members of the Project Team:



David M. Krutich, PEng
Landmark Engineers Inc.
2380 Ambassadeur Drive
Windsor, Ontario N9C 4A4
Phone: (519) 972-8022
Fax: (519) 972-8644
Email: dkrutich@landmarkengineers.ca



Mark W. Golin, PEng
Town of Amherstburg
3250 Melville Rd.
Amherstburg, Ontario N0V 2T6
Phone: (519) 756-5408
Fax: (519) 756-7111
Email: mgo@amherstburg.ca



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process Amherstburg Parks Master Plan

Master Plan use in EA Process

The Municipal Class EA document specifically addresses the use of Master Plans.

Master Plans are defined as:

A long range plan which integrates infrastructure requirements for existing and future land use with environmental assessment principles. At a minimum, a Master Plan addresses Phases 1 and 2 of the Municipal Class EA process.


	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Landmark Engineers Inc.	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓

Parks Master Plan Project

- The Town of Amherstburg retained Montha Brown Planning Consultants (MBPC) to undertake the Parks Master Plan project.
- Two Public Information sessions for the Parks Master Plan were held in October 2017 by MBPC.
- MBPC also conducted stakeholder interviews (November 2017), monitored an online public engagement forum (www.townofamherstburg.ca), and conducted an online community survey (September – November 2017) to obtain feedback regarding the Parks Master Plan.

Community Engagement Feedback Highlights

- 60% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.
- Waterfront parks and facilities were listed as greatest importance in Amherstburg Parks for 88% of the respondents (over playgrounds, splashpads, and sports facilities).
- Festivals and fairs were the second highest response (72%) when asked what type of events respondents participate in outdoors.
- Highest response was use of trails / parks for walking / jogging.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

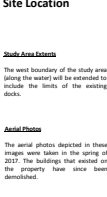


Environmental Inventory Site Location


Study Area Context

The aerial photos of the study area along the water will be extended to include the limits of the existing docks.

Aerial Photos

The aerial photos depicted in these images were taken in the spring of 2017. The buildings that existed on the property have since been demolished.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Background and Project Objectives

Background


The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property on the Detroit River waterfront as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was conducted in September 2017, aimed at soliciting stakeholder feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project and the potential environmental impacts it may have, an environmental assessment needs to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.


In January 2018, Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Project Objectives

- Prepare a site plan that incorporates a park with an amphitheatre.
- Assess the condition of the existing marina.
- Create a marina layout that is more functional and has a larger capacity than the existing marina.
- Design a breakwater to improve the function of the marina and mitigate wave action.



EXISTING SITE LOOKING NORTH



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT


Environmental Assessment Process

Where we have been:

1. Identify Problem or Opportunity
2. Identify Stakeholders / Interested Parties
3. Develop Project Objectives
4. Develop Preliminary Environmental Assessment / Screening
5. Develop Detailed Environmental Assessment / Screening
6. Develop Detailed Environmental Assessment / Screening
7. Develop Detailed Environmental Assessment / Screening

Where we are going:

8. Develop Detailed Environmental Assessment / Screening
9. Develop Detailed Environmental Assessment / Screening
10. Develop Detailed Environmental Assessment / Screening
11. Develop Detailed Environmental Assessment / Screening
12. Develop Detailed Environmental Assessment / Screening
13. Develop Detailed Environmental Assessment / Screening
14. Develop Detailed Environmental Assessment / Screening



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Site Topography

The subject property generally slopes down from north to south and from east to west. Due to the high level of historic disturbance on the site, it is unclear where the historic shoreline was originally located, but it is believed that some of the lower portions of the site was filled in to create more land adjacent to the marina.

When the buildings were demolished in 2017, affected portions of the site were filled and graded to drain toward the Detroit River.

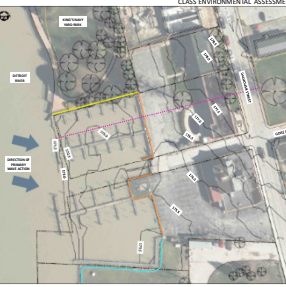
Marina Bathymetry

The river bottom throughout the existing marina is generally flat and appears to drop off into the channel near the west end of the docks.

At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.


Marina Climate

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.



Legend:

- North - West Direction
- East - East Direction
- West - West Direction
- South - South Direction
- North - North Direction
- East - East Direction
- West - West Direction
- South - South Direction



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Purpose, Problem and Process

Purpose

This Drop-In Centre is intended to:


- Present the Problem / Opportunity Statement for the Project.
- Introduce the members of the Project Team.
- Present the scope of the Class Environmental Assessment (Class EA) process.

Problem / Opportunity Statement

"This study intends to achieve a design for a public festival plaza and transient marina that will improve the existing vacant land, enhance the connection to King's Navy Yard Park and restore the existing dilapidated marina."

Environmental Assessment (EA) Process

- This project will follow the planning process set out in the Municipal Engineers Association's Municipal Class Environmental Assessment (Class EA). A copy of this document, which sets out the details of the approved Planning and Design Process for municipal projects (such as this), is on-site and is available for review by the public.
- Since the Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment will be focusing on new construction of a plaza and marina, the Project Team has concluded that this project falls under Schedule "B" of the Municipal Class EA.
- For "Schedule B" projects, only one point of Public Consultation is required. Given the high-profile nature of this project, however, the Project Team has elected to increase the level of public consultation (over and above the minimum requirement), and host an extra Public Drop-In Centre, creating a total of two Public Consultations for this project.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

The following displays are intended to present the Environmental Inventory of the Study Area that has been compiled by the Project Team. This inventory documents the existing conditions of the site in terms of the following categories:

Physical Environment



- Site Location
- Physical Infrastructure (e.g.: utilities, existing marina condition, etc.)
- Topography
- Bathymetry and Wave Climate


Natural Environment

- Aquatic Habitat
- Species at Risk

Social / Economic Environment

- Land Ownership
- Adjacent Land Use
- Heritage & Archaeological Resources



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Existing Shore Protection

The existing steel sheet pile breakwater along the north side of the marina, adjacent to King's Navy Yard Park, has been impacted and appears to be in poor condition.

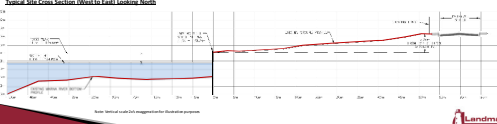
The rock shore protection along the south portion of the basin is in fair condition.


Marina Docks

Since the closure of the Marina, the docks have not been maintained and are generally in poor condition. Some of the docks may be repaired for reuse.

The layout of the "Taleway" between the existing docks does not meet the minimum standard recommended for safe maneuvering of boats in and out of a marina. It is recommended that the marina docks be removed and reconfigured according to current marina design standards.

Physical Site Cross Section (West to East Looking North)





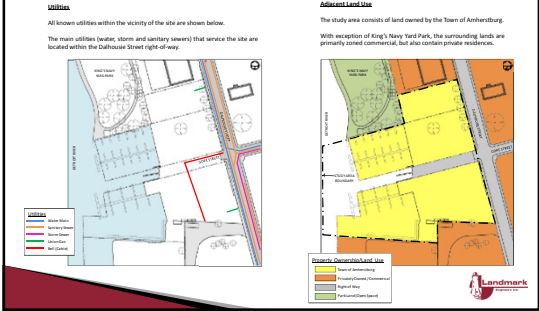
Environmental Inventory

Utilities & Adjacent Land Use

Utilities

All known utilities within the vicinity of the site are shown below.

The main utilities (water, storm and sanitary sewers) that service the site are located within the Dalhousie Street right-of-way.



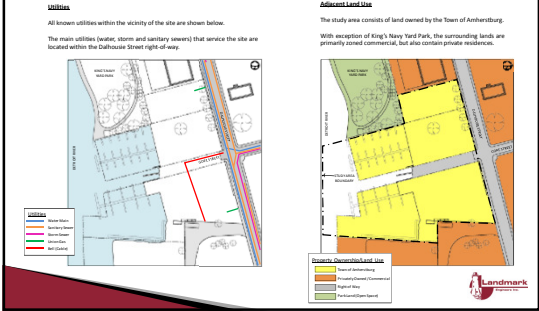
AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Adjacent Land Use

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily owned commercial, but also contain private residences.

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily owned commercial, but also contain private residences.



Evaluation of Alternatives

Alternative A : Passive Park

The passive park alternative would be an extension to King's Navy Yard Park with a view of the transient marina.

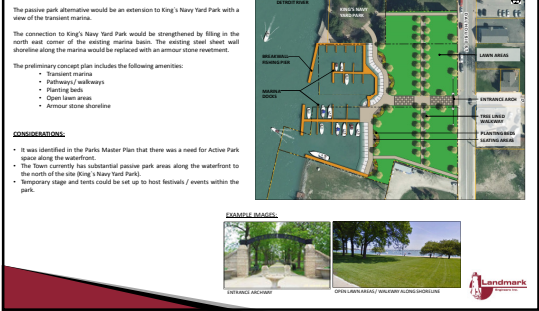
The connection to King's Navy Yard Park would be strengthened by filling in the north east corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn area
- Armour stone shoreline

CONSIDERATIONS:

- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

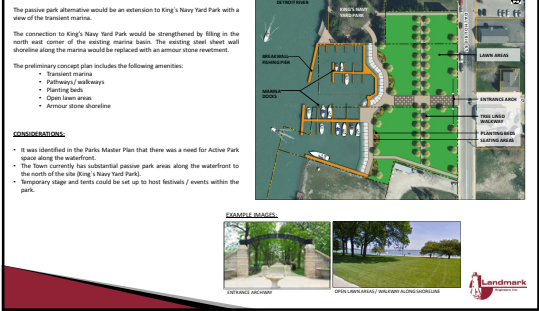
EXAMPLE IMAGES

TRANSIENT MARINA

ENTRANCE AREA

OPEN LAWN AREA

ARMOUR STONE SHORELINE

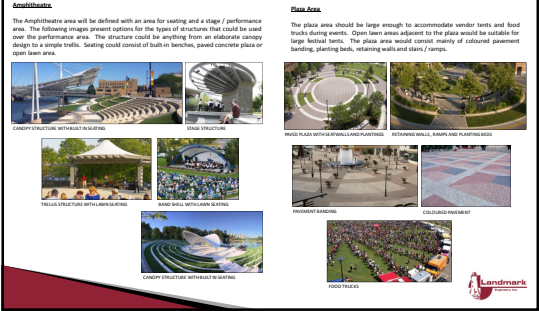


Design Considerations

Amphitheatre and Plaza

Amenities

The Amphitheatre area will be defined with an area for seating and a stage / performance area. The following images present options for the types of structure that could be used over the performance area. The structure could be anything from an elaborate canopy design to a simple built-in seating. Seating could consist of built-in benches, paved concrete plaza or open lawn area.

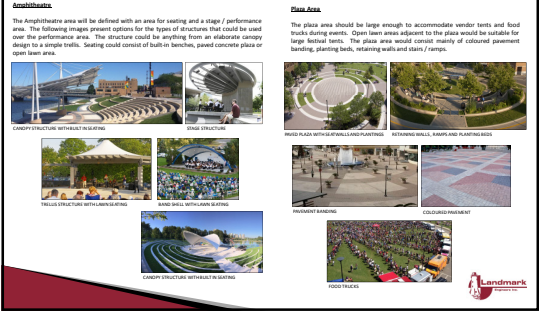


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Plaza Area

The plaza area should be large enough to accommodate vendor tents and food trucks during events. Open lawn area adjacent to the plaza would be suitable for large festival tents. The plaza area would consist mainly of coloured pavement, planting beds, retaining walls and stairs / ramps.



Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

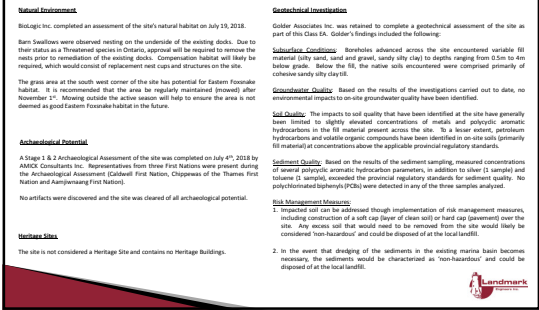
Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMOX Consultants Inc. Representatives from the First Nations were present during the Archaeological Assessment (Gallwey First Nations, Chippewas of the Thames First Nation and Anishnawabeg First Nations).

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Geotechnical Investigation

Golden Associates Inc. was retained to complete a geotechnical assessment of the site as part of the Class EA. Golden's findings included the following:

Subsurface Conditions: Boreholes advanced across the site encountered variable fill material (silty sand, sand and gravel, sandy silt (clay) to depths ranging from 0.5m to 4m below grade). Below the fill, the native soils encountered were comprised primarily of cohesive sandy silt/clays.

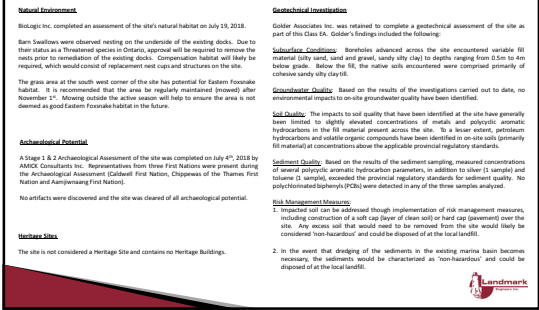
Groundwater Quality: Based on the results of the investigations carried out to date, no environmental impacts to on-site groundwater quality have been identified.

Soil Quality: The impacts to soil quality that have been identified at the site have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.

Sediment Quality: Based on the results of the sediment sampling, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (1 sample) and bismuth (2 samples), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples analyzed.

Risk Management Measures:

1. Impacted soil can be addressed through implementation of risk management measures, including construction of a lift cap (layer of clean soil) or hard cap (concrete) over the site. Any metals soil that would need to be removed from the site would likely be considered 'non-hazardous' and could be disposed of at the local landfill.
2. In the event that dredging of the sediments in the existing marina basin becomes necessary, the sediments would be characterized as 'non-hazardous' and could be disposed of at the local landfill.



Evaluation of Alternatives


Alternative B : Expanded Marina

In June of 2018, a petition was received by the Town asking that a boat launch with appropriate number of parking spaces for vehicles, the boat trailers, a wharf and lookout (the shoreline fishing) and transient marina slips be incorporated into the final design of the site.

A preliminary design concept for such a facility is presented here, with parking and turn-around space provided, based on other similar-sized facilities in Essex County. To minimize the interference with the traffic on Dalhousie Street, a one-way / not in proposed, with ample room for trailers to turn and back into the boat launch within the site.

CONSIDERATIONS:

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront as identified in the Parks Master Plan.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

EXAMPLE IMAGES

BOAT LAUNCH

PARKING SPACES

WHARF AND LOOKOUT

TRANSIENT MARINA SLIPS




Design Considerations

Transient Marina and Breakwaters

Breakwaters

Breakwaters are offshore structures that protect marinas and shorelines from the erosive force of waves. As shown in the example images below, they are typically constructed of stone or concrete. The existing marina basin is currently exposed to the Detroit River, with no breakwater to protect the marina from wave action. This study will determine an appropriate breakwater size, orientation and materials to sufficiently protect the proposed transient marina design.




AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Transient Marina

A transient marina offers temporary docking for boats and does not offer reserved slips. The marina would be available for boaters who wish to dock their boat while visiting Amherstburg.

The current layout of the 'transient' marina during the existing docks does not meet the minimum standard for safe maneuvering of boats in and out of the marina. This study will develop a new dock layout that will meet current marina design guidelines for safe maneuvering.



Evaluation of Alternatives

Alternative Solutions

The project team identified three alternatives that were considered as options for the site development; Active Park, Passive Park and Expanded Marina. The advantages and disadvantages for each option are presented below:

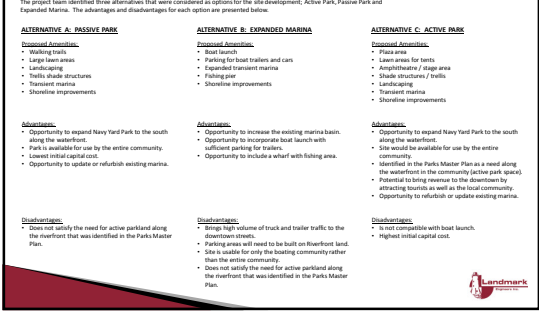
ALTERNATIVE A: PASSIVE PARK

Advantages:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn area
- Armour stone shoreline

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

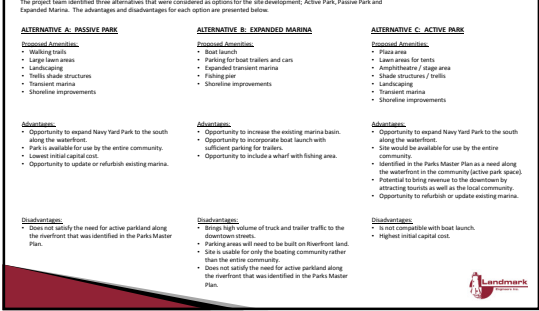
ALTERNATIVE B: EXPANDED MARINA

Advantages:

- Boat launch
- Parking for boat trailers and cars
- Expanded transient marina
- Fishing pier
- Shoreline improvements

Disadvantages:

- Opportunity to increase the existing marina basin.
- Site would be available for use by the entire community.
- Opportunity to include a wharf with fishing area.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

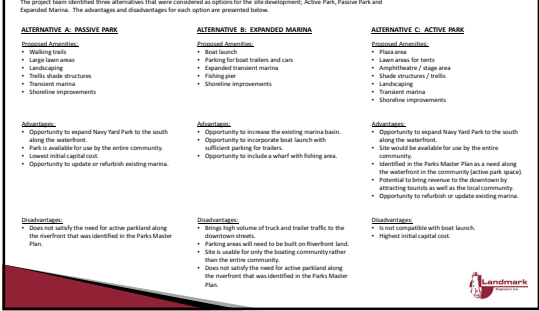
ALTERNATIVE C: ACTIVE PARK

Advantages:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn area
- Armour stone shoreline

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.



Evaluation of Alternatives

Alternative C : Active Park

Landmark was retained by the Town in 2016 to prepare this preliminary concept plan. The plan has been presented to the public at two previous Public Information Centres for the Parks Master Plan and made available to the Town's website (link the Burg for consideration and comment).

This concept plan intends to strengthen the connection to King's Navy Yard Park by filling in the north west corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

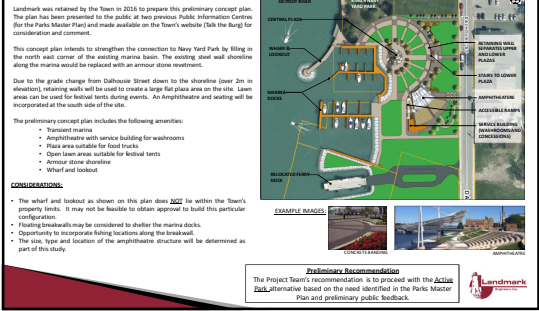
Due to the grade change from Dalhousie Street down to the shoreline (over 2m in elevation), retaining walls will be used to create a large flat plaza area on the site. A lawn area can be used for festival tents during events. An Amphitheatre and seating will be incorporated at the south side of the site.

The preliminary concept plan includes the following amenities:

- Transient marina
- Amphitheatre with service building for washrooms
- Plaza area suitable for food trucks
- Open lawn area suitable for festival tents
- Armour stone shoreline
- Wharf and lookout

CONSIDERATIONS:

- The wharf and lookout as shown on this plan does not fit within the Town's property limits. It may not be feasible to obtain approval to build this particular configuration.
- Fishing breakwaters may be considered to shelter the marina docks.
- Opportunity to incorporate fishing structures along the breakwater.
- The size, type and location of the amphitheatre structure will be determined as part of this study.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

EXAMPLE IMAGES

TRANSIENT MARINA

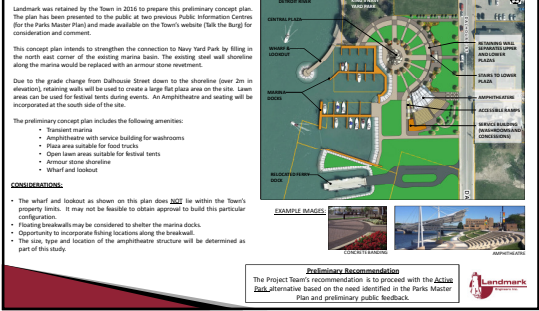
AMPHITHEATRE

PLAZA AREA

OPEN LAWN AREA

ARMOUR STONE SHORELINE

WHARF AND LOOKOUT



Next Steps

- All comments received from today's meeting will be reviewed by the Project Team and used to help define the Preferred Solution.
- A second Public Drop-in Centre will be held in late September to present the Preferred Solution.
- All comments received from the second Drop-in Centre will be reviewed and used to help refine the Preferred Solution. The project website will then be updated and a Notice will be published, alerting the public that the 30-day public review period for this Class EA has commenced.
- Provided that all outstanding issues are resolved and no Part II Orders are requested, the project may proceed to final approvals and construction upon completion of the 30-day public review period.

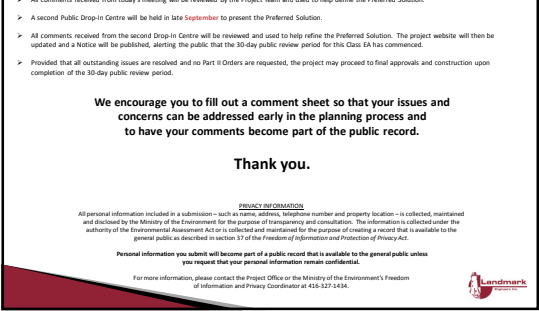
We encourage you to fill out a comment sheet so that your issues and concerns can be addressed early in the planning process and to have your comments become part of the public record.

Thank you.

All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public as described in section 37 of the Freedom of Information and Protection of Privacy Act.

Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416-327-2434.



Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:18 PM
To: denise.stonefish@delawarenation.on.ca
Subject: FW: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Stonefish,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:21 PM
To: 'denise.stonefish@delawarenation.on.ca'
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Chief Denise Stonefish,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:
<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

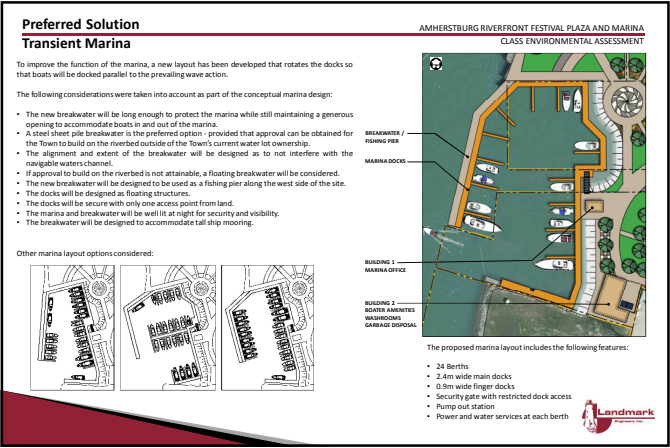
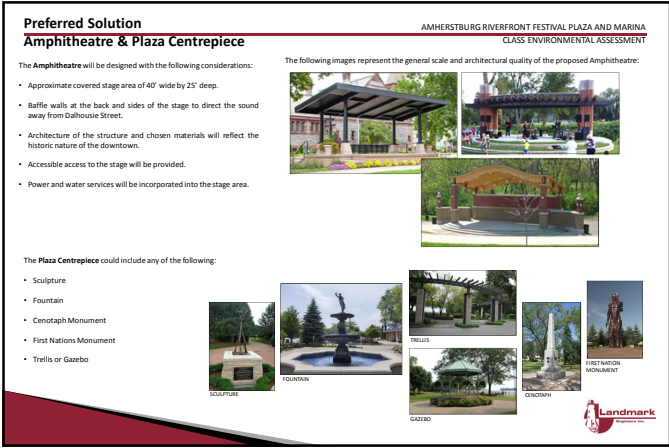
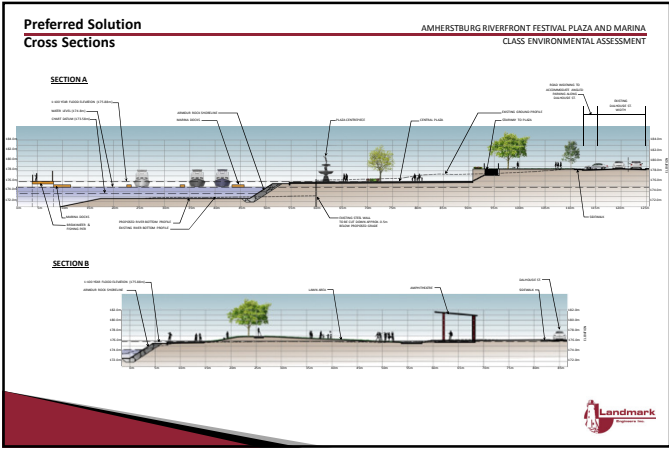
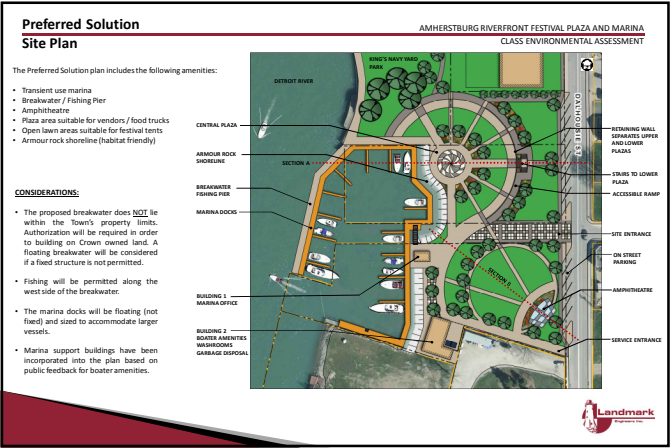
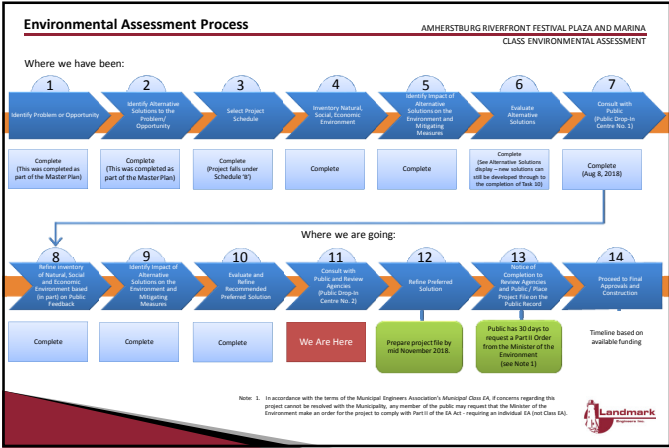
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.

Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.

Public Views

Boaters' Facilities

Building 1: Office / ICE / BORDER SERVICES / SECURITY

Building 2: WASHROOM / SHOWER / FISH DISPOSAL / LAUNDRY








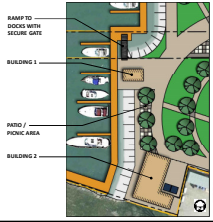
PHOTO / PICTURE AREA



RAMP TO DOCKS WITH SECURITY GATE

BUILDING 1

BUILDING 2

FISHING PIER





Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN



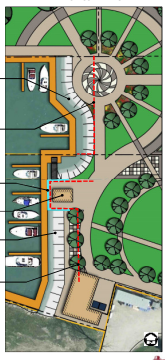
NEW STEEL SHEET PILE WALL

BUILDING 1

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN

STEEL SHEET PILE WALL



Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.

Plaza Site Works:
The estimate includes items such as:

- Site Preparation (Removals and Servicing)
- Retaining Walls
- Ramps and Stairs
- Concrete Flatwork
- Lighting
- Landscaping
- Dalhousie Street Widening

Shoreline Improvements:
The estimate includes items such as:

- Cut down existing steel walls
- Armour Stone Shoreline
- Steel Sheet Pile Walls

Marinas:
The estimate includes items such as:

- Breakwater
- Floating Docks
- Lighting
- Dredging
- Servicing

Structures:
The estimate includes the following items:

- Amphitheatre
- Marina Building 1
- Marina Building 2

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$400K - \$450K

Preliminary Budget Estimate
\$2.5M - \$3M

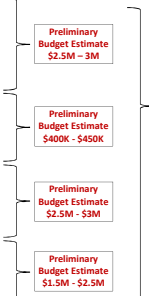
Preliminary Budget Estimate
\$1.5M - \$2.5M


Total Preliminary Project Budget Estimate
\$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does NOT include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.





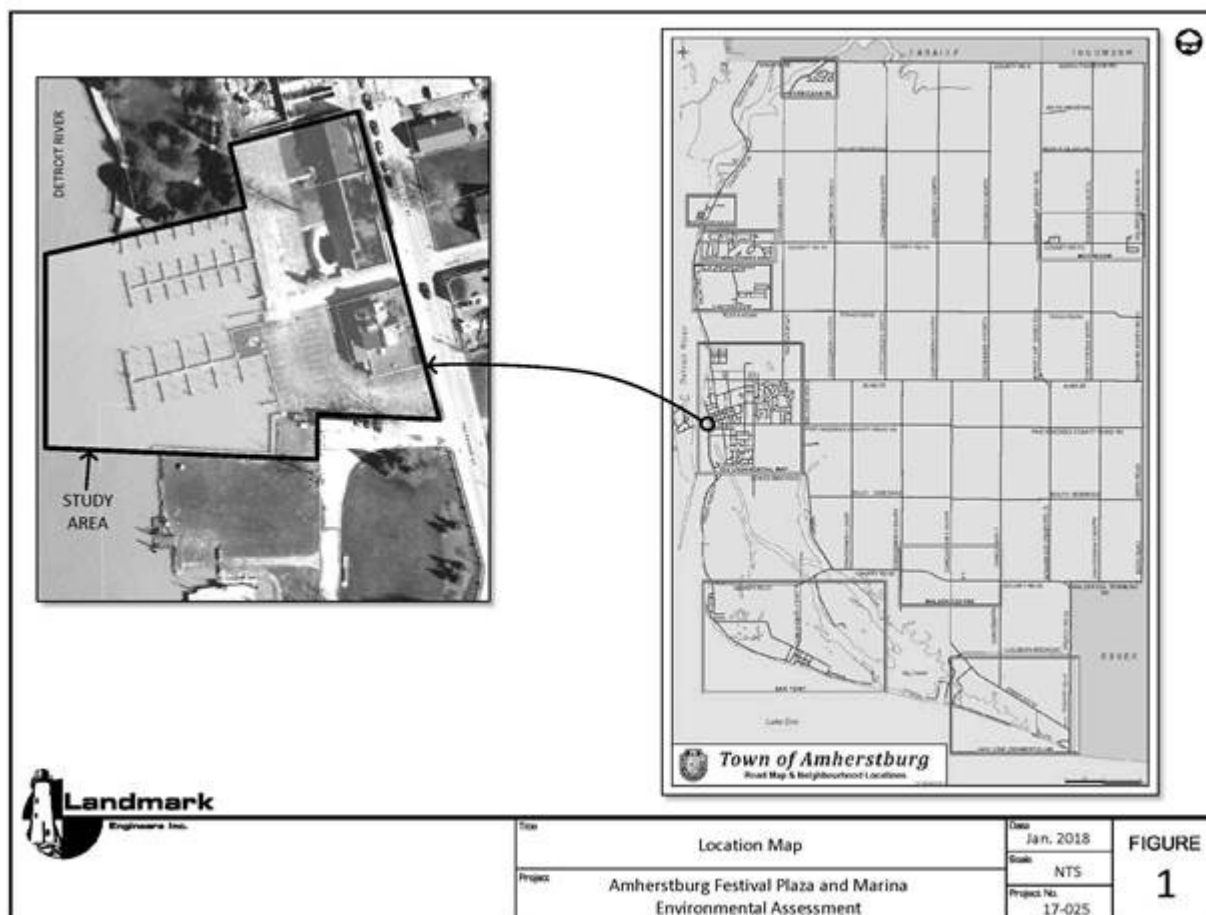
Munsee-Delaware First Nation Correspondence

Liz Michaud

From: Liz Michaud
Sent: June-19-18 11:21 AM
To: 'chief@munsee.ca'
Cc: glenn@munsee.ca
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential

environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 11:26 AM
To: 'chief@aamjiwnaang.ca'; 'sjohnston@aamjiwnaang.ca'; 'cjames@aamjiwnaang.ca'; 'drskoke@wifn.org'; 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'; 'Thomas.bressette@kettlepoint.org'; 'Valerie George'; 'myeengun@cottfn.com'; 'kriley@cottfn.com'; 'rsmith@cottfn.com'; 'chief.duckworth@caldwellfirstnation.ca'; 'nikki.orosz@caldwellfirstnation.ca'; 'Randall.phillips@oneida.on.ca'; 'catherine.cornelius@oneida.on.ca'; 'chief@munsee.ca'; 'glenn@munsee.ca'; 'denise.stonefish@delawarenation.on.ca'
Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud

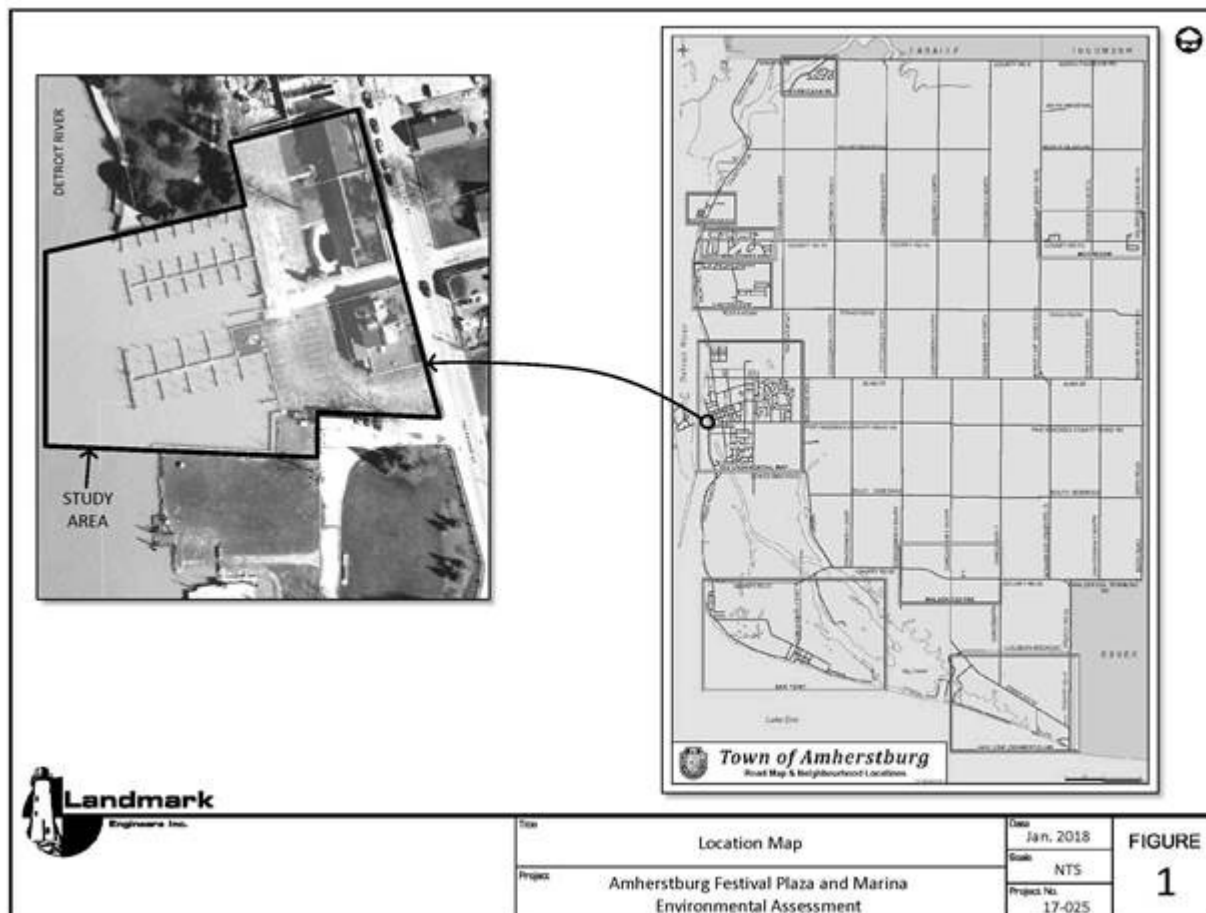


Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: July-25-18 3:20 PM
To: 'chief@munsee.ca'
Cc: 'glenn@munsee.ca'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Roger Thomas,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

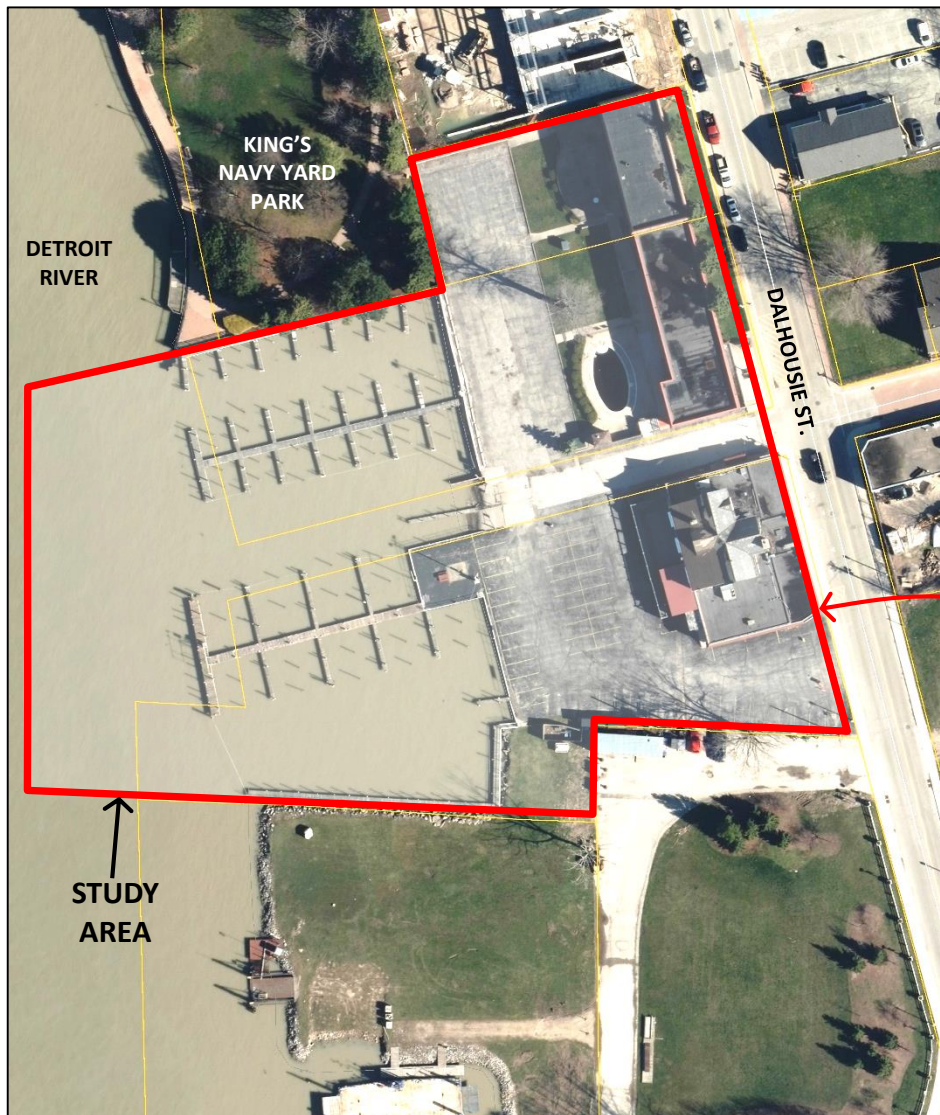
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

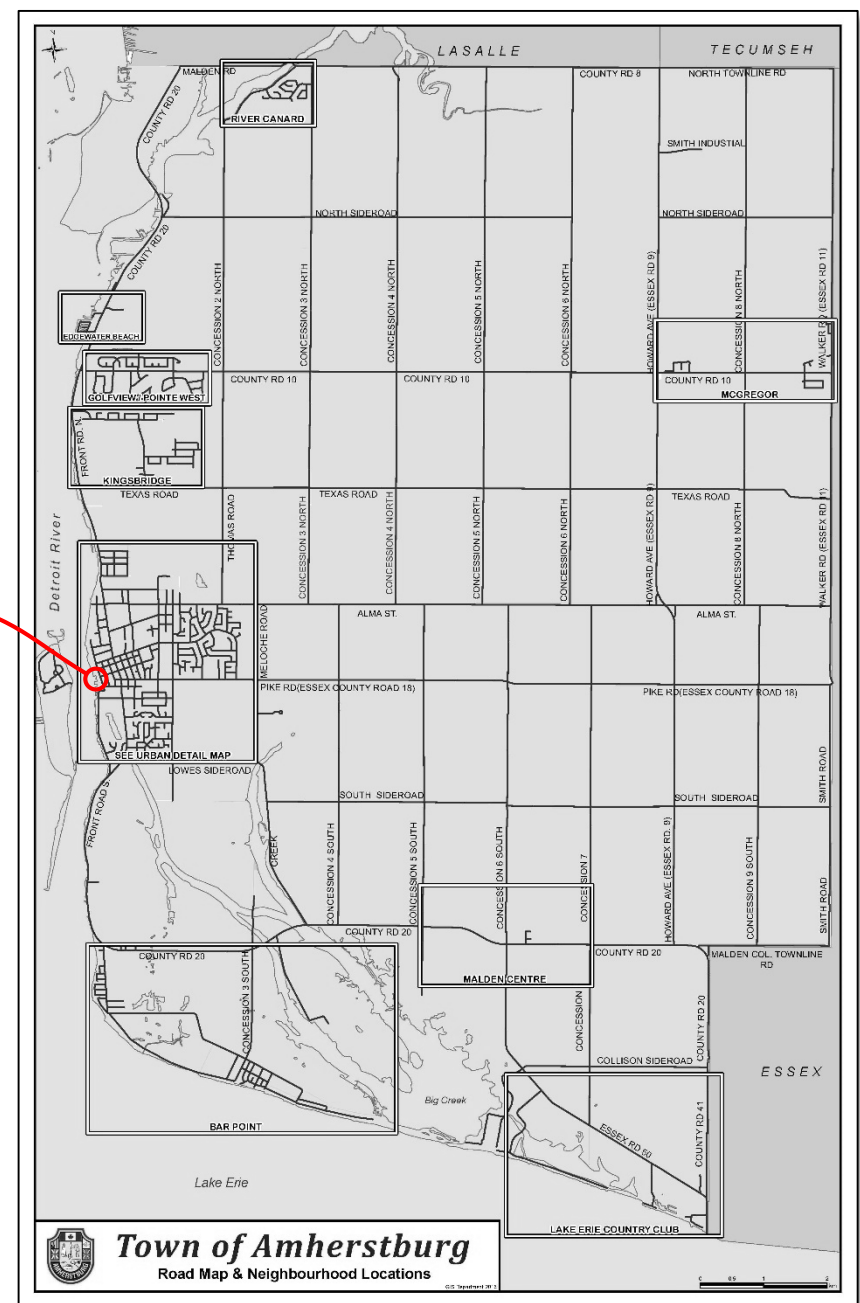
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

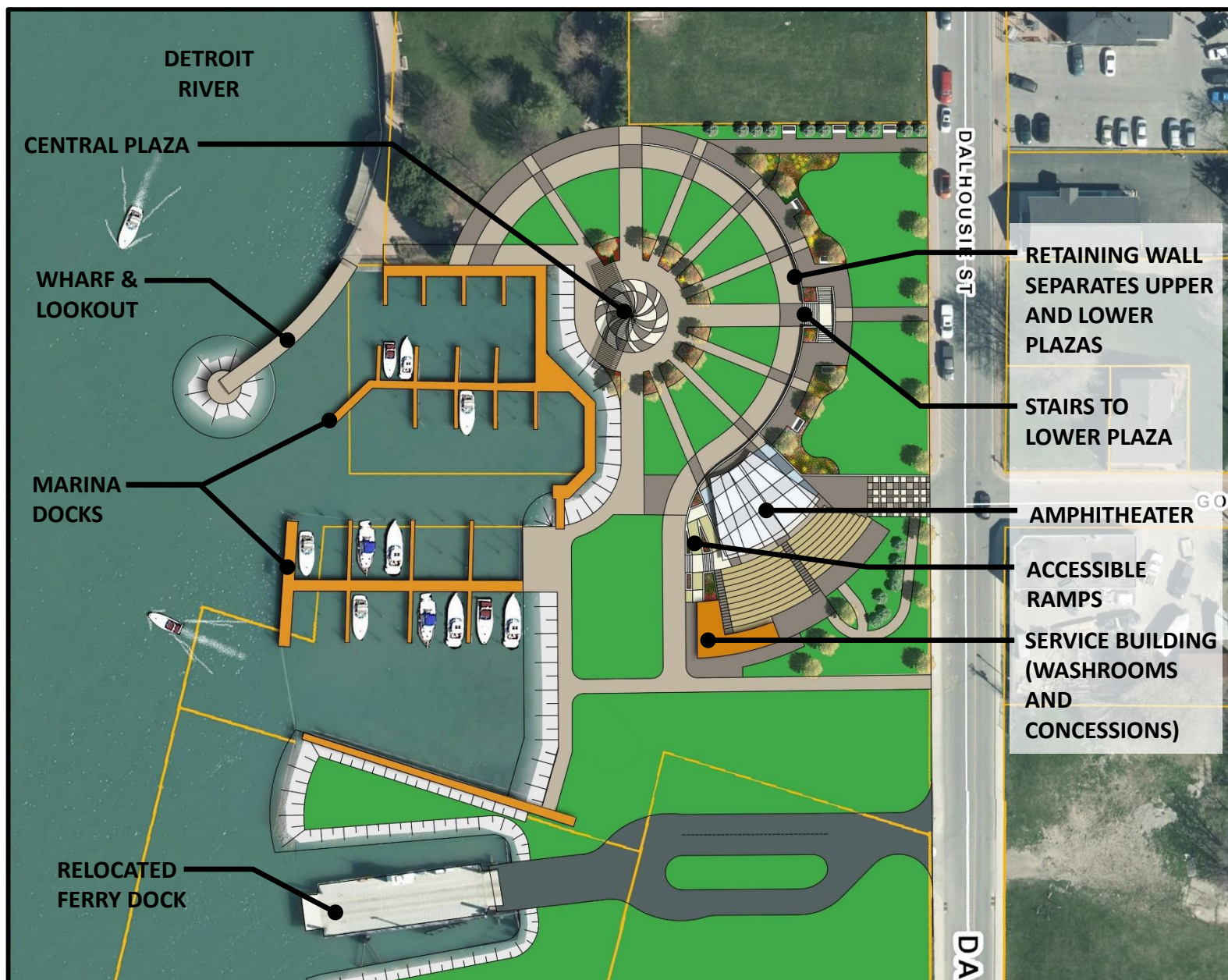
Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON



Title	Location Map	Date July 2018	FIGURE 1
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale NTS	
		Project No. 17-025	



Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project		Scale	NTS	
		Project No.	17-025	
Amherstburg Festival Plaza and Marina Class Environmental Assessment				

Liz Michaud

From: Liz Michaud
Sent: August-13-18 3:47 PM
To: 'chief@munsee.ca'
Cc: 'glenn@munsee.ca'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Roger Thomas,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: July-25-18 3:20 PM
To: 'chief@munsee.ca' <chief@munsee.ca>
Cc: 'glenn@munsee.ca' <glenn@munsee.ca>
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Roger Thomas,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Welcome to the Public Drop-In Centre No. 1

> All relevant information regarding this project (including the display material presented today) is available for public review on the Town of Amherstburg's website (www.amherstburg.ca).

> Please sign to record your attendance.

> Please review the display material and provide any comments on the sheet provided. You may submit your comments by mail / fax / e-mail or you may place them in the Comment Box located on the sign-in table.


> All comments for this Drop-In Centre must be received by **August 13th, 2018** to be given consideration in the development of the preferred solution for this project. Contact information for the Project Team is available below, and also on the comment sheet provided.

> The Project Team members present will be pleased to discuss any questions you may have.


Project Team

This study has been initiated by the Town of Amherstburg. Landmark Engineers Inc. has been retained by the Town to serve as the Lead Consultant on the project.


Any comments, questions or suggestions relevant to this study should be directed to the following primary members of the Project Team:



David M. Krutusch, PEng
Landmark Engineers Inc.
2380 Ambassadeur Drive
Windsor, Ontario N9C 4A4
Phone: (519) 972-8022
Fax: (519) 972-8644
Email: dkrutusch@landmarkengineers.ca



Mark W. Golin, PEng
Town of Amherstburg
3250 Melville Rd.
Amherstburg, Ontario N0V 2T6
Phone: (519) 756-5408
Fax: (519) 756-7111
Email: mgo@amherstburg.ca



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process Amherstburg Parks Master Plan

Master Plan use in EA Process

The Municipal Class EA document specifically addresses the use of Master Plans.

Master Plans are defined as:

A long range plan which integrates infrastructure requirements for existing and future land use with environmental assessment principles. At a minimum, a Master Plan addresses Phases 1 and 2 of the Municipal Class EA process.

	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Landmark Engineers Inc.	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓

Parks Master Plan Project

> The Town of Amherstburg retained Montha Brown Planning Consultants (MBPC) to undertake the Parks Master Plan project.

> Two Public Information sessions for the Parks Master Plan were held in October 2017 by MBPC.

> MBPC also conducted stakeholder interviews (November 2017), monitored an online public engagement forum (www.townofamherstburg.ca), and conducted an online community survey (September – November 2017) to obtain feedback regarding the Parks Master Plan.


Community Engagement Feedback Highlights

> 62% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.

> In an online poll, 94% of respondents were in support of the proposed redevelopment plan for the Duffy's site.

> Waterfront parks and facilities were listed as greatest importance in Amherstburg Parks for 88% of the respondents (over playgrounds, splashpads, and sports facilities).

> Festivals and fairs were the second highest response (72%) when asked what type of events respondents participate in outdoors. (Highest response was use of trails / parks for walking / jogging).



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

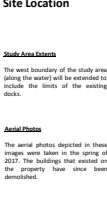

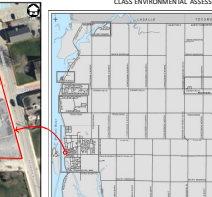
Environmental Inventory Site Location


Study Area Context

The aerial photos of the study area (along the water) will be extended to include the limits of the existing docks.

Aerial Photos

The aerial photos depicted in these images were taken in the spring of 2017. The buildings that existed on the property have since been demolished.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Background and Project Objectives

Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property on the Detroit River waterfront as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was conducted in September 2017, aimed at soliciting stakeholder feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project and the potential environmental impacts it may have, an environmental assessment needs to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

In January 2018, Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.


Project Objectives

> Prepare a site plan that incorporates a park with an amphitheatre.


> Assess the condition of the existing marina.

> Create a marina layout that is more functional and has a larger capacity than the existing marina.

> Design a breakwater to improve the function of the marina and mitigate wave action.



EXISTING SITE LOOKING NORTH



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT


Environmental Assessment Process

Where we have been:

1. Identify Problem or Opportunity
2. Develop Assessment / Transient Marina
3. Issue Project
4. Complete (This was completed as part of the Master Plan)
5. Complete (This was completed as part of the Master Plan)
6. Complete (This was completed as part of the Master Plan)
7. Complete (This was completed as part of the Master Plan)

Where we are going:

8. Complete (This was completed as part of the Master Plan)
9. Complete (This was completed as part of the Master Plan)
10. Complete (This was completed as part of the Master Plan)
11. Complete (This was completed as part of the Master Plan)
12. Complete (This was completed as part of the Master Plan)
13. Complete (This was completed as part of the Master Plan)
14. Complete (This was completed as part of the Master Plan)



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Site Topography

The subject property generally slopes down from north to south and from east to west. Due to the high level of historic disturbance on the site, it is unclear where the historic shoreline was originally located, but it is believed that some of the lower portions of the site was filled in to create more land adjacent to the marina.

When the buildings were demolished in 2017, affected portions of the site were filled and graded to drain toward the Detroit River.


Marina Bathymetry

The river bottom throughout the existing marina is generally flat and appears to drop off into the channel near the west end of the docks.


At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.

Marina Climate

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.



Legend:
North
East
West
South
North
East
West
South
North
East
West
South



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Purpose, Problem and Process

Purpose

This Drop-In Centre is intended to:

- > Present the Problem / Opportunity Statement for the Project.
- > Introduce the members of the Project Team.
- > Present the scope of the Class Environmental Assessment (Class EA) process.

Problem / Opportunity Statement


"This study intends to achieve a design for a public festival plaza and transient marina that will improve the existing vacant land, enhance the connection to King's Navy Yard Park and restore the existing dilapidated marina."

Environmental Assessment (EA) Process

> This project will follow the planning process set out in the Municipal Engineers Association's Municipal Class Environmental Assessment (Class EA). A copy of this document, which sets out the details of the approved Planning and Design Process for municipal projects (such as this), is on-site and is available for review by the public.

> Since the Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment will be focusing on new construction of a plaza and marina, the Project Team has concluded that this project falls under Schedule "B" of the Municipal Class EA.

> For "Schedule B" projects, only one point of Public Consultation is required. Given the high-profile nature of this project, however, the Project Team has elected to increase the level of public consultation (over and above the minimum requirement), and host an extra Public Drop-In Centre, creating a total of two Public Consultations for this project.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

The following displays are intended to present the Environmental Inventory of the Study Area that has been compiled by the Project Team. This inventory documents the existing conditions of the site in terms of the following categories:

Physical Environment



- Site Location
- Physical Infrastructure (e.g.: utilities, existing marina condition, etc.)
- Topography
- Bathymetry and Wave Climate


Natural Environment

- Aquatic Habitat
- Species at Risk

Social / Economic Environment

- Land Ownership
- Adjacent Land Use
- Heritage & Archaeological Resources



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Existing Shore Protection

The existing steel sheet pile breakwater along the north side of the marina, adjacent to King's Navy Yard Park, has been impacted and appears to be in poor condition.

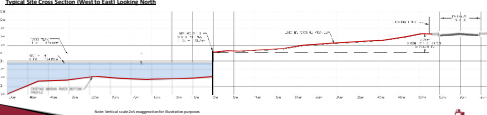
The rock shore protection along the south portion of the basin is in fair condition.


Marina Docks

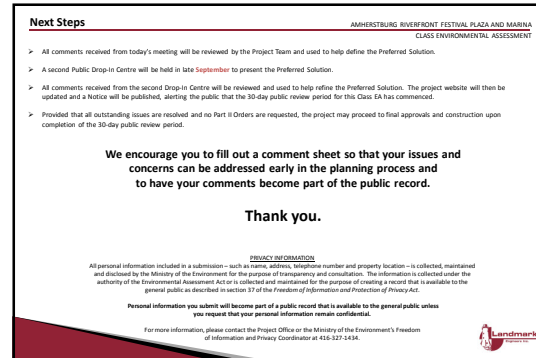
Since the closure of the Marina, the docks have not been maintained and are generally in poor condition. Some of the docks may be repaired for reuse.

The layout of the "Taleway" between the existing docks does not meet the minimum standard recommended for safe maneuvering of boats in and out of a marina. It is recommended that the marina docks be removed and reconfigured according to current marina design standards.

Physical Site Cross Section (Viewed to East Looking North)







Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:18 PM
To: 'chief@munsee.ca'
Cc: 'glenn@munsee.ca'
Subject: FW: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Thomas,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:19 PM
To: 'chief@munsee.ca'
Cc: glenn@munsee.ca
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Chief Roger Thomas,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:

<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

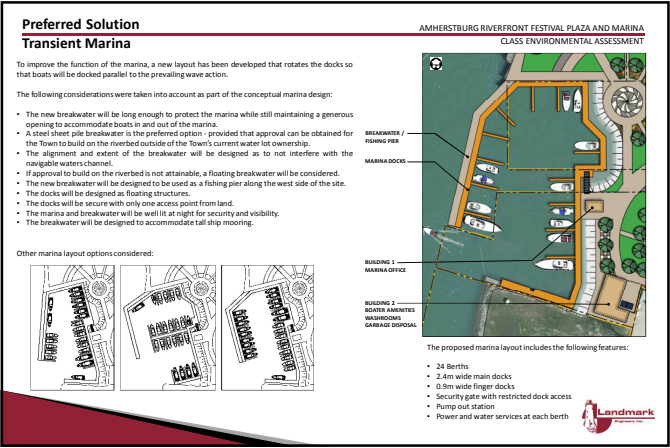
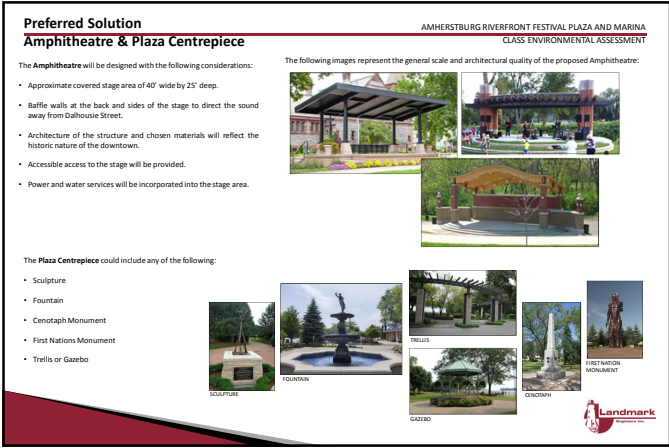
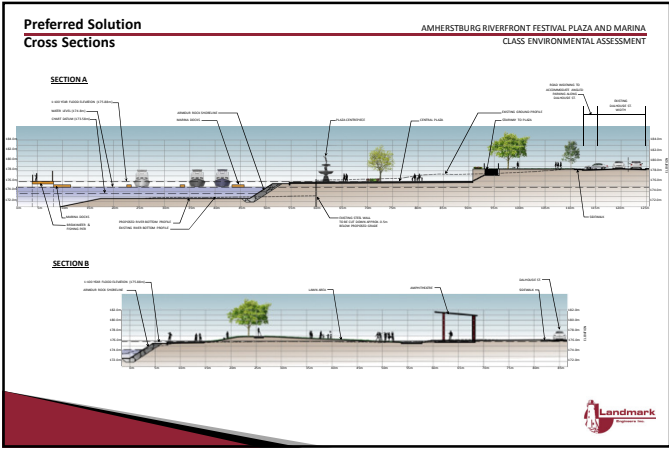
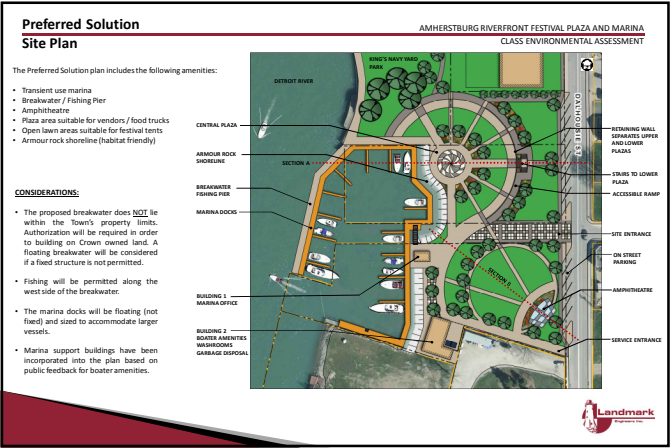
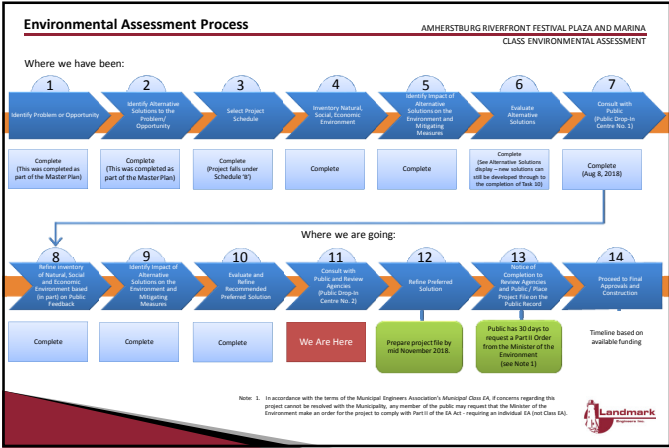
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.










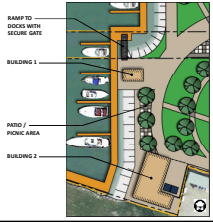
Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT



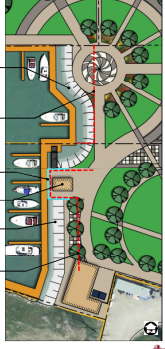
Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.










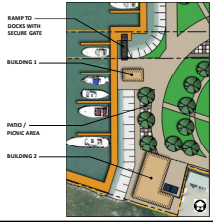
Category	Item	Preliminary Budget Estimate
Plaza Site Works:	The estimate includes items such as:	
	• Site Preparation (Removals and Servicing)	
	• Retaining Walls	
	• Ramps and Stairs	
	• Concrete Flatwork	
Shoreline Improvements:	The estimate includes items such as:	
	• Cut down existing steel walls	
	• Armour Stone Shoreline	
	• Steel Sheet Pile Walls	
	• Dredging	
Marinas:	The estimate includes items such as:	
	• Breakwater	
	• Floating Docks	
	• Lighting	
	• Servicing	
Structures:	The estimate includes the following items:	
	• Amphitheatre	
	• Marina Building 1	
	• Marina Building 2	
	• Servicing	

Total Preliminary Project Budget Estimate
\$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES:

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does not include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Liz Michaud

From: Liz Michaud
Sent: May 15, 2019 11:35 AM
To: Stacey Phillips
Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Morning Mr. Philips,

At this time we anticipate that proposed development will have some impacts to the river. We will be better able to quantify those impacts during detailed design stages of the project. We intend to mitigate the impact by working outside of timing window for fish spawning and providing habitat enhancements such as a rock shoreline in place of steel sheet pile walls.

Thank you for taking the time to get back to us. Your interest in the impacts to the Detroit River and opportunity for First Nation recognition on the site will be noted in the Project File.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Stacey Phillips <consultation@munsee.ca>
Sent: May 15, 2019 11:07 AM
To: Liz Michaud <lmichaud@landmarkengineers.ca>
Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Morning Mrs. Michaud,

Sorry for the delay in responding to your e-mail; our interest is in the project impacts to the Detroit river and as mentioned in your communication First Nation recognition.

Stacey Phillips,
Consultation Coordinator
Munsee-Delaware Nation
279 Jubilee Road,

RR #1 Muncey, ON
NOL 1Y0

From: Liz Michaud <lmichaud@landmarkengineers.ca>

Sent: April 25, 2019 12:09 PM

To: Stacey Phillips <consultation@munsee.ca>

Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Mr. Phillips,

Thank you for taking the time to review our project. At this time, we are wrapping up the Environmental Assessment Process and will be filing our EA in mid May. We have noted your interest in the project moving forward and will be sending you a Notice of Completion in May. The information provided in the previous e-mail will be part of our project file and the EA process will be considered complete.

Moving forward past the EA process, at what point would you like the Town to contact you for consultations? At this time the site plan is only a concept and will need to be broken into phases for detailed design and construction. Should the Town contact you prior to finalizing design for each project phase? Just curious as when in the project design phase you would like to be contacted for Consultation.

Please feel free to call if you would like to discuss.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Stacey Phillips <consultation@munsee.ca>

Sent: April 2, 2019 4:50 PM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Subject: RE: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Mrs. Michaud,

I have reviewed your project information sent to Munsee-Delaware Nation (MDN) and have noted the possible impacts to the Detroit River as an on-going concern to MDN. I would like to continue to receive information as this project does indicate possible impacts to the Detroit River as well as information on First Nation recognition.

Stacey Phillips,
Consultation Coordinator
Munsee-Delaware Nation
279 Jubilee Road,
RR #1 Muncey, ON
N0L 1Y0

From: Liz Michaud <lmichaud@landmarkengineers.ca>

Sent: April 2, 2019 4:23 PM

To: Stacey Phillips <consultation@munsee.ca>

Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Mr. Phillips,

Over the past 8 months, we have been sending project information and notifications to both Chief Roger Thomas and Mr. Glenn Forrest. As we have yet to receive a reply, we called (on March 21, 2019) as asked who else may be interested in reviewing and discussing our project. The receptionist directed us to contact yourself but way of e-mail. We are reaching out once again to offer consultation regarding our Environmental Assessment. The following provides a brief description of the project and issues that may be of interest to your community.

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:
<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

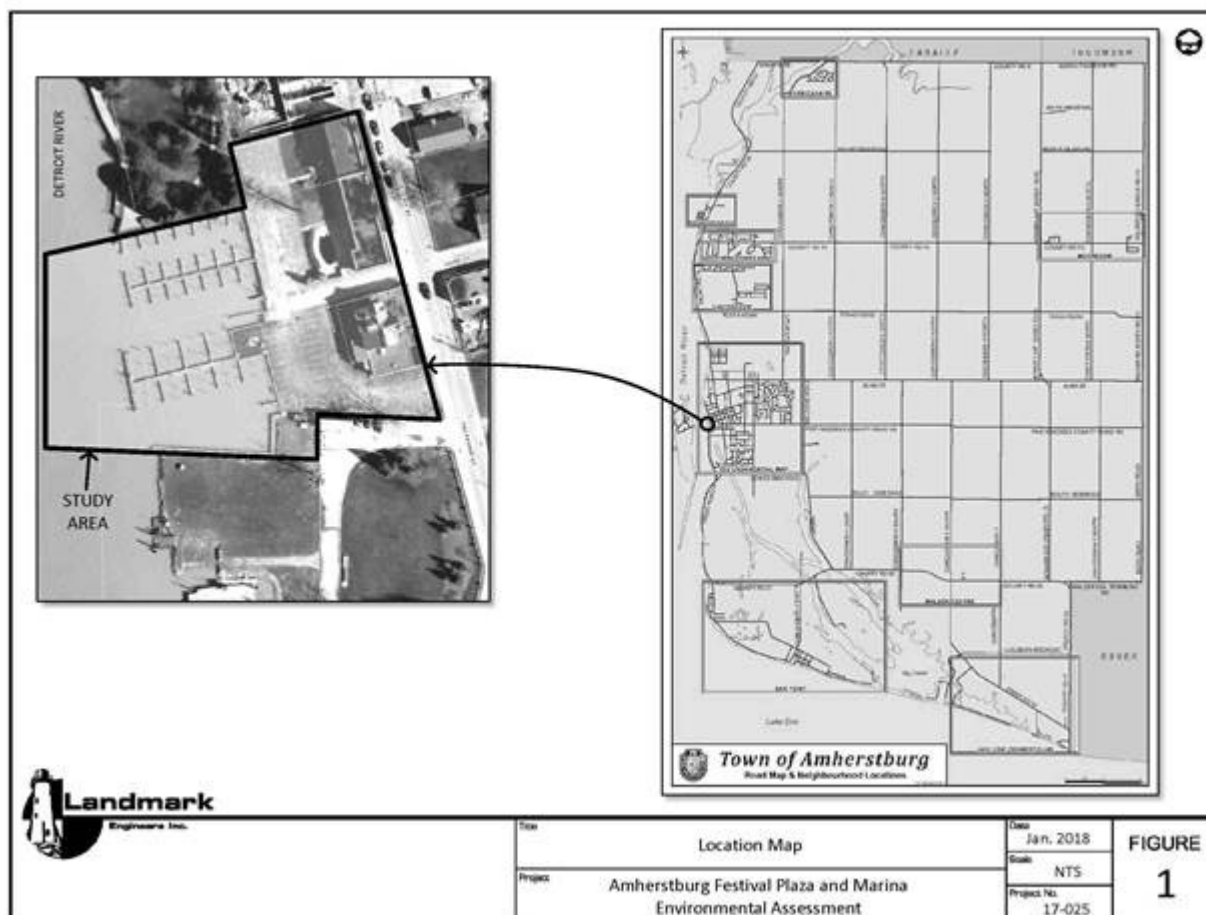
Oneida Nation of the Thames First Nation Correspondence

Liz Michaud

From: Liz Michaud
Sent: June-19-18 11:16 AM
To: 'Randall.phillips@oneida.on.ca'
Cc: 'catherine.cornelius@oneida.ca'
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential

environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 11:26 AM
To: 'chief@aamjiwnaang.ca'; 'sjohnston@aamjiwnaang.ca'; 'cjames@aamjiwnaang.ca'; 'drskoke@wifn.org'; 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'; 'Thomas.bressette@kettlepoint.org'; 'Valerie George'; 'myeengun@cottfn.com'; 'kriley@cottfn.com'; 'rsmith@cottfn.com'; 'chief.duckworth@caldwellfirstnation.ca'; 'nikki.orosz@caldwellfirstnation.ca'; 'Randall.phillips@oneida.on.ca'; 'catherine.cornelius@oneida.on.ca'; 'chief@munsee.ca'; 'glenn@munsee.ca'; 'denise.stonefish@delawarenation.on.ca'
Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud

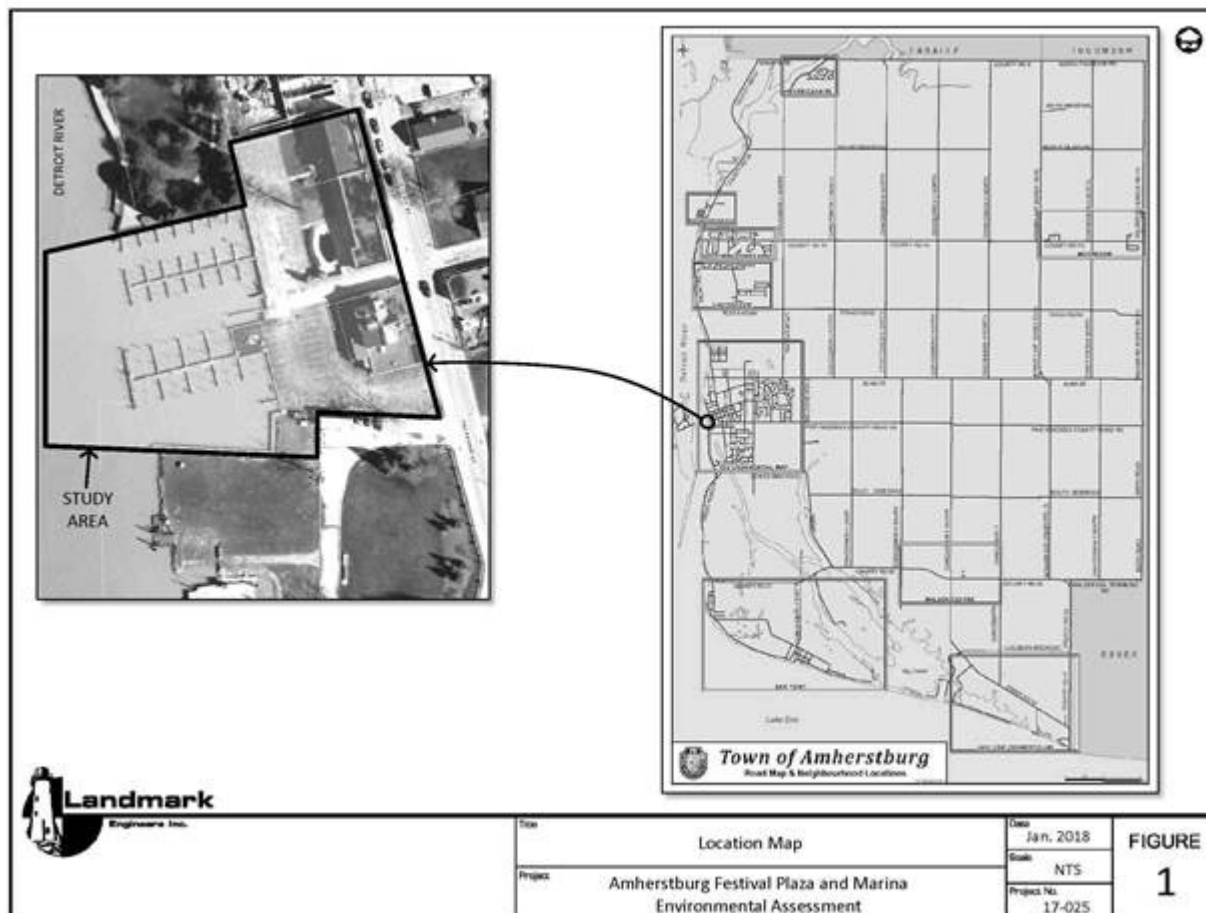


Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: July-25-18 3:19 PM
To: 'Randall.phillips@oneida.on.ca'
Cc: catherine.cornelius@oneida.on.ca
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Randall Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

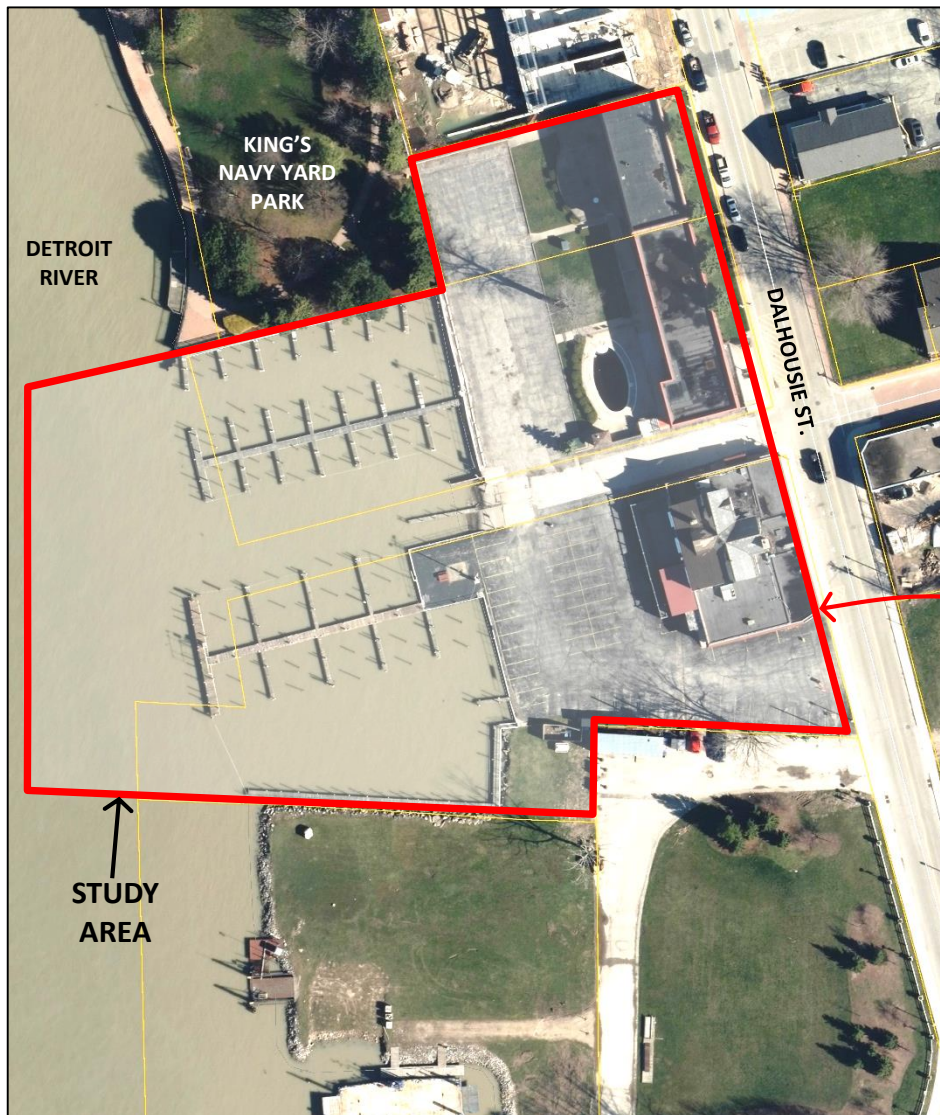
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

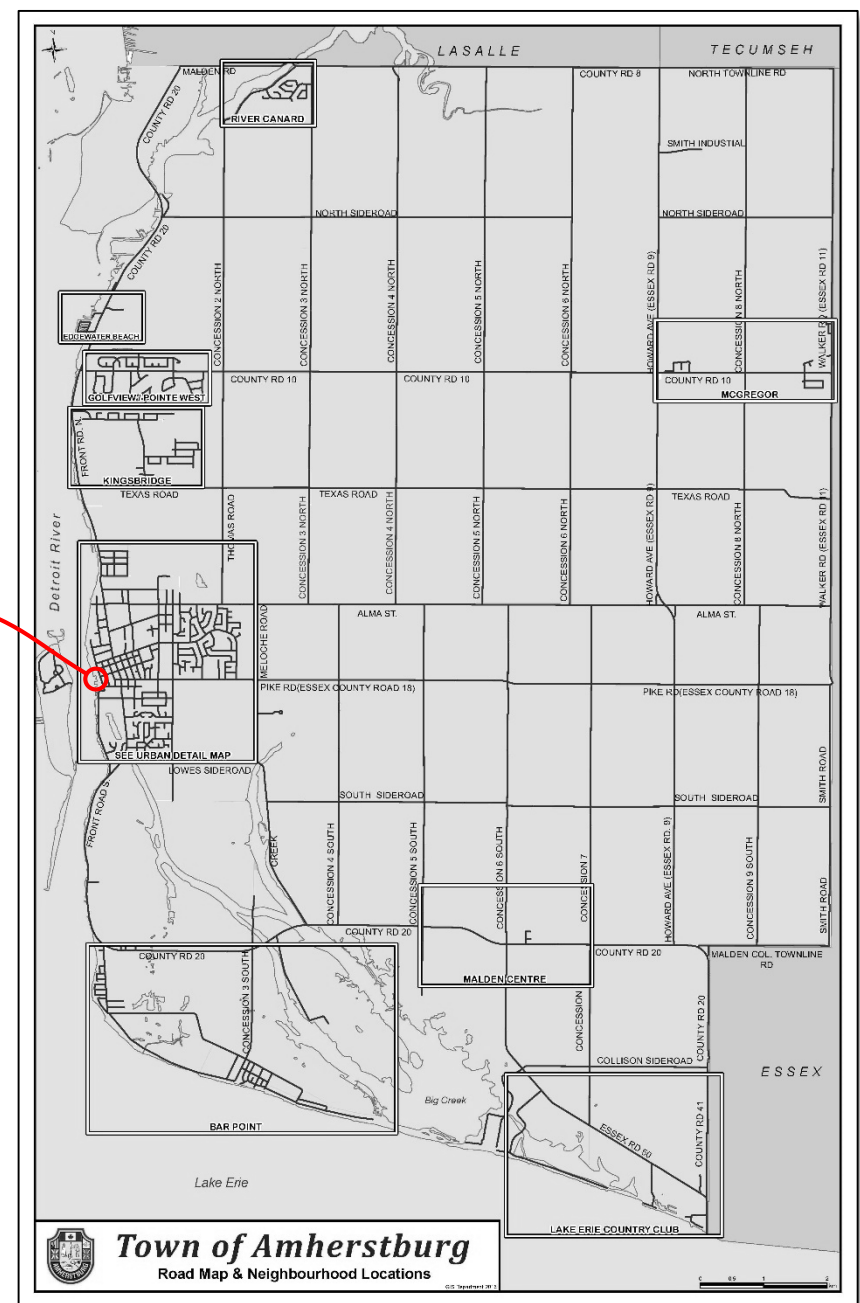
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

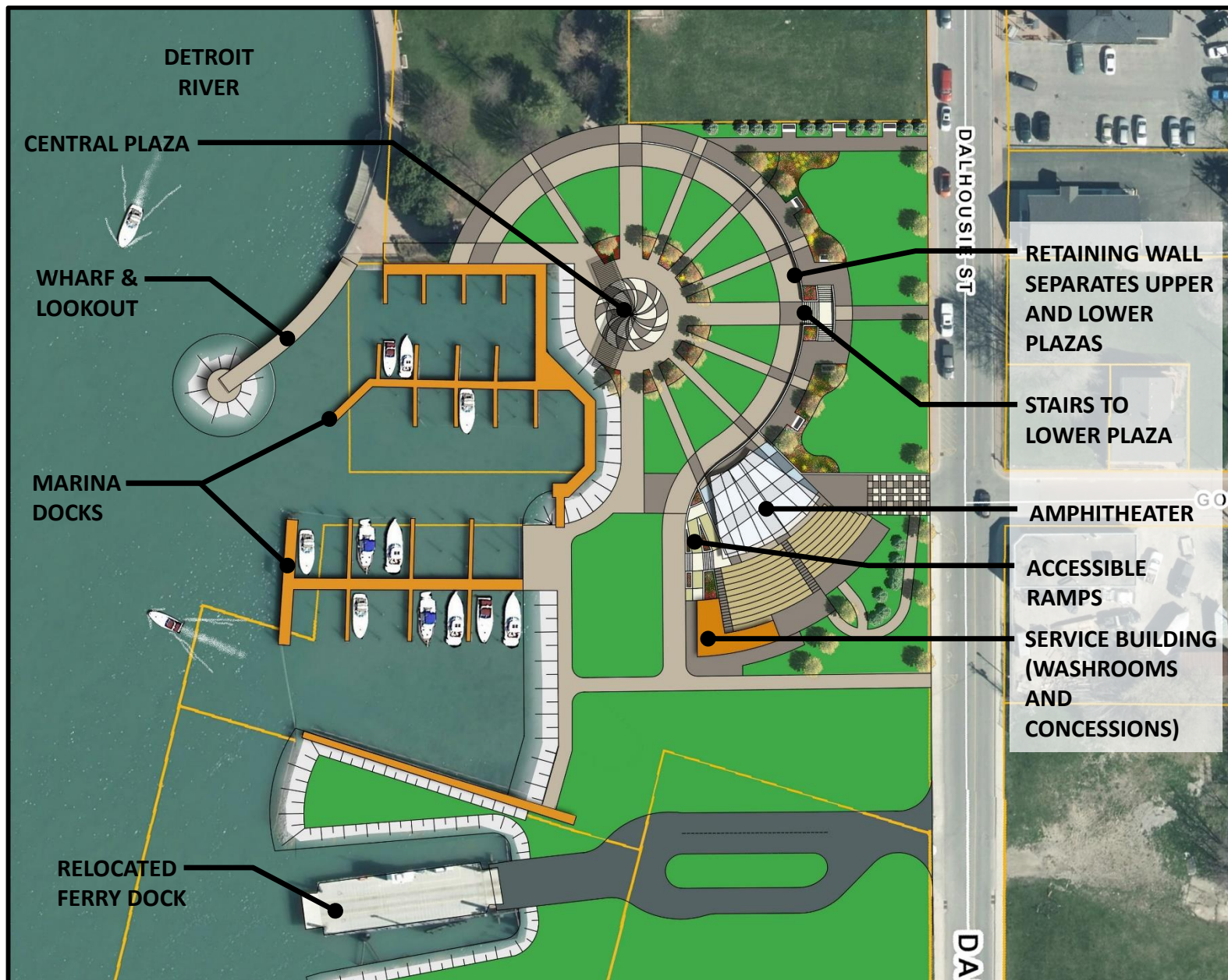
Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON



Title	Location Map	Date	July 2018	FIGURE 1
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale	NTS	
		Project No.	17-025	



Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project		Scale	NTS	
		Project No.	17-025	
Amherstburg Festival Plaza and Marina Class Environmental Assessment				

Liz Michaud

From: Liz Michaud
Sent: August-13-18 3:53 PM
To: 'Randall.phillips@oneida.on.ca'
Cc: 'catherine.cornelius@oneida.on.ca'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Randall Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: July-25-18 3:19 PM
To: 'Randall.phillips@oneida.on.ca' <Randall.phillips@oneida.on.ca>
Cc: catherine.cornelius@oneida.on.ca
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Randall Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Welcome to the Public Drop-In Centre No. 1

> All relevant information regarding this project (including the display material presented today) is available for public review on the Town of Amherstburg's website (www.amherstburg.ca).

> Please sign to record your attendance.

> Please review the display material and provide any comments on the sheet provided. You may submit your comments by mail / fax / e-mail or you may place them in the Comment Box located on the sign-in table.


> All comments for this Drop-In Centre must be received by **August 13th, 2018** to be given consideration in the development of the preferred solution for this project. Contact information for the Project Team is available below, and also on the comment sheet provided.

> The Project Team members present will be pleased to discuss any questions you may have.


Project Team

This study has been initiated by the Town of Amherstburg. Landmark Engineers Inc. has been retained by the Town to serve as the Lead Consultant on the project.


Any comments, questions or suggestions relevant to this study should be directed to the following primary members of the Project Team:



David M. Krutich, PEng
Landmark Engineers Inc.
2380 Ambuscador Drive
Windsor, Ontario N9C 4A4
Phone: (519) 972-8022
Fax: (519) 972-8644
Email: dkrutich@landmarkengineers.ca



Mark W. Golin, PEng
Town of Amherstburg
3250 Melville Rd.
Amherstburg, Ontario N0V 2T6
Phone: (519) 756-5458
Fax: (519) 756-7111
Email: mgo@amherstburg.ca



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process Amherstburg Parks Master Plan

Master Plan use in EA Process

The Municipal Class EA document specifically addresses the use of Master Plans.

Master Plans are defined as:

A long range plan which integrates infrastructure requirements for existing and future land use with environmental assessment principles. At a minimum, a Master Plan addresses Phases 1 and 2 of the Municipal Class EA process.


	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Landmark Engineers Inc.	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓

Parks Master Plan Project

- The Town of Amherstburg retained Montha Brown Planning Consultants (MBPC) to undertake the Parks Master Plan project.
- Two Public Information sessions for the Parks Master Plan were held in October 2017 by MBPC.
- MBPC also conducted stakeholder interviews (November 2017), monitored an online public engagement forum (www.townofamherstburg.ca), and conducted an online community survey (September – November 2017) to obtain feedback regarding the Parks Master Plan.

Community Engagement Feedback Highlights

- 62% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.
- Waterfront parks and facilities were listed as greatest importance in Amherstburg Parks for 88% of the respondents (over playgrounds, splashpads, and sports facilities).
- Festivals and fairs were the second highest response (72%) when asked what type of events respondents participate in outdoors.
- Highest response was use of trails / parks for walking / jogging.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

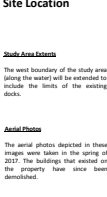


Environmental Inventory Site Location


Study Area Context

The aerial photos of the study area along the water will be extended to include the limits of the existing docks.

Aerial Photos

The aerial photos depicted in these images were taken in the spring of 2017. The buildings that existed on the property have since been demolished.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Background and Project Objectives

Background


The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property on the Detroit River waterfront as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was conducted in September 2017, aimed at soliciting stakeholder feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project and the potential environmental impacts it may have, an environmental assessment needs to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.


In January 2018, Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Project Objectives

- Prepare a site plan that incorporates a park with an amphitheatre.
- Assess the condition of the existing marina.
- Create a marina layout that is more functional and has a larger capacity than the existing marina.
- Design a breakwater to improve the function of the marina and mitigate wave action.



EXISTING SITE LOOKING NORTH



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT


Environmental Assessment Process

Where we have been:

1. Identify Problem or Opportunity
2. Identify Stakeholders / Interested Parties
3. Select Project Location
4. Develop Preliminary Conceptual Design
5. Develop Preliminary Environmental Assessment
6. Develop Preliminary Environmental Assessment
7. Develop Preliminary Environmental Assessment

Where we are going:

8. Complete (This was completed as part of the Master Plan)
9. Complete (This was completed as part of the Master Plan)
10. Complete (This was completed as part of the Master Plan)
11. Complete (This was completed as part of the Master Plan)
12. Complete (This was completed as part of the Master Plan)
13. Complete (This was completed as part of the Master Plan)
14. Complete (This was completed as part of the Master Plan)



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Site Topography

The subject property generally slopes down from north to south and from east to west. Due to the high level of historic disturbance on the site, it is unclear where the historic shoreline was originally located, but it is believed that some of the lower portions of the site was filled in to create more land adjacent to the marina.

When the buildings were demolished in 2017, affected portions of the site were filled and graded to drain toward the Detroit River.

