Water

Windsor Utilities Commission

Potable Water Reservoir & Central Corridor Feedermain Municipal Class Environmental Assessment Schedule ‘B’ (Final)

Prepared by:

AECOM

410 – 250 York Street, Citi Plaza
London, ON, Canada N6A 6K2

519 673 0510 tel
519 673 5975 fax

350 Cabana Road East, Unit 4
Windsor, ON N9G 1A3
www.aecom.com

519.915 3080 tel
519.969.9420 fax

Project Number:

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Date:

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AECOM: 2012-01-06

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Revision Log

Revision #	Revised By	Date	Issue / Revision Description
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AECOM Signatures

Report Prepared By:

Neil Awde, P.Eng.,
Project Engineer

Nancy Martin
Project Coordinator

Paolo Eugeni, P.Eng.,
Project Manager

Report Reviewed By:

John Haasen, PMP
Senior Vice President

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1. Introduction

The Windsor Utilities Commission (WUC) initiated a Municipal Class Environmental Assessment (Class EA) study to determine the need, justification and conceptual features for:

1. A new central corridor feedermain to address operational constraints and improve overall operations and servicing capability/capacity to the outer limits of the service area; and
2. A new potable water reservoir to facilitate rehabilitation of the existing Reservoir D and improve system security and vulnerability.

AECOM Canada Ltd. (AECOM) was retained by WUC to complete this Municipal Class EA in accordance with the requirements for Schedule 'B' projects as described in the Municipal Engineers Association's "Municipal Class Environmental Assessment" document (October 2000, as amended in 2007 and 2011) and as outlined in the Request for Proposal No. 2011-004 (**Appendix A**). This report has been prepared to provide members of the public, stakeholders, Aboriginal communities and review agencies with a structured overview of the screening process to ensure Municipal Class EA requirements have been met.

1.1 Report Format

This report presents the planning and public consultation work completed for the project. It includes:

- An overview of the project;
- Project objectives;
- Project requirements;
- An overview of the Class EA process;
- Identification and description of the problem to be addressed;
- An overview of existing environmental conditions;
- Identification, development and evaluation of solutions;
- Correspondence related to the project;
- Public consultation details;
- A description of the preferred solutions; and
- Conceptual design and recommended mitigation and compensation measures for the preferred solution.

1.2 Project Overview

The WUC owns and operates an integrated water supply system that provides treated water to the City of Windsor, the Town of LaSalle and the Town of Tecumseh. The WUC water system currently relies on treated water storage provided by Reservoir D at the Albert H. Weeks Water Treatment Plant (WTP), and distribution storage provided at the J. F. Cook Reservoir and Pumping Station, the Hanna Street elevated storage tank and the Tecumseh elevated storage tank.

The WUC is proposing to construct a new central corridor feedermain from the Albert H. Weeks WTP campus to the J.F. Cook Reservoir Pumping Station to increase transmission main capacity as recommended in the Windsor Water System Master Plan (WMP). Currently, the Cook Reservoir can fill either by way of the existing watermain or pump to the system but not both. A new dedicated feedermain to the Cook Reservoir will address this issue as well as

current pressure problems in the southwest area of Windsor and to service the Town of LaSalle, the Town of Tecumseh and development area around the Windsor airport in the future.

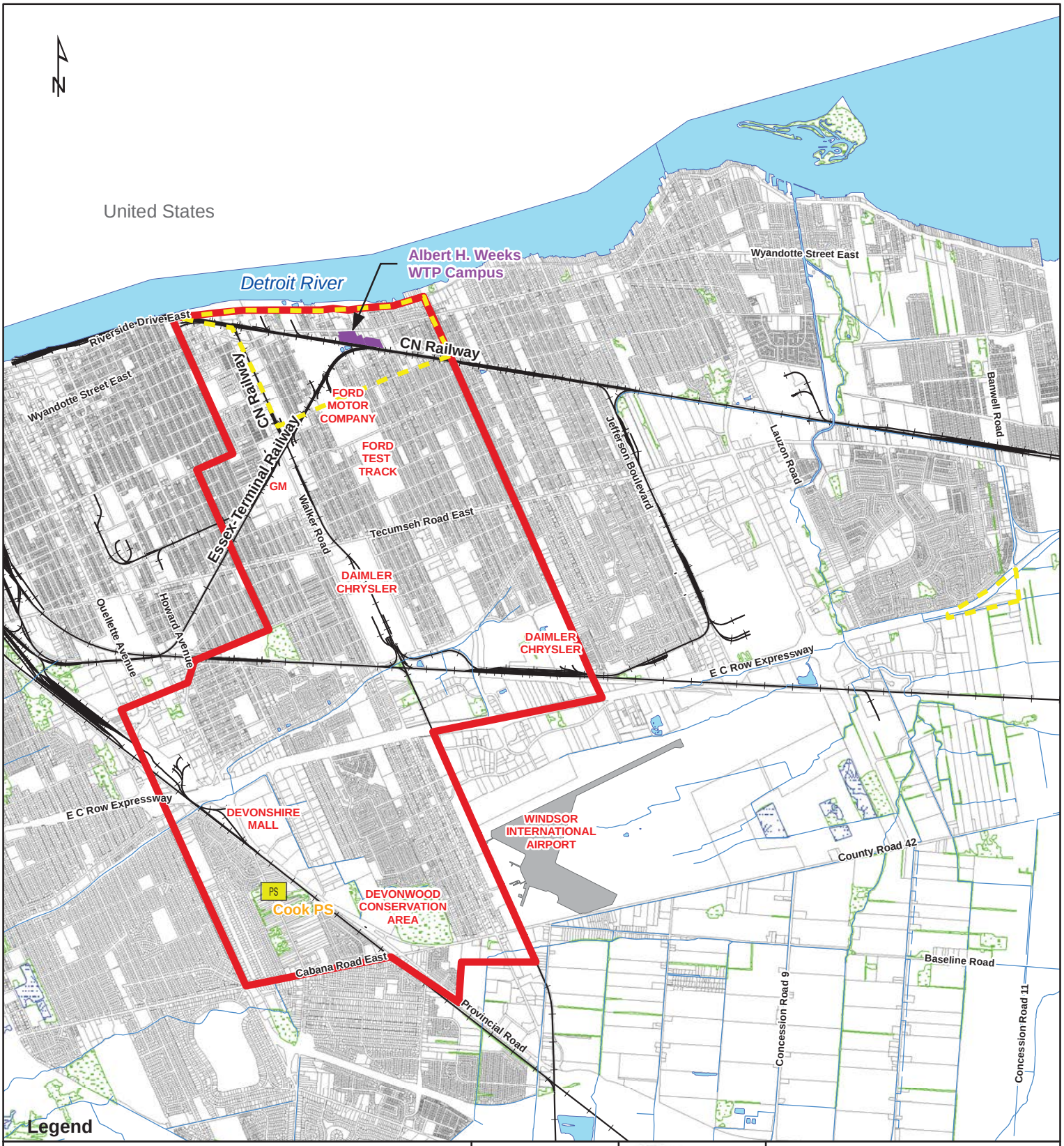
The WUC is also proposing construction of a new potable water reservoir, also identified in the WMP, to facilitate necessary rehabilitation of the existing Reservoir D at the Albert H. Weeks WTP and to improve existing system security and vulnerability protection. Additional details surrounding the need and sizing of the new reservoir are provided in Sections 3.2 and 4.5 herein.

Figure 1.1 identifies the combined study areas for both aspects of this Class EA.

1.3 Project Objectives

The primary objectives of this project are to confirm the most optimum route for the central corridor feedermain and to identify a location for the potable water reservoir in accordance with the Municipal Engineers Association (MEA) Municipal Class EA guidelines. The study incorporates key planning principles including public consultation, assessment of a reasonable range of solutions, consideration of the natural, social, economic and technical environments and provides clear documentation. The following components were undertaken as part of this study:

- Identify and evaluate alternative right-of-way (ROW)/feedermain routing and reservoir locations in the context of social, natural environment, technical and economic opportunities or constraints to provide a stable supply of water to the study area;
- Assess system operation for the WUC, the proposed central corridor feedermain, the existing reservoir, the existing water system and twinned feedermain interconnection, operating philosophy, etc.;
- Confirm feedermain sizing along the preferred route, feedermain and/or facility locations in easements, utility corridors and/or ROWs and proximity to adjacent utilities (power supplies, high pressure gas mains, water crossing, rail lines, highways);
- Confirm reservoir sizing to accommodate rehabilitation of Reservoir D and improve system security;
- Undertake conceptual design of proposed works, construction cost estimates and timing for implementation;
- Confirm new reservoir outlet/inlet requirements and/or system interconnections;
- Consult with members of the public, stakeholders, Aboriginal communities and relevant agencies; and
- Complete a Screening Report, documenting a summary of the rationale, planning, design and consultation process undertaken to establish the preferred solution.


United States
Albert H. Weeks WTP Campus
Detroit River
Riverside Drive East
Wyandotte Street East
CN Railway
CN Railway
Essex Terminal Railway
FORD MOTOR COMPANY
FORD TEST TRACK
GM
Walker Road
Tecumseh Road East
DAIMLER CHRYSLER
DAIMLER CHRYSLER
Ouellette Avenue
Howard Avenue
E C Row Expressway
E C Row Expressway
DEVONSHIRE MALL
PS
Cook PS
DEVONWOOD CONSERVATION AREA
Cabana Road East
Provincial Road
WINDSOR INTERNATIONAL AIRPORT
County Road 42
Baseline Road
Concession Road 9
Concession Road 11
Jefferson Boulevard
Lauzon Road
Banwell Road
Wyandotte Street East
Legend
PS Existing Pump Station
Lot Line
AH_Weeks_WPT_Campus
Reservoir Study Area
Feedermain Study Area
Watercourse/Drain
Railway
Wetland
Wooded Area
AECOM
WINDSOR UTILITIES COMMISSION
Datum:
NAD 83 UTM Zone 17 N
Source:
Windsor Utilities Commission
0 0.5 1 2
Kilometres
August 2014
Scale: 1:60,000
Windsor Utilities Commission
Potable Water Reservoir and Central Corridor Feedermain
Municipal Class EA
Schedule 'B'
Figure 1.1
Study Area

2. Municipal Class Environmental Assessment Process

Municipalities in Ontario, as well as utility commissions, such as the Windsor Utilities Commission, are subject to the provisions of the *Environmental Assessment Act* (EA Act) and its requirements to prepare a Class EA for applicable public works projects. The Ontario MEA "Municipal Class Environmental Assessment" document (October 2000, as amended in 2007 and 2011) provides municipalities with a five-phase planning procedure approved under the EAA to plan and undertake all municipal sewage, water, stormwater management, and transportation projects that occur frequently, are usually limited in scale and have a predictable range of environmental impacts and applicable mitigation measures.

Key components of the Class EA planning process include:

- Consultation early and throughout the process;
- Determine a reasonable range of alternatives;
- Consideration of effects on the environment and ways to avoid/reduce impacts;
- Systematic evaluation of alternatives;
- Documentation of the process; and
- Traceable decision making.

2.1 Types of Projects

Based on the MEA Class EA document, projects are classified as either Schedule "A", "B" or "C" projects. Each of these classifications requires a different level of review to complete the requirements of the Class EA, and thus comply with the EAA, as noted below:

Schedule "A" Projects are limited in scale, have minimal adverse effects and include the majority of municipal sewage, stormwater management and water operations, and maintenance activities. These projects are pre - approved and may be implemented without following the procedures outlined in the Class EA planning process.

Schedule "A+" The purpose of this schedule is to provide public notification for specific projects that are pre-approved under the Class EA where the proponent shall notify the public of infrastructure projects being implemented in their area. The public has the right to comment to municipal officials /council in their area. However, considering that the projects are pre-approved there is no appeal process to the Minister of the Environment on these projects.

Schedule "B" Projects have the potential for some adverse environmental effects. The proponent is required to undertake a screening process involving mandatory contact with directly affected public and relevant review agencies to ensure that they are aware of the project and that their concerns are addressed where possible.

Schedule "B" projects require that Phases 1 and 2 of the Class EA planning process be followed and a Project File/report be prepared and submitted for review by the public. If there are no outstanding concerns raised by the public and/or review agencies, then the proponent may proceed to project implementation (Phase 5). If however, the screening process raises a concern that cannot

be resolved, then the Part II Order[1] procedure (formerly referred to as a "bump-up") may be invoked. Alternatively, the proponent may voluntarily elect to plan the project as a Schedule "C" undertaking (described below).

Schedule “B” projects generally include improvements and expansions to existing facilities where there is the potential for some adverse environmental impacts. As a result, the proponent is required to proceed through a screening process including consultation with those who may be affected. Examples of Schedule “B” projects include activities such as the construction of new roads (less than $2.4M), road widening and installation of traffic control devices. As a result, the proponent is required to proceed through a screening process (Phases 1 and 2) including consultation with those who may be affected.

Schedule “C” Projects that have the potential for significant environmental effects must proceed under the full planning and documentation procedures (Phases 1 to 4) specified in the Class EA document. Schedule "C" projects require that an Environmental Study Report (ESR) be prepared and submitted for review by the public. If concerns are raised that cannot be resolved, then the Part II Order procedure may be invoked.

Schedule “C” projects typically include the siting and construction of new facilities as well as major expansions to existing facilities, such as water or wastewater treatment plants. An example of a Schedule “C” project would be construction of a new water system including a new well and water distribution system.

2.2 Class Environmental Assessment Phases 1-5

Figure 2.1 illustrates the process followed in the planning and design of projects covered by a MEA Class EA. The figure incorporates steps considered essential for compliance with the requirements of the EA Act that are summarized below.

The five phases of the Class EA process are summarized below:

Phase 1 Identify the problem (deficiency) or opportunity.

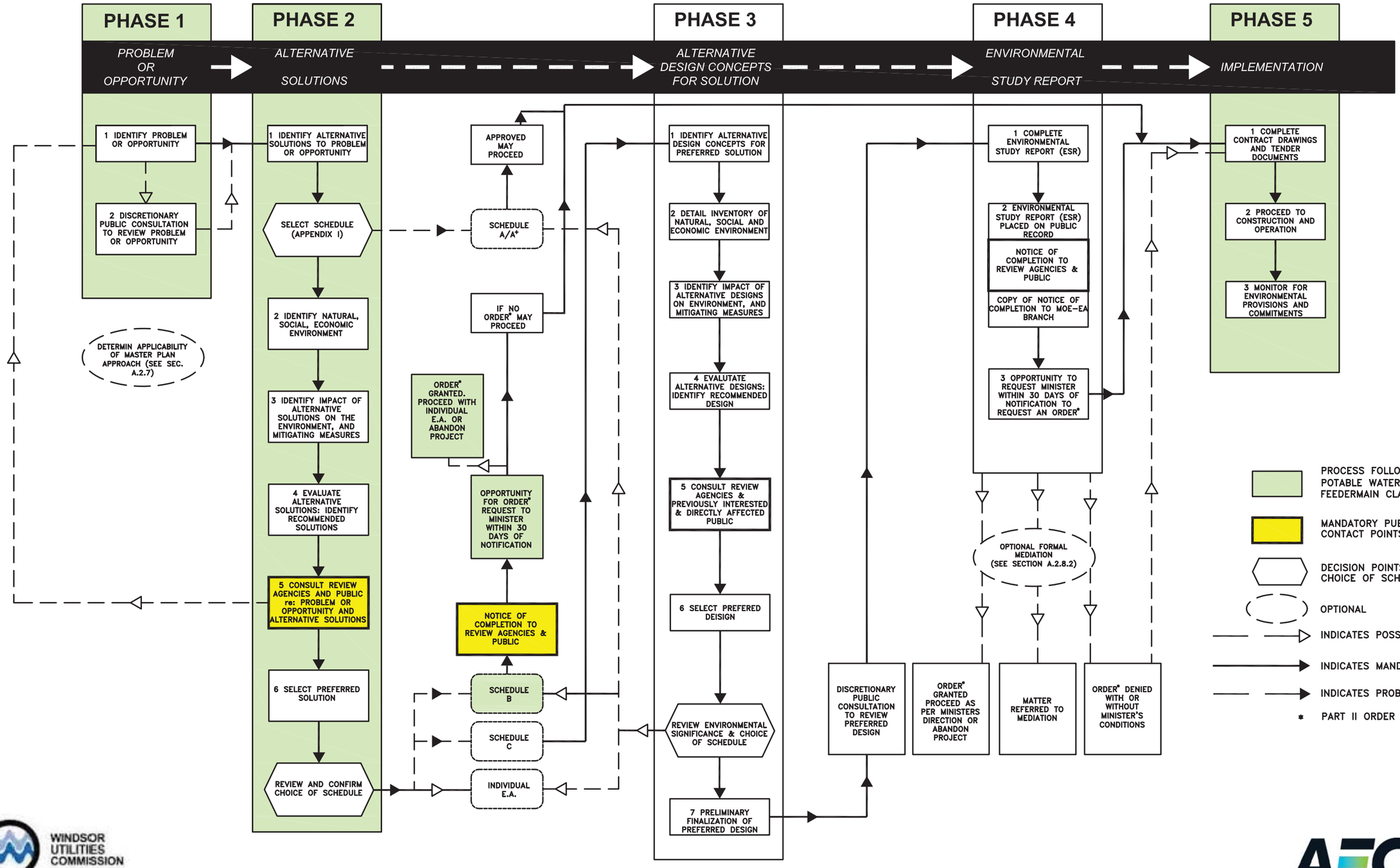
Phase 2 Identify alternative solutions to the problem or opportunity by taking into consideration the existing environment and establish the preferred solution accounting for public and agency review and input. Document the planning process in a Municipal Class EA project file and make such documentation available for scrutiny by review agencies and the public.