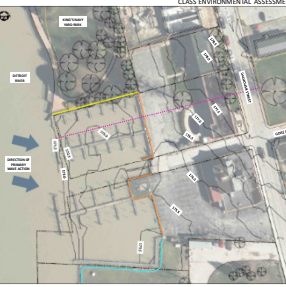
Marina Bathymetry

The river bottom throughout the existing marina is generally flat and appears to drop off into the channel near the west end of the docks.


At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.

Marina Climate

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.



EXISTING MARINA DOCKS



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Purpose, Problem and Process

Purpose

This Drop-In Centre is intended to:


- Present the Problem / Opportunity Statement for the Project.
- Introduce the members of the Project Team.
- Present the scope of the Class Environmental Assessment (Class EA) process.

Problem / Opportunity Statement

"This study intends to achieve a design for a public festival plaza and transient marina that will improve the existing vacant land, enhance the connection to King's Navy Yard Park and restore the existing dilapidated marina."

Environmental Assessment (EA) Process

- This project will follow the planning process set out in the Municipal Engineers Association's Municipal Class Environmental Assessment (Class EA). A copy of this document, which sets out the details of the approved Planning and Design Process for municipal projects (such as this), is on-site and is available for review by the public.
- Since the Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment will be focusing on new construction of a plaza and marina, the Project Team has concluded that this project falls under Schedule "B" of the Municipal Class EA.
- For "Schedule B" projects, only one point of Public Consultation is required. Given the high-profile nature of this project, however, the Project Team has elected to increase the level of public consultation (over and above the minimum requirement), and host an extra Public Drop-In Centre, creating a total of two Public Consultations for this project.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

The following displays are intended to present the Environmental Inventory of the Study Area that has been compiled by the Project Team. This inventory documents the existing conditions of the site in terms of the following categories:

Physical Environment



- Site Location
- Physical Infrastructure (e.g.: utilities, existing marina condition, etc.)
- Topography
- Bathymetry and Wave Climate


Natural Environment

- Aquatic Habitat
- Species at Risk

Social / Economic Environment

- Land Ownership
- Adjacent Land Use
- Heritage & Archaeological Resources



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Existing Shore Protection

The existing steel sheet pile breakwater along the north side of the marina, adjacent to King's Navy Yard Park, has been impacted and appears to be in poor condition.

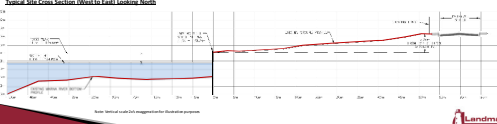
The rock shore protection along the south portion of the basin is in fair condition.


Marina Docks

Since the closure of the Marina, the docks have not been maintained and are generally in poor condition. Some of the docks may be repaired for reuse.

The layout of the "Taleway" between the existing docks does not meet the minimum standard recommended for safe maneuvering of boats in and out of a marina. It is recommended that the marina docks be removed and reconfigured according to current marina design standards.

Physical Site Cross Section (West to East Looking North)





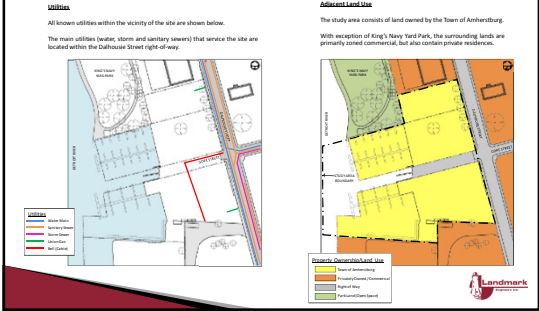
Environmental Inventory

Utilities & Adjacent Land Use

Utilities

All known utilities within the vicinity of the site are shown below.

The main utilities (water, storm and sanitary sewers) that service the site are located within the Dalhousie Street right-of-way.

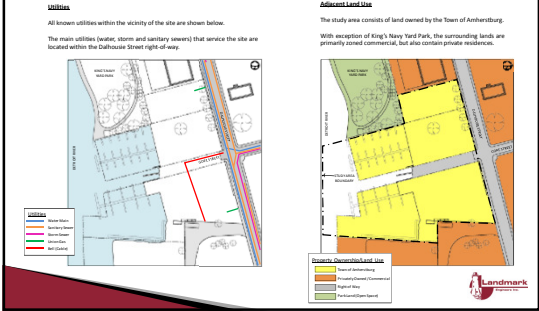


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Adjacent Land Use

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily owned commercial, but also contain private residences.



Evaluation of Alternatives

Alternative A : Passive Park

The passive park alternative would be an extension to King's Navy Yard Park with a view of the transient marina.

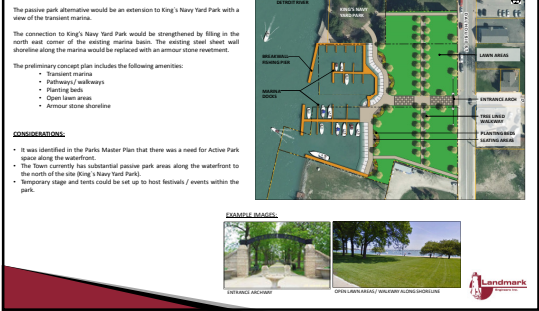
The connection to King's Navy Yard Park would be strengthened by filling in the north east corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn area
- Armour stone shoreline

CONSIDERATIONS:

- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.

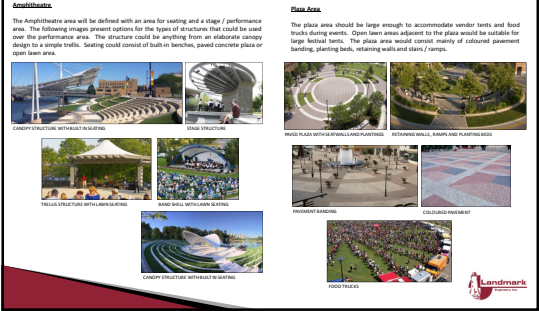


Design Considerations

Amphitheatre and Plaza

Amenities

The Amphitheatre area will be defined with an area for seating and a stage / performance area. The following images present options for the types of structure that could be used over the performance area. The structure could be anything from an elaborate canopy design to a simple built-in seating. Seating could consist of built-in benches, paved concrete plaza or open lawn area.

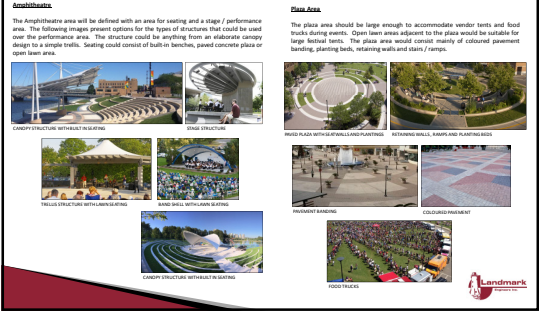


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Plaza Area

The plaza area should be large enough to accommodate vendor tents and food trucks during events. Open lawn area adjacent to the plaza would be suitable for large festival tents. The plaza area would consist mainly of coloured pavement paving, planting beds, retaining walls and stairs / ramps.



Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMOX Consultants Inc. Representatives from the Town of Amherstburg were present during the Archaeological Assessment (Guided) First Nations. Chippewa of the Thames First Nation and Anishinaabe First Nations.

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Geotechnical Investigation

Golden Associates Inc. was retained to complete a geotechnical assessment of the site as part of the Class EA. Golden's findings included the following:

Subsurface Conditions: Boreholes advanced across the site encountered variable fill material (silty sand, sand and gravel, sandy silt (clay) to depths ranging from 0.5m to 4m below grade). Below the fill, the native soils encountered were comprised primarily of cohesive sandy silt/clays.

Groundwater Quality: Based on the results of the investigations carried out to date, no environmental impacts to on-site groundwater quality have been identified.

Soil Quality: The impacts to soil quality that have been identified at the site have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.

Sediment Quality: Based on the results of the sediment sampling, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (1 sample) and bismuth (2 samples), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples analyzed.

Risk Management Measures:

1. Impacted soil can be addressed through implementation of risk management measures, including construction of a lift cap (layer of clean soil) or hard cap (concrete) over the site. Any metals soil that would need to be removed from the site would likely be considered "non-hazardous" and could be disposed of at the local landfill.
2. In the event that dredging of the sediments in the existing marina basin becomes necessary, the sediments would be characterized as "non-hazardous" and could be disposed of at the local landfill.

Evaluation of Alternatives


Alternative B : Expanded Marina

In June of 2018, a petition was received by the Town asking that a boat launch with appropriate number of parking spaces for vehicles, the boat trailers, a wharf and lookout (the shoreline fishing) and transient marina slips be incorporated into the final design of the site.

A preliminary design concept for such a facility is presented here, with parking and turn-around space provided, based on other similar-sized facilities in Essex County. To minimize the interference with the traffic on Dalhousie Street, a one-way / not in proposed, with ample room for trailers to turn and back into the boat launch within the site.

CONSIDERATIONS:

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront as identified in the Parks Master Plan.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.




Design Considerations

Transient Marina and Breakwaters

Breakwaters

Breakwaters are offshore structures that protect marinas and shorelines from the erosive force of waves. As shown in the example images below, they are typically constructed of stone or concrete. The existing marina basin is currently exposed to the Detroit River, with no breakwater to protect the marina from wave action. This study will determine an appropriate breakwater size, orientation and materials to sufficiently protect the proposed transient marina design.




AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Transient Marina

A transient marina offers temporary docking for boats and does not offer reserved slips. The marina would be available for boaters who wish to dock their boat while visiting Amherstburg.

The current layout of the "harbour" between the existing docks does not meet the minimum standard for safe maneuvering of boats in and out of the marina. This study will develop a new dock layout that will meet current marina design guidelines for safe maneuvering.



Evaluation of Alternatives

Alternative Solutions

The project team identified three alternatives that were considered as options for the site development; Active Park, Passive Park and Expanded Marina. The advantages and disadvantages for each option are presented below:

ALTERNATIVE A: PASSIVE PARK

Advantages:

- Walking trails
- Large lawn areas
- Landscaping
- Trails shade structures
- Transient marina
- Shoreline improvements

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.

Disadvantages:

- Does not satisfy the need for active parkland along the waterfront that was identified in the Parks Master Plan.

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

ALTERNATIVE B: EXPANDED MARINA

Advantages:

- Boat launch
- Parking for boat trailers and cars
- Expanded transient marina
- Fishing pier
- Shoreline improvements

Disadvantages:

- Opportunity to increase the existing marina basin.
- Site would be available for use by the entire community.
- Opportunity to include a wharf with fishing area.

Disadvantages:

- Brings high volume of truck and trailer traffic to the downtown streets.
- Parking area will need to be built on waterfront land.
- Site is usable for only the boating community rather than the entire community.
- Does not satisfy the need for active parkland along the waterfront that was identified in the Parks Master Plan.

Evaluation of Alternatives

Alternative C : Active Park

Landmark was retained by the Town in 2016 to prepare this preliminary concept plan. The plan has been presented to the public at two previous Public Information Centres for the Parks Master Plan and made available to the Town's website (link the Burg) for consideration and comment.

This concept plan intends to strengthen the connection to King's Navy Yard Park by filling in the north west corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

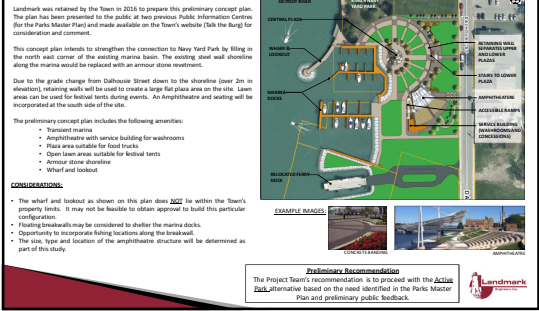
Due to the grade change from Dalhousie Street down to the shoreline (over 2m in elevation), retaining walls will be used to create a large flat plaza area on the site. A lawn area can be used for festival tents during events. An Amphitheatre and seating will be incorporated at the south side of the site.

The preliminary concept plan includes the following amenities:

- Transient marina
- Amphitheatre with service building for washrooms
- Plaza area suitable for food trucks
- Open lawn area suitable for festival tents
- Armour stone shoreline
- Wharf and lookout

CONSIDERATIONS:

- The wharf and lookout as shown on this plan does not fit within the Town's property limits. It may not be feasible to obtain approval to build this particular configuration.
- Fishing breakwaters may be considered to shelter the marina docks.
- Opportunity to incorporate fishing breakwaters along the breakwater.
- The size, type and location of the amphitheatre structure will be determined as part of this study.



Next Steps

- All comments received from today's meeting will be reviewed by the Project Team and used to help define the Preferred Solution.
- A second Public Drop-in Centre will be held in late September to present the Preferred Solution.
- All comments received from the second Drop-in Centre will be reviewed and used to help refine the Preferred Solution. The project website will then be updated and a Notice will be published, alerting the public that the 30-day public review period for this Class EA has commenced.
- Provided that all outstanding issues are resolved and no Part II Orders are requested, the project may proceed to final approvals and construction upon completion of the 30-day public review period.

We encourage you to fill out a comment sheet so that your issues and concerns can be addressed early in the planning process and to have your comments become part of the public record.

Thank you.

Privacy Information

All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public as described in section 37 of the Freedom of Information and Protection of Privacy Act.

Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416-327-2434.

Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:14 PM
To: 'Randall.phillips@oneida.on.ca'
Cc: catherine.cornelius@oneida.on.ca
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Chief Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:20 PM
To: 'Randall.phillips@oneida.on.ca'
Cc: 'catherine.cornelius@oneida.on.ca'
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Chief Randall Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:
<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

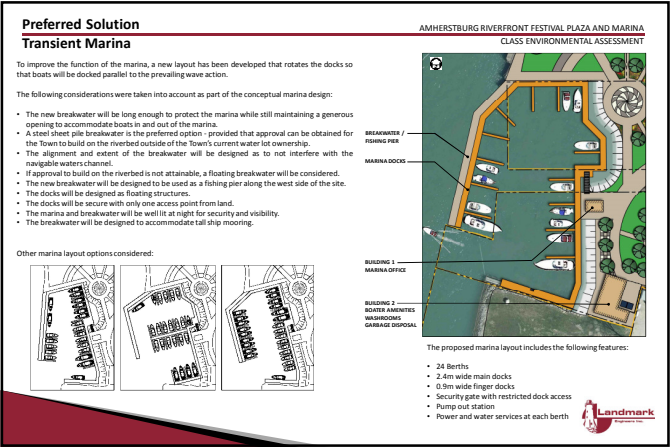
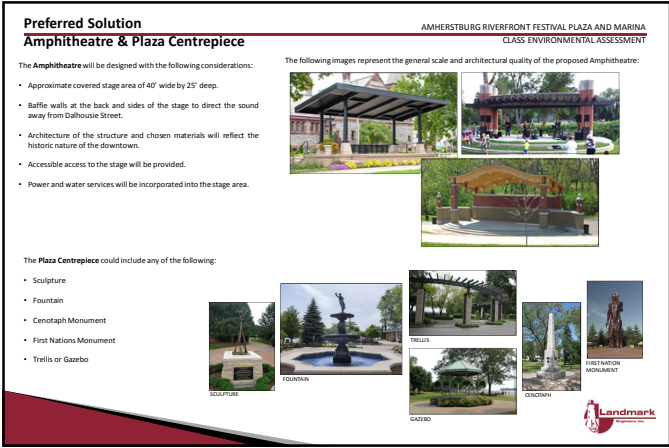
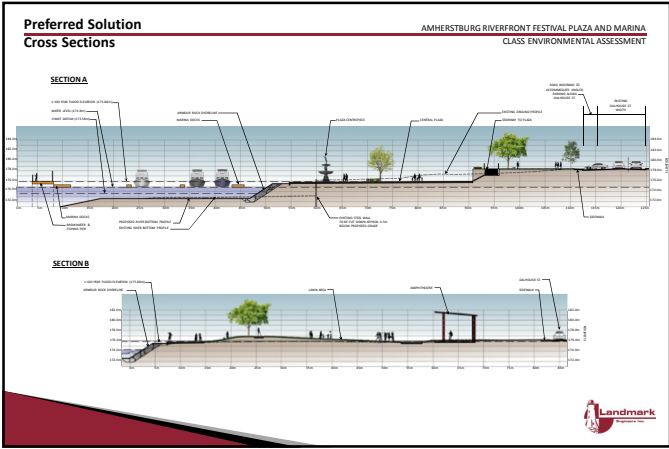
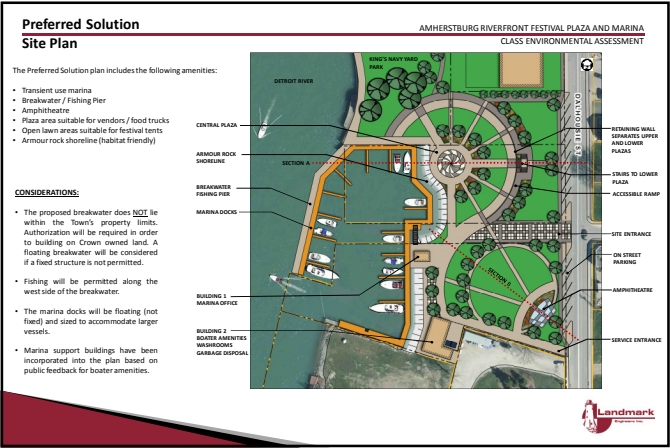
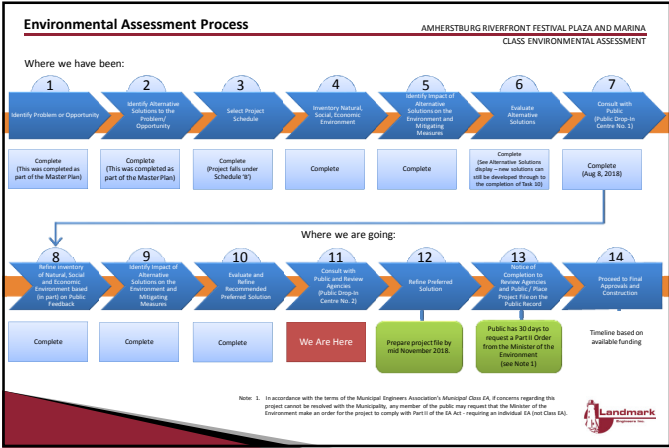
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.





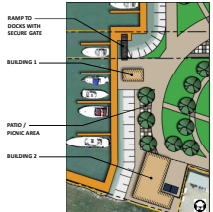
Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

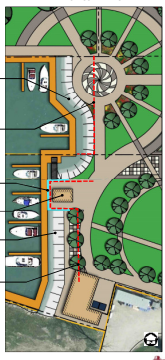


Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.

Plaza Site Works:
The estimate includes items such as:

- Site Preparation (Removals and Servicing)
- Retaining Walls
- Ramps and Stairs
- Concrete Flatwork
- Lighting
- Landscaping
- Dalhousie Street Widening

Shoreline Improvements:
The estimate includes items such as:

- Cut down existing steel walls
- Armour Stone Shoreline
- Steel Sheet Pile Walls

Marinas:
The estimate includes items such as:

- Breakwater
- Floating Docks
- Lighting
- Dredging
- Servicing

Structures:
The estimate includes the following items:





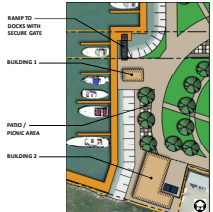
- Amphitheatre
- Marina Building 1
- Marina Building 2

Total Preliminary Project Budget Estimate
\$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES:

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does NOT include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

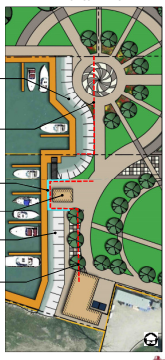


Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Liz Michaud

From: Liz Michaud
Sent: November-28-18 10:54 AM
To: 'jessica.hill@oneida.on.ca'
Cc: 'hgrant.doxtator@oneida.on.ca'
Subject: FW: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf; 17-025 Notice of Intent & Location Map.pdf

Good Morning Chief Hill,

Over the past several months we have been conducting an Environmental Assessment for a shoreline property in Amherstburg, Ontario. When we began the project, I was directed to send correspondence to Randall Philips and Catherine Cornelius. It seems that in the meantime, individuals have changed positions and Randall Philips is no longer the Chief.

As we wrap up our EA process, I would very much like to get input from you regarding your potential interest in our project. I have included all of the e-mails below that were sent to Randall and Catherine over the past several months. I have not received any feedback to date.

I have also attached the Preferred Solution plan for our project here for your review. If you would prefer to meet in person to discuss our project and any concerns you may have, we would be happy to arrange a time that is convenient for you.

I will follow up in a few days with a phone call.

Thank you for your time,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: October-30-18 2:20 PM
To: 'Randall.phillips@oneida.on.ca' <Randall.phillips@oneida.on.ca>
Cc: 'catherine.cornelius@oneida.on.ca' <catherine.cornelius@oneida.on.ca>
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Randall Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Good Afternoon Chief Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018

TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

Good Afternoon Chief Randall Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud

Sent: July-25-18 3:19 PM

To: 'Randall.phillips@oneida.on.ca' <Randall.phillips@oneida.on.ca>

Cc: catherine.cornelius@oneida.on.ca

Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Randall Phillips,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th, 2018

TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.

PLACE: Libro Credit Union Centre

Community Room

3295 Meloche Road

Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Contact

You are here: [Home](#) / [Contact](#)



Contact Oneida Nation Administration 2212
Elm Ave., Southwold, Ontario N0L 2G0

Send us mail

Fields marked with an * are required

Name *

Susan Krutsch

Email *

Hi, My name is Sue. I am calling from Landmark Engineers in regards to the Amherstburg Riverfront Festival Plaza and marina Environmental Assessment.

Over the last six months we have sent out information packages via email to Catherine Cornelius. One of our engineers would like to speak to someone from the Oneida Nation of the Thames regarding concerns or issues you may have regarding this project.

The Environmental Assessment is nearing completion and we would like to obtain feedback from you.

Please give Liz Michaud a call at (519) 972-8052 to discuss this project.

Thank you for your time.

Sue Krutsch

From: WordPress <dawn.doxtater@oneida.on.ca>
Sent: March-21-19 4:29 PM
To: Sue Krutsch
Subject: Thank you for contacting us!
Attachments: ninja-forms-submission.csv

Thank you so much for contacting us. We will get back to you shortly.

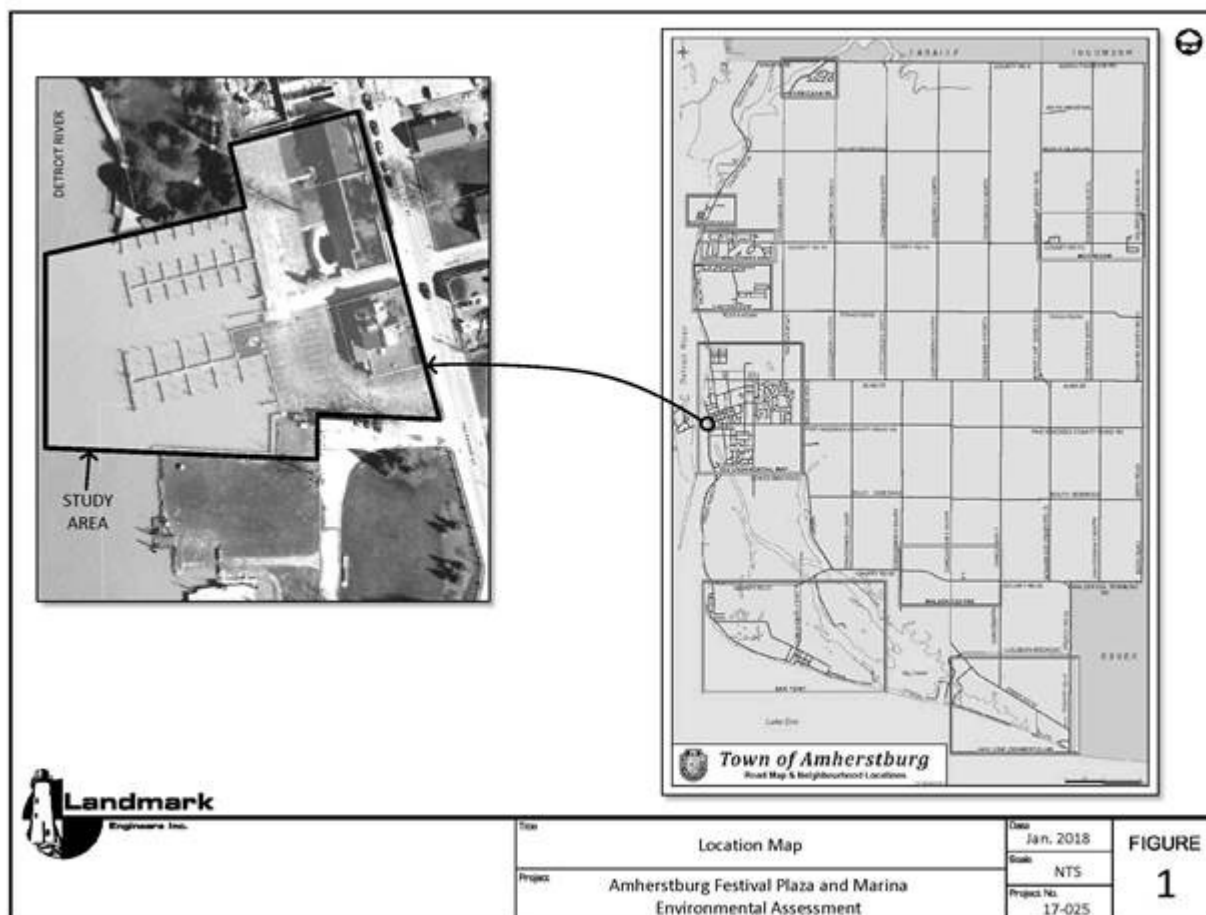
Walpole Island First Nation Correspondence

Liz Michaud

From: Liz Michaud
Sent: June-19-18 10:59 AM
To: 'dean.jacobs@wifn.org'
Cc: 'drskoke@wifn.org'; 'janet.macbeth@wifn.org'
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential

environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: June-25-18 11:26 AM
To: 'chief@aamjiwnaang.ca'; 'sjohnston@aamjiwnaang.ca'; 'cjames@aamjiwnaang.ca'; 'drskoke@wifn.org'; 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'; 'Thomas.bressette@kettlepoint.org'; 'Valerie George'; 'myeengun@cottfn.com'; 'kriley@cottfn.com'; 'rsmith@cottfn.com'; 'chief.duckworth@caldwellfirstnation.ca'; 'nikki.orosz@caldwellfirstnation.ca'; 'Randall.phillips@oneida.on.ca'; 'catherine.cornelius@oneida.on.ca'; 'chief@munsee.ca'; 'glenn@munsee.ca'; 'denise.stonefish@delawarenation.on.ca'
Subject: Update - Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

I would like to follow up regarding the Archaeological Assessment of our Amherstburg Festival Plaza site on **July 4th, 2018**. Our Archaeologists will be starting at **9am** and they anticipate it will only take a few hours due to the site having a history of disturbance. I have yet to receive confirmation that any of the First Nations will be attending.

To that note, I would like to encourage any First Nation that wishes to send their archaeological monitor to please contact me by **Friday June 29th**.

Please don't hesitate to call or e-mail if you have further questions.

Thank you,

Liz Michaud

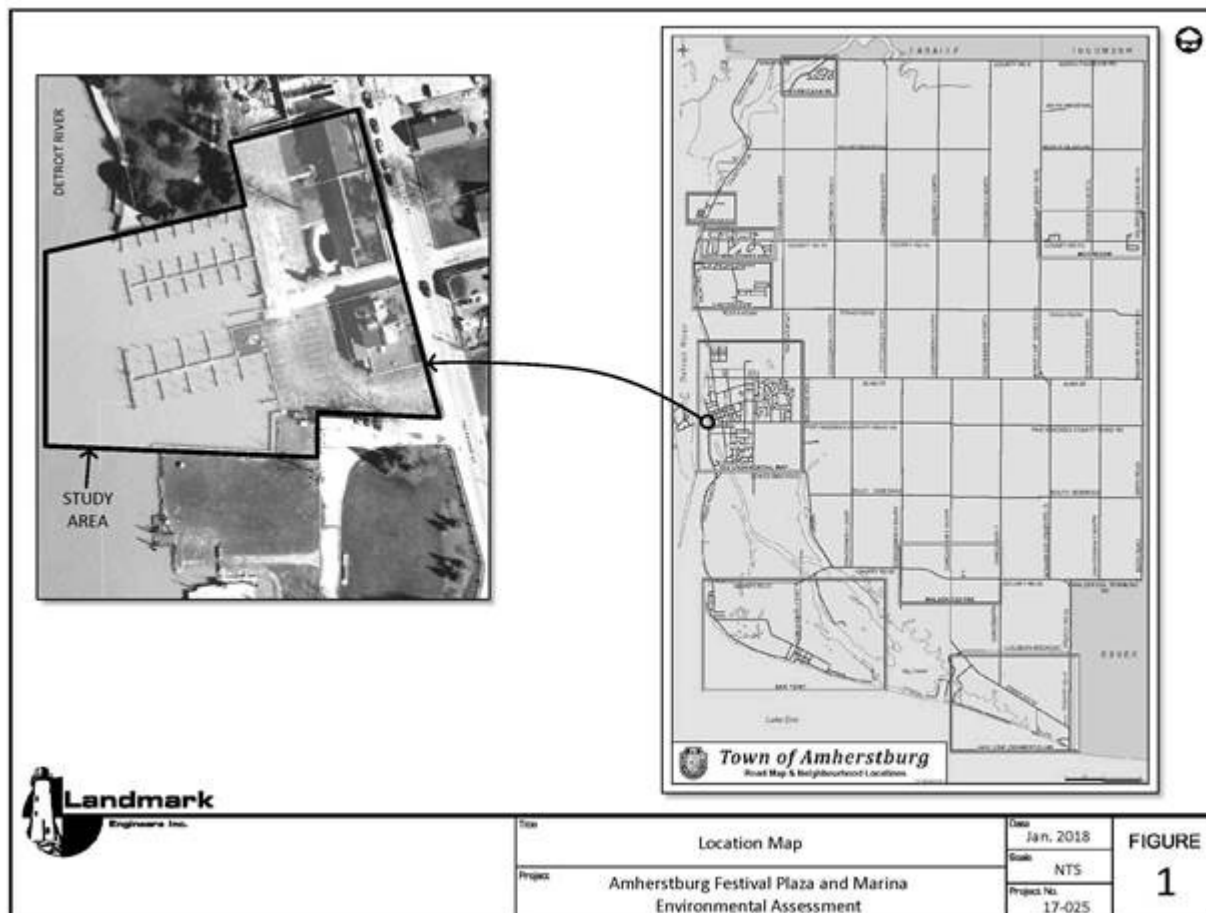


Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: June-19-18 11:23 AM
To: All First Nations
Subject: Archaeological Assessment Invitation - Amherstburg Festival Plaza

Good Morning,

On behalf of the Town of Amherstburg, we are extending an invitation to all First Nations that may be interested in observing the Phase 1 Archaeological Assessment of our project site. The Archaeological Assessment will take place on **Wednesday 4 July, 2018**. A project location map is shown below.



Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (290, 296, and 306 Dalhousie Street) on the Detroit River waterfront in downtown Amherstburg as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was convened in September 2017, aimed at soliciting initial feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project. Due to the nature of the project and the potential environmental impacts it may have, it was determined that an environmental assessment would need to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Site Condition

Demolition of the previously existing commercial buildings was carried out in 2017. All existing structures, paving and sidewalks were removed. The site was subsequently filled and graded as required. Currently, Environmental Investigation activities are underway to support the preparation of the Record of Site Condition required by the Ministry of the Environment for future development of the site.

Archaeological Assessment

At this time, Landmark has engaged AMICK Consultants to undertake a Phase 1 Archaeological Assessment of the site as our first step in the EA process. If you would like to attend the site to observe the Archaeological Assessment on **Wednesday 4 July, 2018**, please reply to this e-mail by **June 29th**. If you require further information, please don't hesitate to call.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

Liz Michaud

From: Liz Michaud
Sent: July-25-18 2:08 PM
To: 'drskoke@wifn.org'
Cc: 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon Chief Miskokomon,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

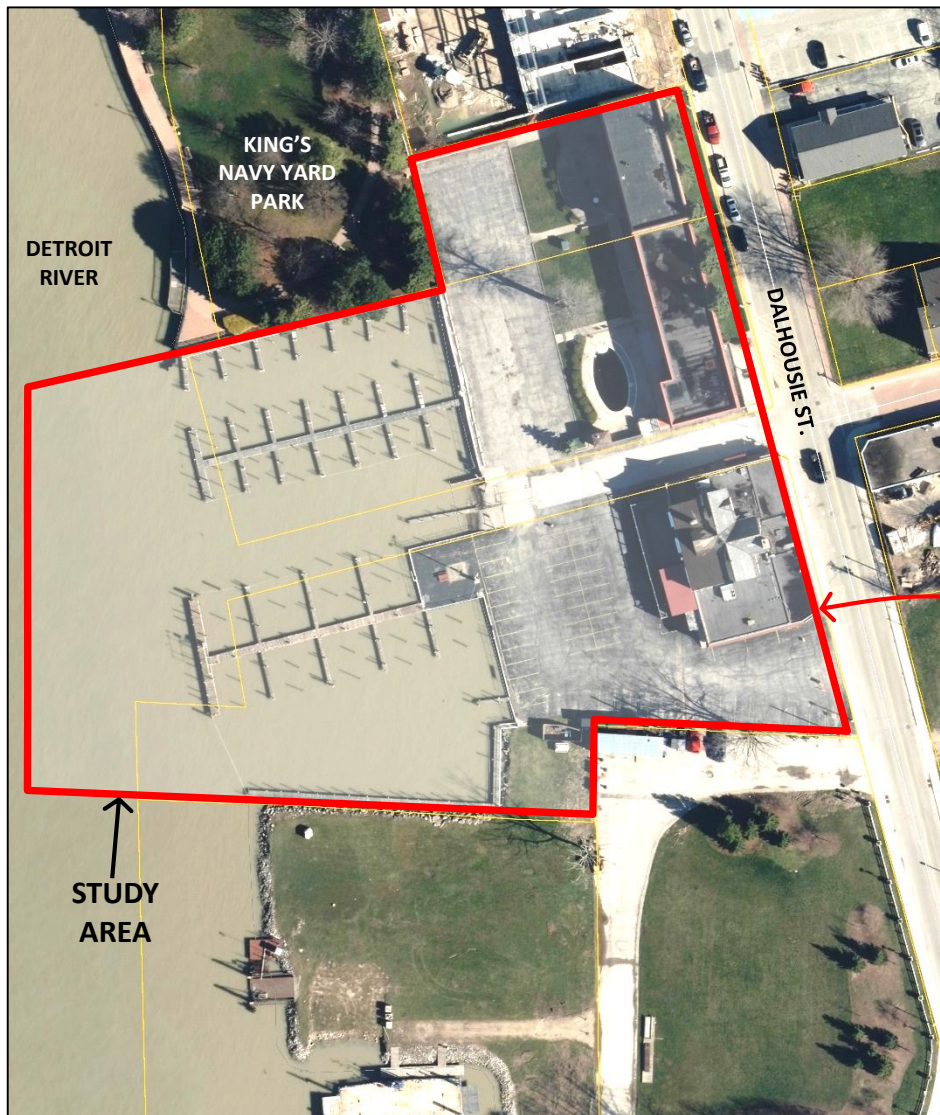
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

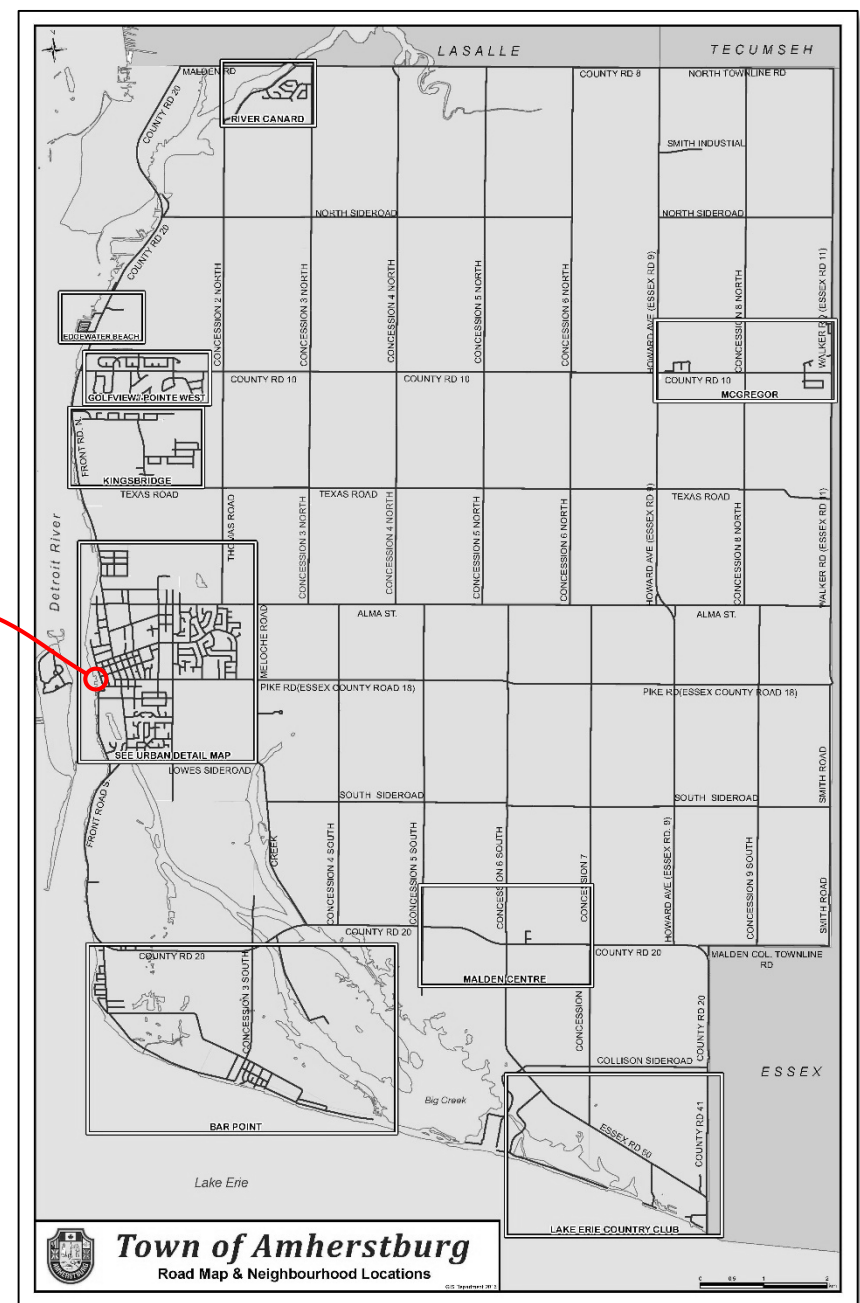
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

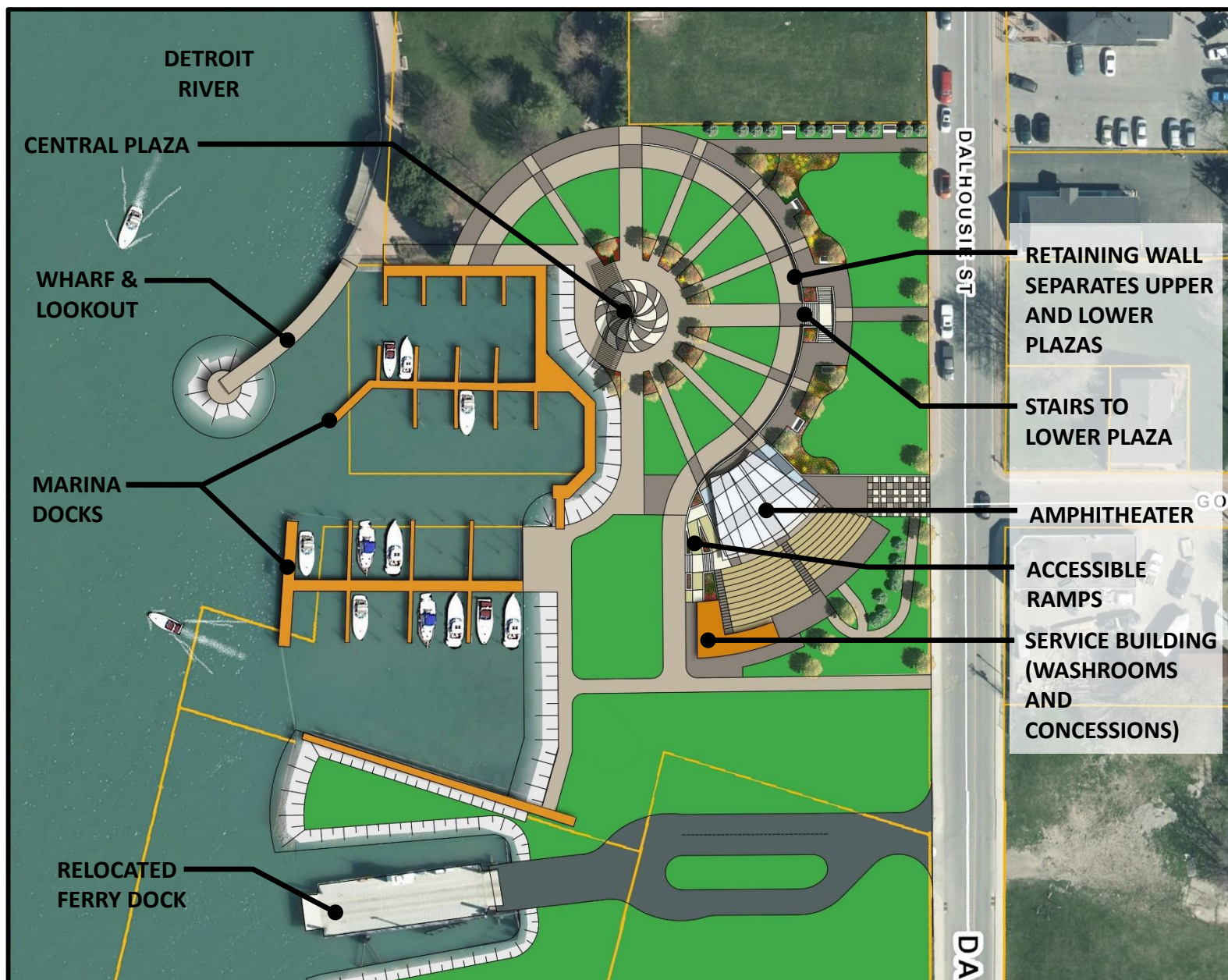
Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON



Title	Location Map	Date July 2018	FIGURE 1
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale NTS	
		Project No. 17-025	



Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale	NTS	
		Project No.	17-025	

Liz Michaud

From: Liz Michaud
Sent: August-13-18 2:24 PM
To: 'dean.jacobs@wifn.org'; janet.macbeth@wifn.org
Cc: 'drskoke@wifn.org'
Subject: FW: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Mr. Jacobs,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud
Sent: July-25-18 2:08 PM
To: 'drskoke@wifn.org' <drskoke@wifn.org>
Cc: 'dean.jacobs@wifn.org' <dean.jacobs@wifn.org>; 'janet.macbeth@wifn.org' <janet.macbeth@wifn.org>
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon Chief Miskokomon,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Welcome to the Public Drop-In Centre No. 1

> All relevant information regarding this project (including the display material presented today) is available for public review on the Town of Amherstburg's website (www.amherstburg.ca).

> Please sign to record your attendance.

> Please review the display material and provide any comments on the sheet provided. You may submit your comments by mail / fax / e-mail or you may place them in the Comment Box located on the sign-in table.


> All comments for this Drop-In Centre must be received by **August 13th, 2018** to be given consideration in the development of the preferred solution for this project. Contact information for the Project Team is available below, and also on the comment sheet provided.

> The Project Team members present will be pleased to discuss any questions you may have.


Project Team

This study has been initiated by the Town of Amherstburg. Landmark Engineers Inc. has been retained by the Town to serve as the Lead Consultant on the project.


Any comments, questions or suggestions relevant to this study should be directed to the following primary members of the Project Team:



David M. Krutusch, PEng
Landmark Engineers Inc.
2380 Ambassadors Drive
Windsor, Ontario N9C 4A4
Phone: (519) 972-8022
Fax: (519) 972-8644
Email: dkrutusch@landmarkengineers.ca



Mark W. Golin, PEng
Town of Amherstburg
3250 Melville Rd.
Amherstburg, Ontario N0V 2T6
Phone: (519) 756-5408
Fax: (519) 756-7111
Email: mgo@amherstburg.ca



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process Amherstburg Parks Master Plan

Master Plan use in EA Process

The Municipal Class EA document specifically addresses the use of Master Plans.

Master Plans are defined as:

A long range plan which integrates infrastructure requirements for existing and future land use with environmental assessment principles. At a minimum, a Master Plan addresses Phases 1 and 2 of the Municipal Class EA process.

	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Landmark Engineers Inc.	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓

Parks Master Plan Project

> The Town of Amherstburg retained Montha Brown Planning Consultants (MBPC) to undertake the Parks Master Plan project.

> Two Public Information sessions for the Parks Master Plan were held in October 2017 by MBPC.

> MBPC also conducted stakeholder interviews (November 2017), monitored an online public engagement forum (www.townofamherstburg.ca), and conducted an online community survey (September – November 2017) to obtain feedback regarding the Parks Master Plan.


Community Engagement Feedback Highlights

> 62% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.

> In an online poll, 94% of respondents were in support of the proposed redevelopment plan for the Duffy's site.

> Waterfront parks and facilities were listed as greatest importance in Amherstburg Parks for 88% of the respondents (over playgrounds, splashpads, and sports facilities).

> Festivals and fairs were the second highest response (72%) when asked what type of events respondents participate in outdoors. (Highest response was use of trails / parks for walking / jogging).



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

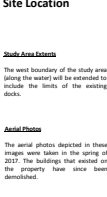

Environmental Inventory Site Location


Study Area Context

The aerial photos of the study area (along the water) will be extended to include the limits of the existing docks.

Aerial Photos

The aerial photos depicted in these images were taken in the spring of 2017. The buildings that existed on the property have since been demolished.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Background and Project Objectives

Background

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property on the Detroit River waterfront as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was conducted in September 2017, aimed at soliciting stakeholder feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project and the potential environmental impacts it may have, an environmental assessment needs to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.

In January 2018, Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.


Project Objectives

> Prepare a site plan that incorporates a park with an amphitheatre.


> Assess the condition of the existing marina.

> Create a marina layout that is more functional and has a larger capacity than the existing marina.

> Design a breakwater to improve the function of the marina and mitigate wave action.



EXISTING SITE LOOKING NORTH



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT


Environmental Assessment Process

Where we have been:

1. Identify Problem or Opportunity
2. Develop Assessment / Transient / Temporary / Permanent
3. Develop Project / Temporary / Permanent
4. Develop Assessment / Transient / Temporary / Permanent
5. Develop Assessment / Transient / Temporary / Permanent
6. Develop Assessment / Transient / Temporary / Permanent
7. Develop Assessment / Transient / Temporary / Permanent

Where we are going:

8. Develop Assessment / Transient / Temporary / Permanent
9. Develop Assessment / Transient / Temporary / Permanent
10. Develop Assessment / Transient / Temporary / Permanent
11. Develop Assessment / Transient / Temporary / Permanent
12. Develop Assessment / Transient / Temporary / Permanent
13. Develop Assessment / Transient / Temporary / Permanent
14. Develop Assessment / Transient / Temporary / Permanent



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Site Topography

The subject property generally slopes down from north to south and from east to west. Due to the high level of historic disturbance on the site, it is unclear where the historic shoreline was originally located, but it is believed that some of the lower portions of the site was filled in to create more land adjacent to the marina.

When the buildings were demolished in 2017, affected portions of the site were filled and graded to drain toward the Detroit River.

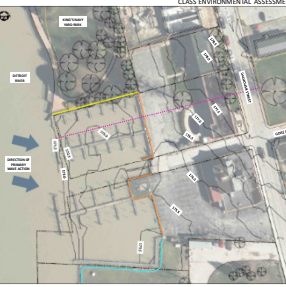
Marina Bathymetry

The river bottom throughout the existing marina is generally flat and appears to drop off into the channel near the west end of the docks.


At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.

Marina Climate

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.



Legend:
North - West Direction
East - East Direction
West - West Direction
South - South Direction
North - North Direction



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Purpose, Problem and Process

Purpose

This Drop-In Centre is intended to:

- > Present the Problem / Opportunity Statement for the Project.
- > Introduce the members of the Project Team.
- > Present the scope of the Class Environmental Assessment (Class EA) process.

Problem / Opportunity Statement


"This study intends to achieve a design for a public festival plaza and transient marina that will improve the existing vacant land, enhance the connection to King's Navy Yard Park and restore the existing dilapidated marina."

Environmental Assessment (EA) Process

> This project will follow the planning process set out in the Municipal Engineers Association's Municipal Class Environmental Assessment (Class EA). A copy of this document, which sets out the details of the approved Planning and Design Process for municipal projects (such as this), is on-site and is available for review by the public.

> Since the Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment will be focusing on new construction of a plaza and marina, the Project Team has concluded that this project falls under Schedule "B" of the Municipal Class EA.

> For "Schedule B" projects, only one point of Public Consultation is required. Given the high-profile nature of this project, however, the Project Team has elected to increase the level of public consultation (over and above the minimum requirement), and host an extra Public Drop-In Centre, creating a total of two Public Consultations for this project.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

The following displays are intended to present the Environmental Inventory of the Study Area that has been compiled by the Project Team. This inventory documents the existing conditions of the site in terms of the following categories:

Physical Environment



- Site Location
- Physical Infrastructure (e.g.: utilities, existing marina condition, etc.)
- Topography
- Bathymetry and Wave Climate


Natural Environment

- Aquatic Habitat
- Species at Risk

Social / Economic Environment

- Land Ownership
- Adjacent Land Use
- Heritage & Archaeological Resources



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Existing Shore Protection

The existing steel sheet pile breakwater along the north side of the marina, adjacent to King's Navy Yard Park, has been impacted and appears to be in poor condition.

The remaining steel sheet pile breakwater (along the east side of the marina basin) are in poor condition.

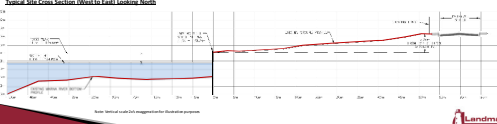
The rock shore protection along the south portion of the basin is in fair condition.


Marina Docks

Since the closure of the Marina, the docks have not been maintained and are generally in poor condition. Some of the docks may be repaired for reuse.

The layout of the "Taleway" between the existing docks does not meet the minimum standard recommended for safe maneuvering of boats in and out of a marina. It is recommended that the marina docks be removed and reconfigured according to current marina design standards.

Physical Site Cross Section (West to East Looking North)





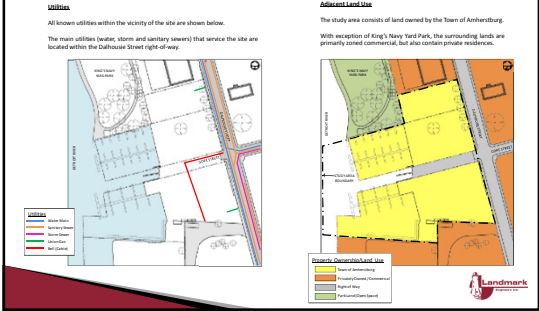
Environmental Inventory

Utilities & Adjacent Land Use

Utilities

All known utilities within the vicinity of the site are shown below.

The main utilities (water, storm and sanitary sewers) that service the site are located within the Dalhousie Street right-of-way.

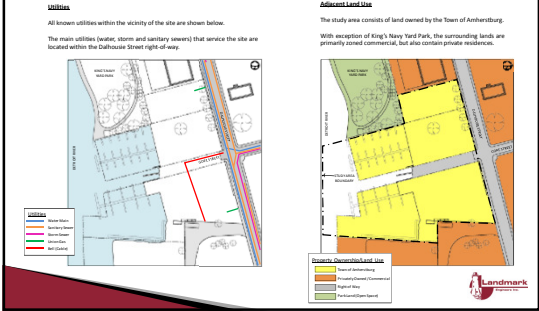


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Adjacent Land Use

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily owned commercial, but also contain private residences.



Evaluation of Alternatives

Alternative A : Passive Park

The passive park alternative would be an extension to King's Navy Yard Park with a view of the transient marina.

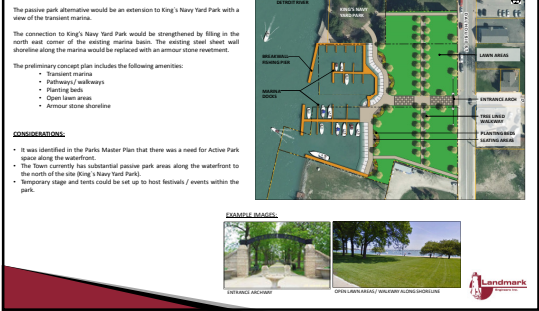
The connection to King's Navy Yard Park would be strengthened by filling in the north east corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.

The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn areas
- Armour stone shoreline

CONSIDERATIONS:

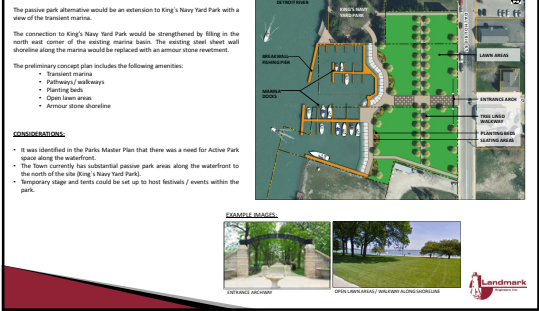
- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

EXAMPLE IMAGES

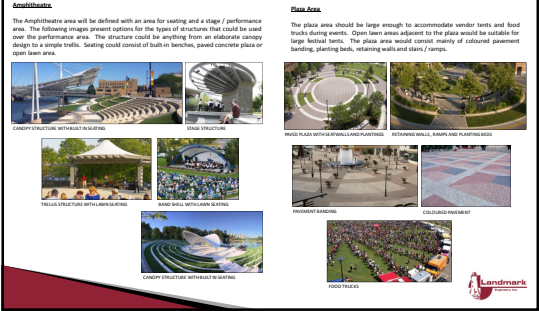


Design Considerations

Amphitheatre and Plaza

Amenities

The Amphitheatre area will be defined with an area for seating and a stage / performance area. The following images present options for the types of structure that could be used over the performance area. The structure could be anything from an elaborate canopy design to a simple trellis. Seating could consist of built-in benches, paved concrete plaza or open lawn area.

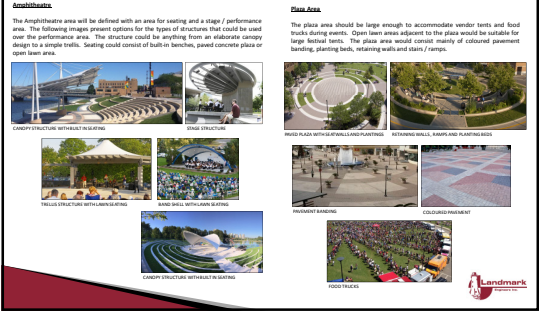


AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Plaza Area

The plaza area should be large enough to accommodate vendor tents and food trucks during events. Open lawn areas adjacent to the plaza would be suitable for large festival tents. The plaza area would consist mainly of coloured pavement paving, planting beds, retaining walls and stairs / ramps.



Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

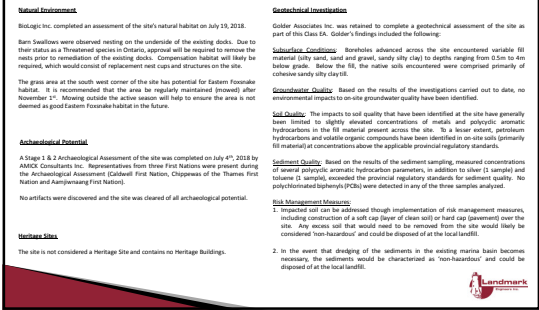
Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMOX Consultants Inc. Representatives from the First Nations were present during the Archaeological Assessment (Gallwey First Nations, Chippewas of the Thames First Nation and Anishnawabeg First Nations).

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Geotechnical Investigation

Golden Associates Inc. was retained to complete a geotechnical assessment of the site as part of the Class EA. Golden's findings included the following:

Subsurface Conditions: Boreholes advanced across the site encountered variable fill material (silty sand, sand and gravel, sandy silty clay) to depths ranging from 0.5m to 4m below grade. Below the fill, the native soils encountered were comprised primarily of cohesive sandy silty clays.

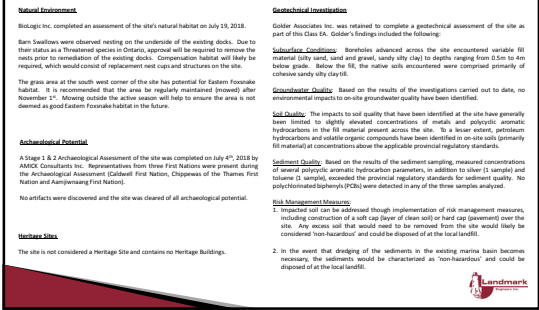
Groundwater Quality: Based on the results of the investigations carried out to date, no environmental impacts to on-site groundwater quality have been identified.

Soil Quality: The impacts to soil quality that have been identified at the site have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.

Sediment Quality: Based on the results of the sediment sampling, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (1 sample) and bismuth (2 samples), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples analyzed.

Risk Management Measures:

1. Impacted soil can be addressed through implementation of risk management measures, including construction of a lift cap (layer of clean soil) or hard cap (concrete) over the site. Any metals soil that would need to be removed from the site would likely be considered 'non-hazardous' and could be disposed of at the local landfill.
2. In the event that dredging of the sediments in the existing marina basin becomes necessary, the sediments would be characterized as 'non-hazardous' and could be disposed of at the local landfill.



Evaluation of Alternatives


Alternative B : Expanded Marina

In June of 2018, a petition was received by the Town asking that a boat launch with appropriate number of parking spaces for vehicles, the boat trailers, a wharf and lookout (the shoreline fishing) and transient marina slips be incorporated into the final design of the site.

A preliminary design concept for such a facility is presented here, with parking and turn-around spaces provided, based on other similar-sized facilities in Essex County. To minimize the interference with the traffic on Dalhousie Street, a one-way / not in proposed, with ample room for trailers to turn and back into the boat launch within the site.

CONSIDERATIONS:

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront as identified in the Parks Master Plan.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

EXAMPLE IMAGES




Design Considerations

Transient Marina and Breakwaters

Breakwaters

Breakwaters are offshore structures that protect marinas and shorelines from the erosive force of waves. As shown in the example images below, they are typically constructed of stone or concrete. The existing marina basin is currently exposed to the Detroit River, with no breakwater to protect the marina from wave action. This study will determine an appropriate breakwater size, orientation and materials to sufficiently protect the proposed transient marina design.




AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Shore Protection

It is recommended that the existing steel breakwall along the east side of the marina remain in place and a new rock revetment be built in front of the existing steel walls. The rock revetment would extend out into the marina basin in the north east corner to create more land which will strengthen the connection of the site to King's Navy Yard Park.




AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

Transient Marina

A transient marina offers temporary docking for boats and does not offer reserved slips. The marina would be available for boaters who wish to dock their boat while visiting Amherstburg.

The current layout of the 'Transient' marina during the existing docks does not meet the minimum standard for safe maneuvering of boats in and out of the marina. This study will develop a new dock layout that will meet current marina design guidelines for safe maneuvering.



Evaluation of Alternatives

Alternative Solutions

The project team identified three alternatives that were considered as options for the site development; Active Park, Passive Park and Expanded Marina. The advantages and disadvantages for each option are presented below:

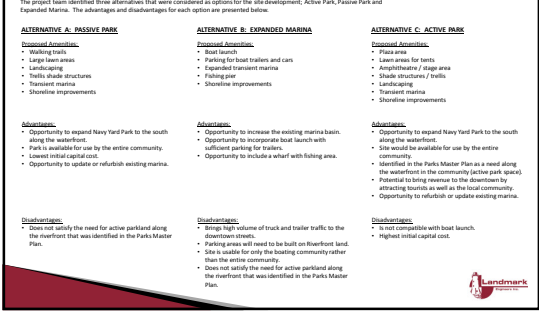
ALTERNATIVE A: PASSIVE PARK

Advantages:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn areas
- Armour stone shoreline

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

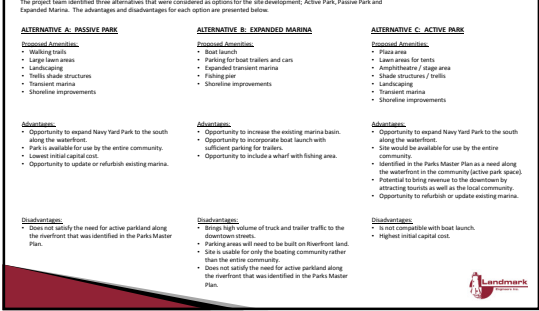
ALTERNATIVE B: EXPANDED MARINA

Advantages:

- Boat launch
- Parking for boat trailers and cars
- Expanded transient marina
- Fishing pier
- Shoreline improvements

Disadvantages:

- Opportunity to increase the existing marina basin.
- Site would be available for use by the entire community.
- Opportunity to include a wharf with fishing area.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

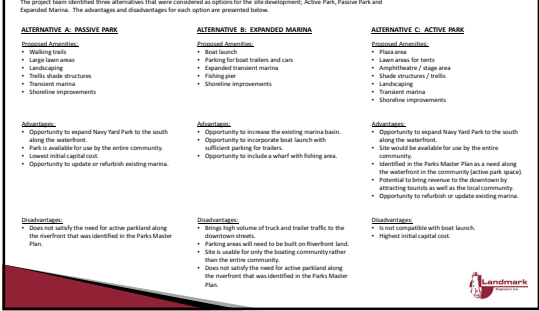
ALTERNATIVE C: ACTIVE PARK

Advantages:

- Transient marina
- Pathways / walkways
- Fishing break
- Open lawn areas
- Armour stone shoreline

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.



Evaluation of Alternatives

Alternative C : Active Park

Landmark was retained by the Town in 2016 to prepare this preliminary concept plan. The plan has been presented to the public at two previous Public Information Centres for the Parks Master Plan and made available to the Town's website (Link the Burg) for consideration and comment.

This concept plan intends to strengthen the connection to King's Navy Yard Park by filling in the north east corner of the existing marina basin. The existing steel sheet shoreline along the marina would be replaced with an armour stone treatment.

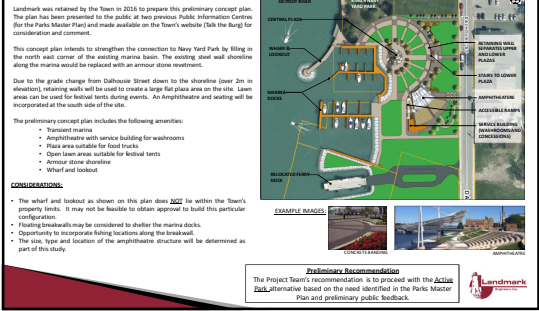
Due to the grade change from Dalhousie Street down to the shoreline (over 2m in elevation), retaining walls will be used to create a large flat plaza area on the site. A lawn area can be used for festival tents during events. An Amphitheatre and seating will be incorporated at the south side of the site.

The preliminary concept plan includes the following amenities:

- Transient marina
- Amphitheatre with service building for washrooms
- Plaza area suitable for food trucks
- Open lawn areas suitable for festival tents
- Armour stone shoreline
- Wharf and lookout

CONSIDERATIONS:

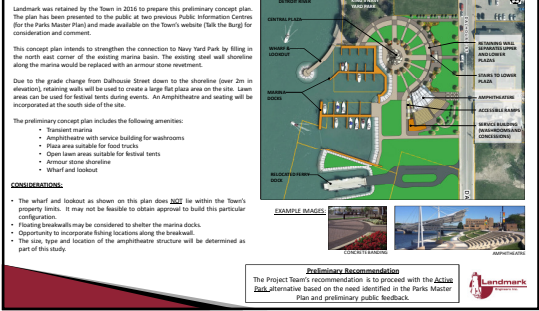
- The wharf and lookout as shown on this plan does not fit within the Town's property limits. It may not be feasible to obtain approval to build this particular configuration.
- Fishing breakwaters may be considered to shelter the marina docks.
- Opportunity to incorporate fishing structures along the breakwater.
- The size, type and location of the amphitheatre structure will be determined as part of this study.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA

CLASS ENVIRONMENTAL ASSESSMENT

EXAMPLE IMAGES



Next Steps

- All comments received from today's meeting will be reviewed by the Project Team and used to help define the Preferred Solution.
- A second Public Drop-in Centre will be held in late September to present the Preferred Solution.
- All comments received from the second Drop-in Centre will be reviewed and used to help refine the Preferred Solution. The project website will then be updated and a Notice will be published, alerting the public that the 30-day public review period for this Class EA has commenced.
- Provided that all outstanding issues are resolved and no Part II Orders are requested, the project may proceed to final approvals and construction upon completion of the 30-day public review period.

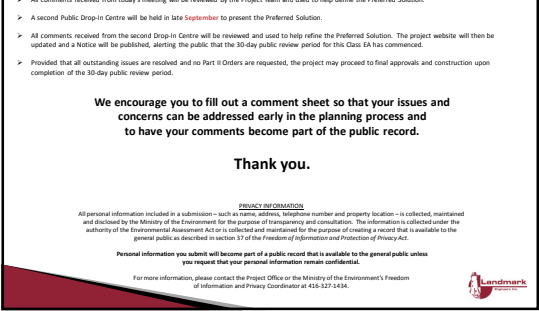
We encourage you to fill out a comment sheet so that your issues and concerns can be addressed early in the planning process and to have your comments become part of the public record.

Thank you.

All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public as described in section 37 of the Freedom of Information and Protection of Privacy Act.

Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416-327-2434.



Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:08 PM
To: 'dean.jacobs@wifn.org'
Cc: janet.macbeth@wifn.org; 'drskoke@wifn.org'
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon Mr. Jacobs,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:10 PM
To: 'dean.jacobs@wifn.org'; 'janet.macbeth@wifn.org'
Cc: 'drskoke@wifn.org'
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Good Afternoon Mr. Jacobs,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:
<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

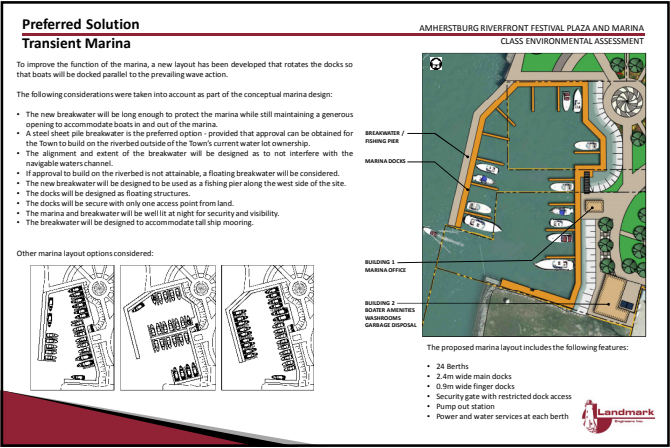
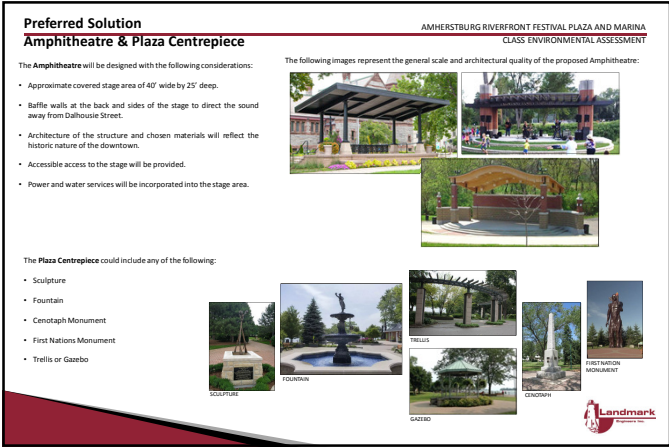
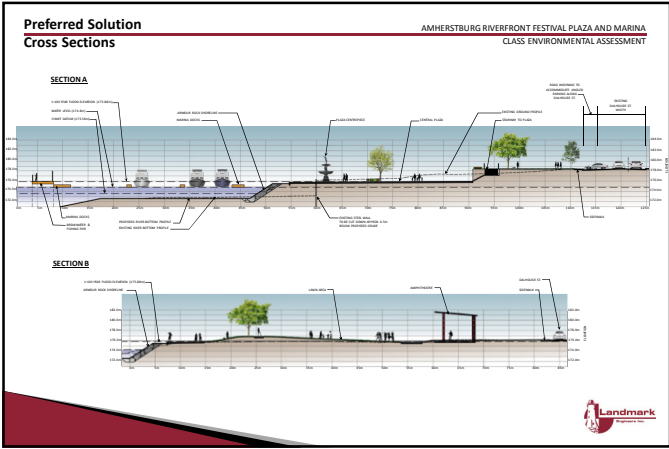
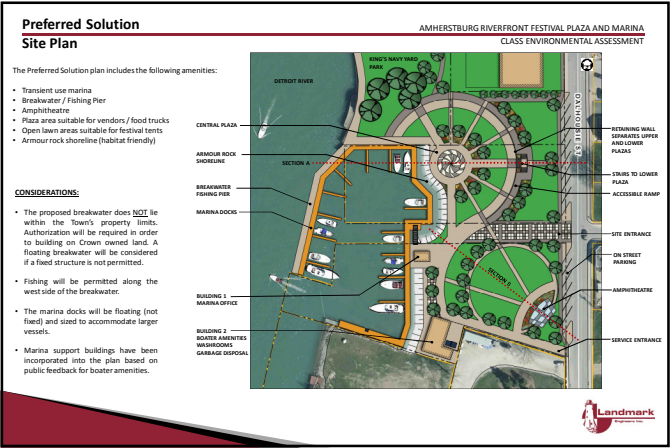
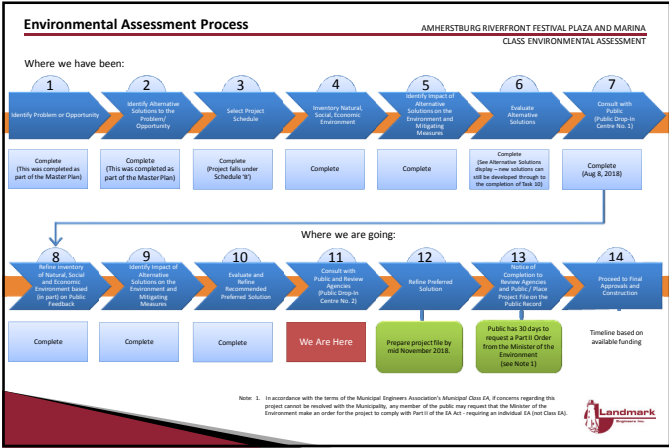
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca



Preferred Solution

Marina Amenities & Fishing Pier

The transient marina will require supporting amenities for the boaters visiting the site. Two buildings have been incorporated into the site plan to accommodate the needs of boaters.

Building 1 will be the main point of contact for boaters when they arrive to the site with services such as marina security and border call in station.

Building 2 will have washrooms with showers, laundry facilities and a lounge area for boaters only. The marina and the associated amenities building will be accessible by lany card only.

A dock with a pump out station will also be provided along the south side of the marina.

The **Fishing Pier** will be located along the west side of the proposed marina breakwater. The Fishing Pier will be:

- Open to the public.
- Approximately 65m long by 3m wide.
- Accessible from the south west corner of King's Navy Yard Park.
- Separated from the marina docks by a fence for marina security.
- Properly lit for security and visibility at night.

Public Views

Boaters' Facilities

Building 1: Office / ICE / BORDER SERVICES / SECURITY

Building 2: WASHROOM / SHOWER / FRESH DISPOSAL / LAUNDRY








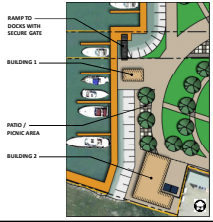
PHOTO / PICTURE AREA



RAMP TO DOCKS WITH SECURITY GATE

BUILDING 1

BUILDING 2

FISHING PIER





Preferred Solution

Shoreline Improvements

The majority of the existing steel shoreline will be cut down below the proposed site grade and a new armour rock shoreline will be built in front of the existing wall. The new shoreline will:

- Protect the shoreline from erosion.
- Attenuate wave reflection.
- Enhance fish habitat.
- Improve the connection of the plaza to King's Navy Yard Park to the north.

A segment of the steel sheet pile wall will be maintained / improved by installing a new steel sheet pile wall around the promontory for the proposed Building 1 location.

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN



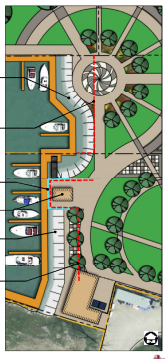
NEW STEEL SHEET PILE WALL

BUILDING 1

ARMOUR ROCK SHORELINE

EXISTING STEEL SHEET PILE WALL TO BE CUT DOWN

STEEL SHEET PILE WALL



Preferred Solution

Preliminary Budget Estimate

A preliminary budget estimate has been prepared for the Preferred Solution. It has been broken down into ranges of cost for each site element.

Plaza Site Works:
The estimate includes items such as:

- Site Preparation (Removals and Servicing)
- Retaining Walls
- Ramps and Stairs
- Concrete Flatwork
- Lighting
- Landscaping
- Dalhousie Street Widening

Shoreline Improvements:
The estimate includes items such as:

- Cut down existing steel walls
- Armour Stone Shoreline
- Steel Sheet Pile Walls

Marinas:
The estimate includes items such as:

- Breakwater
- Floating Docks
- Lighting
- Dredging
- Servicing

Structures:
The estimate includes the following items:

- Amphitheatre
- Marina Building 1
- Marina Building 2

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$400K - \$450K

Preliminary Budget Estimate
\$2.5M - \$3M

Preliminary Budget Estimate
\$1.5M - \$2.5M

Total Preliminary Project Budget Estimate
\$7 million - \$8 million

The project could be phased over time, as funding becomes available.

NOTES

- The Budget Estimate includes an overall contingency allowance of \$750,000 to account for current construction cost trends.
- The Budget Estimate was prepared based on the assumption that higher end materials and finishes would be used in construction.
- The Budget Estimate provided does NOT include HST.
- The Budget Estimate includes allowances for engineering and project administration.
- The Budget numbers have been rounded to the nearest \$50,000.
- The Budget numbers are subject to change during detailed design process.

Landmark

Metis Nation of Ontario

Liz Michaud

From: Liz Michaud
Sent: July-25-18 3:29 PM
To: 'consultations@metisnation.org'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf

Good Afternoon,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**AMHERSTBURG RIVERFRONT
FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT**



**NOTICE OF INTENT AND
INVITATION FOR PUBLIC COMMENT**

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. The project is being planned under **Schedule B** of the **Municipal Class Environmental Assessment**. The study has progressed to the point that design alternatives have been identified for review and public comment.

DROP-IN CENTRE

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

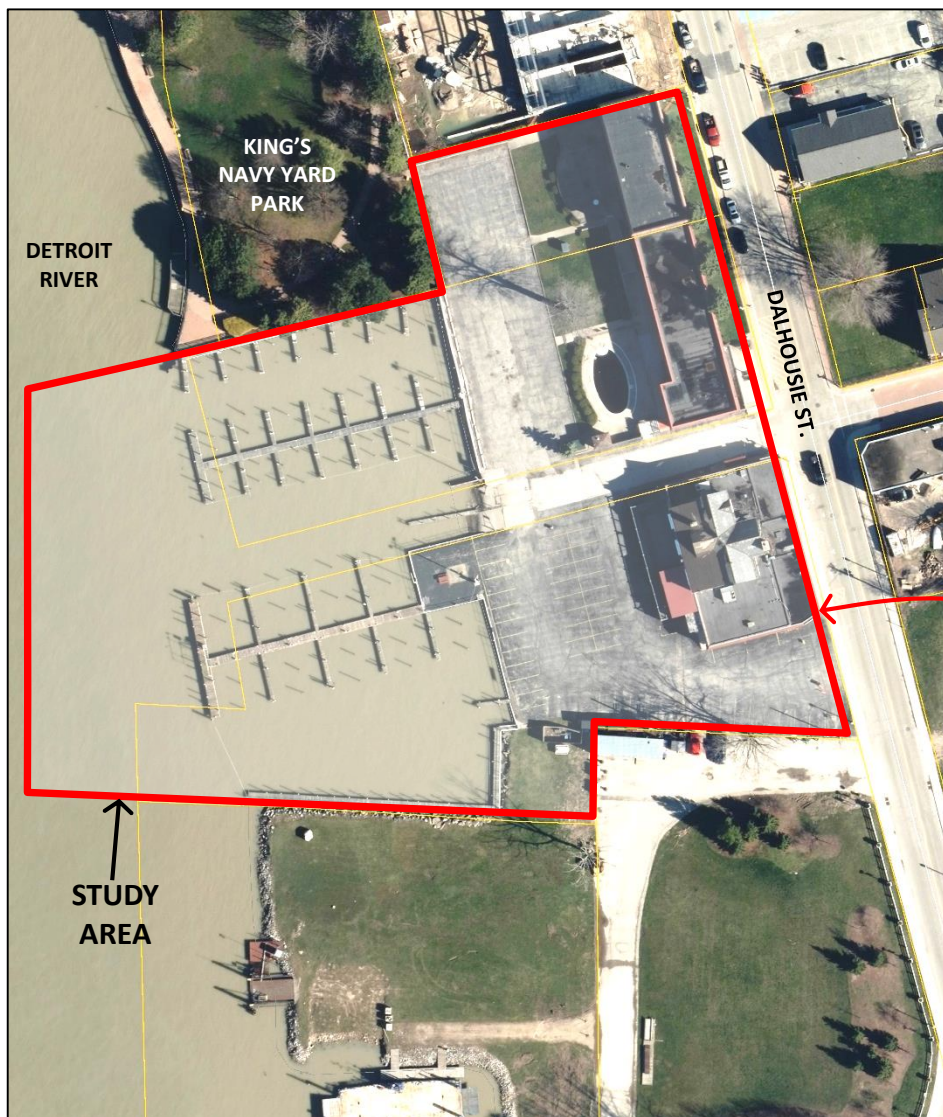
DATE: Wednesday, August 8th, 2018
TIME: 2:00 – 4:00 p.m. and 6:00 – 8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. For additional information or to provide comments on the project, please contact one of the following individuals:

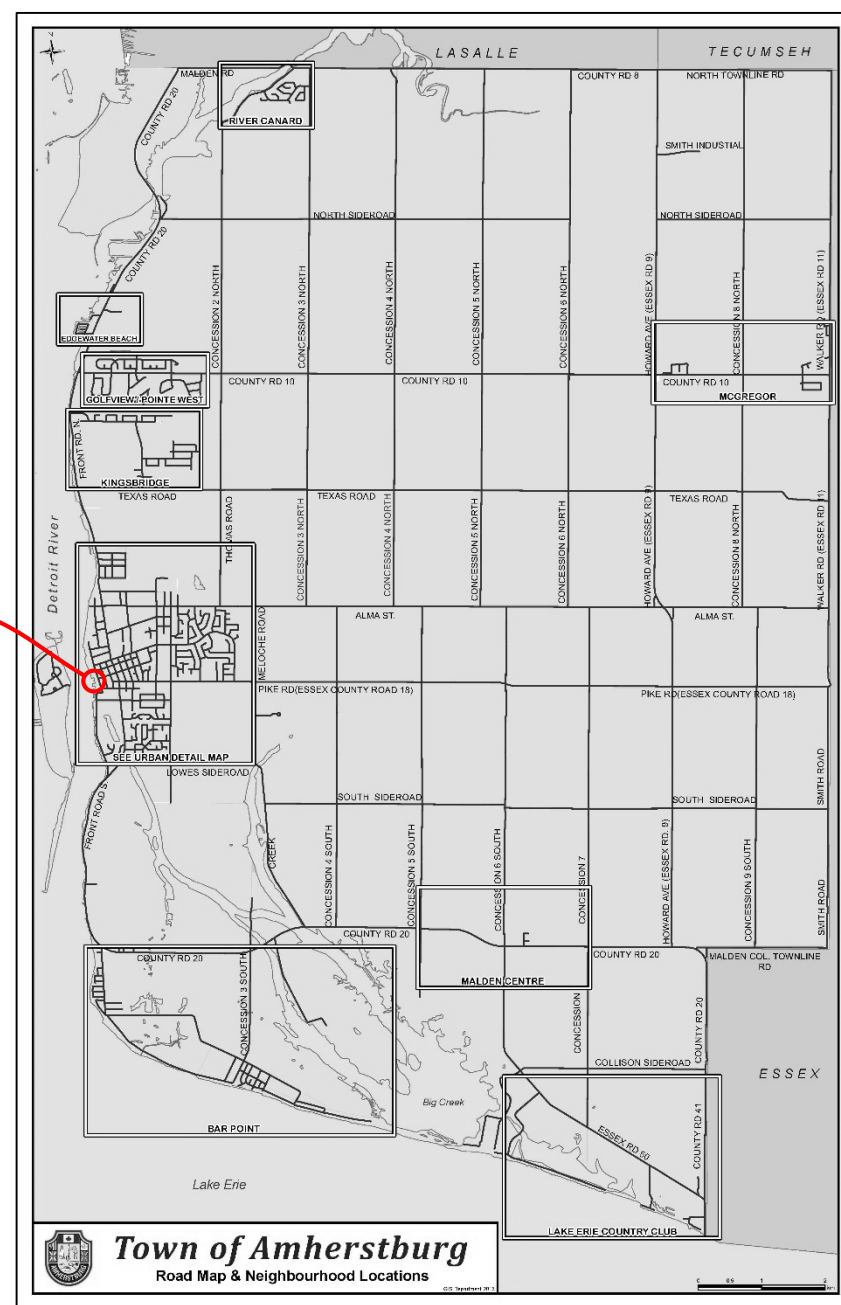
Town of Amherstburg
Mr. Mark Galvin, P.Eng.
3295 Meloche Road
Amherstburg, Ontario N9V 2Y8
(519) 736-5408 x2137
mgalvin@amherstburg.ca

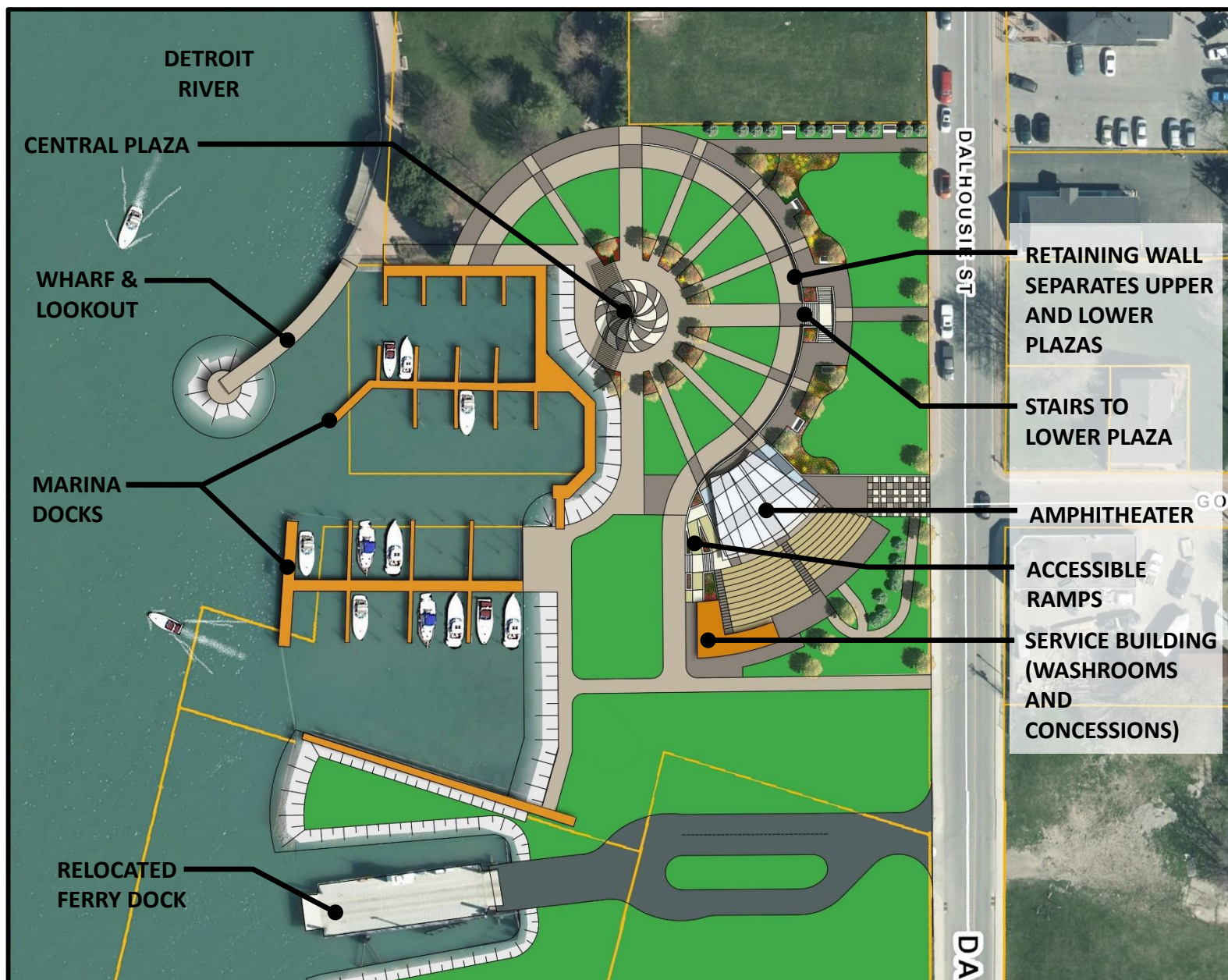
Landmark Engineers Inc.
Mr. Daniel Krutsch, P.Eng.
2280 Ambassador Drive
Windsor, Ontario N9C 4E4
(519) 972-8052
dkrutsch@landmarkengineers.ca

Under the *Municipal Freedom of Information and Protection of Privacy Act* and the *Ontario Environmental Assessment Act*, unless otherwise stated in submission, with the exception of personal information, all comments will become part of the public record and will be released, if requested to any person.



Property Address – 290, 296 and 306 Dalhousie St. in Amherstburg, ON





Title	Preliminary Concept Plan	Date	July 2018	FIGURE 2
Project	Amherstburg Festival Plaza and Marina Class Environmental Assessment	Scale	NTS	
		Project No.	17-025	

Liz Michaud

From: Liz Michaud
Sent: August-13-18 4:08 PM
To: 'consultations@metisnation.org'
Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Notice of Intent & Location Map.pdf; 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Attn: Region 9 Consultations Committee

Re: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

As indicated in the e-mail sent on July 25, 2018, the first of two scheduled Public Drop-In Centres was held on August 8th, 2018. The project information presented at the Drop-In Center has been attached for your review and comment.

In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.** We would be happy to schedule a meeting if you would like to discuss any concerns you may have.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Liz Michaud

Sent: July-25-18 3:29 PM

To: 'consultations@metisnation.org' <consultations@metisnation.org>

Subject: 17-025 Notice of Intent & Invitation to Comment - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment.

The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. An informational Open House regarding the site and concept plan was convened in September 2017, aimed at soliciting initial feedback from the public and stakeholders. Based on the generally positive feedback that was received at the Open House, the Town decided to proceed with an environmental assessment of the proposed works. Landmark Engineers Inc. was retained in January 2018 to undertake the EA.

On July 4th, 2018 a Stage 1 & 2 Archaeological Assessment was completed on the site and no artifacts were discovered. The site has been cleared of all archaeological potential.

The study has progressed to the point that design alternatives have been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions and obtain feedback. The Drop-In Centre will be held on:

DATE: August 8th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road
Amherstburg, Ontario

We are presently contacting all private and public agencies that may have an interest in the project to solicit their comments and to confirm their interest in the Environmental Assessment process. The attached PDF contains the project Notice of Intent and Invitation for Public Consultation. In order to simplify your initial response, **please reply to this e-mail to indicate your interest in the project by August 22, 2018.**

To aid in the dissemination of information, all project information will be available for review on the Town's website (www.amherstburg.ca) under Environmental Plans and Reports.