Phase 3 For Schedule “C” projects, examine alternative methods of implementing the preferred solution based upon the existing environment, public and government agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.

Phase 4 For Schedule “C” projects, document, in an ESR, a summary of the rationale and the planning, design and consultation process followed in the project and make such documentation available for scrutiny by review agencies and the public.

[1] *Part II Order refers to a request to the Minister of the Environment for a project to comply with Part II (addresses Individual Environmental Assessments) of the EAA. The requirement to prepare an Individual Environmental Assessment (EA) involves the preparation of a Terms of Reference and EA document that are submitted to MOE, other government agencies and the public for review.*

Figure 2.1 : PLANNING AND DESIGN PROCESS FOR MUNICIPAL CLASS EA PROJECTS



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Phase 5 Complete contract drawings and documents; proceed to construction and operation and monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor the operation of the completed facilities.

The MEA Class EA document identifies work undertaken to ***'establish new or expand/enlarge existing water storage facilities,*** and to ***'establish, extended or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, where such facilities are not in either an existing road allowance or an existing utility corridor'*** as Schedule "B" projects. To adequately address the technical and environmental needs associated with the central corridor feedermain and potable water reservoir, AECOM has undertaken this study in accordance with Class EA Schedule 'B' requirements (as amended in 2007 and 2011). This study was subject to Phases 1 and 2 of the Class EA process which included identifying the problem (deficiency) or the opportunity, identifying alternative solutions to address the problem/opportunity taking into consideration the existing environment, establishing a preferred solution, and taking into account review agency and stakeholder input.

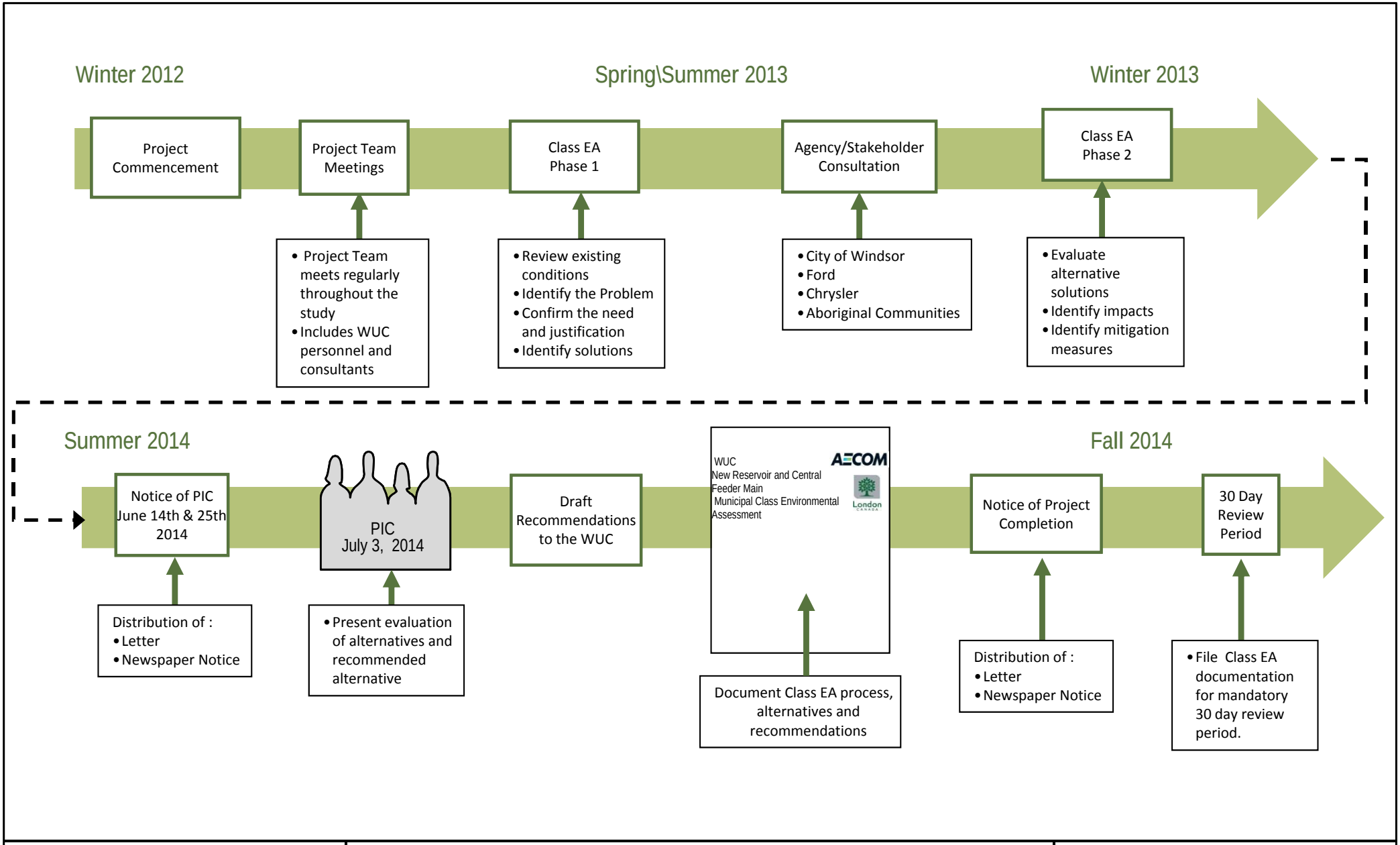
2.3 Consultation and Communication Program

Public involvement is an important part of the study process therefore several steps have been completed to inform members of the public, stakeholders, Aboriginal communities and review agencies about the project and to solicit their comments. The following mandatory points of contact as well as specific methods for contacting and consulting with stakeholders were undertaken. These include:

- Direct mailing to affected land owners, stakeholders and review agencies regarding notice of project milestones; including a Notice of the Commencement/Public Information Centre (PIC) and a Notice of Completion.
- Consultation with Aboriginal communities to determine the potential affect on their lands/treaty rights and their interest in the study. Consultation was carried out through direct correspondence to Aboriginal Affairs and Northern Development Canada (AANDC), Ministry of Aboriginal Affairs, Algonquin Consultation Office and local councils (Aamjiwnaang First Nation, Bkejwanong Territory, Chippewas of Kettle & Stony Point, Oneida Nation of the Thames, Chippewas of the Thames, Munsee-Delaware Nation, Delaware Nation and Caldwell First Nation).
- Consultation with agencies included a meeting with City of Windsor staff (September 2012) to determine potential central corridor feedermain routing.
- Consultation with stakeholders, including Chrysler Canada (September 2013) and Ford Motor Company (December 2013) to discuss potential feedermain route alignments and reservoir location options within their properties.
- A PIC was held in Phase 2 to provide background information with respect to the project, the Class EA process being followed, the preliminary planning solutions reviewed, the recommended preferred alternatives and to collect stakeholder input.
- Newspaper notices for all project milestones including Notice of Commencement/PIC (June 14 & June 25, 2014) and Notice of Completion (September 24 & 27, 2014).
- All notifications and documentation have been posted on the WUC website at: www.wuc.on.ca.

Further details regarding project consultation and is provided in **Sections 5.4** of this report.

Figure 2.2 provides an overview of the Class EA and consultation process followed for this project.