If you have any questions or require further details, please contact either the undersigned or Mr. Mark Galvin (Town of Amherstburg).

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Welcome to the Public Drop-In Centre No. 1

> All relevant information regarding this project (including the display material presented today) is available for public review on the Town of Amherstburg's website (www.amherstburg.ca).

> Please sign to record your attendance.

> Please review the display material and provide any comments on the sheet provided. You may submit your comments by mail / fax / e-mail or you may place them in the Comment Box located on the sign-in table.


> All comments for this Drop-In Centre must be received by **August 13th, 2018** to be given consideration in the development of the preferred solution for this project. Contact information for the Project Team is available below, and also on the comment sheet provided.

> The Project Team members present will be pleased to discuss any questions you may have.


Project Team

This study has been initiated by the Town of Amherstburg. Landmark Engineers Inc. has been retained by the Town to serve as the Lead Consultant on the project.


Any comments, questions or suggestions relevant to this study should be directed to the following primary members of the Project Team:



David M. Krutusch, PEng
Landmark Engineers Inc.
2380 Ambassadors Drive
Windsor, Ontario N9C 4A4
Phone: (519) 972-8022
Fax: (519) 972-8644
Email: dkrutusch@landmarkengineers.ca



Mark W. Golin, PEng
Town of Amherstburg
3250 Melville Rd.
Amherstburg, Ontario N0V 2T6
Phone: (519) 756-5408
Fax: (519) 756-7111
Email: mgo@amherstburg.ca



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process Amherstburg Parks Master Plan

Master Plan use in EA Process

The Municipal Class EA document specifically addresses the use of Master Plans.

Master Plans are defined as:

A long range plan which integrates infrastructure requirements for existing and future land use with environmental assessment principles. At a minimum, a Master Plan addresses Phases 1 and 2 of the Municipal Class EA process.


	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Landmark Engineers Inc.	✓	✓	✓	✓	✓
Amherstburg Parks Master Plan	✓	✓	✓	✓	✓
Amherstburg Class EA	✓	✓	✓	✓	✓

Parks Master Plan Project

- The Town of Amherstburg retained Montha Brown Planning Consultants (MBPC) to undertake the Parks Master Plan project.
- Two Public Information sessions for the Parks Master Plan were held in October 2017 by MBPC.
- MBPC also conducted stakeholder interviews (November 2017), monitored an online public engagement forum (www.townofamherstburg.ca), and conducted an online community survey (September – November 2017) to obtain feedback regarding the Parks Master Plan.

Community Engagement Feedback Highlights

- 62% of respondents agreed that the development of Duffy's property to a festival amphitheatre should be a high priority for the Town.
- Waterfront parks and facilities were listed as greatest importance in Amherstburg Parks for 88% of the respondents (over playgrounds, splashpads, and sports facilities).
- Festivals and fairs were the second highest response (72%) when asked what type of events respondents participate in outdoors.
- Highest response was use of trails / parks for walking / jogging.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Site Location

Study Area Context

The aerial photos of the study area (along the water) will be extended to include the limits of the existing docks.

Aerial Photos

The aerial photos depicted in these images were taken in the spring of 2017. The buildings that existed on the property have since been demolished.







AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Background and Project Objectives

Background


The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property on the Detroit River waterfront as a public festival plaza and transient marina.

A preliminary concept plan was prepared and an informational Open House regarding the site was conducted in September 2017, aimed at soliciting stakeholder feedback from the public and from stakeholders. Based on the feedback that was received, the Town decided to proceed with the project and the potential environmental impacts it may have, an environmental assessment needs to be completed in accordance with the Municipal Engineers Class Environmental Assessment (EA) before moving forward with construction on the site.


In January 2018, Landmark Engineers Inc. was retained by the Town to undertake this EA, in preparation for eventual implementation of the project.

Project Objectives

- Prepare a site plan that incorporates a park with an amphitheatre.
- Assess the condition of the existing marina.
- Create a marina layout that is more functional and has a larger capacity than the existing marina.
- Design a breakwater to improve the function of the marina and mitigate wave action.



EXISTING SITE LOOKING NORTH



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Assessment Process

Where we have been:

1. Identify Problem or Opportunity
2. Identify Stakeholders / Interested Parties
3. Select Project Location
4. Develop Preliminary Conceptual Design
5. Develop Preliminary Environmental Assessment
6. Develop Preliminary Environmental Assessment
7. Develop Preliminary Environmental Assessment

Where we are going:

8. Complete (This was completed as part of the Master Plan)
9. Complete (This was completed as part of the Master Plan)
10. Complete (This was completed as part of the Master Plan)
11. Complete (This was completed as part of the Master Plan)
12. Complete (This was completed as part of the Master Plan)
13. Complete (This was completed as part of the Master Plan)
14. Complete (This was completed as part of the Master Plan)


We Are Here

Date to be Determined (September 2018)

Present project file by end October 2018

Public has 30 days to request a Public Hearing from the Minister of the Environment (see Notice 1)

Timeline based on Amherstburg Planning



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Site Topography

The subject property generally slopes down from north to south and from east to west. Due to the high level of historic disturbance on the site, it is unclear where the historic shoreline was originally located, but it is believed that some of the lower portions of the site was filled in to create more land adjacent to the marina.

When the buildings were demolished in 2017, affected portions of the site were filled and graded to drain toward the Detroit River.

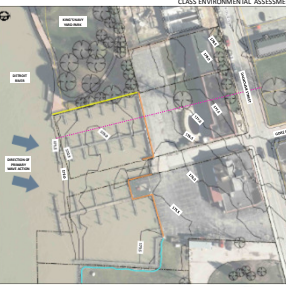
Marina Bathymetry

The river bottom throughout the existing marina is generally flat and appears to drop off into the channel near the west end of the docks.

At the time of the survey (July 2018), the measured water elevation was 274.8m. This translates to a water depth ranging from approximately 2.2m to 3m within the marina basin. Chart datum at this location is 273.58m.


Marina Climate

Due to the orientation of the site and the Detroit River, the site is only exposed to wave action from the west.



Legend:

- North - West Direction
- East - East Direction
- West - West Direction
- South - South Direction
- North - North Direction
- East - East Direction
- West - West Direction
- South - South Direction



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Purpose, Problem and Process

Purpose

This Drop-In Centre is intended to:


- Present the Problem / Opportunity Statement for the Project.
- Introduce the members of the Project Team.
- Present the scope of the Class Environmental Assessment (Class EA) process.

Problem / Opportunity Statement

"This study intends to achieve a design for a public festival plaza and transient marina that will improve the existing vacant land, enhance the connection to King's Navy Yard Park and restore the existing dilapidated marina."

Environmental Assessment (EA) Process

- This project will follow the planning process set out in the Municipal Engineers Association's Municipal Class Environmental Assessment (Class EA). A copy of this document, which sets out the details of the approved Planning and Design Process for municipal projects (such as this), is on-site and is available for review by the public.
- Since the Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment will be focusing on new construction of a plaza and marina, the Project Team has concluded that this project falls under Schedule "B" of the Municipal Class EA.
- For "Schedule B" projects, only one point of Public Consultation is required. Given the high-profile nature of this project, however, the Project Team has elected to increase the level of public consultation (over and above the minimum requirement), and host an extra Public Drop-In Centre, creating a total of two Public Consultations for this project.



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory

The following displays are intended to present the Environmental Inventory of the Study Area that has been compiled by the Project Team. This inventory documents the existing conditions of the site in terms of the following categories:

Physical Environment



- Site Location
- Physical Infrastructure (e.g.: utilities, existing marina condition, etc.)
- Topography
- Bathymetry and Wave Climate


Natural Environment

- Aquatic Habitat
- Species at Risk

Social / Economic Environment

- Land Ownership
- Adjacent Land Use
- Heritage & Archaeological Resources



AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT

Environmental Inventory Physical Environment

Existing Shore Protection

The existing steel sheet pile breakwater along the north side of the marina, adjacent to King's Navy Yard Park, has been impacted and appears to be in poor condition.

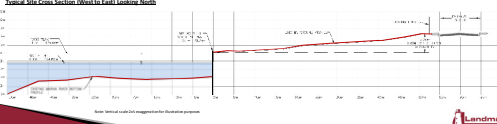
The rock shore protection along the south portion of the basin is in fair condition.


Marina Docks

Since the closure of the Marina, the docks have not been maintained and are generally in poor condition. Some of the docks may be repaired for reuse.

The layout of the "Taleway" between the existing docks does not meet the minimum standard recommended for safe maneuvering of boats in and out of a marina. It is recommended that the marina docks be removed and reconfigured according to current marina design standards.

Physical Site Cross Section (West to East Looking North)






Environmental Inventory

Utilities & Adjacent Land Use

Utilities

All known utilities within the vicinity of the site are shown below.

The main utilities (water, storm and sanitary sewers) that service the site are located within the Dalhousie Street right-of-way.



Adjacent Land Use

The study area consists of land owned by the Town of Amherstburg. With exception of King's Navy Yard Park, the surrounding lands are primarily zoned commercial, but also contain private residences.

Landmark CONSULTANTS LTD.

Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMCO Consultants Inc. Representatives from the Town of Amherstburg were present during the Archaeological Assessment (Guided) First Nations. Chippewa of the Thames First Nation and Anishinaabe First Nations.

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.

Landmark CONSULTANTS LTD.

Evaluation of Alternatives

Alternative A : Passive Park

The passive park alternative would be an extension to King's Navy Yard Park with a view of the transient marina.

The connection to King's Navy Yard Park would be strengthened by filling in the north east corner of the existing marina basin. The existing steel sheet wall shoreline along the marina would be replaced with an armour stone treatment.


The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Planting beds
- Open lawn areas
- Armour stone shoreline

CONSIDERATIONS

- It was identified in the Parks Master Plan that there was a need for Active Park space along the waterfront.
- The Town currently has substantial passive park areas along the waterfront to the south of the site (King's Navy Yard Park).
- Temporary stage and tents could be set up to host festivals / events within the park.

EXAMPLE IMAGES



Landmark CONSULTANTS LTD.

Design Considerations

Amphitheatre and Plaza

Amphitheatre

The Amphitheatre area will be defined with an area for seating and a stage / performance area. The following images present options for the types of structure that could be used over the performance area. The structure could be anything from an elaborate canopy design to a simple trellis. Seating could consist of built-in benches, paved concrete plaza or open lawn area.



Plaza Area

The plaza area should be large enough to accommodate vendor tents and food trucks during events. Open lawn areas adjacent to the plaza would be suitable for large festival tents. The plaza area would consist mainly of coloured pavement paving, planting beds, retaining walls and stairs / ramps.

Landmark CONSULTANTS LTD.

Environmental Inventory

Natural and Social Environments

Natural Environment

Biologic Inc. completed an assessment of the site's natural habitat on July 19, 2018.

Barn Swallows were observed nesting on the underside of the existing docks. Due to their status as a Threatened species in Ontario, approval will be required to remove the nests prior to remediation of the existing docks. Compensation habitat will likely be required, which would consist of replacement nest cups and structures on the site.

The grass area at the south west corner of the site has potential for Eastern Foxglove habitat. It is recommended that the area be regularly maintained (mowed) after November 1st. Mowing outside the active season will help to ensure the area is not deemed as good Eastern Foxglove habitat in the future.

Archaeological Potential

A Stage 1 & 2 Archaeological Assessment of the site was completed on July 4th, 2018 by AMCO Consultants Inc. Representatives from the Town of Amherstburg were present during the Archaeological Assessment (Guided) First Nations. Chippewa of the Thames First Nation and Anishinaabe First Nations.

No artifacts were discovered and the site was cleared of all archaeological potential.

Heritage Sites

The site is not considered a Heritage Site and contains no Heritage Buildings.

Landmark CONSULTANTS LTD.

Evaluation of Alternatives

Alternative B : Expanded Marina


In June of 2018, a petition was received by the Town asking that a boat launch with appropriate number of parking spaces for vehicles, the boat trailers, a wharf and lookout (the shoreline fishing) and transient marina slips be incorporated into the final design of the site.

A preliminary design concept for such a facility is presented here, with parking and turn-around spaces provided, based on other similar-sized facilities in Essex County. To minimize the interference with the traffic on Dalhousie Street, a one-way / not in proposed, with ample room for trailers to turn and back into the boat launch within the site.

CONSIDERATIONS

- Using the site as a boat launch does not satisfy the need for active parkland along the waterfront as identified in the Parks Master Plan.
- The site size (50m by 110m) may not be large enough to provide sufficient truck and trailer parking required to service the boat launch demand of the community.
- The amount of truck and trailer traffic on Dalhousie Street would increase and has potential to obstruct the flow of regular traffic.
- Prime waterfront land would essentially be turned into a parking lot.

EXAMPLE IMAGES



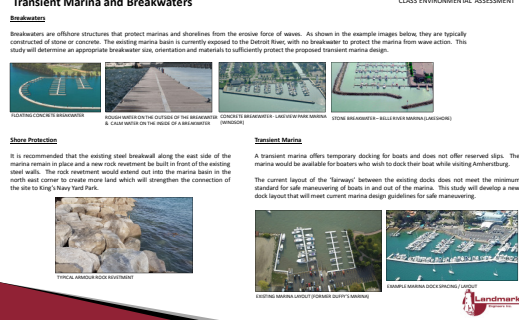
Landmark CONSULTANTS LTD.

Design Considerations

Transient Marina and Breakwaters

Breakwaters

Breakwaters are offshore structures that protect marinas and shorelines from the erosive force of waves. As shown in the example images below, they are typically constructed of stone or concrete. The existing marina basin is currently exposed to the Detroit River, with no breakwater to protect the marina from wave action. This study will determine an appropriate breakwater size, orientation and materials to sufficiently protect the proposed transient marina design.



Shore Protection

It is recommended that the existing steel breakwall along the east side of the marina remain in place and a new rock revetment be built in front of the existing steel walls. The rock revetment would extend out into the marina basin in the north east corner to create more land which will strengthen the connection of the site to King's Navy Yard Park.

Transient Marina

A transient marina offers temporary docking for boats and does not offer reserved slips. The marina would be available for boaters who wish to dock their boat while visiting Amherstburg.

The current layout of the 'transient' berthing docks does not meet the minimum standard for safe maneuvering of boats in and out of the marina. This study will develop a new dock layout that will meet current marina design guidelines for safe maneuvering.

Landmark CONSULTANTS LTD.

Evaluation of Alternatives

Alternative Solutions

The project team identified three alternatives that were considered as options for the site development; Active Park, Passive Park and Expanded Marina. The advantages and disadvantages for each option are presented below:

ALTERNATIVE A: PASSIVE PARK

Advantages:

- Walking trails
- Large lawn areas
- Landscaping
- Trails shade structures
- Transient marina
- Shoreline improvements

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Park is available for use by the entire community.
- Lowest initial capital cost.
- Opportunity to update or refurbish existing marina.

ALTERNATIVE B: EXPANDED MARINA

Advantages:

- Boat launch
- Parking for boat trailers and cars
- Expanded transient marina
- Fishing pier
- Shoreline improvements

Disadvantages:

- Opportunity to increase the existing marina basin.
- Site would be available for use by the entire community.
- Opportunity to include a wharf with fishing area.
- Opportunity to include a wharf with fishing area.

ALTERNATIVE C: ACTIVE PARK

Advantages:

- Transient marina
- Pathways / walkways
- Planting beds
- Open lawn areas
- Armour stone shoreline

Disadvantages:

- Opportunity to expand King's Navy Yard Park to the south along the waterfront.
- Site would be available for use by the entire community.
- Identified in the Parks Master Plan as a need along the waterfront to the community (active park space).
- Potential to bring revenue to the downtown by attracting tourists as well as the local community.
- Opportunity to refurbish or update existing marina.

Disadvantages:

- Brings high volume of truck and trailer traffic to the downtown streets.
- Parking area will need to be built on waterfront land.
- Site is usable for only the boating community rather than the entire community.
- Does not satisfy the need for active parkland along the waterfront that was identified in the Parks Master Plan.

Landmark CONSULTANTS LTD.

Evaluation of Alternatives

Alternative C : Active Park

Landmark was retained by the Town in 2016 to prepare this preliminary concept plan. The plan has been presented to the public at two previous Public Information Centres for the Parks Master Plan and made available to the Town's website (link the Burg) for consideration and comment.

This concept plan intends to strengthen the connection to King's Navy Yard Park by filling in the north east corner of the existing marina basin. The existing steel sheet shoreline along the marina would be replaced with an armour stone treatment.

Due to the grade change from Dalhousie Street down to the shoreline (over 2m in elevation), retaining walls will be used to create a large flat plaza area on the site. A lawn area can be used for festival tents during events. An Amphitheatre and seating will be incorporated at the south side of the site.


The preliminary concept plan includes the following amenities:

- Transient marina
- Pathways / walkways
- Planting beds
- Open lawn areas
- Armour stone shoreline

CONSIDERATIONS

- The wharf and lookout as shown on this plan does not fit within the Town's property limits. It may not be feasible to obtain approval to build this particular configuration.
- Fishing breakwaters may be considered to shelter the marina docks.
- Opportunity to incorporate fishing structures along the breakwall.
- The size, type and location of the amphitheatre structure will be determined as part of this study.

EXAMPLE IMAGES



Landmark CONSULTANTS LTD.

Next Steps

➢ All comments received from today's meeting will be reviewed by the Project Team and used to help define the Preferred Solution.

➢ A second Public Drop-in Centre will be held in late September to present the Preferred Solution.

➢ All comments received from the second Drop-in Centre will be reviewed and used to help refine the Preferred Solution. The project website will then be updated and a Notice will be published, alerting the public that the 30-day public review period for this Class EA has commenced.

➢ Provided that all outstanding issues are resolved and no Part 9 Orders are requested, the project may proceed to final approvals and construction upon completion of the 30-day public review period.

We encourage you to fill out a comment sheet so that your issues and concerns can be addressed early in the planning process and to have your comments become part of the public record.

Thank you.

Privacy Information

All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public as described in section 37 of the Freedom of Information and Protection of Privacy Act.

Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

For more information, please contact the Project Officer or the Ministry of the Environment's Freedom of Information and Privacy Coordinator at 416-327-2434.

Landmark CONSULTANTS LTD.

Liz Michaud

From: Liz Michaud
Sent: September-28-18 12:19 PM
To: consultations@metisnation.org
Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2
Attachments: 17-025 Drop-In Centre #1 - Amherstburg Riverfront Plaza EA (8Aug18).pdf

Good Afternoon,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, the second Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

We would be happy to schedule a meeting with you if you would like to discuss the project or any concerns you may have. In order to simplify your response, please reply to this e-mail to indicate your interest in the project by October 19, 2018.

All of the project information to date can be found online here: <https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>. The webpage will be updated periodically as the project progresses.

We have attached the information (from the first Drop-In Centre) that was sent by e-mail on August 13, 2018 for your review and comment.

If you have any questions or require further details, please contact the undersigned.

Regards,

Liz Michaud



Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644

Liz Michaud

From: Liz Michaud
Sent: October-30-18 2:22 PM
To: 'consultations@metisnation.org'
Subject: 17-025 Preferred Solution and Offer of Consultation - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 17-025 Preferred Solution - Amherstburg Riverfront Plaza EA.pdf

Attn: Region 9 Consultations Committee

Re: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Good Afternoon,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the Amherstburg Riverfront Festival Plaza Class Environmental Assessment. The Town of Amherstburg intends to redevelop the former Duffy's Tavern and Motor Inn property (306 Dalhousie Street) on the Detroit River waterfront as a transient marina and public festival plaza. At this time, a Preferred Solution has been identified. A copy of the information that was recently presented at the 2nd Public Drop-In Centre is attached for review and comment.

As indicated in that attachment, the preferred solution includes the construction of a new festival plaza, amphitheatre, transient marina and breakwater on the site. We believe the following items may be of interest to your community:

- Anticipated impacts to the Detroit River aquatic environment and proposed mitigation measures.
- Land Ownership – the project may involve construction of a breakwater outside the limits of the Town's water lot, on what has historically been regarded by the Provincial and Federal Government as Crown Land.
- Potential opportunities for First Nation recognition on the site.

We would be happy to schedule a meeting with you if you would like to discuss these items or any other concerns you may have regarding the preferred solution.

All of the project information that has been prepared to date can be found online here:
<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>

Please indicate if you would prefer to receive a hard copy of all of the study material.

If you have any questions or require further details, please don't hesitate to contact me.

Thank you,

Liz Michaud



Landmark Engineers Inc.

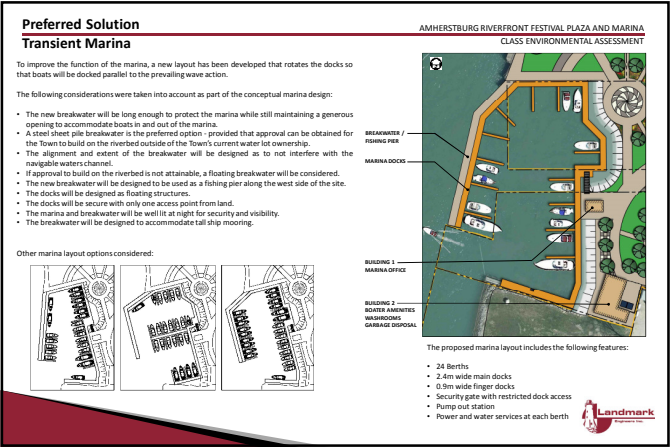
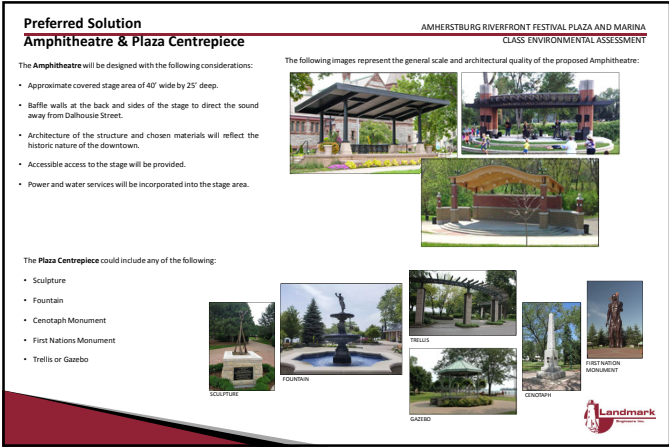
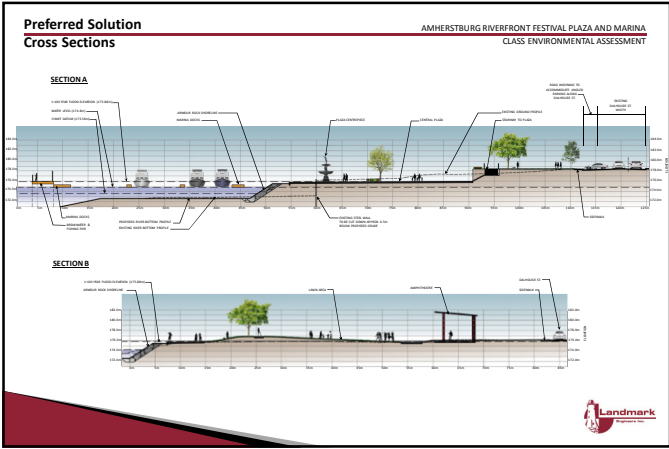
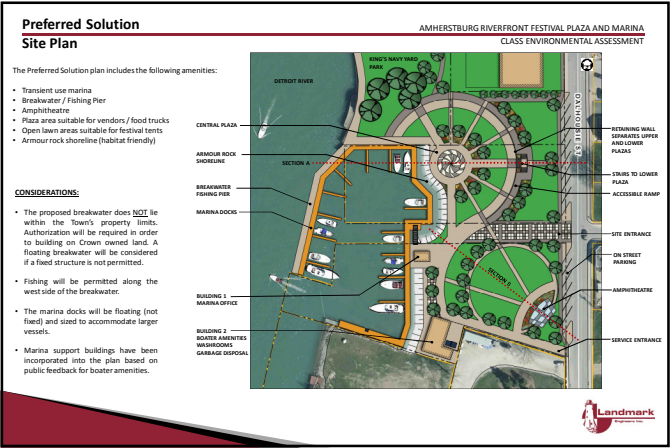
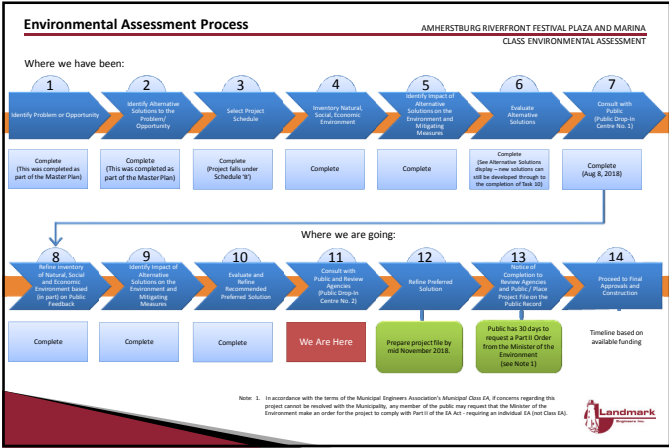
2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca





Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment



Job Number: 17-025

Date: May 2019

Binder 2 of 2

Section 7:

Archaeological Report

7.0 Archaeological Assessment

This section of the Project File contains all of the completed checklists required by the Ministry of Tourism Culture and Sport and the supporting documentation for each. A summary of each assessment has been included below.

Land Based Assessment

A Stage 1 and 2 Archaeological Assessment of the land potentially affected by the proposed jetty extension was undertaken by AMICK Consultants Limited. A copy of AMICK's report can be found in Section 7 of the Project File.

Conclusions and Recommendations:

- The Stage 1 Assessment identified the study area as having archaeological potential. Therefore, a Stage 2 Assessment was required.
- As a result of the Stage 2 Assessment of the study area, no archaeological resources were encountered.
- Given the extensive disturbance at the site and that the site has been capped with fill material, conventional methodology has not been able to determine if there are any deeply buried archaeological deposits.
- Any areas where the proposed excavations for the project are to penetrate the full depth of the fill material will require further Stage 2 investigations through mechanical removal and examination of the buried topsoil below the fill deposits.
- Monitoring of the removal of fill overburden must be undertaken under the direct supervision of a licensed archaeologist.
- Any First Nations which have identified interest in this project should be invited to participate in any subsequent phases of fieldwork and also review and comment on any subsequent archaeological reports.

Marine Archaeological Potential

In consultation with the Ministry of Tourism, Culture and Sport (MTCS), it was determined that a full Marine Archaeological Assessment was not required due to the historical disturbance of the river bottom within the marina. A checklist for Marine Potential was provided by MTCS and has been filled out to satisfy any further requirements. A copy of the submitted checklist and supporting documentation can be found in Section 7 of the Project File.

Built Heritage

There are no listed or designated heritage buildings or properties on the site.

Cultural Heritage

A Cultural Heritage Evaluation Report was requested by MTCS. AECOM Canada Ltd. was retained by the Town to complete the study. A copy of the MTCS checklist and AECOM's report can be found herein.

Conclusions and Recommendations:

- Given that the property is located along the shores of the Detroit River, a Canadian Heritage River, consideration should be given to the property's future use and its relation to the heritage river.
- The Detroit River Management Strategy should be consulted and reviewed to ensure that the plans for the property are consistent with the guideline to conserving and enhancing the heritage value of the river.
- There is opportunity to install relevant signage, or interpretive plans, or installations that can relate to the human and natural heritage of the Detroit River as part of the Canadian Heritage River System.

Memo

Date: July 4, 2018
To: File 17-025
From: Liz Michaud
Subject: Amherstburg Festival Plaza EA – Archaeological Assessment

A. Site Attendance

Liz Michaud – Landmark Engineers Inc.
Dan Kurtsch – Landmark Engineers Inc.
Mark Galvin – Town of Amherstburg
Sarah Sinasac – Town of Amherstburg
Marilyn Cornies – AMICK Consultants
Michael Henry – AMICK Consultants
Shelley Birch – Caldwell First Nation
Wanda Maness – (on behalf of) Aamjiwaang First Nation
Fred Albert – (on behalf of) Chippewas of the Thames First Nation

B. Site Assessment Notes

The Archaeological Assessment of the Amherstburg Festival Plaza site began at approximately 8:45am on July 4, 2018. Marilyn and Michael walked the site to assess areas that were disturbed and determine areas that may have archaeological potential. It was determined that only a small portion of the site may contain native soils (see image below). This area was screened at a 5m grid. No artifacts were found.

Wanda requested that some test pits be taken in the middle of the site in the sandy area. Two test pits were taken and no artifacts were found. See image for approximate location of the sandy test locations.



Liz Michaud

From: Roe, Sarah (MTCS) <Sarah.Roe@ontario.ca>
Sent: September-13-18 2:48 PM
To: Liz Michaud
Subject: RE: Amherstburg Riverfront Festival Plaza - marine archaeology query

Hi Liz,

I've taken a closer look at the attachments you sent, and also at our GIS to see what sites are nearby. There are a lot of sites in the vicinity and very close by, which would indicate the property has high potential for having cultural heritage value. Especially close by is the King's Wharf site, about 100 m away.

The land assessment (P058-1650-2018) will have made recommendations for the terrestrial portion of the study area which need to be followed.

However the current area of planned marine impacts I can see has been dredged and therefore disturbed. I am ok with not having a specific marine assessment at this time, based on that disturbance.

Hope this is helpful,

Sarah

Sarah Roe

Archaeology Review Officer and Marine Licensing
Archaeology Program Unit
Culture Division
Ministry of Tourism, Culture and Sport
401 Bay Street, 17th Floor
(416) 314-7152
sarah.roe@ontario.ca

From: Liz Michaud [mailto:lmichaud@landmarkengineers.ca]
Sent: September 7, 2018 10:40 AM
To: Roe, Sarah (MTCS)
Subject: RE: Amherstburg Riverfront Festival Plaza - marine archaeology query

Good Morning Sarah,

Katherine has been helping us with determining if our site would require a Marine Archaeological Assessment. I have had our Archaeologist fill out the checklist and based on Question 7 (Has the property or project been recognised for its cultural heritage value?) we were told to answer YES which automatically means we must do a Marine Archaeological Assessment.

Given that the entire property / project area has been subject to recent extensive disturbance, I don't know why we would be required to do a marine assessment for this site.

I have attached a series of historical photos that shows where the land used to be. The shoreline was dredged out in order to create the existing marina. Any artifacts that would have been present would have been removed during the

construction of the marina. We are not intending to do any significant alterations to the existing riverbottom in order to restore the marina.

Our proposal intends to dredge the sediments that have accumulated since the closure of the marina and install new floating docks and floating breakwater. We intend to fill a small area in front of the existing steel sheet pile wall and create a natural rock revetment shoreline to aid in erosion control, create fish habitat and gain some land connection to the existing park to the north.

I have attached the Marine archeological potential checklist and a series of site photos for your review. Please advise if we are still required to do a marine archaeological assessment for this property. A marine assessment is very costly and given the site's history of disturbance we don't want to proceed unless it is critical.

Regards,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

From: Roe, Sarah (MTCS) <Sarah.Roe@ontario.ca>

Sent: September-07-18 10:20 AM

To: Liz Michaud <lmichaud@landmarkengineers.ca>

Cc: Kirzati, Katherine (MTCS) <Katherine.Kirzati@ontario.ca>

Subject: RE: Amherstburg Riverfront Festival Plaza - marine archaeology query

Thank you Katherine.

Hi Liz – let me know what you would like to discuss regarding the archaeology at Duffy's Tavern.

Sarah

From: Kirzati, Katherine (MTCS)

Sent: Friday, September 7, 2018 10:09 AM

To: Liz Michaud (lmichaud@landmarkengineers.ca) <lmichaud@landmarkengineers.ca>

Cc: Roe, Sarah (MTCS) <Sarah.Roe@ontario.ca>

Subject: Amherstburg Riverfront Festival Plaza - marine archaeology query

Hi Liz

I received your voice message and suggest that you or your archaeologist connect with Sarah Roe (copied), one of our Archaeology Review Officers. She can be reached at (416) 314-7152 or at sarah.roe@ontario.ca

Sarah: this deals with the Duffy Tavern PIF P058-1650-2018.

Regards, Katherine

Katherine Kirzati

A/Heritage Advisor

Heritage Program Unit

Ministry of Tourism, Culture and Sport

401 Bay Street, 17th Floor

Toronto, ON M7A 0A7

416.314.7643 katherine.kirzati@ontario.ca

Liz Michaud

From: Liz Michaud
Sent: September-24-18 10:54 AM
To: Kirzati, Katherine (MTCS)
Subject: RE: 0007528 -Amherstburg -Riverfront Festival Plaza -MTCS Letter 2018
Attachments: Amherstburg Festival Plaza & Marina EA - Criteria for Evaluating Marine Archaeological Potential.pdf; Criteria for Evaluating Archaeological Potential.pdf; Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes.pdf

Good Morning Katherine,

As requested, I have completed the required checklists for Archaeological potential.

Please see the following attachments:

1. Criteria for Evaluating Archaeological Potential 2. Criteria for Evaluating Marine Archaeological Potential 3. Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

The checklists, along with the Archaeological Report submitted by AMICK Consultants, will be included in our EA Project File.

Please let me know if you require further information regarding our project.

Regards,

Liz Michaud

Landmark Engineers Inc.
2280 Ambassador Drive
Windsor, ON, N9C 4E4
p (519) 972-8052
f (519) 972-8644
e-mail lmichaud@landmarkengineers.ca

-----Original Message-----

From: Kirzati, Katherine (MTCS) <Katherine.Kirzati@ontario.ca>
Sent: August-20-18 2:32 PM
To: Liz Michaud <lmichaud@landmarkengineers.ca>; mgalvin@amherstburg.ca
Subject: 0007528 -Amherstburg -Riverfront Festival Plaza -MTCS Letter 2018

Good Afternoon Liz:

Attached is our acknowledgement letter for the above-noted project. If you have any questions, do give me a call.

Regards, Katherine

Katherine Kirzati

A/Heritage Advisor
Heritage Program Unit
Ministry of Tourism, Culture and Sport
401 Bay Street, 17th Floor
Toronto, ON M7A 0A7
416.314.7643 katherine.kirzati@ontario.ca<mailto:katherine.kirzati@ontario.ca>

Criteria for Evaluating Archaeological Potential

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area may contain archaeological resources i.e., have archaeological potential
- it includes all areas that may be impacted by project activities, including – but not limited to:
 - the main project area
 - temporary storage
 - staging and working areas
 - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Archaeological assessment

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a licensed consultant archaeologist (see page 4 for definitions) to undertake an archaeological assessment.

The assessment will help you:

- identify, evaluate and protect archaeological resources on your property or project area
- reduce potential delays and risks to your project

Note: By law, archaeological assessments **must** be done by a licensed consultant archaeologist. Only a licensed archaeologist can assess – or alter – an archaeological site.

What to do if you:

- **find an archaeological resource**

If you find something you think may be of archaeological value during project work, you must – by law – stop all activities immediately and contact a licensed consultant archaeologist

The archaeologist will carry out the fieldwork in compliance with the *Ontario Heritage Act* [s.48(1)].

- **unearth a burial site**

If you find a burial site containing human remains, you must immediately notify the appropriate authorities (i.e., police, coroner's office, and/or Registrar of Cemeteries) and comply with the *Funeral, Burial and Cremation Services Act*.

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – [separate checklist](#)
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages when completing this form.

Project or Property Name

Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Project or Property Location (upper and lower or single tier municipality)

290, 296 and 306 Dalhousie Street, Amherstburg, Ontario

Proponent Name

Liz Michaud - Landmark Engineers Inc on behalf of the Town of Amherstburg

Proponent Contact Information

E-mail: lmichaud@landmarkengineers.ca Phone: 519-972-8052

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

	Yes	No
2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If Yes, do **not** complete the rest of the checklist. You are expected to follow the recommendations in the archaeological assessment report(s).

The proponent, property owner and/or approval authority will:

- summarize the previous assessment
- add this checklist to the project file, with the appropriate documents that demonstrate an archaeological assessment was undertaken e.g., MTCS letter stating acceptance of archaeological assessment report

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., environmental assessment document
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Are there known archaeological sites on or within 300 metres of the property (or the project area)?	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property (or project area)?	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or project area)?	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
7. Has the property (or project area) been recognized for its cultural heritage value?	<input type="checkbox"/>	<input type="checkbox"/>

If Yes to any of the above questions (3 to 7), do **not** complete the checklist. Instead, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment of your property or project area.

If No, continue to question 8.

	Yes	No
8. Has the entire property (or project area) been subjected to recent, extensive and intensive disturbance?	<input type="checkbox"/>	<input type="checkbox"/>

If Yes to the preceding question, do **not** complete the checklist. Instead, please keep and maintain a summary of documentation that provides evidence of the recent disturbance.

An archaeological assessment is not required.

If No, continue to question 9.

	Yes	No
9. Are there present or past water sources within 300 metres of the property (or project area)?	<input type="checkbox"/>	<input type="checkbox"/>

If Yes, an archaeological assessment is required.

If No, continue to question 10.

	Yes	No
10. Is there evidence of two or more of the following on the property (or project area)?	<input type="checkbox"/>	<input type="checkbox"/>

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

If Yes, an archaeological assessment is required.

If No, there is low potential for archaeological resources at the property (or project area).

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., under the *Environmental Assessment Act*, *Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
 - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

In this context, the following definitions apply:

- **consultant archaeologist** means, as defined in Ontario regulation as an archaeologist who enters into an agreement with a client to carry out or supervise archaeological fieldwork on behalf of the client, produce reports for or on behalf of the client and provide technical advice to the client. In Ontario, these people also are required to hold a valid professional archaeological licence issued by the Ministry of Tourism, Culture and Sport.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may be already in place for identifying archaeological potential, including:

- one prepared and adopted by the municipality e.g., archaeological management plan
- an environmental assessment process e.g., screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties](#) [s. B.2.]

2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?

Respond 'yes' to this question, if all of the following are true:

- an archaeological assessment report has been prepared and is in compliance with MTCS requirements
 - a letter has been sent by MTCS to the licensed archaeologist confirming that MTCS has added the report to the Ontario Public Register of Archaeological Reports (Register)
- the report states that there are no concerns regarding impacts to archaeological sites

Otherwise, if an assessment has been completed and deemed compliant by the MTCS, and the ministry recommends further archaeological assessment work, this work will need to be completed.

For more information about archaeological assessments, contact:

- approval authority
- proponent
- consultant archaeologist
- Ministry of Tourism, Culture and Sport at archaeology@ontario.ca

3. Are there known archaeological sites on or within 300 metres of the property (or project area)?

MTCS maintains a database of archaeological sites reported to the ministry.

For more information, contact MTCS Archaeological Data Coordinator at archaeology@ontario.ca.

4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property?

Check with:

- Aboriginal communities in your area
- local municipal staff

They may have information about archaeological sites that are not included in MTCS' database.

Other sources of local knowledge may include:

- property owner
- [local heritage organizations and historical societies](#)
- local museums
- [municipal heritage committee](#)
- published local histories

5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or property area)?

Check with:

- Aboriginal communities in your area
- local municipal staff

Other sources of local knowledge may include:

- property owner
- [local heritage organizations and historical societies](#)
- local museums
- [municipal heritage committee](#)
- published local histories

6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulation Unit, Ontario Ministry of Consumer Services – for [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – to [locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, ‘adjacent’ means ‘contiguous’, or as otherwise defined in a municipal official plan.

7. Has the property (or project area) been recognized for its cultural heritage value?

There is a strong chance there may be archaeological resources on your property (or immediate area) if it has been listed, designated or otherwise identified as being of cultural heritage value by:

- your municipality
- Ontario government
- Canadian government

This includes a property that is:

- designated under *Ontario Heritage Act* (the OHA), including:
 - individual designation (Part IV)
 - part of a heritage conservation district (Part V)
 - an archaeological site (Part VI)
- subject to:
 - an agreement, covenant or easement entered into under the OHA (Parts II or IV)
 - a notice of intention to designate (Part IV)
 - a heritage conservation district study area by-law (Part V) of the OHA
- listed on:
 - a municipal register or inventory of heritage properties
 - Ontario government’s list of provincial heritage properties
 - Federal government’s list of federal heritage buildings
- part of a:
 - National Historic Site
 - UNESCO World Heritage Site
- designated under:
 - *Heritage Railway Station Protection Act*
 - *Heritage Lighthouse Protection Act*
- subject of a municipal, provincial or federal commemorative or interpretive plaque.

To determine if your property or project area is covered by any of the above, see:

- Part A of the MTCS Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes

Part VI – Archaeological Sites

Includes five sites designated by the Minister under Regulation 875 of the Revised Regulation of Ontario, 1990 (Archaeological Sites) and 3 marine archaeological sites prescribed under Ontario Regulation 11/06.

For more information, check [Regulation 875](#) and [Ontario Regulation 11/06](#).

8. Has the entire property (or project area) been subjected to recent extensive and intensive ground disturbance?

Recent: after-1960

Extensive: over all or most of the area

Intensive: thorough or complete disturbance

Examples of ground disturbance include:

- quarrying
- major landscaping – involving grading below topsoil
- building footprints and associated construction area
 - where the building has deep foundations or a basement
- infrastructure development such as:
 - sewer lines
 - gas lines
 - underground hydro lines
 - roads
 - any associated trenches, ditches, interchanges. **Note:** this applies only to the excavated part of the right-of-way; the remainder of the right-of-way or corridor may not have been impacted.

A ground disturbance does **not** include:

- agricultural cultivation
- gardening
- landscaping

Site visits

You can typically get this information from a site visit. In that case, please document your visit in the process (e.g., report) with:

- photographs
- maps
- detailed descriptions

If a disturbance isn't clear from a site visit or other research, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment.

9. Are there present or past water bodies within 300 metres of the property (or project area)?

Water bodies are associated with past human occupations and use of the land. About 80-90% of archaeological sites are found within 300 metres of water bodies.

Present

- Water bodies:
 - primary - lakes, rivers, streams, creeks
 - secondary - springs, marshes, swamps and intermittent streams and creeks
- accessible or inaccessible shoreline, for example:
 - high bluffs
 - swamps
 - marsh fields by the edge of a lake
 - sandbars stretching into marsh

Water bodies not included:

- man-made water bodies, for example:
 - temporary channels for surface drainage
 - rock chutes and spillways
 - temporarily ponded areas that are normally farmed
 - dugout ponds
- artificial bodies of water intended for storage, treatment or recirculation of:
 - runoff from farm animal yards
 - manure storage facilities
 - sites and outdoor confinement areas

Past

Features indicating past water bodies:

- raised sand or gravel beach ridges – can indicate glacial lake shorelines
- clear dip in the land – can indicate an old river or stream
- shorelines of drained lakes or marshes
- cobble beaches

You can get information about water bodies through:

- a site visit
- aerial photographs
- 1:10,000 scale [Ontario Base Maps](#) - or [equally detailed and scaled maps](#).

10. Is there evidence of two or more of the following on the property (or project area)?

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

• **Elevated topography**

Higher ground and elevated positions - surrounded by low or level topography - often indicate past settlement and land use.

Features such as eskers, drumlins, sizeable knolls, plateaus next to lowlands, or other such features are a strong indication of archaeological potential.

Find out if your property or project area has elevated topography, through:

- site inspection
- aerial photographs
- [topographical maps](#)

• **Pockets of well-drained sandy soil, especially within areas of heavy soil or rocky ground**

Sandy, well-drained soil - in areas characterized by heavy soil or rocky ground - may indicate archaeological potential

Find out if your property or project area has sandy soil through:

- site inspection
- [soil survey reports](#)

- **Distinctive land formations**

Distinctive land formations include – but are not limited to:

- waterfalls
- rock outcrops
- rock faces
- caverns
- mounds, etc.

They were often important to past inhabitants as special or sacred places. The following sites may be present – or close to – these formations:

- burials
- structures
- offerings
- rock paintings or carvings

Find out if your property or project areas has a distinctive land formation through:

- a site visit
- aerial photographs
- 1:10,000 scale [Ontario Base Maps](#) - or [equally detailed and scaled maps](#).

- **Resource extraction areas**

The following resources were collected in these extraction areas:

- food or medicinal plants e.g., migratory routes, spawning areas, prairie
- scarce raw materials e.g., quartz, copper, ochre or outcrops of chert
- resources associated with early historic industry e.g., fur trade, logging, prospecting, mining

Aboriginal communities may hold traditional knowledge about their past use or resources in the area.

- **Early historic settlement**

Early Euro-Canadian settlement include – but are not limited to:

- early military or pioneer settlement e.g., pioneer homesteads, isolated cabins, farmstead complexes
- early wharf or dock complexes
- pioneers churches and early cemeteries

For more information, see below – under the early historic transportation routes.

- **Early historic transportation routes** - such as trails, passes, roads, railways, portage routes, canals.

For more information, see:

- historical maps and/or historical atlases
 - for information on early settlement patterns such as trails (including Aboriginal trails), monuments, structures, fences, mills, historic roads, rail corridors, canals, etc.
 - [Archives of Ontario](#) holds a large collection of historical maps and historical atlases
 - digital versions of historic atlases are available on the [Canadian County Atlas Digital Project](#)
- commemorative markers or plaques such as local, [provincial](#) or [federal](#) agencies
- [municipal heritage committee](#) or other [local heritage organizations](#)
 - for information on early historic settlements or landscape features (e.g., fences, mill races, etc.)
 - for information on commemorative markers or plaques

Criteria for Evaluating Marine Archaeological Potential

A Checklist for Non-Marine Archaeologists

Purpose

The **purpose of this checklist** is to help proponents determine:

- if a property or project area may contain marine archaeological resources or have marine archaeological potential

A marine archaeological site is fully or partially submerged, or lies below or partially below the high-water mark of any body of water.

The property or project area includes all submerged areas that may be impacted by project activities, including, but not limited to:

- the main project area
- temporary storage and stockpiling locations
- staging and work areas, such as docking platforms and dredging locations
- temporary features such as access routes, anchors, moorings and cofferdams.

Please refer to the **instructions** on pages 4 through 9 when completing this checklist

Processes covered

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregate Resources Act*
- *Ontario Heritage Act*
 - Standards & Guidelines for Conservation of Provincial Heritage Properties
- *Canadian Environmental Assessment Act*
- *Canada Shipping Act*

Marine archaeological assessment

The assessment will help you:

- identify, evaluate and protect marine archaeological resources on your property or project area
- reduce potential delays and risks to your project

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a licensed marine archaeologist (defined on page 5) to undertake a marine archaeological assessment.

Note: Under Part VI of the *Ontario Heritage Act*, all marine archaeological assessments **must** be done by a licensed marine archaeologist. Only a licensed marine archaeologist can assess – or alter – a marine archaeological site.

Have you found a site?

If you find something you think may be of marine archaeological value during project work, you **must** – by law – stop all activities immediately and contact a licensed marine archaeologist. The marine archaeologist will carry out the fieldwork in compliance with the *Ontario Heritage Act*.

Have you found human remains?

If you find remains (e.g., bones) that could be of human origin, you **must** – by law – immediately notify the appropriate authorities (police, coroner's office, or Registrar of Cemeteries) and comply with the *Funeral, Burial and Cremation Services Act*.

Other Checklists

Please use a separate checklist for your project if:

- your Parent Class EA document has approved screening criteria
- your ministry's or prescribed public body's approved Identification and Evaluation Process includes approved screening criteria

Project or Property Name

Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Project or Property Location (upper and lower or single tier municipality)

290, 296 and 306 Dalhousie Street, Amherstburg, Ontario

Proponent Name

Liz Michaud - Landmark Engineers Inc. on behalf of the Town of Amherstburg

Proponent Contact Information

Telephone Number

519-972-8052

Fax Number

519-972-8644

Email Address

lmichaud@landmarkengineers.ca

Screening Questions

1. Is there a government-authorized, pre-approved screening checklist, methodology or process in place?

☐ Yes ☒ No

If **Yes**, please follow the pre-approved screening checklist, methodology or process. Do not complete the rest of this checklist.

If **No**, continue to Question 2.

2. Has a marine archaeological assessment been prepared for the property or project area and been entered by MTCS into the Ontario Public Register of Archaeological Reports?

☐ Yes ☒ No

If **Yes**, do **not** complete the rest of the checklist. You are expected to follow the recommendations in the marine archaeological assessment report(s).

The proponent and/or approval authority will:

- summarize the previous marine archaeological assessment
- follow any recommendations for further marine archaeological assessment work, as applicable
- add this checklist to the project file, with the appropriate documents that demonstrate a marine archaeological assessment was undertaken (e.g. MTCS letter that states that the report has been entered into the Ontario Public Register of Archaeological Reports)

The summary and appropriate documentation may be:

- submitted as part of a report requirement, e.g. environmental assessment document
- maintained by the proponent or approval authority

If **No**, continue to Question 3.

3. Are there known marine or land-based archaeological sites on or within 500 metres of the property or project area?

☒ Yes ☐ No

4. Is there Aboriginal or local knowledge of marine or land-based archaeological sites on or within 500 metres of the property or project area?

☒ Yes ☐ No

5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 500 metres of the property or project area?

☒ Yes ☐ No

6. Is there a known burial site or cemetery on the property or adjacent to the property or project area?

☐ Yes ☒ No

7. Has the property or project area been recognized for its cultural heritage value?

☒ Yes ☐ No

If **Yes** to any of questions 3 to 7, do **not** complete the checklist. Your property or project area could contain marine archaeological resources: please hire a licensed marine archaeologist to conduct a marine archaeological assessment.

If **No**, continue to Question 8.

8. Has the entire property or project area been subjected to recent, extensive and intensive disturbance?

☒ Yes ☐ No

If **Yes**, do **not** complete the checklist. Instead, please keep and maintain a summary of documentation that provides evidence of the recent disturbance. A marine archaeological assessment is not required.

If **No**, continue to Question 9.

9. Are there two or more reported or registered ship wreck sites or reports of lost ships within a five kilometre radius of the property or project area?
☐ Yes ☐ No
 If **Yes**, a marine archaeological assessment is required.
 If **No**, continue to Question 10.

10. Is the property or project area within one kilometre of an active or historic harbour, seaplane or floatplane base, tunnel, ferry route, marine terminal, or winter road?
☐ Yes ☐ No
 If **Yes**, a marine archaeological assessment is required.
 If **No**, continue to Question 11.

11. Where the project impacts fourth order or higher watercourses, are there existing narrows, rapids, waterfalls or does the watercourse enter or leave a body of water within 300 metres of the property or project area?
☐ Yes ☐ No
 If **Yes**, a marine archaeological assessment is required.
 If **No**, continue to Question 12.

12. Are there potential built heritage or cultural heritage landscape resources that may be of cultural heritage value or interest adjacent to the watercourse or water body?
☐ Yes ☐ No
 If **Yes**, a marine archaeological assessment is required.
 If **No**, continue to Question 13.

13. Are there inundated beaches, bluffs, lakeshores, streams or river banks within 300 metres of the property or project area?
☐ Yes ☐ No
 If **Yes**, a marine archaeological assessment is required.
 If **No**, continue to Question 14.

14. Are there inundated beaches, lakeshores or river/creek banks beyond 300 metres and at greater depth than the project area with evidence of two or more of the following in the project area?

- elevated bathymetric features such as drumlins, eskers, kames, ridges, etc.
- pockets of sandy lakebed
- distinctive bathymetric formations such as escarpments, shoals, promontories, reefs, etc.
- inundated resource extraction areas (quarry, fishery)
- inundated historical settlement including built heritage resources or cultural heritage landscapes
- inundated historical transportation routes

☐ Yes ☐ No

If **Yes**, a marine archaeological assessment is required.
 If **No**, there is low potential for marine archaeological resources at the property (or project area).
 The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project report or file

The summary and appropriate documentation may be:

- submitted as part of a report requirement, e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained and retained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions:

- a clear map or chart showing the location and boundary of the property or project area
 - large scale and small scale maps/charts showing nearby islands or township names for context
- the municipal addresses of all properties or water lots within or adjacent to the project area, if any
- the lot, concession, parcel number or mining claims of any properties within the project area

In this context, the following definitions apply:

- **licensed marine archaeologist** means an archaeologist who has a valid marine archaeology licence issued by the Ministry of Tourism, Culture and Sport to practice in Ontario. As a consultant, a licensed marine archaeologist enters into an agreement with a client to carry out or supervise marine archaeological work on behalf of the client, produce reports for or on behalf of the client and provide technical advice to the client.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may be already in place to identify marine archaeological potential, including:

- one prepared and adopted by the municipality, such as an archaeological management plan
- an environmental assessment process, such as a screening checklist for municipal bridges
- projects being reviewed under the Canadian *Environmental Assessment Act*.
- one that is approved by the Ministry of Tourism, Culture and Sport under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties](#) [s. B.2.]

2. Has a marine archaeological assessment been prepared for the property or project area and been entered into the Ontario Public register of Archaeological Reports?

Respond 'yes' to this question, if all of the following are true:

- a marine archaeological assessment report has been prepared and complies with MTCS requirements
 - a letter has been sent by MTCS to the licensed marine archaeologist confirming that MTCS has entered the report into the Ontario Public Register of Archaeological Reports (Register)
- the report contains a recommendation stating that there are no further concerns regarding impacts to marine archaeological sites

If a marine archaeological assessment report has been completed and deemed compliant by MTCS, and the report contains a recommendation that further marine archaeological assessment work be undertaken, this work will need to be completed.

For more information about previously conducted marine archaeological assessments, contact:

- approval authority (such as a municipality or conservation authority)
- proponent for whom the marine archaeological assessment was carried out
- consultant archaeologist qualified to hold a marine archaeology licence in Ontario
- Ministry of Tourism, Culture and Sport at archaeology@ontario.ca

3. Are there known marine or land-based archaeological sites on or within 500 metres of the property or project area?

MTCS maintains a database of marine and land-based archaeological sites reported to the ministry. Land-based archaeological sites may extend into adjacent waterbodies.

For more information, contact MTCS Archaeological Data Coordinator at archaeology@ontario.ca.

4. Is there Aboriginal or local knowledge of marine or land-based archaeological sites on or within 500 metres of the property or project area?

Check with:

- Aboriginal communities in your area
- local municipal staff

Aboriginal communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Aboriginal communities includes a discussion about known or potential cultural heritage resources that are of value to these communities. Aboriginal communities and local municipal staff may have information about marine archaeological sites that are not included in the MTCS database or reported to the ministry.

Other sources of local knowledge include the following:

- property owner
- [local heritage organizations and historical societies](#), [Association for Great Lakes Maritime History](#)
- local and provincial dive organizations ([Save Ontario Shipwrecks](#), [Ontario Underwater Council](#)), [Preserve Our Wrecks](#), Ontario Marine Heritage Committee)
- local dive shops
- local amateur divers and diving associations
- local museums
- [municipal heritage committees](#)
- published local histories

5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 500 metres of the property or project area?

Check with:

- Aboriginal communities in your area
- local municipal staff

Other sources of local knowledge include the following:

- property owner
- [local heritage organizations and historical societies](#)
- local museums
- [municipal heritage committees](#)
- published local histories

6. Is there a known burial site or cemetery on the property or adjacent to the property or project area?

For more information on known cemeteries or burial sites contact the following:

- Cemeteries Regulation Unit, Ontario Ministry of Consumer Services – for [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – [to locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, 'adjacent' means 'contiguous', or as otherwise defined in a municipal official plan.

When wrecks are associated with a loss of life, the area in the vicinity of the wreck may be established as a cemetery.

7. Has the property or project area been recognized for its cultural heritage value?

There is a strong chance there may be marine archaeological resources on the property or project area if it has been listed, designated or otherwise identified as being of cultural heritage value by:

- Municipal government
- Ontario government
- Canadian government

This includes a property that is:

- designated under *Ontario Heritage Act* (the OHA), including:
 - individual designation (Part IV)
 - part of a heritage conservation district (Part V)
 - a land or marine archaeological site (Part VI)
- subject to:
 - an agreement, covenant or easement entered into under the OHA (Parts II or IV)
 - a notice of intention to designate (Part IV)
 - a heritage conservation district study area by-law (Part V) of the OHA
- included on:
 - a municipal register or inventory of heritage properties
 - Ontario government's list of provincial heritage properties
 - Federal government's list of federal heritage buildings
- part of a:
 - National Historic Site
 - UNESCO World Heritage Site
- designated under:
 - *Heritage Railway Station Protection Act*
 - *Heritage Lighthouse Protection Act*
- subject of a municipal, provincial or federal commemorative or interpretive plaque.

To determine if your property or project area is covered by any of the above, see:

- Part A of the MTCS [Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes](#)

Part VI – Archaeological Sites

Includes three marine archaeological sites prescribed under Ontario Regulation 11/06 and five terrestrial archaeological sites designated by the Minister under Regulation 875 of the Revised Regulation of Ontario, 1990.

For more information, refer to [Regulation 875](#) and Ontario [Regulation 11/06](#).

8. Has the entire property or project area been subjected to recent, extensive and intensive disturbance?

Recent: after-1960

Extensive: over all or most of the area

Intensive: thorough or complete disturbance

Examples of ground disturbance include:

- quarrying
- dredging
- structural footprints and associated construction areas
 - where the structure has deep foundations or footings
- infrastructure development such as:
 - dams
 - pipelines, hydro lines or other utility trenches
 - causeways
 - bridges

Note: this applies only to the excavated part of the right-of-way or corridor as the remainder may not be impacted

A ground disturbance does not include:

- aqua-cultural activities, such as a fish farm
- areas of traditional or commercial harvesting of fish, shellfish or water-based vegetation
- traditional agricultural areas that have been inundated

Property (Project Area) Inspection

Some documentation may provide evidence of prior disturbance, such as:

- photographs
- maps
- detailed descriptions and blueprints of prior projects

If complete disturbance isn't clear from documents available, an archaeologist licensed for marine archaeology can be hired to undertake an underwater and/or remote-sensing inspection of the study area to determine whether there is any remaining marine archaeological potential.

9. Are there two or more reported or registered ship wreck sites or reports of lost ships within a five kilometre radius of the property or project area?

The presence of two or more ship wreck sites or reports of lost ships in the vicinity may indicate increased marine archaeological potential for additional marine wrecks.

10. Is the property or project area within one kilometre of an active or historic harbour, seaplane or floatplane base, tunnel, ferry route, marine terminal, or winter road?

Focussed areas of marine activity on- and off-shore are indicators for potential marine archaeology due to:

- deliberate structures built in or on the water, such as:
 - mooring and anchoring structures
 - weirs, piers, docks, cribwork
 - groynes, breakwaters, artificial reefs
 - vessels scuttled for utilitarian or other purposes
 - infrastructure related to the construction or operation of a facility like marine railways
- incidental features, such as:
 - beached or sunken vessels or aircraft
 - dropped objects

As a result, there is potential for marine archaeological features or artifacts.

11. Where the project impacts fourth order or higher watercourses, are there existing narrows, rapids, waterfalls or does the watercourse enter or leave a body of water within 300 metres of the property or project area?

Fourth order and higher watercourses (on the Strahler scale) have potential association with human activity around narrows, rapids, waterfalls and proximity to waterbodies such as lakes due to:

- fish harvesting and related dams or weirs
- portage locations for navigable waterways
- early historical fording locations
- early historical water power sources for mills

These activities may result in marine archaeological features or artifacts.

12. Are there potential built heritage or cultural heritage landscape resources that may be of cultural heritage value or interest adjacent to the watercourse or water body?

Euro-Canadian settlement immediately adjacent to water bodies or watercourses may be focussed on the water for specific industrial, commercial or residential uses resulting in marine archaeological features or artifacts. For guidance, see the MTCS [Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes](#)

13. Are there inundated beaches, bluffs, lakeshores, streams or river banks within 300 metres of the property or project area?

The margins of water bodies are associated with past human occupations and use of the land. About 80-90% of archaeological sites are found within 300 metres of water bodies.

- water body types:
 - primary - lakes, rivers, streams, creeks
 - secondary - springs, marshes, swamps and intermittent streams and creeks
- water bodies can include constructed water bodies or watercourses, such as:
 - temporary channels for surface drainage
 - rock chutes and spillways
- Accessible or inaccessible shorelines can also have archaeological potential, for example:
 - high bluffs or cliffs
 - sandbars

You can get information about inundated shoreline features through:

- a site visit
- aerial photographs
- bathymetric data
- geological and physiographic studies

14. Are there inundated beaches, lakeshores or river/creek banks beyond 300 metres and at greater depth than the project area with evidence of two or more of the following in the project area?

- elevated bathymetric features such as drumlins, eskers, kames, ridges, etc.
- pockets of sandy lakebed
- distinctive bathymetric formations such as escarpments, shoals, promontories, reefs, etc.
- inundated resource extraction areas (quarry, fishery)
- inundated historical settlement including built heritage resources or cultural heritage landscapes
- inundated historical transportation routes

Landforms associated with past human occupations that have later been inundated, as historically documented or demonstrated through water-level chronologies, retain their archaeological potential.

- **Elevated bathymetric features**

Higher ground and elevated positions, surrounded by low or level topography, often indicate past settlement and land use. Features such as eskers, drumlins, sizeable knolls, plateaus next to lowlands or other such features are a strong indication of archaeological potential.

Find out if your property or project area had elevated topography prior to inundation through:

- nautical charts
- bathymetric data

- **Pockets of sandy lakebed**

Areas of sandy soil, prior to being inundated, that would be well-drained and in areas characterized by heavy soil or rocky ground may indicate archaeological potential

Find out if your property or project area had sandy soil through:

- site visits
- lakebed studies and sediment borehole data

- **Distinctive bathymetric formations**

Distinctive land formations include – but are not limited to:

- waterfalls
- rock outcrops or faces
- caverns
- mounds

Prior to inundation such features were often important to past inhabitants as special or sacred places. The following sites may be present at – or close to – these formations:

- burials
- structures
- offerings
- rock paintings or carvings

Find out if your property or project area has a distinctive land formation through:

- site visits
- aerial photographs
- bathymetric data

- **Inundated resource extraction areas**

Prior to inundation, the following resources were collected in these extraction areas:

- food or medicinal plants e.g. migratory routes, spawning areas, prairie
- scarce raw materials e.g. quartz, copper, ochre or outcrops of chert
- resources associated with early historic industry e.g. fur trade, logging, prospecting, mining

Aboriginal communities may hold traditional knowledge about their past use or resources in the area.

- **Inundated early historic settlement**

Early Euro-Canadian settlements include – but are not limited to:

- early military or pioneer settlement, e.g. pioneer homesteads, isolated cabins, farmstead complexes
- early wharf or dock complexes
- pioneers churches and early cemeteries

- **Inundated early historic transportation routes** - such as trails, passes, roads, railways, portage routes, canals.

For more information, see:

- historical maps or atlases
 - for information on early settlement patterns such as trails (including Aboriginal trails), monuments, structures, fences, mills, historic roads, rail corridors, canals, etc.
 - [Archives of Ontario](#) holds a large collection of historical maps and atlases
 - digital versions of historical atlases are available on the [Canadian County Atlas Digital Project](#)
- commemorative markers or plaques such as those posted by local, [provincial](#) or [federal](#) agencies
- [municipal heritage committees](#) or [other local heritage organizations](#)
 - for information on early historic settlements or landscape features (e.g. fences, mill races)
 - for information on commemorative markers or plaques

Print

Clear

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT



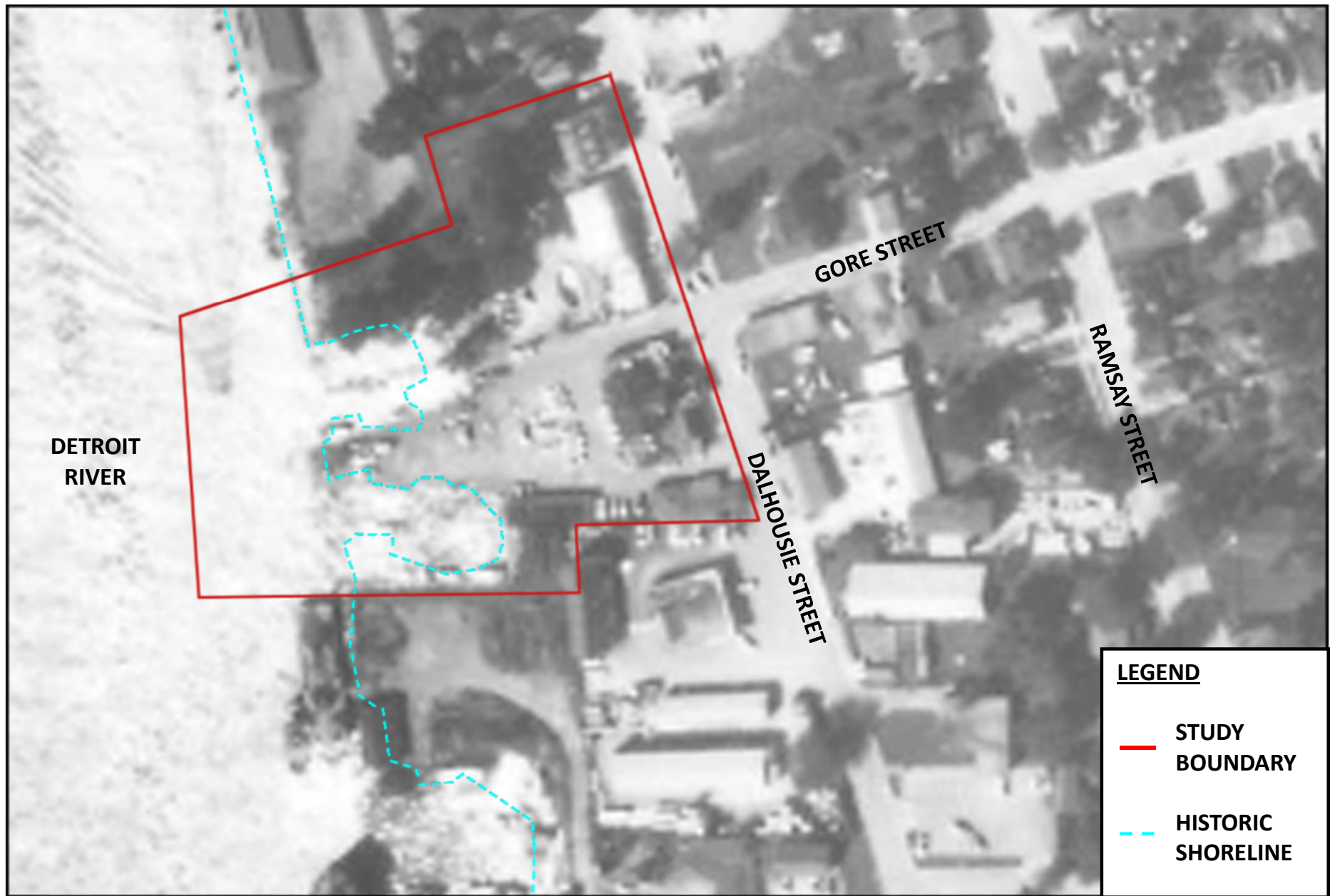
1931 AERIAL IMAGE

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT



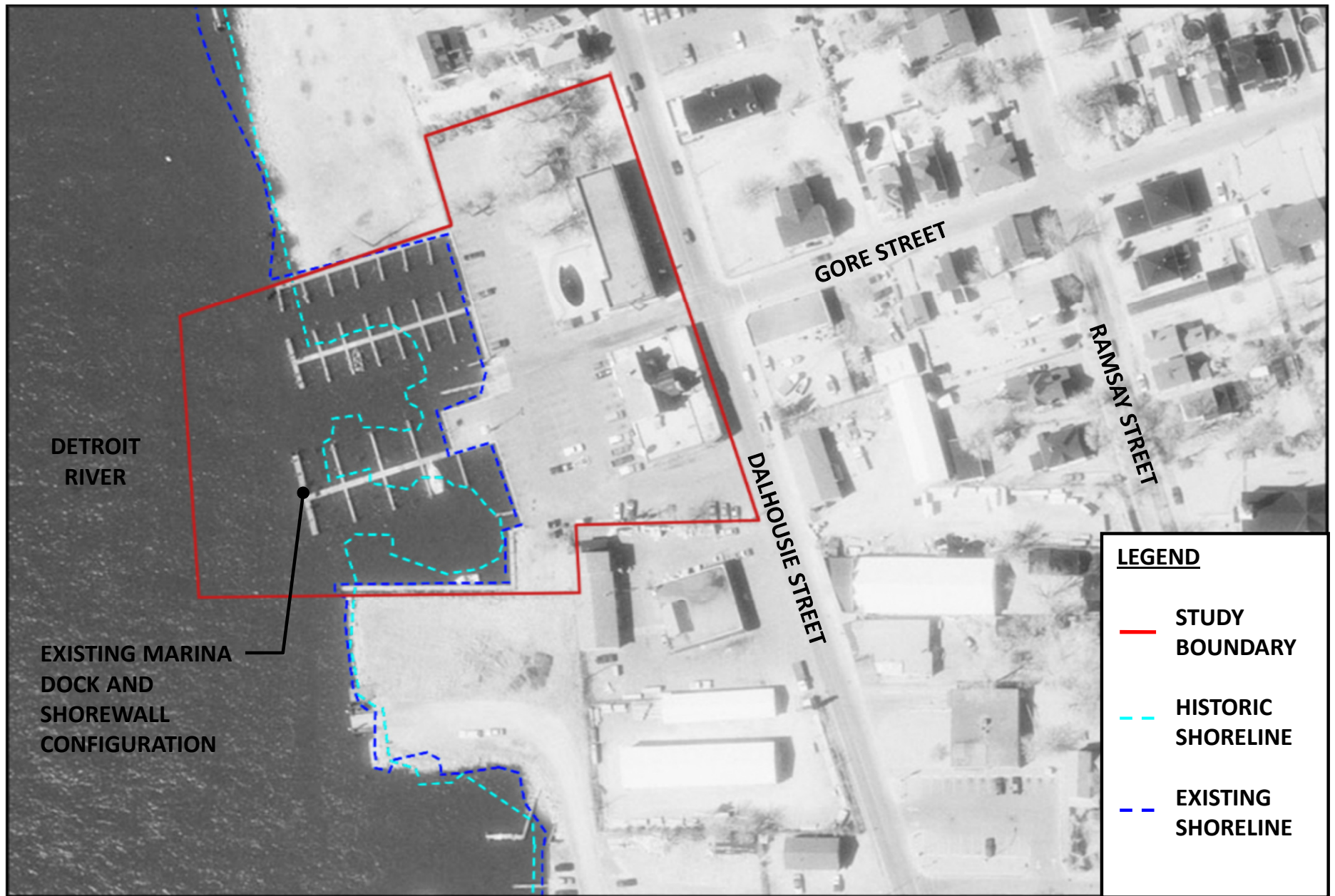
1972 AERIAL IMAGE

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA
CLASS ENVIRONMENTAL ASSESSMENT



1972 AERIAL IMAGE

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA CLASS ENVIRONMENTAL ASSESSMENT



1988 AERIAL IMAGE

AMHERSTBURG RIVERFRONT FESTIVAL PLAZA AND MARINA CLASS ENVIRONMENTAL ASSESSMENT



2017 AERIAL IMAGE

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
 - is a recognized heritage property
 - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
 - the main project area
 - temporary storage
 - staging and working areas
 - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – [separate checklist](#)
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name

Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment

Project or Property Location (upper and lower or single tier municipality)

290, 296 and 306 Dalhousie Street, Amherstburg, Ontario

Proponent Name

Liz Michaud - Landmark Engineers Inc. on behalf of the Town of Amherstburg

Proponent Contact Information

lmichaud@landmarkengineers.ca , 2280 Ambassador Drive, Windsor, ON N9C 4E4, 519-972-8052

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the <i>Ontario Heritage Act</i> as being of cultural heritage value?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. a National Historic Site (or part of)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. designated under the <i>Heritage Railway Stations Protection Act</i> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. designated under the <i>Heritage Lighthouse Protection Act</i> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has or is adjacent to a known burial site and/or cemetery?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. is in a Canadian Heritage River watershed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. contains buildings or structures that are 40 or more years old?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has a special association with a community, person or historical event?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. contains or is part of a cultural heritage landscape?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act*, *Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
 - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's [Ontario Heritage Toolkit](#) or [Standards and Guidelines for Conservation of Provincial Heritage Properties](#).

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties](#) [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

- i. designated under the *Ontario Heritage Act*
 - individual designation (Part IV)
 - part of a heritage conservation district (Part V)

-
-

]

Note

of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- [Ontario Heritage Trust](#)
- local land registry office (for a title search)

ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- [Ontario Heritage Trust](#) - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act*. **Note:** To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- [Ontario Heritage Trust](#)

- v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

properties.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the [National Historic Sites website](#).

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the [Directory of Designated Heritage Railway Stations](#).

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the [Heritage Lighthouses of Canada](#) website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the [Federal Heritage Buildings Review Office](#).

See a [directory of all federal heritage designations](#).

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – [World Heritage Site website](#).

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- [municipal heritage committees](#) or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's [Heritage directory](#) – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a [list of plaques](#) commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a [list of plaques](#) commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – to [locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the [Canadian Heritage River System](#).

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide [Heritage Property Evaluation](#).

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- [municipal heritage committees](#) or local heritage organizations
- Ontario Historical Society's "[Heritage Directory](#)" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through [Ontario Trails](#).

Memorandum

To	Liz Michaud (Landmark Engineers)	Page	1
CC			
Subject	Amherstburg Riverfront Festival Plaza and Marina EA – Cultural Heritage		
From	Michael Greguol, Cultural Heritage Specialist (AECOM)		
Date	December 10, 2018	Project Number	60590266

Environmental Assessment

The Town of Amherstburg has initiated a Municipal Class Environmental Assessment (Class EA) as part of the proposed Amherstburg Riverfront Festival Plaza and Marina, in the Town of Amherstburg, Ontario. The Study Area includes the former Duffy's Tavern and Motor Inn property at 306 Dalhousie Street, on the Detroit River waterfront. The Town of Amherstburg intends to redevelop the site as a transient marina and public festival plaza.

Cultural Heritage Screening

As part of the Class EA, Landmark Engineers completed the Ministry of Tourism, Culture, and Sport's (MTCS) *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* checklist in order to determine whether the project area is a recognized heritage property or may be of cultural heritage value. The completed checklist determined that the project area did not include a recognized heritage property, nor did it include commemorative/interpretive plaques, or buildings or structures that are 40 or more years old. However, the property area is located along the Canadian shores of the Detroit River. As a result, the checklist determined that the project area is located within a Canadian Heritage River watershed, and required further investigation.

AECOM was retained to provide an additional review of existing cultural heritage documentation for the project area. The following tasks were completed as part of this additional review:

- Review of the Town of Amherstburg's Heritage Register (*Properties in Amherstburg Designated as Heritage under the Ontario Heritage Act*); and
- Review of the publically available documentation related to the Detroit River as a Canadian Heritage River; and
- Consultation with Anne Rota, Manager of Tourism, and Culture at the Town of Amherstburg.

The outcomes of these tasks are described below.

Property Description and Background Information

The project area consists of the properties formerly identified as 290, 296 and 306 Dalhousie Street, in Amherstburg, Ontario. The three properties have been combined to form the project area. The west side of the properties back onto the Detroit River. Previously, the properties included the Duffy's Tavern (306 Dalhousie Street) and the Duffy's Motor Inn (290 and 296 Dalhousie Street).

The property was first developed in 1870, with the construction of the Fraser family home, a 2 ½ storey gable roofed residence that could still be seen rising above the one storey roof of the tavern. James Duff purchased the property in 1940 and converted the house into "Duffy's Tavern". In 1959, the property and tavern was purchased by Zarko Vucinic. Under his ownership, the tavern was expanded in 1961 and 1963, and the motel on the adjacent property was built in 1970. A marina was added in 1980 (Image 1).¹

In 2013, following the closure of Duffy's Tavern, the property was purchased by the Town of Amherstburg and the restaurant and motel were later demolished. Today the property is vacant and consists primarily of surface parking lots, vacant land, and the remaining marina/dock facilities (Images 2 – 4).



Image 1: The former Duffy's Tavern on the subject property showing the original Fraser house roof rising above the addition below, as shown in the *Windsor Star*, November 6, 2013.

¹ "Amherstburg landmark Duffy's Tavern set to close," *Windsor Star*, November 6, 2013, <https://windsorstar.com/news/amherstburg-landmark-duffys-tavern-set-to-close/>; "Duffy's Tavern", Amherstburg River Town Times, <https://rivertowntimes.com/tag/duffys-tavern/>.



Image 2: View looking northeast showing vacant property and surface parking



Image 3: View looking north at project area. The docks and Detroit River are at right.



Image 4: View looking west showing docks and Detroit River

Town of Amherstburg Heritage Register and Consultation

A review of the Town of Amherstburg's Heritage Register, *Properties in Amherstburg Designated as Heritage under the Ontario Heritage Act*. In addition, the Town of Amherstburg's GIS-based heritage mapping was reviewed in order to identify the proximity of adjacent heritage properties. The project area does not include properties that are listed on a municipal heritage register or designated under the *Ontario Heritage Act*.

AECOM also contacted Angelo Avolio, Staff Representative to the Town of Amherstburg's Municipal Heritage Committee, however, a response was not received at the time of issuing this memo. AECOM also consulted with Anne Rota, Manager of Tourism and Culture at the Town of Amherstburg. Ms. Rota did not identify any recognized or potential cultural heritage value for the property.

Detroit River – Canadian Heritage River

The Canadian Heritage Rivers System (CHSR) is Canada's national river conservation program. The program, established in 1984 gives national recognition to Canada's outstanding rivers and encourages their long-term management to conserve their natural, cultural, and recreational values for the benefit and enjoyment of Canadians, now and in the future.

The Detroit River was designated as a Canadian Heritage River in 2001, and was also designated as an American Heritage River, the only North American river with dual designation. Within Canada, the designation is based on the cultural history of the river and its watershed. The history of the river includes various themes such as First Nations settlements along the river, dating to 400 A.D., the War

of 1812, the first permanent agricultural community in Ontario, and the river's connection to the Underground Railway. The river's recreational values are also recognized in the designation.²

As a part of the CHSR program and designation, a Management Strategy was prepared for the Detroit River. The strategy is a living document which evolves over time to respond to management opportunities, and serves as an inspiring guide for the community to voluntarily develop and undertake actions for the good of the watershed. Further, a series of "river management actions" have been developed as a component of the Management Strategy in order to provide a framework for the community to carry out efforts to conserve, enhance, interpret, and appreciate the heritage values of the Detroit River watershed. The river management actions are categorized, as over-arching actions, human heritage actions, recreation actions, and natural heritage/environmental clean-up actions. A number of the actions address larger, broader goals related to the long-term management of the river, however a number of the actions may be considered applicable for the proposed riverfront project in Amherstburg. These include:

- Over-arching Actions;
 - Install signage recognizing Canadian and American Heritage River designations
- Human Heritage Actions
 - Ensure human heritage values are reflected are integrated into recreation, transportation, and other plans.

The complete list of river management actions can be found in the *Detroit River Management Strategy* (2001).

Recommendations

Completion of the MTCS *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* checklist determined the subject properties included within the project area are not listed on a municipal heritage inventory, not are they designated under the *Ontario Heritage Act*. Further, the properties do not contain commemorative or interpretive plaques, nor does the property contain buildings or structures that are older than 40 years of age that may be of cultural heritage value or interest. However, given that the property is located along the shores of the Detroit River, a Canadian Heritage River, consideration should be given to the property's future use and its relation to the heritage river.

As a general recommendation, the *Detroit River Management Strategy* should be consulted and reviewed to ensure that designs or future uses for the property, related to the proposed riverfront festival plaza and marina are consistent with the guidelines to conserving and enhancing the heritage value of the river. More specifically, the proposed project presents an opportunity to install relevant signage, or interpretive panels, or installations that can relate to the human and natural heritage of the Detroit River that is commemorated in the designation of the watershed as part of the Canadian Heritage River System.

² Canadian Heritage River Systems; <http://chrs.ca/>.



1.0 PROJECT REPORT COVER PAGE

LICENSEE INFORMATION:

Contact Information:

Michael B. Henry CD BA FRAI FRSA
Marilyn E. Cornies BA CAHP
Southwestern District Office
553 Dufferin Avenue
London, ON N6B 2A5
Phone: (419) 432-4435
Email: mhenry@amick.ca/mcornies@amick.ca
www.amick.ca

Licensee:

Ontario Archaeology Licence:

Michael B. Henry CD BA FRAI FRSA
P058

PROJECT INFORMATION:

Corporate Project Number:

18519

MTCS Project Number:

P058-1650-2018

Investigation Type:

Stage 1-2 Archaeological Property Assessment

Project Name:

Amherstburg Festival Plaza.

Project Location:

290, 296 & 306 Dalhousie Street,
Part of Lots 2 & 3, Concession 1 (Geographic Township
of Malden), Town of Amherstburg, County of Essex
Not Currently Available

Project Designation Number:

MTCS FILING INFORMATION:

Site Record/Update Form(s):

N/A

Date of Report Filing:

TBD

Type of Report:

ORIGINAL

2.0 EXECUTIVE SUMMARY

This report describes the results of the 2018 Stage 1-2 Archaeological Assessment of 290, 296 & 306 Dalhousie Street, Part of Lots 2 & 3, Concession 1 (Geographic Township of Malden), Town of Amherstburg, County of Essex, conducted by AMICK Consultants Limited. This study was conducted under Professional Archaeologist License #P058 issued to Michael Henry by the Minister of Tourism, Culture and Sport for the Province of Ontario. This assessment was undertaken as a requirement under the Planning Act (RSO 1990) and the Provincial Policy Statement (2014) in order to support a Site Plan application and companion Zoning By-law Amendment application as part of the pre-submission process. Within the land use planning and development context, Ontario Regulation 544/06 under the Planning Act (1990b) requires an evaluation of archaeological potential and, where applicable, an archaeological assessment report completed by an archaeologist licensed by the Ministry of Tourism, Culture and Sport (MTCS). Policy 2.6 of the Provincial Policy Statement (PPS 2014) addresses archaeological resources. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011), the Ontario Heritage Act (RSO 1990a).

AMICK Consultants Limited was engaged by the proponent to undertake a Stage 1-2 Archaeological Assessment of lands potentially affected by the proposed undertaking and was granted permission to carry out archaeological fieldwork. The entirety of the study area was subject to property inspection and photographic documentation concurrently with the Stage 2 Property Assessment by test pit survey at a ten metre interval to confirm disturbance on 4 July 2018. All records, documentation, field notes, photographs and artifacts (as applicable) related to the conduct and findings of these investigations are held at the Lakelands District corporate offices of AMICK Consultants Limited until such time that they can be transferred to an agency or institution approved by the Ontario Ministry of Tourism, Culture and Sport (MTCS) on behalf of the government and citizens of Ontario.

The fieldwork was completed with the participation of First Nations Monitors. Fred Albert of the Chippewa of the Thames, Shelley Birch of the Caldwell First Nation and Wanda Maness of the Aamjiunaang First Nation acted as field monitors for Aboriginal Engagement on behalf of AMICK Consultants Limited and participated in the Stage 2 Property Assessment. Draft copies of this report have been provided to the Chippewa of the Thames, the Caldwell First Nation and the Aamjiunaang First Nation for review and comment in advance of submission to MTCS. Their feedback has been incorporated into the recommendations of this report.

As a result of the Stage 2 Property Assessment of the study area, no archaeological resources were encountered. Consequently, the following recommendations are made:

- 1. No further archaeological assessment of the study area is warranted;*
- 2. The Provincial interest in archaeological resources with respect to the proposed undertaking has been addressed;*
- 3. The proposed undertaking is clear of any archaeological concern.*

3.0 TABLE OF CONTENTS

1.0	PROJECT REPORT COVER PAGE	1
2.0	EXECUTIVE SUMMARY	2
3.0	TABLE OF CONTENTS	3
4.0	PROJECT PERSONNEL	3
5.0	PROJECT CONTEXT	4
6.0	FIELD WORK METHODS AND WEATHER CONDITIONS	15
7.0	RECORD OF FINDS	20
8.0	ANALYSIS AND CONCLUSIONS	21
9.0	RECOMMENDATIONS	30
10.0	ADVICE ON COMPLIANCE WITH LEGISLATION	32
11.0	BIBLIOGRAPHY AND SOURCES	33
12.0	MAPS	35
13.0	IMAGES	41

4.0 PROJECT PERSONNEL

AMICK CONSULTANTS LIMITED PARTNERS

Michael Henry (MTCS Professional Archaeologist Licence #P058)

Marilyn Cornies (MTCS Professional Archaeologist Licence #P038)

AMICK CONSULTANTS LIMITED BUSINESS MANAGER

Melissa Maclean BBA email mmaclean@amick.ca

PROJECT COORDINATOR

Melissa Maclean

PROJECT LICENSEE ARCHAEOLOGIST

Michael Henry (MTCS Professional Archaeologist Licence #P058)

PROJECT FIELD DIRECTORS

Michael Henry (MTCS Professional Archaeologist Licence #P058)

Marilyn Cornies (MTCS Professional Archaeologist Licence #P038)

PROJECT REPORT PREPARATION

Nick Kaluzny

PROJECT GRAPHICS

Nick Kaluzny

PROJECT PHOTOGRAPHY

Michael Henry (MTCS Professional Archaeologist Licence #P058)

FIRST NATIONS STAGE 2 PROPERTY ASSESSMENT ARCHAEOLOGICAL MONITORS

Fred Albert – Chippewa of the Thames First Nations Monitor (4 July 2018)

Shelley Birch – Caldwell First Nation Monitor (4 July 2018)

Wanda Maness – Aamjiunaang First Nation Monitor (4 July 2018)

5.0 PROJECT CONTEXT

5.1 DEVELOPMENT CONTEXT

This report describes the results of the 2018 Stage 1-2 Archaeological Assessment of 290, 296 & 306 Dalhousie Street, Part of Lots 2 & 3, Concession 1 (Geographic Township of Malden), Town of Amherstburg, County of Essex, conducted by AMICK Consultants Limited. This study was conducted under Professional Archaeologist License #P058 issued to Michael Henry by the Minister of Tourism, Culture and Sport for the Province of Ontario. This assessment was undertaken as a requirement under the Planning Act (RSO 1990) and the Provincial Policy Statement (2014) in order to support a Site Plan application and companion Zoning By-law Amendment application as part of the pre-submission process. Within the land use planning and development context, Ontario Regulation 544/06 under the Planning Act (1990b) requires an evaluation of archaeological potential and, where applicable, an archaeological assessment report completed by an archaeologist licensed by the Ministry of Tourism, Culture and Sport (MTCS). Policy 2.6 of the Provincial Policy Statement (PPS 2014) addresses archaeological resources. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011), the Ontario Heritage Act (RSO 1990a).

AMICK Consultants Limited was engaged by the proponent to undertake a Stage 1-2 Archaeological Assessment of lands potentially affected by the proposed undertaking and was granted permission to carry out archaeological fieldwork. The entirety of the study area was subject to property inspection and photographic documentation concurrently with the Stage 2 Property Assessment by test pit survey at a ten metre interval to confirm disturbance on 4 July 2018. All records, documentation, field notes, photographs and artifacts (as applicable) related to the conduct and findings of these investigations are held at the Lakelands District corporate offices of AMICK Consultants Limited until such time that they can be transferred to an agency or institution approved by the Ontario Ministry of Tourism, Culture and Sport (MTCS) on behalf of the government and citizens of Ontario.

The proposed development of the study area includes a new plaza and amphitheatre on the harbour, and a new lookout point extending from the existing path. A preliminary plan of the proposed development has been submitted together with this report to MTCS for review and reproduced within this report as Map 4.

5.2 HISTORICAL CONTEXT

5.2.1 GENERAL HISTORICAL OUTLINE

Essex County was among the first areas of Ontario to be settled. The original settlers were primarily disbanded French soldiers or former fur traders. Permanent settlement began on what was to become the Canadian side of the Detroit River in 1747, at this time these lands were largely inhabited by native peoples, both the Huron and the Ottawas had villages in the area (Connecting Windsor-Essex 2011).

One of the earliest maps of the area dates back to 1749 and shows the area around the Detroit River as undeveloped (LaJeunesse 1960: Page LIV). Further maps and surveys in 1790 and 1791 detail the proposed development of the area after the British began to use it as a new base in 1784, with a proposed reserve to the north of the township, and a fort to be built within the area (LaJeunesse 1960: Page LXXII, Page CVI). A later plan of the town of Amherstburg from 1797 details the fort and naval yard in the area (LaJeunesse 1960: Page CXXVII). Taken together, these maps show the progression of the area from wilderness to the development of the fort of the river, with the original intention to reserve lands for First Nations to the north of the fort. These historic maps, with the inferred location and extent of the study area shown on them, are included in this report as Maps 7-10.

First settled 1784, it became the new base for the British after they evacuated Detroit. In 1796, Fort Amherstburg was established, and Loyalist refugees laid out a townsite (Malden). General Isaac Brock used the fort as a base to capture Detroit (1812), but it was under American occupation from 1813 to 1815. In 1837-38, the fort was attacked 4 times by rebel supporters of William Lyon Mackenzie and was bombarded by the schooner Anne, which later ran aground and was captured. The British garrison remained until 1851. By the late 1830s, the fort and the town were known by each other's names, Fort Malden and Amherstburg (The Canadian Encyclopedia 2015).

By 1869, the town of Amherstburg in the Township of Malden County Essex had a population of 2,500. When the fort was no longer needed for military purposes, the government adapted it for use as a "lunatic asylum". Its main building was later used as a Port of Entry Money Order office and Post Office savings bank. Amherstburg was incorporated as a town in 1878. The town is named after Jeffery Amherst, 1st Baron Amherst, commander of the British forces and first British Governor General of the Province of Quebec (Wikipedia.org 2018).

Map 2 is a facsimile segment from The Map of Essex County, Ontario (Walling, H. F. 1877). Map 2 illustrates the location of the study area and environs as of 1877. The study area is not shown to belong to anyone and there are no structures near to the study area. However, the study area is within the settled part of the town of Amherstburg. This demonstrates that the original property of which the study area is a part was settled by the time that the atlas data was compiled. Accordingly, it has been determined that there is potential for archaeological deposits related to early Post-contact settlement within the study area. In addition, this map illustrates a large body of water immediately west of the study area and three settlement roads are in the vicinity, one running through the study area, one adjacent to the eastern boundary and one intersecting the second road. The road in the study area is no longer present on recent maps, while the other two roads are the current Dalhousie Street and Gore Street respectively. The body of water is the Detroit River.

Map 3 is a facsimile segment of the Township of Malden map reproduced from The Essex Supplement in Illustrated Atlas of the Dominion of Canada (Belden, H. & Co. 1881). Map 3 illustrates the location of the study area and environs as of 1881. The study area is not shown

to belong to anyone and there are no structures near to the study area. However, the study area is within the settled part of the town of Amherstburg. This demonstrates that the original property of which the study area is a part was settled by the time that the atlas data was compiled. Accordingly, it has been determined that there is potential for archaeological deposits related to early Post-contact settlement within the study area. In addition, this map illustrates a large body of water immediately west of the study area and three settlement roads are in the vicinity, one running through the study area, one adjacent to the eastern boundary and one intersecting the second road. The road in the study area is no longer present on recent maps, while the other two roads are the current Dalhousie Street and Gore Street respectively. The body of water is the Detroit River.

It must be borne in mind that inclusion of names of property owners and depictions of structures and other features within properties on these maps were sold by subscription. Property owners paid to include information or details about their properties. While information included within these maps may provide information about the occupation of a property at a specific moment in time when the information was collected, the absence of such information does not necessarily indicate that the property was not occupied.

5.2.2 CURRENT CONDITIONS

The present use of the study area is as a former harbor plaza. The study area is roughly 1.34 hectares in area. The study area includes within it mostly paved lots and the footprint of demolished buildings. The entire western half of the study area is within the waters of the Detroit River. There are two entirely disturbed areas adjacent to the eastern boundary of the study area that are the footprints of demolished buildings and the former lawn in the plaza. There is a paved lot in the centre of the study area, between the demolished buildings and the Detroit River. A paved road also enters the study area from the eastern boundary, between the two disturbed patches from the demolished buildings. There is a small patch of lawn adjacent to the southern boundary of the study area that was also found to be disturbed. The study area is bounded on the north by a park and an apartment complex, on the east by Dalhousie Street, on the west by the Detroit River and on the south by another park. The study area is adjacent and to the west of the intersection of Dalhousie Street and Gore Street. A plan of the study area is included within this report as Map 4. Current conditions encountered during the Stage 1-2 Property Assessment are illustrated in Maps 5 & 6.

5.2.3 SUMMARY OF HISTORICAL CONTEXT

The brief overview of readily available documentary evidence indicates that the study area is situated within an area that was close to historic transportation routes and in an area well populated during the nineteenth century and therefore has potential for sites relating to early Post-contact settlement in the region. Background research also indicates the property has potential for significant archaeological resources of Native origins based on proximity to a natural source of potable water that was also a navigable waterway in the past.

5.3 ARCHAEOLOGICAL CONTEXT

The Archaeological Sites Database administered by the Ministry of Tourism, Culture and Sport (MTCS) indicates that there are twenty-one (21) previously documented sites within 1 kilometre of the study area. However, it must be noted that this is based on the assumption of the accuracy of information compiled from numerous researchers using different methodologies over many years. AMICK Consultants Limited assumes no responsibility for the accuracy of site descriptions, interpretations such as cultural affiliation, or location information derived from the Archaeological Sites Database administered by MTCS. In addition, it must also be noted that a lack of formerly documented sites does not indicate that there are no sites present as the documentation of any archaeological site is contingent upon prior research having been conducted within the study area.

On the basis of information supplied by MTCS, no archaeological assessments have been conducted within 50 metres of the study area. AMICK Consultants Limited assumes no responsibility for the accuracy of previous assessments, interpretations such as cultural affiliation, or location information derived from the Archaeological Sites Database administered by MTCS. In addition, it must also be noted that the lack of formerly documented previous assessments does not indicate that no assessments have been conducted.

Data contained in previous archaeological reports in close proximity to the study area that is relevant to Stage 1 Background Study is defined within the Standards and Guidelines for Consultant Archaeologists in Section 7.5.8 Standard 4 as follows:

*“Provide descriptions of previous archaeological fieldwork carried out within the limits of, or immediately adjacent to the project area, **as documented by all available reports that include archaeological fieldwork carried out on the lands to be impacted by this project, or where reports document archaeological sites immediately adjacent (i.e., within 50 m) to those lands.**”*

(MTCS 2011: 126 Emphasis Added)

In accordance with data supplied by MTCS for the purposes of completing this study, there are no previous reports detailing, *“archaeological fieldwork carried out on the lands to be impacted by this project”*, nor do any previous reports document known archaeological sites within 50 metres of the study area.

The Standards and Guidelines for Consultant Archaeologists stipulates that the necessity to summarize the results of previous archaeological assessment reports, or to cite MTCS File Numbers in references to other archaeological reports, is reserved for reports that are directly relevant to the fieldwork and recommendations for the study area (S & Gs 7.5.7, Standard 2, MTC 2011: 125). This is further refined and elaborated upon in Section 7.5.8, Standards 4 & 5, MTC 2011:

“4. Provide descriptions of previous archaeological fieldwork carried out within the limits of, or immediately adjacent to the project area, as documented by all available reports that include archaeological fieldwork carried out on the lands to be impacted by this project, or where reports document archaeological sites immediately adjacent (i.e., within 50m) to those lands.”

“5. If previous findings and recommendations are relevant to the current stage of work, provide the following:

- a. a brief summary of previous findings and recommendations*
- b. documentation of any differences in the current work from the previously recommended work*
- c. rationale for the differences from the previously recommended work”*
(Emphasis Added)

The study area is situated in area for which there is no archaeological master plan.

It must be further noted that there are no relevant plaques associated with the study area, which would suggest an activity or occupation within, or in close proximity to, the study area that may indicate potential for associated archaeological resources of significant CHVI.

5.3.1 PRE-CONTACT REGISTERED SITES

A summary of registered and/or known archaeological sites within a 1-kilometre radius of the study area was gathered from the Archaeological Sites Database, administered by MTCS. As a result it was determined that fifteen (15) archaeological sites relating directly to Pre-contact habitation/activity had been formally registered within the immediate vicinity of the study area. Two (2) of these sites (AaHs-30 & AaHs-59) are multi-component sites listed as both Pre-contact and Post-contact sites. All previously registered Pre-contact sites are briefly described below in Table 1:

TABLE 1 PRE-CONTACT SITES WITHIN 1KM

Site Name	Borden #	Site Type	Cultural Affiliation
Gordon House	AaHs-30	Not Determined	Late Woodland
92-092:1	AaHs-32	Not Determined	Indeterminate Pre-Contact
Saugeen Cluster	AaHs-33	Othercamp/camp site	Middle Woodland
Eastern Shore	AaHs-34	Camp/Campsite	Late Woodland
Duffy	AaHs-35	Scatter	Indeterminate Pre-Contact
M. Teskey	AaHs-37	Findspot	Indeterminate Pre-Contact
G. Rumble	AaHs-41	Scatter	Indeterminate Pre-Contact
Underwood	AaHs-42	Scatter	Indeterminate Pre-Contact
Boblo Watermain	AaHs-57	Other – tool making site,	Indeterminate Pre-Contact

		processing	
Salmoni	AaHs-59	Scatter	Indeterminate Pre-Contact
	AaHs-121	Findspot	Early Archaic
	AaHs-122	Findspot	Early Archaic
	AaHs-123	Findspot	Middle Archaic
	AaHs-124	Findspot	Early Archaic
Boblo Watermain Site	BdGv-29	Scatter	Archaic

One of the above noted archaeological sites (AaHs-30) is situated within 300 metres of the study area. Therefore, it demonstrates archaeological potential for further archaeological resources related to Pre-contact activity and occupation with respect to the archaeological assessment of the proposed undertaking.

The western part of the study area lies within the Detroit River, which is a source of potable water and a navigable water way. The distance to water criteria used to establish potential for archaeological sites suggests potential for Pre-contact occupation and land use in the area in the past.

Table 2 illustrates the chronological development of cultures within southern Ontario prior to the arrival of European cultures to the area at the beginning of the 17th century. This general cultural outline is based on archaeological data and represents a synthesis and summary of research over a long period of time. It is necessarily generalizing and is not necessarily representative of the point of view of all researchers or stakeholders. It is offered here as a rough guideline and as a very broad outline to illustrate the relationships of broad cultural groups and time periods.

TABLE 2 PRE-CONTACT CULTURAL CHRONOLOGY FOR SOUTHERN ONTARIO

Years ago	Period	Southern Ontario
250	Terminal Woodland	Ontario and St. Lawrence Iroquois Cultures
1000 2000	Initial Woodland	Princess Point, Saugeen, Point Peninsula, and Meadowood Cultures
3000 4000 5000 6000	Archaic	Laurentian Culture
7000 8000 9000 10000 11000	Palaeo-Indian	Plano and Clovis Cultures
		(Wright 1972)

5.3.2 POST-CONTACT REGISTERED SITES

A summary of registered and/or known archaeological sites within a 1-kilometre radius of the study area was gathered from the Archaeological Sites Database, administered by MTCS. As a result it was determined that eight (8) archaeological sites relating directly to Post-contact habitation/activity had been formally registered within the immediate vicinity of the study area. Two (2) of these sites (AaHs-30 & AaHs-59) are multi-component sites listed as both Pre-contact and Post-contact sites. All previously registered Post-contact sites are briefly described below in Table 3:

TABLE 3 POST-CONTACT SITES WITHIN 1KM

Site Name	Borden #	Site Type	Cultural Affiliation
King's Shipyard	AaHs-4	Wharf/Pier/Dock	Post-Contact
Fort Malden	AaHs-12	Fort	Post-Contact
Gordon House	AaHs-30	House	Post-Contact
St. Jean Baptiste	AaHs-31	Cemetery	Post-Contact
Salmoni	AaHs-59	Hotel, Store	Post-Contact
St. Joseph's Academy	AaHs-106	Cemetery, School	Post-Contact
	AaHs-117	Residential	Post-Contact
	AaHs-118	Residential	Post-Contact

One of the above noted archaeological sites (AaHs-30) is situated within 300 metres of the study area. Therefore, it demonstrates archaeological potential for further archaeological resources related to Post-contact activity and occupation with respect to the archaeological assessment of the proposed undertaking.

5.3.3 LOCATION AND CURRENT CONDITIONS

The study area is described as 290, 296 & 306 Dalhousie Street, Part of Lots 2 & 3, Concession 1 (Geographic Township of Malden), Town of Amherstburg, County of Essex, conducted by AMICK Consultants Limited. This assessment was undertaken as a requirement under the Planning Act (RSO 1990) and the Provincial Policy Statement (2014) in order to support a Site Plan application and companion Zoning By-law Amendment application as part of the pre-submission process.

The present use of the study area is as a former harbor plaza. The study area is roughly 1.34 hectares in area. The study area includes within it mostly paved lots and the footprint of demolished buildings. The entire western half of the study area is within the waters of the Detroit River. There are two entirely disturbed areas adjacent to the eastern boundary of the study area that are the footprints of demolished buildings and the former lawn in the plaza. There is a paved lot in the centre of the study area, between the demolished buildings and the Detroit River. A paved road also enters the study area from the eastern boundary, between the two disturbed patches from the demolished buildings. There is a small patch of lawn adjacent to the southern boundary of the study area that was also found to be disturbed. The study area is bounded on the north by a park and an apartment complex, on the east by Dalhousie Street, on the west by the Detroit River and on the south by another park. The

study area is adjacent and to the west of the intersection of Dalhousie Street and Gore Street. A plan of the study area is included within this report as Map 4. Current conditions encountered during the Stage 1-2 Property Assessment are illustrated in Maps 5 & 6.

5.3.4 PHYSIOGRAPHIC REGION

The study area is within the St. Clair Clay Plains. The St. Clair clay plains cover 2, 270 square miles including the Counties of Essex, Kent and Lambton. The region has little relief varying between 575 and 700 feet a.s.l. in most areas. The counties of Lambton and Essex are till plains which have been smoothed by deposits of lacustrine clay which has settled in depressions as a result of glacial lakes Whittlesey and Warren which covered the whole area. A deep cover of overburden lies on the bedrock creating good conditions for vegetation (Chapman and Putnam 1984: 147-148).

5.3.5 SURFACE WATER

Sources of potable water, access to waterborne transportation routes, and resources associated with watersheds are each considered, both individually and collectively to be the highest criteria for determination of the potential of any location to support extended human activity, land use, or occupation. Accordingly, proximity to water is regarded as the primary indicator of archaeological resource potential. The Standards and Guidelines for Consultant Archaeologists stipulates that undisturbed lands within 300 metres of a water source are considered to have archaeological potential (MTC 2011: 21).

The western part of the study area is within the Detroit River, a source of potable water and a navigable waterway that would have been used as a means of waterborne trade and communications.

5.3.6 CURRENT PROPERTY CONDITIONS CONTEXT

Current characteristics encountered within an archaeological research study area determine if property Assessment of specific portions of the study area will be necessary and in what manner a Stage 2 Property Assessment should be conducted, if necessary. Conventional assessment methodologies include pedestrian survey on ploughable lands and test pit methodology within areas that cannot be ploughed. For the purpose of determining where property Assessment is necessary and feasible, general categories of current landscape conditions have been established as archaeological conventions. These include:

5.3.6.1 BUILDINGS AND STRUCTURAL FOOTPRINTS

A building, for the purposes of this particular study, is a structure that exists currently or has existed in the past in a given location. The footprint of a building is the area of the building formed by the perimeter of the foundation. Although the interior area of building foundations would often be subject to property Assessment when the foundation may represent a potentially significant historic archaeological site, the footprints of existing

structures are not typically assessed. Existing structures commonly encountered during archaeological assessments are often residential-associated buildings (houses, garages, sheds), and/or component buildings of farm complexes (barns, silos, greenhouses). In many cases, even though the disturbance to the land may be relatively shallow and archaeological resources may be situated below the disturbed layer (e.g. a concrete garage pad), there is no practical means of assessing the area beneath the disturbed layer. However, if there were evidence to suggest that there are likely archaeological resources situated beneath the disturbance, alternative methodologies may be recommended to study such areas.

The study area contains two entirely disturbed areas that are the footprints of demolished buildings. At the time of the property assessment there was no remaining evidence of the structures remaining. Maps 5 & 6 of this report illustrate the locations of these features.

5.3.6.2 DISTURBANCE

Areas that have been subjected to extensive and deep land alteration that has severely damaged the integrity of archaeological resources are known as land disturbances. Examples of land disturbances are areas of past quarrying, major landscaping, and sewage and infrastructure development (MTC 2011: 18), as well as driveways made of gravel or asphalt or concrete, in-ground pools, and wells or cisterns. Surfaces paved with interlocking brick, concrete, asphalt, gravel and other surfaces meant to support heavy loads or to be long wearing hard surfaces in high traffic areas, must be prepared by the excavation and removal of topsoil, grading, and the addition of aggregate material to ensure appropriate engineering values for the supporting matrix and also to ensure that the installations shed water to avoid flooding or moisture damage. All hard surfaced areas are prepared in this fashion and therefore have no or low archaeological potential. Major utility lines are conduits that provide services such as water, natural gas, hydro, communications, sewage, and others. These major installations should not be confused with minor below ground service installations not considered to represent significant disturbances removing archaeological potential, such as services leading to individual structures which tend to be comparatively very shallow and vary narrow corridors. Areas containing substantial and deeply buried services or clusters of below ground utilities are considered areas of disturbance, and may be excluded from Stage 2 Property Assessment. Disturbed areas are excluded from Stage 2 Property Assessment due to no or low archaeological potential and often because they are also not viable to assess using conventional methodology.

*“Earthwork is one of the major works involved in road construction. This process includes excavation, material removal, filling, compaction, and construction. Moisture content is controlled, and compaction is done according to standard design procedures. Normally, rock explosion at the road bed is not encouraged. While filling a depression to reach the road level, **the original bed is flattened after the removal of the topsoil.** The fill layer is distributed and compacted to the designed specifications. This procedure is repeated until the compaction desired is reached. **The fill material should not contain organic elements,** and possess a low index of plasticity. Fill material can include gravel and decomposed rocks of a particular size,*

*but should not consist of huge clay lumps. Sand clay can be used. The area is considered to be adequately compacted when the roller movement does not create a noticeable deformation. **The road surface finish is reliant on the economic aspects, and the estimated usage.*** [Emphasis Added]

(Goel 2013)

The supporting matrix of a hard paved surface cannot contain organic material which is subject to significant compression, decay and moisture retention. Topsoil has no engineering value and must be removed in any construction application where the surface finish at grade requires underlying support.

Installation of sewer lines and other below ground services associated with infrastructure development often involves deep excavation that can remove archaeological potential. This consideration does not apply to relatively minor below ground services that connect structures and facilities to services that support their operation and use. Major servicing corridors will be situated within adjacent road allowances with only minor, narrow and relatively shallow underground services entering into the study area to connect existing structures to servicing mainlines. The relatively minor, narrow and shallow services buried within a residential property do not require such extensive ground disturbance to remove or minimize archaeological potential within affected areas.

There are two entirely disturbed areas adjacent to the eastern boundary of the study area that are the footprints of demolished buildings and the former lawn in the plaza. There is a paved lot in the centre of the study area, between the demolished buildings and the Detroit River. A paved road also enters the study area from the eastern boundary, between the two disturbed patches from the demolished buildings. There is a small patch of lawn adjacent to the southern boundary of the study area that was also found to be disturbed. Maps 5 & 6 of this report illustrate the locations of these features.

5.3.6.3 LOW-LYING AND WET AREAS

Landscape features that are covered by permanently wet areas, such as marshes, swamps, or bodies of water like streams or lakes, are known as low-lying and wet areas. Low-lying and wet areas are excluded from Stage 2 Property Assessment due to inaccessibility.

The entire western half of the study area is within the waters of the Detroit River. Maps 5 & 6 of this report illustrate the location of this feature.

5.3.6.4 STEEP SLOPE

Landscape which slopes at a greater than (>) 20 degree change in elevation, is known as steep slope. Areas of steep slope are considered uninhabitable, and are excluded from Stage 2 Property Assessment.

Generally, steep slopes are not assessed because steep slopes are interpreted to have low potential, not due to viability to assess, except in cases where the slope is severe enough to become a safety concern for archaeological field crews. In such cases, the Occupational Health and Safety Act takes precedence as indicated in the introduction to the Standards and Guidelines. AMICK Consultant Limited policy is to assess all slope areas whenever it is safe to do so. Assessment of slopes, except where safety concerns arise, eliminates the invariably subjective interpretation of what might constitute a steep slope in the field. This is done to minimize delays due to conflicts in such interpretations and to increase the efficiency of review.

The study area does not contain areas of steep slope.

5.3.6.5 WOODED AREAS

Areas of the property that cannot be ploughed, such as natural forest or woodlot, are known as wooded areas. These wooded areas qualify for Stage 2 Property Assessment, and are required to be assessed using test pit survey methodology.

The study area does not contain any wooded areas.

5.3.6.6 PLOUGHABLE AGRICULTURAL LANDS

Areas of current or former agricultural lands that have been ploughed in the past are considered ploughable agricultural lands. Ploughing these lands regularly turns the soil, which in turn brings previously buried artifacts to the surface, which are then easily identified during visual inspection. Furthermore, by allowing the ploughed area to weather sufficiently through rainfall, soil is washed off of exposed artifacts at the surface and the visibility of artifacts at the surface of recently worked field areas is enhanced markedly. Pedestrian survey of ploughed agricultural lands is the preferred method of physical assessment because of the greater potential for finding evidence of archaeological resources if present.

The study area does not contain any ploughable lands.

5.3.6.7 LAWN, PASTURE, MEADOW

Landscape features consisting of former agricultural land covered in low growth, such as lawns, pastures, meadows, shrubbery, and immature trees. These are areas that may be considered too small to warrant ploughing, (i.e. less than one hectare in area), such as yard areas surrounding existing structures, and land-locked open areas that are technically workable by a plough but inaccessible to agricultural machinery. These areas may also include open area within urban contexts that do not allow agricultural tillage within municipal or city limits or the use of urban roadways by agricultural machinery. These areas are required to be assessed using test pit survey methodology.

There is a small patch of lawn adjacent to the southern boundary of the study area. This patch was found to be disturbed. Maps 5 & 6 of this report illustrate the location of this feature.

5.3.7 SUMMARY

Background research indicates the vicinity of the study area has potential for archaeological resources of Native origins based on proximity to previously registered archaeological sites of Pre-contact origins and proximity to a source of potable water that was also used as a means of waterborne trade and communication. Background research also suggests potential for archaeological resources of Post-contact origins based on proximity to previously registered archaeological sites of Post-contact origins, proximity to a historic roadway, and proximity to areas of documented historic settlement.

Current conditions within the study area indicate that some areas of the property may have no or low archaeological potential and do not require Stage 2 Property Assessment or should be excluded from Stage 2 Property Assessment. These areas would include areas under pavement and water, and areas that are entirely disturbed from the demolition of former buildings. A significant proportion of the study area does exhibit archaeological potential and therefore a Stage 2 Property Assessment is required.

Archaeological potential does not indicate that there are necessarily sites present, but that environmental and historical factors suggest that there may be as yet undocumented archaeological sites within lands that have not been subject to systematic archaeological research in the past.

6.0 FIELD WORK METHODS AND WEATHER CONDITIONS

This report confirms that the study area was subject to Stage 2 Property Assessment by test pit survey at a ten metre interval to confirm disturbance on 4 July 2018.

The fieldwork undertaken as a component of this study was conducted according to the archaeological fieldwork standards and guidelines (including weather and lighting conditions). Weather conditions were appropriate for the necessary fieldwork required to complete the Stage 2 Property Assessment and to create the documentation appropriate to this study. The locations from which photographs were taken and the directions toward which the camera was aimed for each photograph are illustrated in Maps 5 & 6 of this report. Upon completion of the property inspection of the study area, it was determined that select areas would require Stage 2 Property Assessment.

It must be noted that AMICK Consultants Limited has been retained to assess lands as specified by the proponent. As such, AMICK Consultants Limited is constrained by the terms of the contract in place at the time of the Archaeological Assessment and can only enter into lands for which AMICK Consultants Limited has received consent from the owner or their agent(s). The proponent has been advised that the entire area within the planning application must be subject to archaeological assessment and that portions of the planning

application may only be excluded if they are of low potential, are not viable to assess, or are subject to planning provisions that would restrict any such areas from any form of ground altering activities.

6.1 PROPERTY INSPECTION

A detailed examination and photo documentation was carried out on the study area in order to document the existing conditions of the study area to facilitate the Stage 2 Property Assessment. All areas of the study area were visually inspected and select features were photographed as a representative sample of each area defined within Maps 5 and 6. Observations made of conditions within the study area at the time of the inspection were used to inform the requirement for Stage 2 Property Assessment for portions of the study area as well as to aid in the determination of appropriate Stage 2 Property Assessment strategies. The locations from which photographs were taken and the directions toward which the camera was aimed for each photograph are illustrated in Maps 5 & 6 of this report.

6.2 TEST PIT SURVEY

In accordance with the Standards and Guidelines for Consultant Archaeologists, test pit survey is required to be undertaken for those portions of the study area where deep prior disturbance had not occurred prior to assessment or which were accessible to survey. Test pit survey is only used in areas that cannot be subject to ploughing or cultivation. This report confirms that the conduct of test pit survey within the study area conformed to the following standards:

1. Test pit survey only on terrain where ploughing is not possible or viable, as in the following examples:

a. wooded areas

[Not Applicable – The study area does not contain any wooded areas]

b. pasture with high rock content

[Not Applicable - The study area does not contain any pastures with high rock content]

c. abandoned farmland with heavy brush and weed growth

[Not Applicable - The study area does not contain any abandoned farmland with heavy brush and weed growth]

d. orchards and vineyards that cannot be strip ploughed (planted in rows 5 m apart or less), gardens, parkland or lawns, any of which will remain in use for several years after the survey

[Not Applicable - The study area does not contain any of the above-mentioned circumstances]

e. properties where existing landscaping or infrastructure would be damaged. The presence of such obstacles must be documented in sufficient detail to demonstrate that ploughing or cultivation is not viable.

[Not Applicable - The study area does not contain the above-mentioned circumstances]

f. narrow (10 m or less) linear survey corridors (e.g., water or gas pipelines, road widening). This includes situations where there are planned impacts 10 m or less beyond the previously impacted limits on both sides of an existing linear corridor (e.g., two linear survey corridors on either side of an existing roadway). Where at the time of fieldwork the lands within the linear corridor meet the standards as stated under the above section on pedestrian survey land preparation, pedestrian survey must be carried out. Space test pits at maximum intervals of 5 m (400 test pits per hectare) in areas less than 300 m from any feature of archaeological potential.

[Not Applicable – The study area does not contain any linear corridors]

2. *Space test pits at maximum intervals of 5 m (400 test pits per hectare) in areas less than 300 m from any feature of archaeological potential.*

[All test pits were spaced at an interval of 10m between individual test pits due to the study area being disturbed.]

3. *Space test pits at maximum intervals of 10 m (100 test pits per hectare) in areas more than 300 m from any feature of archaeological potential.*

[The entirety of the test pitted areas of the study area were assessed using test pit methodology at an interval of 10 metres between individual test pits to confirm disturbance]

4. *Test pit to within 1 m of built structures (both intact and ruins), or until test pits show evidence of recent ground disturbance.*

[Not Applicable]

5. *Ensure that test pits are at least 30 cm in diameter.*

[All test pits were at least 30 cm in diameter]

6. *Excavate each test pit, by hand, into the first 5 cm of subsoil and examine the pit for stratigraphy, cultural features, or evidence of fill.*

[Regardless of the interval between individual test pits, all test pits were excavated by hand into the first 5 cm of subsoil where possible and examined for stratigraphy, cultural features, or evidence of fill. In areas where topsoil was not present, test pits were excavated to a minimum of 30cm in depth to ensure that suspected subsoils, if present, were not layers of fill or waterborne materials overlying buried topsoil. If these areas consisted of fill soils, test pits were also excavated a minimum of 30 cm below grade in order to ensure disturbance extended below even deep topsoil layers such as those encountered in agricultural fields to ensure that the depth of disturbance was sufficient to remove

archaeological potential in most contexts. Where other evidence indicates locations of potentially significant archaeological sites that may include cultural deposits below fill soils, alternative strategies to explore beneath the fill layers found in some areas may be necessary to complete the Stage 2 Property Assessment. In such cases, further Stage 2 Property Assessment may be recommended following completion of the property survey under conventional methodologies.]

7. *Screen soil through mesh no greater than 6 mm.*
[All soil was screened through mesh no greater than 6 mm]
8. *Collect all artifacts according to their associated test pit.*
[Not Applicable - No archaeological resources were encountered]
9. *Backfill all test pits unless instructed not to by the landowner.*
[All test pits were backfilled]

(MTC 2011: 31-32)

“A combination of property inspection and test pitting may be used when initial Stage 2 results determine that all or part of the project area may in fact be disturbed. The Stage 2 survey may then consists of a detailed inspection (equivalent to Stage 1), combined with test pitting.”

1. *If it was not done as part of Stage 1, inspect and document the disturbed areas according to the standards described for Stage 1 property inspections.*
[The disturbed areas of the study area were inspected and documented as per the standards described for Stage 1 property inspections. Areas of suspected disturbance where test pit survey was viable were shovel tested as described below. This area is limited to a small patch of lawn adjacent to the southern boundary of the study area.

Standard archaeological survey methodologies employed in Ontario for Stage 2 Archaeological Property Assessment (i.e. pedestrian survey and test pit survey) cannot determine if deeply buried cultural remains are or are not present. The purpose of Stage 2 Property Assessment is not to test for deeply buried deposits. The Standards and Guidelines for Consultants Archaeologists recognize this fact and have a whole separate section covering this specific issue. The only way to determine if deeply buried remains are present is to follow those standards not via a standard Stage 1-2 Archaeological Property Assessment.

In most cases, unless there is documentation or evidence to the contrary, areas where grading has exceeded topsoil depth are areas considered to have no or low archaeological potential because in most cases removal of the topsoil will remove archaeological sites. While archaeological sites are popularly thought of as being deeply buried, archaeological sites begin on the surface of the ground and for most

of humanity's history involved no substantial excavations or significant landscape alterations. Only with the rise of urbanization and sedentary settlement do sites begin to accumulate depth. This is a result of continuous building and rebuilding over top of earlier settlements. Deep archaeological sites are created by adding to the surface of an area and building the landform up. Deeply buried archaeological deposits are relatively rare outside of urban environments in Ontario and even within urban contexts, this seldom occurs outside of the historic core of the community where redevelopment has occurred since initial settlement.

If an area was not occupied during a period of potential archaeological significance, there is no potential to locate deeply buried significant archaeological resources. There are only a few very rare exceptions related to historical significance that is not tied to the time period of activity or occupation of a site but to certain historical events and/or personalities.

Areas of suspected disturbance where test pit survey was viable were shovel tested as described below.]

2. *Place Stage 2 test pits throughout the disturbed areas according to professional judgment (and where physically viable) as to confirm that these areas have been completely disturbed.*

[An area of suspected disturbance was identified during the Property Inspection conducted as part of the Stage 2 Property Assessment. This area consists of a small patch of disturbed lawn adjacent to the southern boundary of the study area. Test pits were excavated every 10 metres across the entirety of this portion of the study area. The intensity of test pit survey conducted is far in excess of the minimum standard required. AMICK Consultants Limited tested the suspected disturbed area at a 10-metre interval to confirm disturbance in a manner consistent with the objectives to ensure that the area is accurately delimited and properly identified. There is no requirement to systematically examine such areas. The Standards and Guidelines require only judgmental testing based on the professional judgment of the investigating archaeologist. In most typical archaeological assessments the entire area of presumed disturbance will be written off as an area of no archaeological potential without thorough testing to demonstrate that the entire area is disturbed or it will be tested at subjective, irregular and inconsistent intervals, and consequently such testing cannot verify that the entire area contained within the presumed limits of disturbance are, in fact, disturbed. The methodology employed here by AMICK Consultants Limited exceeds any requirements of the Standards and Guidelines and that which is generally applied within the industry.

The excavated soil and the profiles of these test pits were examined to determine if each represented an area of disturbance. Test pits were excavated a minimum of 30 cm below grade in order to ensure that test pits were excavated to depths below the surrounding natural grade. This procedure demonstrated that the entire study area

consists of fill deposited within a deeply disturbed context. There is no archaeological potential within this area.]

(MTC 2011: 38)

Approximately 2% of the study area consisted of disturbed lawn that was test pit surveyed at an interval of 10 metres between individual test pits. Approximately 98% of the study area was not assessable due to the presence of disturbed field from demolished buildings, paved lots and driveways and being under a body of water.

7.0 RECORD OF FINDS

Section 7.8.2 of the Standards and Guidelines for Consultant Archaeologists (MTC 2011: 137-138) outlines the requirements of the Record of Finds component of a Stage 2 report:

1. *For all archaeological resources and sites that are identified in Stage 2, provide the following:*
 - a. *a general description of the types of artifacts and features that were identified*
 - b. *a general description of the area within which artifacts and features were identified, including the spatial extent of the area and any relative variations in density*
 - c. *a catalogue and description of all artifacts retained*
 - d. *a description of the artifacts and features left in the field (nature of material, frequency, other notable traits).*
2. *Provide an inventory of the documentary record generated in the field (e.g. photographs, maps, field notes).*
3. *Submit information detailing exact site locations on the property separately from the project report, as specified in section 7.6. Information on exact site locations includes the following:*
 - a. *table of GPS readings for locations of all archaeological sites*
 - b. *maps showing detailed site location information.*

7.1 ARCHAEOLOGICAL RESOURCES

No archaeological resources of any description were encountered anywhere within the study area.

7.2 ARCHAEOLOGICAL FIELDWORK DOCUMENTATION

The documentation produced during the field investigation conducted in support of this report includes: one sketch map, one page of photo log, one page of field notes, and 15 digital photographs.

7.3 ABORIGINAL ENGAGEMENT PROGRAM

The fieldwork was completed with the participation of First Nations Monitors. Fred Albert of the Chippewa of the Thames, Shelley Birch of the Caldwell First Nation and Wanda Maness of the Aamjiunaang First Nation acted as field monitors for Aboriginal Engagement on behalf of AMICK Consultants Limited and participated in the Stage 2 Property Assessment. Draft copies of this report have been provided to the Chippewa of the Thames, the Caldwell First Nation and the Aamjiunaang First Nation for review and comment in advance of submission to MTCS. Their feedback has been incorporated into the recommendations of this report.

8.0 ANALYSIS AND CONCLUSIONS

AMICK Consultants Limited was engaged by the proponent to undertake a Stage 1-2 Archaeological Assessment of lands potentially affected by the proposed undertaking and was granted permission to carry out archaeological fieldwork. The entirety of the study area was subject to property inspection and photographic documentation concurrently with the Stage 2 Property Assessment on 4 July 2018, consisting of test pit survey at an interval of ten metres between individual test pits to confirm disturbance. All records, documentation, field notes, photographs and artifacts (as applicable) related to the conduct and findings of these investigations are held at the Lakelands District corporate offices of AMICK Consultants Limited until such time that they can be transferred to an agency or institution approved by the Ontario Ministry of Tourism, Culture and Sport (MTCS) on behalf of the government and citizens of Ontario.

8.1 STAGE 1 ANALYSIS AND CONCLUSIONS

As part of the present study, background research was conducted in order to determine the archaeological potential of the proposed project area.

“A Stage 1 background study provides the consulting archaeologist and Ministry report reviewer with information about the known and potential cultural heritage resources within a particular study area, prior to the start of the field assessment.” (OMCzCR 1993)

The evaluation of potential is further elaborated Section 1.3 of the Standards and Guidelines for Consultant Archaeologist (2011) prepared by the Ontario Ministry of Tourism and Culture:

“ The Stage 1 background study (and, where undertaken, property inspection) leads to an evaluation of the property’s archaeological potential. If the evaluation indicates that there is archaeological potential anywhere on the property, the next step is a Stage 2 assessment.” (MTC 2011: 17)

Features or characteristics that indicate archaeological potential when documented within the study area, or within close proximity to the study area (as applicable), include:

- “ - *previously identified archaeological sites*
- *water sources (It is important to distinguish types of water and shoreline, and to distinguish natural from artificial water sources, as these features affect site locations and types to varying degrees.):*
 - *primary water sources (lakes, rivers, streams, creeks)*
 - *secondary water sources (intermittent streams and creeks, springs, marshes, swamps)*
 - *features indicating past water sources (e.g., glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches)*
 - *accessible or inaccessible shoreline (e.g., high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh)*
 - *elevated topography (e.g., eskers, drumlins, large knolls, plateaux)*
 - *pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground*
 - *distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings.*
 - *resource areas, including:*
 - *food or medicinal plants (e.g., migratory routes, spawning areas, prairie)*
 - *scarce raw materials (e.g., quartz, copper, ochre or outcrops of chert)*
 - *early Post-contact industry (e.g., fur trade, logging, prospecting, mining)*
 - *areas of early Post-contact settlement. These include places of early military or pioneer settlement (e.g., pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches and early cemeteries. There may be commemorative markers of their history, such as local, provincial, or federal monuments or heritage parks.*
 - *Early historical transportation routes (e.g., trails, passes, roads, railways, portage routes)*
 - *property listed on a municipal register or designated under the Ontario Heritage Act that is a federal, provincial or municipal historic landmark or site*
 - *property that local histories or informants have identified with possible archaeological sites, historical events, activities, or occupations”*
- (MTC 2011: 17-18)

The evaluation of potential does not indicate that sites are present within areas affected by proposed development. Evaluation of potential considers the possibility for as yet undocumented sites to be found in areas that have not been subject to systematic archaeological investigation in the past. Potential for archaeological resources is used to determine if property assessment of a study area or portions of a study area is required.

“Archaeological resources not previously documented may also be present in the affected area. If the alternative areas being considered, or the preferred alternative selected, exhibit either high or medium potential for the discovery of archaeological remains an archaeological assessment will be required.”

(MCC & MOE 1992: 6-7)

“The Stage 1 background study (and, where undertaken, property inspection) leads to an evaluation of the property’s archaeological potential. If the evaluation indicates that there is archaeological potential anywhere on the property, the next step is a Stage 2 assessment.”

(MTC 2011: 17)

In addition, archaeological sites data is also used to determine if any archaeological resources had been formerly documented within or in close proximity to the study area and if these same resources might be subject to impacts from the proposed undertaking. This data was also collected in order to establish the relative cultural heritage value or interest of any resources that might be encountered during the conduct of the present study. For example, the relative rarity of a site can be used to assign an elevated level of cultural heritage value or interest to a site that is atypical for the immediate vicinity. The requisite archaeological sites data of previously registered archaeological sites was collected from the Programs and Services Branch, Culture Programs Unit, MTCS and the corporate research library of AMICK Consultants Limited. The Stage 1 Background Research methodology also includes a review of the most detailed available topographic maps, historical settlement maps, archaeological management plans (where applicable) and commemorative plaques or monuments. When previous archaeological research documents lands to be impacted by the proposed undertaking or archaeological sites within 50 metres of the study area, the reports documenting this earlier work are reviewed for pertinent information. AMICK Consultants Limited will often modify this basic methodology based on professional judgment to include additional research (such as, local historical works or documents and knowledgeable informants).

Section 7.7.3 of the Standards and Guidelines for Consultant Archaeologists (MTC 2011: 132) outlines the requirements of the Analysis and Conclusions component of a Stage 1 Background Study.

- 1) *“Identify and describe areas of archaeological potential within the project area.*
- 2) *Identify and describe areas that have been subject to extensive and deep land alterations. Describe the nature of alterations (e.g., development or other activity) that have severely damaged the integrity of archaeological resources and have removed archaeological potential.”*

CHARACTERISTICS INDICATING ARCHAEOLOGICAL POTENTIAL

Section 1.3.1 of the Standards and Guidelines for Consultant Archaeologists specifies the property characteristics that indicate archaeological potential (MTC 2011: 17-18). Factors

that indicate archaeological potential are features of the local landscape and environment that may have attracted people to either occupy the land or to conduct activities within the study area. One or more of these characteristics found to apply to a study area would necessitate a Stage 2 Property Assessment to determine if archaeological resources are present. These characteristics are listed below together with considerations derived from the conduct of this study.

1) *Previously Identified Archaeological Sites*

Previously registered archaeological sites have been documented within 300 metres of the study area.

2) *Water Sources*

Primary water sources are described as including lakes, rivers streams and creeks. Close proximity to primary water sources (300 metres) indicates that people had access to readily available sources of potable water and routes of waterborne trade and communication should the study area have been used or occupied in the past.

There are identified primary water sources within 300 metres of the study area. The western part of the study area is within the Detroit River, a source of potable water and a navigable waterway.

Secondary water sources are described as including intermittent streams and creeks, springs, marshes, and swamps. Close proximity (300 metres) to secondary water sources indicates that people had access to readily available sources of potable water, at least on a seasonal basis, and in some cases seasonal access to routes of waterborne trade and communication should the study area have been used or occupied in the past.

There are no identified secondary water sources within 300 metres of the study area.

3) *Features Indicating Past Water Sources*

Features indicating past water resources are described as including glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, and cobble beaches. Close proximity (300 metres) to features indicating past water sources indicates that people had access to readily available sources of potable water, at least on a seasonal basis, and in some cases seasonal access to routes of waterborne trade and communication should the study area have been used or occupied in the past.

There are no identified features indicating past water sources within 300 metres of the study area.

4) *Accessible or Inaccessible Shoreline*

This form of landscape feature would include high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.

There are shorelines within 300 metres of the study area. The shore of the Detroit River passes through the study area.

5) Elevated Topography

Features of elevated topography that indicate archaeological potential include eskers, drumlins, large knolls, and plateaux.

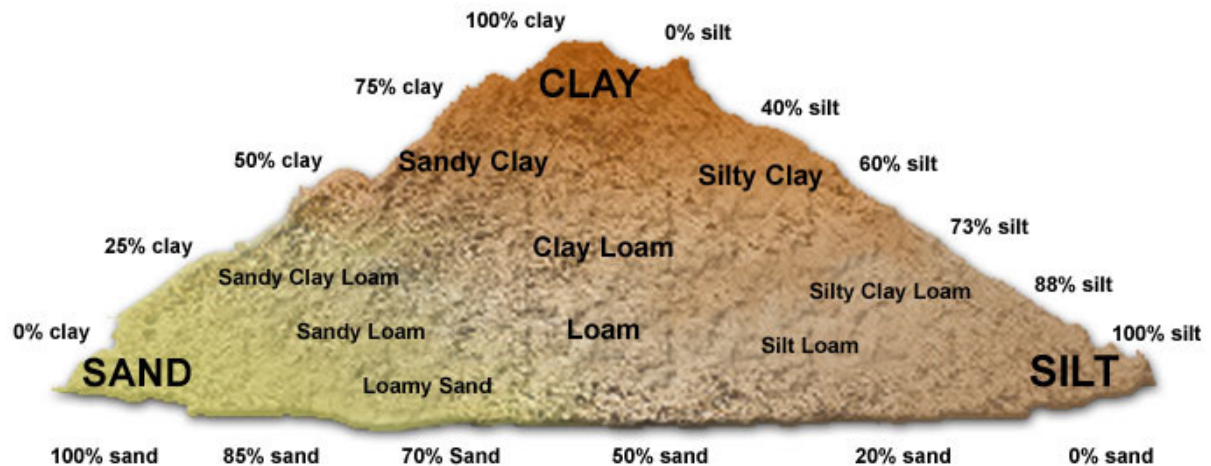
There are no identified features of elevated topography within the study area.

6) Pockets of Well-drained Sandy Soil

Pockets of sandy soil are considered to be especially important near areas of heavy soil or rocky ground.

The soil throughout the study area is a light brown sand, which is consistent with the wider area surrounding the property. Therefore, the presence of this soil has no impact on potential within the study area, as the wider area is not known for clay soils or exposed bedrock.

The image below (Kuhlmann, Stacy 2017) shows the consistencies of soil types and how they compare to one another. The lower percentage of clay allows the soil to break up from the action of ploughing alone when not compacted or bound by extensive root masses.



(Kuhlmann, Stacy 2017)

7) Distinctive Land Formations

These are landscape features that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There

may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings.

There are no identified distinctive land formations within the study area.

8) Resource Areas

Resource areas that indicate archaeological potential include food or medicinal plants (e.g., migratory routes, spawning areas, and prairie), scarce raw materials (e.g., quartz, copper, ochre or outcrops of chert) and resources of importance to early Post-contact industry (e.g., logging, prospecting, and mining).

There are no identified resource areas within the study area.

9) Areas of Early Post-contact Settlement

These include places of early military or pioneer settlement (e.g., pioneer homesteads, isolated cabins, and farmstead complexes), early wharf or dock complexes, pioneer churches and early cemeteries. There may be commemorative markers of their history, such as local, provincial, or federal monuments or heritage parks.

The study area is situated in close proximity to a historic community identified on the historic atlas map, the town of Amherstburg.

10) Early Historical Transportation Routes

This includes evidence of trails, passes, roads, railways, portage routes.

The study area is situated within 100 metres of three early settlement roads that appear on the Historic Atlas Map of 1881. One of these roads is no longer present on recent maps. The other two historic roads correspond to the roads presently known as Dalhousie Street and Gore Street, which are adjacent to the study area.

11) Heritage Property

Property listed on a municipal register or designated under the *Ontario Heritage Act* or is a federal, provincial or municipal historic landmark or site.

There are no listed or designated heritage buildings or properties that form a part of the study area. There are no listed or designated heritage buildings or properties that are adjacent to the study area.

12) Documented Historical or Archaeological Sites

This includes property that local histories or informants have identified with possible archaeological sites, historical events, activities, or occupations. These are properties which have not necessarily been formally recognized or for which there is additional evidence identifying possible archaeological resources associated with historic properties in addition to the rationale for formal recognition.

There are no known heritage features, or known historic sites, or known archaeological sites within the study area in addition to those formally documented with the appropriate agencies or previously noted under a different criterion.

CHARACTERISTICS INDICATING REMOVAL OF ARCHAEOLOGICAL POTENTIAL

Section 1.3.2 of the Standards and Guidelines for Consultant Archaeologists specifies the property characteristics which indicate no archaeological potential or for which archaeological potential has been removed (MTC 2011: 18-19). These characteristics are listed below together with considerations derived from the conduct of this study.

The introduction of Section 1.3.2 (MTC 2011: 18) notes that “*Archaeological potential can be determined not to be present for either the entire property or a part(s) of it when the area under consideration has been subject to extensive and deep land alterations that have severely damaged the integrity of any archaeological resources. This is commonly referred to as ‘disturbed’ or ‘disturbance’, and may include:*”

1) Quarrying

There is no evidence to suggest that quarrying operations were ever carried out within the study area.

2) Major Landscaping Involving Grading Below Topsoil

Unless there is evidence to suggest the presence of buried archaeological deposits, such deeply disturbed areas are considered to have lost their archaeological potential. Properties that do not have a long history of Post-contact occupation can have archaeological potential removed through extensive landscape alterations that penetrate below the topsoil layer. This is because most archaeological sites originate at grade with relatively shallow associated excavations into the soil. Pre-contact sites and early historic sites are vulnerable to extensive damage and complete removal due to landscape modification activities. In urban contexts where a lengthy history of occupation has occurred, properties may have deeply buried archaeological deposits covered over and sealed through redevelopment activities that do not include the deep excavation of the entire property for subsequent uses. Buildings are often erected directly over older foundations preserving archaeological deposits associated with the earlier occupation.

There is evidence to suggest that major landscaping operations involving grading below topsoil were ever carried out within the study area. Surfaces paved with interlocking brick, concrete, asphalt, gravel and other surfaces meant to support heavy loads or to be long wearing hard surfaces in high traffic areas, must be prepared by the excavation and removal of topsoil, grading, and the addition of aggregate material to ensure appropriate engineering values for the supporting matrix and also to ensure that the installations shed water to avoid flooding or moisture damage. All hard surfaced areas are prepared in this fashion and therefore have no or low archaeological potential. Disturbed areas are excluded from Stage 2 Property

Assessment due to no or low archaeological potential and often because they are also not viable to assess using conventional methodology.

There are two entirely disturbed areas adjacent to the eastern boundary of the study area that are the footprints of demolished buildings and the former lawn in the plaza. There is a paved lot in the centre of the study area, between the demolished buildings and the Detroit River. A paved road also enters the study area from the eastern boundary, between the two disturbed patches from the demolished buildings.

3) *Building Footprints*

Typically, the construction of buildings involves the deep excavation of foundations, footings and cellars that often obliterate archaeological deposits situated close to the surface.

There are no buildings within the study area, as any buildings that were in the study area were demolished before the property assessment.

4) *Sewage and Infrastructure Development*

Installation of sewer lines and other below ground services associated with infrastructure development often involves deep excavation that can remove archaeological potential.

There is no evidence to suggest that substantial below ground services of any kind have resulted in significant impacts to any significant portion of the study area. Major utility lines are conduits that provide services such as water, natural gas, hydro, communications, sewage, and others. These major installations should not be confused with minor below ground service installations not considered to represent significant disturbances removing archaeological potential, such as services leading to individual structures which tend to be comparatively very shallow and vary narrow corridors. Areas containing substantial and deeply buried services or clusters of below ground utilities are considered areas of disturbance, and may be excluded from Stage 2 Property Assessment.

“Activities such as agricultural cultivation, gardening, minor grading and landscaping do not necessarily affect archaeological potential.”

(MTC 2011: 18)

“Archaeological potential is not removed where there is documented potential for deeply buried intact archaeological resources beneath land alterations, or where it cannot be clearly demonstrated through background research and property inspection that there has been complete and intensive disturbance of an area. Where complete disturbance cannot be demonstrated in Stage 1, it will be necessary to undertake Stage 2 assessment.”

(MTC 2011: 18)

SUMMARY

Table 4 below summarizes the evaluation criteria of the Ministry of Tourism, Culture and Sport (MTCS) together with the results of the Stage 1 Background Study for the proposed undertaking. Based on the criteria, the property is deemed to have archaeological potential on the basis of proximity to previously registered archaeological sites, proximity to water, proximity to historic communities, and the location of early historic settlement roads adjacent to the study area.

TABLE 4 EVALUATION OF ARCHAEOLOGICAL POTENTIAL

FEATURE OF ARCHAEOLOGICAL POTENTIAL		YES	NO	N/A	COMMENT
1	Known archaeological sites within 300m	Y			If Yes, potential determined
PHYSICAL FEATURES					
2	Is there water on or near the property?	Y			If Yes, what kind of water?
2a	Primary water source within 300 m. (lakeshore, river, large creek, etc.)	Y			If Yes, potential determined
2b	Secondary water source within 300 m. (stream, spring, marsh, swamp, etc.)		N		If Yes, potential determined
2c	Past water source within 300 m. (beach ridge, river bed, relic creek, etc.)		N		If Yes, potential determined
2d	Accessible or Inaccessible shoreline within 300 m. (high bluffs, marsh, swamp, sand bar, etc.)	Y			If Yes, potential determined
3	Elevated topography (knolls, drumlins, eskers, plateaus, etc.)		N		If Yes, and Yes for any of 4-9, potential determined
4	Pockets of sandy soil in a clay or rocky area		N		If Yes and Yes for any of 3, 5-9, potential determined
5	Distinctive land formations (mounds, caverns, waterfalls, peninsulas, etc.)		N		If Yes and Yes for any of 3-4, 6-9, potential determined
HISTORIC/PREHISTORIC USE FEATURES					
6	Associated with food or scarce resource harvest areas (traditional fishing locations, agricultural/berry extraction areas, etc.)		N		If Yes, and Yes for any of 3-5, 7-9, potential determined.
7	Early Post-contact settlement area within 300 m.	Y			If Yes, and Yes for any of 3-6, 8-9, potential determined
8	Historic Transportation route within 100 m. (historic road, trail, portage, rail corridors, etc.)	Y			If Yes, and Yes for any 3-7 or 9, potential determined
9	Contains property designated and/or listed under the Ontario Heritage Act (municipal heritage committee, municipal register, etc.)		N		If Yes and, Yes to any of 3-8, potential determined
APPLICATION-SPECIFIC INFORMATION					
10	Local knowledge (local heritage organizations, Pre-contact, etc.)		N		If Yes, potential determined
11	Recent disturbance not including agricultural cultivation (post-1960-confirmed extensive and intensive including industrial sites, aggregate areas, etc.)		N		If Yes, no potential or low potential in affected part (s) of the study area.

If **YES** to any of 1, 2a-c, or 10 Archaeological Potential is **confirmed**

If **YES** to 2 or more of 3-9, Archaeological Potential is **confirmed**

If **YES** to 11 or No to 1-10 Low Archaeological Potential is **confirmed** for at least a portion of the study area.

8.2 STAGE 2 ANALYSIS AND CONCLUSIONS

Section 7.8.3 of the Standards and Guidelines for Consultant Archaeologists (MTC 2011: 138-139) outlines the requirements of the Analysis and Conclusions component of a Stage 2 Property Assessment.

1. *Summarize all finding from the Stage 2 survey, or state that no archaeological sites were identified.*
2. *For each archaeological site, provide the following analysis and conclusions:*
 - a. *A preliminary determination, to the degree possible, of the age and cultural affiliation of any archaeological sites identified.*
 - b. *A comparison against the criteria in 2 Stage 2: Property Assessment to determine whether further assessment is required*
 - c. *A preliminary determination regarding whether any archaeological sites identified in Stage 2 show evidence of a high level cultural heritage value or interest and will thus require Stage 4 mitigation.*

No archaeological sites or resources were found during the Stage 2 survey of the study area.

9.0 RECOMMENDATIONS

9.1 STAGE 1 RECOMMENDATIONS

Under Section 7.7.4 of the Standards and Guidelines for Consultant Archaeologists (MTC 2011: 133) the recommendations to be made as a result of a Stage 1 Background Study are described.

- 1) *Make recommendations regarding the potential for the property, as follows:*
 - a. *if some or all of the property has archaeological potential, identify areas recommended for further assessment (Stage 2) and areas not recommended for further assessment. Any exemptions from further assessment must be consistent with the archaeological fieldwork standards and guidelines.*
 - b. *if no part of the property has archaeological potential, recommend that the property does not require further archaeological assessment.*
- 2) *Recommend appropriate Stage 2 assessment strategies.*

9.2 STAGE 2 RECOMMENDATIONS

Under Section 7.8.4 of the Standards and Guidelines for Consultant Archaeologists (MTC 2011: 139) the recommendations to be made as a result of a Stage 2 Property Assessment are described.

- 1) *For each archaeological site, provide a statement of the following:
 - a. Borden number or other identifying number
 - b. Whether or not it is of further cultural heritage value or interest
 - c. Where it is of further cultural heritage value or interest, appropriate Stage 3 assessment strategies*
- 2) *Make recommendations only regarding archaeological matters. Recommendations regarding built heritage or cultural heritage landscapes should not be included.*
- 3) *If the Stage 2 survey did not identify any archaeological sites requiring further assessment or mitigation of impacts, recommend that no further archaeological assessment of the property be required.*

As a result of the Stage 2 Property Assessment of the study area, no archaeological resources were encountered. Consequently, the following recommendations are made:

1. *No further archaeological assessment of the study area is warranted;*
2. *The Provincial interest in archaeological resources with respect to the proposed undertaking has been addressed;*
3. *The proposed undertaking is clear of any archaeological concern.*

10.0 ADVICE ON COMPLIANCE WITH LEGISLATION

While not part of the archaeological record, this report must include the following standard advisory statements for the benefit of the proponent and the approval authority in the land use planning and development process:

- a. This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c. 0.18. The report is reviewed to ensure that it complies with the standards and guidelines issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.*
- b. It is an offence under Sections 48 and 69 of the Ontario Heritage Act for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the Ontario Heritage Act.*
- c. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act.*
- d. The Cemeteries Act, R.S.O. 1990, c. C.4 and the Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.*
- e. Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.*

11.0 BIBLIOGRAPHY AND SOURCES

- Belden, H. & Co. (1881). *Essex Supplement in Illustrated Atlas of the Dominion of Canada*. H. Belden & Co., Toronto.
- Chapman, L.J. & D.F. Putnam. (1984). *The Physiography of Southern Ontario (Third Edition)*. Ontario Geological Survey, Special Report #2. Ontario Ministry of Natural Resources, Toronto.
- Connecting Windsor-Essex (2011) *Early History of Essex County*. URL: <http://www.windsor-essex.info/wps/wcm/connect/COE/COE/ABOUT+ESSEX+COUNTRY/History+of+Essex+County/Early+History+of+Essex+County+%281792+-+1924%29/>, as of October 18, 2011.
- Goel, Tarun (2013). Road Construction: History and Procedure. Bright Hub Engineering. Retrieved 24 May 2015 from URL: <http://www.brighthubengineering.com/structural-engineering/59665-road-construction-history-and-procedure/>
- Google Earth (Version 6.0.3.2197) [Software]. (2009). Available from <http://www.google.com/earth/index.html>.
- Google Maps. (2012). Available from: http://maps.google.ca/?utm_campaign=en&utm_source=en-ha-na-ca-bk-gm&utm_medium=ha&utm_term=google%20maps.
- Kuhlmann, Stacy. (2017). *Types of Soil*. Diagram of Soil Types available from <http://www.tes.com/lessons/AKChU3fbfZKo9g/types-of-soil>.
- LaJeunesse, E. J. (1960). *The Windsor Border Region, Canada's southernmost frontier; a collection of documents*. Champlain Society., Toronto.
- Landmark Engineers Inc. (2018). *Preliminary Concept Plan – Amherstburg Festival Plaza and Marina Environmental Assessment*. Landmark Engineers Inc., Windsor.
- Ontario Heritage Act, RSO 1990a, Government of Ontario. (Queen's Printer, Toronto).
- Ontario Heritage Amendment Act, SO 2005, Government of Ontario. (Queen's Printer, Toronto).
- Ontario Ministry of Citizenship, Culture and Recreation (OMCzCR). (1993). *Archaeological Assessment Technical Guidelines, Stages 1-3 and Reporting Format*. (Queen's Printer for Ontario 1993)
- Ontario Ministry of Culture (MCL). (2005). *Conserving a Future for Our Past: Archaeology, Land Use Planning & Development in Ontario (An Educational Primer and Comprehensive Guide for Non-Specialists)*. (Heritage & Libraries Branch, Heritage Operations Unit: Toronto).
- Ontario Ministry of Culture and Communications (MCC) & Ministry of Environment (MOE). (1992). *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments*. (Cultural Programs Branch, Archaeology and Heritage Planning: Toronto).

ORIGINAL 2018 Stage 1-2 Archaeological Assessment of 290, 296 & 306 Dalhousie Street, Part of Lots 2 & 3, Concession 1 (Geographic Township of Malden), Town of Amherstburg, County of Essex (AMICK File #18519/MTCS File #P058-1650-2018)

Ontario Ministry of Tourism and Culture (MTC). (2011). *Standards and Guidelines for Consultant Archaeologist*. (Programs and Services Branch: Culture Programs Unit, Toronto).

Ontario Planning Act, RSO 1990b, Government of Ontario. (Queen's Printer, Toronto).

Provincial Policy Statement (2014). Government of Ontario. (Queen's Printer, Toronto).

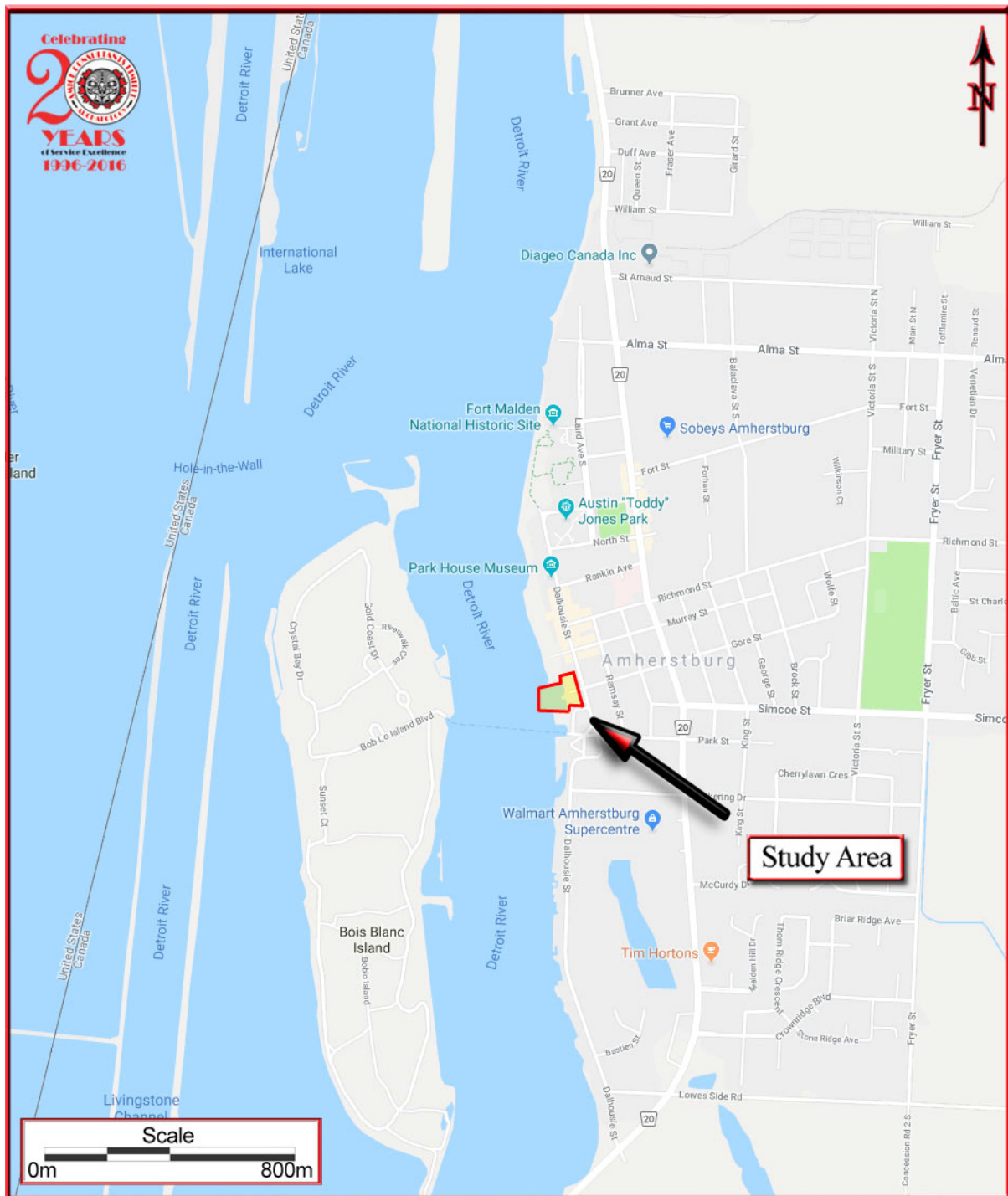
The Canadian Encyclopedia. (2015). *Amherstburg – The Canadian Encyclopedia*. Retrieved on 10 July 2018 from URL: <https://www.thecanadianencyclopedia.ca/en/article/amherstburg/>

Walling, H. F. (1877). *Map of Essex County, Ontario*. (Toronto, Ontario: R. M. Tackabury, 1877).

Wikipedia.org. (2018). *Amherstburg – Wikipedia*. Retrieved 10 July 2018 from URL: <https://en.wikipedia.org/wiki/Amherstburg>

Wright, J.V. (1972). *Ontario Prehistory: an Eleven-thousand-year Archaeological Outline*. Archaeological Survey of Canada. National Museum of Man, Ottawa.

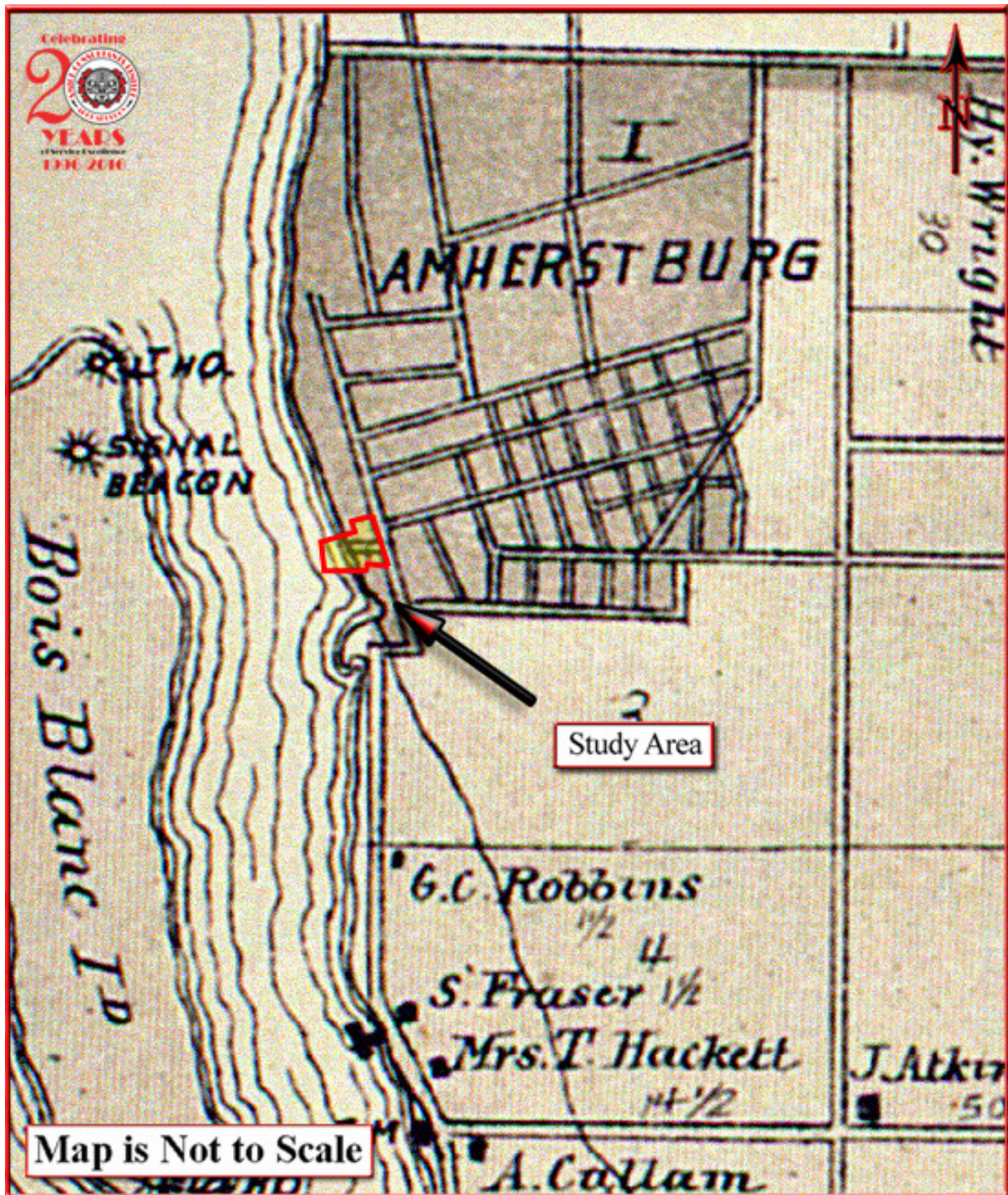
12.0 MAPS



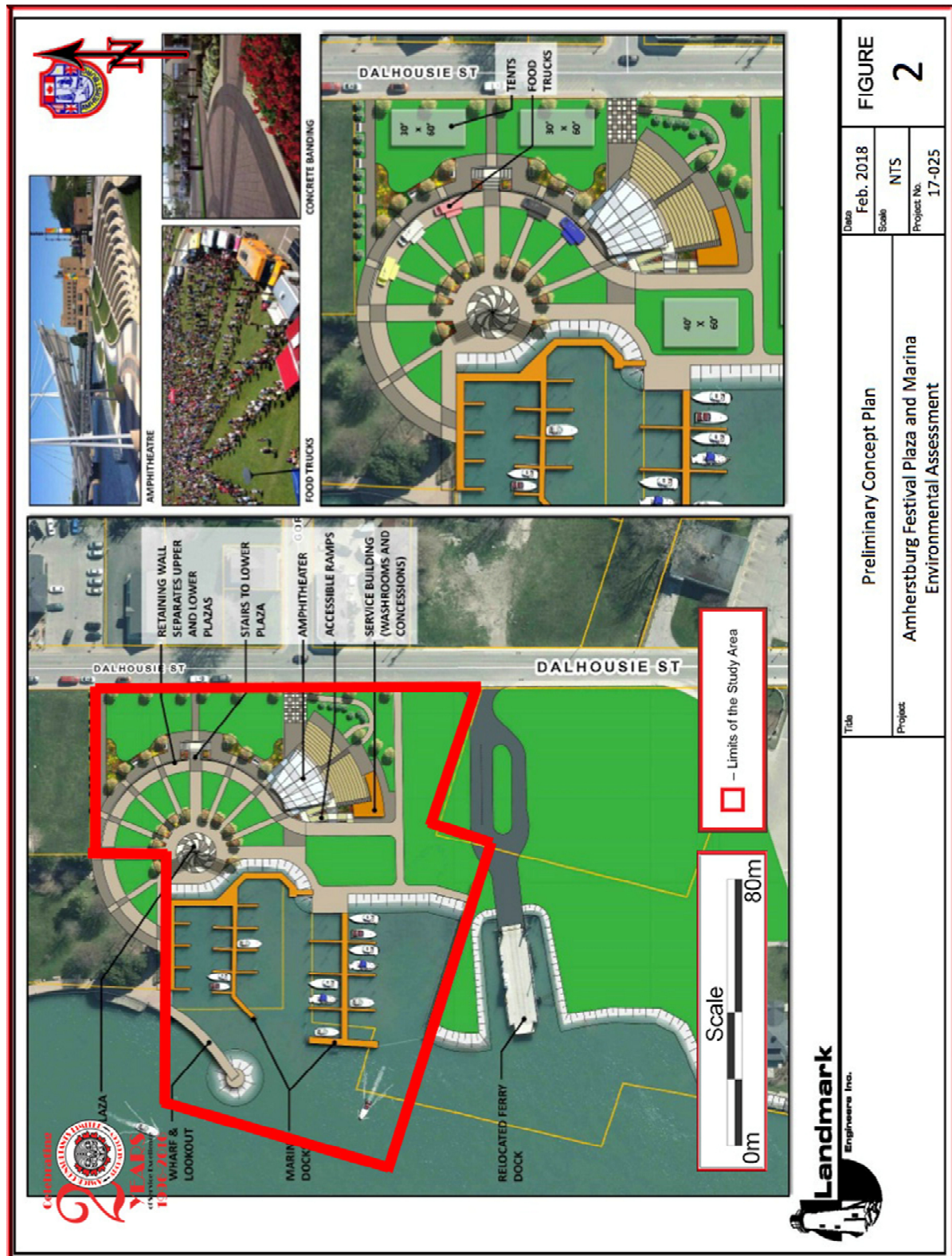
MAP 1 LOCATION OF THE STUDY AREA (GOOGLE MAPS 2012)



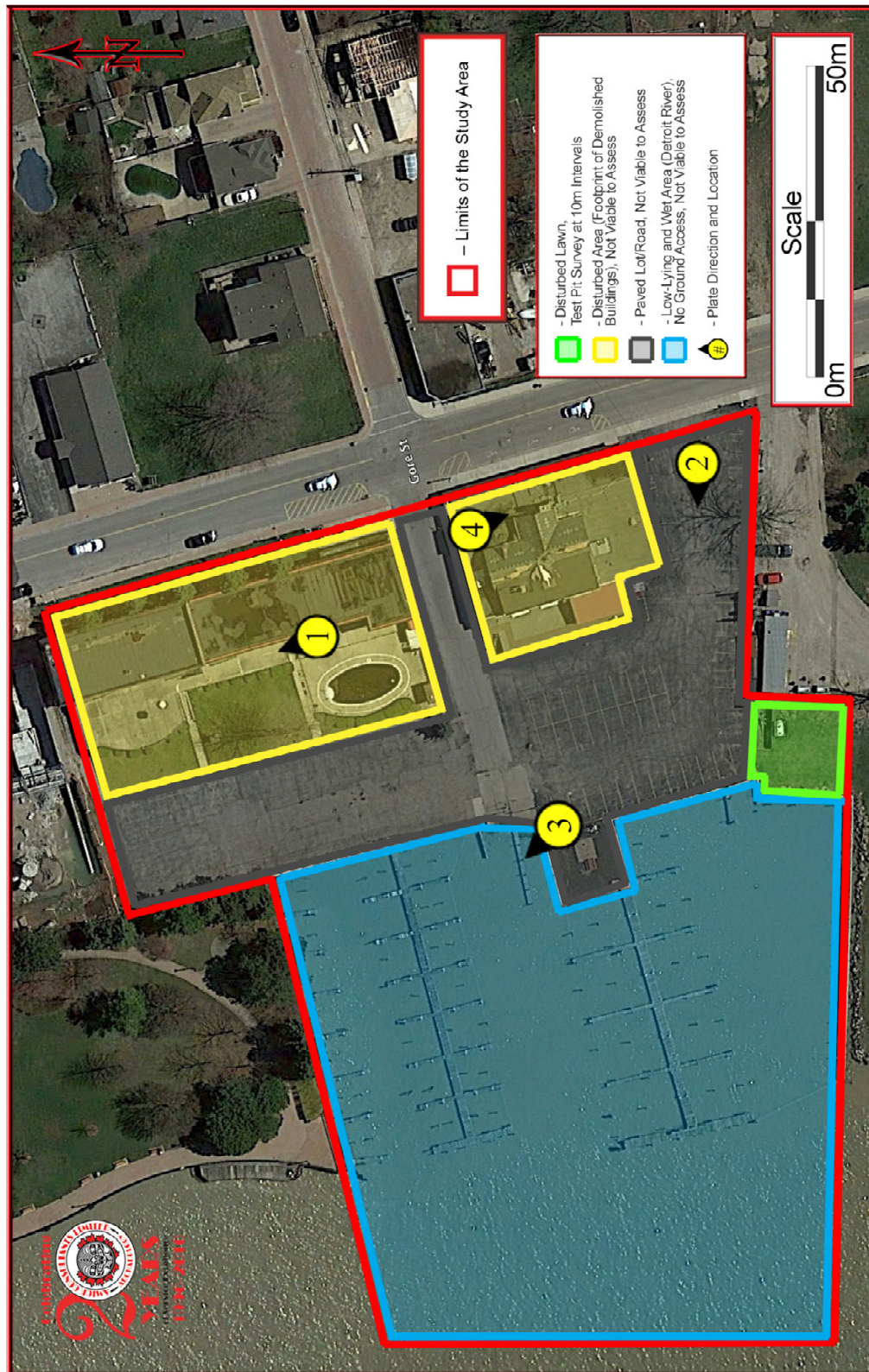
**MAP 2 FACSIMILE SEGMENT OF WALLING'S MAP OF THE COUNTY OF ESSEX
(WALLING, H. F. 1877)**



MAP 3 FACSIMILE SEGMENT OF THE HISTORIC ATLAS MAP OF THE TOWNSHIP OF MALDEN (BELDEN, H. & Co. 1881)

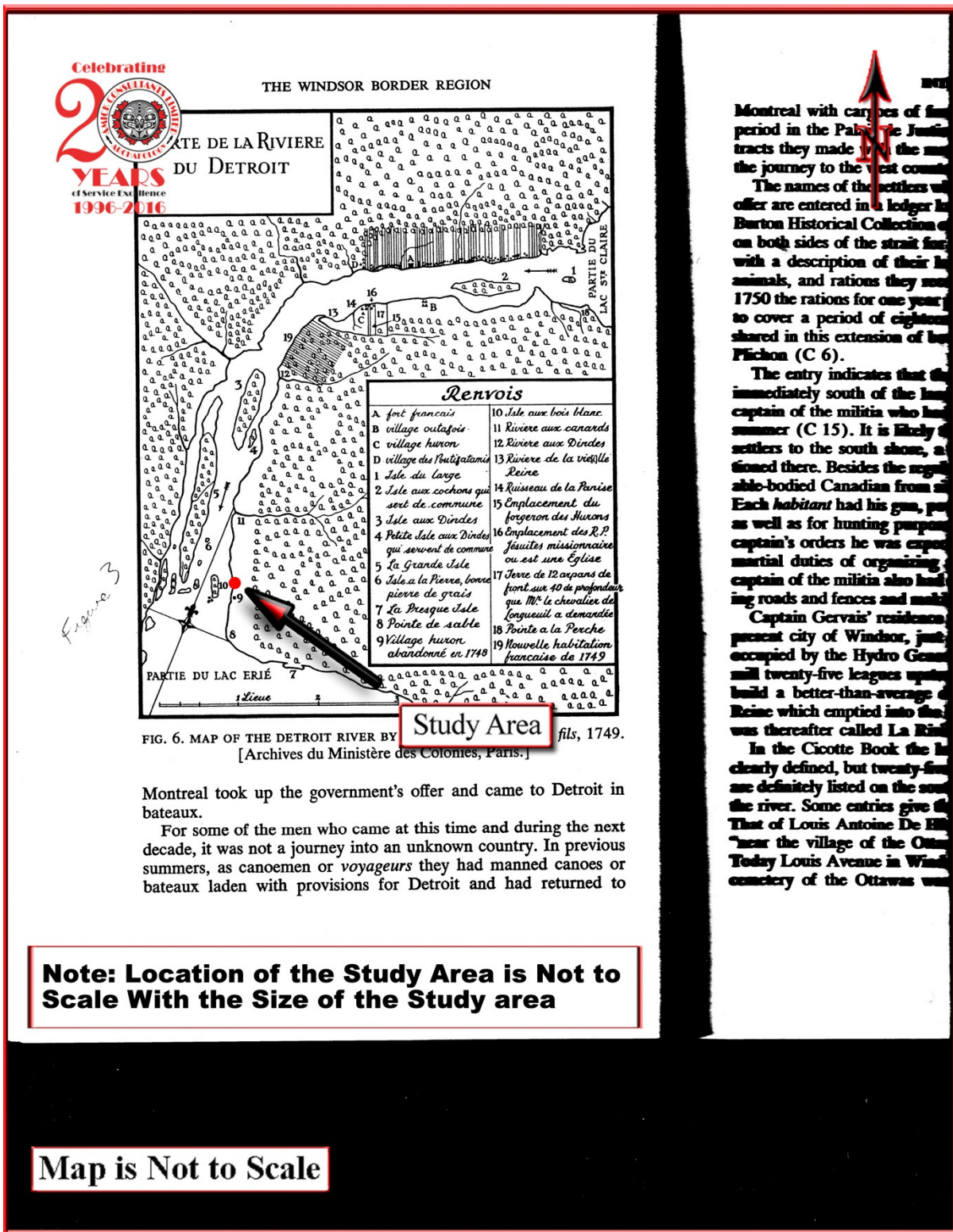


MAP 4 PLAN OF SURVEY (LANDMARK ENGINEERS INC. 2018)

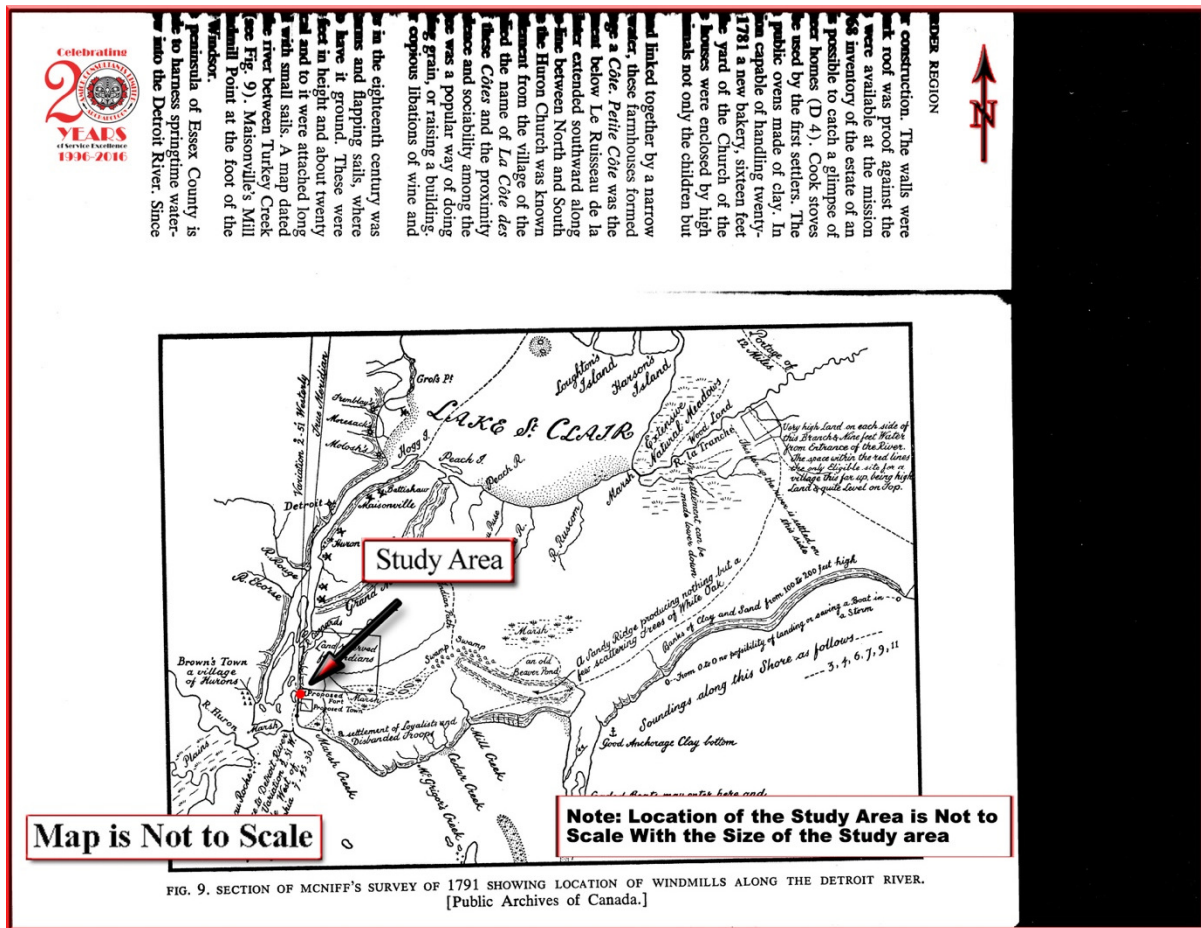


MAP 5 AERIAL PHOTO OF THE STUDY AREA (GOOGLE EARTH 2011)





MAP 7 INFERRED LOCATION OF THE STUDY AREA ON A MAP OF THE DETROIT RIVER AREA FROM 1749 (LAJEUNESSE 1960)



MAP 8 INFERRED LOCATION OF THE STUDY AREA ON A MAP FROM MCNIFF'S SURVEY OF 1791 (LAJEUNESSE 1960)

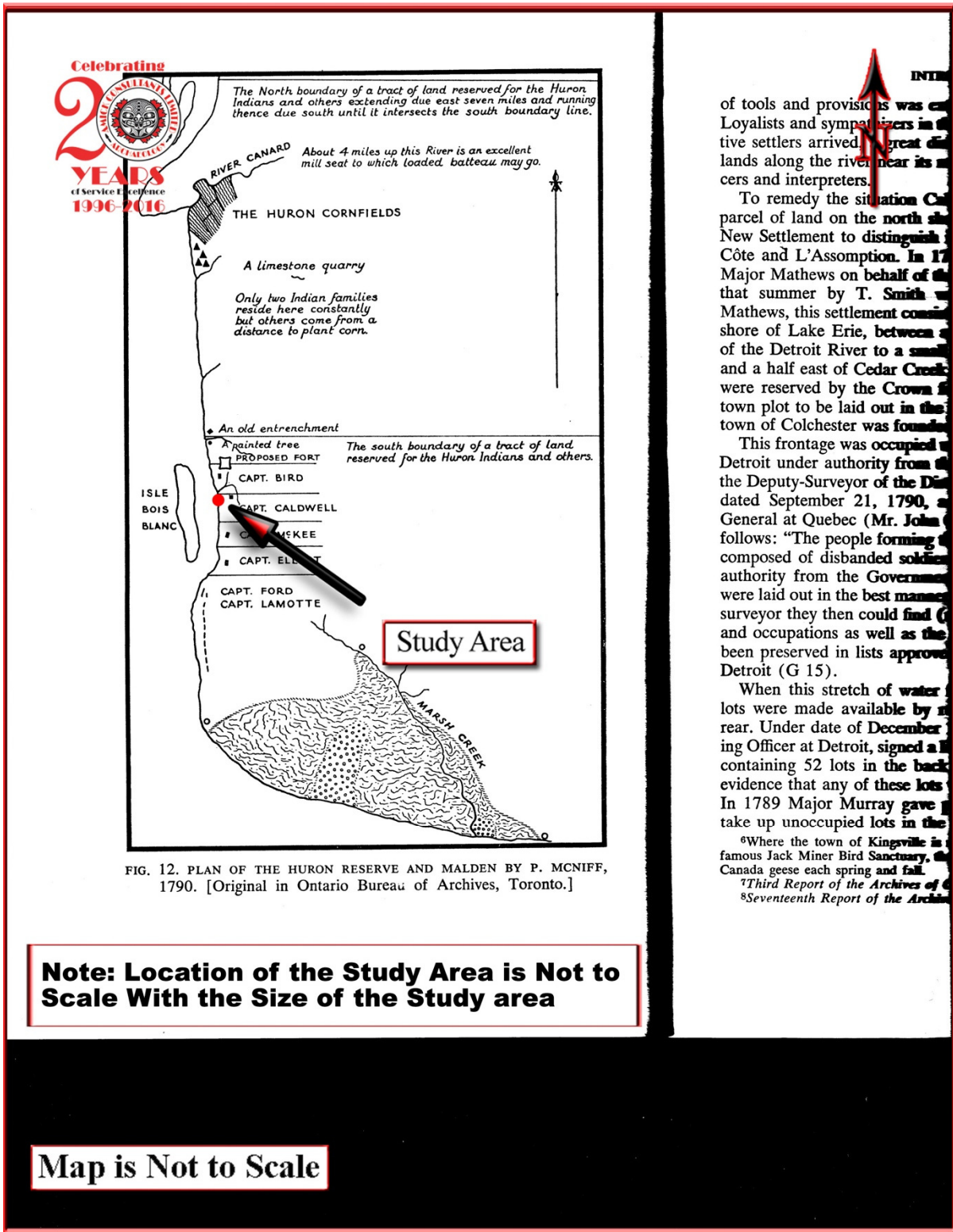


FIG. 12. PLAN OF THE HURON RESERVE AND MALDEN BY P. MCNIFF, 1790. [Original in Ontario Bureau of Archives, Toronto.]

of tools and provisions was... Loyalists and sympathizers in... tive settlers arrived... great dis... lands along the river near its... cers and interpreters.

To remedy the situation... parcel of land on the north... New Settlement to distinguish... Côte and L'Assomption. In 17... Major Mathews on behalf of... that summer by T. Smith... Mathews, this settlement consist... shore of Lake Erie, between... of the Detroit River to a small... and a half east of Cedar Creek... were reserved by the Crown... town plot to be laid out in the... town of Colchester was founded.