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P0TABLE WATER RESERVOIR AND CENTRAL CORRIDOR
FEEDERMAIN MUNICIPAL CLASS ENVIRONMENTAL
ASSESSMENT SCHEDULE 'B

Date: August 2014

PN: 60239211

Figure 2.2:
Consultation Process

3. Problem Statement and Justification

As part of Phase 1 of the Class EA process, the problem or deficiency to be addressed is identified to provide a clear understanding of the project need or opportunity which may not be evident. It is necessary to document all factors which lead to the conclusion that an improvement or change is necessary. This section of the report defines the project need and provides justification for the WUC to undertake this Municipal Class EA.

3.1 Problem Statement

Through completion of the Windsor WMP, the following operational constraints and vulnerabilities were identified associated with the provision of water within the WUC water supply system.

System Operation and Supply to Outer Limits of the Service Area

- Replenishing of the Cook Reservoir significantly reduces system pressure for the areas near the existing reservoir.
- When pumping is increased at the A.J. Brian and/or George Avenue Pumping Stations to increase pressure at the southern part of the system, the potential for overflow of the Hanna Street tower can occur.
- As water demand increases in the Town of Tecumseh, the collective headloss (energy loss) of the existing system will increase the difficulty of maintaining the balance of system pressures and storage tank levels.

System Storage Capacity and Security of Supply

- A preliminary internal inspection of the existing Reservoir D indicated debris within the reservoir and vertical cracking along the sides. The reservoir is a single-celled storage system. Therefore, phased repairs cannot be accomplished while the reservoir is online (operational). Storage deficit and operational constraints will occur while Reservoir D is offline for rehabilitation.
- While the existing water supply system currently achieves the objectives of the Ministry of Environment (MOE) guidelines for system storage, the system has far less than a single day of total storage capacity during average daily demands under emergency conditions.

3.2 Justification

This following section identifies the infrastructure works necessary to address the above constraints and provides justification for WUC to undertake this Municipal Class EA.

3.2.1 Background

The 2009 Windsor WMP identified a number of infrastructure requirements to address system vulnerabilities and growth impacts to 2048. The preferred servicing strategy outlined in the WMP was based on the premise of storing and pumping water from the central A.J. Brian and/or George Street Pumping Station facilities to the south and east of the City of Windsor. Two of the primary recommendations of the 2009 WMP were the central corridor feedermain and a potable water reservoir.

As detailed in the Windsor WMP and illustrated by **Figure 3.1** below, Watermain No.1a (WM1a) was identified as the WUC's primary water feed and was deemed undersized to provide sufficient supply to the Cook Pumping Station and Reservoir, and sufficient pressures in the southwest area of Windsor as well as the Town of LaSalle in the future. WM1a also provides a main feed to the southeast portion of Windsor and the southern portions of the Town

of Tecumseh. To remedy the pressure constraints, the WMP identified a requirement to either upsize or twin the existing watermain subject to pipe conditions and anticipated remaining life span. Routing for this undertaking was tentatively identified in the WMP as along Turner Road from the heavily built-up area east of the City's core to County Road 42.

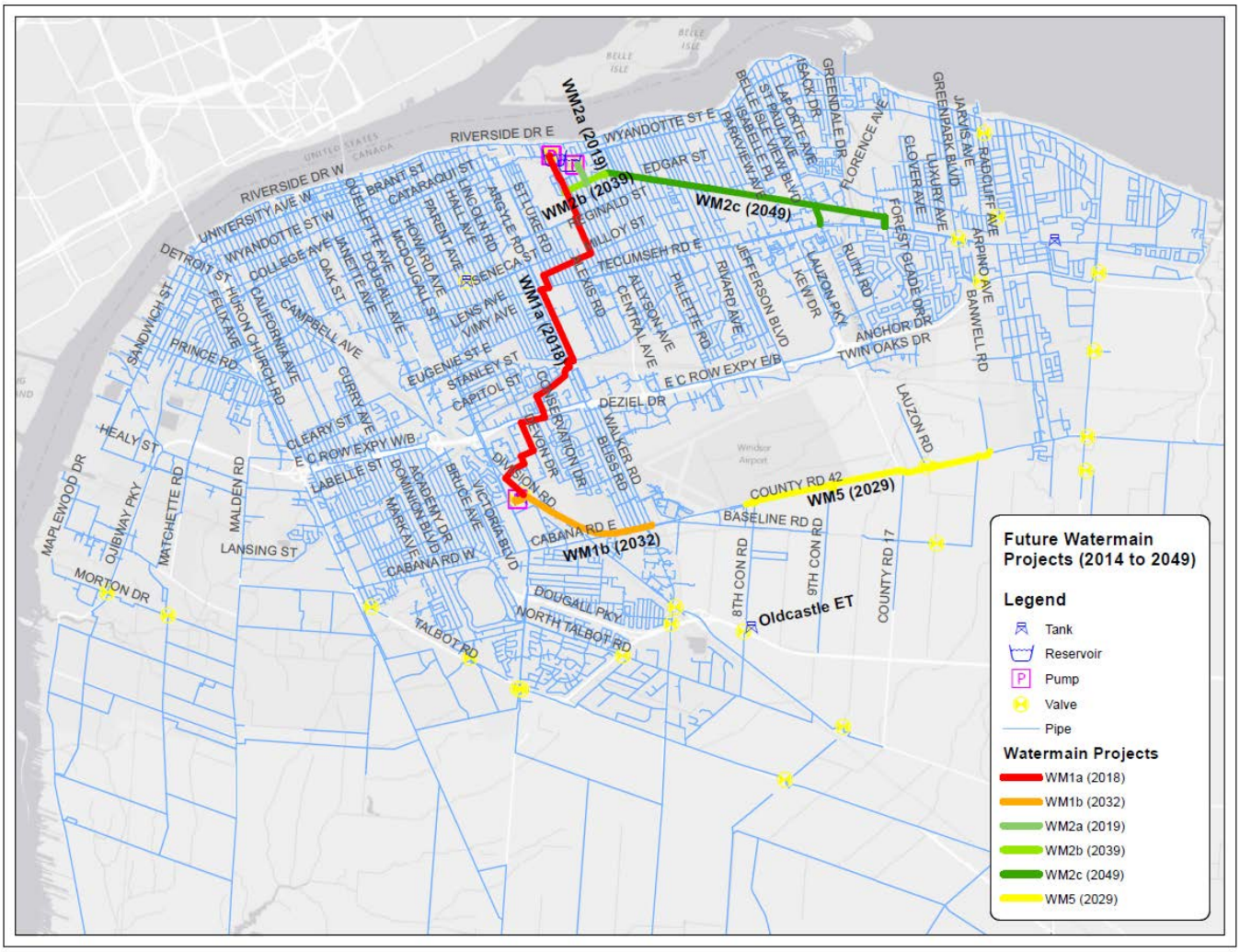


Figure 3.1: Windsor Water Master Plan (2014) Recommended Capital Projects

The 2009 WMP also reviewed the need for additional potable water storage capacity to accommodate growth requirements to 2048 as well as rehabilitation of the existing Reservoir D. The existing storage facilities provided a surplus capacity of approximately 14 ML in 2009, but a deficit of approximately 34 ML would exist by 2048, based on MOE criteria. As a result, the WMP recommended construction of a potable water storage reservoir to address the storage deficit projected to 2048 as well as the storage deficit resulting from the immediate need for rehabilitation of the existing Reservoir D.

Since completion of the 2009 Windsor WMP, the WUC has completed additional water system modelling based on revised population projections. This work, identified in the Windsor WMP Update (2014) resulted in projected populations and peaking factors being revised downward based on actual trends. Analysis completed to date concluded that the servicing strategy outlined in the 2009 WMP remains hydraulically feasible under existing (2014)

and ultimate (2049) scenarios. Therefore the proposed twinning or upsizing of WM1a to address pressure problems in southwest Windsor, and to service southeast Windsor and the Towns of LaSalle and Tecumseh in the future, remains valid. However, given the MOE storage evaluation criteria is directly proportional to the maximum daily demand, the reduction in population projections has had an impact on storage requirements. Based on the revised population projections, the existing storage facilities will provide sufficient capacity well into the future – based solely on MOE criteria. However, the immediate need for rehabilitation of the existing Reservoir D still results in a temporary storage deficit that must be addressed through the provision of a potable water storage reservoir.

See **Appendix B** for the Windsor WMP Update (2014) (filed under separate cover). The Windsor WMP (2009) can be found on the WUC website (www.wuc.on.ca/information/water_reports.cfm).