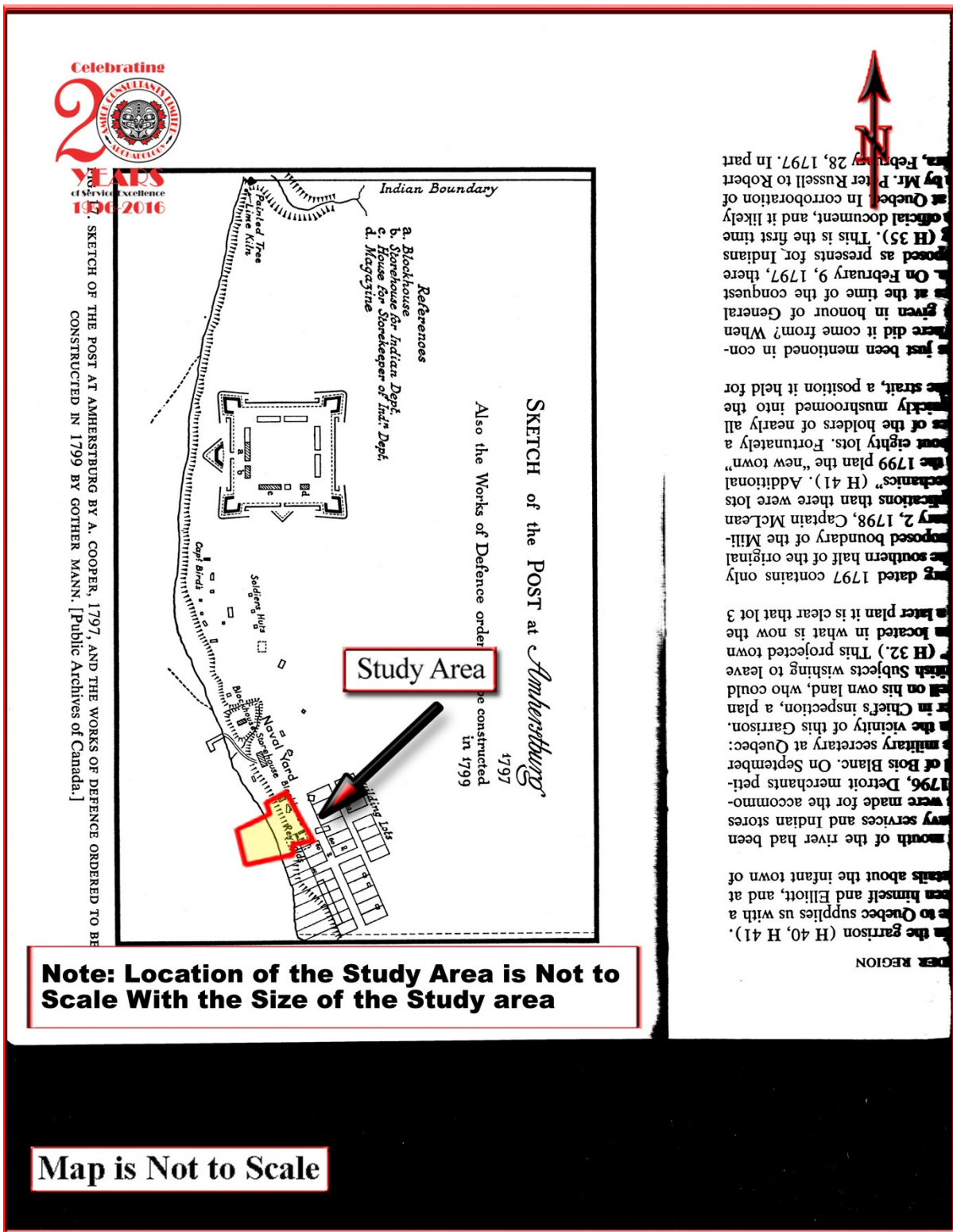
This frontage was occupied... Detroit under authority from... the Deputy-Surveyor of the Dis... dated September 21, 1790, a... General at Quebec (Mr. John... follows: "The people forming... composed of disbanded soldiers... authority from the Government... were laid out in the best manner... surveyor they then could find... and occupations as well as the... been preserved in lists approved... Detroit (G 15).

When this stretch of water... lots were made available by... rear. Under date of December... ing Officer at Detroit, signed a... containing 52 lots in the back... evidence that any of these lots... In 1789 Major Murray gave... take up unoccupied lots in the...

⁶Where the town of Kingsville is... famous Jack Miner Bird Sanctuary, the... Canada geese each spring and fall.

⁷Third Report of the Archives of...
⁸Seventeenth Report of the Archives...

MAP 9 INFERRED LOCATION OF THE STUDY AREA ON A PLAN OF THE HURON RESERVE AND THE TOWNSHIP OF MALDEN FROM 1790 (LAJEUNESSE 1960)



13.0 IMAGES

	
<p>IMAGE 1 DISTURBED AREA (LOCATION OF DEMOLISHED BUILDING)</p>	<p>IMAGE 2 PAVED LOT</p>
	
<p>IMAGE 3 HARBOR AND DETROIT RIVER SHORE</p>	<p>IMAGE 4 DISTURBED AREA (LOCATION OF DEMOLISHED BUILDING)</p>

Section 8:

Geotechnical Report

8.0 Geotechnical Report

This section of the Project File contains the Geotechnical report prepared by Golder Associates.

Conclusions and Recommendations:

- Subsurface Conditions: Boreholes advanced across the site encountered variable fill materials (silty sand, sand and gravel, sandy silty clay) to depths ranging from 0.5m to 4m below grade. Below the fill, the native soils encountered were comprised primarily of cohesive sandy silty clay till.
- Groundwater Quality: Based on the results of the investigations carried out to date, no adverse environmental impacts to on-site groundwater quality have been identified.
- Soil Quality: The impacts to soil quality that have been identified at the site have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.
- Sediment Quality: Based on the results of the sediment sampling, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (1 sample) and toluene (1 sample), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples analyzed.
- Risk Management Measures:
 1. Impacted soil can be addressed through implementation of risk management measures, including construction of a soft cap (i.e. a layer of clean soil) or a hard cap (i.e. pavement) over the site. Any excess soil that would need to be removed from the site would likely be considered 'non-hazardous' and could be disposed of at the local landfill, if necessary.
 2. In the event that dredging of the sediments in the existing marina basin becomes necessary, the sediments would be characterized as 'non-hazardous' and could be disposed of at the local landfill.

Liz Michaud

From: Schroeder, Carl <Carl_Schroeder@golder.com>
Sent: July-31-18 9:20 PM
To: Liz Michaud
Cc: Dan Krutsch
Subject: Email Summary Re: Duffy's, Amherstburg (GAL Ref. 18100361)
Attachments: 18100361-R01001_DRAFT.pdf

Liz,

As discussed, please find below a summary of our findings (high-level) for the Town's property at 290, 296 and 306 Dalhousie Street in Amherstburg. Although you do not need to include it with your Open House, for your reference I have attached a draft Site Plan to illustrate sample locations.

Please let me know if you have any questions / concerns regarding the information below, and/or if you require any additional information. Our geotechnical and environmental reports will both include significantly more detail on the findings.

FYI – I'll be working out of our Windsor office tomorrow (Wednesday), should you wish to reach me.

Much appreciated,

Carl

Objective

- To support Landmark's public communications (i.e., "Open House"), the following summary email provides a high-level factual description of the Site's physical and environmental (soil and sediment quality) characteristics. This email also identifies possible measures that may be employed to manage environmental impacts to on-site soil and sediment quality (i.e., remediation, risk assessment, engineering controls such as capping).

Site Background

- The Subject Property is approximately 120 m by 50 metres in area, and is located on the east shore of the Detroit River (west) in the Town of Amherstburg. Most recently, the Property was operated as a motel and tavern with a marina. Historically (dating back to the early 1900s) the southern and central portions of the Property were associated with a lumber mill operation. Both the motel and tavern buildings were demolished in 2017, and subsurface infrastructure (including a former fuel tank) was removed. The Subject Property is currently vacant, and generally slopes down from the northeast to southwest.
- A total of 15 boreholes have been drilled to assess subsurface conditions at the Subject Property and to facilitate soil sampling. Eight groundwater monitoring wells have also been installed to facilitate monitoring and sampling of groundwater. Limited sediment sampling has also been carried out, with three shallow sediment samples collected from river bed near the docks of the former marina.

Subsurface Conditions

- The boreholes advanced across the Site encountered variable fill material (silty sand, sand and gravel, sandy silty clay) to depths ranging from about 0.5 to 4.0 metres below ground surface, with greater fill thicknesses generally encountered closer to the shore and within the former building footprints. Beneath the fill, the native soils encountered within the Subject Property generally comprised cohesive sandy silty clay till to the maximum depth of the investigation (up to 9.7 metres below ground surface).

- Based on groundwater monitoring carried out to date, groundwater at the Subject Property is expected to range between about 0.3 to 0.5 metres below ground surface (close to the shoreline), to about 1.2 to 1.5 metres below ground surface closer to Dalhousie Street.
- Where sediment samples were collected in 2018, the water was about 2 metres deep, with the river bed about 2.3 to 3.3 metres below the ground surface on the east side of the sea wall.

Soil and Groundwater Quality

- Based on the results of the investigations carried out to date, no environmental impacts to on-site groundwater quality have been identified.
- The impacts to soil quality that have been identified at the Subject Property have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the Site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.

Sediment Quality

- Based on the results of the limited sediment sampling program, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (1 sample) and toluene (1 sample), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples analysis.

Risk Management Measures

- The impacts to soil quality identified at the Subject Property can be addressed through risk assessment and implementation of risk management measures, including construction of a soft cap (e.g., cover the site with a layer of clean soil and landscaping) or hard cap (e.g., pavement), or combination of both. Should any excess soils require removal from the site during future construction, and if they are found to be impacted, they would be characterized as “non-hazardous” wastes and could be disposed of at the local landfill.
- With respect to the quality of the sediments, as sampled in the former marina area, in the event these sediments are dredged or otherwise require removal during future development, the excavated sediments may require landfill disposal (following dewatering); however, the sediments would be characterized as “non-hazardous” wastes and could be disposed of at the local landfill.

Carl Schroeder (M.A.Sc., P.Eng.)

Senior Environmental Engineer



Golder Associates Ltd.

309 Exeter Road, Unit #1, London, Ontario, Canada N6L 1C1

T: +1 519 652 0099 | **D:** +1 519 652-0099 x4130 | **C:** +1 (226) 973-4032 | golder.com

[LinkedIn](#) | [Facebook](#) | [Twitter](#)

Work Safe, Home Safe

This email transmission is confidential and may contain proprietary information for the exclusive use of the intended recipient. Any use, distribution or copying of this transmission, other than by the intended recipient, is strictly prohibited. If you are not the intended recipient, please notify the sender and delete all copies. Electronic media is susceptible to unauthorized modification, deterioration, and incompatibility. Accordingly, the electronic media version of any work product may not be relied upon.

Golder and the G logo are trademarks of Golder Associates Corporation

Please consider the environment before printing this email.

Drawing file: 18100361-R01001.dwg Jul 31, 2018 - 3:09pm 25mm Original Format is Tabloid 279mm x 432mm Client: Corporation of the Town of Amherstburg



LEGEND

- PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE/MONITORING WELL
- [175.94] GROUND SURFACE ELEVATION
- 175.48** MEASURED WATER LEVEL - m amsl (JUNE 19, 2018)
- 174.52** MEASURED WATER LEVEL - m amsl (JULY 10, 2018)
- X BOREHOLE NOT FOUND
- SEDIMENT SAMPLE

REFERENCE

DRAWING BASED ON 2017 AERIAL IMAGERY FROM THE COUNTY OF ESSEX WEB MAPPING SITE, BY PERMISSION; PLAN OF SURVEY, VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC., ONTARIO LAND SURVEYORS; MAY 23 - 2017; AND CANMAP STREETFILES V2008.4.

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.
100 SERIES BOREHOLES DRILLED IN 2016.
200 SERIES BOREHOLES DRILLED IN 2018.
ALL LOCATIONS ARE APPROXIMATE.

PROJECT			
GEO-ENVIRONMENTAL EXPLORATION 290, 296 AND 306 DALHOUSIE STREET AMHERSTBURG, ONTARIO			
TITLE			
SITE PLAN			
	PROJECT No.	18100361	FILE No. 18100361-R01001
	CADD	DH/AS	SCALE AS SHOWN
	CHECK	July 31/18	REV.
			FIGURE 1



REPORT

Geo-Environmental Exploration

290, 296 and 306 Dalhousie Street, Amherstburg, Ontario

Submitted to:

Mr. Mark Galvin

Corporation of the Town of Amherstburg
271 Sandwich Street South
Amherstburg, Ontario N9V 2A5

Submitted by:

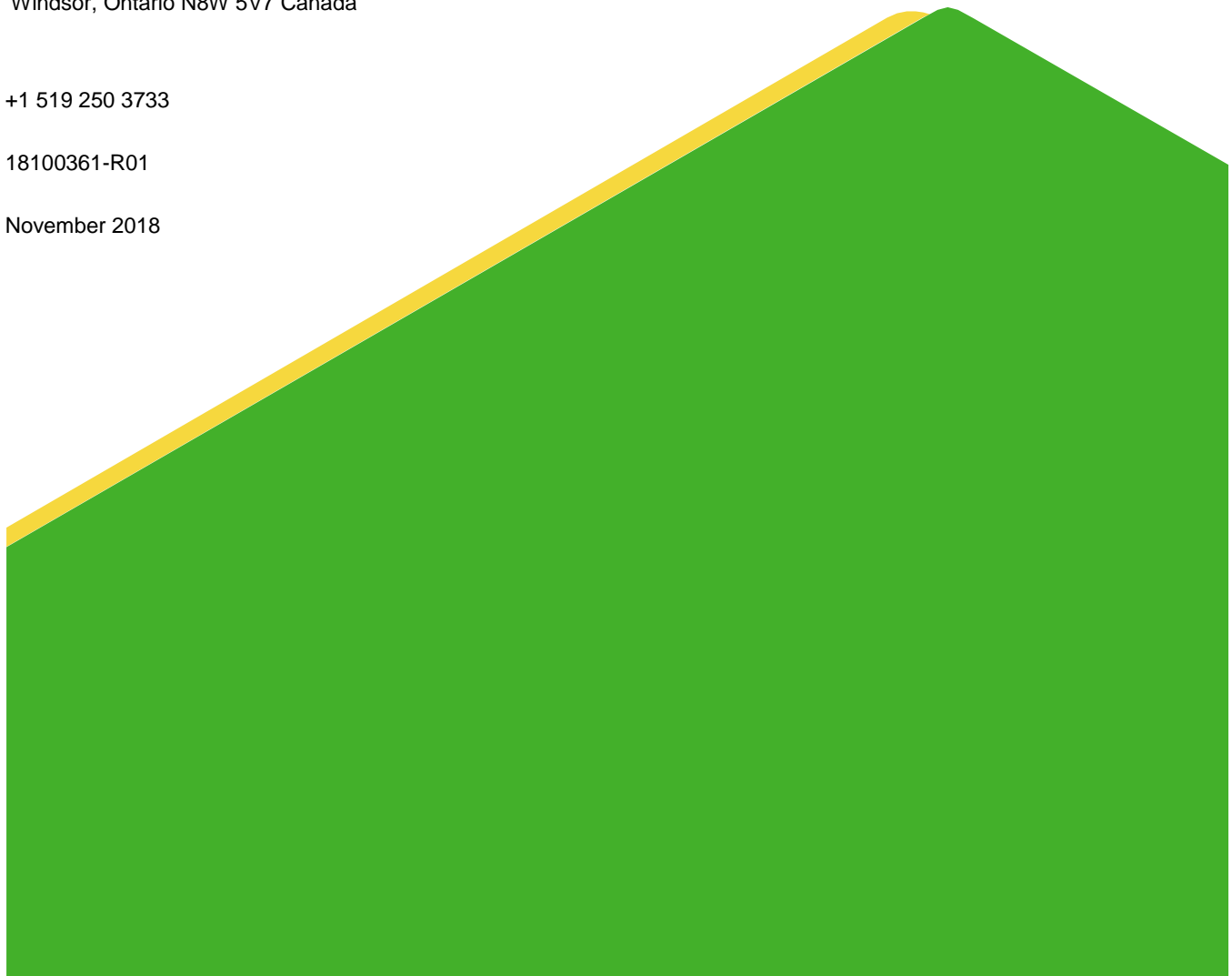
Golder Associates Ltd.

1825 Provincial Road
Windsor, Ontario N8W 5V7 Canada

+1 519 250 3733

18100361-R01

November 2018



Distribution List

1 E-Copy: Corporation of the Town of Amherstburg

1 E-Copy: Landmark Engineers Inc.

1 E-Copy: Golder

Table of Contents

1.0 INTRODUCTION.....	1
2.0 SITE DESCRIPTION AND GEOLOGY.....	1
3.0 PROCEDURE.....	2
4.0 SUBSURFACE CONDITIONS.....	3
4.1 General.....	3
4.2 Soil Conditions	3
4.2.1 Asphaltic Concrete and Topsoil	3
4.2.2 Fill.....	3
4.2.3 Sand.....	3
4.2.4 Silty Clay Till.....	4
4.2.5 Previous Boreholes	4
4.3 Groundwater.....	4
5.0 DISCUSSION	5
5.1 Foundations.....	5
5.2 Seismic Site Classification and Seismic Hazard Values.....	6
5.3 Slabs-on-Grade	6
5.4 Excavations	7
5.4.1 Construction Considerations.....	7
5.4.2 Dewatering Considerations.....	8
5.5 General Backfill	8
5.5.1 Pipe Bedding and Backfill	8
5.5.2 Trench Backfill.....	9
5.6 Pavements	9
6.0 SEAWALL CONSIDERATIONS	10
6.1 Lateral Earth Pressures	10
7.0 GEOTECHNICAL INSPECTIONS AND TESTING.....	12

FIGURES

Figure 1: Site Plan

Figure 2: Grain Size Distribution

Figure 3: Plasticity Chart

APPENDICES

APPENDIX A

Record of Borehole Sheets (Golder Project 1665363)

1.0 INTRODUCTION

This draft report presents the results of the geotechnical portion of the geo-environmental exploration conducted for the subject site located at 290, 296 and 306 Dalhousie Street as well as the municipal right-of-way from Dalhousie Street to the Detroit River in Amherstburg, Ontario (the “Site”). The layout of the Site is shown on Figure 1.

Demolition of the previously existing commercial buildings (as shown on the aerial photograph included with Figure 1) was recently carried out (by others) in 2017. It is understood that the Town of Amherstburg (the “Town”) intends to redevelop the Site as parkland and/or outdoor community space that may include a marina, amphitheatre and public gathering greenspaces. It is also understood that improvements to the sea wall may be carried out that may warrant targeted dredging of existing sediments. There is currently no definitive plan for the proposed redevelopment of the Site and therefore information concerning proposed grades, building types, bearing depths and utility locations, was not available at the time of preparation of this report.

Landmark Engineers Inc. (“Landmark”) has been engaged by the Town to complete an Environmental Assessment (EA) of the Site to support its proposed development. On behalf of the Town, Landmark has requested this exploration to support their EA, and overall development planning. The drilling program described herein was carried out in conjunction with an environmental investigation, on behalf of the Town (Golder project reference 1665363). The geotechnical component of the subsurface exploration was conducted to assess the subsurface soil and groundwater conditions at the subject site and provide preliminary geotechnical engineering recommendations for the potential future redevelopment.

This report should be read in conjunction with the attached document “Important Information and Limitations of This Report”, which comprises an integral component hereof. The reader’s attention is specifically drawn to this material, as it is essential for the proper use and interpretation of the information presented and discussed herein.

2.0 SITE DESCRIPTION AND GEOLOGY

The project area is located in the physiographic region of Southwestern Ontario known as the St. Clair Clay Plains. Within this region, Essex County and the southwestern part of Kent County are normally discussed as a sub-region known as the Essex Clay Plain. The clay plain was deposited during the retreat of ice sheets (late Pleistocene Era) when a series of glacial lakes inundated the area. In general, the ice sheets deposited materials with a glacial-till-like gradation in the area of Windsor. Depending on the locations of the glacial ice sheets and depths of water in the ice-contact glacial lakes, the materials may have been directly deposited at the contact between the ice sheet and the bedrock or, as the lake levels rose and the ice sheets retreated and floated, the soil and rock debris within and at the base of the ice were deposited through the lake water (glaciolacustrine depositional environment). The term “glacial till”, in its common usage, often indicates a very dense or hard composition resulting from consolidation and densification under the weight of the ice sheet and the mineral soil particles typically have a distribution of grain sizes ranging from cobbles to clay. In many areas of Essex and Kent Counties, however, the majority of the soils described as “glacial till” were deposited through water and have a soft to firm consistency below an upper “crust” that has since become stiff to hard through weathering and desiccation.

3.0 PROCEDURE

The field work for this phase of the exploration work was carried out on June 18 and 19, 2018 at which time eight boreholes (designated as BH-201 to BH-208) were advanced to depths ranging from about 4.6 metres (m) to 9.7 m below the existing ground surface. It should be noted that on behalf of the Town, Golder carried out a previous environmental exploration at the Site in November 2016, at which time seven boreholes (designated as BH-101 to BH-107) were advanced to depths ranging from 3.7 m to 4.6 m below the existing ground surface (Golder project reference 1665363). All borehole locations are shown on Figure 1. The subsurface conditions encountered in the 2016 and 2018 exploration activities are shown on the Record of Borehole sheets in Appendix A.

The 200-series boreholes were advanced using a rubber track-mounted Geoprobe™ 7822DT drill rig equipped with both a hydraulic percussion hammer and hollow-stem augers to facilitate continuous sampling of subsurface materials from the ground surface to the depth explored.

Standard penetration testing and sampling was carried out in all 200-series boreholes with the exception of boreholes BH-201 and BH-205 where continuous soil core samples were obtained via direct push, dual-tube sampling. A single standard penetration test was conducted, and a sample collected, from the lower 0.6 m of BH-201. Standard penetration testing and sampling was conducted using a 38 millimeter (mm) inside diameter split spoon sampling equipment and an automatic hammer, in accordance with ASTM D 1586 “Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils”. According to ASTM D1586, the SPT resistance, or N value, is defined as the number of blows required by a 63.5-kilogram hammer dropped from a height of 760 mm to drive a split-spoon sampler a distance of 300 mm, after an initial 150 mm of penetration. The soil stratigraphy encountered in the boreholes is shown in detail on the Record of Borehole sheets in Appendix A.

With the exception of the lower 0.6 m of BH-201, boreholes BH-201 and BH-205 were sampled using the direct push soil sampling methodology in which the rig advanced a dual-tube sampler comprised of two nested casings, an outer 83-mm outside diameter (OD) steel casing, and an inner 60-mm diameter sample sheath lined with a disposable PVC liner to contain the sample and prevent cross contamination between samples. Using this sampling system, soil samples were collected in 1.5 m long, PVC sampling tubes at continuous intervals over the full depth of each borehole.

All of the samples obtained during the exploration were brought to Golder's Windsor laboratory for further examination and representative classification testing. Soil samples were logged in the field for observations of potential chemical impacts (e.g. odours, staining). Samples were subsequently placed in 1-litre sealable plastic bags. The results of the field and geotechnical laboratory testing are shown on the Record of Borehole sheets and on Figures 2 and 3.

Groundwater seepage levels were observed in the boreholes during drilling as detailed on the Record of Borehole sheets. Upon completion of sampling and in situ testing, the boreholes were loosely backfilled with bentonite in accordance with Ontario Regulation 903, as amended. Following drilling and sampling, 50-mm diameter monitoring wells were installed in BH-201, BH-202, BH-204, BH-205 and BH-206.

The borehole locations were designated in the field by members of our engineering staff who also arranged for underground utility clearances, supervised the drilling, sampling and standard penetration testing, logged the boreholes, and cared for the samples obtained. The ground surface elevations at the borehole locations were also surveyed by Golder staff, using a temporary benchmark indicated to be the top bolt of a fire hydrant located along Dalhousie Street and shown on Figure 1, with a reported top of casing elevation of 179.18 m. As noted on

Figure 1, the surveyed ground surface elevations at boreholes BH-201 to BH-208 were found to range from 175.32 m to 178.26 m.

4.0 SUBSURFACE CONDITIONS

4.1 General

The subsurface conditions encountered in the boreholes advanced at the site are shown on the Record of Borehole sheets (Appendix A). The following paragraphs have been simplified in terms of major soil strata for the purposes of preliminary geotechnical design. The soil boundaries indicated have been largely inferred from non-continuous samples and observations of sampling and drilling resistance and typically represent transitions from one soil type to another rather than exact planes of geological change. Further, the subsurface conditions will vary between and beyond the borehole locations.

4.2 Soil Conditions

4.2.1 Asphaltic Concrete and Topsoil

Asphalt was encountered at the ground surface in boreholes BH-203, BH-204 and BH-208. The thickness of the asphalt was observed to range from about 25 to 100 mm, with an average thickness of about 60 mm at the borehole locations. The noted thicknesses are specific to the borehole locations and variations in asphalt thickness should be anticipated in other areas of the site.

A thin layer of topsoil with a thickness of approximately 10 mm was encountered at the ground surface in BH-205. The noted thickness is specific to the borehole location and variations in topsoil thickness should be anticipated in other areas of the site. Materials designated as topsoil in this report were classified based solely on visual and textural evidence. Testing of organic content, pH, alkalinity, acidity or for other nutrients was not carried out. Accordingly, materials classified herein as topsoil cannot necessarily be relied upon for support and growth of landscaping vegetation without supplementary soil fertility testing.

4.2.2 Fill

Fill, which varied from sandy silty clay to sand and gravel, was encountered in all boreholes. The fill materials were encountered at the ground surface in BH-201, BH-202, BH-206 and BH-208; underlying the topsoil in BH-205; and underlying the asphalt in BH-203, BH-204 and BH-208. The fill thickness ranged from approximately 0.6 to 3.9 m. It should be noted that, in many areas, the fill was observed to contain pieces of wood, brick, plastic and other deleterious materials, and it should be anticipated that, due to the previous demolition work on the site, fill will be encountered to various depths throughout the site. The non-cohesive fill soils were classified as very loose to compact with measured 'N' values ranging from the static weight of the sampling hammer to 14 blows per 0.3 m, while the cohesive fill soils were found to have a very soft to hard consistency with measured 'N' values obtained ranging from the static weight of the sampling hammer to 32 blows per 0.3 m. The water content of the fill materials ranged from about 5 to 74 per cent.

4.2.3 Sand

A layer of grey sand soil was encountered underlying the fill materials in BH-203. The sand was observed to have a thickness of approximately 0.4 m at the borehole location. The sand was classified as very loose with a measured 'N' value of 2 blows per 0.3 m. The water content of the sand was measured to be about 27 per cent.

4.2.4 Silty Clay Till

Silty clay to sandy silty clay till soils were encountered underlying the fill in all boreholes, with the exception of BH-203 in which the sandy silty clay till was encountered underlying a layer of sand. The silty clay/sandy silty clay till was observed to range from brown to grey in colour and extended to the termination depth of the boreholes. The silty clay/sandy silty clay till had a very soft to hard consistency with measured 'N' values obtained ranging from 1 blow per 0.3 m to refusal (>50 blows per 0.15 m). The water content of the silty clay/sandy silty clay till ranged from about 5 to 38 per cent. Atterberg limits testing conducted on a sample of the sandy silty clay till yielded a liquid limit of about 28 per cent and a plasticity index of about 11 per cent, indicating an inorganic silty clay of low plasticity. The results of the Atterberg limits testing are shown on Figure 3.

4.2.5 Previous Boreholes

As noted, an exploration was conducted for the Town at the subject site in November 2016 for environmental due diligence prior to the demolition work. At that time seven boreholes (designated as BH-101 to BH-107) were advanced to depths ranging from 3.7 m to 4.6 m below the existing ground surface. Since the previous work focused on environmental conditions, standard penetration testing was not conducted (all samples were collected using soil cores). In general, the subsurface conditions encountered during the 2016 exploration were found to be consistent with those encountered during the 2018 exploration.

4.3 Groundwater

Groundwater seepage conditions were observed in the boreholes during drilling as shown on the Record of Borehole sheets. Groundwater levels were subsequently measured on July 10, 2018 and August 9, 2018 in the monitoring wells installed during the June 2018 drilling program. The groundwater elevations in the monitoring wells were found to range from approximately 174.33 m to 174.90 m with depths ranging from approximately 0.53 m to 3.93 m below the existing ground surface. The corresponding river water level was found to be 174.85 m.

Borehole ID	Approximate Ground Surface Elevation (m)	Approximate Top of Pipe Elevation (m)	Approximate Ground Water Level Elevation (m)	Approximate Ground Water Level Below the Existing Ground Surface (m)
BH-201	177.36	178.27	174.52 ¹ /175.29 ²	2.84 ¹ /2.07 ²
BH-202	178.26	179.22	174.33 ¹ /175.96 ²	3.93 ¹ /2.30 ²
BH-203	176.15	-	-	-
BH-204	175.94	175.84	174.77 ¹ /174.93 ²	1.17 ¹ /1.01 ²
BH-205	175.32	176.31	174.79 ¹ /174.93 ²	0.53 ¹ /0.39 ²
BH-206	175.53	176.47	174.90 ¹ /174.91 ²	0.63 ¹ /0.62 ²
BH-207	176.08	-	-	-

Borehole ID	Approximate Ground Surface Elevation (m)	Approximate Top of Pipe Elevation (m)	Approximate Ground Water Level Elevation (m)	Approximate Ground Water Level Below the Existing Ground Surface (m)
BH-208	176.16	-	-	-

¹ – Indicates water level information obtained on July 10, 2018

² – Indicates water level information obtained on August 9, 2018

Based on the stratigraphy encountered in the boreholes, there is the potential for perched groundwater to be encountered at the interface between the fill and the underlying silty clay/sandy silty clay till.

It should be noted that groundwater conditions are generally dependent on the amount of precipitation, site grading and other measures in place to control surface water drainage, as well as the time of year, and can fluctuate significantly in elevation over time.

5.0 DISCUSSION

The purpose of the exploration and testing program was to evaluate the subsurface soil and groundwater conditions at the site and to provide preliminary geotechnical engineering recommendations for future redevelopment which may take place on the site.

This section of the report provides our interpretation of the factual geotechnical data obtained during the exploration and testing program and is intended for the guidance of the design engineer. Where comments are made on construction, they are provided only to highlight those aspects which could affect the design of the project. Contractors bidding on or undertaking the work should make their own independent interpretation of the factual subsurface information provided as it affects their proposed construction means and methods, equipment selection, scheduling and the like.

This report addresses only the geotechnical (physical) aspects of the subsurface conditions at this site. The environmental (chemical) aspects are discussed in a separate report.

5.1 Foundations

Based on the conditions encountered in boreholes advanced at the subject site, any proposed structures may be founded on conventional spread and/or strip footings bearing on the undisturbed sandy silty clay till, below the depth of roots and organics. The footings must fully penetrate all topsoil or fill materials to bear on undisturbed native materials. In general, a factored geotechnical resistance at the Ultimate Limit State (ULS) of 225 kilopascals (kPa) and a geotechnical reaction at the Serviceability Limit State (SLS) of 150 kPa may be used based on a minimum footing width of 600 mm. It should be noted that, in the area of BH-204, unsuitable native soils containing organics, roots and rootlets extended to a depth of about 4.0 metres. The foundation excavations should be inspected by the geotechnical engineer prior to placing concrete. It would be recommended that, once the redevelopment plans are finalized, a design specific supplementary geotechnical exploration be undertaken to confirm the recommendations in this report.

Should the footings need to be lowered in any areas to address the presence of fill materials or unsuitable native soils, the excavated materials may be replaced with lean concrete fill or Ontario Provincial Standard Specifications (OPSS) Granular 'A' engineered fill. All engineered fill should extend laterally beyond the footings a distance equal to the depth of the fill plus 1.0 m. All engineered fill beneath foundations should be placed in maximum 300 mm thick loose lifts and compacted to 100 per cent of standard proctor maximum dry density (SPMDD).

To address potential damage due to frost action, all exterior footings and footings in unheated areas should be provided with at least 1.2 m of soil cover or thermal equivalent after final grading. Should the construction be carried out in the winter months, care should be taken to prevent the penetration of frost beneath the partially completed structure.

5.2 Seismic Site Classification and Seismic Hazard Values

Site Class D is considered appropriate for seismic design purposes for structures founded on the native soils, based on the results of the geotechnical exploration and our geotechnical experience in the area. The site classification for seismic response presented in Table 4.1.8.4 of the 2012 Ontario Building Code relates to the average properties of the upper 30 m of supporting strata. The information obtained in the geotechnical field exploration was gathered from the upper 4.6 m to 9.7 m.

Mean seismic hazard values were determined for the 2 per cent in 50-year (0.000404 per annum) probability of exceedance for the standard base condition assuming "firm ground" (NBCC 2015 Soil Class C, average V_{s30} shear wave velocity 450 m/s). The 5 per cent damped spectral acceleration (S_a) values for the location of the site (as multiples of gravitational acceleration, 9.81 m/s^2) are: $S_a(0.2) = 0.102$; $S_a(0.5) = 0.065$; $S_a(1.0) = 0.036$; and $S_a(2) = 0.017$. The peak ground acceleration (PGA) value for the site is 0.60 m/s^2 with a peak ground velocity (PGV) of 0.49 m/s . Acceleration-based (F_a) and velocity-based (F_v) site coefficients of 1.3 and 1.4, respectively, should be applied to account for the Site Class D designation.

5.3 Slabs-on-Grade

Following removal of all topsoil, fill materials and any excessively soft or deleterious materials, the area beneath any slabs-on-grade should be proofrolled using a static roller under the direction of the geotechnical engineer. Any soft or poorly performing areas identified during the proofrolling activities should be subexcavated, removed, and replaced with approved, well compacted OPSS Granular 'A'.

Sound construction practice dictates the subexcavation of all existing fill material below any proposed slabs-on-grade. However, if it is not financially viable to subexcavate the full extent of the fill during the work due to depth or amount of fill soils, then it is recommended to subexcavate a minimum of 1 m below the proposed slab-on-grade base, proofroll the area, and then raise the area using compacted OPSS Granular 'A'. Should the proofrolling show that the fill material is unsuitable for support of the proposed slab(s) then additional subexcavation or soil stabilization utilizing geosynthetic reinforcement may be required.

Final construction should consist of at least 150 mm of OPSS Granular 'A' compacted to 100 per cent of SPMDD. Unless uncontrolled migration of water vapour through the slab is considered to be acceptable, a robust polyethylene vapour barrier should be provided between the underside of the concrete slab and the Granular 'A'. The floor slab should be kept structurally separate from the walls and columns with saw cut crack control joints provided at regular intervals.

For exterior concrete pavements or slabs-on-grade (sidewalks, accessibility ramps and exterior stairs), the subgrade should be prepared as described above. The slabs should then be constructed with a Granular 'A' base with a minimum thickness of 150 mm, uniformly compacted to 100 percent of SPMDD.

Perforated sub-drains should be included at regular intervals beneath any slabs, placed at the subgrade elevation and bedded in a properly graded granular material. The subgrade surface should be properly shaped and graded to provide positive drainage to the sub-drains and catch basins and reduce the effects of frost heaving.

5.4 Excavations

Details regarding any proposed structure foundations (locations, widths, depths, etc.) or site servicing (types, depths, etc.) were not available at the time this report was prepared.

Based on the results of the field work and laboratory testing, excavations for foundation construction and service installations will likely encounter the existing surficial topsoil and fill, sand, and silty clay/sandy silty clay till. All excavations should be conducted in accordance with current Occupational Health and Safety Act (OHSA) provisions, and in particular, OHSA Regulation 213/91, which specifically addresses Construction Projects.

All native undisturbed sand and silty clay till soils, as well as any fill soils encountered above the groundwater level would be classified as Type 3 soils based on the OHSA criteria. For OHSA compliance, all unsupported excavations in Type 3 soils should cut with side slopes inclined not steeper than a gradient of 1 horizontal to 1 vertical with the sloped cut extending outward from the base of the excavation. All wet or saturated soils would be classified as Type 4 soils and unsupported excavations in those materials must be sloped from the bottom of the excavation at a minimum gradient of 3 horizontal to 1 vertical for OHSA compliance.

5.4.1 Construction Considerations

Sloughing and/or caving of unsupported excavation walls should be anticipated within the fill materials. Localized flattening and/or blanketing with coarse free-draining granular material may be required to enhance stability.

Care should be taken during construction to avoid disturbance of the founding soils. All existing fill, topsoil, organics, and any soft, excessively wet, or loose soils should be stripped from the proposed founding areas prior to placement of concrete. The foundation formwork and concrete should be installed as soon as practical following the excavation, inspection and approval of the founding soils. If it is expected that the founding soils will be left open to exposure for an extended period of time, it is recommended that a 75-mm thick lean concrete working mat be placed to protect the structural integrity of the founding soils.

Should trench liner boxes be used to reduce the lateral extent of the excavations, it should be noted that the box only provides protection for the workmen once in place. The liner box does not restrict movement of the excavation walls or prevent granular soils from flowing under the influence of groundwater. Adequate groundwater control should be provided and any voids between the excavation wall and the trench liner box should be filled immediately to reduce the potential for loss of ground and support of adjacent utilities, roadway pavements, completed works, and the like. Furthermore, it is suggested that the trench excavation be carried out in short sections with the support system installed immediately upon completion of excavation.

Care will be required to ensure that adequate support is provided for any existing utilities located within the zone of influence of the excavations as defined by a line drawn upwards and outwards from the base of the excavation at an inclination of 1 horizontal to 1 vertical.

5.4.2 Dewatering Considerations

As discussed above in Section 4.3, based on the stratigraphy encountered in the boreholes, there is the potential for perched groundwater to be encountered at the interface between the fill and the underlying cohesive soils. It is anticipated that groundwater seepage encountered on this site can be managed, as required, by pumping from properly constructed and filtered sumps located in the base of the excavation(s) and outside of the bearing areas of any footings.

Collected water should discharge a sufficient distance away from excavations to prevent re-entry. Sediment control measures should be installed at the discharge point of the dewatering system to avoid potential adverse impacts on the environment.

Surface water should be directed away from all open excavations.

5.5 General Backfill

Any existing topsoil, organics, wet, or deleterious fill materials excavated from the site are not considered suitable as general backfill.

Approved native soils excavated at the site during construction are generally considered to be suitable for reuse as backfill from a geotechnical perspective. All backfill material should be at suitable moisture contents to achieve the specified degree of field compaction. Materials should not be considered acceptable as trench backfill when the placement water content exceeds the optimum water content (as determined by the standard Proctor compaction test ASTM D698) by more than about 2 to 3 per cent. Further, material that is more than 3 per cent dry of the optimum water content should be wetted during compaction to limit post construction settlement, or should not be used.

In general, the native soils are cohesive in nature. When cohesive soils are used as backfill, it is essential that the material be broken down and compacted thoroughly to reduce voids and the potential for settlement. Should very moist to wet soils be encountered during excavation, these soils will require extensive air-drying to achieve the specified field compaction. If time constraints do not permit for air-drying of soils, they will have to be disposed of properly off-site and replaced with a suitable approved alternative.

General backfill material should be placed in loose lifts not exceeding a maximum thickness of 300 mm for granular soils and 200 mm for the native silty clay till and compacted to a minimum of 95 per cent of SPMDD. Where backfill comprises the subgrade for proposed pavements, the upper 1 m should be compacted to 98 per cent of SPMDD.

5.5.1 Pipe Bedding and Backfill

The undisturbed native silty clay/sandy silty clay till soils encountered during the exploration are generally considered suitable for indirect support of the site service pipes. Bedding material for any services should consist of properly graded granular material consistent with the type, size and class of pipe and current municipal standards. The bedding should extend from 150 mm below the pipe invert to at least 300 mm above the pipe obvert. The granular bedding material should be placed in loose lifts with a maximum thickness of 300 mm and uniformly compacted to at least 95 per cent of the SPMDD. Hand tamping around the pipe may be required to ensure that no voids are present below the spring line of the pipe.

It is also important to provide well compacted granular bedding within the approach zone of the pipe(s) at any manholes. In general, the use of material known locally as “graded clear stone” might be considered for pipe bedding up to the spring line of the pipes; however, in general, such “clear stone” should not be used without the corresponding use of a non-woven geotextile filter fabric completely encapsulating the stone. Otherwise, the native fine-grained soils can soften over time as a result of water within the stone void spaces, saturating the surrounding clay and allowing deformation and migration of the native soils into this void space.

Granular materials used for pipe bedding can create subsurface reservoirs or conduits for the accumulation and flow of water and if such flow is not acceptable, low-permeability trench plugs around the utilities may be required. Should localized wet conditions be encountered at the base of the trench, it may be necessary to increase the thickness of the granular material at the base of the excavation to provide adequate pipe support. Should a trench support system be utilized, care should be taken when removing the support system to not disturb and destabilize the compacted bedding material.

5.5.2 Trench Backfill

Approved native soils excavated at the site during construction are generally considered to be suitable for reuse as backfill for the service trenches from the top of the pipe bedding to the subgrade elevation, provided that all deleterious material such as topsoil or excessively wet materials are removed. Backfill material should be at suitable moisture contents to achieve the specified degree of field compaction. Materials should not be considered acceptable as trench backfill when the placement water content exceeds the optimum water content (as determined by the standard Proctor compaction test: ASTM D698) by more than about 2 to 3 per cent. Further, material that is more than 3 per cent dry of the optimum water content should be wetted during compaction to reduce post construction settlements, or should not be used.

Care will be required to ensure that sufficient effort and workmanship are put into placement and compaction of the trench backfill to reduce settlement, especially if a trench liner box is used. The general trench backfill should be placed in maximum 300 mm thick lifts and uniformly compacted to at least 95 per cent of SPMDD. The upper one m of the backfill, should it form pavement subgrade, should be placed in maximum 200 mm lifts and uniformly compacted to at least 98 per cent of SPMDD.

5.6 Pavements

It is anticipated that any pavements associated with development on this site would be expected to accommodate mostly personal vehicles with only occasional heavily-loaded vehicles (garbage trucks, snow removal and maintenance vehicles). Following excavation to the proposed subgrade level and the removal of any topsoil, fill, or other deleterious materials, the subgrade should be proofrolled under the direction of the geotechnical engineer. Any poorly performing areas identified should be subexcavated and reinstated with OPSS Granular ‘A’ uniformly compacted in maximum 300 mm thick lifts to at least 98 per cent of SPMDD. The pavement structure should consist of the following components placed on a competent, properly shaped and prepared subgrade:

Component	Thickness (mm)
HL 3 Surface Asphalt	50
HL 8 Binder Asphalt	65

Component	Thickness (mm)
Granular 'A' Base	300

The Granular 'A' base should be uniformly compacted to at least 100 per cent of SPMDD. The asphalt should be produced, placed and compacted in accordance with the current OPSS specifications for pavements. Milled notches 50 mm deep by 500 mm wide should be provided where new construction abuts any existing pavements and care should be taken to properly tack coat all milled surfaces and butt joints. The asphalt should be produced, placed, and compacted in accordance with the current OPSS requirements. Positive drainage of the pavement structure is critical to ensure long-term performance. Perforated, filtered stub drains should be provided at the subgrade level at all catch basin locations.

Construction activities should be coordinated to limit the amount of construction traffic over the exposed subgrade soils and to reduce the impact of construction and/or through traffic on the pavement granular materials and placement of the asphaltic materials.

6.0 SEAWALL CONSIDERATIONS

Based on information provided by Landmark¹, on behalf of the Town, it is understood that improvements proposed as part of the redevelopment of this site will include a new armour rock shoreline to be constructed in front of the existing seawall (which will be cut down below the proposed final site grades) as well as a section of new sheet pile wall to be installed around a proposed building location (identified as "Building 1").

Based on the results of the geotechnical exploration, the construction of the armour rock shoreline is considered conceptually feasible, but some supplemental exploration and testing will be required to provide recommendations for a geotextile separation layer between the armour rock and the underlying sediment to address the migration of fines into the voids between the armour stone blocks and the resulting settlement of the armour stone over time. Similarly, additional site-specific exploration would be required to provide recommendations for the design and construction of the new section of sheet pile wall around proposed Building 1. Based on the additional exploration, recommendations would be provided for the depth of embedment, anchors (if proposed), "deadman" capacities, and the required section modulus for the sheet piles for a cantilevered wall and an anchored wall. General design recommendations are presented below.

6.1 Lateral Earth Pressures

The lateral pressures acting on the seawall structures will depend on the type and method of placement of the backfill materials, on the nature of the soils behind the backfill, on the freedom of lateral movement of the structure and on the drainage conditions behind the walls. The following preliminary recommendations are made concerning the design of the seawall structure:

- Select, free-draining granular fill meeting the specifications of OPSS Granular 'A' or Granular 'B', Type II or III (with less than 5 per cent passing the No. 200 sieve) should be used as backfill behind the and walls. This fill

¹ November 16, 2018 email from Landmark, including preferred shoreline improvements.

should be compacted in loose lifts not greater than 200 mm in thickness in accordance with SP 105S10. Longitudinal drains and weep holes should be installed to provide positive drainage of the granular backfill.

- A compaction surcharge equal to 12 kilopascals (kPa) should be included in the lateral earth pressures for the structural design.
- For restrained cases, the pressures are based on the existing fill materials and native soils and the following parameters (unfactored) may be used:

	Existing Site Soils
Soil unit weight:	19 kN/m ³
Coefficients of lateral earth pressure:	
Active, K_a	0.33
At rest, K_o	0.55
Passive, K_p	3.0

- For unrestrained cases, the pressures are based on the granular fill as placed and the following parameters (unfactored) may be assumed:

	OPSS GRANULAR 'A'	OPSS GRANULAR 'B', (Type II or III)
Soil unit weight:	22 kN/m ³	21 kN/m ³
Coefficients of lateral earth pressure:		
Active, K_a	0.27	0.31
At rest, K_o	0.43	0.47

- If the sea wall support and superstructure allow lateral yielding of the stem, active earth pressures may be used in the geotechnical design of the structure. If the wall support does not allow lateral yielding, at-rest earth pressures should be assumed for geotechnical design.

It should be noted that the above design parameters assume level backfill and ground surface behind the wall. The lateral earth pressure coefficients should be adjusted if there is sloping ground at the back of the wall.

7.0 GEOTECHNICAL INSPECTIONS AND TESTING

After final design and once construction commences, a regular program of geotechnical inspections and testing should be carried out during construction to confirm that the conditions encountered are consistent with the results of the boreholes, to ensure that the intent of the design recommendations provided are being met, and that the various project and material specifications are being consistently achieved. Further, submissions of the contractor's proposed excavation methodology, dewatering controls, and excavation support systems should be reviewed by the geotechnical engineer. It is recommended that a supplementary geotechnical exploration be undertaken when additional details concerning the proposed redevelopment are available to provide more detailed project-specific geotechnical recommendations.

The factual data, interpretation, and recommendations in this report pertain to a specific project as described in this report and are not applicable to any other project or site location. If the project is modified in concept, location or elevation, deviates from the assumption stated herein, or if the project is not initiated within twelve months of the date of the report, Golder Associates Ltd. should be given an opportunity to confirm that the recommendations are still valid. The subject geotechnical exploration and this report address only the geotechnical aspects of the proposed project; potential environmental impacts or related issues are beyond the defined scope of this work and are addressed in a separate report.

Signature Page

Golder Associates Ltd.



Nathan Chortos, P.Eng.
Geotechnical Engineer

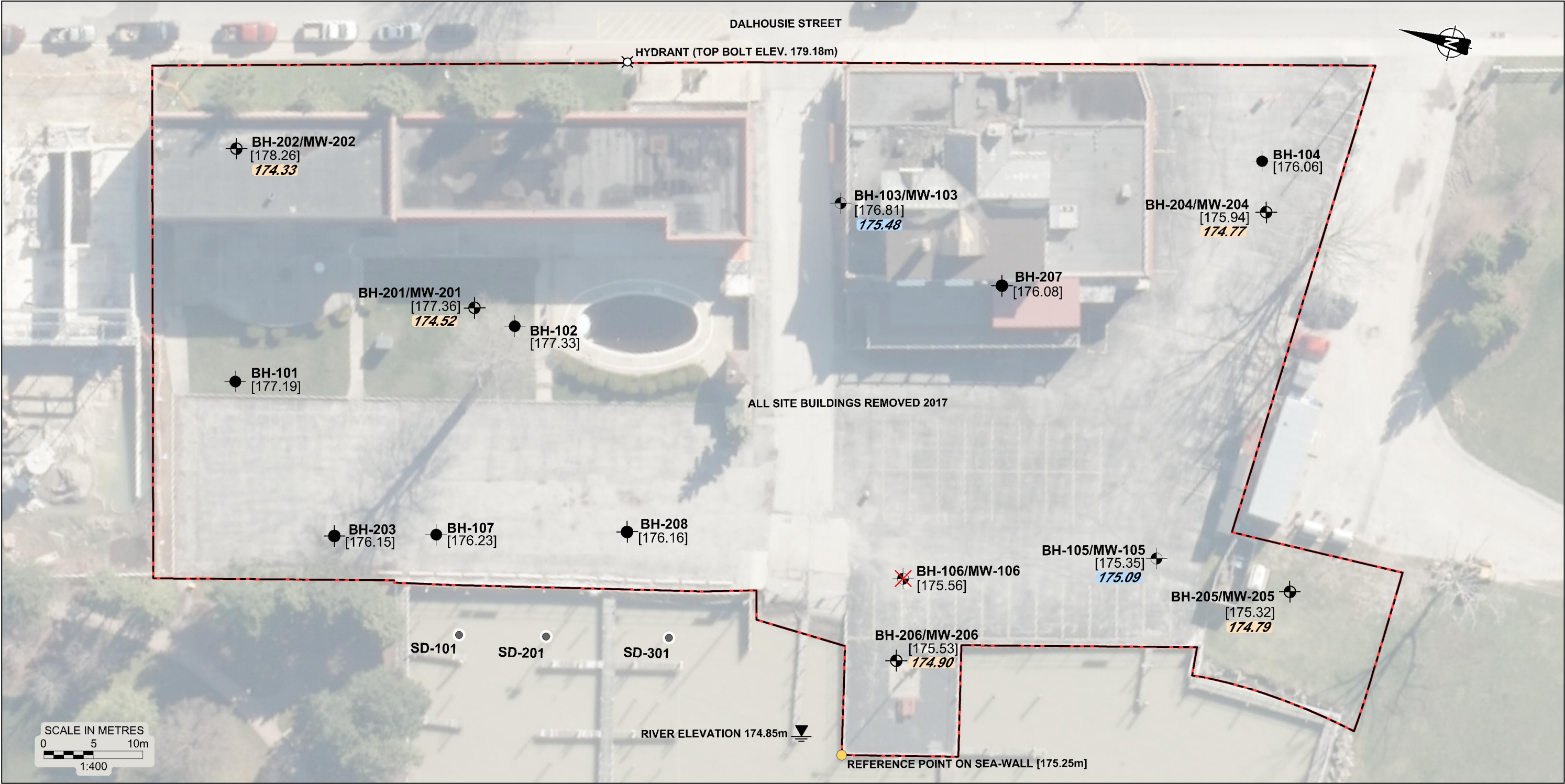
Mark A. Swallow, P.E., P.Eng.
Principal and Senior Practice Leader

NC/MAS/cr/ly

Golder and the G logo are trademarks of Golder Associates Corporation

<https://golderassociates.sharepoint.com/sites/25779g/deliverables/r01-geo rpt/18100361-r01 nov 23 18 geo exploration-dalhousie st.docx>

Drawing file: 18100361-R01001.dwg Aug 01, 2018 - 8:37am 25mm Original Format is Tabloid 279mm x 432mm Client: Corporation of the Town of Amherstburg



LEGEND

- PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE/MONITORING WELL
- [175.94] GROUND SURFACE ELEVATION
- 175.48** MEASURED WATER LEVEL - m amsl
(JUNE 19, 2018)
- 174.52** MEASURED WATER LEVEL - m amsl
(JULY 10, 2018)
- BOREHOLE NOT FOUND
- SEDIMENT SAMPLE

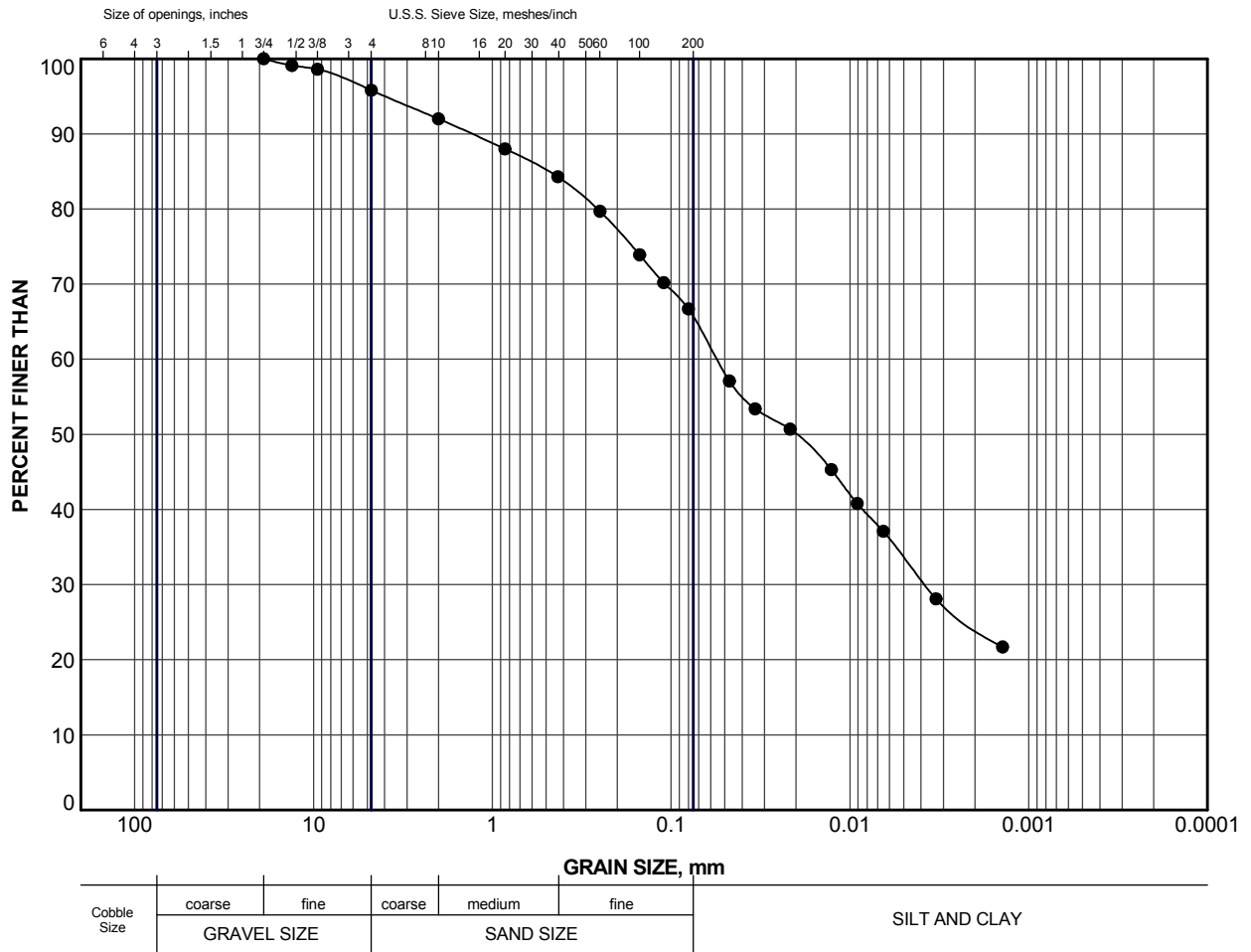
REFERENCE

DRAWING BASED ON 2017 AERIAL IMAGERY FROM THE COUNTY OF ESSEX WEB MAPPING SITE, BY PERMISSION; PLAN OF SURVEY, VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC., ONTARIO LAND SURVEYORS; MAY 23 - 2017; AND CANMAP STREETFILES V2008.4.


NOTES

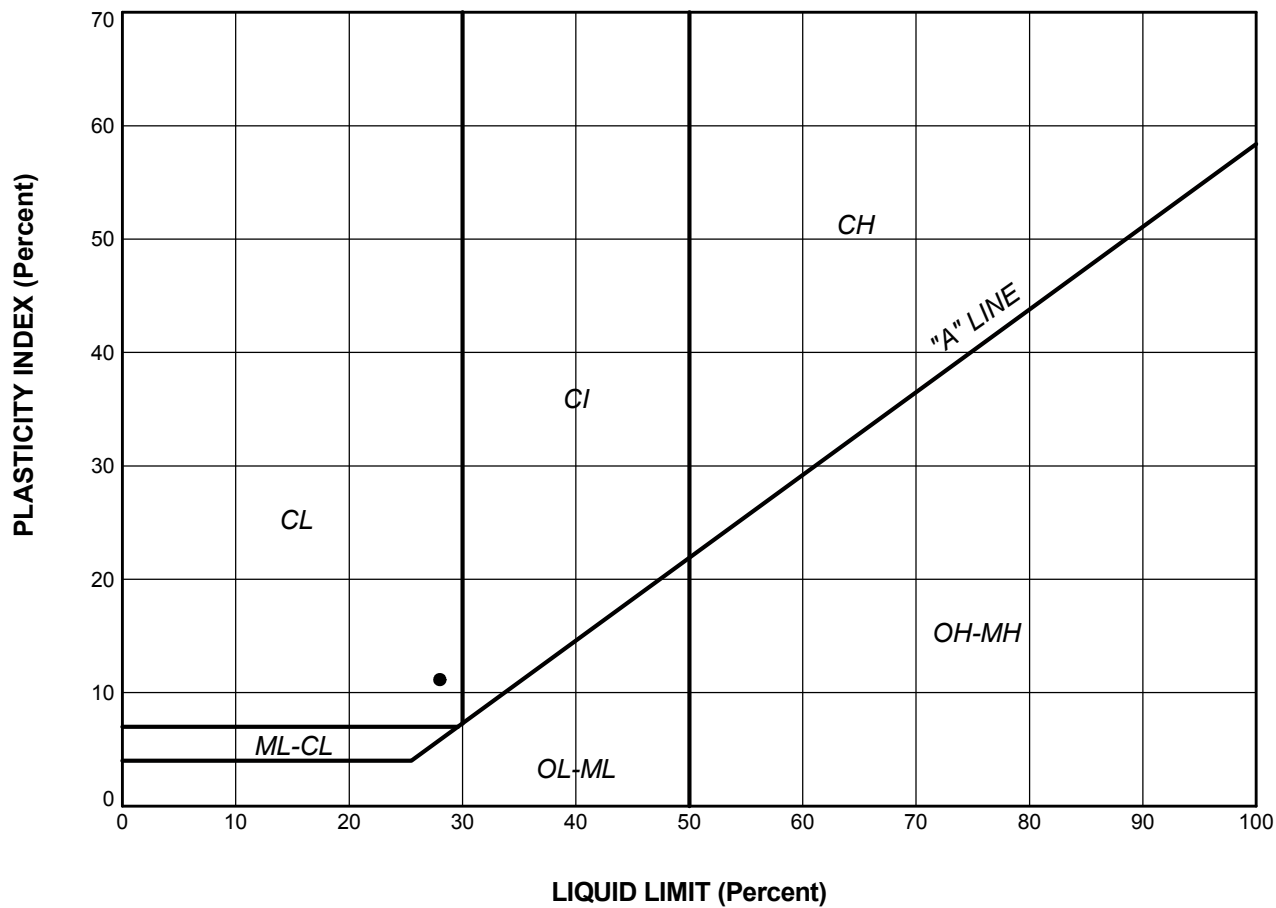
THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.
100 SERIES BOREHOLES DRILLED IN 2016.
200 SERIES BOREHOLES DRILLED IN 2018.
ALL LOCATIONS ARE APPROXIMATE.

PROJECT		GEO-ENVIRONMENTAL EXPLORATION 290, 296 AND 306 DALHOUSIE STREET AMHERSTBURG, ONTARIO	
TITLE		SITE PLAN	
GOLDER	PROJECT No.	18100361	FILE No. 18100361-R01001
	CADD	DH/AS	SCALE AS SHOWN
	CHECK	July 31/18	REV.
FIGURE 1			



LEGEND			
SYMBOL	BOREHOLE	SAMPLE	ELEV (m)
●	BH-201	3	176.9

PROJECT		GEO-ENVIRONMENTAL ASSESSMENT 290, 296 AND 306 DALHOUSIE STREET AMHERSTBURG, ONTARIO				
TITLE		GRAIN SIZE DISTRIBUTION sandy SILTY CLAY				
 GOLDER	PROJECT No.		18100361	FILE No.		18100361-R01002
				SCALE		N/A
	DRAWN		AMS	Aug 30/18		FIGURE 2
	CHECK		lk			



PROJECT		GEO-ENVIRONMENTAL ASSESSMENT 290, 296 AND 306 DALHOUSIE STREET AMHERSTBURG, ONTARIO			
TITLE		PLASTICITY CHART			
PROJECT No.		18100631		FILE No.	
DRAWN		AMS		Aug 30/18	
CHECK		[Signature]		[Signature]	
SCALE		N/A		REV.	
GOLDER		[Signature]		FIGURE 3	

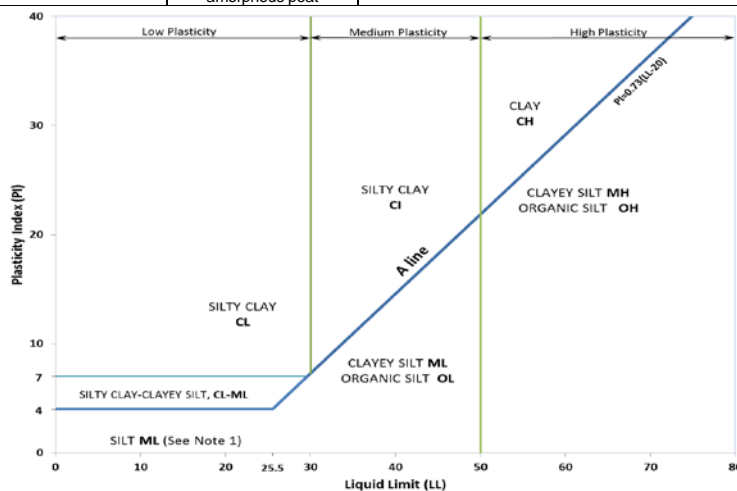
APPENDIX A

**Record of Borehole Sheets
(Golder Project 1665363)**

METHOD OF SOIL CLASSIFICATION

The Golder Associates Ltd. Soil Classification System is based on the Unified Soil Classification System (USCS)

Organic or Inorganic	Soil Group	Type of Soil		Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$		$Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$			Organic Content	USCS Group Symbol	Group Name	
INORGANIC (Organic Content ≤30% by mass)	COARSE-GRAINED SOILS (>50% by mass is larger than 0.075 mm)	GRAVELS (>50% by mass of coarse fraction is larger than 4.75 mm)	Gravels with ≤12% fines (by mass)	Poorly Graded	<4		≤1 or ≥3			≤30%	GP	GRAVEL	
				Well Graded	≥4		1 to 3				GW	GRAVEL	
			Gravels with >12% fines (by mass)	Below A Line	n/a						GM	SILTY GRAVEL	
				Above A Line	n/a						GC	CLAYEY GRAVEL	
		SANDS (≥50% by mass of coarse fraction is smaller than 4.75 mm)	Sands with ≤12% fines (by mass)	Poorly Graded	<6		≤1 or ≥3				SP	SAND	
				Well Graded	≥6		1 to 3				SW	SAND	
			Sands with >12% fines (by mass)	Below A Line	n/a						SM	SILTY SAND	
				Above A Line	n/a						SC	CLAYEY SAND	
Organic or Inorganic	Soil Group	Type of Soil	Laboratory Tests	Field Indicators					Organic Content	USCS Group Symbol	Primary Name		
				Dilatancy	Dry Strength	Shine Test	Thread Diameter	Toughness (of 3 mm thread)					
INORGANIC (Organic Content ≤30% by mass)	FINE-GRAINED SOILS (≥50% by mass is smaller than 0.075 mm)	SILTS (Non-Plastic or Pl and LL plot below A-Line on Plasticity Chart below)	Liquid Limit <50	Rapid	None	None	>6 mm	N/A (can't roll 3 mm thread)	<5%	ML	SILT		
				Slow	None to Low	Dull	3mm to 6 mm	None to low	<5%	ML	CLAYEY SILT		
			Liquid Limit ≥50	Slow to very slow	Low to medium	Dull to slight	3mm to 6 mm	Low	5% to 30%	OL	ORGANIC SILT		
				Slow to very slow	Low to medium	Slight	3mm to 6 mm	Low to medium	<5%	MH	CLAYEY SILT		
		CLAYS (Pl and LL plot above A-Line on Plasticity Chart below)	Liquid Limit <30	None	Low to medium	Slight to shiny	~ 3 mm	Low to medium	0% to 30%	CL	SILTY CLAY		
			Liquid Limit 30 to 50	None	Medium to high	Slight to shiny	1 mm to 3 mm	Medium	(see Note 2)	CI	SILTY CLAY		
			Liquid Limit ≥50	None	High	Shiny	<1 mm	High		CH	CLAY		
HIGHLY ORGANIC SOILS (Organic Content >30% by mass)		Peat and mineral soil mixtures							30% to 75%	PT	SILTY PEAT, SANDY PEAT		
		Predominantly peat, may contain some mineral soil, fibrous or amorphous peat							75% to 100%		PEAT		



Note 1 – Fine grained materials with PI and LL that plot in this area are named (ML) SILT with slight plasticity. Fine-grained materials which are non-plastic (i.e. a PL cannot be measured) are named SILT.

Note 2 – For soils with <5% organic content, include the descriptor “trace organics” for soils with between 5% and 30% organic content include the prefix “organic” before the Primary name.

Dual Symbol — A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC and CL-ML.

For non-cohesive soils, the dual symbols must be used when the soil has between 5% and 12% fines (i.e. to identify transitional material between “clean” and “dirty” sand or gravel.

For cohesive soils, the dual symbol must be used when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart (see Plasticity Chart at left).

Borderline Symbol — A borderline symbol is two symbols separated by a slash, for example, CL/CI, GM/SM, CL/ML.

A borderline symbol should be used to indicate that the soil has been identified as having properties that are on the transition between similar materials. In addition, a borderline symbol may be used to indicate a range of similar soil types within a stratum.

ABBREVIATIONS AND TERMS USED ON RECORDS OF BOREHOLES AND TEST PITS

PARTICLE SIZES OF CONSTITUENTS

Soil Constituent	Particle Size Description	Millimetres	Inches (US Std. Sieve Size)
BOULDERS	Not Applicable	>300	>12
COBBLES	Not Applicable	75 to 300	3 to 12
GRAVEL	Coarse Fine	19 to 75 4.75 to 19	0.75 to 3 (4) to 0.75
SAND	Coarse Medium Fine	2.00 to 4.75 0.425 to 2.00 0.075 to 0.425	(10) to (4) (40) to (10) (200) to (40)
SILT/CLAY	Classified by plasticity	<0.075	< (200)

MODIFIERS FOR SECONDARY AND MINOR CONSTITUENTS

Percentage by Mass	Modifier
>35	Use 'and' to combine major constituents (i.e., SAND and GRAVEL)
> 12 to 35	Primary soil name prefixed with "gravelly, sandy, SILTY, CLAYEY" as applicable
> 5 to 12	some
≤ 5	trace

PENETRATION RESISTANCE

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) split-spoon sampler for a distance of 300 mm (12 in.). Values reported are as recorded in the field and are uncorrected.

Cone Penetration Test (CPT)

An electronic cone penetrometer with a 60° conical tip and a project end area of 10 cm² pushed through ground at a penetration rate of 2 cm/s. Measurements of tip resistance (q_t), porewater pressure (u) and sleeve frictions are recorded electronically at 25 mm penetration intervals.

Dynamic Cone Penetration Resistance (DCPT); N_d:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in.).

PH: Sampler advanced by hydraulic pressure

PM: Sampler advanced by manual pressure

WH: Sampler advanced by static weight of hammer

WR: Sampler advanced by weight of sampler and rod

SAMPLES

AS	Auger sample
BS	Block sample
CS	Chunk sample
DD	Diamond Drilling
DO or DP	Seamless open ended, driven or pushed tube sampler – note size
DS	Denison type sample
GS	Grab Sample
MC	Modified California Samples
MS	Modified Shelby (for frozen soil)
RC	Rock core
SC	Soil core
SS	Split spoon sampler – note size
ST	Slotted tube
TO	Thin-walled, open – note size (Shelby tube)
TP	Thin-walled, piston – note size (Shelby tube)
WS	Wash sample

SOIL TESTS

w	water content
PL , w _p	plastic limit
LL , w _L	liquid limit
C	consolidation (oedometer) test
CHEM	chemical analysis (refer to text)
CID	consolidated isotropically drained triaxial test ¹
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement ¹
D _R	relative density (specific gravity, G _s)
DS	direct shear test
GS	specific gravity
M	sieve analysis for particle size
MH	combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	organic content test
SO ₄	concentration of water-soluble sulphates
UC	unconfined compression test
UU	unconsolidated undrained triaxial test
V (FV)	field vane (LV-laboratory vane test)
γ	unit weight

1. Tests anisotropically consolidated prior to shear are shown as CAD, CAU.

NON-COHESIVE (COHESIONLESS) SOILS

Compactness²

Term	SPT 'N' (blows/0.3m) ¹
Very Loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	>50

- SPT 'N' in accordance with ASTM D1586, uncorrected for the effects of overburden pressure.
- Definition of compactness terms are based on SPT 'N' ranges as provided in Terzaghi, Peck and Mesri (1996). Many factors affect the recorded SPT 'N' value, including hammer efficiency (which may be greater than 60% in automatic trip hammers), overburden pressure, groundwater conditions, and grain size. As such, the recorded SPT 'N' value(s) should be considered only an approximate guide to the soil compactness. These factors need to be considered when evaluating the results, and the stated compactness terms should not be relied upon for design or construction.

Field Moisture Condition

Term	Description
Dry	Soil flows freely through fingers.
Moist	Soils are darker than in the dry condition and may feel cool.
Wet	As moist, but with free water forming on hands when handled.

COHESIVE SOILS

Consistency

Term	Undrained Shear Strength (kPa)	SPT 'N' ^{1,2} (blows/0.3m)
Very Soft	<12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

- SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects; approximate only.
- SPT 'N' values should be considered ONLY an approximate guide to consistency; for sensitive clays (e.g., Champlain Sea clays), the N-value approximation for consistency terms does NOT apply. Rely on direct measurement of undrained shear strength or other manual observations.

Water Content

Term	Description
w < PL	Material is estimated to be drier than the Plastic Limit.
w ~ PL	Material is estimated to be close to the Plastic Limit.
w > PL	Material is estimated to be wetter than the Plastic Limit.

LIST OF SYMBOLS

Unless otherwise stated, the symbols employed in the report are as follows:

I. GENERAL

π	3.1416
$\ln x$	natural logarithm of x
\log_{10}	x or log x, logarithm of x to base 10
g	acceleration due to gravity
t	time

II. STRESS AND STRAIN

γ	shear strain
Δ	change in, e.g. in stress: $\Delta \sigma$
ε	linear strain
ε_v	volumetric strain
η	coefficient of viscosity
ν	Poisson's ratio
σ	total stress
σ'	effective stress ($\sigma' = \sigma - u$)
σ'_{vo}	initial effective overburden stress
$\sigma_1, \sigma_2, \sigma_3$	principal stress (major, intermediate, minor)
σ_{oct}	mean stress or octahedral stress $= (\sigma_1 + \sigma_2 + \sigma_3)/3$
τ	shear stress
u	porewater pressure
E	modulus of deformation
G	shear modulus of deformation
K	bulk modulus of compressibility

III. SOIL PROPERTIES

(a) Index Properties

$\rho(\gamma)$	bulk density (bulk unit weight)*
$\rho_d(\gamma_d)$	dry density (dry unit weight)
$\rho_w(\gamma_w)$	density (unit weight) of water
$\rho_s(\gamma_s)$	density (unit weight) of solid particles
γ'	unit weight of submerged soil ($\gamma' = \gamma - \gamma_w$)
D_R	relative density (specific gravity) of solid particles ($D_R = \rho_s / \rho_w$) (formerly G_s)
e	void ratio
n	porosity
S	degree of saturation

(a) Index Properties (continued)

w	water content
w_l or LL	liquid limit
w_p or PL	plastic limit
I_p or PI	plasticity index = $(w_l - w_p)$
NP	non-plastic
w_s	shrinkage limit
I_L	liquidity index = $(w - w_p) / I_p$
I_C	consistency index = $(w_l - w) / I_p$
e_{max}	void ratio in loosest state
e_{min}	void ratio in densest state
I_D	density index = $(e_{max} - e) / (e_{max} - e_{min})$ (formerly relative density)

(b) Hydraulic Properties

h	hydraulic head or potential
q	rate of flow
v	velocity of flow
i	hydraulic gradient
k	hydraulic conductivity (coefficient of permeability)
j	seepage force per unit volume

(c) Consolidation (one-dimensional)

C_c	compression index (normally consolidated range)
C_r	recompression index (over-consolidated range)
C_s	swelling index
C_α	secondary compression index
m_v	coefficient of volume change
C_v	coefficient of consolidation (vertical direction)
C_h	coefficient of consolidation (horizontal direction)
T_v	time factor (vertical direction)
U	degree of consolidation
σ'_p	pre-consolidation stress
OCR	over-consolidation ratio = σ'_p / σ'_{vo}

(d) Shear Strength

τ_p, τ_r	peak and residual shear strength
ϕ'	effective angle of internal friction
δ	angle of interface friction
μ	coefficient of friction = $\tan \delta$
c'	effective cohesion
c_u, s_u	undrained shear strength ($\phi = 0$ analysis)
p	mean total stress $(\sigma_1 + \sigma_3)/2$
p'	mean effective stress $(\sigma'_1 + \sigma'_3)/2$
q	$(\sigma_1 - \sigma_3)/2$ or $(\sigma'_1 - \sigma'_3)/2$
q_u	compressive strength $(\sigma_1 - \sigma_3)$
S_t	sensitivity

* Density symbol is ρ . Unit weight symbol is γ where $\gamma = \rho g$ (i.e. mass density multiplied by acceleration due to gravity)

Notes: 1
2

$$\tau = c' + \sigma' \tan \phi'$$

$$\text{shear strength} = (\text{compressive strength})/2$$

PROJECT: 1665363


RECORD OF BOREHOLE BH-101


SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

 BORING DATE: November 24 2016
 DRILLING CONTRACTOR: Landshark Drilling
 (CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HEADSPACE VAPOUR ORGANIC CONCENTRATIONS [PPM] IBL - Isobutylene Standard					ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	RUN No.	NUMBER	TYPE													
0	GEO PROBE 7822DT MACROCORE	ELEVATION UPDATED TO GEODETIC JULY 2018		177.19				178											Chem	<div>Enc WL </div> <div>Groundwater encountered at about elev. 175.6m during drilling on November 24, 2016.</div>
		GROUND SURFACE		0.00					HEX / IBL											
		TOPSOIL - silty clay; dark brown		176.81				177												
				0.38																
1					1A	SC														
					1B	SC		176												
			(CL-CI) sandy SILTY CLAY , trace gravel; brown, TILL																	
2					2A	SC														
					2B	SC		175												
3																				
				174.14				174												
			3.05																	
4		(CL-CI) sandy SILTY CLAY , trace gravel; brown, TILL																		

Enc WL 
 Groundwater
 encountered at about
 elev. 175.6m during
 drilling on
 November 24, 2016.

DEPTH SCALE

1 : 50



LOGGED: KL

CHECKED:

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
DRILLING CONTRACTOR: Landshark Drilling
(CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DN_BHS_07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

1 : 50



CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-103

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

 BORING DATE: November 24 2016
 DRILLING CONTRACTOR: Landshark Drilling
 (CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HEADSPACE VAPOUR ORGANIC CONCENTRATIONS [PPM] IBL - Isobutylene Standard					ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	RUN No.	NUMBER	TYPE													
0	GEOPROBE 7822DT MACROCORE	ELEVATION UPDATED TO GEODETIC JULY 2018 WELL REPAIRED JULY 2018 PAVEMENT SURFACE		176.81				177										Top of Pipe Elev. 177.59m		
		ASPHALT		0.00 0.08					HEX / IBL									Concrete		
1		FILL - clayey silt; brown, trace grey			1A	SC			0 / 0									Granular Bentonite		
					1B	SC		176	0 / 0							Chem	June 19/18 Filter Sand			
2				175.15 1.66	2A	SC		175	0 / 0									51mm Diam. Slot 10 Schedule 40 PVC Screen		
		(CL-CI) sandy SILTY CLAY, trace gravel; brown, TILL			2B	SC		174	0 / 0							Chem				
3					3A	SC			0 / 0									Enc WL		
4		(CL-CI) sandy SILTY CLAY, trace gravel; grey, TILL		172.91 3.90	3B	SC		173	0 / 0							Chem				
5		END OF BOREHOLE		172.24 4.57				172										Groundwater encountered at about elev. 173.4m during drilling on November 24, 2016.		
6																		Water level measured in well at elev. 175.48m on June 19, 2018.		
7																				
8																				
9																				

DEPTH SCALE

1 : 50



LOGGED: KL


CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
DRILLING CONTRACTOR: Landshark Drilling
(CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

Enc WL 

Groundwater encountered at about elev. 172.8m during drilling on November 24, 2016.

1 : 50



CHECKED:

.DN_BHS_07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

PROJECT: 1665363

RECORD OF BOREHOLE BH-105

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
 DRILLING CONTRACTOR: Landshark Drilling
 (CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HEADSPACE VAPOUR ORGANIC CONCENTRATIONS [PPM] IBL - Isobutylene Standard					ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS MW-105
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	RUN No.	NUMBER	TYPE													
0	GEOPROBE 7822DT MACROCORE	ELEVATION UPDATED TO GEODETIC JULY 2018						176										Top of Pipe Elev. 175.18m		
		PAVEMENT SURFACE		175.35																
		ASPHALT		0.00																
		FILL - sand and gravel; brown		0.08	1A	SC		175	0 / 0									Concrete June 19/18		
				174.97																
				0.38	1															
1					1B	SC		174	0 / 0									Granular Bentonite		
2			FILL - clayey silt, some sand, some organics, trace gravel, trace brick; dark grey		2A	SC		173	0 / 0									Filter Sand		
					2													Enc WL		
				2B	SC		172	0 / 0												
3			172.30																	
			3.05	3A	SC		171	0 / 0									51mm Diam. Slot 10 Schedule 40 PVC Screen			
4		(SM) SILTY SAND, fine, some clay; grey		3																
			171.36																	
			3.99	3B	SC		170	0 / 0												
		(CL-CI) sandy SILTY CLAY, trace gravel; brown, TILL																		
			170.78																	
			4.57																	
5		END OF BOREHOLE															Groundwater encountered at about elev. 173.5m during drilling on November 24, 2016.			
6																	Water level measured in well at elev. 175.09m on June 19, 2018.			
7																				
8																				
9																				

DEPTH SCALE

1 : 50



LOGGED: KL

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
DRILLING CONTRACTOR: Landshark Drilling
(CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DN_BHS_07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

1 : 50



CHECKED:

PROJECT: 1665363







RECORD OF BOREHOLE BH-107

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
DRILLING CONTRACTOR: Landshark Drilling
(CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HEADSPACE VAPOUR ORGANIC CONCENTRATIONS [PPM] IBL - Isobutylene Standard					ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	RUN No.	NUMBER	TYPE													
	GEOPROBE 7822DT MACROCORE	ELEVATION UPDATED TO GEODETIC JULY 2018		176.23				177										Chem	<div>Enc WL </div> <div>Groundwater encountered at about elev. 174.1m during drilling on November 24, 2016.</div>	
0		PAVEMENT SURFACE		0.00																
		ASPHALT		0.08						HEX / IBL										
		FILL - sand and gravel; light brown		175.85				176												
				0.38																
		FILL - silty clay, some sand, trace gravel, trace brick debris; mottled brown and grey		175.33	1	1A	SC			0 / 0										
				0.90																
1		(CL) SILTY CLAY, some sand, trace gravel; dark grey		175.33				175		0 / 0										
				0.90																
				174.71				174												
2			1.52						0 / 0											
		(SM) SILTY SAND, fine, some clay, trace gravel; dark grey to brown			2	2A	SC													
									0 / 0											
3																				
									0 / 0											
4		(CL-Cl) sandy SILTY CLAY, trace gravel; brown, TILL			3	3B	SC		0 / 0											
																</				

DEPTH SCALE

1 : 50



LOGGED: KL

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 19 2018
DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DATUM: GEODETIC

DN_BHS_07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

1 : 50



CHECKED:

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018
DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DATUM: GEODETIC

DN_BHS_07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

1 : 50



CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-203

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018

DATUM: GEODETIC

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HYDRAULIC CONDUCTIVITY, k, cm/s					ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m							WATER CONTENT PERCENT							
														Wp	W	Wi	10 ⁻⁶	10 ⁻⁵			10 ⁻⁴
0	GEOPROBE 7822DT 159mm ID HOLLOW STEM	GROUND SURFACE		176.15				177												Borehole dry during drilling on June 18, 2018.	
		ASPHALTIC CONCRETE.		0.07				176	HEX												
		FILL, sand & gravel, some silt; brown.			1	SS	4	20													
1		FILL sandy silty clay, with organics & gravel, wood, ash, brick & plastic; grey to black; stiff to firm.			2	SS	5	10											Chem		
2					3	SS	3	10													
									174												
			(SP) SAND, trace silt, with shell fragments & gravel; dark grey to grey to brown.		173.86 2.29	4A	SS	2	10												
					173.46 2.69	4B	SS		15										Chem		
3									173												
						5	SS	17	20												
4			(CL) sandy SILTY CLAY, trace to some gravel, with occasional oxidized fissures; transition from brown to grey from about elevation 171.41m to 171.18m, TILL; firm to very stiff.						172												
					6	SS	20	10													
5																					
					7	SS	20	15										Chem			
		END OF BOREHOLE.		170.97 5.18				171													
6								170													
7																					
8																					
9																					

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

Borehole dry during
drilling on June 18, 2018.

PROJECT: 1665363

RECORD OF BOREHOLE BH-204

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018

DATUM: GEODETIC

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE			BLOWS/0.3m	WATER CONTENT PERCENT					
										Wp	W	WI			
									10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³			
														</	

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-205

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 19 2018

DATUM: GEODETIC

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE			WATER CONTENT PERCENT					
									Wp	W	WI			
									10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³		
									10	20	30	40		

Top of Pipe
Elev. 176.31mConcrete
Granular
Bentonite

July 10/18

Filter Sand

Chem

Chem

Chem

50mm Diam. Slot
10 Schedule 40
PVC Screen

73.8

68.6

Borehole dry during
drilling on June 19, 2018.Water level measured in
well at elev. 174.79m on
July 10, 2018.

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018
DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DATUM: GEODETIC

DN_BHS_07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

1 : 50



CHECKED:

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 19 2018
DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

SHEET 1 OF 1

DATUM: GEODETIC

DN_BHS_07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

LOGGED: CHM
CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-208

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018

DATUM: GEODETIC

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE			BLOWS/0.3m	WATER CONTENT PERCENT					
										Wp	W	WI			
		GROUND SURFACE		176.16											
0	GEOPROBE 7822DT 108mm ID HOLLOW STEM	ASPHALTIC CONCRETE		0.05	1A	SS	9								
		FILL, sand & gravel, trace to some silt; brown; loose.		175.65	1B	SS							Chem		
				0.51											
1			FILL, sandy silty clay, trace gravel, with organics; dark brown to grey; very soft to stiff.			2	SS	WH							
						3A	SS	32						Chem	
2						3B	SS								
					173.83	4A	SS								
					2.33	4B	SS	22							
3															
			(CL-CI) sandy SILTY CLAY, trace gravel, with oxidized fissures, & sand pockets; brown, TILL; stiff to hard.			5	SS	32							
4						6	SS	29					Chem		
					7	SS	37								
5				170.90											
				5.26	8	SS	11								
6															
					9	SS	17								
7															
		(CL-CI) sandy SILTY CLAY, trace gravel, with oxidized fissures, & sand pockets; grey, TILL, soft to very stiff.			10	SS	4								
8					11	SS	12								
9															
					12	SS	68/305mm								
10		END OF BOREHOLE		166.48											
				9.68											

Enc WL

Groundwater
encountered at about
elev. 172.4m during
drilling on June 18, 2018.

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS



golder.com



REPORT

Summary of Environmental Exploration Findings

290, 296 and 306 Dalhousie Street, Amherstburg, Ontario

Submitted to:

Mr. Mark Galvin

Corporation of the Town of Amherstburg
271 Sandwich Street South
Amherstburg, Ontario
N9V 2A5

Submitted by:

Golder Associates Ltd.

309 Exeter Road, Unit #1 London, Ontario, N6L 1C1 Canada

+1 519 652 0099

18100361-R02

November 2018



Distribution List

1 - eCopy Town of Amherstburg

1 - eCopy Landmark Engineers Inc.

1 - eCopy Golder Associates Ltd.

Table of Contents

1.0 INTRODUCTION.....	1
2.0 BACKGROUND AND OBJECTIVES	1
3.0 SCOPE OF SITE INVESTIGATIONS	2
3.1 Soil Sampling	2
3.2 Monitoring Well Installation and Development.....	3
3.3 Groundwater Monitoring and Sampling	3
3.4 Sediment Sampling.....	4
3.5 Surveying	4
3.6 Discussion of Environmental Criteria.....	5
3.6.1 Soil and Groundwater Quality.....	5
3.6.2 Sediment Quality.....	6
3.6.3 Waste Characterization.....	6
4.0 SUMMARY OF FINDINGS.....	6
4.1 Subsurface Soil Conditions.....	6
4.1.1 Analytical Results for Soil Samples	7
4.1.2 Waste Characterization of On-Site Fill Material.....	11
4.2 Groundwater Conditions	11
4.2.1 Groundwater Analytical Results.....	12
4.3 Sediment Conditions.....	12
4.3.1 Analytical Results for Sediment Samples.....	12
4.3.2 Waste Characterization of Sediment	14
5.0 SUMMARY.....	14
6.0 LIMITATIONS.....	16
7.0 CLOSURE.....	17

TABLES (within text)

Table 1: Summary of Groundwater Samples Submitted for Analysis	3
Table 2: Summary of Measured Metals and Inorganic Concentrations in Soil Exceeding SCS	8
Table 3: Summary of Measured PAH Concentrations in Soil Exceeding SCS	9
Table 4: Summary of Measured PHC Concentrations in Soil Exceeding SCS	10
Table 5: Summary of Measured VOC Concentrations in Soil Exceeding SCS	10
Table 6: Summary of Measured Metals and Inorganic Concentrations in Sediment Exceeding SCS	13
Table 7: Summary of Measured PAH Concentrations in Sediment Exceeding SCS	13
Table 8: Summary of Measured VOC Concentrations in Sediment Exceeding SCS	14

TABLES (appended to text)

Table A – Summary of Soil Samples Selected for Laboratory Analysis	
Table B – Total Number of Soil Samples Selected for Laboratory Analysis	

FIGURES

Figure 1 – Location Plan	
Figure 2 – Site Plan	

APPENDICES**APPENDIX A**

Record of Borehole Sheets (2016 and 2018 Site Investigations)

APPENDIX B

Laboratory Certificates of Analysis (2018 Sediment Sampling)

1.0 INTRODUCTION

Golder Associates Ltd. (“Golder”) was retained by the Corporation of the Town of Amherstburg (the “Town”) to carry out geo-environmental exploration activities at the “Amherstburg Riverfront Festival Plaza” site, located as shown on Figure 1 (attached) and referred to herein as the “Site”. The Site is currently owned by the Town of Amherstburg (the “Town”), and comprises 290, 296 and 309 Dalhousie Street as well as the municipal right-of-way from Dalhousie Street to the Detroit River, which borders the western portion of the Site.

We understand that the Town intends to redevelop the Site as parkland and/or outdoor community space that may include a marina, outdoor amphitheatre and public gathering greenspaces. Demolition of the previously existing commercial buildings (as illustrated on the aerial photograph included on Figures 1 and 2) was recently carried out (by others) in 2017.

Landmark Engineers Inc. (“Landmark”) has been engaged by the Town to complete an Environmental Assessment (EA) of the Site to support its proposed development. We understand that, on behalf of the Town, Landmark requested this scope of work to support their EA, and overall development planning. The scope of work and specific project objectives was outlined in Golder’s proposal letter dated May 25, 2018 (revised June 8, 2018) (ref. P18100361-P01). This report provides a summary and interpretation of environmental findings (i.e., regarding soil, groundwater and sediment quality) based on available data. Golder’s geotechnical interpretation of available data for the Site was provided to the City under separate cover (reference 18100361-R01).

2.0 BACKGROUND AND OBJECTIVES

The Site is approximately 120 m by 50 metres in area and is located on the east shore of the Detroit River (west) in the Town of Amherstburg. Most recently, the property was operated as a motel and tavern with a marina. Historically (dating back to the early 1900s) the southern and central portions of the Property were associated with a lumber mill operation. Both the motel and tavern buildings were demolished in 2017, and subsurface infrastructure (including a former fuel tank) was removed. The Site is currently vacant, and generally slopes down from the northeast to southwest.

The Town previously engaged Golder to carry out environmental investigation activities to support preparation of a Record of Site Condition (RSC), in accordance with Ontario Regulation (O.Reg.) 153/04 (as amended), for the Site (excluding the open water areas). The work carried out to date, to support the RSC, has included a preliminary subsurface investigation comprising the seven 100-series boreholes and monitoring wells (2016/2017) shown on Figure 2 and removal of an underground storage tank (2017) with verification sampling (identified as EX-101 on Figure 2).

Additional field activities associated with these efforts (including environmental borehole drilling, monitoring well installation and soil and groundwater sampling) were carried out in June and July 2018 (i.e., the eight 200-series boreholes and monitoring wells noted on Figure 2). For the purposes of this assessment, the investigation “Study Area” also included the shoreline west of the Site, to allow for the collection of the three sediment samples at three locations, as noted on Figure 2.

Except for the sediment sampling results outlined herein, all of the environmental data (i.e., soil and groundwater quality) collected by Golder for the Site, on behalf of the Town, was collected to support preparation of a Record of Site Condition (RSC), as prescribed under the Ontario Environmental Protection Act and Ontario Regulation

153/04, as amended (O.Reg. 153/04)¹. However, it is our understanding that this report will not be used for preparation of an RSC for the property.

3.0 SCOPE OF SITE INVESTIGATIONS

All of the work activities described herein were conducted in accordance with Golder's Quality Assurance Plan (QAP) and Standard Operating Procedures (SOPs) and were based on our understanding of environmental issues at the Site and the Town's project objectives. To carry out the drilling programs, Golder retained drilling contractors licensed as a well contractor by the Ontario Ministry of the Environment, Conservation and Parks (MECP)². The following sections provide an overview of the field investigation methodology employed for the site investigations carried out to date. Additional details on the soil and groundwater sampling programs carried out will be reported to the Town under separate cover.

3.1 Soil Sampling

To facilitate the collection of soil samples, the seven 100-series boreholes (designated BH-101 through BH-107) were drilled at the Site in November 2016 using direct push drilling equipment with continuous core sampling equipment. The eight 200-series boreholes (designated BH-201 through BH-208) were drilled at the Site in June 2018. For six of the eight 200-series boreholes, soil samples were collected using 38 millimetre inside-diameter split spoon sampling equipment and an automatic hammer. Boreholes BH-201 and BH-205 were advanced using direct push drilling equipment with continuous core sampling equipment.

Copies of the Record of Borehole sheets are included in Appendix A of this report. As noted on the Record of Borehole sheets, most of the boreholes were drilled to depths ranging from approximately 3.7 to 6.1 metres (m) below ground surface (bgs). One borehole, BH-208 was drilled to a depth of approximately 9.7 m bgs. Selected soil samples from the boreholes were submitted for laboratory analysis of petroleum hydrocarbons (F1-F4 fractions) (PHC F1-F4), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), metals (including mercury and/or hexavalent chromium), metal hydrides, electrical conductivity (EC), sodium adsorption ratio (SAR) and/or pH. A total of 13 soil samples were submitted from the 100-series boreholes, with an additional 24 samples submitted for analysis of one or more parameters from the 200-series boreholes.

In June 2017, Golder personnel monitored the removal of an inactive underground storage tank (UST) and associated contaminated soils. The final dimensions of the excavation (EX-101 on Figure 2) were approximately 4 by 4 metres in area and 3 metres deep. A total of ten soil samples were taken for field screening purposes, and of these, seven samples were submitted for laboratory analysis of PHC F1-F4 and BTEX.

Table A of this report provides a summary of the soil samples submitted for analysis, from the 2016 and 2018 borehole drilling programs as well as the June 2017 remedial excavation. Table A provides a description of each

¹ O.Reg. 153/04 (as amended) as made under Part XV.1 of the *Environmental Protection Act* (EPA), 'Records of Site Condition'.

² Formerly the Ontario Ministry of the Environment and Climate Change (MOECC), formerly the Ontario Ministry of the Environment (MOE).

sample, the soil combustible headspace concentration, an indication of what parameters were analysed for and whether the measured concentrations exceeded the site conditions standards used for comparison purposes.

To support potential off-site disposal of fill material (if required to support redevelopment of the Site), a sample of fill material encountered during the 2018 site investigation activities, considered representative of the fill encountered across the Site (sample BH-205-2D from borehole BH-205) was submitted for Toxicity Characteristic Leaching Procedure (TCLP), with the leachate analysed for Schedule 4 metals, inorganics, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) to classify the soil as hazardous or non-hazardous for disposal purposes.

3.2 Monitoring Well Installation and Development

Monitoring wells were installed at three of the 100-series locations, and were designated as monitoring wells MW-103, MW-105 and MW-106 (as noted on Figure 2). In 2018, monitoring wells were installed at six locations, designated MW-201, MW-202, MW-204, MW-205 and MW-206. Well construction details are provided in the respective Record of Borehole sheets provided in Appendix A.

After allowing time for the wells to recover, Golder personnel developed each of the monitoring wells by purging them dry or removing at least three well volumes.

3.3 Groundwater Monitoring and Sampling

After allowing time for the wells to recover, groundwater samples were collected from the on-site monitoring wells and submitted to the analytical laboratory for analysis of targeted parameters. Prior to sampling, groundwater levels were measured at each monitoring well location, and the monitoring well was purged with a peristaltic pump and dedicated silicone and polyethylene tubing. Purging and sampling were performed in general accordance with Golder's standard operating procedures for low flow sampling.

The recovered groundwater samples were inspected in the field for indications of petroleum impact (i.e., odour, sheen or the presence of phase separated liquid product). The following table provides a list of each groundwater sample, the sampling date, and an indication of what parameters were analysed for.

Table 1: Summary of Groundwater Samples Submitted for Analysis

Location ID	Sampling Date	PHC F1-F4 / BTEX	VOCs	PAHs	Metals	Metal Hydrides	Mercury and Hexavalent Chromium	Inorganics (Chloride, Sodium, Conductivity, pH)
MW-103	Jun-28-17	•	•	•	-	-	-	-
MW-105	Dec-1-16	•	•	•	•	•	•	•
MW-106	Dec-1-16	•	•	•	•	•	•	•
MW-201	Jul-10-18	•	•	•	•	•	•	•

Location ID	Sampling Date	PHC F1-F4 / BTEX	VOCs	PAHs	Metals	Metal Hydrides	Mercury and Hexavalent Chromium	Inorganics (Chloride, Sodium, Conductivity, pH)
MW-202	Jul-10-18	•	•	•	•	•	•	•
MW-204	Jul-10-18	•	•	•	•	•	•	•
MW-205	Jul-10-18	•	•	•	•	•	•	•
MW-206	Jul-10-18	•	-	-	-	-	-	-

3.4 Sediment Sampling

To support the Town and Landmark's project objectives, Golder collected samples of sediment within the marina area west of the Site property (locations SD-101, SD-201 and SD-301 on Figure 2). Each of the sediment sampling locations was accessed from the existing boat docks.

Golder collected the sediment samples using a Ponar grab-sampler, designed to collect surficial sediments (i.e., within a few centimetres of the sediment surface). Upon retrieval, free water was allowed to drain from the Ponar sampler and the recovered sediments were placed in a stainless steel bowl for visual inspection and to form a composite of the sediments retrieved at each location. Both the bowl and Ponar sampler were cleaned with river water to remove all sediment and vegetation and rinsed with distilled water between samples.

To assess the depth of the accumulated sediments, Golder also pushed a plastic pipe down at each location to assess potential depth of the sediments. At each location, resistance was met within several centimetres and no additional information regarding the conditions beneath the surficial sediments was obtained.

Each sediment sample was submitted for analysis of a suite of metals, PAHs, PHC F1-F4 and BTEX, VOCs and polychlorinated biphenyls (PCBs). Based on the results of the initial analysis, one sediment sample (SD-101) was also submitted for toxicity characteristic leaching procedure (TCLP) analysis of O.Reg. 558/00 Schedule 4 metals and inorganics, VOCs and SVOCs to classify the sediments as hazardous or non-hazardous for disposal purposes.

3.5 Surveying

The borehole locations were recorded by Golder field staff by GPS methods and reported in the NAD83 global coordinate system. Golder personnel also completed a level survey recording the ground surface elevations at each of the borehole locations and the top of the riser pipe for each monitoring well. A reference point on the sea wall was also surveyed (175.25 m), as were points on the docks near where the sediment samples were collected (in order to establish the bathymetric elevation of the top of the sediment).

Elevations were referenced to a temporary project benchmark identified as the top bolt of a nearby fire hydrant located along the eastern Site boundary (located as shown on Figure 2). The elevation of this point is understood to be 179.18 metres referenced to geodetic datum.

3.6 Discussion of Environmental Criteria

Current environmental criteria for soil quality in Ontario are identified in MECP document: "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*" (April 2011) (the "MECP Standards"). The MECP Standards identify generic criteria that can be applied to evaluate site conditions.

3.6.1 Soil and Groundwater Quality

The following issues were considered in selecting Site Condition Standards (SCS) appropriate for evaluating soil and groundwater quality at the Site:

- The Study Area is not interpreted to be an environmentally sensitive site as defined by section 41, Part IX, O.Reg. 153/04. The laboratory measured soil pH of the 10 analysed samples (all of fill material) were measured between about 6.5 and 8.1, which falls within the acceptable range of 5 to 9 for surface soil and 5 to 11 for subsurface soil.
- The Site is within 30 metres of a water body (the Detroit River);
- The Site is proposed be redeveloped for parkland / recreational use;
- The "Site", for the purpose of the proposed RSC, excludes all open water areas;
- The depth of overburden soil is greater than 2 mbgs;
- Based on Golder's preliminary inquiries with the Town of Amherstburg, groundwater at the Site is assumed to be a non-potable resource; and
- As discussed herein, the soils encountered at the Site were primarily comprised of variable fill material underlain by native silty clay. Although the underlying native soils would be classified as fine and medium textured, the fill which currently covers the majority of the Site would likely be classified as coarse textured.

Based on the above, for evaluating existing conditions on the Site, the SCS considered appropriate for evaluating soil and groundwater quality at the Site were the:

- 2011 MECP Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition (Table 9 SCS) (soil and groundwater standards). Measured concentrations in soil or groundwater above these standards indicate that the soil or groundwater would likely need to be disposed of off-site if it cannot be managed on-site through risk assessment and risk management measures (i.e., to support completion of the RSC for the Site).
- *For evaluation of potential off-site disposal options of on-site soils:* full depth generic SCS for commercial/industrial/community property use for all soil textures, and non-potable groundwater conditions (Table 3 SCS). Measured concentrations below these standards suggest that it may possible to re-use the soils on another site and also suggest that the soil may be suitable for use as daily cover if disposed of at a landfill. Measured concentrations above these standards indicate that the soil would likely need to be disposed of off-site in a licensed landfill as a waste if it cannot be managed on-site through risk assessment and risk management measures.

3.6.2 Sediment Quality

Based on our understanding that management of the sediments near the sea wall would only be required if dredging is carried out, the SCS considered appropriate for evaluating sediment quality were the:

- *For general characterization of sediment quality:* the generic SCS for sediment quality, as presented in the Table 9 SCS, were considered. Measured concentrations in sediments above these standards indicate that the sediments *may* need to be disposed of off-site if it cannot be managed on-site through risk assessment and risk management measures.
- *For evaluation of potential off-site land-disposal / re-use options of dredged sediment materials:* full depth background SCS for all non-agricultural property uses for all soil textures (Table 1 soil standards). Measured concentrations below these standards suggest that it may possible to re-use dredged sediments on another property.
- *For evaluation of potential off-site disposal options of dredged sediments:* full depth generic SCS for commercial/industrial/community property use for all soil textures, and non-potable groundwater conditions (Table 3 SCS). Measured concentrations below these standards suggest that it may possible to re-use the sediments on another site and also suggest that the sediments may be suitable for use as daily cover if disposed of at a landfill. Measured concentrations above these standards indicate that the soil would likely need to be disposed of off-site in a licensed landfill as a waste if they cannot be managed on-site through risk assessment and risk management measures.

3.6.3 Waste Characterization

To support potential off-site disposal of excavated soils and/or dredged sediments, fill material (if required to support redevelopment of the Site), the results of the waste characterization analysis (TCLP) were compared against the O.Reg. 558/00, as amended, Schedule 4 Criteria. Leachate concentrations below these criteria suggest the materials would be classified as non-hazardous for disposal.

4.0 SUMMARY OF FINDINGS

4.1 Subsurface Soil Conditions

Details of the subsurface conditions encountered during the drilling programs carried out at the Site are presented on the Record of Borehole sheets provided in Appendix A. It should be noted that the logs presented have been inferred from discontinuous samples and that geologic contacts noted on the logs represent a transition from one soil type to another rather than an exact plane of geologic change. Further, it should be noted that subsurface conditions encountered will vary between and beyond borehole sampling locations.

As noted on the Record of Borehole sheets, where boreholes were advanced in the former pavement and parking areas across the Site (i.e., outside of the footprint of the former building and/or landscaped areas), these boreholes were drilled through surficial pavement. In general, the subsurface soil conditions encountered in the boreholes consisted of variable sand and gravel, and/or silty clay, fill material, underlain by sandy silty clay. The encountered depth of the fill material varied across the Site but was generally thicker along the western portion of the Site (i.e., closer to the shoreline) and within the former building footprint. The surficial fill material extended to depths ranging from approximately 0.4 m bgs (at borehole BH-101) to 3.9 m bgs (at borehole BH-205).

The fill material was generally underlain by native silty clay till; however, at several borehole locations closest to the shoreline, a layer of (inferred native) sand was encountered above the silty clay. As noted on the Record of Borehole sheets, the majority of the boreholes were drilled to depths ranging from approximately 3.7 to 6.1 m bgs; however, one borehole, BH-208, was drilled to a depth of approximately 9.7 m bgs. Except for borehole BH-202, all of the boreholes were terminated in sandy silty clay till. Borehole BH-202 was terminated in a layer of sandy silt encountered beneath the silty clay till.

The reported soil pH of the 12 fill samples analysed ranged from about 7.2 to 7.9. The reported soil pH of the four samples of native soils analysed ranged from 7.3 to 7.5.

Headspace vapour concentrations were notably higher for samples collected during the warmer months (i.e., the 200-series boreholes and remedial excavation carried out in June) compared to cooler temperatures (i.e., the 100-series boreholes drilled in November). Headspace combustible vapour concentrations (as measured by the hexane sensor) obtained as part of the 2016 and 2018 borehole drilling programs ranged from 0 ppm to 40 ppm for the hexane ("HEX") sensor (combustible vapours). The maximum headspace vapour concentration was measured in a sample from the remedial excavation (EX-101-3), of 75 ppm. The measured combustible and organic vapour concentrations were not interpreted to represent potential chemical impacts to soil quality (i.e., volatile petroleum hydrocarbon impacts).

During drilling, no obvious visual or olfactory evidence of environmental impact was noted except for occasional observations of deleterious material (i.e., ash, coal brick and glass fragments) in several boreholes (BH-105, BH-107, BH-203, BH-204, BH-205). No visual and olfactory evidence of potential hydrocarbon constituents (staining or petroleum hydrocarbon odour) was noted in any of the soil samples collected from the boreholes. However, as noted in Table A, several of the verification samples collected from EX-101 following removal of the UST exhibited petroleum hydrocarbon staining and odours.

4.1.1 Analytical Results for Soil Samples

As noted in Table A of this report, and discussed below, a total of 37 soils samples from the 15 boreholes advanced at the Site (14 samples for fill material and 21 of native soils) and were submitted for laboratory analysis of PHC F1-F4 and BTEX, VOCs, PAHs, metals, metal hydrides, inorganics and/or pH. A total of 7 samples of sandy fill material from the side walls and floor of the remedial excavation (EX-101) were submitted for laboratory analysis of PHC F1-F4 and BTEX. One soil sample was submitted for TCLP analysis for waste characterization purposes.

Metals and Inorganics

Native soil samples and samples of fill material were submitted for laboratory analysis of a suite of metals and inorganic parameters as summarized below:

Soil Type	Number of Soil Samples Submitted by Parameter					
	Metals	Metal Hydrides	Hexavalent Chromium	Mercury	EC, SAR	pH
Native Soils	9	5	1	1	4	6
Fill Material	11	11	10	10	10	10

Table A provides a summary of the soil samples submitted for laboratory analysis and indicates where measured metals and inorganics concentrations exceeded the corresponding SCS. As indicated therein, the measured concentrations of one or more metals and/or metal hydride parameters exceeded the corresponding Table 9 standards in all 11 of the samples of fill material submitted for laboratory analysis. Metals exceedances in the samples of native soil submitted for analysis were limited to concentrations of molybdenum slightly elevated above the Table 9 SCS in 7 of the 9 native soil samples submitted for analysis. The measured concentrations of SAR marginally exceeded the Table 9 SCS (but below the Table 3 SCS) in three samples of fill material.

No exceedances of the Table 3 SCS were identified except for lead in samples of fill from boreholes BH-102 and BH-105, and barium, hot water-soluble boron, cadmium, copper, lead and zinc in a sample of fill material from borehole BH-203.

As outlined below, the highest measured metals concentrations were primarily identified in samples of fill (notable from borehole BH-202); however, the highest measured concentration of molybdenum was in the native silty clay, suggesting that molybdenum is naturally elevated above the Table 9 SCS (but well below the Table 3 SCS).

The laboratory measured soil pH of the fill and native soil samples were measured between about 7.2 and 7.9, which falls within the acceptable range of 5 to 9 for surface soil and 5 to 11 for subsurface soil.

For those parameters where one or more exceedances of the Table 3 SCS or Table 9 SCS were identified, the following table highlights the maximum metals and inorganic concentrations measured on the Site, as well the range of measured concentrations (excluding the maximum concentration). Maximum concentrations which exceed the Table 3 SCS are highlighted.

Table 2: Summary of Measured Metals and Inorganic Concentrations in Soil Exceeding SCS

Parameter	Conc. Range (µg/g)	Max. Conc. (µg/g)	Table 3 SCS (µg/g)	Table 9 SCS (µg/g)	Location of Max Conc.	Sample Depth (m bgs)
Antimony	<1.3 to 2.6	3	40	1.3	BH-203-2	0.8 - 1.4
Barium	<220 to 585	949	670	220	BH-203-2	0.8 - 1.4
Boron (HWS)	<1.5	2.56	2	1.5	BH-203-2	0.8 - 1.4
Cadmium	<1.2	2.8	1.9	1.2	BH-203-2	0.8 - 1.4
Copper	<92	305	230	92	BH-203-2	0.8 - 1.4
Lead	<120 to 375	1570	120	120	BH-203-2	0.8 - 1.4
Mercury	<0.27 to 0.44	0.57	3.9	0.27	BH-203-2	0.8 - 1.4
Molybdenum	<2 to 6.3	7	40	2	BH-203-7	4.6 - 5.2
Selenium	<1.5	1.9	5.5	1.5	BH-102-1B	0.2 - 0.7
Zinc	<290	1010	340	290	BH-203-2	0.8 - 1.4
SAR	<5 to 5.88	5.89	12	5	BH-106-1A	0.1 - 0.8

Polycyclic Aromatic Hydrocarbons

A total of 15 soil samples were submitted for laboratory analysis of PAHs (seven samples of native soils and eight samples of fill material). Table A provides a summary of the soil samples submitted for laboratory analysis and indicates where measured PAH concentrations exceeded the corresponding SCS. As indicated therein, the measured concentrations of one or more PAH exceeded the corresponding Table 9 standards in two of the eight samples of fill material submitted and in one of the seven samples of native soil submitted for laboratory analysis of PAHs. PAH exceedances of the Table 3 SCS were limited to one sample of fill material from borehole BH-104.

For those parameters where one or more exceedances of the Table 3 SCS or Table 9 SCS were identified, the following table highlights the maximum PAH concentrations measured on the Site, as well as the range of measured concentrations (excluding the maximum concentration). Maximum concentrations which exceed the Table 3 SCS are highlighted.

Table 3: Summary of Measured PAH Concentrations in Soil Exceeding SCS

Parameter	Conc. Range (µg/g)	Max. Conc. (µg/g)	Table 3 SCS (µg/g)	Table 9 SCS (µg/g)	Location of Max Conc.	Sample Depth (m bgs)
Acenaphthylene	<0.093	0.41	0.15	0.093	BH-104-1B	0.4 - 1.5
Acenaphthene	<0.072 to 0.08	0.1	96	0.072	BH-103-3B	3.9 - 4.6
Phenanthrene	<0.69	1.1	12	0.69	BH-104-1B	0.4 - 1.5
Anthracene	<0.22	0.47	0.67	0.22	BH-104-1B	0.4 - 1.5
Fluoranthene	<0.69 to 0.73	4.9	9.6	0.69	BH-104-1B	0.4 - 1.5
Pyrene	<1	4.5	96	1	BH-104-1B	0.4 - 1.5
Benz(a)anthracene	<0.36	1.7	0.96	0.36	BH-104-1B	0.4 - 1.5
Benzo(b)fluoranthene	<0.47	2	0.96	0.47	BH-104-1B	0.4 - 1.5
Benzo(k)fluoranthene	<0.48	1	0.96	0.48	BH-104-1B	0.4 - 1.5
Benzo(a)pyrene	<0.3	1.5	0.3	0.3	BH-104-1B	0.4 - 1.5
Indeno(1,2,3-cd)pyrene	<0.23	0.84	0.76	0.23	BH-104-1B	0.4 - 1.5
Dibenzo(a,h)anthracene	<0.1	0.15	0.1	0.1	BH-104-1B	0.4 - 1.5
Benzo(g,h,i)perylene	<0.68	0.9	9.6	0.68	BH-104-1B	0.4 - 1.5

Petroleum Hydrocarbons

A total of seven samples of the native soil and seven samples of the fill material encountered in the boreholes were submitted for laboratory analysis of PHC F1-F4 and BTEX. An additional seven samples of fill material from the remedial excavation (EX-101) were also submitted for analysis. All measured concentrations of all BTEX parameters were below both the Table 3 SCS and Table 9 SCS. As noted in Table A, several samples from the excavation contained PHC F2 and PHC F3 petroleum hydrocarbon fractions at concentrations above the Table 3 SCS and/or Table 9 SCS. The highest concentrations of PHC F2 and PHC F3 were measured in a soil sample collected from the southern wall of the completed remedial excavation (sample EX-101-3). The measured concentration of PHC F2 exceeded the Table 9 SCS in three other soil samples from the remedial excavation; however, the measured concentration of PHC F2 in these samples were well below the Table 3 SCS. With the exception of low concentrations of PHC F2 in samples of native silty clay from borehole BH-202 (marginally above the Table 9 SCS but below the Table 3 SCS), no other exceedances of petroleum-related parameters were identified on the site outside of the remedial excavation.

For those parameters where one or more exceedances of the Table 3 SCS or Table 9 SCS were identified, the following table highlights the maximum petroleum hydrocarbon concentration measured on the Site, as well the range of measured concentrations (excluding the maximum concentration). Maximum concentrations which exceed the Table 3 SCS are highlighted.

Table 4: Summary of Measured PHC Concentrations in Soil Exceeding SCS

Parameter	Conc. Range (µg/g)	Max. Conc. (µg/g)	Table 3 SCS (µg/g)	Table 9 SCS (µg/g)	Location of Max Conc.	Sample Depth (m bgs)
PHC F2	<10 to 65	420	230	10	EX-101-3	1.0
PHC F3	<240	280	1700	240	EX-101-3	1.0

Volatile Organic Compounds

A total of four samples of the native soil and seven samples of the fill material encountered in the boreholes were submitted for laboratory analysis of VOCs. As identified in Table A, except for tetrachloroethylene ("PCE") detected in a sample of fill material from borehole BH-104, which exceeded the Table 9 SCS but was well below the Table 3 SCS, the measured concentrations of VOC parameters for each of the samples submitted for analysis were below the Table 9 SCS and Table 3 SCS.

The following table highlights the maximum PCE concentration measured on the Site, as well the range of measured concentrations (excluding the maximum concentration).

Table 5: Summary of Measured VOC Concentrations in Soil Exceeding SCS

Parameter	Conc. Range (µg/g)	Max. Conc. (µg/g)	Table 3 SCS (µg/g)	Table 9 SCS (µg/g)	Location of Max Conc.	Sample Depth (m bgs)
Tetrachloro-ethylene	<0.05	0.31	45	0.05	BH-104-1B	0.4 - 1.5

4.1.2 Waste Characterization of On-Site Fill Material

To support potential off-site disposal of fill material (if required to support redevelopment of the Site), a sample of fill material encountered during the 2018 site investigation activities, considered representative of the fill encountered across the Site (sample BH-205-2D from borehole BH-205) was submitted for Toxicity Characteristic Leaching Procedure (TCLP), with the leachate analysed for Schedule 4 metals, inorganics, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) to classify the soil as hazardous or non-hazardous for disposal purposes.

These results were compared to O. Reg. 347, as amended, Schedule 4 Leachate Quality Criteria (Schedule 4 Criteria). No leachate concentrations were found to exceed the Schedule 4 Criteria and the fill material was therefore classified as non-hazardous for disposal.

4.2 Groundwater Conditions

Groundwater seepage conditions were observed in the boreholes during drilling as shown on the Record of Borehole sheets. Groundwater levels were subsequently measured on July 10, 2018 and August 9, 2018. The groundwater elevations in the monitoring wells were found to range from approximately 174.33 m to 174.90 m with depths ranging from approximately 0.53 m to 3.93 m below the existing ground surface. The corresponding river water level was found to be 174.85 m on July 10, 2018 and 174.77 m on August 9, 2018. The following table summarizes the available groundwater elevation (and river elevation) data for 2018:

Location ID	Approximate Ground Surface Elevation (m)	June 19, 2018	July 10, 2018	August 9 2018
MW-103	176.81	175.48 (1.13)	-	175.21 (1.60)
MW-105	175.35	175.09 (0.26)	-	-
MW-106	175.56	<i>Well not found in 2018 (buried or removed)</i>		
MW-201	177.36	-	174.52 (2.84)	175.29 (2.07)
MW-202	178.26	-	174.33 (3.93)	175.96 (2.30)
MW-204	175.94	-	174.77 (1.17)	174.93 (1.01)
MW-205	175.32	-	174.79 (0.53)	174.93 (0.39)
MW-206	175.53	-	174.90 (0.63)	174.91 (0.62)
River	n/a	-	174.85	174.77

1 – Number in brackets (2.84) indicates depth below ground surface (metres).

As inferred from the progressive increase in groundwater elevations in several monitoring wells (most notably MW-201 and MW-202), the groundwater elevations measured in August 9, 2018 may not represent static groundwater conditions at all on-site monitoring wells.

Groundwater elevations and flow direction on the Site are anticipated to be influenced, on a localized level, by features such as remaining building foundations and buried utilities (if any), site topography and the presence and characteristics of fill materials. Based on our overall knowledge of the Site and regional conditions, groundwater flow across the Site is inferred to be predominantly towards the Detroit River located adjacent to the west of the Site.

4.2.1 Groundwater Analytical Results

As summarized above, as part of the subsurface investigations carried out to date between 2016 and 2018, groundwater samples from the on-site monitoring well network have been submitted for laboratory analysis of PHC F1-F4 and BTEX (eight monitoring wells), VOCs (seven wells), PAHs (seven wells), and a suite of metals and inorganics parameters (six wells). The reported concentrations of all analysed parameters in the groundwater samples submitted for analysis were below both the Table 3 SCS and Table 9 SCS.

Non-Numerical Standards

In addition to numerical standards, the MOECC specifies out non-numerical groundwater standards for petroleum hydrocarbons. Specifically, a property does not meet the applicable site condition standards if there is evidence of free product, including, but not limited to: 1) any visible petroleum hydrocarbon film or sheen present in the groundwater or surface water; and 2) an objectionable petroleum hydrocarbon taste or odour in groundwater.

No free product, petroleum hydrocarbon odour or sheen were noted in groundwater purged from any of the monitoring well locations during well development or sampling.

4.3 Sediment Conditions

The three sediment samples (SD-101, SD-201 and SD-301) recovered using the Ponar sampler generally comprised dark brown silty sand and trace gravel with organic matter (plant matter, rootlets, and organic silt) with no odour or staining indicative of potential chemical impacts. It is inferred that the sediment samples represent the upper 0 to 0.15 metres of the sediment, as the river bottom became dense and was not penetrated with the probe rod deeper than about 0.15 metres at any of the three locations.

4.3.1 Analytical Results for Sediment Samples

As noted above, three sediment samples (SD-101, SD-201 and SD-301) were submitted for laboratory analysis of PHC F1-F4 and BTEX, VOCs, PAHs, metals and PCBs. Copies of the laboratory certificates of analysis are provided in Appendix B. The analytical results for the sediment sampling were compared to the corresponding Table 3 SCS and Table 9 SCS for comparison purposes.

Metals

As indicated on the laboratory certificates of analysis, the measured concentration of copper (three samples), nickel (one sample) and silver (one sample) exceeded the Table 9 SCS for sediment. Except for a marginally elevated concentration of silver in one sediment sample, all other metals concentrations were below both the Table 1 SCS (soil) and Table 3 SCS (soil).

For those parameters where one or more exceedances of the applicable Table 1 SCS, Table 3 SCS or Table 9 SCS were identified, the following table highlights the maximum metals concentrations measured in the collected sediment samples, as well the range of measured concentrations (excluding the maximum concentration).

Table 6: Summary of Measured Metals and Inorganic Concentrations in Sediment Exceeding SCS

Parameter	Conc. Range (µg/g)	Max. Conc. (µg/g)	Table 1 SCS (Soil) (µg/g)	Table 3 SCS (Soil) (µg/g)	Table 9 SCS (Sediment) (µg/g)	Location of Max Conc.
Copper	16 to 21	24	92	230	16	SD-101
Nickel	<16	24	82	270	16	SD-101
Silver	<0.2	0.9	0.5	40	0.5	SD-201

Polycyclic Aromatic Hydrocarbons

As indicated on the laboratory certificates of analysis, the measured concentration of one or more PAH parameters exceeded both the Table 1 SCS (soil) and Table 9 SCS (sediment). Except for benzo(a)pyrene, which matched or exceeded the corresponding Table 3 SCS, all measured PAH concentrations were below the Table 3 SCS.

Table 7: Summary of Measured PAH Concentrations in Sediment Exceeding SCS

Parameter	Conc. Range (µg/g)	Max. Conc. (µg/g)	Table 1 SCS (Soil) (µg/g)	Table 3 SCS (Soil) (µg/g)	Table 9 SCS (Sediment) (µg/g)	Location of Max Conc.
Benz(a) anthracene	0.45 to 0.48	0.61	0.36	0.96	0.32	SD-201
Benzo(a)pyrene	0.3 to 0.37	0.46	0.3	0.3	0.37	SD-201
Benzo(g,h,i) perylene	<0.17 to 0.17	0.2	0.68	9.6	0.17	SD-201
Benzo(k) fluoranthene	0.26 to 0.32	0.43	0.48	0.96	0.24	SD-201
Chrysene	0.62 to 0.78	0.91	2.8	9.6	0.34	SD-201
Fluoranthene	1.5 to 1.7	1.8	0.56	9.6	0.75	SD-201
Ideno(1,2,3-cd) pyrene	<0.2	0.21	0.23	0.76	0.2	SD-201
Phenanthrene	0.66 to 0.74	0.81	0.69	12	0.56	SD-201
Pyrene	1.2 to 1.3	1.5	1	96	0.49	SD-201

Petroleum Hydrocarbons

As indicated on the laboratory certificates of analysis, petroleum hydrocarbons in the F1 to F4 fractions (PHC F1 to F4) were measured at concentrations below the laboratory's reportable detection limits for all 3 sediment samples analysed. A brief discussion on the analysis of BTEX parameters is provided below (as VOCs).

Volatile Organic Compounds

As indicated on the attached certificates of analysis, none of the analysed VOC parameters have a corresponding Table 9 SCS (for sediment). Also, due to the elevated moisture content of the samples, the reportable detection limits were raised (due to sample dilution) above the Table 1 SCS (for soil) for most of the VOC parameters. However, based on the analytical results, toluene was detected in one sample (SD-101) at a concentration above the Table 1 SCS, but well below the Table 3 SCS. No other exceedances of the Table 1 SCS or Table 3 SCS were identified.

The following table highlights the maximum toluene concentration measured in the sediment samples analysed, as well as the range of measured concentrations (excluding the maximum concentration).

Table 8: Summary of Measured VOC Concentrations in Sediment Exceeding SCS

Parameter	Conc. Range (µg/g)	Max. Conc. (µg/g)	Table 1 SCS (Soil) (µg/g)	Table 3 SCS (Soil) (µg/g)	Table 9 SCS (Sediment) (µg/g)	Location of Max Conc.
Toluene	<0.10	0.94	0.2	68	NV	SD-101

Polychlorinated Biphenyls

As indicated on the laboratory certificates of analysis, the measured concentration of PCBs in each of the 3 sediment samples submitted for analysis were below the reportable detection limit, and therefore below the Table 1 SCS (soil) and Table 3 SCS (soil). However, due to the moisture content of the samples, the reportable detection limit (of 0.1 µg/g) was slightly raised above the Table 9 SCS (sediment) of 0.07 µg/g).

4.3.2 Waste Characterization of Sediment

To support potential off-site disposal of sediment material (if required to support dredging), a sample of sediment material (sample SD-101) was submitted for TCLP analysis, with the leachate analysed for Schedule 4 metals, inorganics, VOCs and SVOCs to classify the soil as hazardous or non-hazardous for disposal purposes.

These results were compared to O. Reg. 347, as amended, Schedule 4 Leachate Quality Criteria (Schedule 4 Criteria). No leachate concentrations were found to exceed the Schedule 4 Criteria and the sediment was therefore classified as non-hazardous for the purpose of disposal.

5.0 SUMMARY

Background

- The Site is approximately 120 m by 50 metres in area and is located on the east shore of the Detroit River (west) in the Town of Amherstburg. Most recently, the property was operated as a motel and tavern with a marina. Historically (dating back to the early 1900s) the southern and central portions of the Property were associated with a lumber mill operation. Both the motel and tavern buildings were demolished in 2017, and subsurface infrastructure (including a former fuel tank) was removed. The Site is currently vacant, and generally slopes down from the northeast to southwest.

- A total of 15 boreholes have been drilled to assess subsurface conditions at the Site and to facilitate soil sampling. Eight groundwater monitoring wells have also been installed to facilitate monitoring and sampling of groundwater. Limited sediment sampling has also been carried out, with three shallow sediment samples collected from river bed near the docks of the former marina.

Subsurface Conditions

- The boreholes advanced across the Site encountered variable fill material (silty sand, sand and gravel, sandy silty clay) to depths ranging from about 0.5 to 4.0 metres below ground surface, with greater fill thicknesses generally encountered closer to the shore and within the former building footprints. Beneath the fill, the native soils encountered on the Site generally comprised cohesive sandy silty clay till to the maximum depth of the investigation (up to 9.7 metres below ground surface).
- Based on groundwater monitoring carried out to date, groundwater at the Site is expected to range between about 0.3 to 0.5 metres below ground surface (close to the shoreline), to about 1.2 to 1.5 metres below ground surface closer to Dalhousie Street.

Soil and Groundwater Quality

- Based on the results of the investigations carried out to date, no environmental impacts to on-site groundwater quality have been identified.
- The impacts to soil quality that have been identified at the Site have generally been limited to slightly elevated concentrations of metals and polycyclic aromatic hydrocarbons in the fill material present across the Site. To a lesser extent, petroleum hydrocarbons and volatile organic compounds have been identified in on-site soils (primarily fill material) at concentrations above the applicable provincial regulatory standards.

Sediment Quality

- Based on the results of the limited sediment sampling program, measured concentrations of several polycyclic aromatic hydrocarbon parameters, in addition to silver (one sample) and toluene (one sample), exceeded the provincial regulatory standards for sediment quality. No polychlorinated biphenyls (PCBs) were detected in any of the three samples submitted for analysis.

Potential Risk Management Measures

- The impacts to soil quality identified at the Site can likely be addressed through risk assessment and implementation of risk management measures, including construction of a soft cap (e.g., cover the site with a layer of clean soil and landscaping) or hard cap (e.g., pavement), or combination of both. Should any excess soils require removal from the site during future construction, and if they are found to be impacted, they would be characterized as “non-hazardous” wastes and could be disposed of at the local landfill.
- With respect to the quality of the sediments, as sampled in the former marina area, in the event these sediments are dredged or otherwise require removal during future development, the excavated sediments may require landfill disposal (following dewatering); however, the sediments would be characterized as “non-hazardous” wastes and could be disposed of at the local landfill.

6.0 LIMITATIONS

The activities described and conclusions drawn within this report address only the geo-environmental (chemical) aspects of the subsurface conditions at the Site and Study Area. The geotechnical (physical) aspects, including, without limitation, the engineering recommendations for the design and construction of building foundations, pavements, underground servicing and the like are outside the terms of reference for this report and have been provided under separate cover.

This report was prepared for the exclusive use of Town of Amherstburg. No third parties may rely upon this report. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the sole responsibility of such third party. This report is based on data and information collected by Golder Associates Ltd. on behalf of the Town of Amherstburg, and is based solely on the site conditions encountered at the time of the field investigations referenced herein. In preparing this assessment, Golder evaluated only conditions on/within the Study Area and did not evaluate the operations on adjacent properties. Only limited chemical analyses of soil, groundwater and sediment samples were carried out. Regulatory criteria are used for comparison purposes only and are not necessarily enforceable on the property owner. It should be noted that the results of an investigation of this nature should, in no way, be construed as a warranty that the site is free from any and all contamination from past or current practices.

In evaluating the property, Golder Associates Ltd. has relied in good faith on information provided by others. We accept no responsibility for any deficiency, misstatements or inaccuracies contained in this report as a result of omission, errors, misinterpretations or fraudulent acts of the persons interviewed. Golder Associates Ltd. accepts no responsibility for any reduction in property value, either real or perceived, or for decisions made as a result of the reporting of factual information herein.

If additional information is obtained during future work at the Study Area, including excavations, borings, or other studies, and/or if conditions exposed during construction are different from those encountered in this assessment, Golder should be requested to re-evaluate the conclusions presented in this report and provide amendments as required.

Based on our understanding of the Town's objectives, this report was not intended to satisfy the submission requirements for a Record of Site Condition (RSC) "as is". If a RSC is required, additional field work and reporting may be necessary.

7.0 CLOSURE

We trust the information presented in this report meets your current requirements. Should you have any questions or concerns, please do not hesitate to contact us.

Golder Associates Ltd.



Carl Schroeder, M.A.Sc., P.Eng.
Senior Project Manager



Keith G. Lesarge, M.Sc., P.Geo.
Principal

CES/KGL/ly

Golder and the G logo are trademarks of Golder Associates Corporation

Table A: Summary of Soil Samples Selected for Laboratory Analysis

Sample ID	Depth (m) ⁽ⁱ⁾	Description of Soil Material Encountered	Headspace Combustible Vapour Concentrations (ppm)	Parameters Analysed								Exceedances of MECP Site Condition Standards (SCS) ⁽ⁱⁱⁱ⁾		
				O Reg. 153/04 Metals	O Reg. 153/04 Metal Hydrides	Hexavalent Chromium	Mercury	PHC F1-F4 (BTEX) ⁽ⁱⁱⁱ⁾	VOCs ^(iv)	PAHs ^(v)	EC and SAR ^(vi)	pH	Table 3 Commercial ^(vii) (Full Depth, Non-Potable)	Table 9 Parkland ^(viii) (Full Depth, Non-Potable, within 30 m of water body)
November 2016 ^(ix)														
BH-101-1B	0.6 - 1.5	Sandy SILTY CLAY , trace gravel; brown, TILL.	0	-	-	-	-	-	-	-	-	●	None	None
BH-102-1B	0.2 - 0.7	FILL – Sand and gravel, some silt, some clay; brown.	0	●	●	●	●	-	-	●	●	●	Metals (Pb) ^(x)	Metals (Pb, Mo, Se, Hg)
BH-103-1B	0.7 - 1.5	FILL – Clayey silt; brown, trace grey.	0	●	●	●	●	-	-	●	●	●	None	Metals (Mo), SAR, PAHs (x1) ^(xi)
BH-103-2B	2.3 - 3.1	Sandy SILTY CLAY , trace gravel; brown, TILL.	0	-	-	-	-	●	●	-	-	-	None	None
BH-103-3B	3.9 - 4.6	Sandy SILTY CLAY , trace gravel; grey, TILL	0	-	-	-	-	-	-	-	●	-	None	PAHs (x2)
BH-104-1B	0.4 - 1.5	FILL – Silty clay, some sand, some gravel; brown to dark grey with some black staining.	0	●	●	●	●	●	●	●	●	●	PAHs (x7)	Metals (Mo), PAHs (x12), VOCs (PCE) ^(xii)
BH-104-3B	3.4 - 4.6	Sandy SILTY CLAY , trace gravel; grey and brown, TILL.	0	-	-	-	-	-	-	●	●	-	None	None
BH-105-1B	0.4 - 1.5	FILL – Clayey silt; some sand, some organics, trace gravel, trace brick; brown, dark grey.	0	●	●	●	●	-	-	●	●	●	Metals (Pb)	Metals (Pb, Sb)
BH-105-2A	1.5 - 2.3	FILL – Clayey silt; some sand, some organics, trace gravel, trace brick; brown, dark grey.	0	-	-	-	-	●	●	-	-	-	None	None
BH-106-1A	0.1 - 0.8	FILL – Clayey silt; some sand, some gravel, brown and grey.	0	●	●	●	●	-	-	●	●	●	None	Metals (Mo, Hg), SAR
BH-106-1B	0.8 - 1.5	Fine SAND , dark grey.	0	-	-	-	-	-	-	-	-	●	None	None
BH-106-2A	1.5- 2.3	Sandy SILTY CLAY , trace gravel; brown, TILL.	0	-	-	-	-	●	●	-	-	-	None	None
BH-107-1A	0.4 - 0.9	FILL – Silty clay, some sand, trace gravel, trace brick debris; brown and grey.	0	●	●	●	●	-	-	●	●	●	None	Metals (Mo)
June 2017 ^(xiii)														
EX-101-1	3.0	FILL , Sand; brown [excavation floor]	20	-	-	-	-	●	-	-	-	in-	None	None
EX-101-2	3.0	FILL , Sand; brown, with petroleum odour and staining [excavation floor]	20	-	-	-	-	●	-	-	-	-	None	PHC F2

Sample ID	Depth (m) ⁽ⁱ⁾	Description of Soil Material Encountered	Headspace Combustible Vapour Concentrations (ppm)	Parameters Analysed								Exceedances of MECP Site Condition Standards (SCS) ⁽ⁱⁱⁱ⁾	
				O Reg. 153/04 Metals	O Reg. 153/04 Metal Hydrides	Hexavalent Chromium	Mercury	PHC F1-F4 (BTEX) ⁽ⁱⁱⁱ⁾	VOCs ^(iv)	PAHs ^(v)	EC and SAR ^(vi)		Table 3 Commercial ^(vii) (Full Depth, Non-Potable)
EX-101-3	1.0	FILL, Sand; brown, with petroleum odour and staining [south excavation side wall]	75	-	-	-	-	●	-	-	-	PH	PHC F2, PHC F3
EX-101-4	1.0	FILL, Sand; brown, with petroleum odour and staining [south excavation side wall]	15	-	-	-	-	●	-	-	-	-	PHC F2
EX-101-5	1.0	FILL, Sand and clay, with construction debris; brown [west excavation side wall]	25	-	-	-	-	●	-	-	-	-	PHC F2
EX-101-8	1.0	FILL, Sand and clay, with construction debris; brown [east excavation side wall]	25	-	-	-	-	●	-	-	-	-	None
EX-101-10	1.0	FILL, Sand and clay, with construction debris; brown [north excavation side wall]	20	-	-	-	-	●	-	-	-	-	None
June 2018 ^(xiv)													
BH-201-1A	0.0 - 0.4	FILL – Sandy silty clay, some travel, trace organics; brown to dark brown.	25	-	-	-	-	●	-	-	-	-	None
BH-201-2A	1.5 - 2.3	Sandy SILTY CLAY , trace gravel, with fissures and occasional silt layers; brown to grey, TILL	5	●	●	-	-	-	-	-	-	-	Metals (Mo)
BH-201-4	2.3 - 2.6	Sandy SILTY CLAY , trace gravel, with fissures and occasional silt layers; brown to grey, TILL and sandy SILT , trace gravel, grey-brown.	15	-	-	-	-	-	-	●	-	-	None
BH-202-4A	2.3 - 2.6	FILL – Sandy silty clay, trace gravel with coal; brown.	25	●	●	●	●	-	-	-	●	●	Metals (Mo)
BH-202-6	3.8 - 4.4	Sandy SILTY CLAY , trace gravel, with fissures and occasional silt layers; brown to grey, TILL	5	-	-	-	-	●	●	-	-	-	PHC F2
BH-202-8	5.3 - 5.9	Sandy SILTY CLAY , trace gravel, with fissures and occasional silt layers; brown to grey, TILL	0	-	-	-	-	●	●	-	-	●	PHC F2
BH-203-2	0.8 - 1.4	FILL – Sandy silty clay, with organics and gravel, wood, ash, brick and plastic debris; grey to black.	10	●	●	●	●	●	●	●	●	●	Metals (Sb, Ba, HWS Bo, Cd, Cu, Pb, Hg, Mo, Zn)
BH-203-4B	2.7 - 2.9	Sandy SILTY CLAY , trace to some gravel, with fissures; brown to grey, TILL	15	●	●	-	-	-	-	-	●	-	Metals (Mo)
BH-203-7	4.6 - 5.2	Sandy SILTY CLAY , trace to some gravel, with fissures; brown to grey, TILL	15	●	-	-	-	-	-	-	-	●	Metals (Mo)
BH-204-1B	0.3 - 0.8	FILL – Sand, some clay, some silt, trace gravel, with ash, brick, concrete and coal fragments.	20	-	-	-	-	-	-	-	-	-	None
BH-204-4	2.3 - 2.9	SILTY CLAY , some sand, with roots and rootlets; dark brown to black.	5	●	●	-	-	-	-	-	-	-	None

Sample ID	Depth (m) ⁽ⁱ⁾	Description of Soil Material Encountered	Headspace Combustible Vapour Concentrations (ppm)	Parameters Analysed									Exceedances of MECP Site Condition Standards (SCS) ⁽ⁱⁱ⁾			
				O Reg. 153/04 Metals	O Reg. 153/04 Metal Hydrides	Hexavalent Chromium	Mercury	PHC F1-F4 (BTEX) ⁽ⁱⁱⁱ⁾	VOCs ^(iv)	PAHs ^(v)	EC and SAR ^(vi)	pH	Table 3 Commercial ^(vii) (Full Depth, Non-Potable)	Table 9 Parkland ^(viii) (Full Depth, Non-Potable, within 30 m of water body)		
BH-204-7	4.6 - 5.2	Sandy SILTY CLAY , trace to some gravel; gray to brown, TILL.	15	●	-	-	-	-	-	-	-	●	None	Metals (Mo)	Table 3 Commercial ^(vii) (Full Depth, Non-Potable)	Table 9 Parkland ^(viii) (Full Depth, Non-Potable, within 30 m of water body)
BH-204-5A	3.0 - 3.3	SILTY CLAY , some sand, with organics (roots and rootlets); grey, TILL.	20	-	-	-	-	●	-	-	-	-	None	None		
BH-205-1D	0.8 - 1.5	FILL – Sand, some silt, trace gravel, with organics, ash and brick; dark brown.	0	-	-	-	-	-	-	●	-	-	None	None		
BH-205-2A	1.5 - 2.2	FILL – Sand, some silt, trace gravel, with organics, ash and brick; dark brown.	30	●	●	●	●	●	-	-	●	●	None	Metals (Mo)		
BH-205-2B	2.2 - 2.5	FILL – Sand, some silt, trace gravel, with organics, ash and brick; dark brown.	15	-	-	-	-	●	-	-	●	-	None	None		
BH-206-5B	3.3 - 3.7	SILTY CLAY , some sand, with organics (roots and rootlets); grey, TILL	30	-	-	-	-	●	-	-	-	-	None	None		
BH-206-6B	4.2 - 4.4	SILTY CLAY , some sand, with organics (roots and rootlets); grey, TILL	20	●	●	●	●	●	-	-	-	●	None	Metals (Mo)	Table 3 Commercial ^(vii) (Full Depth, Non-Potable)	Table 9 Parkland ^(viii) (Full Depth, Non-Potable, within 30 m of water body)
BH-207-1B	0.5 - 0.6	FILL – Silty sand, trace gravel with organics; brown.	10	●	●	-	-	-	-	-	-	-	None	Metals (Ba)		
BH-207-3	1.5 - 2.1	Sandy SILTY CLAY , trace gravel with fissures and sand pockets; brown, TILL	15	●	●	-	-	-	-	-	-	●	None	Metals (Mo)		
BH-207-7	4.6 - 5.2	Sandy SILTY CLAY , trace gravel; grey, TILL	5	-	-	-	-	-	-	-	-	●	None	None	Table 3 Commercial ^(vii) (Full Depth, Non-Potable)	Table 9 Parkland ^(viii) (Full Depth, Non-Potable, within 30 m of water body)
BH-208-1B	0.5 - 0.8	FILL – Sandy silty clay, trace gravel, with organics; dark brown to grey.	25	●	●	●	●	-	-	-	-	●	None	Metals (Mo), SAR		
BH-208-3A	1.5- 2.1	FILL – Sandy silty clay, trace gravel, with organics; dark brown to grey.	20	-	-	-	-	●	-	-	●	-	None	None		
BH-208-6	3.8 - 4.4	Sandy SILTY CLAY , trace gravel with fissures and sand pockets; brown, TILL	10	●	-	-	-	-	-	-	-	●	None	Metals (Mo)		

Table B: Total Number of Soil Samples Selected for Laboratory Analysis

Parameters Analysed	O Reg. 153/04 Metals	O Reg. 153/04 Hexavalent Chromium	Mercury	PHC F1-F4 (BTEX)	VOCs	PAHs	EC and SAR	pH
Total Number of Samples Submitted for Analysis – Native Soils	9	6	2	7	4	7	5	7
Total Number of Samples Submitted for Analysis – Fill Material	11	10	9	14	7	8	9	9

ⁱ All sample depths are expressed as metres below ground surface (mbgs).

ⁱⁱ Ontario Ministry of Environment, Conservation and Parks (MECP), formerly the Ministry of Environment and Climate Change (MOECC).

ⁱⁱⁱ Petroleum Hydrocarbons (PHCs) as F1, F2, F3 and F4 PHC fractions (PHC F1-F4), and benzene, toluene, ethylbenzene and total xylenes (BTEX).

^{iv} Volatile Organic Compounds (VOCs).

^v Polycyclic Aromatic Hydrocarbons (PAHs).

^{vi} Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR)

^{vii} MECP 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA' (April 2011). Table 3 full depth soil conditions, in a non-potable ground water condition for commercial/industrial/community property use. Criteria for coarse textured soils applied for comparison.

^{viii} MECP 'Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA' (April 2011). Table 9 full depth soil conditions within 30 m of a water body, in a non-potable ground water condition for residential/parkland/institutional property use. Criteria for all textured soils applied for comparison.

^{ix} Summary of soil samples submitted for analysis during November 2016 borehole drilling investigation.

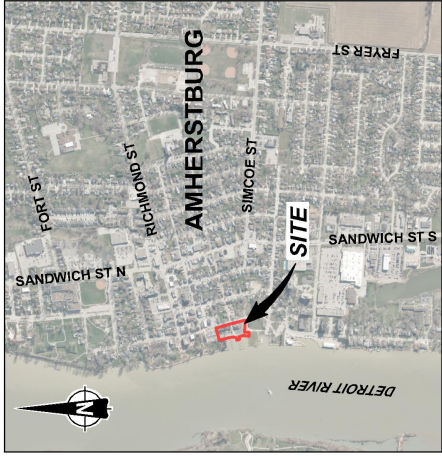
^x Metals: Antimony (Sb), Barium (Ba), Hot Water Soluble Boron (HWS Bo), Cadmium (Cd), Copper (Cu), Lead (Pb), Mercury (Hg), Molybdenum (Mo), Zinc (Zn).

^{xi} Number in parentheses (x2) represents the number of PAH parameters whose measured concentration exceeded the respective SCS.

^{xii} Tetrachloroethylene (PCE).

^{xiii} Summary of soil samples submitted for analysis during June 2017 tank removal and limited soil remediation.

^{xiv} Summary of soil samples submitted for analysis during June 2018 borehole drilling investigation.



KEY PLAN

LEGEND

PROPERTY BOUNDARY

REFERENCE

DRAWING BASED ON 2017 AERIAL IMAGERY FROM THE COUNTY OF ESSEX WEB MAPPING SITE. BY PERMISSION; AND CANMAP STREETFILES V2008.4.

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT. ALL LOCATIONS ARE APPROXIMATE.

PROJECT

SUMMARY OF ENVIRONMENTAL EXPLORATION FINDINGS
290, 296 AND 306 DALHOUSIE STREET
AMHERSTBURG, ONTARIO

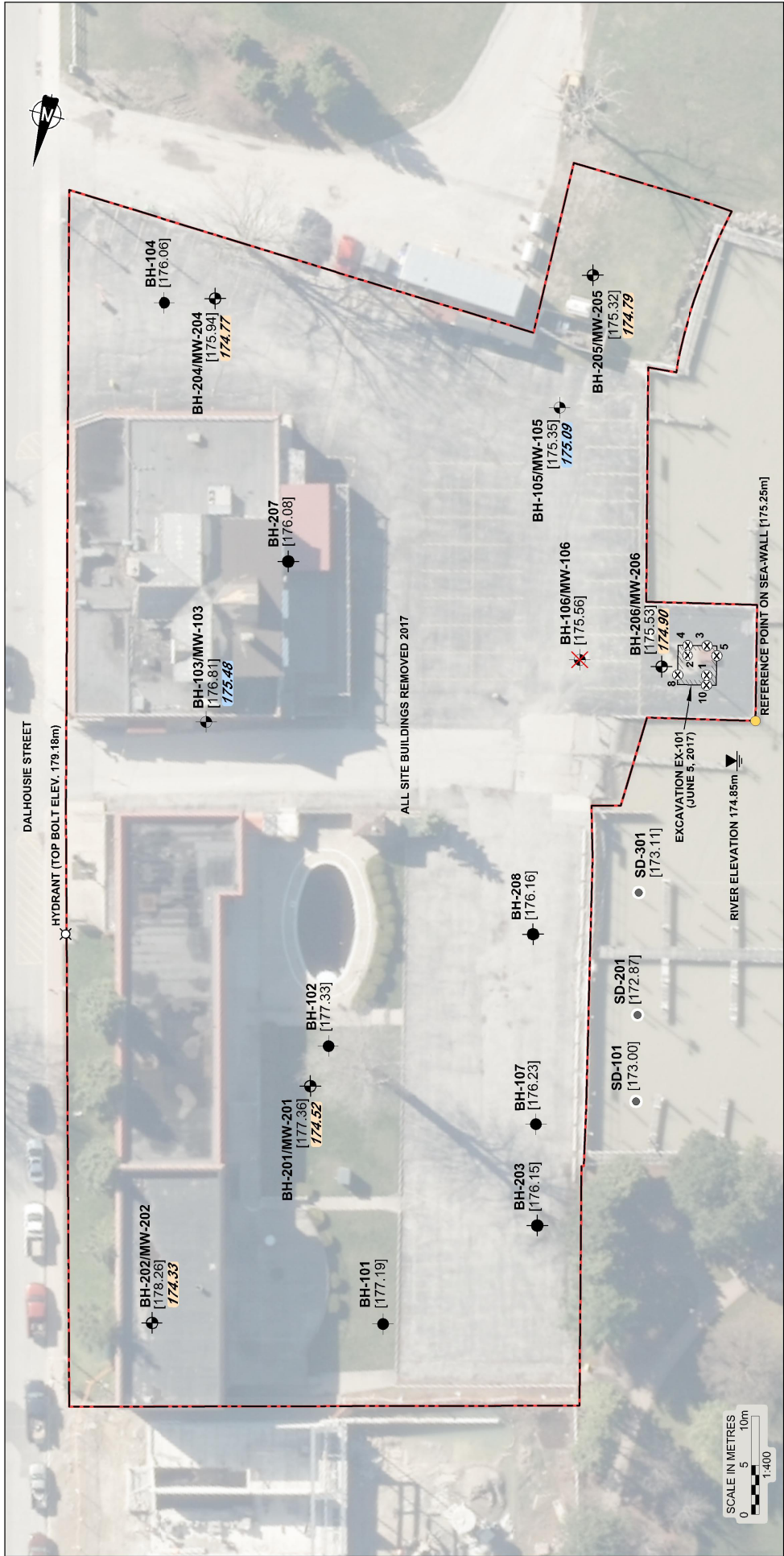
TITLE

LOCATION PLAN



PROJECT No.	18100361	FILE No.	18100361-R02001
DRAWN	DCM	SCALE	AS SHOWN
CHECKED	ef	DATE	Sep 11/18

FIGURE 1



LEGEND

- PROPERTY BOUNDARY
- BOREHOLE
- BOREHOLE/MONITORING WELL
- BOREHOLE NOT FOUND
- SEDIMENT SAMPLE
- EXCAVATED AREA
- SOIL SAMPLE (Submitted for laboratory analysis)
SAMPLES 1 to 10 : EX-101-1 to EX-101-10

- [175.94]
- 175.48
- 174.52
- GROUND SURFACE/BATHYMETRIC ELEVATION
- MEASURED WATER LEVEL - m amsl
(JUNE 13, 2018)
- MEASURED WATER LEVEL - m amsl
(JULY 10, 2018)

REFERENCE

DRAWING BASED ON 2017 AERIAL IMAGERY FROM THE COUNTY OF ESSEX WEB MAPPING SITE. BY PERMISSION:
PLAN OF SURVEY, VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC., ONTARIO LAND SURVEYORS; MAY 23 - 2017; AND
CANMAP STREETFILES V2008.4.

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ
IN CONJUNCTION WITH ACCOMPANYING TEXT.
100 SERIES BOREHOLES DRILLED IN 2016.
200 SERIES BOREHOLES DRILLED IN 2018.
ALL LOCATIONS ARE APPROXIMATE.

SITE PLAN

PROJECT
SUMMARY OF ENVIRONMENTAL EXPLORATION FINDINGS
290, 296 AND 306 DALHOUSIE STREET
AMHERSTBURG, ONTARIO

TITLE

GOLDER

PROJECT No.	18100361	FILE No.	18100361-R02002
DRAWN	DCN	SCALE	AS SHOWN
CHECKED	EX	DATE	SEP 11/18

FIGURE 2

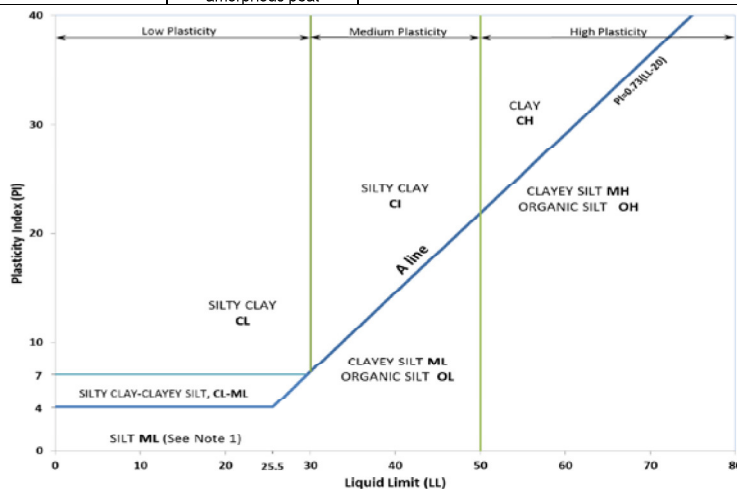
APPENDIX A

**Record of Borehole Sheets (2016
and 2018 Site Investigations)**

METHOD OF SOIL CLASSIFICATION

The Golder Associates Ltd. Soil Classification System is based on the Unified Soil Classification System (USCS)

Organic or Inorganic	Soil Group	Type of Soil		Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$		$Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$			Organic Content	USCS Group Symbol	Group Name	
INORGANIC (Organic Content ≤30% by mass)	COARSE-GRAINED SOILS (>50% by mass is larger than 0.075 mm)	GRAVELS (>50% by mass of coarse fraction is larger than 4.75 mm)	Gravels with ≤12% fines (by mass)	Poorly Graded	<4		≤1 or ≥3			≤30%	GP	GRAVEL	
				Well Graded	≥4		1 to 3				GW	GRAVEL	
			Gravels with >12% fines (by mass)	Below A Line	n/a						GM	SILTY GRAVEL	
				Above A Line	n/a						GC	CLAYEY GRAVEL	
		SANDS (≥50% by mass of coarse fraction is smaller than 4.75 mm)	Sands with ≤12% fines (by mass)	Poorly Graded	<6	≤1 or ≥3			SP		SAND		
				Well Graded	≥6	1 to 3			SW		SAND		
			Sands with >12% fines (by mass)	Below A Line	n/a						SM	SILTY SAND	
				Above A Line	n/a						SC	CLAYEY SAND	
Organic or Inorganic	Soil Group	Type of Soil	Laboratory Tests	Field Indicators					Organic Content	USCS Group Symbol	Primary Name		
				Dilatancy	Dry Strength	Shine Test	Thread Diameter	Toughness (of 3 mm thread)					
INORGANIC (Organic Content ≤30% by mass)	FINE-GRAINED SOILS (≥50% by mass is smaller than 0.075 mm)	SILTS (Non-Plastic or PI and LL plot below A-Line on Plasticity Chart below)	Liquid Limit <50	Rapid	None	None	>6 mm	N/A (can't roll 3 mm thread)	<5%	ML	SILT		
				Slow	None to Low	Dull	3mm to 6 mm	None to low	<5%	ML	CLAYEY SILT		
			Liquid Limit ≥50	Slow to very slow	Low to medium	Dull to slight	3mm to 6 mm	Low	5% to 30%	OL	ORGANIC SILT		
				Slow to very slow	Low to medium	Slight	3mm to 6 mm	Low to medium	<5%	MH	CLAYEY SILT		
		CLAYS (PI and LL plot above A-Line on Plasticity Chart below)	Liquid Limit <30	None	Low to medium	Slight to shiny	~ 3 mm	Low to medium	0% to 30%	CL	SILTY CLAY		
			Liquid Limit 30 to 50	None	Medium to high	Slight to shiny	1 mm to 3 mm	Medium	(see Note 2)	CI	SILTY CLAY		
			Liquid Limit ≥50	None	High	Shiny	<1 mm	High		CH	CLAY		
HIGHLY ORGANIC SOILS (Organic Content >30% by mass)		Peat and mineral soil mixtures							30% to 75%	PT	SILTY PEAT, SANDY PEAT		
		Predominantly peat, may contain some mineral soil, fibrous or amorphous peat							75% to 100%		PEAT		



Note 1 – Fine grained materials with PI and LL that plot in this area are named (ML) SILT with slight plasticity. Fine-grained materials which are non-plastic (i.e. a PL cannot be measured) are named SILT.

Note 2 – For soils with <5% organic content, include the descriptor “trace organics” for soils with between 5% and 30% organic content include the prefix “organic” before the Primary name.

Dual Symbol — A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC and CL-ML.

For non-cohesive soils, the dual symbols must be used when the soil has between 5% and 12% fines (i.e. to identify transitional material between “clean” and “dirty” sand or gravel.

For cohesive soils, the dual symbol must be used when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart (see Plasticity Chart at left).

Borderline Symbol — A borderline symbol is two symbols separated by a slash, for example, CL/CI, GM/SM, CL/ML.

A borderline symbol should be used to indicate that the soil has been identified as having properties that are on the transition between similar materials. In addition, a borderline symbol may be used to indicate a range of similar soil types within a stratum.

ABBREVIATIONS AND TERMS USED ON RECORDS OF BOREHOLES AND TEST PITS

PARTICLE SIZES OF CONSTITUENTS

Soil Constituent	Particle Size Description	Millimetres	Inches (US Std. Sieve Size)
BOULDERS	Not Applicable	>300	>12
COBBLES	Not Applicable	75 to 300	3 to 12
GRAVEL	Coarse Fine	19 to 75 4.75 to 19	0.75 to 3 (4) to 0.75
SAND	Coarse Medium Fine	2.00 to 4.75 0.425 to 2.00 0.075 to 0.425	(10) to (4) (40) to (10) (200) to (40)
SILT/CLAY	Classified by plasticity	<0.075	< (200)

MODIFIERS FOR SECONDARY AND MINOR CONSTITUENTS

Percentage by Mass	Modifier
>35	Use 'and' to combine major constituents (f.e., SAND and GRAVEL)
> 12 to 35	Primary soil name prefixed with "gravelly, sandy, SILTY, CLAYEY" as applicable
> 5 to 12	some
≤ 5	trace

PENETRATION RESISTANCE

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) split-spoon sampler for a distance of 300 mm (12 in.). Values reported are as recorded in the field and are uncorrected.

Cone Penetration Test (CPT)

An electronic cone penetrometer with a 60° conical tip and a project end area of 10 cm² pushed through ground at a penetration rate of 2 cm/s. Measurements of tip resistance (q_t), porewater pressure (u) and sleeve frictions are recorded electronically at 25 mm penetration intervals.

Dynamic Cone Penetration Resistance (DCPT); N_d:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in.).

PH: Sampler advanced by hydraulic pressure

PM: Sampler advanced by manual pressure

WH: Sampler advanced by static weight of hammer

WR: Sampler advanced by weight of sampler and rod

SAMPLES

AS	Auger sample
BS	Block sample
CS	Chunk sample
DD	Diamond Drilling
DO or DP	Seamless open ended, driven or pushed tube sampler – note size
DS	Denison type sample
GS	Grab Sample
MC	Modified California Samples
MS	Modified Shelby (for frozen soil)
RC	Rock core
SC	Soil core
SS	Split spoon sampler – note size
ST	Slotted tube
TO	Thin-walled, open – note size (Shelby tube)
TP	Thin-walled, piston – note size (Shelby tube)
WS	Wash sample

SOIL TESTS

w	water content
PL, w _p	plastic limit
LL, w _L	liquid limit
C	consolidation (oedometer) test
CHEM	chemical analysis (refer to text)
CID	consolidated isotropically drained triaxial test ¹
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement ¹
D _R	relative density (specific gravity, G _s)
DS	direct shear test
GS	specific gravity
M	sieve analysis for particle size
MH	combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	organic content test
SO ₄	concentration of water-soluble sulphates
UC	unconfined compression test
UU	unconsolidated undrained triaxial test
V (FV)	field vane (LV-laboratory vane test)
γ	unit weight

1. Tests anisotropically consolidated prior to shear are shown as CAD, CAU.

NON-COHESIVE (COHESIONLESS) SOILS

Compactness²

Term	SPT 'N' (blows/0.3m) ¹
Very Loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	>50

1. SPT 'N' in accordance with ASTM D1586, uncorrected for the effects of overburden pressure.

2. Definition of compactness terms are based on SPT 'N' ranges as provided in Terzaghi, Peck and Mesri (1996). Many factors affect the recorded SPT 'N' value, including hammer efficiency (which may be greater than 60% in automatic trip hammers), overburden pressure, groundwater conditions, and grain size. As such, the recorded SPT 'N' value(s) should be considered only an approximate guide to the soil compactness. These factors need to be considered when evaluating the results, and the stated compactness terms should not be relied upon for design or construction.

Field Moisture Condition

Term	Description
Dry	Soil flows freely through fingers.
Moist	Soils are darker than in the dry condition and may feel cool.
Wet	As moist, but with free water forming on hands when handled.

COHESIVE SOILS

Consistency

Term	Undrained Shear Strength (kPa)	SPT 'N' ^{1,2} (blows/0.3m)
Very Soft	<12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects; approximate only.

2. SPT 'N' values should be considered ONLY an approximate guide to consistency; for sensitive clays (e.g., Champlain Sea clays), the N-value approximation for consistency terms does NOT apply. Rely on direct measurement of undrained shear strength or other manual observations.

Water Content

Term	Description
w < PL	Material is estimated to be drier than the Plastic Limit.
w ~ PL	Material is estimated to be close to the Plastic Limit.
w > PL	Material is estimated to be wetter than the Plastic Limit.

LIST OF SYMBOLS

Unless otherwise stated, the symbols employed in the report are as follows:

I. GENERAL

π	3.1416
$\ln x$	natural logarithm of x
$\log_{10} x$	x or log x, logarithm of x to base 10
g	acceleration due to gravity
t	time

II. STRESS AND STRAIN

γ	shear strain
Δ	change in, e.g. in stress: $\Delta \sigma$
ε	linear strain
ε_v	volumetric strain
η	coefficient of viscosity
ν	Poisson's ratio
σ	total stress
σ'	effective stress ($\sigma' = \sigma - u$)
σ'_{vo}	initial effective overburden stress
$\sigma_1, \sigma_2, \sigma_3$	principal stress (major, intermediate, minor)
σ_{oct}	mean stress or octahedral stress $= (\sigma_1 + \sigma_2 + \sigma_3)/3$
τ	shear stress
u	porewater pressure
E	modulus of deformation
G	shear modulus of deformation
K	bulk modulus of compressibility

III. SOIL PROPERTIES

(a) Index Properties

$\rho(\gamma)$	bulk density (bulk unit weight)*
$\rho_d(\gamma_d)$	dry density (dry unit weight)
$\rho_w(\gamma_w)$	density (unit weight) of water
$\rho_s(\gamma_s)$	density (unit weight) of solid particles
γ'	unit weight of submerged soil ($\gamma' = \gamma - \gamma_w$)
D_R	relative density (specific gravity) of solid particles ($D_R = \rho_s / \rho_w$) (formerly G_s)
e	void ratio
n	porosity
S	degree of saturation

(a) Index Properties (continued)

w	water content
w_l or LL	liquid limit
w_p or PL	plastic limit
I_p or PI	plasticity index = $(w_l - w_p)$
NP	non-plastic
w_s	shrinkage limit
I_L	liquidity index = $(w - w_p) / I_p$
I_C	consistency index = $(w_l - w) / I_p$
e_{max}	void ratio in loosest state
e_{min}	void ratio in densest state
I_D	density index = $(e_{max} - e) / (e_{max} - e_{min})$ (formerly relative density)

(b) Hydraulic Properties

h	hydraulic head or potential
q	rate of flow
v	velocity of flow
i	hydraulic gradient
k	hydraulic conductivity (coefficient of permeability)
j	seepage force per unit volume

(c) Consolidation (one-dimensional)

C_c	compression index (normally consolidated range)
C_r	recompression index (over-consolidated range)
C_s	swelling index
C_{α}	secondary compression index
m_v	coefficient of volume change
C_v	coefficient of consolidation (vertical direction)
C_h	coefficient of consolidation (horizontal direction)
T_v	time factor (vertical direction)
U	degree of consolidation
σ'_p	pre-consolidation stress
OCR	over-consolidation ratio = σ'_p / σ'_{vo}

(d) Shear Strength

τ_p, τ_r	peak and residual shear strength
ϕ'	effective angle of internal friction
δ	angle of interface friction
μ	coefficient of friction = $\tan \delta$
c'	effective cohesion
c_u, s_u	undrained shear strength ($\phi = 0$ analysis)
p	mean total stress $(\sigma_1 + \sigma_3)/2$
p'	mean effective stress $(\sigma'_1 + \sigma'_3)/2$
q	$(\sigma_1 - \sigma_3)/2$ or $(\sigma'_1 - \sigma'_3)/2$
q_u	compressive strength $(\sigma_1 - \sigma_3)$
S_t	sensitivity

* Density symbol is ρ . Unit weight symbol is γ where $\gamma = \rho g$ (i.e. mass density multiplied by acceleration due to gravity)

Notes: 1
2

$$\tau = c' + \sigma' \tan \phi'$$

$$\text{shear strength} = (\text{compressive strength})/2$$

PROJECT: 1665363


LOCATION: REFER TO LOCATION PLAN

RECORD OF BOREHOLE BH-101

 BORING DATE: November 24 2016
 DRILLING CONTRACTOR: Landshark Drilling
 (CONTINUOUS SAMPLING EQUIPMENT)

SHEET 1 OF 1

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HEADSPACE VAPOUR ORGANIC CONCENTRATIONS [PPM] IBL - Isobutylene Standard					ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	RUN No.	NUMBER	TYPE													
0	GEOPROBE 7822DT MACROCORE	ELEVATION UPDATED TO GEODETIC JULY 2018		177.19				178											Chem	<div>Enc WL </div> <div>Groundwater encountered at about elev. 175.6m during drilling on November 24, 2016.</div>
		GROUND SURFACE		0.00					HEX / IBL											
		TOPSOIL - silty clay; dark brown		176.81				177												
				0.38		1A	SC		0 / 0											
1			(CL-CI) sandy SILTY CLAY , trace gravel; brown, TILL			1B	SC	176	0 / 0											
					2A	SC		175	0 / 0											
2					2B	SC		174	0 / 0											
3					3A	SC		173	0 / 0											
4			(CL-CI) sandy SILTY CLAY , trace gravel; brown, TILL		174.14		3													
				3.05		3B	SC		0 / 0											
5		END OF BOREHOLE		172.62																
			4.57																	
6								172												
7																				
8																				
9																				

DEPTH SCALE

1 : 50



LOGGED: KL

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
DRILLING CONTRACTOR: Landshark Drilling
(CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DN BHS 07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

1 : 50



CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-103

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

 BORING DATE: November 24 2016
 DRILLING CONTRACTOR: Landshark Drilling
 (CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard				HEADSPACE VAPOUR ORGANIC CONCENTRATIONS [PPM] IBL - Isobutylene Standard				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	RUN No.	NUMBER	TYPE											
0	GEOPROBE 7822DT MACROCORE	ELEVATION UPDATED TO GEODETIC JULY 2018 WELL REPAIRED JULY 2018 PAVEMENT SURFACE		176.81				177									Top of Pipe Elev. 177.59m	
		ASPHALT		0.00 0.08					HEX / IBL								Concrete	
				1A	SC			0 / 0										
1		FILL - clayey silt; brown, trace grey		1				176									Granular Bentonite	
				1B	SC			0 / 0								Chem		
																	June 19/18 Filter Sand	
2								175	0 / 0								51mm Diam. Slot 10 Schedule 40 PVC Screen	
		(CL-CI) sandy SILTY CLAY, trace gravel; brown, TILL		2					0 / 0							Chem		
				2B	SC			174	0 / 0									
3				3A	SC				0 / 0								Enc WL	
4		(CL-CI) sandy SILTY CLAY, trace gravel; grey, TILL		3				173	0 / 0							Chem		
				3B	SC				0 / 0									
		END OF BOREHOLE						172									Groundwater encountered at about elev. 173.4m during drilling on November 24, 2016. Water level measured in well at elev. 175.48m on June 19, 2018.	

DEPTH SCALE

1 : 50




LOGGED: KL

CHECKED:

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
DRILLING CONTRACTOR: Landshark Drilling
(CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

Enc WL 

Groundwater encountered at about elev. 172.8m during drilling on November 24, 2016.

1 : 50



CHECKED:

DN BHS 07 1665363.GPJ GLDR LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

PROJECT: 1665363

RECORD OF BOREHOLE BH-105

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
 DRILLING CONTRACTOR: Landshark Drilling
 (CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HEADSPACE VAPOUR ORGANIC CONCENTRATIONS [PPM] IBL - Isobutylene Standard					ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS MW-105
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	RUN No.	NUMBER	TYPE													
	GEOPROBE 7822DT MACROCORE	ELEVATION UPDATED TO GEODETIC JULY 2018						176											Top of Pipe Elev. 175.18m	
0		PAVEMENT SURFACE		175.35																
		ASPHALT		0.00					HEX / IBL											Concrete June 19/18
		FILL - sand and gravel; brown		0.08	1A	SC		175	0 / 0											
				174.97																
				0.38	1															
1					1B	SC			0 / 0											Granular Bentonite
2		FILL - clayey silt, some sand, some organics, trace gravel, trace brick; dark grey			2A	SC		174	0 / 0										Filter Sand	
				2															Enc WL	
3																				
4		(SM) SILTY SAND, fine, some clay; grey			3A	SC		172	0 / 0											
						</														

DEPTH SCALE

1 : 50



LOGGED: KL

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT: 30/08/18 14:25 DATA INPUT: ZJB

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
DRILLING CONTRACTOR: Landshark Drilling
(CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DN BHS 07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

1 : 50



CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-107


SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: November 24 2016
DRILLING CONTRACTOR: Landshark Drilling
(CONTINUOUS SAMPLING EQUIPMENT)

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HEADSPACE VAPOUR ORGANIC CONCENTRATIONS [PPM] IBL - Isobutylene Standard					ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	RUN No.	NUMBER	TYPE														
0	GEOPROBE 7822DT MACROCORE	ELEVATION UPDATED TO GEODETIC JULY 2018		176.23				177										Chem	Groundwater encountered at about elev. 174.1m during drilling on November 24, 2016.		
		PAVEMENT SURFACE		0.00					HEX / IBL												
		ASPHALT		0.08																	
		FILL - sand and gravel; light brown		175.85				176													
				0.38																	
		FILL - silty clay, some sand, trace gravel, trace brick debris; mottled brown and grey		175.33	1	1A	SC		0 / 0												
				0.90																	
1			(CL) SILTY CLAY, some sand, trace gravel; dark grey		175.33		1B	SC	175	0 / 0											
					174.71																
					1.52																
2		(SM) SILTY SAND, fine, some clay, trace gravel; dark grey to brown				2A	SC	174	0 / 0												
					2B	SC	0 / 0														
3						3A	SC	173	0 / 0												
					172.70																
				3.53																	
4		(CL-CI) sandy SILTY CLAY, trace gravel; brown, TILL			3	3B	SC	172	0 / 0												
				171.66																	
		END OF BOREHOLE		4.57				171													
5																					
6																					
7																					
8																					
9																					

Enc WL Groundwater
encountered at about
elev. 174.1m during
drilling on
November 24, 2016.

DEPTH SCALE

1 : 50



LOGGED: KL

CHECKED:

LDN_BHS_07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: ZJB

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 19 2018
DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DATUM: GEODETIC

DN BHS 07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

1 : 50



CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-202

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018

DATUM: GEODETIC

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS MW-202
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m			WATER CONTENT PERCENT					
										Wp	W	WI			
										10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³		
										10	20	30	40		
0	GEOPROBE 7822DT 108mm ID HOLLOW STEM	GROUND SURFACE		178.26 0.00	1	SS	8	179	HEX						Top of Pipe Elev. 179.22m
		FILL, silty sand, trace gravel; brown; loose to compact						178	20						Concrete
1					2	SS	11	177	25						Granular Bentonite
2					3	SS	14	176	15						
		FILL, sandy silty clay, trace gravel, with coal; brown; stiff		175.97 2.29	4A	SS		176	25						Chem
		FILL, sandy silty clay, some to trace gravel, some organics; grey & brown; stiff		175.69 2.57	4B	SS	14	175	30						
3				175.29 2.97	4C	SS		175	10						
		(CL) sandy SILTY CLAY , trace gravel, with oxidized fissures and occasional silt layers; brown to grey at about elevation 174.45m, TILL ; stiff to very stiff			5	SS	26	175	25						Filter Sand
4															
					6	SS	20	174	5						
5								7	SS	15	173	0			
					8	SS	15	172	0						
6		END OF BOREHOLE		172.16 6.10											
7															Borehole dry during drilling on June 18, 2018.
8														Water level measured in well at elev. 174.33m on July 10, 2018.	
9															

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-203

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m			WATER CONTENT PERCENT					
										Wp	W	WI			
										10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³		
										10	20	30	40		
0	GEOPROBE 7622DT 159mm ID HOLLOW STEM	GROUND SURFACE		176.15				177							Borehole dry during drilling on June 18, 2018.
		ASPHALTIC CONCRETE.		0.07					HEX						
		FILL, sand & gravel, some silt; brown.						176							
					1	SS	4	20							
1		FILL sandy silty clay, with organics & gravel, wood, ash, brick & plastic; grey to black; stiff to firm.			2	SS	5	10						Chem	
								175							
					3	SS	3	10							
2								174							
		(SP) SAND, trace silt, with shell fragments & gravel; dark grey to grey to brown.		173.86				10							
				2.29	4A	SS	2	15						Chem	
3				173.46											
				2.69	4B	SS									
					5	SS	17	20							
4		(CL) sandy SILTY CLAY, trace to some gravel, with occasional oxidized fissures; transition from brown to grey from about elevation 171.41m to 171.18m, TILL; firm to very stiff.						172							
					6	SS	20								
5							171								
				7	SS	20	15						Chem		
		END OF BOREHOLE.		170.97											
				5.18				170							
6															
7															
8															
9															

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

PROJECT: 1665363

LOCATION: REFER TO LOCATION PLAN

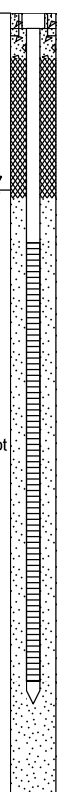
RECORD OF BOREHOLE BH-204

BORING DATE: June 18 2018

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

SHEET 1 OF 1

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS															
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE							BLOWS/0.3m	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³																			
														WATER CONTENT PERCENT Wp ———— W ———— Wl 10 20 30 40																			
0	GEOPROBE 7622DT 108mm ID HOLLOW STEM	GROUND SURFACE		175.94												Top of Pipe Elev. 175.84m																	
		ASPHALTIC CONCRETE.		0.00																													
		FILL, sand & gravel, trace silt; brown.		0.10 175.64	1A	SS	4											Concrete															
		FILL, sand, some clay, some silt, trace gravel, with ash, brick, concrete & coal; loose.		0.30 175.18	1B	SS		20											Granular Bentonite														
1		FILL, sandy silty clay, trace gravel; grey; soft.		0.76 174.49	2	SS	2	20												July 10/18													
				1.45																	Filter Sand												
					3	SS	1	20														50mm Diam. Slot 10 Schedule 40 PVC Screen											
		(Cl) SILTY CLAY, some sand, with roots and rootlets; dark brown to black; soft.																					Chem										
					4	SS	1	5																Chem									
3				172.89	5A	SS	3	20																	Chem								
				3.05	5B	SS		10																		Chem							
		(Cl) sandy SILTY CLAY, trace gravel, with organics (roots & rootlets); grey, TILL.																									Borehole dry during drilling on June 18, 2018.						
4					6	SS	10	25																				Water level measured in well at elev. 174.77m on July 10, 2018.					
				171.44																													
				4.50																													
5		(Cl-CL) sandy SILTY CLAY, trace to some gravel; grey to brown, TILL; stiff.			7	SS	18	15																									
				170.76																													
		END OF BOREHOLE.		5.18																													
6																																	
7																																	
8																																	
9																																	

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

PROJECT: 1665363

RECORD OF BOREHOLE BH-205

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 19 2018

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS								
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE			BLOWS/0.3m	WATER CONTENT PERCENT												
										Wp	W	WL										
									10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³										
									10	20	30	40										
0	GEOPROBE 7822DT DT22 TSD	GROUND SURFACE		175.32	1A	SC		HEX						Top of Pipe Elev. 176.31m								
		TOPSOIL, sandy silty clay, trace gravel, with organics & glass pieces; dark brown		0.01	1B	SC		20							Concrete Granular Bentonite July 10/18							
				175.04				5								Filter Sand						
		FILL, sand & gravel, some silt, trace clay, with organics.		0.28	1C	SC		0									Chem					
		FILL, sandy silty clay, trace gravel with organics & wood pieces; brown and grey.		174.53														Chem				
				0.79	1D	SC		0											Chem			
1																				50mm Diam. Slot 10 Schedule 40 PVC Screen		
		FILL, sand, some silt, trace gravel, with organics, ash & brick; dark brown.			2A	SC		30													Borehole dry during drilling on June 19, 2018.	
2				172.86	2B	SC		15														Water level measured in well at elev. 174.79m on July 10, 2018.
				2.46	2C	SC		25														
				2D	SC		35					73.8										
3	FILL, sandy silty clay, some sand with gravel, roots & rootlets, glass pieces, shells; dark brown to dark grey			3A	SC		30					68.6										
			171.46																			
			3.86	3B	SC		30															
4	(CL) sandy SILTY CLAY, trace gravel with oxidized fissures; brown; TILL.																					
			170.75																			
	END OF BOREHOLE		4.57																			
5																						
6																						
7																						
8																						
9																						

PROJECT: 1665363

RECORD OF BOREHOLE BH-206

SHEET 1 OF 1

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard					HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m							WATER CONTENT PERCENT						
														Wp	W	WL				
0	GEOPROBE 7822DT 108mm ID HOLLOW STEM	GROUND SURFACE		175.53 0.00	1	SS	1	176	HEX									Top of Pipe Elev. 176.47m		
		FILL, silty sand with asphalt pieces; brown; very loose.						175	35									Granular Bentonite		
1																		July 10/18		
		FILL, sandy silty clay, with gravel; brown; firm to stiff.		174.29 1.24 174.08 1.45	2	SS	8	174	35									Filter Sand		
2		FILL, silty sand, trace gravel; brown; very loose to compact.			3	SS	WH	174	30											
3					4	SS	WH	173	20											
4			(CL - CI) sandy SILTY CLAY, trace gravel; brown to grey, TILL; stiff to hard			5A	SS	14	172	10										
		5B				SS		30											Chem	
5		6A				SS	14	35												
		6B				SS		20											Chem	
5		END OF BOREHOLE		170.68 4.85	7	SS	50/127mm	171	25											
6								170												
7																				
8																				
9																				

Borehole dry during drilling on June 18, 2018.

Water level measured in well at elev. 174.90m on July 10, 2018.

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 19 2018
DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DATUM: GEODETIC

DN BHS 07 1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

1 : 50



CHECKED:

PROJECT: 1665363

RECORD OF BOREHOLE BH-208

SHEET 1 OF 1


LOCATION: REFER TO LOCATION PLAN

BORING DATE: June 18 2018

DATUM: GEODETIC

DRILLING CONTRACTOR: Direct Environmental Drilling Inc.

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		ELEVATION	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] HEX - Hexane Standard				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE						BLOWS/0.3m	10 ⁻⁶ 10 ⁻⁵ 10 ⁻⁴ 10 ⁻³					
													WATER CONTENT PERCENT Wp ———— W ———— Wl 10 20 30 40					
0	GEOPROBE 7822DT 108mm ID HOLLOW STEM	GROUND SURFACE		176.16				176	HEX									
		ASPHALTIC CONCRETE		0.05														
		FILL, sand & gravel, trace to some silt; brown; loose.		175.65	1A	SS	9											
				0.51	1B	SS			25							Chem		
1					2	SS	WH		175									
		FILL, sandy silty clay, trace gravel, with organics; dark brown to grey; very soft to stiff.																
2					3A	SS	32		20							Chem		
					3B	SS			25									
				173.83	4A	SS			0									
				2.33	4B	SS	22		10									
3																		
					5	SS	32		20									
4		(CL-CI) sandy SILTY CLAY, trace gravel, with oxidized fissures, & sand pockets; brown, TILL; stiff to hard.			6	SS	29		10							Chem		
					7	SS	37		20									
5				170.90					171									
				5.26	8	SS	11		0									
6																		
					9	SS	17		0									
7																		
					10	SS	4		25									
8		(CL-CI) sandy SILTY CLAY, trace gravel, with oxidized fissures, & sand pockets; grey, TILL; soft to very stiff.			11	SS	12		30									
									168									
9										⊕		+						
										⊕		+						
									167									
					12	SS	68/305mm		20									
				166.48														
			9.68															
10		END OF BOREHOLE																

Enc WL Groundwater
encountered at about
elev. 172.4m during
drilling on June 18, 2018.