3.2.2 Central Corridor Feedermain

AECOM used an all pipe model to identify a new servicing strategy that could potentially maximize the benefit of the proposed feedermain to replenish the Cook Reservoir. A dedicated feedermain used to transfer water to the Cook reservoir only would accomplish this.

In the original WMP, the proposed feedermain was integrated with multiple connections between the main system and the distribution system. Under this scenario, the WTP would provide flow to the feedermain which would carry water to both the Zone 1 distribution system and the Cook Reservoir.

Under the new strategy all connections between the new feedermain and the local distribution system would remain closed with the WTP supplying both the feedermain (and thereby the Cook Reservoir), and the Zone 1 distribution system.

Modeling results comparing the original integrated feedermain option with the new dedicated option indicated that:

- Under 2014 Maximum Day Demand the dedicated feedermain:
  - Will provide similar hydraulics for the replenishment of the existing elevated tanks (Hanna and Tecumseh);
  - Can significantly improve system pressure in the southern part of the system;
  - Can greatly improve utilization of the Cook Pumping Station;
  - Can provide adequate fire flow to the system;
  - Can significantly reduce water age in the Cook Reservoir.

- Under 2049 Maximum Day Demand the dedicated feedermain:
  - Will provide similar hydraulics for replenishment of the floating storage facilities (Hanna, Tecumseh and Old Castle in the future);
  - Will slightly improve system pressure in the southern part of the system;
  - Can greatly improve utilization of the Cook Pumping Station;
  - Can provide adequate fire flow to the system;
  - Can significantly reduce the water age in the Cook Reservoir.

3.2.3 Potable Water Reservoir

In recognition of Reservoir D requiring rehabilitation in the near term, the WUC requested that AECOM conduct a high level review of existing constraints and requirements to facilitate the repair and rehabilitation of Reservoir D. The intent of the review was to identify technical constraints and potential operational limitations that would be used

to evaluate storage alternatives. The following points summarize the primary constraints of removing Reservoir D from service for rehabilitation.

- Reservoir D is a treated water reservoir; therefore, it must be taken out of service to facilitate any significant repair work and be properly disinfected prior to being placed back into service. 'Live' repairs and modifications to the reservoir cannot be performed due to regulatory requirements, contamination risks and constructability constraints.
- Reservoir D is a single-celled reservoir, thus phased repairs cannot be accomplished (i.e. repairs cannot be completed to one section of the reservoir while operating another).
- Reservoir D is the only significant treated water reservoir at the WTP campus, therefore, it provides all equalization storage for operation of the treatment and pumping systems.
- Under normal operations, the existing high lift pumping stations (A.J. Brian and George Avenue) draw treated water from Reservoir D for pumping to the distribution system.
- Reservoir D is the largest potable water reservoir in the WUC water system (66.8 ML). Temporary removal of this reservoir from service would result in a significant storage deficit which would present operational challenges as well as vulnerabilities in the event of emergencies (e.g. raw water contamination, treatment plant shut down, major fire, etc.).
- The extent of rehabilitation required to Reservoir D will be determined once the reservoir can be drained for a detailed inspection. Should significant repairs be required, rehabilitation of the reservoir could last upward of one year.

Based on items above, a potable water reservoir was deemed necessary to facilitate rehabilitation of the existing Reservoir D.

It was also noted that security of supply may be an issue with only Reservoir D as there is little redundancy and current storage capacity is less than optimal.

- With current storage capacity, WUC had approximately 82% of one average day of storage in 2013 and will have approximately 63% of one average day of storage in 2049.
- With current storage capacity and a new 35 ML reservoir, WUC will have approximately 102% of one average day of storage in 2019 and will have approximately 82% of one average day of storage in 2049.

The addition of the new reservoir will bring storage capacity within acceptable standards for the foreseeable future.

4. Existing Conditions

This section of the report summarizes existing conditions (i.e., socio-economic/cultural environment, natural environment, technical environment and policy and/or approval requirements) relative to the potential alternatives and the service area. This information was used to confirm, assess and evaluate alternatives and their potential environmental impacts and mitigating measures.

4.1 Background

The WUC currently supplies water to the Municipalities of Windsor, Tecumseh and LaSalle. Water is taken from the Detroit River at the Albert H. Weeks WTP campus, which is owned and operated by the WUC. Water is treated and stored at Reservoir D (66.8 ML) which is the only significant treated water reservoir at the WTP. It provides all equalization storage for operation of the treatment plant and pumping systems. After treatment, water is discharged to trunk watermains by high lift pumps at the A.J. Brian and/or George Avenue Pumping Stations. Approximately 1,100 km of watermains with sizes ranging from 150 mm to 1,800 mm diameter supplies the service area from the high lift pumping stations.

Distribution system storage and pumping facilities maintain service levels to the extremities of the system. The J.F. Cook Reservoir (44.5 ML) and Pumping Station located on Howard Avenue, an existing elevated water tank located on Hanna Street (5.7 ML) and an existing elevated water tower in the Town of Tecumseh (4.5 ML) provide this additional storage capacity. High lift pump operation at the A.J. Brian and/or George Avenue Pumping Stations is controlled based on system pressures within the water distribution network.

The entire water supply system is operated as a single pressure zone. Flows to the Town of LaSalle and the Town of Tecumseh are sold wholesale based on flow monitoring at boundary flow meters.

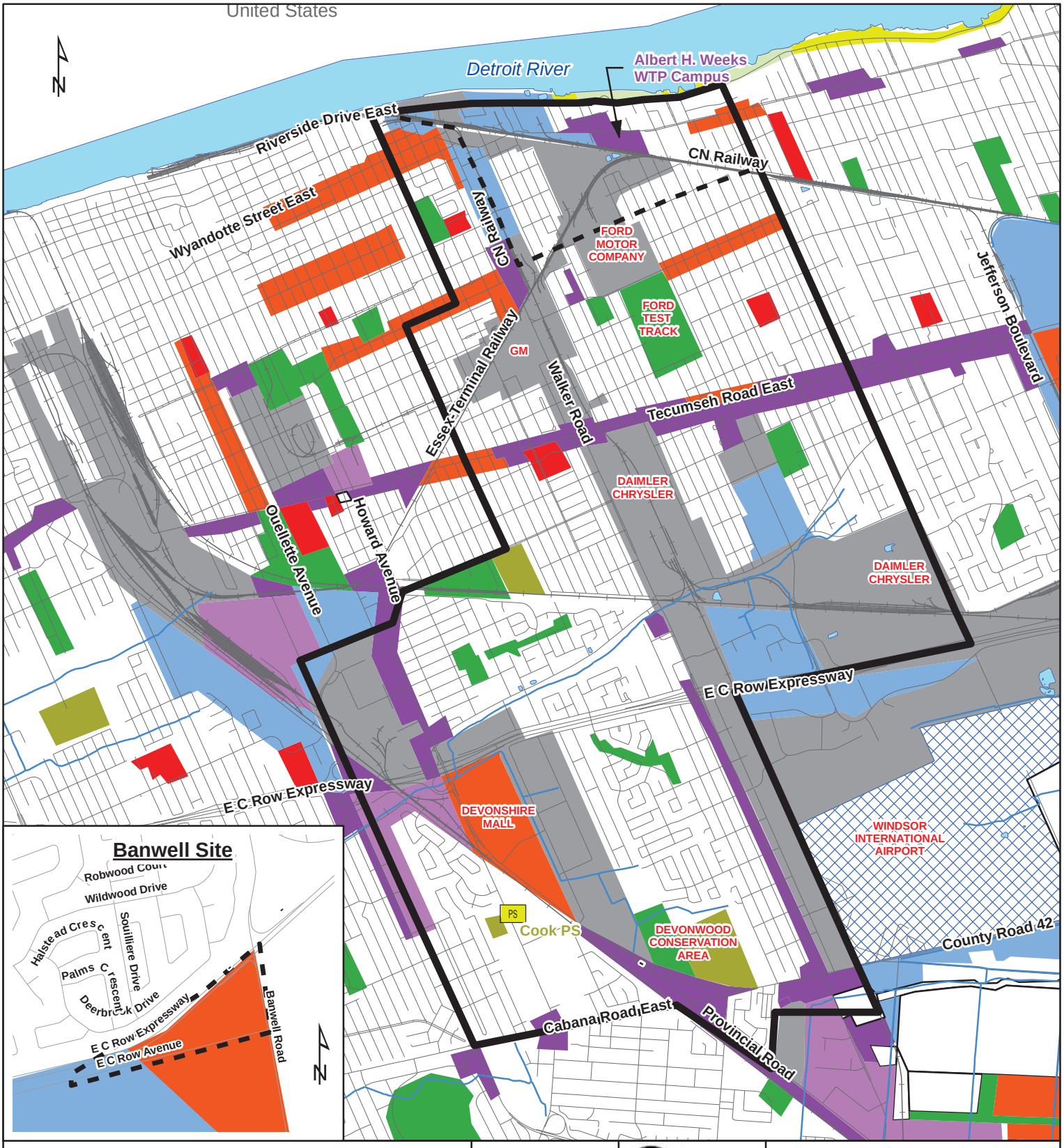
4.2 Socio-Economic Environment

Schedule D of the City of Windsor Official Plan illustrates the land uses within the study area corridor (**Figure 4.1**). The study area contains the following five land uses:

- Open Space – (Ford Test Track), north section of the study area, south of Seminole Street, west of George Street
- Mixed Use – south of E.C. Row Expressway and north of Division Road
- Industrial – adjacent to the CNR corridor and south of E.C. Row Expressway
- Commercial Corridor – south of Wyandotte Street, Walker Road and Tecumseh Road intersection, Walker Road and Grand Marais Road East intersection,
- Residential – north of Wyandotte Street and CNR corridor, east/west of George Street, east/west of Drouillard Road, west of Walker Road, north/south of EC Row Expressway, east of Howard Avenue.

4.3 Archaeology

AECOM undertook a Stage 1 archaeological assessment for the central corridor feedermain routing. The Stage 1 evaluation resulted in the determination that there is a high potential for both Aboriginal and Euro-Canadian archaeological resources to be present in the general region surrounding the feedermain route. However, due to the long history of urban development, the majority of the land within the study area limits has been extensively and intensively previously disturbed. The ROW, including culvert areas, gravel shoulders, and associated drainage ditches do not require Stage 2 archaeological assessment (Ontario Government 2011b; Section 1.3.2) as the area


United States
Detroit River
Albert H. Weeks WTP Campus
Riverside Drive East
Wyandotte Street East
CN Railway
CN Railway
FORD MOTOR COMPANY
FORD TEST TRACK
Jefferson Boulevard
GM
Essex Terminal Railway
Walker Road
Tecumseh Road East
DAIMLER CHRYSLER
DAIMLER CHRYSLER
Howard Avenue
Ouellette Avenue
E C Row Expressway
E C Row Expressway
DEVONSHIRE MALL
WINDSOR INTERNATIONAL AIRPORT
PS
Cook PS
DEVONWOOD CONSERVATION AREA
County Road 42
Cabana Road East
Provincial Road
Banwell Site
Robwood Court
Wildwood Drive
Halstead Crescent
Souillière Drive
Palms Crescent
Deerbrook Drive
E C Row Expressway
E C Row Avenue
Banwell Road
Legend
Residential
Airport
Commercial Corridor
Waterfront Recreation
Waterfront Residential
Natural Heritage
Major Industrial
Commercial Centre
Reservoir Study Area
Open Space
Business Park
Mixed Use
Industrial
Feedermain Study Area
AECOM
WINDSOR UTILITIES COMMISSION
Datum:
NAD 83 UTM Zone 17 N
Source:
City of Windsor
Officail Plan
Schedule D
0 0.5 1 2
Kilometres
August 2014
Scale: 1:43,000
Windsor Utilities Commission
Potable Water Reservoir and
Central Corridor Feedermain
Municipal Class EA
Schedule 'B'
Figure 4.1
Landuse

under consideration has been subject to extensive land alterations that have severely damaged the integrity of any archaeological resources that may have been present. However, there are small sections within each alternative route that will require further Stage 2 investigation, centered on the Grand Marais Drain that runs through the study area. Until the central corridor feedermain design is finalized, the extent of the area to be impacted cannot be accurately evaluated.

AECOM also conducted Stage 1 and 2 archaeological assessments for the George Avenue Park reservoir location. The Stage 1 background study indicated that the reservoir study area had the potential to contain archaeological resources; however the Stage 2 field investigation did not result in the identification of any archaeological sites or material. As no archaeological sites or material were identified during the course of this Stage 1 and 2 archaeological assessment, archaeological concerns under land use planning are considered addressed and no further archaeological assessment is required at this site.

See **Appendix C** for the Archaeological Assessments.

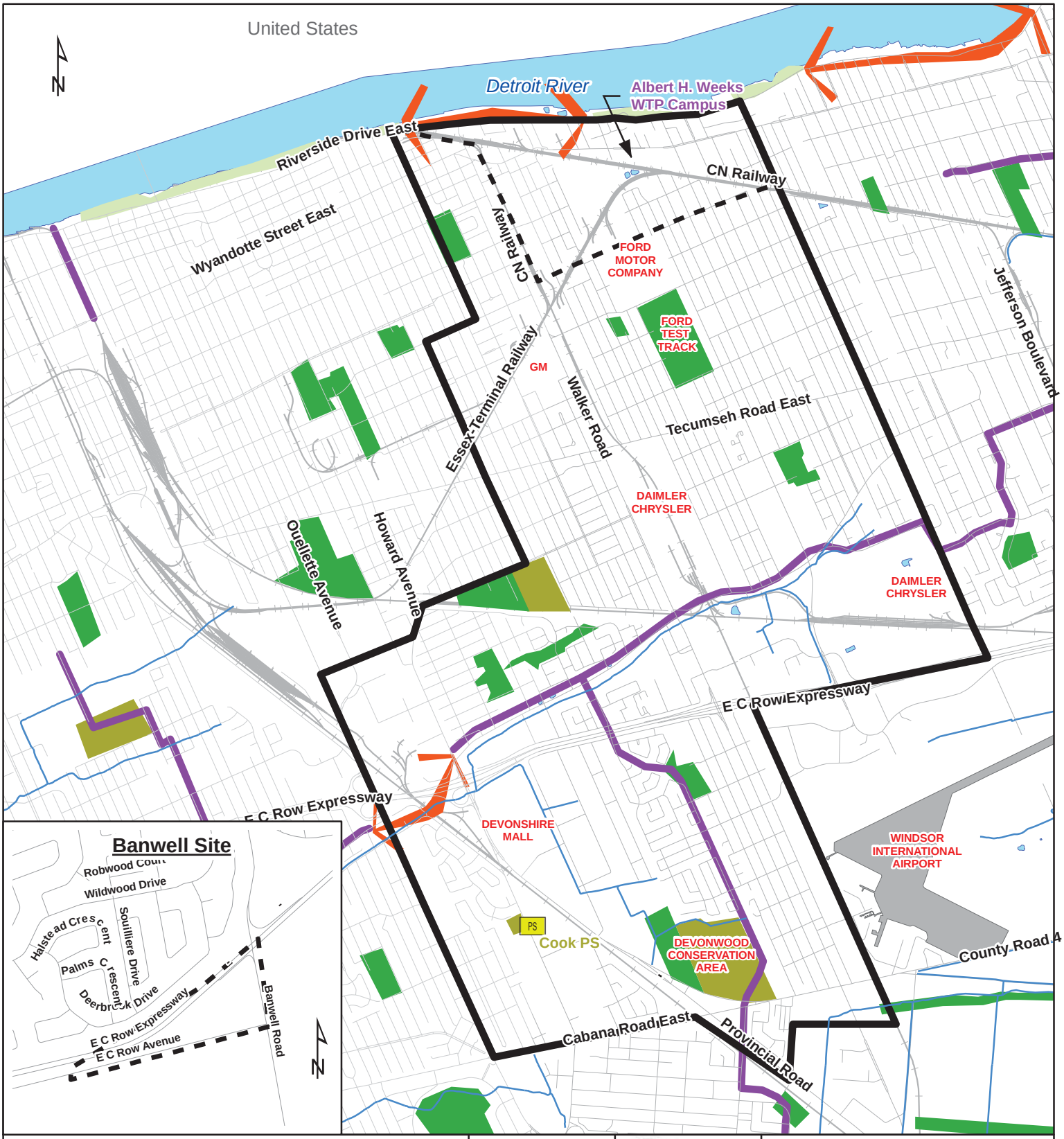
4.4 Natural Environment

Schedule B of the City of Windsor Official Plan illustrates the Greenway System. This planned network includes conservation lands, community and regional parks, natural heritage areas, parks and recreational linkages within the City of Windsor and the study area (**Figure 4.2**). Primary parks within the area include the Ford Test Track, a park located at the southeast corner of Seminole Street and Drouillard Road, the Walker Homesite Park and Harris Farms Park.