DEPTH SCALE

1 : 50



LOGGED: CHM

CHECKED:

LDN_BHS_07_1665363.GPJ GLDR_LON.GDT 30/08/18 14:25 DATA INPUT: AMS

APPENDIX B

**Laboratory Certificates of Analysis
(2018 Sediment Sampling)**

**CLIENT NAME: GOLDER ASSOCIATES LTD.
309 EXETER ROAD, UNIT #1
LONDON, ON N6L1C1
(519) 652-0099**

ATTENTION TO: Carl Schroeder

PROJECT: 18100361

AGAT WORK ORDER: 18L360083

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Aug 02, 2018

PAGES (INCLUDING COVER): 23

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 2: Report issued Aug 02, 2018 including TCLP testing.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V2)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

Page 1 of 23

*Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request*



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)									
DATE RECEIVED: 2018-07-10					DATE REPORTED: 2018-08-02				
Parameter	Unit	SAMPLE DESCRIPTION:							
		SAMPLE TYPE:		SD-101		SD-201		SD-301	
		DATE SAMPLED:		Sediment		Sediment		Sediment	
		G / S	RDL	2018-07-04	9393005	2018-07-04	9393721	2018-07-04	9393962
Antimony	µg/g	1.3	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	6	5	5	5	4	4
Barium	µg/g	220	2	59	36	36	36	32	32
Beryllium	µg/g	2.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/g	36	5	8	7	7	7	7	7
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	70	2	23	15	15	15	15	15
Cobalt	µg/g	21	0.5	7.3	5.1	5.1	4.5	4.5	4.5
Copper	µg/g	92	1	24	21	21	16	16	16
Lead	µg/g	120	1	20	17	17	21	21	21
Molybdenum	µg/g	2	0.5	1.5	1.0	1.0	1.0	1.0	1.0
Nickel	µg/g	82	1	24	15	15	14	14	14
Selenium	µg/g	1.5	0.4	0.6	0.5	0.5	0.4	0.4	0.4
Silver	µg/g	0.5	0.2	<0.2	0.9	0.9	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	2.5	0.5	0.8	0.6	0.6	0.6	0.6	0.6
Vanadium	µg/g	86	1	26	17	17	18	18	18
Zinc	µg/g	290	5	82	58	58	56	56	56

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:

Ananyot Bhela



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 558 Metals and Inorganics				DATE REPORTED: 2018-08-02
DATE RECEIVED: 2018-07-10				
Parameter	Unit	SAMPLE DESCRIPTION:		DATE REPORTED: 2018-08-02
		G / S	RDL	
Arsenic Leachate	mg/L	2.5	0.010	<0.010
Barium Leachate	mg/L	100	0.100	0.482
Boron Leachate	mg/L	500	0.050	<0.050
Cadmium Leachate	mg/L	0.5	0.010	<0.010
Chromium Leachate	mg/L	5	0.010	<0.010
Lead Leachate	mg/L	5	0.010	0.029
Mercury Leachate	mg/L	0.1	0.01	<0.01
Selenium Leachate	mg/L	1	0.010	<0.010
Silver Leachate	mg/L	5	0.010	<0.010
Uranium Leachate	mg/L	10	0.050	<0.050
Fluoride Leachate	mg/L	150	0.05	0.15
Cyanide Leachate	mg/L	20	0.05	<0.05
(Nitrate + Nitrite) as N Leachate	mg/L	1000	0.70	<0.70

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to O. Reg. 558 - Schedule IV Leachate Quality Criteria

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:

Ananyot Bhela



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)										DATE REPORTED: 2018-08-02
DATE RECEIVED: 2018-07-10										
Parameter	Unit	SAMPLE DESCRIPTION:				SD-101		SD-201		SD-301
		SAMPLE TYPE:		DATE SAMPLED:		Sediment		Sediment		Sediment
		G / S	RDL	2018-07-04	9393005	2018-07-04	9393721	2018-07-04	9393962	2018-07-04
Naphthalene	µg/g	0.09	0.05	0.07		<0.05		<0.05		<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05		<0.05		<0.05		<0.05
Acenaphthene	µg/g	0.072	0.05	0.10		<0.05		<0.05		0.05
Fluorene	µg/g	0.12	0.05	0.12		0.07		0.05		0.05
Phenanthrene	µg/g	0.69	0.05	0.74		0.81		0.66		0.66
Anthracene	µg/g	0.16	0.05	0.21		0.14		0.09		0.09
Fluoranthene	µg/g	0.56	0.05	1.7		1.8		1.5		1.5
Pyrene	µg/g	1	0.05	1.3		1.5		1.2		1.2
Benz(a)anthracene	µg/g	0.36	0.05	0.48		0.61		0.45		0.45
Chrysene	µg/g	2.8	0.05	0.78		0.91		0.62		0.62
Benzo(b)fluoranthene	µg/g	0.47	0.05	0.69		0.62		0.41		0.41
Benzo(k)fluoranthene	µg/g	0.48	0.05	0.32		0.43		0.26		0.26
Benzo(a)pyrene	µg/g	0.3	0.05	0.37		0.46		0.30		0.30
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	0.18		0.21		0.14		0.14
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05		0.05		<0.05		<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	0.17		0.20		0.12		0.12
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05		<0.05		<0.05		<0.05
Moisture Content	%		0.1	51.3		53.6		37.5		37.5
Surrogate	Unit	Acceptable Limits				118		102		113
Chrysene-d12	%	50-140				118		102		113

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

9393005-9393721 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation. Results are based on the dry weight of the soil. Due to the high moisture content of the sample it was air dried prior to extraction.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b&j)Fluoranthene isomers because the isomers co-elute on the GC column.

Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b&j)Fluoranthene isomers because the isomers co-elute on the GC column.

9393962

N Popmickalof

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)						DATE REPORTED: 2018-08-02
DATE RECEIVED: 2018-07-10						
SAMPLE DESCRIPTION:						
Parameter	Unit	SAMPLE TYPE:		SD-201		
		DATE SAMPLED:	RDL	2018-07-04	2018-07-04	
G / S				9393005	9393721	
F1 (C6 to C10)	µg/g	25	10	<10	<10	
F1 (C6 to C10) minus BTEX	µg/g	25	10	<10	<10	
F2 (C10 to C16)	µg/g	10	20	<20	<20	
F2 (C10 to C16) minus Naphthalene	µg/g		20	<20	<20	
F3 (C16 to C34)	µg/g	240	100	<100	<100	
F3 (C16 to C34) minus PAHs	µg/g		100	<100	<100	
F4 (C34 to C50)	µg/g	120	100	<100	<100	
Gravimetric Heavy Hydrocarbons	µg/g	120	100	NA	NA	
Moisture Content	%		0.2	51.3	53.6	
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140		124	90	

Comments:

RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9393005-9393721

Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX and PAH contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Due to high moisture content of the sample the reporting detection limit has been raised.

Extraction and holding times were met for this sample.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)							DATE REPORTED: 2018-08-02
DATE RECEIVED: 2018-07-10		SAMPLE DESCRIPTION:					
Parameter	Unit	SAMPLE TYPE:		SD-101	SD-201		
		DATE SAMPLED:	RDL	Sediment	Sediment		
	G / S	2018-07-04	9393005	2018-07-04	9393721		
Dichlorodifluoromethane	ug/g	0.05	0.10	<0.10	<0.10		
Vinyl Chloride	ug/g	0.02	0.04	<0.04	<0.04		
Bromomethane	ug/g	0.05	0.10	<0.10	<0.10		
Trichlorofluoromethane	ug/g	0.25	0.10	<0.10	<0.10		
Acetone	ug/g	0.5	1.00	<1.00	<1.00		
1,1-Dichloroethylene	ug/g	0.05	0.10	<0.10	<0.10		
Methylene Chloride	ug/g	0.05	0.10	<0.10	<0.10		
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.10	<0.10	<0.10		
Methyl tert-butyl Ether	ug/g	0.05	0.10	<0.10	<0.10		
1,1-Dichloroethane	ug/g	0.05	0.04	<0.04	<0.04		
Methyl Ethyl Ketone	ug/g	0.5	1.00	<1.00	<1.00		
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.04	<0.04	<0.04		
Chloroform	ug/g	0.05	0.08	<0.08	<0.08		
1,2-Dichloroethane	ug/g	0.05	0.06	<0.06	<0.06		
1,1,1-Trichloroethane	ug/g	0.05	0.10	<0.10	<0.10		
Carbon Tetrachloride	ug/g	0.05	0.10	<0.10	<0.10		
Benzene	ug/g	0.02	0.04	<0.04	<0.04		
1,2-Dichloropropane	ug/g	0.05	0.06	<0.06	<0.06		
Trichloroethylene	ug/g	0.05	0.06	<0.06	<0.06		
Bromodichloromethane	ug/g	0.05	0.10	<0.10	<0.10		
Methyl Isobutyl Ketone	ug/g	0.5	1.00	<1.00	<1.00		
1,1,2-Trichloroethane	ug/g	0.05	0.08	<0.08	<0.08		
Toluene	ug/g	0.2	0.10	0.94	<0.10		
Dibromochloromethane	ug/g	0.05	0.10	<0.10	<0.10		
Ethylene Dibromide	ug/g	0.05	0.08	<0.08	<0.08		
Tetrachloroethylene	ug/g	0.05	0.10	<0.10	<0.10		
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.08	<0.08	<0.08		
Chlorobenzene	ug/g	0.05	0.10	<0.10	<0.10		
Ethylbenzene	ug/g	0.05	0.10	<0.10	<0.10		
m & p-Xylene	ug/g		0.10	<0.10	<0.10		

Certified By:

N Popmickal



AGAT

Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)									
DATE RECEIVED: 2018-07-10					DATE REPORTED: 2018-08-02				
SAMPLE DESCRIPTION:									
SAMPLE TYPE: Sediment									
DATE SAMPLED: 2018-07-04									
SD-101									
Sediment									
2018-07-04									
9393721									
Parameter	Unit	G / S	RDL	SD-101	SD-201				
Bromoform	ug/g	0.05	0.10	<0.10	<0.10				
Styrene	ug/g	0.05	0.10	<0.10	<0.10				
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.10	<0.10	<0.10				
o-Xylene	ug/g		0.10	<0.10	<0.10				
1,3-Dichlorobenzene	ug/g	0.05	0.10	<0.10	<0.10				
1,4-Dichlorobenzene	ug/g	0.05	0.10	<0.10	<0.10				
1,2-Dichlorobenzene	ug/g	0.05	0.10	<0.10	<0.10				
Xylene Mixture	ug/g	0.05	0.10	<0.10	<0.10				
1,3-Dichloropropene	µg/g	0.05	0.08	<0.08	<0.08				
n-Hexane	µg/g	0.05	0.10	<0.10	<0.10				
Moisture Content	%		0.2	51.3	53.6				
Acceptable Limits									
Surrogate	Unit								
Toluene-d8	% Recovery	50-140		90		88			
4-Bromofluorobenzene	% Recovery	50-140		80		80			

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9393005-9393721 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.
Due to high moisture content of the sample the reporting detection limit has been raised.

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 558 - Benzo(a) pyrene		DATE RECEIVED: 2018-07-10	DATE REPORTED: 2018-08-02
Parameter	Unit	SAMPLE DESCRIPTION: SD-101 SAMPLE TYPE: Sediment	
		DATE SAMPLED: 2018-07-04	
Benzo(a)pyrene	mg/L	G / S 0.001	RDL 9393005 0.001

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to O. Reg. 558 - Schedule IV Leachate Quality Criteria
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
The sample was leached according to Regulation 558 protocol. Analysis was performed on the leachate.

9393005

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder
SAMPLED BY:

O. Reg. 558 - VOCs

DATE RECEIVED: 2018-07-10

DATE REPORTED: 2018-08-02

SAMPLE DESCRIPTION: SD-101				
Parameter	Unit	SAMPLE TYPE: Sediment		
		DATE SAMPLED: 2018-07-04	SD-101	
		G / S		
	RDL			
Vinyl Chloride	mg/L	0.2	0.030	<0.030
1,1 Dichloroethene	mg/L	1.4	0.020	<0.020
Dichloromethane	mg/L	5.0	0.030	<0.030
Methyl Ethyl Ketone	mg/L	200	0.090	<0.090
Chloroform	mg/L	10.0	0.020	<0.020
1,2-Dichloroethane	mg/L	0.5	0.020	<0.020
Carbon Tetrachloride	mg/L	0.5	0.020	<0.020
Benzene	mg/L	0.5	0.020	<0.020
Trichloroethene	mg/L	5.0	0.020	<0.020
Tetrachloroethene	mg/L	3.0	0.050	<0.050
Chlorobenzene	mg/L	8.0	0.010	<0.010
1,2-Dichlorobenzene	mg/L	20.0	0.010	<0.010
1,4-Dichlorobenzene	mg/L	0.5	0.010	<0.010
Surrogate	Unit	Acceptable Limits		
	% Recovery	60-130		113
Toluene-d8				

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to O. Reg. 558 - Schedule IV Leachate Quality Criteria

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Sample was prepared using Regulation 558 protocol and a zero headspace extractor.

9393005

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

DATE RECEIVED: 2018-07-10				PHCs F1 - F4 (with PAHs) (Soil)				DATE REPORTED: 2018-08-02			
Parameter		SAMPLE DESCRIPTION:		SD-301		SAMPLE TYPE:		DATE SAMPLED: 2018-07-04		RDL	
		Unit	G / S	RDL	Sediment						
F1 (C6 to C10)		µg/g	25	5	<5						
F1 (C6 to C10) minus BTEX		µg/g	25	5	<5						
F2 (C10 to C16)		µg/g	10	10	<10						
F2 (C10 to C16) minus Naphthalene		µg/g		10	<10						
F3 (C16 to C34)		µg/g	240	50	64						
F3 (C16 to C34) minus PAHs		µg/g		50	60						
F4 (C34 to C50)		µg/g	120	50	<50						
Gravimetric Heavy Hydrocarbons		µg/g	120	50	NA						
Moisture Content		%		0.1	37.5						
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140		120							

Comments:

RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX and PAH contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

The soil sample was prepared in the lab using the Methanol extraction technique. The sample was not field preserved with methanol and an Encore was not provided for analysis.

Extraction and holding times were met for this sample.

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

Total PCBs (soil)									
DATE RECEIVED: 2018-07-10					DATE REPORTED: 2018-08-02				
SAMPLE DESCRIPTION:									
SAMPLE TYPE: Sediment									
DATE SAMPLED: 2018-07-04									
G / S RDL 9393005 9393721 9393962									
Parameter	Unit	0.3	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCBs	µg/g								
Surrogate	Unit	Acceptable Limits							
Decachlorobiphenyl	%	60-130			81	100	90		

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9393005-9393721

Results are based on the dry weight of soil extracted.

Due to the high moisture content of the sample it was air dried prior to extraction.

9393962

Results are based on the dry weight of soil extracted.

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder
SAMPLED BY:

VOCs (Soil)					DATE REPORTED: 2018-08-02
DATE RECEIVED: 2018-07-10					
Parameter	Unit	SAMPLE DESCRIPTION:		SD-301 Sediment	
		DATE SAMPLED:	DATE SAMPLED:		
		G / S	RDL	9393962	
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05	
Vinyl Chloride	ug/g	0.02	0.02	<0.02	
Bromomethane	ug/g	0.05	0.05	<0.05	
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	
Acetone	ug/g	0.5	0.50	<0.50	
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	
Methylene Chloride	ug/g	0.05	0.05	<0.05	
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05	
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02	
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02	
Chloroform	ug/g	0.05	0.04	<0.04	
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05	
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	
Benzene	ug/g	0.02	0.02	<0.02	
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	
Trichloroethylene	ug/g	0.05	0.03	<0.03	
Bromodichloromethane	ug/g	0.05	0.05	<0.05	
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	
Toluene	ug/g	0.2	0.05	<0.05	
Dibromochloromethane	ug/g	0.05	0.05	<0.05	
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	
Chlorobenzene	ug/g	0.05	0.05	<0.05	
Ethylbenzene	ug/g	0.05	0.05	<0.05	
m & p-Xylene	ug/g		0.05	<0.05	

Certified By:

N Popniuk



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

VOCs (Soil)					DATE REPORTED: 2018-08-02
SAMPLE DESCRIPTION: SD-301					
SAMPLE TYPE: Sediment		DATE SAMPLED: 2018-07-04			
Parameter	Unit	G / S	RDL	9393962	
Bromofom	ug/g	0.05	0.05	<0.05	
Styrene	ug/g	0.05	0.05	<0.05	
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	
o-Xylene	ug/g	0.05	0.05	<0.05	
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05	
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05	
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05	
Xylene Mixture	ug/g	0.05	0.05	<0.05	
1,3-Dichloropropene	ug/g	0.05	0.04	<0.04	
n-Hexane	ug/g	0.05	0.05	<0.05	
Moisture Content	%	0.1	0.1	37.5	
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140			87
4-Bromofluorobenzene	% Recovery	50-140			82

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

9393962 The sample was analysed using the high level technique. The soil sample was prepared in the lab using the Methanol extraction technique. The sample was not field preserved with methanol and an Encore was not provided for analysis. Results are based on the dry weight of the soil.

Certified By:

N Popmickalof



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

ATTENTION TO: Carl Schroeder

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Acenaphthene	µg/g	0.072	0.10
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.16	0.21
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.36	0.48
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.37
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.47	0.69
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.56	1.7
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Phenanthrene	µg/g	0.69	0.74
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Pyrene	µg/g	1	1.3
9393005	SD-101	ON T1 S RP//ICC	O. Reg. 153(511) - VOCs (Soil)	Toluene	µg/g	0.2	0.94
9393721	SD-201	ON T1 S RP//ICC	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Silver	µg/g	0.5	0.9
9393721	SD-201	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.36	0.61
9393721	SD-201	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.46
9393721	SD-201	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.47	0.62
9393721	SD-201	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.56	1.8
9393721	SD-201	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Phenanthrene	µg/g	0.69	0.81
9393721	SD-201	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Pyrene	µg/g	1	1.5
9393962	SD-301	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.36	0.45
9393962	SD-301	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.56	1.5
9393962	SD-301	ON T1 S RP//ICC	O. Reg. 153(511) - PAHs (Soil)	Pyrene	µg/g	1	1.2

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.
PROJECT: 18100361
SAMPLING SITE:
AGAT WORK ORDER: 18L360083
ATTENTION TO: Carl Schroeder
SAMPLED BY:

Soil Analysis

RPT Date: Aug 02, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)															
Antimony	9393005	9393005	<0.8	<0.8	NA	< 0.8	125%	70%	130%	84%	80%	120%	73%	70%	130%
Arsenic	9393005	9393005	6	6	0.0%	< 1	105%	70%	130%	99%	80%	120%	103%	70%	130%
Barium	9393005	9393005	59	58	1.7%	< 2	97%	70%	130%	91%	80%	120%	86%	70%	130%
Beryllium	9393005	9393005	<0.5	0.6	NA	< 0.5	94%	70%	130%	120%	80%	120%	104%	70%	130%
Boron	9393005	9393005	8	9	NA	< 5	89%	70%	130%	108%	80%	120%	85%	70%	130%
Cadmium	9393005	9393005	<0.5	<0.5	NA	< 0.5	112%	70%	130%	110%	80%	120%	110%	70%	130%
Chromium	9393005	9393005	23	24	4.3%	< 2	98%	70%	130%	115%	80%	120%	110%	70%	130%
Cobalt	9393005	9393005	7.3	7.5	2.7%	< 0.5	96%	70%	130%	101%	80%	120%	99%	70%	130%
Copper	9393005	9393005	24	26	8.0%	< 1	104%	70%	130%	108%	80%	120%	107%	70%	130%
Lead	9393005	9393005	20	21	4.9%	< 1	105%	70%	130%	94%	80%	120%	89%	70%	130%
Molybdenum	9393005	9393005	1.5	1.6	NA	< 0.5	98%	70%	130%	105%	80%	120%	103%	70%	130%
Nickel	9393005	9393005	24	25	4.1%	< 1	103%	70%	130%	109%	80%	120%	109%	70%	130%
Selenium	9393005	9393005	0.6	0.7	NA	< 0.4	111%	70%	130%	96%	80%	120%	95%	70%	130%
Silver	9393005	9393005	<0.2	<0.2	NA	< 0.2	105%	70%	130%	117%	80%	120%	103%	70%	130%
Thallium	9393005	9393005	<0.4	<0.4	NA	< 0.4	88%	70%	130%	101%	80%	120%	100%	70%	130%
Uranium	9393005	9393005	0.8	0.8	NA	< 0.5	87%	70%	130%	104%	80%	120%	105%	70%	130%
Vanadium	9393005	9393005	26	26	0.0%	< 1	100%	70%	130%	105%	80%	120%	105%	70%	130%
Zinc	9393005	9393005	82	81	1.2%	< 5	97%	70%	130%	106%	80%	120%	117%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

O. Reg. 558 Metals and Inorganics

Arsenic Leachate	9424700	<0.010	<0.010	NA	< 0.010	102%	90%	110%	112%	80%	120%	114%	70%	130%
Barium Leachate	9424700	0.250	0.248	NA	< 0.100	100%	90%	110%	100%	80%	120%	108%	70%	130%
Boron Leachate	9424700	<0.050	<0.050	NA	< 0.050	94%	90%	110%	87%	80%	120%	87%	70%	130%
Cadmium Leachate	9424700	<0.010	<0.010	NA	< 0.010	99%	90%	110%	101%	80%	120%	103%	70%	130%
Chromium Leachate	9424700	0.019	0.021	NA	< 0.010	98%	90%	110%	115%	80%	120%	110%	70%	130%
Lead Leachate	9424700	0.019	0.019	NA	< 0.010	96%	90%	110%	93%	80%	120%	98%	70%	130%
Mercury Leachate	9424700	<0.01	<0.01	NA	< 0.01	100%	90%	110%	92%	80%	120%	100%	70%	130%
Selenium Leachate	9424700	<0.010	<0.010	NA	< 0.010	99%	90%	110%	111%	80%	120%	106%	70%	130%
Silver Leachate	9424700	<0.010	<0.010	NA	< 0.010	103%	90%	110%	101%	80%	120%	97%	70%	130%
Uranium Leachate	9424700	<0.050	<0.050	NA	< 0.050	100%	90%	110%	85%	80%	120%	94%	70%	130%
Fluoride Leachate	9424700	<0.05	<0.05	NA	< 0.05	103%	90%	110%	108%	90%	110%	90%	70%	130%
Cyanide Leachate	9424700	<0.05	<0.05	NA	< 0.05	107%	90%	110%	107%	90%	110%	103%	70%	130%
(Nitrate + Nitrite) as N Leachate	9424700	<0.70	<0.70	NA	< 0.70	95%	80%	120%	103%	80%	120%	90%	70%	130%

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.

PROJECT: 18100361

SAMPLING SITE:

AGAT WORK ORDER: 18L360083

ATTENTION TO: Carl Schroeder

SAMPLED BY:

Soil Analysis (Continued)

RPT Date: Aug 02, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

Certified By:



Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.
PROJECT: 18100361
SAMPLING SITE:
AGAT WORK ORDER: 18L360083
ATTENTION TO: Carl Schroeder
SAMPLED BY:

Trace Organics Analysis

RPT Date: Aug 02, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	9402048		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	76%	50%	140%	79%	50%	140%
Vinyl Chloride	9402048		< 0.02	< 0.02	NA	< 0.02	80%	50%	140%	95%	50%	140%	82%	50%	140%
Bromomethane	9402048		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	96%	50%	140%	93%	50%	140%
Trichlorofluoromethane	9402048		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	104%	50%	140%	79%	50%	140%
Acetone	9402048		< 0.50	< 0.50	NA	< 0.50	84%	50%	140%	87%	50%	140%	90%	50%	140%
1,1-Dichloroethylene	9402048		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	107%	60%	130%	88%	50%	140%
Methylene Chloride	9402048		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	85%	60%	130%	95%	50%	140%
Trans- 1,2-Dichloroethylene	9402048		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	115%	60%	130%	112%	50%	140%
Methyl tert-butyl Ether	9402048		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	89%	60%	130%	90%	50%	140%
1,1-Dichloroethane	9402048		< 0.02	< 0.02	NA	< 0.02	111%	50%	140%	118%	60%	130%	116%	50%	140%
Methyl Ethyl Ketone	9402048		< 0.50	< 0.50	NA	< 0.50	88%	50%	140%	86%	50%	140%	89%	50%	140%
Cis- 1,2-Dichloroethylene	9402048		< 0.02	< 0.02	NA	< 0.02	78%	50%	140%	101%	60%	130%	82%	50%	140%
Chloroform	9402048		< 0.04	< 0.04	NA	< 0.04	109%	50%	140%	91%	60%	130%	89%	50%	140%
1,2-Dichloroethane	9402048		< 0.03	< 0.03	NA	< 0.03	81%	50%	140%	91%	60%	130%	101%	50%	140%
1,1,1-Trichloroethane	9402048		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	105%	60%	130%	87%	50%	140%
Carbon Tetrachloride	9402048		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	75%	60%	130%	92%	50%	140%
Benzene	9402048		< 0.02	< 0.02	NA	< 0.02	88%	50%	140%	86%	60%	130%	83%	50%	140%
1,2-Dichloropropane	9402048		< 0.03	< 0.03	NA	< 0.03	86%	50%	140%	94%	60%	130%	81%	50%	140%
Trichloroethylene	9402048		< 0.03	< 0.03	NA	< 0.03	82%	50%	140%	100%	60%	130%	92%	50%	140%
Bromodichloromethane	9402048		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	104%	60%	130%	78%	50%	140%
Methyl Isobutyl Ketone	9402048		< 0.50	< 0.50	NA	< 0.50	102%	50%	140%	91%	50%	140%	77%	50%	140%
1,1,2-Trichloroethane	9402048		< 0.04	< 0.04	NA	< 0.04	92%	50%	140%	85%	60%	130%	85%	50%	140%
Toluene	9402048		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	95%	60%	130%	100%	50%	140%
Dibromochloromethane	9402048		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	84%	60%	130%	84%	50%	140%
Ethylene Dibromide	9402048		< 0.04	< 0.04	NA	< 0.04	78%	50%	140%	82%	60%	130%	77%	50%	140%
Tetrachloroethylene	9402048		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	95%	60%	130%	104%	50%	140%
1,1,1,2-Tetrachloroethane	9402048		< 0.04	< 0.04	NA	< 0.04	103%	50%	140%	82%	60%	130%	102%	50%	140%
Chlorobenzene	9402048		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	99%	60%	130%	105%	50%	140%
Ethylbenzene	9402048		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	84%	60%	130%	84%	50%	140%
m & p-Xylene	9402048		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	95%	60%	130%	99%	50%	140%
Bromoform	9402048		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	82%	60%	130%	86%	50%	140%
Styrene	9402048		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	71%	60%	130%	80%	50%	140%
1,1,1,2-Tetrachloroethane	9402048		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	90%	60%	130%	87%	50%	140%
o-Xylene	9402048		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	97%	60%	130%	103%	50%	140%
1,3-Dichlorobenzene	9402048		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	88%	60%	130%	90%	50%	140%
1,4-Dichlorobenzene	9402048		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	99%	60%	130%	107%	50%	140%
1,2-Dichlorobenzene	9402048		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	85%	60%	130%	89%	50%	140%
1,3-Dichloropropene	9402048		< 0.04	< 0.04	NA	< 0.04	80%	50%	140%	76%	60%	130%	78%	50%	140%
n-Hexane	9402048		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	104%	60%	130%	96%	50%	140%

AGAT QUALITY ASSURANCE REPORT (V2)

Page 17 of 23

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

Results relate only to the items tested and to all the items tested

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.

PROJECT: 18100361

SAMPLING SITE:

AGAT WORK ORDER: 18L360083

ATTENTION TO: Carl Schroeder

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Aug 02, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

F1 (C6 to C10)	9395987		< 5	< 5	NA	< 5	101%	60%	130%	98%	85%	115%	90%	70%	130%
F2 (C10 to C16)	9383175		< 10	< 10	NA	< 10	93%	60%	130%	91%	80%	120%	80%	70%	130%
F3 (C16 to C34)	9383175		< 50	< 50	NA	< 50	100%	60%	130%	94%	80%	120%	87%	70%	130%
F4 (C34 to C50)	9383175		< 50	< 50	NA	< 50	90%	60%	130%	104%	80%	120%	101%	70%	130%

O. Reg. 153(511) - PAHs (Soil)

Naphthalene	9352579		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	103%	50%	140%	99%	50%	140%
Acenaphthylene	9352579		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	102%	50%	140%	91%	50%	140%
Acenaphthene	9352579		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	102%	50%	140%	91%	50%	140%
Fluorene	9352579		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	100%	50%	140%	97%	50%	140%
Phenanthrene	9352579		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	98%	50%	140%	101%	50%	140%
Anthracene	9352579		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	107%	50%	140%	105%	50%	140%
Fluoranthene	9352579		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	107%	50%	140%	97%	50%	140%
Pyrene	9352579		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	108%	50%	140%	94%	50%	140%
Benz(a)anthracene	9352579		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	106%	50%	140%	92%	50%	140%
Chrysene	9352579		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	97%	50%	140%	94%	50%	140%
Benzo(b)fluoranthene	9352579		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	87%	50%	140%	105%	50%	140%
Benzo(k)fluoranthene	9352579		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	89%	50%	140%	95%	50%	140%
Benzo(a)pyrene	9352579		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	102%	50%	140%	92%	50%	140%
Indeno(1,2,3-cd)pyrene	9352579		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	98%	50%	140%	91%	50%	140%
Dibenz(a,h)anthracene	9352579		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	97%	50%	140%	100%	50%	140%
Benzo(g,h,i)perylene	9352579		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	101%	50%	140%	93%	50%	140%
2-and 1-methyl Naphthalene	9352579		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	91%	50%	140%	87%	50%	140%

Total PCBs (soil)

PCBs	9380728		< 0.1	< 0.1	NA	< 0.1	102%	60%	140%	111%	60%	140%	113%	60%	140%
------	---------	--	-------	-------	----	-------	------	-----	------	------	-----	------	------	-----	------

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

O. Reg. 558 - VOCs

Vinyl Chloride	9428393		< 0.030	< 0.030	NA	< 0.030	74%	60%	140%	119%	60%	140%	NA	60%	140%
1,1 Dichloroethene	9428393		< 0.020	< 0.020	NA	< 0.020	71%	70%	130%	101%	70%	130%	NA	60%	140%
Dichloromethane	9428393		< 0.030	< 0.030	NA	< 0.030	89%	70%	130%	102%	70%	130%	NA	60%	140%
Methyl Ethyl Ketone	9428393		< 0.090	< 0.090	NA	< 0.090	90%	70%	130%	84%	70%	130%	NA	60%	140%
Chloroform	9428393		< 0.020	< 0.020	NA	< 0.020	79%	70%	130%	111%	70%	130%	NA	60%	140%
1,2-Dichloroethane	9428393		< 0.020	< 0.020	NA	< 0.020	78%	70%	130%	85%	70%	130%	NA	60%	140%
Carbon Tetrachloride	9428393		< 0.020	< 0.020	NA	< 0.020	85%	70%	130%	87%	70%	130%	NA	60%	140%
Benzene	9428393		< 0.020	< 0.020	NA	< 0.020	73%	70%	130%	79%	70%	130%	NA	60%	140%
Trichloroethene	9428393		< 0.020	< 0.020	NA	< 0.020	86%	70%	130%	96%	70%	130%	NA	60%	140%
Tetrachloroethene	9428393		< 0.050	< 0.050	NA	< 0.050	80%	70%	130%	100%	70%	130%	NA	60%	140%

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.

PROJECT: 18100361

SAMPLING SITE:

AGAT WORK ORDER: 18L360083

ATTENTION TO: Carl Schroeder

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Aug 02, 2018			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Chlorobenzene	9428393		< 0.010	< 0.010	NA	< 0.010	87%	70%	130%	104%	70%	130%	NA	60%	140%
1,2-Dichlorobenzene	9428393		< 0.010	< 0.010	NA	< 0.010	85%	70%	130%	100%	70%	130%	NA	60%	140%
1,4-Dichlorobenzene	9428393		< 0.010	< 0.010	NA	< 0.010	86%	70%	130%	106%	70%	130%	NA	60%	140%
O. Reg. 558 - Benzo(a) pyrene															
Benzo(a)pyrene	9393005	9393005	< 0.001	< 0.001	NA	< 0.001	102%	70%	130%	104%	70%	130%	NA	70%	130%

Certified By:



Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD.

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

ATTENTION TO: Carl Schroeder

SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Barium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Boron Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Cadmium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Chromium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Lead Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Mercury Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Selenium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Silver Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Uranium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Fluoride Leachate	INOR-93-6018	EPA SW-846-1311 & SM4500-F- C	ION SELECTIVE ELECTRODE
Cyanide Leachate	INOR-93-6052	EPA SW-846-1311 & MOE 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
(Nitrate + Nitrite) as N Leachate	INOR-93-6053	EPA SW 846-1311 & SM 4500 - NO3- I	LACHAT FIA

Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD.

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

ATTENTION TO: Carl Schroeder

SAMPLING SITE:
SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD.

PROJECT: 18100361

SAMPLING SITE:

AGAT WORK ORDER: 18L360083

ATTENTION TO: Carl Schroeder

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE
Benzo(a)pyrene	ORG-91-5114	EPA SW846 3540 & 8270	GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,1 Dichloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Dichloromethane	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Trichloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
PCBs	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD

CLIENT NAME: GOLDER ASSOCIATES LTD.
309 EXETER ROAD, UNIT #1
LONDON, ON N6L1C1
(519) 652-0099

ATTENTION TO: Carl Schroeder

PROJECT: 18100361

AGAT WORK ORDER: 18L360083

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Sep 14, 2018

PAGES (INCLUDING COVER): 23

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 2: Report issued Aug 02, 2018 including TCLP testing.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083
PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder
SAMPLED BY:

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)										DATE REPORTED: 2018-09-14
DATE RECEIVED: 2018-07-10										
Parameter	SAMPLE DESCRIPTION:									
	SAMPLE TYPE:		SD-101		SD-201		SD-301			
	DATE SAMPLED:	Sediment	DATE SAMPLED:	Sediment	DATE SAMPLED:	Sediment	DATE SAMPLED:	Sediment		
Unit	G / S	RDL	9393005	2018-07-04	9393721	2018-07-04	9393962	2018-07-04		
Antimony	µg/g	NV	0.8	<0.8	<0.8	<0.8	<0.8	<0.8		
Arsenic	µg/g	6	1	6	5	4				
Barium	µg/g	NV	2	59	36	32				
Beryllium	µg/g	NV	0.5	<0.5	<0.5	<0.5				
Boron	µg/g	NV	5	8	7	7				
Cadmium	µg/g	0.6	0.5	<0.5	<0.5	<0.5				
Chromium	µg/g	26	2	23	15	15				
Cobalt	µg/g	50	0.5	7.3	5.1	4.5				
Copper	µg/g	16	1	24	21	16				
Lead	µg/g	31	1	20	17	21				
Molybdenum	µg/g	NV	0.5	1.5	1.0	1.0				
Nickel	µg/g	16	1	24	15	14				
Selenium	µg/g	NV	0.4	0.6	0.5	0.4				
Silver	µg/g	0.5	0.2	<0.2	0.9	<0.2				
Thallium	µg/g	NV	0.4	<0.4	<0.4	<0.4				
Uranium	µg/g	NV	0.5	0.8	0.6	0.6				
Vanadium	µg/g	NV	1	26	17	18				
Zinc	µg/g	120	5	82	58	56				

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition - Sediment - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.



Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 558 Metals and Inorganics					DATE REPORTED: 2018-09-14
DATE RECEIVED: 2018-07-10					
SAMPLE DESCRIPTION: SD-101					
SAMPLE TYPE: Sediment					
DATE SAMPLED: 2018-07-04					
Parameter	Unit	G / S	RDL	9393005	
Arsenic Leachate	mg/L	2.5	0.010	<0.010	
Barium Leachate	mg/L	100	0.100	0.482	
Boron Leachate	mg/L	500	0.050	<0.050	
Cadmium Leachate	mg/L	0.5	0.010	<0.010	
Chromium Leachate	mg/L	5	0.010	<0.010	
Lead Leachate	mg/L	5	0.010	0.029	
Mercury Leachate	mg/L	0.1	0.01	<0.01	
Selenium Leachate	mg/L	1	0.010	<0.010	
Silver Leachate	mg/L	5	0.010	<0.010	
Uranium Leachate	mg/L	10	0.050	<0.050	
Fluoride Leachate	mg/L	150	0.05	0.15	
Cyanide Leachate	mg/L	20	0.05	<0.05	
(Nitrate + Nitrite) as N Leachate	mg/L	1000	0.70	<0.70	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to O. Reg. 558 - Schedule IV Leachate Quality Criteria

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:





AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)										DATE REPORTED: 2018-09-14
DATE RECEIVED: 2018-07-10										
SAMPLE DESCRIPTION:										
SAMPLE TYPE:		SD-101		SD-201		SD-301				
DATE SAMPLED:		2018-07-04		2018-07-04		2018-07-04				
G / S		RDL		9393005		9393721		9393962		
Parameter	Unit	G / S	RDL	SD-101 Sediment	SD-201 Sediment	SD-301 Sediment	2018-07-04	2018-07-04	2018-07-04	
Naphthalene	µg/g	NV	0.05	0.07	<0.05	<0.05				<0.05
Acenaphthylene	µg/g	NV	0.05	<0.05	<0.05	<0.05				<0.05
Acenaphthene	µg/g	NV	0.05	0.10	<0.05	0.05				0.05
Fluorene	µg/g	0.19	0.05	0.12	0.07	0.05				0.05
Phenanthrene	µg/g	0.56	0.05	0.74	0.81	0.66				0.66
Anthracene	µg/g	0.22	0.05	0.21	0.14	0.09				0.09
Fluoranthene	µg/g	0.75	0.05	1.7	1.8	1.5				1.5
Pyrene	µg/g	0.49	0.05	1.3	1.5	1.2				1.2
Benz(a)anthracene	µg/g	0.32	0.05	0.48	0.61	0.45				0.45
Chrysene	µg/g	0.34	0.05	0.78	0.91	0.62				0.62
Benzo(b)fluoranthene	µg/g	NV	0.05	0.69	0.62	0.41				0.41
Benzo(k)fluoranthene	µg/g	0.24	0.05	0.32	0.43	0.26				0.26
Benzo(a)pyrene	µg/g	0.37	0.05	0.37	0.46	0.30				0.30
Indeno(1,2,3-cd)pyrene	µg/g	0.2	0.05	0.18	0.21	0.14				0.14
Dibenz(a,h)anthracene	µg/g	0.06	0.05	<0.05	0.05	<0.05				<0.05
Benzo(g,h,i)perylene	µg/g	0.17	0.05	0.17	0.20	0.12				0.12
2-and 1-methyl Naphthalene	µg/g	NV	0.05	<0.05	<0.05	<0.05				<0.05
Moisture Content	%		0.1	51.3	53.6	37.5				
Surrogate	Unit	Acceptable Limits								
Chrysene-d12	%	50-140		118	102	113				

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition - Sediment - All Types of Property Uses

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9393005-9393721 Results are based on the dry weight of the soil. Due to the high moisture content of the sample it was air dried prior to extraction.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b&j)Fluoranthene isomers because the isomers co-elute on the GC column.

Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b&j)Fluoranthene isomers because the isomers co-elute on the GC column.

9393962

N Popmickalof

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)				DATE REPORTED: 2018-09-14
DATE RECEIVED: 2018-07-10				
Parameter	Unit	SAMPLE DESCRIPTION:		DATE SAMPLED
		G / S	RDL	
F1 (C6 to C10)	µg/g	10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	10	<10	<10
F2 (C10 to C16)	µg/g	20	<20	<20
F2 (C10 to C16) minus Naphthalene	µg/g	20	<20	<20
F3 (C16 to C34)	µg/g	100	<100	<100
F3 (C16 to C34) minus PAHs	µg/g	100	<100	<100
F4 (C34 to C50)	µg/g	100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/g	NV	NA	NA
Moisture Content	%	0.2	51.3	53.6
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140	124	90

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition - Sediment - All Types of Property Uses

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9393005-9393721 Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX and PAH contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Due to high moisture content of the sample the reporting detection limit has been raised.

Extraction and holding times were met for this sample.

N Popmickalof

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)					DATE REPORTED: 2018-09-14
DATE RECEIVED: 2018-07-10					
SAMPLE DESCRIPTION:					
Parameter	Unit	SAMPLE TYPE:		SD-201 Sediment	SD-101 Sediment
		DATE SAMPLED:	RDL	2018-07-04	2018-07-04
G / S				9393005	9393721
Dichlorodifluoromethane	µg/g	NV	0.10	<0.10	<0.10
Vinyl Chloride	ug/g	NV	0.04	<0.04	<0.04
Bromomethane	ug/g	NV	0.10	<0.10	<0.10
Trichlorofluoromethane	ug/g	NV	0.10	<0.10	<0.10
Acetone	ug/g	NV	1.00	<1.00	<1.00
1,1-Dichloroethylene	ug/g	NV	0.10	<0.10	<0.10
Methylene Chloride	ug/g	NV	0.10	<0.10	<0.10
Trans- 1,2-Dichloroethylene	ug/g	NV	0.10	<0.10	<0.10
Methyl tert-butyl Ether	ug/g	NV	0.10	<0.10	<0.10
1,1-Dichloroethane	ug/g	NV	0.04	<0.04	<0.04
Methyl Ethyl Ketone	ug/g	NV	1.00	<1.00	<1.00
Cis- 1,2-Dichloroethylene	ug/g	NV	0.04	<0.04	<0.04
Chloroform	ug/g	NV	0.08	<0.08	<0.08
1,2-Dichloroethane	ug/g	NV	0.06	<0.06	<0.06
1,1,1-Trichloroethane	ug/g	NV	0.10	<0.10	<0.10
Carbon Tetrachloride	ug/g	NV	0.10	<0.10	<0.10
Benzene	ug/g	NV	0.04	<0.04	<0.04
1,2-Dichloropropane	ug/g	NV	0.06	<0.06	<0.06
Trichloroethylene	ug/g	NV	0.06	<0.06	<0.06
Bromodichloromethane	ug/g	NV	0.10	<0.10	<0.10
Methyl Isobutyl Ketone	ug/g	NV	1.00	<1.00	<1.00
1,1,2-Trichloroethane	ug/g	NV	0.08	<0.08	<0.08
Toluene	ug/g	NV	0.10	0.94	<0.10
Dibromochloromethane	ug/g	NV	0.10	<0.10	<0.10
Ethylene Dibromide	ug/g	NV	0.08	<0.08	<0.08
Tetrachloroethylene	ug/g	NV	0.10	<0.10	<0.10
1,1,1,2-Tetrachloroethane	ug/g	NV	0.08	<0.08	<0.08
Chlorobenzene	ug/g	NV	0.10	<0.10	<0.10
Ethylbenzene	ug/g	NV	0.10	<0.10	<0.10
m & p-Xylene	ug/g		0.10	<0.10	<0.10

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)						DATE REPORTED: 2018-09-14
DATE RECEIVED: 2018-07-10						
SAMPLE DESCRIPTION:						
SAMPLE TYPE:		SD-101		SD-201		
DATE SAMPLED:		Sediment		Sediment		
G / S		2018-07-04		2018-07-04		
Parameter	Unit	RDL	9393005	9393721		
Bromoform	ug/g	NV	<0.10	<0.10		
Styrene	ug/g	NV	<0.10	<0.10		
1,1,2,2-Tetrachloroethane	ug/g	NV	<0.10	<0.10		
o-Xylene	ug/g	NV	<0.10	<0.10		
1,3-Dichlorobenzene	ug/g	NV	<0.10	<0.10		
1,4-Dichlorobenzene	ug/g	NV	<0.10	<0.10		
1,2-Dichlorobenzene	ug/g	NV	<0.10	<0.10		
Xylene Mixture	ug/g	NV	<0.10	<0.10		
1,3-Dichloropropene	ug/g	NV	<0.08	<0.08		
n-Hexane	ug/g	NV	<0.10	<0.10		
Moisture Content	%	0.2	51.3	53.6		
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	50-140		90	88	
4-Bromofluorobenzene	% Recovery	50-140		80	80	

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard: Refers to Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition - Sediment - All Types of Property Uses

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9393005-9393721 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Due to high moisture content of the sample the reporting detection limit has been raised.

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.
SAMPLING SITE:

ATTENTION TO: Carl Schroeder
SAMPLED BY:

O. Reg. 558 - Benzo(a) pyrene		DATE RECEIVED: 2018-07-10	DATE REPORTED: 2018-09-14
SAMPLE DESCRIPTION: SD-101			
SAMPLE TYPE: Sediment			
DATE SAMPLED: 2018-07-04			
Parameter	Unit	G / S	RDL
Benzo(a)pyrene	mg/L	0.001	0.001
			<0.001

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to O. Reg. 558 - Schedule IV Leachate Quality Criteria
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
9393005 The sample was leached according to Regulation 558 protocol. Analysis was performed on the leachate.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

O. Reg. 558 - VOCs						DATE REPORTED: 2018-09-14
DATE RECEIVED: 2018-07-10		SAMPLE DESCRIPTION: SD-101				
		SAMPLE TYPE: Sediment				
		DATE SAMPLED: 2018-07-04				
Parameter	Unit	G / S	RDL			
Vinyl Chloride	mg/L	0.2	0.030			<0.030
1,1 Dichloroethene	mg/L	1.4	0.020			<0.020
Dichloromethane	mg/L	5.0	0.030			<0.030
Methyl Ethyl Ketone	mg/L	200	0.090			<0.090
Chloroform	mg/L	10.0	0.020			<0.020
1,2-Dichloroethane	mg/L	0.5	0.020			<0.020
Carbon Tetrachloride	mg/L	0.5	0.020			<0.020
Benzene	mg/L	0.5	0.020			<0.020
Trichloroethene	mg/L	5.0	0.020			<0.020
Tetrachloroethene	mg/L	3.0	0.050			<0.050
Chlorobenzene	mg/L	8.0	0.010			<0.010
1,2-Dichlorobenzene	mg/L	20.0	0.010			<0.010
1,4-Dichlorobenzene	mg/L	0.5	0.010			<0.010
Surrogate	Unit	Acceptable Limits				
	% Recovery	60-130				113
Toluene-d8						

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to O. Reg. 558 - Schedule IV Leachate Quality Criteria

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Sample was prepared using Regulation 558 protocol and a zero headspace extractor.

9393005

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

DATE RECEIVED: 2018-07-10				DATE REPORTED: 2018-09-14			
SAMPLE DESCRIPTION:				PHCs F1 - F4 (with PAHs) (Soil)			
Parameter	Unit	SAMPLE TYPE:		DATE SAMPLED:	G / S	RDL	
		SD-301	Sediment				
F1 (C6 to C10)	µg/g	5	<5	2018-07-04	9393962		
F1 (C6 to C10) minus BTEX	µg/g	5	<5				
F2 (C10 to C16)	µg/g	10	<10				
F2 (C10 to C16) minus Naphthalene	µg/g	10	<10				
F3 (C16 to C34)	µg/g	50	64				
F3 (C16 to C34) minus PAHs	µg/g	50	60				
F4 (C34 to C50)	µg/g	50	<50				
Gravimetric Heavy Hydrocarbons	µg/g	NV	NA				
Moisture Content	%	0.1	37.5				
Surrogate	Unit	Acceptable Limits					
Terphenyl	%	60-140					120

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition - Sediment - All Types of Property Uses

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX and PAH contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

The soil sample was prepared in the lab using the Methanol extraction technique. The sample was not field preserved with methanol and an Encore was not provided for analysis.

Extraction and holding times were met for this sample.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder
SAMPLED BY:

Total PCBs (soil)									
DATE RECEIVED: 2018-07-10					DATE REPORTED: 2018-09-14				
SAMPLE DESCRIPTION:									
SAMPLE TYPE:									
DATE SAMPLED:									
G / S									
RDL									
Acceptable Limits									
60-130									
81									
100									
90									
PCBs									
Surrogate									
Decachlorobiphenyl									

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition - Sediment - All Types of Property Uses

9393005-9393721 Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9393962 Results are based on the dry weight of soil extracted.
Due to the high moisture content of the sample it was air dried prior to extraction.
Results are based on the dry weight of soil extracted.

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

VOCs (Soil)

DATE RECEIVED: 2018-07-10				DATE REPORTED: 2018-09-14			
Parameter		SAMPLE DESCRIPTION:		SD-301		Sediment	
		Unit	G / S	DATE SAMPLED:	RDL		
Dichlorodifluoromethane	µg/g	NV	0.05	2018-07-04	0.05	<0.05	
Vinyl Chloride	ug/g	NV	0.02		0.02	<0.02	
Bromomethane	ug/g	NV	0.05		0.05	<0.05	
Trichlorofluoromethane	ug/g	NV	0.05		0.05	<0.05	
Acetone	ug/g	NV	0.50		0.50	<0.50	
1,1-Dichloroethylene	ug/g	NV	0.05		0.05	<0.05	
Methylene Chloride	ug/g	NV	0.05		0.05	<0.05	
Trans- 1,2-Dichloroethylene	ug/g	NV	0.05		0.05	<0.05	
Methyl tert-butyl Ether	ug/g	NV	0.05		0.05	<0.05	
1,1-Dichloroethane	ug/g	NV	0.02		0.02	<0.02	
Methyl Ethyl Ketone	ug/g	NV	0.50		0.50	<0.50	
Cis- 1,2-Dichloroethylene	ug/g	NV	0.02		0.02	<0.02	
Chloroform	ug/g	NV	0.04		0.04	<0.04	
1,2-Dichloroethane	ug/g	NV	0.03		0.03	<0.03	
1,1,1-Trichloroethane	ug/g	NV	0.05		0.05	<0.05	
Carbon Tetrachloride	ug/g	NV	0.05		0.05	<0.05	
Benzene	ug/g	NV	0.02		0.02	<0.02	
1,2-Dichloropropane	ug/g	NV	0.03		0.03	<0.03	
Trichloroethylene	ug/g	NV	0.03		0.03	<0.03	
Bromodichloromethane	ug/g	NV	0.05		0.05	<0.05	
Methyl Isobutyl Ketone	ug/g	NV	0.50		0.50	<0.50	
1,1,2-Trichloroethane	ug/g	NV	0.04		0.04	<0.04	
Toluene	ug/g	NV	0.05		0.05	<0.05	
Dibromochloromethane	ug/g	NV	0.05		0.05	<0.05	
Ethylene Dibromide	ug/g	NV	0.04		0.04	<0.04	
Tetrachloroethylene	ug/g	NV	0.05		0.05	<0.05	
1,1,1,2-Tetrachloroethane	ug/g	NV	0.04		0.04	<0.04	
Chlorobenzene	ug/g	NV	0.05		0.05	<0.05	
Ethylbenzene	ug/g	NV	0.05		0.05	<0.05	
m & p-Xylene	ug/g		0.05		0.05	<0.05	

Certified By:

N Popmickalof



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

SAMPLING SITE:

ATTENTION TO: Carl Schroeder

SAMPLED BY:

VOCs (Soil)					DATE REPORTED: 2018-09-14
SAMPLE DESCRIPTION: SD-301					
SAMPLE TYPE: Sediment		DATE SAMPLED: 2018-07-04			
Parameter	Unit	G / S	RDL	9393962	
Bromofom	ug/g	NV	0.05	<0.05	
Styrene	ug/g	NV	0.05	<0.05	
1,1,2,2-Tetrachloroethane	ug/g	NV	0.05	<0.05	
o-Xylene	ug/g	NV	0.05	<0.05	
1,3-Dichlorobenzene	ug/g	NV	0.05	<0.05	
1,4-Dichlorobenzene	ug/g	NV	0.05	<0.05	
1,2-Dichlorobenzene	ug/g	NV	0.05	<0.05	
Xylene Mixture	ug/g	NV	0.05	<0.05	
1,3-Dichloropropene	ug/g	NV	0.04	<0.04	
n-Hexane	ug/g	NV	0.05	<0.05	
Moisture Content	%		0.1	37.5	
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140			87
4-Bromofluorobenzene	% Recovery	50-140			82

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard: Refers to Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition - Sediment - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
9393962 The sample was analysed using the high level technique. The soil sample was prepared in the lab using the Methanol extraction technique. The sample was not field preserved with methanol and an Encore was not provided for analysis. Results are based on the dry weight of the soil.

Certified By:

N Popmickalof



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD.

ATTENTION TO: Carl Schroeder

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9393005	SD-101	ON T9 SD	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Copper	µg/g	16	24
9393005	SD-101	ON T9 SD	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Nickel	µg/g	16	24
9393005	SD-101	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.32	0.48
9393005	SD-101	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Benzo(k)fluoranthene	µg/g	0.24	0.32
9393005	SD-101	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Chrysene	µg/g	0.34	0.78
9393005	SD-101	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.75	1.7
9393005	SD-101	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Phenanthrene	µg/g	0.56	0.74
9393005	SD-101	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Pyrene	µg/g	0.49	1.3
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Copper	µg/g	16	21
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Silver	µg/g	0.5	0.9
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.32	0.61
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.37	0.46
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Benzo(g,h,i)perylene	µg/g	0.17	0.20
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Benzo(k)fluoranthene	µg/g	0.24	0.43
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Chrysene	µg/g	0.34	0.91
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.75	1.8
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.2	0.21
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Phenanthrene	µg/g	0.56	0.81
9393721	SD-201	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Pyrene	µg/g	0.49	1.5
9393962	SD-301	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.32	0.45
9393962	SD-301	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Benzo(k)fluoranthene	µg/g	0.24	0.26
9393962	SD-301	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Chrysene	µg/g	0.34	0.62
9393962	SD-301	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.75	1.5
9393962	SD-301	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Phenanthrene	µg/g	0.56	0.66
9393962	SD-301	ON T9 SD	O. Reg. 153(511) - PAHs (Soil)	Pyrene	µg/g	0.49	1.2

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.

PROJECT: 18100361

SAMPLING SITE:

AGAT WORK ORDER: 18L360083

ATTENTION TO: Carl Schroeder

SAMPLED BY:

Soil Analysis															
RPT Date: Sep 14, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)															
Antimony	9393005	9393005	<0.8	<0.8	NA	< 0.8	125%	70%	130%	84%	80%	120%	73%	70%	130%
Arsenic	9393005	9393005	6	6	0.0%	< 1	105%	70%	130%	99%	80%	120%	103%	70%	130%
Barium	9393005	9393005	59	58	1.7%	< 2	97%	70%	130%	91%	80%	120%	86%	70%	130%
Beryllium	9393005	9393005	<0.5	0.6	NA	< 0.5	94%	70%	130%	120%	80%	120%	104%	70%	130%
Boron	9393005	9393005	8	9	NA	< 5	89%	70%	130%	108%	80%	120%	85%	70%	130%
Cadmium	9393005	9393005	<0.5	<0.5	NA	< 0.5	112%	70%	130%	110%	80%	120%	110%	70%	130%
Chromium	9393005	9393005	23	24	4.3%	< 2	98%	70%	130%	115%	80%	120%	110%	70%	130%
Cobalt	9393005	9393005	7.3	7.5	2.7%	< 0.5	96%	70%	130%	101%	80%	120%	99%	70%	130%
Copper	9393005	9393005	24	26	8.0%	< 1	104%	70%	130%	108%	80%	120%	107%	70%	130%
Lead	9393005	9393005	20	21	4.9%	< 1	105%	70%	130%	94%	80%	120%	89%	70%	130%
Molybdenum	9393005	9393005	1.5	1.6	NA	< 0.5	98%	70%	130%	105%	80%	120%	103%	70%	130%
Nickel	9393005	9393005	24	25	4.1%	< 1	103%	70%	130%	109%	80%	120%	109%	70%	130%
Selenium	9393005	9393005	0.6	0.7	NA	< 0.4	111%	70%	130%	96%	80%	120%	95%	70%	130%
Silver	9393005	9393005	<0.2	<0.2	NA	< 0.2	105%	70%	130%	117%	80%	120%	103%	70%	130%
Thallium	9393005	9393005	<0.4	<0.4	NA	< 0.4	88%	70%	130%	101%	80%	120%	100%	70%	130%
Uranium	9393005	9393005	0.8	0.8	NA	< 0.5	87%	70%	130%	104%	80%	120%	105%	70%	130%
Vanadium	9393005	9393005	26	26	0.0%	< 1	100%	70%	130%	105%	80%	120%	105%	70%	130%
Zinc	9393005	9393005	82	81	1.2%	< 5	97%	70%	130%	106%	80%	120%	117%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

O. Reg. 558 Metals and Inorganics

Arsenic Leachate	9424700	<0.010	<0.010	NA	< 0.010	102%	90%	110%	112%	80%	120%	114%	70%	130%
Barium Leachate	9424700	0.250	0.248	NA	< 0.100	100%	90%	110%	100%	80%	120%	108%	70%	130%
Boron Leachate	9424700	<0.050	<0.050	NA	< 0.050	94%	90%	110%	87%	80%	120%	87%	70%	130%
Cadmium Leachate	9424700	<0.010	<0.010	NA	< 0.010	99%	90%	110%	101%	80%	120%	103%	70%	130%
Chromium Leachate	9424700	0.019	0.021	NA	< 0.010	98%	90%	110%	115%	80%	120%	110%	70%	130%
Lead Leachate	9424700	0.019	0.019	NA	< 0.010	96%	90%	110%	93%	80%	120%	98%	70%	130%
Mercury Leachate	9424700	<0.01	<0.01	NA	< 0.01	100%	90%	110%	92%	80%	120%	100%	70%	130%
Selenium Leachate	9424700	<0.010	<0.010	NA	< 0.010	99%	90%	110%	111%	80%	120%	106%	70%	130%
Silver Leachate	9424700	<0.010	<0.010	NA	< 0.010	103%	90%	110%	101%	80%	120%	97%	70%	130%
Uranium Leachate	9424700	<0.050	<0.050	NA	< 0.050	100%	90%	110%	85%	80%	120%	94%	70%	130%
Fluoride Leachate	9424700	<0.05	<0.05	NA	< 0.05	103%	90%	110%	108%	90%	110%	90%	70%	130%
Cyanide Leachate	9424700	<0.05	<0.05	NA	< 0.05	107%	90%	110%	107%	90%	110%	103%	70%	130%
(Nitrate + Nitrite) as N Leachate	9424700	<0.70	<0.70	NA	< 0.70	95%	80%	120%	103%	80%	120%	90%	70%	130%

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

ATTENTION TO: Carl Schroeder

SAMPLING SITE:

SAMPLED BY:

Soil Analysis (Continued)

RPT Date: Sep 14, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

Certified By:




Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.

PROJECT: 18100361

SAMPLING SITE:

AGAT WORK ORDER: 18L360083

ATTENTION TO: Carl Schroeder

SAMPLED BY:

Trace Organics Analysis

RPT Date: Sep 14, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	9402048		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	76%	50%	140%	79%	50%	140%
Vinyl Chloride	9402048		< 0.02	< 0.02	NA	< 0.02	80%	50%	140%	95%	50%	140%	82%	50%	140%
Bromomethane	9402048		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	96%	50%	140%	93%	50%	140%
Trichlorofluoromethane	9402048		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	104%	50%	140%	79%	50%	140%
Acetone	9402048		< 0.50	< 0.50	NA	< 0.50	84%	50%	140%	87%	50%	140%	90%	50%	140%
1,1-Dichloroethylene	9402048		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	107%	60%	130%	88%	50%	140%
Methylene Chloride	9402048		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	85%	60%	130%	95%	50%	140%
Trans- 1,2-Dichloroethylene	9402048		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	115%	60%	130%	112%	50%	140%
Methyl tert-butyl Ether	9402048		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	89%	60%	130%	90%	50%	140%
1,1-Dichloroethane	9402048		< 0.02	< 0.02	NA	< 0.02	111%	50%	140%	118%	60%	130%	116%	50%	140%
Methyl Ethyl Ketone	9402048		< 0.50	< 0.50	NA	< 0.50	88%	50%	140%	86%	50%	140%	89%	50%	140%
Cis- 1,2-Dichloroethylene	9402048		< 0.02	< 0.02	NA	< 0.02	78%	50%	140%	101%	60%	130%	82%	50%	140%
Chloroform	9402048		< 0.04	< 0.04	NA	< 0.04	109%	50%	140%	91%	60%	130%	89%	50%	140%
1,2-Dichloroethane	9402048		< 0.03	< 0.03	NA	< 0.03	81%	50%	140%	91%	60%	130%	101%	50%	140%
1,1,1-Trichloroethane	9402048		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	105%	60%	130%	87%	50%	140%
Carbon Tetrachloride	9402048		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	75%	60%	130%	92%	50%	140%
Benzene	9402048		< 0.02	< 0.02	NA	< 0.02	88%	50%	140%	86%	60%	130%	83%	50%	140%
1,2-Dichloropropane	9402048		< 0.03	< 0.03	NA	< 0.03	86%	50%	140%	94%	60%	130%	81%	50%	140%
Trichloroethylene	9402048		< 0.03	< 0.03	NA	< 0.03	82%	50%	140%	100%	60%	130%	92%	50%	140%
Bromodichloromethane	9402048		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	104%	60%	130%	78%	50%	140%
Methyl Isobutyl Ketone	9402048		< 0.50	< 0.50	NA	< 0.50	102%	50%	140%	91%	50%	140%	77%	50%	140%
1,1,2-Trichloroethane	9402048		< 0.04	< 0.04	NA	< 0.04	92%	50%	140%	85%	60%	130%	85%	50%	140%
Toluene	9402048		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	95%	60%	130%	100%	50%	140%
Dibromochloromethane	9402048		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	84%	60%	130%	84%	50%	140%
Ethylene Dibromide	9402048		< 0.04	< 0.04	NA	< 0.04	78%	50%	140%	82%	60%	130%	77%	50%	140%
Tetrachloroethylene	9402048		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	95%	60%	130%	104%	50%	140%
1,1,1,2-Tetrachloroethane	9402048		< 0.04	< 0.04	NA	< 0.04	103%	50%	140%	82%	60%	130%	102%	50%	140%
Chlorobenzene	9402048		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	99%	60%	130%	105%	50%	140%
Ethylbenzene	9402048		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	84%	60%	130%	84%	50%	140%
m & p-Xylene	9402048		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	95%	60%	130%	99%	50%	140%
Bromoform	9402048		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	82%	60%	130%	86%	50%	140%
Styrene	9402048		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	71%	60%	130%	80%	50%	140%
1,1,2,2-Tetrachloroethane	9402048		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	90%	60%	130%	87%	50%	140%
o-Xylene	9402048		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	97%	60%	130%	103%	50%	140%
1,3-Dichlorobenzene	9402048		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	88%	60%	130%	90%	50%	140%
1,4-Dichlorobenzene	9402048		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	99%	60%	130%	107%	50%	140%
1,2-Dichlorobenzene	9402048		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	85%	60%	130%	89%	50%	140%
1,3-Dichloropropene	9402048		< 0.04	< 0.04	NA	< 0.04	80%	50%	140%	76%	60%	130%	78%	50%	140%
n-Hexane	9402048		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	104%	60%	130%	96%	50%	140%

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

ATTENTION TO: Carl Schroeder

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Sep 14, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

F1 (C6 to C10)	9395987	< 5	< 5	NA	< 5	101%	60%	130%	98%	85%	115%	90%	70%	130%
F2 (C10 to C16)	9383175	< 10	< 10	NA	< 10	93%	60%	130%	91%	80%	120%	80%	70%	130%
F3 (C16 to C34)	9383175	< 50	< 50	NA	< 50	100%	60%	130%	94%	80%	120%	87%	70%	130%
F4 (C34 to C50)	9383175	< 50	< 50	NA	< 50	90%	60%	130%	104%	80%	120%	101%	70%	130%

O. Reg. 153(511) - PAHs (Soil)

Naphthalene	9352579	< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	103%	50%	140%	99%	50%	140%
Acenaphthylene	9352579	< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	102%	50%	140%	91%	50%	140%
Acenaphthene	9352579	< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	102%	50%	140%	91%	50%	140%
Fluorene	9352579	< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	100%	50%	140%	97%	50%	140%
Phenanthrene	9352579	< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	98%	50%	140%	101%	50%	140%
Anthracene	9352579	< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	107%	50%	140%	105%	50%	140%
Fluoranthene	9352579	< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	107%	50%	140%	97%	50%	140%
Pyrene	9352579	< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	108%	50%	140%	94%	50%	140%
Benz(a)anthracene	9352579	< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	106%	50%	140%	92%	50%	140%
Chrysene	9352579	< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	97%	50%	140%	94%	50%	140%
Benzo(b)fluoranthene	9352579	< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	87%	50%	140%	105%	50%	140%
Benzo(k)fluoranthene	9352579	< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	89%	50%	140%	95%	50%	140%
Benzo(a)pyrene	9352579	< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	102%	50%	140%	92%	50%	140%
Indeno(1,2,3-cd)pyrene	9352579	< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	98%	50%	140%	91%	50%	140%
Dibenz(a,h)anthracene	9352579	< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	97%	50%	140%	100%	50%	140%
Benzo(g,h,i)perylene	9352579	< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	101%	50%	140%	93%	50%	140%
2-and 1-methyl Naphthalene	9352579	< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	91%	50%	140%	87%	50%	140%

Total PCBs (soil)

PCBs	9380728	< 0.1	< 0.1	NA	< 0.1	102%	60%	140%	111%	60%	140%	113%	60%	140%
------	---------	-------	-------	----	-------	------	-----	------	------	-----	------	------	-----	------

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

O. Reg. 558 - VOCs

Vinyl Chloride	9428393	< 0.030	< 0.030	NA	< 0.030	74%	60%	140%	119%	60%	140%	NA	60%	140%
1,1 Dichloroethene	9428393	< 0.020	< 0.020	NA	< 0.020	71%	70%	130%	101%	70%	130%	NA	60%	140%
Dichloromethane	9428393	< 0.030	< 0.030	NA	< 0.030	89%	70%	130%	102%	70%	130%	NA	60%	140%
Methyl Ethyl Ketone	9428393	< 0.090	< 0.090	NA	< 0.090	90%	70%	130%	84%	70%	130%	NA	60%	140%
Chloroform	9428393	< 0.020	< 0.020	NA	< 0.020	79%	70%	130%	111%	70%	130%	NA	60%	140%
1,2-Dichloroethane	9428393	< 0.020	< 0.020	NA	< 0.020	78%	70%	130%	85%	70%	130%	NA	60%	140%
Carbon Tetrachloride	9428393	< 0.020	< 0.020	NA	< 0.020	85%	70%	130%	87%	70%	130%	NA	60%	140%
Benzene	9428393	< 0.020	< 0.020	NA	< 0.020	73%	70%	130%	79%	70%	130%	NA	60%	140%
Trichloroethene	9428393	< 0.020	< 0.020	NA	< 0.020	86%	70%	130%	96%	70%	130%	NA	60%	140%
Tetrachloroethene	9428393	< 0.050	< 0.050	NA	< 0.050	80%	70%	130%	100%	70%	130%	NA	60%	140%

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD.

PROJECT: 18100361

SAMPLING SITE:

AGAT WORK ORDER: 18L360083

ATTENTION TO: Carl Schroeder

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Sep 14, 2018			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Chlorobenzene	9428393		< 0.010	< 0.010	NA	< 0.010	87%	70%	130%	104%	70%	130%	NA	60%	140%
1,2-Dichlorobenzene	9428393		< 0.010	< 0.010	NA	< 0.010	85%	70%	130%	100%	70%	130%	NA	60%	140%
1,4-Dichlorobenzene	9428393		< 0.010	< 0.010	NA	< 0.010	86%	70%	130%	106%	70%	130%	NA	60%	140%
O. Reg. 558 - Benzo(a) pyrene															
Benzo(a)pyrene	9393005	9393005	< 0.001	< 0.001	NA	< 0.001	102%	70%	130%	104%	70%	130%	NA	70%	130%

Certified By:



Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD.

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

ATTENTION TO: Carl Schroeder

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Barium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Boron Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Cadmium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Chromium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Lead Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Mercury Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Selenium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Silver Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Uranium Leachate	MET-93-6103	EPA SW-846 1311 & 3010A & 6020A	ICP-MS
Fluoride Leachate	INOR-93-6018	EPA SW-846-1311 & SM4500-F- C	ION SELECTIVE ELECTRODE
Cyanide Leachate	INOR-93-6052	EPA SW-846-1311 & MOE 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
(Nitrate + Nitrite) as N Leachate	INOR-93-6053	EPA SW 846-1311 & SM 4500 - NO3- I	LACHAT FIA

Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD.

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

ATTENTION TO: Carl Schroeder

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD.

AGAT WORK ORDER: 18L360083

PROJECT: 18100361

ATTENTION TO: Carl Schroeder

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE
Benzo(a)pyrene	ORG-91-5114	EPA SW846 3540 & 8270	GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,1 Dichloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Dichloromethane	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Trichloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5230B & 8260	(P&T)GC/MS
PCBs	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD



golder.com

Section 9: Natural Heritage Assessment

9.0 Natural Heritage Assessment

This section of the Project File contains a copy of the Natural Heritage Assessment report prepared by BioLogic Inc. and the response letter received from the Ministry of Natural Resources and Forestry (MNRF).

Habitat Assessment Summary and Recommendations:

Fisheries Act

1. A DFO Request for Review is needed due to the potential impacts to an aquatic SAR and the construction of in-water structures below the High Water Mark.
2. Breakwater pier and dredging activities will be required to follow the fall/spring restrictive timing window – (i.e., No in water works will take place between October 15th and July 15th). The marina shoreline and dock construction work will be required to follow the warm water restrictive timing window only (i.e. No in water works from March 15th to July 15th).

Endangered Species Act

1. Construction works should be scheduled outside of Barn Swallow active season (May 1st to late August) to avoid project delays.
2. Registration of the project under the ESA is required for activities involving Barn Swallow habitat removal. The Barn Swallow mitigation and restoration record should be kept up to date during all phases of development.
3. Maintain the section of long grass in the southern portion of the subject lands prior to April 1st to ensure that Eastern Foxsnake will not use the habitat. Continued maintenance is recommended throughout the construction process.

Migratory Birds Convention Act

1. If possible, construction activities should occur outside of the migratory bird active season (i.e. No works between late March and August 31st).
2. Construction activities may occur during the migratory bird active season, however this will require extra mitigation steps and may result in project delays.

Essex Region Conservation Authority (ERCA) Regulation Limit

1. Obtain a permit from ERCA for the proposed works within their regulation limit.
2. Include mitigation measures outlined in Section 6 of the Biologic report (shown below).

Mitigation Measures:

1. The timing of in-water works will avoid peak spawning periods to protect fish and their eggs, juvenile fish, and fish habitat. For the breakwater pier and dredging work, no in-water works will take place between October 15th – July 15th. For marina shoreline and dock construction, no in-water works will take place between March 15th - July 15th.
2. The duration of in-water works should be minimized or spread out to lower the risk of sedimentation issues.
3. An emergency spill kit should always be kept on-site for the duration of construction. All workers should be properly trained on site procedures and the use of an emergency spill kit.
4. Ensure that all machinery used near water bodies arrives clean on site, and is checked for fluid leaks prior to any construction activities.
5. Re-fueling and maintenance of construction equipment should be done at a minimum of 30m away from any body of water and on an impervious surface to minimize the risk of harmful substances entering the water and soil.
6. Sediment and erosion control measures should be installed (where appropriate) before construction occurs to minimize the risk of sedimentation of local water systems. Sediment and erosion control measures should be installed according to the Guide for Erosion and Sediment Control for Urban Construction Sites (OMNR, 2006) and applicable standards in the Ontario Provincial Standard Specification/Ontario Provincial Standard Drawings (OPSS/OPSD).
7. Sediment and erosion control measures should be inspected and maintained for the duration of all construction activities near water.
8. Any disturbed ground near water should be re-vegetated as soon as possible.
9. Any excavated material that is to be stockpiled near water should be placed above the High Water Mark to reduce sedimentation risk.
10. Timing of the marina dock removal and construction should avoid the Barn Swallow active season to protect nesting Barn Swallows. Based on established timing windows, works should not take place between May 1st to August 31st.
11. If construction works on the marina docks are planned during Barn Swallow active season, the mitigation and preventative measures outlined in Section 1 - Option 2 of the Biologic Report need to be followed. Refer to O. Reg 242/08, Subsection 23.5 for more information, if needed.
12. For every Barn Swallow nest that is removed on site, one nest cup must be installed on an existing or created building or structure within the subject lands or within 1km adjacent to the subject lands.

13. Timing of construction activities (save for marina dock construction) should avoid migratory bird active season to protect potentially nesting birds on the subject lands. Based on established timing windows, construction activities should not take place between late March and August 31st.
14. If construction works are planned during migratory bird active season, the mitigation and deterrent measures outlined in Section 3 - Option 2 of the Biologic Report need to be followed.
15. If required, deterrent options for ground nesting birds should be installed before late March or after September 1st to ensure compliance with the MBCA.
16. Maintain the section of long grass in the southern portion of the subject lands prior to April 1st to ensure that Eastern Fox snake will not use the habitat. Continued maintenance is recommended throughout the construction process.



MEMO

To: Liz Michaud
From: Paul Mikoda
Subject: Amherstburg Festival Plaza Preliminary Site Investigation
Date: July 20, 2018
Cc: Dave Hayman

Dear Liz,

The Subject Lands were visited on July 19, 2018 to conduct a preliminary natural heritage assessment, including aquatic and terrestrial features and functions. The site was formerly Duffys Tavern, a historic marina/restaurant/motor inn that has been purchased by the Town of Amherstburg to create a venue to support additional tourism and entertainment events. The structure was demolished in 2017 and the site has been fenced-off and maintained since. Site investigations focused on categorization of habitats and review of presence of or habitat for species protected under the Endangered Species Act (2007).

Aquatic Habitat

As the former marina docks are in questionable repair, preliminary investigations were conducted from the former parking lot/breakwall. Water depths ranged from approximately 130cm to 200cm along the breakwall. The substrate was found to be mainly muck, with lesser amounts of sand, gravel and cobble. Aquatic habitat is mainly in the form of aquatic plants, including Eel Grass (*Vallisneria*) and Eurasian Water Milfoil.

Terrestrial Habitat

Terrestrial habitat within the Subject Lands is limited to a parking lot and a lightly vegetated, maintained sandy area where the tavern formerly stood, as well as a section of the Kings Navy Yard Park. A small area of grass near a service shed has been left unmaintained. Portions of the former parking/landing area are eroding and water was noted within the openings. Kings Navy

Yard Park is well maintained as always.

Endangered Species and Habitat

Habitats and features within the Subject Lands were reviewed for significance and suitability for species noted as potentially present by MNRF (Natural Heritage Information Center), as well as those known to occur in the area. Barn Swallows, observed nesting on the underside of the docks, were the only species for which individuals or habitat were observed. Barn Swallow is considered Threatened in Ontario due to significant recent population declines and are also protected under the federal Migratory Bird Convention Act (1994).

Recommendations

Removal of Barn Swallow nests and nesting habitat outside of the active nesting season can be registered through the province and compensated for with the creation of replacement nest cups and structures, which would likely include the replacement docks depending on design. The area of grass should be maintained after November 1 or under the supervision of a Qualified Biologist until correspondence with MNRF has established that Eastern Foxsnake is not a concern on the Subject Lands. The existing maintenance schedule on the remainder of the site is appropriate and should be continued.

Regards,



Paul Mikoda

Stage 1: Information Request

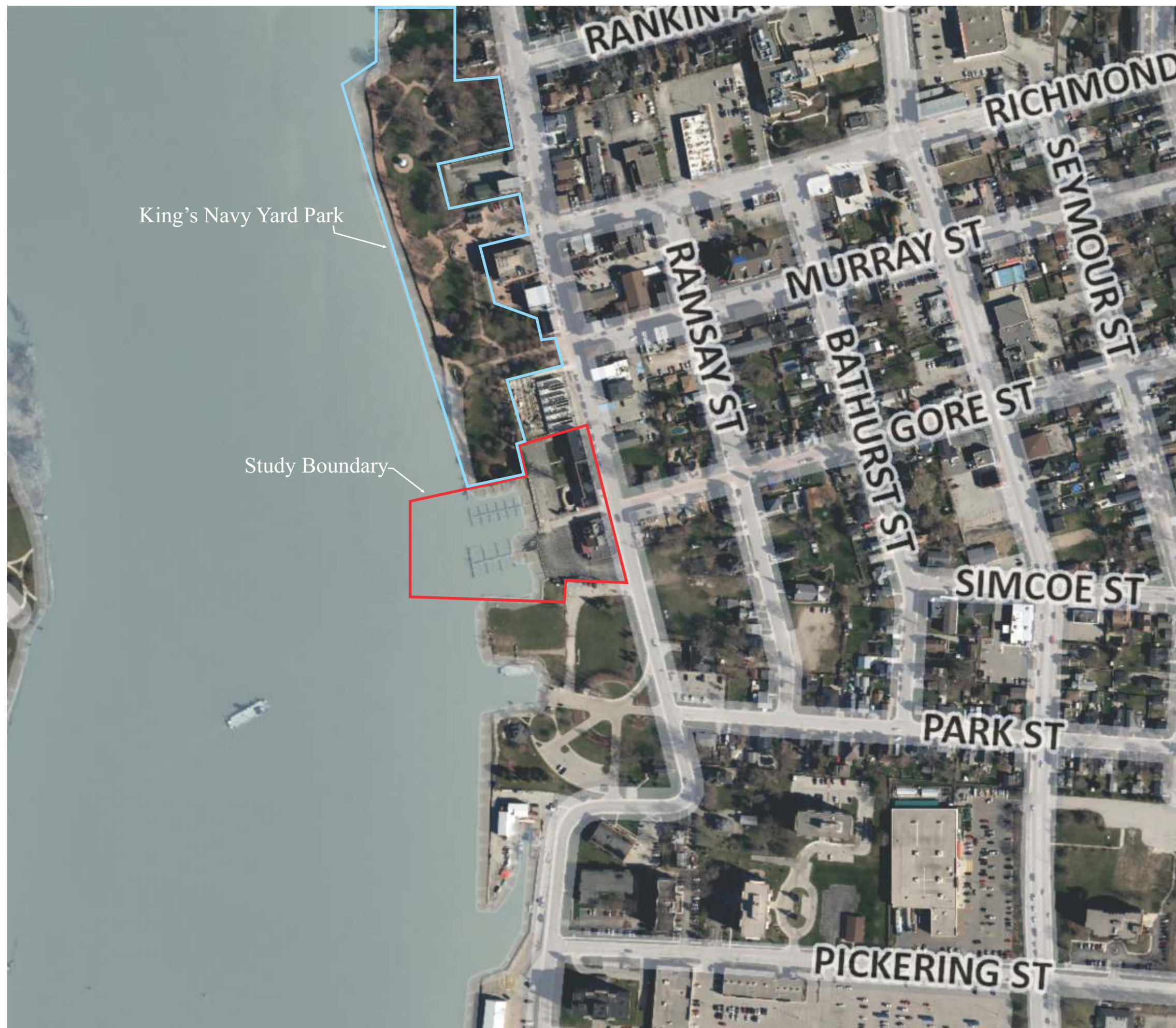
MNR District Office Location: Aylmer

Project Name: Landmark - Amherstburg Festival Plaza and Marina Date: August 14, 2018



Proponent Information:	
Name: Liz Michaud	Company: Landmark Engineers Inc. on behalf of the Town Of Amherstburg
Mailing Address:	2280 Ambassador Drive Windsor, ON
Email Address:	dkrutsch@landmarkengineers.ca
Property Information: Site Location Figure Attached [Figure 1] ✓ yes	
Lot, Conc, Township, County, City:	290, 296 and 306 Dalhousie Street, Amherstburg, ON - Subject Lands newly acquired plus Amherstburg's King's Navy Park
GPS Centroid	17T 325339.35 mE 4663097.82 mN
Vegetation and Site Photos	NHIC & DFO Data Attached [Appendix A] ✓ yes (1 km square) Field Work & Description Attached [Appendix B] ✓ yes Vegetation Map (ELC) ✓ no Photos [Figure 2] ✓ yes ELC Sheets ✓ no Development Proposal Overlay [Figure 3] ✓ yes
Similar to LIO Maps?	Similar
Current Status of Vegetation and History of Maintenance	<p>The Subject Lands, plus King's Navy Yard Park were visited for a preliminary natural heritage assessment, including both aquatic and terrestrial features and functions.</p> <p>A preliminary aquatic habitat assessment was completed as well as two Ekman sediment grabs and two depth measurements. Depths ranged from approximately 130cm to 200cm along the break wall. The substrate was found to be mainly muck, with lesser amounts of sand and gravel, however, probes with the depth gauge detected some cobbles which are most likely concrete/armourstone from shoreline hardening that have fallen into the watercourse. This shoreline hardening may provide some habitat for small fish at times of higher water levels, however most aquatic habitat is mainly from aquatic plants such as Vallisneria, Eurasian Water Milfoil, Potamogeton and Elodea.</p> <p>Terrestrial habitat is limited to a parking lot and a lightly vegetated, maintained sandy area where the tavern formerly stood, as well as a section of the King's Navy Yard Park, north of the recently acquired lands, which is also maintained. A small area of grass near a portable service shed has not been maintained. Barn Swallows were seen nesting on the underside of the docks which has been known to occur at other marinas in the area.</p> <p>The lands along the south portion of the acquired lands plus the adjacent parkland to the south are not part of this application. There are future plans to move the ferry dock at a later date and that will be the subject of additional review when that phase is ready. The acquired lands are also owned by the town of Amherstburg.</p> <p>Comments: No other significant habitat for SAR species was noted. The small area of grass near the portable service shed will be maintained after the active season for E. Foxsnake and the area is considered to be too small for suitable breeding habitat.</p>

Proposed Activities:	
Description of Proposal	The site was formerly Duffys Tavern, a historic marina/restaurant/motor inn that was demolished in 2017 and the site has been fenced off and maintained. The site has been purchased by the Town of Amherstburg to create a venue to support additional tourism and entertainment events. There is a proposed amphitheater and repairs to the marina as well as a wharf lookout and pathway with landscaped gardens.
Timing and Duration of Proposed Activity	Construction planned in 2019-2022
History and Planning	
Planning Status	Current Official Plan: Settlement Area Current Zoning: EP (Marina) and CG-4
Past MNRF Correspondence,	None
Summary	
Based on site investigations, the only habitat found for species at risk on the Subject Lands are the old marina docks which are providing nesting habitat for Barn Swallow. Repairs/replacement of the marina docks will require further consideration. Removal of Barn Swallow nests will require a registration under the Endangered Species Act (ESA, 2007) and will need to include conducting work outside of the breeding and nesting periods and the replacement of existing nests with artificial nest structures on the new docks, or on a suitable nearby structure. The area of grass that is near the portable service shed is considered too small of an area to be suitable for E. Foxsnake breeding habitat and will be maintained outside of the active season.	



King's Navy Yard Park

Study Boundary

Figure 1: Site Location
(2018 ERCA Geomatics)



0 1,000
Scale 1:50,000
Key Plan

Print on 11X17, Landscape Orientation
0 60
Scale 1:3000
August 2018





Study Boundary

Figure 2: Site Photos

(2018 ERCA Geomatics)

0 1,000
Scale 1:50,000
Key Plan

--- Lands owned by the Town of Amherstburg

Print on 11X17, Landscape Orientation
0 60
Scale 1:1000
August 2018



Figure 3: Development Proposal Overlay
(2018 ERCA Geomatics)



0 1,000
Scale 1:50,000
Key Plan

--- Lands owned by the Town of Amherstburg

Print on 11X17, Landscape Orientation
0 60
Scale 1:1000
August 2018



Appendix A: NHIC List and DFO Data

Element Type	Species Common Name	Scientific Name	SRank	SARO	COSEWIC	Last Obs Date	EO ID
SPECIES	Red Mulberry	Morus rubra	S2	END	END	1892	11347
SPECIES	Drooping Trillium	Trillium flexipes	S1	END	END	1826	11204
SPECIES	White Prairie Gentian	Gentiana alba	S1	END	END	1840	11455
SPECIES	Heart-leaved Plantain	Plantago cordata	S1	END	END	1866	2501
SPECIES	Rayed Bean	Villosa fabalis	S1	END	END	1935-pre	115752
SPECIES	Chimney Swift	Chaetura pelagica	S4B,S4N	THR	THR	1978	103928
SPECIES	Lake Sturgeon (Great Lakes - Upper St. Lawrence River pop. 3	Acipenser fulvescens pop. 3	S2	THR	THR	2011-pre	104243
SPECIES	Eastern Camas	Camassia scilloides	S1	THR	THR	1865	3207
SPECIES	Shumard Oak	Quercus shumardii	S3	SC	SC	1959	2154
SPECIES	Chestnut Lamprey (Great Lakes-St Lawrence population)	Ichthyomyzon castaneus pop. 1	SU	DD	DD	2004	115347
SPECIES	Eastern Burning Bush	Euonymus atropurpureus	S3			1967	33293
SPECIES	Biennial Gaura	Oenothera gaura	S3			1863	60066
SPECIES	Appalachian Sedge	Carex appalachica	S2S3			1866	59244
SPECIES	Honey-locust	Gleditsia triacanthos	S2?			1953	5342
SPECIES	Squarrose Sedge	Carex squarrosa	S2			1953	59340
SPECIES	Yellow Corydalis	Corydalis flavula	S1S2			1866	59702
SPECIES	Hairy-jointed Meadow-parsnip	Thaspium barbinode	SH			1866	60107
SPECIES	Appendaged Waterleaf	Hydrophyllum appendiculatum	S2			1925	60205
SPECIES	Many-fruited Seedbox	Ludwigia polycarpa	S2			1951	60074
SPECIES	Trumpet Creeper	Campsis radicans	S2			1892	60318
SPECIES	Two-flowered Dwarf-dandelion	Krigia biflora	S2			1866	60418
SPECIES	Spreading Chervil	Chaerophyllum procumbens	S1S2			1865	60078
SPECIES	Elusive Clubtail	Stylurus notatus	S2			1967	66894
SPECIES	Field Dodder	Cuscuta campestris	S2			1863	60195
SPECIES	Large Field Chickweed	Cerastium velutinum	S1S2			1889	59635

DFO: Aquatic Species At Risk within Mapped Area

Common Name	Scientific Name	Population	Taxon	SAR Status
Channel Darter	<i>Percina copelandi</i>	None	Fishes	Threatened
Eastern Sand Darter	<i>Ammocrypta pellucida</i>	Ontario	Fishes	Threatened
Grass Pickerel	<i>Esox americanus vermiculatus</i>	None	Fishes	Special Concern
Northern Madtom	<i>Noturus stigmosus</i>	None	Fishes	Endangered
Pugnose Minnow	<i>Opsopoeodus emiliae</i>	None	Fishes	Special Concern
Pugnose Shiner	<i>Notropis anogenus</i>	None	Fishes	Endangered
Round Hickorynut	<i>Obovaria subrotunda</i>	None	Molluscs	Endangered
Spotted Sucker	<i>Minytrema melanops</i>	None	Fishes	Special Concern

Appendix B: Field Work And Description



GENERAL SITE INFORMATION FIELD SHEET

Project: LANDMARK - AMHERSTBURG FESTIVAL
 Date: JULY 19 2018 Project Manager: _____
 Collector(s): P.M. E.B. Visit #: 1
 Time started: 14:00 Time finished: 16:15 Combined collectors' hours: _____
☐ NHIC List ☐ MNR EO's ☐ none ☐ not provided to collector ☐

WEATHER CONDITIONS				WIND SCALE			
Temp.	Wind Speed and Direction	Cloud Cover (%)	Precipitation	0	Calm		
27	15-23km/h	40	Today: 0 Yesterday: 0	1	Smoke Drifts		
				2	Wind Felt on Face		
				3	Leaves in constant motion		
				4	Wind raises dust and paper		
				5	Small trees sway		
				6	Large branches sway		
				7	Lots of resistance when walking into		
				8	Limbs breaking off trees		
DATA FOCUS							
<input type="checkbox"/>	Birds 1_2_Mig_	<input type="checkbox"/>	ELC's	<input type="checkbox"/>	Dripline/Tree Survey		
<input type="checkbox"/>	Mammals	<input type="checkbox"/>	Floral V__S__A__	<input type="checkbox"/>	Aquatic - Physical		
<input type="checkbox"/>	Amphibians 1_2_3_	<input type="checkbox"/>	Wetland	<input type="checkbox"/>	Aquatic - Biological		
<input type="checkbox"/>	Reptiles	<input type="checkbox"/>	Butternut (BHA)	<input type="checkbox"/>	Faunal Habitat		
<input type="checkbox"/>	Invertebrates	<input type="checkbox"/>	other SAR	<input type="checkbox"/>	Other - see notes		
FEATURES (with GPS co-ordinates where applicable)							
Man-made Structures:				<input type="checkbox"/>	None observed		
				Mapped	Follow-up Req'd		
				UTM	Yes	No	Who
Yes No							
<input type="checkbox"/>	Barns/Footings/Wells/other(list)						
<input type="checkbox"/>	Rock Piles						
<input type="checkbox"/>	Garbage						
Natural Vegetation:				<input type="checkbox"/>	None observed		
<input type="checkbox"/>	Fallen Logs outside woods (#s)						
<input type="checkbox"/>	Brush Piles						
<input type="checkbox"/>	Snags (raptor perch)						
<input type="checkbox"/>	Tree Cavities (nesting)						
<input type="checkbox"/>	Sentinel Trees						
<input type="checkbox"/>	Butternut Identified						
<input type="checkbox"/>	Mast Trees (6E)			<input type="checkbox"/>	Berry Shrubs (6E)		
Wildlife Features:				<input type="checkbox"/>	None observed		
<input type="checkbox"/>	Waterfowl nesting (large #s, # of species)						
<input type="checkbox"/>	Exposed Banks (nesting swallows)						
<input type="checkbox"/>	Stick Nests						
<input type="checkbox"/>	Animal Burrows (>10cm)						
<input type="checkbox"/>	Heronry						
<input type="checkbox"/>	Crayfish mounds						
<input type="checkbox"/>	Sand/gravel on site						
<input type="checkbox"/>	Marsh/open country/shrub						
<input type="checkbox"/>	Winter Deer yards						
<input type="checkbox"/>	Corridor from pond to woods (amphibian movement)						
<input type="checkbox"/>	Bat corridor (shorelines, escarpments)						
<input type="checkbox"/>	Bat hibernacula (caves, mines, crevices, etc.)						
Aquatic Features:							
<input type="checkbox"/>	Perm. pond in woodland	<input type="checkbox"/>	emergents/submergents/logs	<input type="checkbox"/>	temp.		
<input type="checkbox"/>	Perm. pond in open	<input type="checkbox"/>	emergents/submergents/logs	<input type="checkbox"/>	temp.		
<input type="checkbox"/>	Water in woodland	<input type="checkbox"/>	pools	<input type="checkbox"/>	flowing		
<input type="checkbox"/>	Waterways	<input type="checkbox"/>	flowing	<input type="checkbox"/>	dry		
<input type="checkbox"/>	natural stream	<input type="checkbox"/>		<input type="checkbox"/>	pools		
<input type="checkbox"/>	swale	<input type="checkbox"/>		<input type="checkbox"/>	None observed		
<input type="checkbox"/>	open drain	<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>	Seeps/Springs	<input type="checkbox"/>		<input type="checkbox"/>			
Incidental Observations/Notes:							
- PAVEMENT NEAR RIVER ERODING							
- REGULARLY INUNDATED BY RIVER; NOT HIBERNACULA							
- BASW NESTING ON DOCK UNDERSIDE							
- NO SNAKES OBSERVED							
- NO WORDS NOTED IN SHORELINE PROTECTION							

Graphic ☐ Attached or Name

Checked by Project Manager ☐ Date: _____

Liz Michaud

From: MNRF Ayl Planners (MNRF) <MNRF.Ayl.Planners@ontario.ca>
Sent: October-15-18 10:43 AM
To: Liz Michaud
Subject: MNRF Comments - Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment
Attachments: 2018-07_SAR Screening Process_Technical Bulletin.pdf; 2018-05_SAR Reference Material Memo_AylmerDistrict.pdf; Town of Amherstburg.pdf

**Ministry of Natural
Resources and Forestry**

615 John Street
North
Aylmer, ON N5H 2S8
Tel: 519-773-9241
Fax: 519-773-9014

**Ministère des
Richesses naturelles et
des Forêts**

615, rue John Nord
Aylmer ON N5H 2S8
Tél: 519-773-9241
Télé: 519-773-9014



October 15, 2018

Subject: Amherstburg Riverfront Festival Plaza and Marina

Dear Liz Michaud,

Ministry of Natural Resources and Forestry (MNRF) Aylmer District received a notice for the proposed Amherstburg Riverfront Festival Plaza and Marina on September 26, 2018. Thank for you for circulating this notice to our office, however, **please note that we have not completed a screening of natural heritage (including species at risk) or other resource values for the project at this time.** Please also note that it is your responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

This response provides information to guide you in identifying and assessing natural features and resources as required by applicable policies and legislation, and engaging with MNRF Aylmer District for advice as needed.