Devonwood Conservation Area is located within the study limits and is identified on Schedule B as Natural Heritage. Lands identified as Natural Heritage provide for the protection and conservation of Windsor's most environmentally significant and sensitive natural areas, including provincially designated areas of natural and scientific interest (ANSI) and wetlands. Devonwood Conservation Area is a 44ha forested site typical of Essex County. Vegetation types present are predominantly lowland forest with red ash-white elm - pine oak and bur oak. Disturbances to the site include pasturing, logging, trails, forest management and dirt bikes. Special features of this site include an abundance of oak species including Q. palustris, Q. shumardii, and several hybrid oaks (pin x black; bur x swamp white, shumard x black).

Recreation routes, identified as 'recreationways' on Schedule B, are located along the Grand Marais corridor and south of E.C. Row Expressway, west of Woodward Boulevard where it connects with the Devonwood Conservation Area.

Within the study area but not identified on Schedule B is the Grand Marais Drain. This is an open- municipal drain that is not rated under Fisheries and Oceans Canada (DFO). A Species at Risk (SAR) search was completed using the Natural Heritage Information Centre's (NHIC) biodiversity explorer. **Table 4.1** details 15 species listed under the Species at Risk of Ontario (SARO) which may be present within the drain corridor. If necessary, further assessment may be required prior to finalizing the central corridor feedermain routing. Mapping provided by the Essex Region Conservation Authority (ERCA) mapping shows no fish/mussel SAR within the study area.


United States
Detroit River
Albert H. Weeks WTP Campus
Riverside Drive East
CN Railway
Wyandotte Street East
CN Railway
FORD MOTOR COMPANY
FORD TEST TRACK
GM
Essex-Terminal Railway
Walker Road
Jefferson Boulevard
Tecumseh Road East
DAIMLER CHRYSLER
Ouellette Avenue
Howard Avenue
DAIMLER CHRYSLER
E C Row Expressway
E C Row Expressway
DEVONSHIRE MALL
WINDSOR INTERNATIONAL AIRPORT
PS
Cook PS
DEVONWOOD CONSERVATION AREA
County Road 4
Cabana Road East
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Banwell Site
Robwood Court
Wildwood Drive
Halstead Crescent
Souillière Drive
Palms Crescent
Deerbrook Drive
E C Row Expressway
E C Row Avenue
Banwell Road
Legend
Recreation Ways
Linkages
Natural Heritage
Waterfront Recreation
Community and Regional Parks
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Central Corridor Feedermain
Municipal Class EA
Schedule 'B'
Figure 4.2
Greenway System

Table 4.1: Potential Species at Risk

Scientific Name	English Name	G-rank (Federal)	S-rank (Prov.)	Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Status	Species At Risk in Ontario (SARO) Status	Last Observed Date
Plestiodon fasciatus pop. 1	Common Five-lined Skink (Carolinian population)	G5T2	S2	END	END	1970
Thamnophis butleri	Butler's Gartersnake	G4	S2	END	THR	3/29/1987
Aletris farinosa	Colicroot	G5	S2	THR	THR	9/21/1994
Aletris farinosa	Colicroot	G5	S2	THR	THR	1984-09
Castanea dentata	American Chestnut	G4	S2	END	END	6/8/1989
Cornus florida	Eastern Flowering Dogwood	G5	S2?	END	END	1983
Gymnocladus dioicus	Kentucky Coffee-tree	G5	S2	THR	THR	6/16/1981
Hibiscus moscheutos	Swamp Rose-mallow	G5	S3	SC	SC	8/13/1985
Iris lacustris	Dwarf Lake Iris	G3	S3	SC	THR	8/20/1901
Liatris spicata	Dense Blazing Star	G5	S2	THR	THR	8/19/2008
Liparis liliifolia	Purple Twayblade	G5	S2	THR	END	1986
Quercus shumardii	Shumard Oak	G5	S3	SC	SC	10/2/1979
Rosa setigera	Climbing Prairie Rose	G5	S3	SC	SC	7/18/1990
Solidago riddellii	Riddell's Goldenrod	G5	S3	SC	SC	9/21/1994
Symphyotrichum praealtum	Willowleaf Aster	G5	S2	THR	THR	10/27/1993

Source: NHIC Biodiversity Explorer

4.5 Technical Environment

4.5.1 Central Corridor Feedermain

Construction of a transmission main from the WTP to the Cook Reservoir was identified in the WMP. This main is required to replenish the Cook Reservoir, and improve system pressures and fire flows in the southern part of the water system.

The 2009 WMP identified the need for the central corridor feedermain to provide sustainable water service to meet projected growth in the system, as well as mitigate existing low pressure issues in the central system located south of EC Row Expressway. The previously proposed central corridor feedermain (WM1a) as per the WMP study was integrated into the existing system via multiple interconnections at strategic locations. This feedermain would address growth requirements, improve the level of service in the downtown core area and mitigate the low pressure

issues in the system; however with its interconnections, operational challenges at the Cook Pumping Station and Reservoir would remain. Replenishment of the existing Cook Reservoir relies on the Cook Pumping Station discharge header, therefore, utilization of the station is limited since the Reservoir cannot be filled while the pumping station is providing water supply to the system. In addition, the reservoir filling rate is limited in order to prevent extreme low pressures from occurring in the system when the Cook Reservoir is being filled. As this occurs, it acts as a demand point in the system which could cause significant impacts in the system if the storage is being filled too rapidly.

The project team utilized an all pipe hydraulic model and identified a dedicated central corridor feedermain as the possible solution for improving operational flexibility of Cook Pumping Station and Reservoir. The modeling results demonstrated that utilizing the central corridor feedermain as a dedicated feed to the Cook Reservoir would improve the overall turnover rate of the reservoir and allow an increase in water supply from Cook to the system during peak hour demand. Additionally, system pressures would not be affected as the reservoir is being filled.

When the need for a central corridor feedermain connection between the WTP and the Cook Reservoir was confirmed, the next step in the process was to identify potential routes and determine a recommended alternative. The following technical considerations were used to evaluate alternatives for the feedermain routing:

- Estimated construction cost - influenced by:
    - Overall length;
    - Number, frequency and severity of potential conflicts with existing infrastructure such as sewers, watermains, electrical transmission cables, etc.;
    - Number and length of any required railway or expressway crossings;
    - Restoration costs.

- Ongoing maintenance and operation costs influenced by:
    - Physical plant maintenance costs which are proportional to the size and length of the watermain;
    - Accessibility and location of the watermain;
    - Power requirements to move the water from the WTP to the Cook Reservoir.

4.5.2 Potable Water Reservoir

As part of the ongoing WMP Update, the WUC treated water storage capacity was revisited to confirm the need for additional storage capacity. WUC currently relies on storage provided by Reservoir D at the WTP and distribution storage provided at the J.F. Cook Reservoir and Pumping Station, the Hanna Street elevated storage tank and the Tecumseh elevated storage tank. To determine the level of risk associated with the existing WUC water system storage capacity, storage requirements were calculated for 2014 water system demands based on the following design criteria:

- MOE design guidelines;
- 10 States Standards;
- Several ‘self-imposed’ municipal standards: and
- One average day demand (ADD).

Table 4.2 summarizes the comparison of storage requirements.

Table 4.2: WUC Water Supply System – Storage Requirements for Various Design Criteria

Standand[1]	Additional Storage Requirements (2014)
MOE Guidelines	(43.8)
City of Toronto Design Standards	49.1
Region of Peel Design Standards	(43.1)
10 States Standards with MOE Fire Flow	34.2
10 States Standards with 2 Industrial Fire	30.9
10 States Standards with 1 Industrial Fire and 1 Residential Fire	28.2
One Average Day Demand	25.2
In-Plant Use Storage Projection Included in Totals Above	*9.6*

[1] All standards include plant use storage requirements, as identified in the Banwell EA Report (Stantec, 2007).

As illustrated by Table 4.2, the existing storage capacity of the WUC water system exceeds the MOE storage guidelines; however, the immediate need for rehabilitation of Reservoir D poses a significant threat to the security and reliability of the water supply system. A significant storage deficit and operational constraints will occur while Reservoir D is offline for rehabilitation.

Table 4.3 confirms the storage deficit that will be realized upon removal of Reservoir D from the WUC water system for rehabilitation.