Natural Heritage & Endangered Species Act

- Please refer to the attached *Species at Risk Reference Guides* for a list of threatened and endangered species that may occur in your area to further inform an initial background information review for your project. Also attached is Aylmer District's *Species at Risk Reference Material Memo* intended to introduce and explain the reference guide that is attached
- Please refer to Aylmer District's *Species at Risk Screening Process Technical Bulletin* (attached) for information about the process for seeking *Endangered Species Act 2007* advice, including the information required and where to submit a request.

Petroleum Wells & Oil, Gas and Salt Resource Act

There may be petroleum wells within the proposed project area. Please consult the Ontario Oil, Gas and Salt Resources Library website (www.ogsrlibrary.com) for the best known data on any wells

recorded by MNRF. Please reference the 'Definitions and Terminology Guide' listed in the publications on the Library website in order to better understand the well information available. Any oil and gas wells in your project area are regulated by the *Oil, Gas and Salt Resource Act*, and the supporting regulations and operating standards. If any unanticipated wells are encountered during development of the project, or if the proponent has questions regarding petroleum operations, the proponent should contact the Petroleum Operations Section at 519-873-4634.

Public Lands Act & Lakes and Rivers Improvement Act

Some Municipal projects may be subject to the provisions of the *Public Lands Act* or *Lakes and Rivers Improvement Act*. Please review the information on MNRF's web pages provided below regarding when an approval is required or not. Please note that many of the authorizations issued under the *Lakes and Rivers Improvement Act* are administered by the local Conservation Authority.

- For more information about the *Public Lands Act*: <https://www.ontario.ca/page/crown-land-work-permits>
- For more information about the *Lakes and Rivers Improvement Act*: <https://www.ontario.ca/document/lakes-and-rivers-improvement-act-administrative-guide>

After reviewing the information provided, if you have not identified any of MNRF's interests stated above, there is no need to circulate any subsequent notices to our office. If you have any questions or concerns, please feel free to contact me.

Sincerely,

Karina Cerniavskaja
District Planner
Ministry of Natural Resources and Forestry, Aylmer District
615 John St. N. Aylmer, ON, N5H 2S8
Phone: (519) 773-4757
E-mail: MNRF.Ayl.Planners@ontario.ca

From: Liz Michaud [mailto:lmichaud@landmarkengineers.ca]

Sent: September-26-18 3:47 PM

Subject: Amherstburg Riverfront Festival Plaza and Marina Class Environmental Assessment - Public Drop-In Centre No.2

Good Afternoon,

In accordance with the approved procedures contained in the Municipal Class Environmental Assessment (EA), the Town of Amherstburg is proceeding with the **Amherstburg Riverfront Festival Plaza Class Environmental Assessment**.

The study has progressed to the point where a preferred solution has been identified for review and public comment. To this end, a Public Drop-In Centre will be held to inform the public on the planning and design process being followed and to receive public input and comments. Displays of study information will be available for review.

Interested parties are welcome to attend the Drop-In Centre. Representatives of the Town of Amherstburg and Landmark Engineers Inc. will be present to answer any questions or obtain feedback. The Drop-In Centre will be held:

DATE: Thursday, October 18th, 2018
TIME: 2:00-4:00 p.m. and 6:00-8:00 p.m.
PLACE: Libro Credit Union Centre
Community Room
3295 Meloche Road, Amherstburg

To aid in the dissemination of information, all project-related information will be available for review on the Town of Amherstburg's website (<https://www.amherstburg.ca/en/town-hall/RiverfrontProject.aspx>). The webpage will be updated periodically as the project progresses.

If you have any questions or require further details, please contact the undersigned.

Yours truly,

Liz Michaud



Landmark Engineers Inc.

2280 Ambassador Drive

Windsor, ON, N9C 4E4

p (519) 972-8052

f (519) 972-8644

e-mail lmichaud@landmarkengineers.ca

**Ministry of Natural
Resources and Forestry**

615 John Street North
Aylmer, ON N5H 2S8
Tel: 519-773-9241
Fax: 519-773-9014

**Ministère des Richesses
naturelles et des Forêts**

615, rue John Nord
Aylmer ON N5H 2S8
Tél: 519-773-9241
Télé: 519-773-9014



May 2018

Re: Aylmer District Species at Risk Reference Material for Species and Habitat Information

The Ministry of Natural Resources and Forestry (**MNRF**) has created reference material for species at risk (**SAR**) specific to each municipality in Aylmer District. This document is intended to introduce and explain the reference material that is attached.

Intended use of the reference material

- The reference material is targeted towards landowners, municipalities, consultants, and developers in Aylmer District.
- The material is meant to provide awareness of endangered and threatened SAR that have potential to occur in a specific municipality, along with brief descriptions of typical habitat and general survey recommendations for each SAR species.
- It is MNRF's expectation that consultants and their proponents will refer to the reference material prior to completing SAR field assessments, since it outlines MNRF-approved survey protocols that should be followed in order to work towards MNRF Aylmer District's expectations for ensuring due diligence under the [Endangered Species Act, 2007](#) (**ESA**).
- The material is not meant to replace species and/or habitat surveys conducted by a qualified biologist, but help scope the field assessments.
- If you are intending to conduct a project that has known occurrences of SAR or a high likelihood of SAR in the area, MNRF (ESA.Aylmer@ontario.ca) should be contacted early in the process; see our attached SAR Screening Process Technical Bulletin outlining how to submit a screening request.
- During the SAR screening process, MNRF can provide site-specific information regarding:
 - likelihood of SAR species and/or habitat occurring;
 - whether a qualified professional should be retained for field assessments;
 - SAR survey methodologies to demonstrate due diligence under the ESA; and,
 - options to avoid contravening the ESA or ways to acquire approval, if required.

General information and disclaimers

- The [Species at Risk in Ontario \(SARO\) List](#) is prescribed by Ontario Regulation 230/08 issued under the ESA. The ESA provides protection for endangered and threatened species listed on the SARO List, and their habitats. The ESA is a law of General Application that is binding on everyone (e.g. landowners, corporations, municipal and provincial governments) in the province of Ontario and applies to both private and public lands.
- Please note that the province has not been comprehensively surveyed and MNRF data relies on observers to report sightings. As such, the absence of a species from the municipal list does not guarantee the absence of SAR species or habitat in the specific municipality.

- It is important to note that the reference material may be updated annually but MNRF's guidance on SAR occurrences and field assessments can change throughout the year as policies, regulations, survey protocols, SAR data, and other SAR documents are finalized.

Species and habitat information

The Committee on the Status of Species at Risk in Ontario (COSSARO) meets regularly to evaluate species for listing and/or re-evaluate species already listed. As a result, species designations may change that could in turn change the level of protection they receive under the ESA. Additionally, habitat protection provisions for a species may change over time.

- Detailed information on all species on the SARO List can be found on [the MNRF website](#)
- [Ontario Regulation \(O. Reg.\) 242/08](#) should be consulted for a complete and current list of SAR habitat regulations.
- MNRF (ESA.Aylmer@ontario.ca) should be contacted for guidance on identifying habitat for species that do not have habitat regulations, general habitat descriptions, or recovery strategies available.
 - Aylmer District recommends consulting federal recovery strategies if provincial ones are not available (http://www.registrelep-sararegistry.gc.ca/sar/recovery/recovery_e.cfm)

Conducting adequate surveys

- SAR surveys must be undertaken by a qualified professional who has experience with the target species and/or habitat.
- MNRF approvals or authorizations (e.g. permit under clause 17(2)(b) of the ESA or registry under O. Reg. 242/08, authorization under the *Fish and Wildlife Conservation Act*, and an approved animal care protocol) may be required to conduct SAR surveys.
- MNRF has finalized survey protocols for some SAR species, which are specified in the reference material, and these protocols can be obtained from Aylmer District upon request.
- It is strongly recommended that Aylmer District be consulted prior to conducting species surveys to confirm if surveys are necessary to determine if a project may contravene the ESA, and that surveys are conducted using appropriate methods and effort.

Additional information sources

The reference material was populated using Natural Heritage Information Centre (NHIC) data and additional information available to MNRF Aylmer District. There are additional sources of SAR information, including for species of special concern and provincially rare species that both receive consideration under the [Provincial Policy Statement \(2014\)](#), such as:

- [Your local Conservation Authority](#)
- [Land Information Ontario](#)
- [Ontario Make a Natural Heritage Map tool](#)
- [Fisheries and Oceans Canada](#)
- [Breeding Birds of Ontario](#)
- [eBird](#)
- [Ontario Reptile and Amphibian Atlas](#)

Technical Bulletin: Aylmer District Species at Risk Screening Process

This technical bulletin outlines the process for engaging the Ministry of Natural Resources and Forestry (**MNRF**) Aylmer District Office regarding the *Endangered Species Act, 2007* (**ESA**).

The ESA provides protection for species listed as Endangered or Threatened on the [Species at Risk in Ontario List](#). Individuals receive protection under Section 9 and their habitat is protected under Section 10. The ESA is a law of general application that is binding on everyone in the province of Ontario, and applies to both private and public lands. MNRF Aylmer District provides review of a project's compliance under the ESA by responding to species at risk (**SAR**) information requests (Stage 1) and project screening requests (Stage 2) only when both of the following conditions are met:

1. The request comes directly from the property owner or their delegate (e.g. consultants) on their behalf; and,
2. A specific project/activity is proposed by the property owner.

MNRF Aylmer District Contact Information

All ESA-related requests must be submitted to MNRF Aylmer District via our ESA inbox at ESA.Aylmer@ontario.ca

NOTE: MNRF response time is between 10 and 12 weeks after receipt of all required information, due to the high volume of requests received.

Stage 1: Information Request

To ensure due diligence under the ESA, MNRF encourages property owners and/or their delegates proposing to conduct site alteration (such as construction, vegetation/debris removal, site grading, etc.) to request SAR information from Aylmer District prior to beginning site alteration and/or conducting SAR surveys. For MNRF to respond to an information request, the following information is required:

- Proponent information (name, mailing address, and email address);
- Property location and mapping (municipal address and/or lot and concession);
- Digital photos of the property, including the vegetation on-site, if available;
- General description of all proposed activities and extent of development footprint (e.g. residential, driveway, vegetation clearing). Maps / site layout drawings are beneficial;
- Current state of vegetation, property maintenance/management (e.g. frequency of mowing), and recent property landscape history / changes (i.e. for the last five years);
- Timing and duration of proposed activities;
- Copies of past correspondence with MNRF about the property, if applicable; and,
- Status of municipal planning or Environmental Assessment process, if any.

Once the above information has been provided, MNRF will review available SAR data to determine if SAR species and/or their habitat(s) are known or likely to occur on or in the general area of the property. MNRF's response will be one of the following:

1. There is a **low** likelihood for SAR species and/or habitat to occur and/or be impacted
 - Further project screening / comment from MNRF will not be needed unless recommendations to avoid impacts cannot be followed or significant changes to the project are made (e.g. natural vegetation proposed to be removed).
2. SAR species and/or habitat are **known** to occur on or near the property, or there is a **high** likelihood for SAR species and/or habitat to occur
 - MNRF may recommend that field assessments by a qualified biologist are needed to determine whether the proposed project may contravene the ESA.
 - It is expected that the retained qualified biologist will use the information provided by MNRF to scope and design the field assessments, including identifying appropriate species-specific survey methodologies and timing.
 - MNRF can provide guidance on field assessments (i.e. protocols or proposed work plans). Some field assessment methodologies may require MNRF authorizations under the ESA and the *Fish and Wildlife Conservation Act*.
 - After field assessments have been completed, proceed to Stage 2.

NOTE: MNRF strongly recommends that no on-site activity (i.e. site alteration, vegetation/debris removal, etc.) occur until Stage 2 is complete, in order for proponents to demonstrate due diligence and remain in compliance with the ESA. Failure to comply with this recommendation could result in a contravention of the ESA and possible compliance / enforcement action.

Stage 2: Project Screening / IGF Review

Following MNRF's recommendations, a qualified biologist should complete appropriate field assessments and submit the results in an [Information Gathering Form \(IGF\)](#) to initiate a project screening request.

Link to IGF:

<http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/MinistryResults?Openform&SRT=T&MAX=5&ENV=WWE&STR=1&TAB=PROFILE&MIN=018&BRN=21&PRG=31>

MNRF will review the IGF to determine whether the project is likely to contravene the ESA (Section 9 and/or Section 10). MNRF's response will be one of the following:

1. Contravention under the ESA is **not likely** to occur:
 - A response will be provided, which could include recommendations necessary to avoid impacts to SAR; or,
2. Contravention under the ESA is **likely** to occur:
 - MNRF will recommend options for seeking approval under the ESA, such as applying for a permit or assessing eligibility for alternative regulatory processes. Please be advised that applying for a permit does not guarantee approval and processes can take several months before a permit may be issued.

Town of Amherstburg

Municipal Species at Risk Reference Guide



Birds

Acadian Flycatcher	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> Occupies a broad spectrum of deciduous and mixed woodlands of variable size across its breeding range. Refer to the Provincial Recovery Strategy (2016). https://www.ontario.ca/page/acadian-flycatcher	<u>Timing Windows</u> Migratory bird that may be present in Ontario from April through September.	<u>Survey Protocol</u> Follow Breeding Bird Survey Protocol as applicable, conducting three rounds of surveys during the breeding window. http://www.ec.gc.ca/reom-mbs/default.asp?		
Bank Swallow	Threatened	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> Bank swallows nest in burrows in natural and human-made settings where there are exposed and inclined areas of erodible substrate like silt or sand, such as banks of rivers and lakes, roadsides, aggregate pits, and stock-piled materials. Refer to the Provincial Recovery Strategy (2016) and contact ESA.Aylmer@Ontario.ca for the General Habitat Description (not yet available online). https://www.ontario.ca/page/bank-swallow	<u>Timing Windows</u> Migratory bird most commonly seen in Ontario from April through September.	<u>Survey Protocol</u> Survey for burrows in potential habitat features and identify habitat according to the species general habitat description. Follow Breeding Bird Survey Protocol to assess habitat occupancy, conducting three rounds of surveys during the breeding window. http://www.ec.gc.ca/reom-mbs/default.asp?		
Barn Owl	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input checked="" type="checkbox"/>	General Habitat Protection <input type="checkbox"/>
<u>Habitat Information</u> Barn Owls are known to nest in both natural structures (e.g. hollows in trees or banks) and human-made structures (e.g. nest boxes, barns and other shelters with access). Refer to the Provincial Recovery Strategy (2010) and Ontario Regulation 242/08. https://www.ontario.ca/page/barn-owl	<u>Timing Windows</u> May be present year-round. Egg dates recorded in Ontario have occurred from March through October.	<u>Survey Protocol</u> No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.		
Barn Swallow	Threatened	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> Barn Swallow nests in Ontario are commonly situated inside or outside of buildings and other man-made shelters, under bridges and piers and in road culverts. Refer to the Provincial Recovery Strategy (2014) and the General Habitat Description. https://www.ontario.ca/page/barn-swallow	<u>Timing Windows</u> Migratory bird most commonly seen in Ontario from April through September.	<u>Survey Protocol</u> Survey structures for the presence of nest cups. Identify habitat according to the species general habitat description. http://www.ec.gc.ca/reom-mbs/default.asp?		

Bobolink	Threatened	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> Nests in grassland-like habitats typically greater than 2 hectares, such as hayfield, pasture, alfalfa, winter wheat, old/overgrown fields, prairie, savannah, and meadow or meadow marsh. Refer to the Provincial Recovery Strategy (for Bobolink and Eastern Meadowlark; 2013). https://www.ontario.ca/page/bobolink		<u>Timing Windows</u> Migratory bird most commonly seen in Ontario from May to September.		<u>Survey Protocol</u> Contact ESA.Aylmer@ontario.ca to obtain a copy of the MNRF draft Bobolink breeding survey protocol (2011).
Cerulean Warbler	Threatened	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> Typically occur in mature deciduous woodlands. Has been found breeding in tracts as small as 10 hectares in Ontario. Refer to COSEWIC Assessment and Status Report (2010). https://www.ontario.ca/page/cerulean-warbler		<u>Timing Windows</u> Migratory bird most commonly seen in Ontario from May to August.		<u>Survey Protocol</u> Follow Breeding Bird Survey Protocol as applicable, conducting three rounds of surveys during the breeding window. http://www.ec.gc.ca/reom-mbs/default.asp?
Chimney Swift	Threatened	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> They typically nest and roost in chimneys and other man-made structures. Can also nest in hollow trees or tree cavities. Refer to COSEWIC Assessment and Status Report (2007) and the General Habitat Description. https://www.ontario.ca/page/chimney-swift		<u>Timing Windows</u> Migratory bird most commonly seen in Ontario from mid-April to mid-October.		<u>Survey Protocol</u> Follow the Ontario Swift Watch Protocol by Bird Studies Canada (2015). Identify habitat according to the general habitat description. http://www.bsc-eoc.org/volunteer/ai/resour
Eastern Meadowlark	Threatened	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> Breed primarily in grassland-like habitats, such as pastures and hayfields (including alfalfa), meadow and meadow marsh, old/overgrown fields, prairie, savannah, weedy borders of croplands, roadsides, orchards, golf courses, and other open areas, typically greater than 3 hectares. Refer to the Provincial Recovery Strategy (for Bobolink and Eastern Meadowlark; 2013). https://www.ontario.ca/page/eastern-meadowlark		<u>Timing Windows</u> Migratory bird most commonly seen in Ontario from March through October.		<u>Survey Protocol</u> Contact ESA.Aylmer@ontario.ca to obtain a copy of the MNRF draft Eastern Meadowlark breeding survey protocol (2013) .
King Rail	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>

Habitat Information

Found in marshes, often where vegetation cover is interspersed with areas of open water. They can be found in smaller isolated marshes though most known occurrences are in larger wetlands. Habitat use may differ year to year based on water levels. Refer to the Provincial Recovery Strategy (2016).

<https://www.ontario.ca/page/king-rail>

Timing Windows

Migratory bird most commonly seen in Ontario from April through September.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request advice on conducting adequate surveys for your project.

Least Bittern

Threatened

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Found in marshes, often where vegetation cover is interspersed with areas of open water. They can be found in smaller isolated marshes though most known occurrences are in larger wetlands. Refer to the Provincial Recovery Strategy (2016).

<https://www.ontario.ca/page/least-bittern>

Timing Windows

Migratory bird most commonly seen in Ontario from May through September.

Survey Protocol

Follow the National Least Bittern Survey Protocol, CWS Technical Report Series no. 519 (2011). Contact ESA.Aylmer@ontario.ca for more information if needed.

Prothonotary Warbler

Endangered

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Key features are presence of water near wooded area with suitable cavity nest sites or nest boxes. Nests usually occur near large bodies of standing or slow-moving water, such as seasonally flooded forest, swamps, rivers, streams, ponds, or lakes. Refer to the Provincial Recovery Strategy (2012).

<https://www.ontario.ca/page/prothonotary-warbler>

Timing Windows

Migratory bird most commonly seen in Ontario from May through August.

Survey Protocol

Follow Breeding Bird Survey Protocol as applicable, conducting three rounds of surveys during the breeding window.

<http://www.ec.gc.ca/reom-mbs/default.asp?>

Yellow-breasted Chat

Endangered

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

A wide variety of early-successional habitats are used (i.e., dense, low deciduous or coniferous vegetation), including early shrubby regrowth on abandoned agricultural fields, power-line corridors, clear-cuts, fencerows, forest edges and openings, and areas near streams, ponds and swamps. Refer to the COSEWIC Assessment and Status report (virens subspecies; 2012).

<https://www.ontario.ca/page/yellow-breasted-chat>

Timing Windows

Migratory bird most commonly seen in Ontario from May through August.

Survey Protocol

Follow Breeding Bird Survey Protocol as applicable, conducting three rounds of surveys during the breeding window.

<http://www.ec.gc.ca/reom-mbs/default.asp?>

Fish and Mussel SAR

Fish and Mussel SAR	Threatened and Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input checked="" type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> Consult DFO mapping (http://www.dfo-mpo.gc.ca/species-especies/fpp-ppp/index-eng.htm) to determine if species at risk and/or their habitat may be in or near the proposed project area, and contact ESA.Aylmer@ontario.ca (and/or DFO) for site-specific information or advice as applicable. https://www.ontario.ca/environment-and-energy/species-risk-ontario-list		<u>Timing Windows</u>		<u>Survey Protocol</u> http://www.dfo-mpo.gc.ca/species-especies
Herbaceous				
American Ginseng	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
<u>Habitat Information</u> American Ginseng typically grows in rich, moist, but well-drained, and relatively mature, deciduous woods dominated by Sugar Maple, White Ash and American Basswood. It usually grows in deep, nutrient rich soil over limestone or marble bedrock. Refer to the general habitat description (2013) and the federal recovery strategy (2015). https://www.ontario.ca/page/american-ginseng		<u>Timing Windows</u> American Ginseng plants are typically found from May to late September. Refer to protocol for details.		<u>Survey Protocol</u> Draft Site Occupancy Survey Protocol for American Ginseng in Ontario (2013) - contact MNRF Aylmer District for more information.
Eastern Prairie Fringed-orchid	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input checked="" type="checkbox"/>	General Habitat Protection <input type="checkbox"/>
<u>Habitat Information</u> Grows in wetlands, fens, swamps and tallgrass prairie. It has been found in ditches and railroad rights of way. Refer to the provincial recovery strategy (2010) and Ontario Regulation 242/08. https://www.ontario.ca/page/eastern-prairie-fringed-orchid		<u>Timing Windows</u> The Eastern Prairie Fringed-orchid can lie dormant for several years in between flowering. Flowers occur from late June to late July.		<u>Survey Protocol</u> Draft Eastern Prairie Fringed-orchid survey protocol (2012) - contact MNRF Aylmer District for more information.
Goldenseal	Threatened	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>

Habitat Information

Grows in rich, moist semi-open to closed areas of deciduous forests. Found at periodically flooded upland sites and in moist lowlands near floodplains. Associated with Red Oak, Sugar Maple, Hawthorns, Shagbark Hickory, Ironwood and Basswood. Typically grows in disturbed areas where trees have fallen, or next to recreational paths or woodland edges. Prefers sandy loam, loam soils or clay soils depending on whether it is growing in an upland or lowland area. Refer to the provincial recovery strategy (2016).

<https://www.ontario.ca/page/goldenseal>

Timing Windows

Flowers April - May; fruit ripens July-August.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Purple Twayblade

Threatened

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Found in a variety of habitats including open oak woodland and savannah, mixed deciduous forest, shrub thicket, shrub alvar, deciduous swamp, and even conifer plantations. Grows in partial shade, but does not like dense shade and depends on natural disturbances, such as storms and fire, to keep its habitat relatively open and sunny. Refer to the draft federal recovery strategy (2016).

<https://www.ontario.ca/page/purple-twayblade>

Timing Windows

Flowers between early May and early July.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Willowleaf Aster

Threatened

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Found in openings of oak savannahs. Also been found along railways, roadsides and in abandoned farm fields. Refer to the provincial recovery strategy (2013).

<https://www.ontario.ca/page/willowleaf-aster>

Timing Windows

Flowers from late September through October, and sometimes into November.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Mammals

Eastern Small-footed Myotis

Endangered

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Will roost in a variety of habitats changing day to day, including in trees or under tree bark, under rocks or in rock outcrops, in buildings, under bridges, etc. Over-winter in caves and abandoned mines.

<https://www.ontario.ca/page/eastern-small-footed-bat>

Timing Windows

Typically over-winter from about October to April.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Little Brown Myotis (formerly little brown bat)	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
--	-------------------	--	---	--

Habitat Information

Roost habitat may include human structures such as houses, bridges, and barns, or natural features such as rock crevices and forests. May over-winter in buildings, caves, or mines. Refer to the draft federal recovery strategy (2015).

<https://www.ontario.ca/page/little-brown-bat>

Timing Windows

They feed at night and are most active in the two or three hours after sunset. Typically over-winter from about October to April.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Northern Myotis (formerly Northern Long-eared Bat)	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
---	-------------------	--	---	--

Habitat Information

Roosts in tree cavities, under tree bark, in natural and artificial crevices such as rock outcrops and roof shingles. Over-winters in caves and mines. Refer to the draft federal recovery strategy (2015).

<https://www.ontario.ca/page/northern-long-eared-bat>

Timing Windows

Typically over-winter from about October to April.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Tri-colored Bat	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
------------------------	-------------------	--	---	--

Habitat Information

Roosts in forests, and maternity colonies may be located in anthropogenic features such as barns and houses. Over-winters in caves and mines. Refer to the draft federal recovery strategy (2015).

<https://www.ontario.ca/page/tri-colored-bat>

Timing Windows

Typically over-winter from about October to April.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Snakes

Butler's Gartersnake	Endangered	Species Protection <input checked="" type="checkbox"/>	Regulated Habitat Protection <input type="checkbox"/>	General Habitat Protection <input checked="" type="checkbox"/>
-----------------------------	-------------------	--	---	--

Habitat Information

Butler's Gartersnake habitat includes prairie, grassland, old fields, meadow, thicket, wet areas such as marshes, drains, seasonal wet areas, and small bodies of water, as well as vacant sites, parklands, treed edges, and hedgerows. This species is also commonly found near rock piles, old stonewalls, brush piles, debris piles, crayfish burrows, ant hill mounds, and small mammal burrows. Refer to the draft federal recovery strategy (2016).

<https://www.ontario.ca/page/butlers-gartersnake>

Timing Windows

Active: early April to October. Emerge and mate early - late April. Young born early summer (June - July). Depending on weather conditions, can be found as early as March and as late as mid-November.

Survey Protocol

Survey Protocol for Ontario's Species at Risk Snakes (December 2016) - contact ESA.Aylmer@Ontario.ca for more information

Eastern Foxsnake (Carolinian population)

Endangered

Species Protection ☒

Regulated Habitat Protection ☒

General Habitat Protection ☐

Habitat Information

Generally use old fields, prairie, savannah, shorelines, wetlands, rock barrens, dunes, hedgerows, drains and canals, as well as anthropogenic features such as old foundations, bridges, and wells. Refer to the provincial recovery strategy (2010), Ontario Regulation 242/08, and the habitat protection summary (2012).

Timing Windows

Egress from over-wintering sites usually occurs from April to mid May, mating occurs from late May to mid June, egg-laying occurs from late June to mid-July, and hatching occurs from late August to early October. Ingress to over-wintering sites usually occurs in September and October.

Survey Protocol

Survey Protocol for Ontario's Species at Risk Snakes (December 2016) - contact ESA.Aylmer@Ontario.ca for more information

<https://www.ontario.ca/page/eastern-foxsnake>

Queensnake

Endangered

Species Protection ☒

Regulated Habitat Protection ☒

General Habitat Protection ☐

Habitat Information

Queensnake is an aquatic species that is seldom found far from water. Prefers rivers and riverbanks, streams, and lakes, with the presence of crayfish. Over-wintering sites include abutments of old bridges and crevices in bedrock. Refer to the provincial recovery strategy (2011), Ontario Regulation 242/08, and the habitat protection summary (2013).

Timing Windows

Emerges from over-wintering beginning mid April; Mating in May and September; Young born between July and September; Returns to over-wintering site early to mid October

Survey Protocol

Contact ESA.Aylmer@Ontario.ca for the Survey Protocol for Queensnake (August 2015).

<https://www.ontario.ca/page/queensnake>

Trees

American Chestnut

Endangered

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

In Ontario, it is only found in the Carolinian Zone between Lake Erie and Lake Huron. American Chestnut grows alongside Red Oak, Black Cherry, Sugar Maple, American Beech and other deciduous tree species. Refer to the provincial recovery strategy (2012).

<https://www.ontario.ca/page/american-chestnut-species-risk>

Timing Windows

Trees typically flower in late May to early July. Nuts mature by mid-October.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Butternut

Endangered

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Butternut usually grows alone or in small groups in forests and woodlands. It prefers moist, well-drained soil and is also found on well-drained gravel sites. This species does not do well in the shade, and often grows in sunny openings and near forest edges. Refer to the provincial recovery strategy (2013).

<https://www.ontario.ca/page/butternut-species-risk>

Timing Windows

Flowers from April to June. Fruits reach maturity during the month of September or October in the year of pollination and usually remain on the tree until after leaf fall.

Survey Protocol

A certified butternut health assessor must assess Butternut trees. Contact ESA.Aylmer@Ontario.ca for more information.

Eastern Flowering Dogwood

Endangered

Species Protection ☒

Regulated Habitat Protection ☒

General Habitat Protection ☐

Habitat Information

Grows in deciduous or mixed forests, open woodlands, forest edges, floodplains, slopes, bluffs, ravines, roadsides, hedgerows, and along drains. Refer to the provincial recovery strategy (2010) and Ontario Regulation 242/08.

<https://www.ontario.ca/page/eastern-flowering-dogwood>

Timing Windows

Flowering occurs from mid-May to early June, as the leaves begin to develop. The fruits mature in August and September.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Kentucky Coffee-tree

Threatened

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Generally grows in woodlands, floodplains, forest and wetland edges, hedgerows, roadsides and urban areas. Refer to the federal recovery strategy (2014).

<https://www.ontario.ca/page/kentucky-coffee-tree-species-risk>

Timing Windows

Flowers appear in May and June. Fertilized flowers form seed pods which remain on the tree through the winter.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Red Mulberry

Endangered

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Grows in forests, often in areas where forest canopy is open, but will also tolerate some shade. Also found in floodplains, river valleys, and forest edges. Refer to the provincial recovery strategy (2013) and the general habitat description (2013).

<https://www.ontario.ca/page/red-mulberry>

Timing Windows

Flowers emerge with leaves in the spring. Fruit matures in mid to late July.

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Turtles

Blanding's Turtle

Threatened

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Blanding's Turtle lives in shallow water, usually in large wetlands and shallow lakes with lots of water plants. May travel long distances from nearest waterbody, usually while searching for mates or traveling to nesting or overwintering sites. Hibernates in the mud at the bottom of permanent water bodies from late October until the end of April. Refer to the general habitat description (2013) and the draft federal recovery strategy (2016).

<https://www.ontario.ca/page/blandings-turtle>

Timing Windows

Mating prior to and right after overwintering, typically in April to early May, and from the end of August to end of October. Eggs are laid in from late May to early July, with hatchlings emerging in throughout September and October. Overwinter from October to April.

Survey Protocol

Survey Protocol for Blanding's Turtle (*Emydoidea blandingii*) in Ontario (August 2015) - contact MNRF Aylmer District for more information.

Spiny Softshell

Endangered

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Found in large lakes, rivers, creeks, drainage ditches, ponds, but can also occur in marshes, ponds, oxbows as well as wetlands and ponds next to large bodies of water. Overwinter in aquatic habitat in underwater hibernacula, often in the stream or lake they spend the majority of time during active season. Nest in areas of sand/gravel substrate with low vegetation density and slope. Refer to the draft federal recovery strategy (2016).

<https://www.ontario.ca/page/spiny-softshell>

Timing Windows

Active from late March/early April to October. Mate in spring (late April or May) after emergence. Nests from early June to mid-July. Hatchlings emerge in late summer. Overwintering starts in mid-October (females) and end of November (males).

Survey Protocol

No standardized species protocol available; contact ESA.Aylmer@Ontario.ca to request specific advice on conducting adequate surveys for your project.

Spotted Turtle

Endangered

Species Protection ☒

Regulated Habitat Protection ☐

General Habitat Protection ☒

Habitat Information

Semi-aquatic preferring ponds, marshes, bogs and even ditches with slow-moving, unpolluted water and abundant supply of aquatic vegetation. Other aquatic habitat can include vernal pools, seeps, sloughs, creeks, stormwater ponds, sheltered edges of bays, channels and drainage ditches. Strong preference for marsh meadows as well. Nests will be found in well-drained, sunny locations that are bare or have sparse vegetation. Hibernates in wetlands or seasonally wet areas associated with structures including overhanging banks, hummocks, tree roots, or aquatic animal burrows. Refer to the draft federal recovery strategy (2016) for more information.

<https://www.ontario.ca/page/spotted-turtle>

Timing Windows

Overwinters in underwater hibernacula for 7 to 8 months of the year, from mid-September/October to mid-late April. Basks in April. Mates begins in early spring as soon as ice/snow melt and can occur from late May through to early July.

Survey Protocol

Survey Protocol for Spotted Turtle (*Clemmys guttata*) in Ontario (August 2015) - contact MNRF Aylmer District for more information.

ONTARIO MINISTRY of NATURAL RESOURCES and FORESTRY | AYLMER DISTRICT OFFICE
615 John Street N. Aylmer ON, N5H 2S8 esa.aylmer@ontario.ca

This report was produced May, 2018

Please refer to the associated Municipal Species at Risk Reference Material Memo for instructions on how to use this guide.

The Committee on the Status of Species at Risk in Ontario (COSSARO) meets regularly to evaluate new species for listing and/or re-evaluate species already on the SARO List. As a result, species designations may change, which could in turn change the protection they receive under the ESA and whether proposed projects may have adverse effects on SAR. Habitat protection provisions for a species may also change if a species-specific habitat regulation comes into effect, or as new general habitat guidance is developed based on the best available information. Additionally, the province has not been comprehensively surveyed and MNRF data relies on observers to report sightings. As such, the absence of an occurrence does not indicate the absence of SAR species or habitat, and new occurrence information may affect whether a proposed project may contravene the ESA.



MEMO

To: Liz Michaud, Landmark Engineering Inc.
From: Dave Hayman
Subject: Amherstburg Festival Plaza and Marina - Historic Duffy's Tavern Property
Date: February 28th, 2019
Pages: 12 plus Figures and Appendices

BioLogic has been retained by Landmark Engineering Inc. to complete a natural heritage review for the proposed Amherstburg Festival Plaza and Marina project located on the historic Duffy's Tavern property and a section of Kings Navy Yard Park at the intersection of Gore Street and Dalhousie Street in the town of Amherstburg, Ontario [Figure 1].

The construction of the festival plaza and marina will take place on Part Lot 2, Concession 1 (Town of Amherstburg Official Plan, 2014). The property was historically a marina tavern and hotel but closed down in 2013. Since that time, the Town of Amherstburg has acquired the property and the previous buildings have been demolished to prepare the subject lands for the proposed development. The proposed development will include the construction of an amphitheater building, plaza area, new marina docks, and a breakwater fishing pier [Figure 2].

For the purpose of this report, "subject lands" is defined as the area which is under review for this phase of development. The subject lands encompass the former Duffy's Tavern property boundary and a section of Kings Navy Yard Park [Figure 1]. Additional lands owned by Amico to the south are not part of this EA consideration.

Background Information

The first step for the natural heritage component of this project was the review of relevant background information pertaining to Species at Risk (SAR). Background research and a Stage 1 Information Request response from the MNRF [Appendix A] identified the following species protected under the *Endangered Species Act* (ESA) that require consideration for this project:

- Pugnose Minnow [Threatened]
- Barn Swallow [Threatened]
- Chimney Swift [Threatened]
- Eastern Foxsnake [Endangered]

In order to determine the likelihood of SAR presence on the subject lands, a preliminary natural heritage

assessment including terrestrial habitat investigations and a shoreline-based aquatic habitat assessment were completed. These assessments were completed to provide information on natural heritage components that need to be considered during the project (design and development) and to assess the habitat viability for the listed SAR species.

Aquatic Habitat Assessment

As the former marina docks on the subject lands are not maintained, the aquatic habitat assessment was conducted from the break wall. Two Ekman sediment grabs and two depth measurements, as well as a preliminary aquatic habitat assessment were completed. The average depth recorded at the break wall was 1.65m. No evidence of ground water seepage near the shoreline was observed. The primary substrate type was muck (65%) with gravel being the second most abundant substrate (25%). The remainder of the substrate types were cobble (5%) and sand (5%). The cobble found within the site is suspected to be the result of historic armour stone falling into the water from disrepair. (BioLogic observation) The substrate of the shoreline was dominated by break wall (70%) and boulder (30%). The bank slope ranged from 45 to 90 degrees at the shoreline [Figure 3-Photos 1 and 4].

Aquatic vegetation within the site is composed of submergent species, predominantly Eurasian Water Milfoil and *Vallisneria spp* with smaller amounts of *Potamogeton spp.* and *Elodea spp* also noted. The riparian vegetation of the site is composed exclusively of mowed lawns [Figure 3 - Photo 4]. Slight concentrations of algae were observed at the sample sites. Aquatic habitat was limited and was mainly comprised of some boulders, cobbles, and submergent vegetation. During higher water levels, shoreline boulders and cobble likely provide some refuge habitat for small fish.

Terrestrial Habitat Observations

Terrestrial habitat within the subject lands is primarily composed of a parking lot and area of sand where the former Duffy's tavern stood [Figure 3 - Photo 1] as well as a small section of the maintained Kings Navy Yard Park [Figure 3 - Photo 2]. Trees and shrubs within the subject lands are within existing or formerly landscaped areas and no provincially significant tree or shrub species were observed on the Subject Lands. A small area of un-maintained grass is present in the southern portion of the subject lands and no buildings or debris/garbage piles were present on the property during site investigations [Figure 3 - Photo 3]. No key habitat features for snakes, such as potential hibernaculum, basking habitat, or nesting habitat were observed on the subject lands. Some shoreline erosion was observed in areas of the parking lot that border the Detroit River.

General Site Observations

During the completed site assessments, Barn Swallow were observed nesting below the docks in the marina. This nesting behaviour has been noted at other marinas in the area [Personal observation, P. Mikoda]. No other significant wildlife habitat features or Species at Risk were observed on the subject lands or in the adjacent areas.

Based on the terrestrial and aquatic habitat assessments, as well as the general site observations that were completed, there was no habitat identified for the listed SAR species save for the presence of nesting Barn Swallow below the marina docks. Furthermore, no Significant Wildlife Habitat features as defined in the Natural Heritage Reference Manual (MNR, 2010) were found on the subject lands. Using all of the field observations and background research compiled for the proposed development project, the following natural heritage components will need to be considered during the project.

1. Fisheries Act
2. Endangered Species Act
3. Migratory Birds Convention Act
4. Essex Region Conservation Authority (ERCA) Regulation Limit
5. Summary and Recommendations
6. Mitigation Measures

1. FISHERIES ACT

Records of aquatic species at risk were identified within 1km² of the subject lands including Pugnose Minnow [SC] and Channel Darter [THR] but no records of critical habitat for these fish species was identified [DFO Aquatic Species At Risk Map, 2019]. Pugnose Minnow are protected under the *Endangered Species Act* (ESA) and will be discussed in Section 2 of this report. Channel Darter is provincially listed as Special Concern and does not receive protection under the ESA. However, Channel Darter are federally listed as Threatened and are protected under the *Species at Risk Act* (SARA). The preferred habitat for Channel Darter in large river systems is in cobble and gravel shoals and riffles. The primary substrate type in the Detroit River along the shoreline of the subject lands was muck with some gravels. This is not the preferred habitat for Channel Darter but absence of the species within the Subject Lands cannot be confirmed. Fish and fish habitat, regardless of provincial or federal status, are protected within the Detroit River under the federal *Fisheries Act*. This act protects fish and fish habitat from serious harm unless authorized by the federal minister of the Department of Fisheries and Oceans Canada (DFO).

For projects in and around water that may result in harm to fish and fish habitat, the DFO requires proponents to self-assess their project against specific criteria to determine if a review by DFO is necessary. If the project meets the criteria and the work is carried out with the proper mitigation measures, the project is not considered to be in contravention with the *Fisheries Act* and can proceed without further approval.

If the project will result in a contravention of the *Species at Risk Act* and if any new structures will be constructed below the High Water Mark, a Request for Review form will need to be submitted to DFO for their consideration and review. Details of the project design, project timing, watercourse habitat, and mitigation measures [See Section 6] are needed to properly complete the Request for Review. Following a review of the project details, DFO will either issue a letter of approval (no serious harm to fish) or will require an application for *Fisheries Act* authorization (serious harm to fish expected).

DFO Self-Assessment of Project

Based on the current design details and drawings for the proposed development on the subject lands, the project will involve construction of new docks in the marina and a breakwater fishing pier that will be built below the High Water Mark. The proposed development also has the potential to impact an aquatic species at risk. Therefore, a DFO self-assessment is required.

Request for Review

Once any revisions, if needed, to the design and drawings for the proposed development on the subject lands have been completed, a Request for Review can be submitted to DFO. BioLogic can assist with the submission of this review. We recommend that the DFO review form be submitted as soon as possible as

the target return time for these reviews from DFO is approximately 3 to 4 weeks.

Following submission of the review, DFO will determine if the project will require authorization under the *Fisheries Act*. We do not anticipate this to be the case here. Nevertheless, should an authorization be needed, DFO typically responds within 60 days regarding the status of the authorization application. If an application is deemed complete, the DFO will issue a *Fisheries Act* Authorization within 90 days of the original application being deemed complete. If the DFO informs the proponent of a refusal to issue authorization, changes to the project design or project details would be needed.

Timing Windows and Fish Protection

Since the Detroit River is a diverse aquatic ecosystem that has a variety of fish species present, both a fall and spring timing window for in-water activities need to be considered to protect fish during peak spawning seasons. The fall timing window is triggered due to the potential presence of Lake Whitefish (*Coregonus clupeaformis*) spawning in the Detroit River near Amherstburg (Fischer *et al.*, 2018). Lake Whitefish spawn in shallow water with moderate current over rock or stone bottoms. There is potential suitable spawning habitat for Lake Whitefish in the adjacent Detroit River. Dredging within the marina and resultant down gradient sediment could impact Lake Whitefish spawning habitat. As a result, a restrictive dredging and pier construction timing window for this fishery is **October 15th to July 15th** where **no in water works (dredging)** will take place. This timing window can potentially be shortened by the MNRF upon review of the project details and proposed mitigation measures. Marina shoreline work and dock construction would follow the spring restrictive timing window of **no in water works** between **March 15th and July 15th**.

Summary

- Due to the potential occurrence of an aquatic SAR and construction of new in-water structures below the High Water Mark, a DFO Request for Review needs to be completed and submitted to DFO for approval
- We do not anticipate the need for a *Fisheries Act* authorization
- Mitigation measures to protect fish and fish habitat outlined in Section 6 of this report will be followed and included in future discussions for this project
- Breakwater pier and dredging activities will follow the fall/spring restrictive timing window - October 15th to July 15th unless otherwise modified through discussion with MNRF. The marina shoreline and dock construction work will follow the spring restrictive timing window - March 15th to July 15th.

2. ENDANGERED SPECIES ACT

Species at Risk (SAR) and their habitat are protected provincially by the *Endangered Species Act* (ESA). The legislation for the *Endangered Species Act* protects species identified as either Threatened [THR] or Endangered [END] in Ontario.

NHIC, DFO, and MNRF Consultation

The Stage 1 Information Request response from the MNRF included the addition of Barn Swallow [THR] and Eastern Foxsnake [END] to the list of species at risk that are potentially found within 1km² of the subject lands. The MNRF indicated in their response letter that there were no known occurrences of aquatic species at risk within the Detroit River near the subject lands. However, research using the DFO

aquatic SAR mapping tool revealed that Pugnose Minnow [THR] are or are potentially found within the area, though no critical habitat was identified for this species [DFO Aquatic Species At Risk Map, 2019]

Pugnose Minnow [Threatened]

Pugnose Minnow and their habitat are protected under the *Endangered Species Act*. The DFO aquatic SAR distribution mapping tool has identified the area of the Detroit River within 1km² of the subject lands as an area with potential Pugnose Minnow occurrences. The preferred habitats for Pugnose Minnow are clear, slow moving, and heavily vegetated lakes, rivers, or streams.

Based on the aquatic habitat characteristics of the subject lands, there is potential habitat for Pugnose Minnow. The shoreline of the Detroit River along the subject lands has abundant aquatic vegetation and slower moving water suitable for Pugnose Minnow. As has been previously discussed, the project will need to be registered with DFO due to the potential impacts to fish, in addition to the potential presence of an aquatic species at risk that may be present in the watercourse.

Barn Swallow [Threatened]

Barn Swallow are protected under the *Endangered Species Act* and the *Migratory Birds Convention Act*. MNRF records have identified the area within and 1km adjacent to the subject lands as potential Barn Swallow habitat. During site visits, Barn Swallow were observed actively nesting under the docks in the marina.

Ontario Regulation 242/08, Subsection 23.5 under the *Endangered Species Act* allows a proponent to remove Barn Swallow nests through registration of the activity with Service Ontario using their ONE-key online account. The registration process is relatively quick (a few hours) and will require the replacement of destroyed nests with a nest cup in a one to one ratio, the implementation of mitigation measures dependant on project timing (see Option 1 and Option 2), preparation of a mitigation and restoration record, and post-construction monitoring of nest cups/habitat structures for an additional 3 years. Once the confirmation of registration has been received, removal of the docks and Barn Swallow nests can proceed without contravention of the ESA, as long as mitigation measures (below) are followed.

In addition to the registration of the project, the timing of the dock works is an important consideration to ensure that there is no contravention with the ESA. Depending on the timing of the project, there are two options.

Option 1 - Dock Work Outside of Barn Swallow Active Season

The proposed construction of the new marina docks on the subject lands can be completed before May 1st or after September 1st, outside of Barn Swallow active nesting season. This option will still require registration under the ESA for the temporary removal of Barn Swallow habitat. If a qualified biologist deems the newly constructed marina docks unsuitable for Barn Swallow nesting post-construction, nest cups will need to be installed in an existing or constructed area of suitable habitat within 1km of the original habitat before the next active season. By avoiding the Barn Swallow active season, bird exclusion and nesting prevention measures will not be required.

This is the ideal option to avoid unscheduled delays to project construction.

Option 2 - Dock Work During Barn Swallow Active Season

Work to the docks during Barn Swallow active season (May 1st to late August) is possible however extra steps will be required. This option also requires the proponent to register the project under the ESA. A compensatory structure suitable for nesting would need to be installed within 1km of the original habitat and nesting prevention measures would need to be installed in existing dock areas, where Barn Swallow may attempt to nest, between September 1st and May 1st. The nesting prevention measures would need to be inspected and maintained until the dock works could occur. This option is more labour intensive (installation and maintenance of nesting prevention measures) and could result in project delays (failure of nesting prevention systems). If the nesting prevention measures are ineffective and Barn Swallow nest under the marina docks as previously observed, the project will be delayed until the Barn Swallow active season is complete or all of the young have fledged from the nest.

This option can lead to months of delays if nesting prevention measures are ineffective and as such, this option is discouraged.

Chimney Swift [Threatened]

Chimney Swift are protected under the *Endangered Species Act* and the *Migratory Birds Convention Act*. NHIC records identified records of Chimney Swift within 1km of the subject lands. The preferred nesting habitat for Chimney Swift includes man made structures, chimneys of buildings, and natural tree cavities. The area within 90m of a natural tree roost for Chimney Swift is also protected. Man made structures that provide nesting habitat for Chimney Swift do not receive a buffer zone of protection.

There is **no** nesting habitat within the subject lands for Chimney Swift. There are no man made structures, building chimneys, or trees with suitable roosting cavities within the subject lands. As there is no Chimney Swift nesting habitat within or adjacent to the subject lands, Chimney Swift do not need any further consideration.

Eastern Foxsnake [Endangered]

Eastern Foxsnake and their habitat are protected under the *Endangered Species Act*. MNRF has noted that the subject lands fall within regulated habitat for this species. Eastern Foxsnake prefer areas of open field marshes, hedgerows, and drainage canals for habitat but may use a variety of un-maintained habitats. MNRF requested through their Stage 1 Response that the subject lands be surveyed to confirm that there are no anthropogenic features left (stubble, rock piles, etc.) as a result of the site demolition in 2017, or in the buildings left standing that would provide potential snake habitat [Stage 1 Information Response].

There is **no** hibernaculum, basking or nesting habitat, within the subject lands for Eastern Foxsnake. The entirety of the subject lands have been cleared and are free of construction debris. There are no rock piles, construction debris, or other man made structures on the subject lands that would support snake habitat. An area of long grass is located in the southern portion of the subject lands as a result of the lack of maintenance since the change in property ownership. Eastern Foxsnake could utilize this area if left un-maintained. This long grass area should be mowed prior to April 1st (snake activity increases) and continually maintained throughout the development process to mitigate for Eastern Foxsnake occurrences. Eastern Foxsnake mitigation measures for projects within regulated habitat will be put in place to ensure that there is no harm to the species if encountered and that there will be no contravention with the ESA [Section 6].

Summary

- Completion of dock construction works outside of Barn Swallow active season (May 1st to late August) will minimize project delays
- No critical habitat features for Eastern Foxsnake were identified within the subject lands. The area of long grass will be maintained to mitigate for Eastern Foxsnake and no impacts to the species are expected from the proposed development.

3. MIGRATORY BIRDS CONVENTION ACT

The subject lands are made up of un-maintained sandy areas and parking lots from the previous buildings that stood on the property. Killdeer are a migratory bird species that may make use of these un-maintained areas as they frequently make nests on construction sites and other disturbed areas near bodies of water. In addition, a number of trees and shrubs remains on the subject lands, mainly within the Kings Navy Park, and these may also provide nesting habitat for common urban migratory birds. Therefore, consideration needs to be taken for bird species protected under the *Migratory Birds Convention Act* (MBCA) due to the potential for migratory bird nesting on the subject lands. In short summary, the MBCA prohibits any person from disturbing, destroying, or taking a nest, egg, or migratory bird. The general timing window for peak migratory bird activity is late March to July 31st but this may be extended to August depending on species.

To date, no breeding bird surveys have been completed on the subject lands due to a general lack of suitable habitat for nesting birds. However, Killdeer and other ground nesting birds commonly use construction sites as nesting habitat and may potentially use the subject lands for nesting. Common urban birds (eg. American Robin, Mourning Dove, etc) may also utilize the remaining trees and shrubs on the site for nesting. Options to ensure that the proposed development is in compliance with the MBCA are detailed below.

Recommendation Option 1- Construction Works Outside Migratory Bird Active Season

The proposed development works should occur before March 15th or after August 31st to ensure that construction activities are outside of the active migratory bird breeding window.

This is the ideal approach to avoid unscheduled delays to project construction

Since the shoulder times of active nesting season can vary from year to year and between species, this timing window is somewhat conservative. It may be possible to do works constrained by the timing window noted above in the few weeks at either end of the window. However, before any work can proceed the subject lands will need to be inspected to confirm that there are no nests. If active nests are found, monitoring by a qualified biologist would need to be completed. Once nest activity has ceased, typically 1.5 months from egg laying to young fledging from the nest, construction activities may resume.

It is better to complete construction activities respecting the conservative timing window to avoid potential delays.

Recommendation Option 2 - Construction Works During Migratory Bird Active Season

If construction activities and vegetation removal are being considered during the active season for migratory bird nesting (late March to August 31st) and there is no conflict with the *Endangered Species*

Act, construction activities may occur. Killdeer and common urban birds are the most likely migratory bird species to use the subject lands for nesting. Killdeer are opportunistic nesting birds that frequently use construction sites for nesting. Measures to deter Killdeer from nesting can be installed before the end of March or after August 31st to minimize construction delays. Predator decoys (hawks and owls) and occasional disturbance of the soil on the property can be used to limit Killdeer and other ground birds from nesting. If active nests are found despite deterrent efforts, construction activities must cease and the nests must be monitored by a qualified biologist. Once the nest(s) are no longer active and the young birds have fledged, construction may proceed.

If vegetation removal is completed during the migratory bird active season, all trees and shrubs need to be inspected by a qualified biologist prior to removal to determine if birds are actively nesting. If migratory bird nests are absent, removal activities may proceed. If migratory birds are found actively nesting, all vegetation removal activities must cease until the nest(s) are no longer active and the young birds have fledged.

This approach can lead to months of delays and as such, this approach is discouraged.

4. ESSEX REGION CONSERVATION AUTHORITY (ERCA) REGULATION LIMIT

The proposed works for the subject lands fall within the Essex Region Conservation Authority (ERCA) regulation limit. A permit is required for any works proposed within the ERCA regulation limit. There are no significant natural heritage features including provincially significant wetlands, significant woodlands, significant valley lands, or Areas of Natural or Scientific Interest (ANSI) within or adjacent to the subject lands. Furthermore, no Significant Wildlife Habitat (SWH) features were found within or adjacent to the subject lands.

Summary

- A permit is required for works that fall within the ERCA regulation limit
- No significant natural heritage features or SWH were found within or adjacent to the subject lands

5. SUMMARY AND RECOMMENDATIONS

The following section summarizes each natural heritage component and provides recommendations based on respecting timing windows and project deadlines

Fisheries Act

- A DFO Request for Review is needed due to the potential impacts to an aquatic SAR and the construction of in-water structures below the High Water Mark
- Breakwater pier and dredging activities will follow the fall/spring restrictive timing window - October 15th to July 15th where no in water works will take place. The marina shoreline and dock construction work will follow the warmwater restrictive timing window only - March 15th to July 15th.

Endangered Species Act

- Completion of construction works should occur outside of Barn Swallow active season (May 1st to late August) to avoid project delays
- Registration of the project under the ESA is required for activities involving Barn Swallow habitat removal. The Barn Swallow mitigation and restoration record should be kept up to date during all phases of development.
- Maintain the section of long grass in the southern portion of the subject lands prior to April 1st to ensure that Eastern Foxsnake will not use the habitat. Continued maintenance is recommended throughout the construction process.

Migratory Birds Convention Act

- Construction activities should occur outside of the migratory bird active season - no works between late March to August 31st
- Construction activities may occur during the migratory bird active season, however this will require extra mitigation steps and may result in project delays

Essex Region Conservation Authority (ERCA) Regulation Limit

- Obtain a permit from the ERCA for the proposed works within their regulation limit
- Include mitigation measures outlined in Section 6 of this report in future documents needed to highlight environmental protection

Final Site Specific Recommendations - Timing Windows

Once all of the appropriate permit applications have been approved, follow the mitigation measures and timing windows detailed below during construction.

In-water works

To protect fall and spring spawning fish species within the Detroit River during peak spawning season, **NO** in-water works should occur between **October 15th and July 15th** for breakwater pier and dredging activities unless otherwise stated by MNRF. For marina shoreline and dock construction, **NO** in-water works should occur between **March 15th and July 15th** to protect spring spawning fish species.

Dock Construction

To avoid Barn Swallow active season, construction works should **NOT** occur between **May 1st - August 31st**. Construction activities may occur during Barn Swallow active season if nesting prevention measures are used and no active nests are present on the site. Inspection by a qualified biologist should be completed prior to any construction activities.

Property Infrastructure Construction

To avoid potential impacts to migratory bird species, construction works should **NOT** occur between **late March - August 31st**. Construction activities may occur during migratory bird active season if nesting deterrent measures are used for ground nesting species and no active nests are present on the subject lands. Inspection of the subject lands by a qualified biologist should be completed prior to any construction activities.

6. MITIGATION MEASURES

Dock Construction In-Water Works

1. The timing of in-water works will avoid peak spawning periods to protect fish and their eggs, juvenile fish, and fish habitat. For the breakwater pier and dredging work, no in-water works will take place between October 15th – July 15th. For marina shoreline and dock construction, no in-water works will take place between March 15th - July 15th.
2. The duration of in-water works should be minimized or spread out to lower the risk of sedimentation issues
3. An emergency spill kit should always be on-site in the event of a spill. All workers should be properly trained on site procedures and the use of an emergency spill kit
4. Ensure that all machinery used near water bodies arrives on site clean and is checked for fluid leaks prior to any construction activities
5. Re-fueling and maintenance of construction equipment should be done at a minimum of 30m away from any body of water and on an impervious surface to minimize the risk of harmful substances entering the water and soil
6. Sediment and erosion control measures will be installed where appropriate before construction occurs to minimize the risk of sedimentation of local water systems. Sediment and erosion control measures should be installed according to the Guide for Erosion and Sediment Control for Urban Construction Sites (OMNR, 2006) and applicable standards in the Ontario Provincial Standard Specification/Ontario Provincial Standard Drawings (OPSS/OPSD)
7. Sediment and erosion control measures should be inspected and maintained during construction activities near water
8. Any disturbed ground near water will be re-vegetated as soon as possible
9. Any excavated material that is to be stockpiled near water should be placed above the High Water Mark to reduce sedimentation risk

Dock Construction and Removal - Barn Swallow

10. Timing of the marina dock removal and construction will avoid Barn Swallow active season to protect nesting Barn Swallow. Based on established timing windows, works should not take place between May 1st to August 31st
11. If construction works on the marina docks is planned during Barn Swallow active season, the mitigation and preventative measures outlined in Section 1 - Option 2 need to be followed. Refer to *O. Reg 242/08, Subsection. 23.5* for more information if needed.

12. For every Barn Swallow nest that is removed on site, one nest cup must be installed on an existing or created building or structure within the subject lands or within 1km adjacent to the subject lands

Development Construction - Migratory Birds and ESA

13. Timing of construction activities (save for marina dock construction) will avoid migratory bird active season to protect potentially nesting birds on the subject lands. Based on established timing windows, construction activities should not take place between late March to August 31st

14. If construction works are planned during migratory bird active season, the mitigation and deterrent measures outlined in Section 3 - Option 2 need to be followed

15. If required, deterrent options for ground nesting birds should be installed before late March or after September 1st to be in compliance with the MBCA

16. Maintain the section of long grass in the southern portion of the subject lands prior to April 1st to ensure that Eastern Foxsnake will not use the habitat. Continued maintenance is recommended throughout the construction process.

Next Steps

- DFO Request for Review (BioLogic can assist with the submission once drawings are finalized and provided)
- Register the project under the ESA on One-key for activities involving Barn Swallow
- Obtain a permit from ERCA for works done within their regulation limit

If you have any questions or concerns please don't hesitate to contact Dave Hayman (dhayman@biologic or 519-657-0299 x 106)

Table 1: Timing Windows

Species	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Fish and Fish Habitat - Breakwater Pier/Dredging	Red	Red	Red	Red	Red	Red	Red	Yellow	Yellow	Yellow	Red	Red
Fish and Fish Habitat - Marina Shoreline/Dock Construction	Yellow	Yellow	Yellow	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow
Barn Swallow	Yellow	Yellow	Yellow	Yellow	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow
Migratory Birds	Green	Green	Green	Red	Red	Red	Red	Red	Green	Green	Green	Green

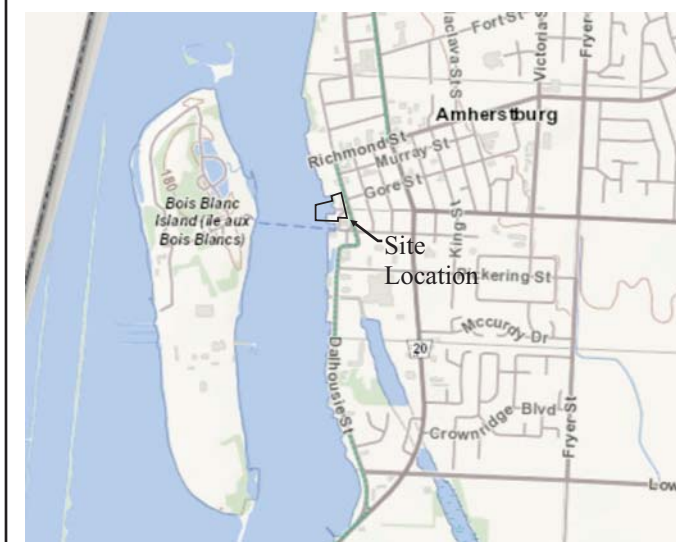
Includes part months - Fish and fish habitat - breakwater pier/dredging, the split occurs on October 15th and July 15th. Fish and fish habitat - marina shoreline, the split occurs on March 15th and July 15th. Migratory birds the split occurs on March 15th.

Note:

Green	Construction can occur without additional approvals or registration from MNR provided mitigation measures followed
Yellow	Some approvals or registration are needed with minimal delays (i.e., DFO review). Some mitigation will be required.
Red	Construction should be avoided, exception of minor adjustments to start or end based on weather; for Barn Swallow, construction can occur if no Barn Swallow nests present; for migratory birds construction can occur if no migratory bird nests are present or young birds have fledged and nests are inactive



Figure 1: Site Location
(2018 Google Earth Air Photo)



0 1,000
Scale 1:50,000
Key Plan

Print on 11X17, Landscape Orientation
0 60
Scale 1:3000
February 2019



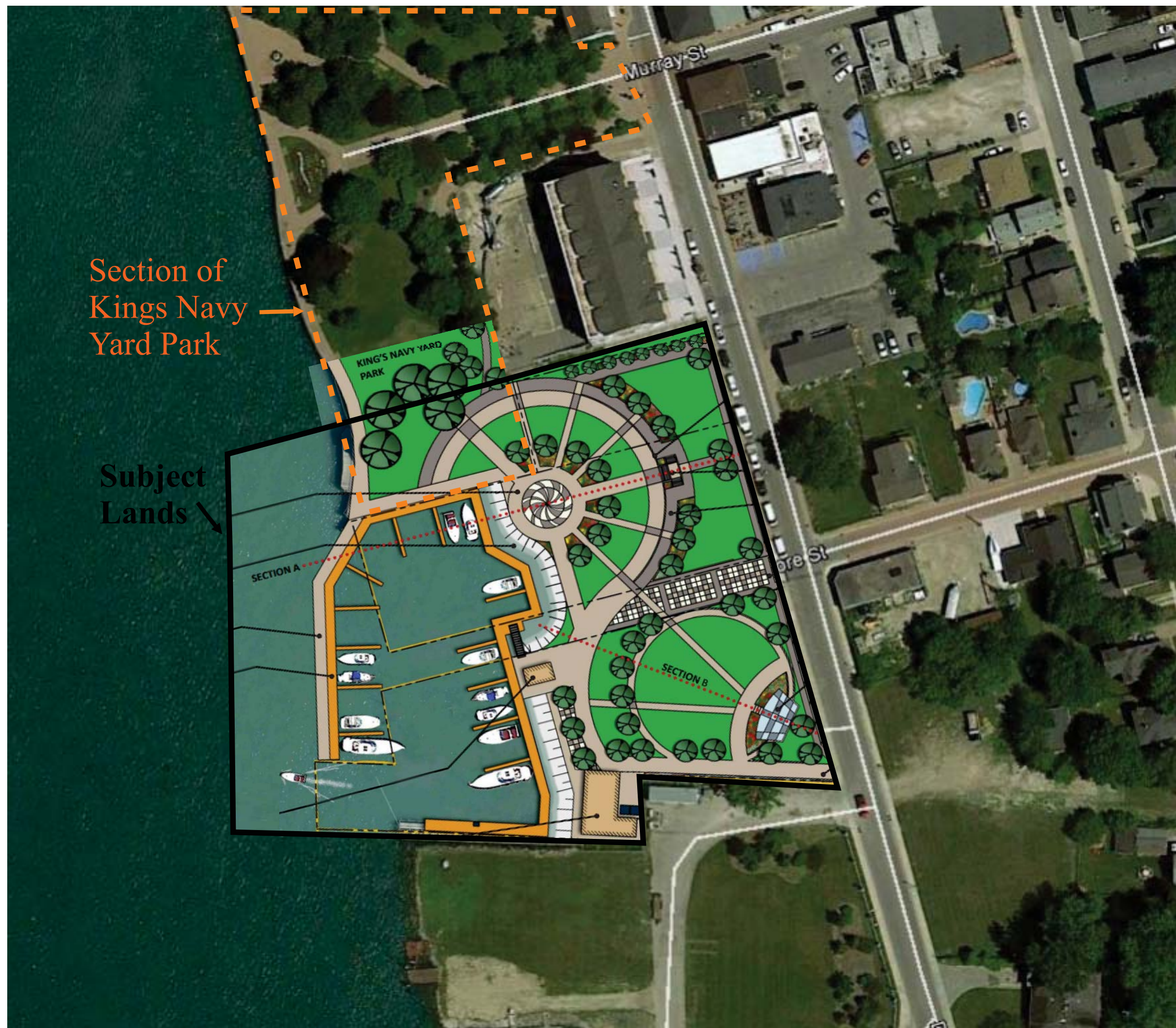
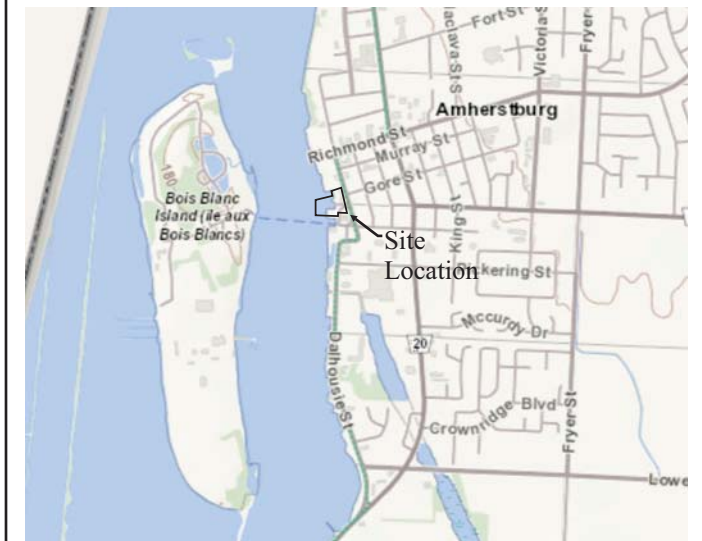


Figure 2: Draft Plan Overlay
(2018 Google Earth Air Photo)



0 1,000
Scale 1:50,000
Key Plan

Print on 11X17, Landscape Orientation
0 20
Scale 1:1000
February 2019



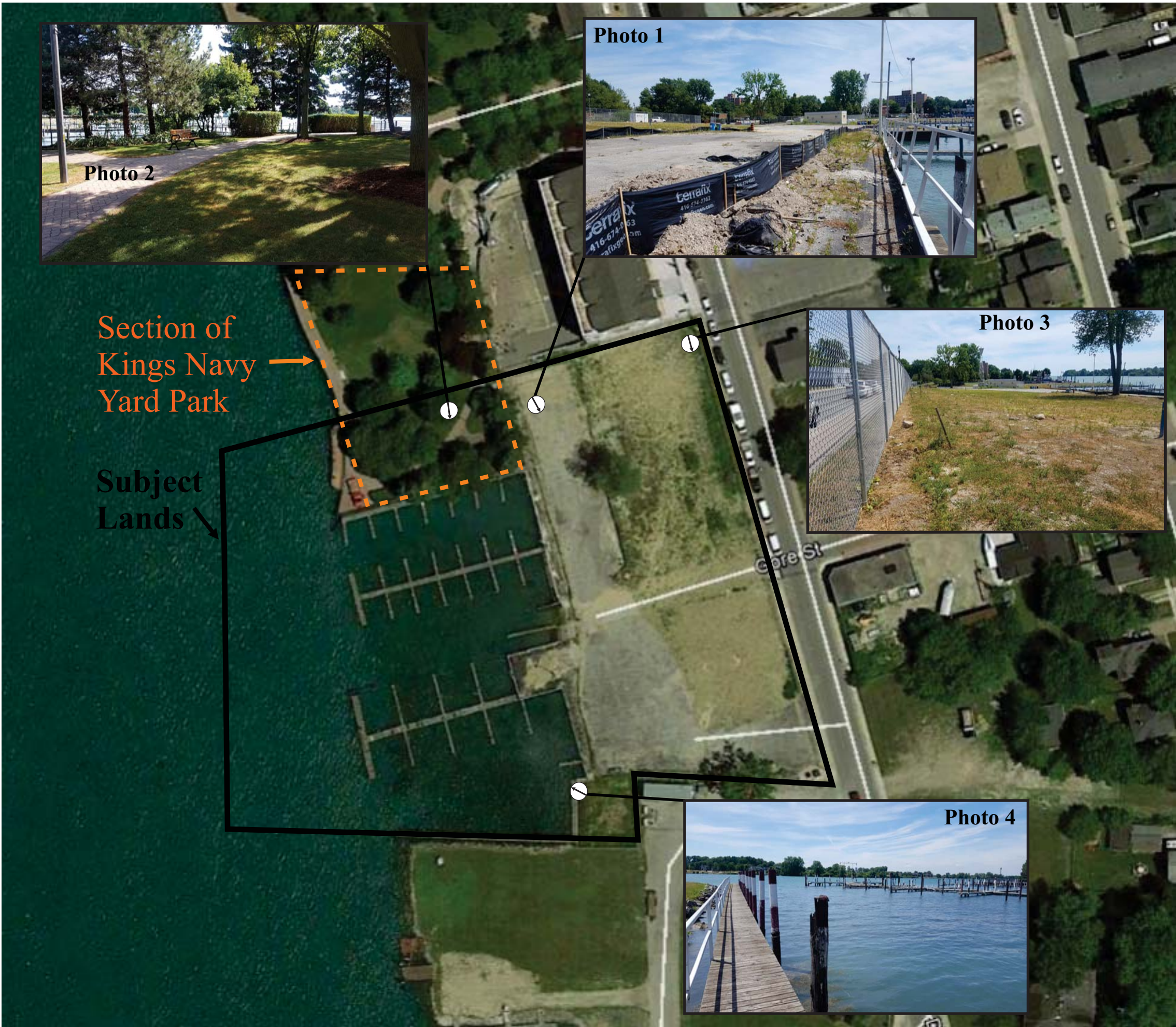
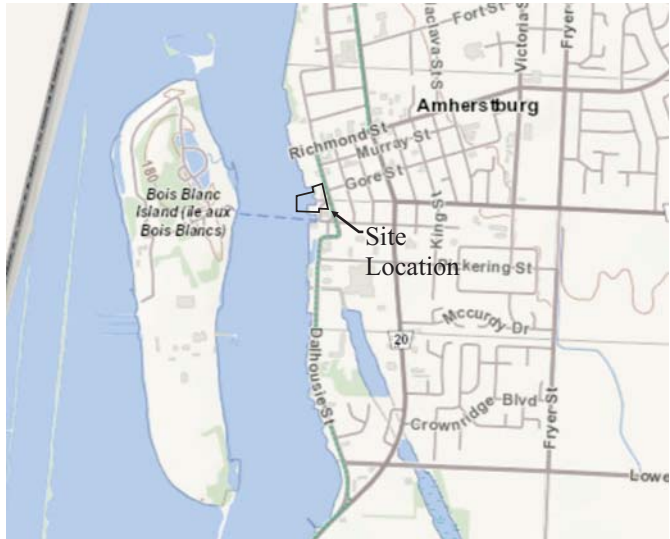


Figure 3: Site Photos
(2018 Google Earth Air Photo)



0 1,000
Scale 1:50,000
Key Plan

Print on 11X17, Landscape Orientation
0 20
Scale 1:1000
February 2019



Appendix A - MNRF Stage 1 Response Letter

From: [ESA-Aylmer \(MNRF\)](#)
To: [Erin Boynton](#)
Subject: RE: Stage 1 Information Request for Landmark - -Amherstburg Festival Plaza and Marina
Date: Friday, October 19, 2018 3:35:51 PM

Hi Erin,

The Ministry of Natural Resources and Forestry (MNRF) understands that Biologic Inc. has requested a stage one information request for Landmark Engineers Inc.'s festival plaza and marina construction proposed at 290, 296 and 306 Dalhousie Street, in the Town of Amherstburg, County of Essex, as identified in the information provided.

An initial SAR (Endangered and Threatened species) screening has been completed for the above-noted property:

There are known occurrences of SAR in the general area of the project location:

- Eastern Foxsnake, Carolinian population (endangered) – receives species and regulated habitat protection. The project location falls within regulated habitat for this species.
- Barn Swallow (threatened) – receives species and general habitat protection. **MNRF notes that barn swallows were confirmed nesting on the underside of the docks within the marina by Biologic Inc. on July 19th 2018.**
- Chimney Swift (threatened) – receives species and general habitat protection.
- There are known occurrences of aquatic species at risk in the Detroit River near the location of the project site.

MNRF provides the following comments:

- Please confirm there are no anthropogenic features left (stubble, rock piles, etc.) as a result of the site demolition in 2017, or in the buildings left standing that would provide potential snake habitat.
- Page 1 of the stage one information request submitted indicates the movement of the ferry dock will not take place during this phase of development. Will any shoreline or in-water work be completed as part of phase 1? If so, please detail what is proposed. The Department of Fisheries and Oceans (DFO) as well as the MNRF Aylmer Lands and Waters Technical Specialist will need to be consulted for this portion of this development.

Thank you,

Emilee Hines

Emilee Hines

A/ Management Biologist

Ministry of Natural Resources and Forestry, Aylmer District

Tel: 519-773-4736 | Fax: 519-773-9014 | Email: emilee.hines@ontario.ca

From: Erin Boynton [mailto:eboynton@biologic.ca]

Sent: August 15, 2018 1:08 PM

To: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>

Cc: Dave Hayman <dhayman@biologic.ca>; Imichaud@landmarkengineers.ca

Subject: Stage 1 Information Request for Landmark - -Amherstburg Festival Plaza and Marina

Please find attached a Stage 1 Information Request for a proposed Festival Plaza and Marina at 290, 296 and 306 Dalhousie Street, Amherstburg, ON .

A confirmation of receipt would be appreciated to confirm that the document is in the queue for review.

The attached documents are submitted as part of our discussions with MNRF with respect to the Endangered Species Act. Until a final decision has been rendered with respect to this application, it is our expectation these documents will be treated as Personal and Confidential. Thank you for your time.

Erin Boynton

BioLogic

201-110 Riverside Dr.

London, ON N6H 4S5

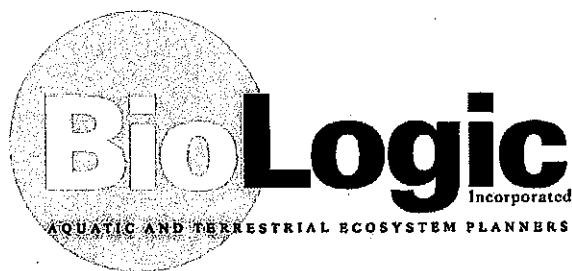
P-519-434-1516 xt 103

F-519-434-0575

E- eboynton@biologic.ca

121

AQUATIC HABITAT ASSESSMENT Pond or Lake



Project Name: <u>LANDMARK-AMHERSTBURG</u>	
Date: <u>JULY 19/18</u>	
Station Name: <u>DUPPIES</u>	Collectors: <u>PM, EB</u>
Time Started: <u>14:00</u>	Time Finished:

GENERAL INFORMATION

Weather: <u>SUNNY, PART CLOUD</u>	Air Temp (°C): <u>27</u>	Waterbody Name: <u>DETROIT RIVER</u>	Drainage System: <u>1</u>
--------------------------------------	-----------------------------	---	------------------------------

GPS Co-ordinates:

DIMENSIONS		LANDUSE	POLLUTION SOURCES	SURFACE CONDITION
Length (m)		<u>REC/FORMER COMMERCIAL</u>	<u>DOWNSTREAM RUNOFF</u>	<input type="checkbox"/> Calm
Width (m)				<input type="checkbox"/> Rippled
Depth (m)				<input checked="" type="checkbox"/> Wavy
Bank Slope (%)	<u>90-45°</u>			<input type="checkbox"/> Rough
TYPE		REGIME	WATER COLOUR	GROUNDWATER EVIDENCE
<input type="checkbox"/> Large Lake >5ha		<input checked="" type="checkbox"/> Permanent	<input type="checkbox"/> Colourless	<input checked="" type="checkbox"/> None
<input type="checkbox"/> Small Lake		<input type="checkbox"/> Intermittent	<input type="checkbox"/> Yellow/Brown	<input type="checkbox"/> Springs/Seeps
<input type="checkbox"/> Pond <0.5ha		CONNECTION <input type="checkbox"/> Off-line <input checked="" type="checkbox"/> On-line	<input checked="" type="checkbox"/> Blue/Green	<input type="checkbox"/> Vegetation
<input type="checkbox"/> Reservoir			<input type="checkbox"/> Other:	<input type="checkbox"/> Iron Staining
<input type="checkbox"/> Dug Pond				<input type="checkbox"/> Other

POND/LAKE SUBSTRATE

Type	<u>Bedrock</u>	Sand	<u>Silt</u> <u>Gravel</u>	Clay	Muck	Marl	Detritus
%	<u>5</u>	<u>5</u>	<u>25</u>		<u>65</u>		

SHORELINE SUBSTRATE

Type	<u>Bedrock</u>	Boulder	Cobble	Gravel	Sand	Silt	Clay	Marl	<u>Detritus</u>
%	<u>30</u>								<u>70</u>

GENERAL SITE COMMENTS

INSTREAM HABITAT							
In-stream Cover (%)	None	Undercut Banks	Boulders	Cobbles	Organic Debris	Woody Debris	Vegetation
		0	10	2	5	In-stream 0	In-stream 35
						Overhanging 0	Overhanging 0
INSTREAM VEGETATION DETAILS					ALGAE		
	%	Examples			<input type="checkbox"/> None	Examples	
Submergent	100	ELODEA, VAL, POT. CRISP, W. HEL			<input checked="" type="checkbox"/> Slight	MARL	
Floating					<input type="checkbox"/> Moderate		
Emergent					<input type="checkbox"/> Heavy		
RIPARIAN VEGETATION					MIGRATORY OBSTRUCTIONS		
% of Stream Shaded	Examples				<input checked="" type="checkbox"/> None		
<input type="checkbox"/> 100 – 90%	N/A				Seasonal		Permanent
<input type="checkbox"/> 90 – 60%							
<input type="checkbox"/> 60 – 30%							
<input type="checkbox"/> 30 – 10%							
<input checked="" type="checkbox"/> 0%							
POTENTIAL CRITICAL HABITAT							
<input type="checkbox"/> Unknown <input type="checkbox"/> Spawning Habitat <input type="checkbox"/> Nursery Habitat <input type="checkbox"/> Deep Pools <input checked="" type="checkbox"/> Seasonal Refugia?? <input type="checkbox"/> Other					Comments: MUCKY BOTTOM		
GENERAL SITE COMMENTS							
OTHER MONITORING CONDUCTED							
N/A							
<input type="checkbox"/> None <input type="checkbox"/> Water Quality Sampling <input type="checkbox"/> Flow Monitoring <input type="checkbox"/> Fish Sampling <input type="checkbox"/> Benthic Sampling <input type="checkbox"/> Mussel Sampling							



AQUATIC HABITAT ASSESSMENT Watercourse

Project Name: <i>LANDMARK</i>	
Date: <i>JULY 19/18</i>	
Station Name: <i>DUPREBS</i>	Collectors: <i>PH EB</i>
Time Started: <i>14:00</i>	Time Finished:

GENERAL INFORMATION

Weather: <i>SUNNY, PART CLOUD 27°C</i>	Watercourse Name: <i>DETROIT RIVER</i>	Drainage System: <i>V</i>
---	---	------------------------------

GPS Co-ordinates:

LANDUSE <i>LAND USE ETC</i>		POLLUTION SOURCES			
Left Bank	Right Bank	Point		Non-Point	
<i>RES</i>	<i>COMM/UNDEVELOPED</i>	<i>RUNOFF</i>		<i>UPSTREAM</i>	
FLOW REGIME	CHANNEL FORM	BANK STABILITY		GROUNDWATER EVIDENCE	
<input checked="" type="checkbox"/> Flowing <input type="checkbox"/> Dry <hr/> <input type="checkbox"/> Permanent <input type="checkbox"/> Intermittent <input type="checkbox"/> Ephemeral	<input checked="" type="checkbox"/> Defined <input type="checkbox"/> Undefined <hr/> <input type="checkbox"/> Natural <input checked="" type="checkbox"/> Channelized <input type="checkbox"/> Swale	Stable <input type="checkbox"/> Vulnerable <input type="checkbox"/> Unstable <input type="checkbox"/> Protected <input checked="" type="checkbox"/>	Left <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Right <input checked="" type="checkbox"/>	None <input checked="" type="checkbox"/> Springs/Seeps <input type="checkbox"/> Vegetation (i.e. Watercress) <input type="checkbox"/> Iron Staining <input type="checkbox"/> Other <input type="checkbox"/>	

WATERCOURSE MORPHOLOGY

	Pool	Riffle	Run	Glide	Other
% Area				<i>100</i>	
Mean Wetted Width (m)				<i>7M</i>	
Mean Wetted Depth (m)				<i>UNWADEABLE</i>	<i>183cm - 203cm</i>
Mean Bankfull Width (m)				<i>7</i>	
Mean Bankfull Depth (m)				<i>1</i>	
Substrate (%)				<i>65 MU 5 CO 25 CL SA SAND</i>	

Substrate Options: BR – Bedrock; BO – Boulder; CO – Cobble; GR – Gravel; SA – Sand; SI – Silt; CL – Clay; MU – Muck; D – Detritus



GENERAL SITE INFORMATION FIELD SHEET

Project: LANDMARK - AMHERSTBURG FESTIVAL
 Date: JULY 19 2018 Project Manager: _____
 Collector(s): P.M. E.B. Visit #: 1
 Time started: 14:00 Time finished: 16:15 Combined collectors' hours: _____
☐ NHIC List ☐ MNR EO's ☐ none ☐ not provided to collector ☐

WEATHER CONDITIONS				WIND SCALE			
Temp.	Wind Speed and Direction	Cloud Cover (%)	Precipitation	0	Calm		
27	15-23km/h	40	Today: 0 Yesterday: 0	1	Smoke Drifts		
				2	Wind Felt on Face		
				3	Leaves in constant motion		
				4	Wind raises dust and paper		
				5	Small trees sway		
				6	Large branches sway		
				7	Lots of resistance when walking into		
				8	Limbs breaking off trees		
DATA FOCUS							
<input type="checkbox"/>	Birds 1_2_Mig_	<input type="checkbox"/>	ELC's	<input type="checkbox"/>	Dripline/Tree Survey		
<input type="checkbox"/>	Mammals	<input type="checkbox"/>	Floral V__S__A__	<input type="checkbox"/>	Aquatic - Physical		
<input type="checkbox"/>	Amphibians 1_2_3_	<input type="checkbox"/>	Wetland	<input type="checkbox"/>	Aquatic - Biological		
<input type="checkbox"/>	Reptiles	<input type="checkbox"/>	Butternut (BHA)	<input type="checkbox"/>	Faunal Habitat		
<input type="checkbox"/>	Invertebrates	<input type="checkbox"/>	other SAR	<input type="checkbox"/>	Other - see notes		
FEATURES (with GPS co-ordinates where applicable)							
Man-made Structures:				<input type="checkbox"/>	None observed		
				Mapped	Follow-up Req'd		
				UTM	Yes	No	Who
Yes No							
<input type="checkbox"/>	Barns/Footings/Wells/other(list)						
<input type="checkbox"/>	Rock Piles						
<input type="checkbox"/>	Garbage						
Natural Vegetation:				<input type="checkbox"/>	None observed		
<input type="checkbox"/>	Fallen Logs outside woods (#s)						
<input type="checkbox"/>	Brush Piles						
<input type="checkbox"/>	Snags (raptor perch)						
<input type="checkbox"/>	Tree Cavities (nesting)						
<input type="checkbox"/>	Sentinel Trees						
<input type="checkbox"/>	Butternut Identified						
<input type="checkbox"/>	Mast Trees (6E)			<input type="checkbox"/>	Berry Shrubs (6E)		
Wildlife Features:				<input type="checkbox"/>	None observed		
<input type="checkbox"/>	Waterfowl nesting (large #s, # of species)						
<input type="checkbox"/>	Exposed Banks (nesting swallows)						
<input type="checkbox"/>	Stick Nests						
<input type="checkbox"/>	Animal Burrows (>10cm)						
<input type="checkbox"/>	Heronry						
<input type="checkbox"/>	Crayfish mounds						
<input type="checkbox"/>	Sand/gravel on site						
<input type="checkbox"/>	Marsh/open country/shrub						
<input type="checkbox"/>	Winter Deer yards						
<input type="checkbox"/>	Corridor from pond to woods (amphibian movement)						
<input type="checkbox"/>	Bat corridor (shorelines, escarpments)						
<input type="checkbox"/>	Bat hibernacula (caves, mines, crevices, etc.)						
Aquatic Features:							
<input type="checkbox"/>	Perm. pond in woodland	<input type="checkbox"/>	emergents/submergents/logs	<input type="checkbox"/>	temp.		
<input type="checkbox"/>	Perm. pond in open	<input type="checkbox"/>	emergents/submergents/logs	<input type="checkbox"/>	temp.		
<input type="checkbox"/>	Water in woodland	<input type="checkbox"/>	pools	<input type="checkbox"/>	flowing		
<input type="checkbox"/>	Waterways	<input type="checkbox"/>	flowing	<input type="checkbox"/>	dry		
<input type="checkbox"/>	natural stream	<input type="checkbox"/>		<input type="checkbox"/>	pools		
<input type="checkbox"/>	swale	<input type="checkbox"/>		<input type="checkbox"/>	None observed		
<input type="checkbox"/>	open drain	<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>	Seeps/Springs	<input type="checkbox"/>		<input type="checkbox"/>			
Incidental Observations/Notes:							
- PAVEMENT NEAR RIVER ERODING							
- REGULARLY INUNDATED BY RIVER; NOT HIBERNACULA							
- BASW NESTING ON DOCK UNDERSIDE							
- NO SNAKES OBSERVED							
- NO WORDS NOTED IN SHORELINE PROTECTION							

Graphic ☐ Attached or Name

Checked by Project Manager ☐ Date: _____