Table 4.3: Storage Deficit Evaluation

Existing Conditions (2014)		
MOE Equalization Storage Requirement (ML):		54.0
MOE Fire Storage Requirement (ML):	+	8.2
MOE Emergency Storage Requirement (ML):	+	15.6
Plant Operating Storage Requirement (ML):	+	9.6
Existing Available Storage (ML):	-	121.5
Storage Deficit (ML):	=	(34.1)
Remove Reservoir D for Maintenance (2014)		
MOE Equalization Storage Requirement (ML):		54.0
MOE Fire Storage Requirement (ML):	+	8.2
MOE Emergency Storage Requirement (ML):	+	15.6
Plant Operating Storage Requirement (ML):	+	9.6
Available Storage without Reservoir D (ML):	-	54.7
Storage Deficit (ML):	=	32.7

As illustrated above, a storage deficit of approximately 32.7 ML, as calculated by MOE guidelines, will exist once Reservoir D is removed from service for rehabilitation.

Compounding concerns surrounding rehabilitation of Reservoir D is the need to address security of supply and vulnerability of the water supply system. While the existing storage capacity exceeds the MOE's requirements for

system storage, there is less than one day of storage capacity at an average daily demand. Storage design criteria are typically developed based on a municipality's risk tolerance and available redundancy and/or flexibility in the system; however, an emerging practice among municipalities is to provide sufficient storage for approximately one average day of demand for the entire system. One average day of water demand for the WUC water supply system is in the order of 147 ML (2013). With an existing total water storage capacity of 121.5 ML, including Reservoir D, the WUC water supply system is approximately 25.5 ML short of one average day of storage. This gap will continue to increase as water demand increases into the future. Given the inherent vulnerability of any surface water supply source like the Detroit River to potential spills or other emergencies, a new potable water reservoir will not only facilitate the rehabilitation of Reservoir D, but also provide one average day of total storage capacity over the next few years, depending upon actual population growth.

Based on the information presented above, the following primary technical criteria were identified for the provision of a new potable water reservoir.

- Reservoir Capacity:
  - A nominal capacity of 35 ML should be provided to address the storage deficit while Reservoir D is out of service.
  - A new 35 ML reservoir in addition to existing storage will also provide approximately one average day of additional water demand storage once Reservoir D is brought back online

- Site Selection:
  - Potential sites for location of the reservoir should be large enough to accommodate a reservoir 35 ML in size.
  - Potential sites for location of the reservoir should be in close proximity to the WTP to enable continued pumping from the existing high lift pumping stations, and provide a source of backwash water for the treatment process, as necessary.

- Construction Cost:
  - The reservoir should be constructed within the existing hydraulic grade line of the existing water treatment and pumping systems to mitigate the need for a costly new high lift pumping station.
  - Avoiding impacts with existing infrastructure, such as watermains, sewers, rail corridors, expressways, etc., should be considered to mitigate overall construction costs.
  - Limiting interconnecting piping and infrastructure will reduce overall construction costs.

It is important to note that the purpose of this Class EA is to determine the best overall location for the potable water reservoir. The alternatives for rehabilitation of Reservoir D were considered within this report and are not subject to the Class EA process.

4.6 Policy and Approvals

The following section outlines the policies and approvals relevant to this study.

4.6.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) (2014) is the complimentary policy document to the Planning Act. Issued under the authority of Section 3 of the Planning Act, the PPS provides direction on matters of provincial interest related to land use planning and development. The PPS provides for appropriate development while protecting resources of provincial interest, public health and safety and the quality of the natural and built environment (MMAH).

Section 2.2.1 of the PPS specifies that the quality and quantity of water shall be protected, improved or restored.

4.6.2 Windsor Official Plan

Official Plans contain policies that provide direction for the allocation of land use, provision of services and facilities and policies to control the use of land, having regard for social, economic and environmental matters. This report has regard for and complies with the City of Windsor policies as noted below.

Section 7.3.3.5 – Infrastructure Provision Policies
Council shall require that the provision, expansion or modification of infrastructure minimizes negative effects on existing neighbourhoods, adjacent land uses and the natural environment.

Section 10.2.5 – Environmental Evaluation Policies
An Environmental Evaluation Report (EER) is required if development or an infrastructure undertaking is located in or adjacent to lands designated as Natural Heritage, Environmental Policy Area A or B and/or Candidate Natural Heritage Site. Proposed development/infrastructure undertakings adjacent to a natural environment area but within an existing ROW does not require an EER.

4.6.3 Essex Region Conservation Authority

Ontario Regulation 97/04 is the generic regulation that applies to work in areas prone to flooding and erosion hazards. Under this regulation, individual conservation authorities are given jurisdiction within their watersheds to regulate development in areas of hazard potential.

Ontario Regulation 158/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (under the Ontario Regulation 97/04) is the local regulation for the Essex Region Conservation Authority (ERCA) watershed. This regulation fulfils the general purpose of ensuring public safety with regard to natural hazards such as flooding and erosion within areas regulated by ERCA.

ERCA implements this regulation by issuing permits for works located within their regulation limit which includes a) areas adjacent or close to the shoreline of the Great Lakes – St. Lawrence River System; b) river or stream valleys; c) hazard lands; d) wetlands; or e) area where development could interfere with the hydraulic function of a wetland.

Work proposed as part of this project, within or adjacent to any watercourses will require consultation and approval with ERCA.

4.6.4 Ministry of Natural Resources

The Ministry of Natural Resources and Forestry (MNRF) is mandated to promote healthy ecosystems and develop effective policies for resource management. MNR is responsible for administering legislation in support of their mandate, including the Endangered Species Act (ESA, 2007). This act provides a protection and recovery strategy for SAR in Ontario. Methods of protection include protection of SAR habitat; support for private and public organizations; recovery of species; and strict enforcement (Ontario 2012). The ESA regulation applies to extirpated (destroyed), endangered and threatened species. Species of Special Concern are not protected under the ESA.

As it relates to this project, if SAR are found within the study area, permitting through MNR will be required.

4.6.5 Ministry of the Environment

The MOE administers the Ontario EA Act. Though no formal application procedure is required, this report will be available to the MOE to ensure that the requirements of the EA Act and Class EA process have been satisfied.

Prior to construction of the potable water reservoir, the WUC will be required to apply for an amendment to their existing MOE Drinking Water Works Permit (DWWP), Schedule C in order to alter the drinking water system. In addition, a hydrogeological study will be required through completion of the detailed design activities in order to determine whether a MOE Permit To Take Water (PTTW) is required for construction. Should existing groundwater elevations and recharge rates dictate a need, a PTTW will be sought prior to construction to enable construction in a dry environment.

4.6.6 Ministry of Tourism, Culture and Sport

Archaeological Assessments determine the archaeological potential of properties or areas and are required for all land development projects under the Planning Act and public development projects under the EA Act. MTCS reviews archaeological assessments to determine if they meet the requirements of the Ministry's *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011) in accordance with the *Ontario Heritage Act*, R.S.O. 1990, c. 0.18 (Ontario Government 1990). The primary focus of the Ministry is to determine if all fieldwork and reporting for an assessment has been undertaken according to the terms and conditions of the act by a licensed archaeologist and if potential archaeological sites have been properly conserved.

MTCS will review the Stage 1 Archaeological Assessment for the central corridor feedermain as well as the Stage 1-2 for George Avenue. If accepted the report will be entered into a register of archaeological reports and the project works can proceed.

5. Alternative Planning Solutions

Phase 2 of the Municipal Class EA process focuses on identifying alternative solutions to the problem/opportunity and evaluating the alternative solutions to identify a recommended solution. All reasonable and feasible alternative solutions that could be implemented to address the problem and/or opportunity are the identified and evaluated during Phase 2 of the Class EA process.

5.1 Alternative Solutions

5.1.1 Central Corridor Feedermain Routing Alternatives

The preliminary central corridor feedermain location outlined in the WMP shows routing south from the WTP to Seminole Street, west to Turner Road, south to County Road 42/Division Road, west to Howard Avenue and north to the Cook PS and Reservoir (**Figure 3.1**). As part of this Class EA process, this route was examined in more detail and variations explored. While multiple routes were identified for consideration, some routes were rejected for not meeting minimum evaluation criteria. Considerations for initial evaluation included route length, existing ROW conditions, roadworks/infrastructure improvements budgeted within the City of Windsor's five year capital works plan, social disruption and cost). Three logical routes were advanced for evaluation (**Figure 5.1**) in conjunction with the 'Do Nothing' scenario.

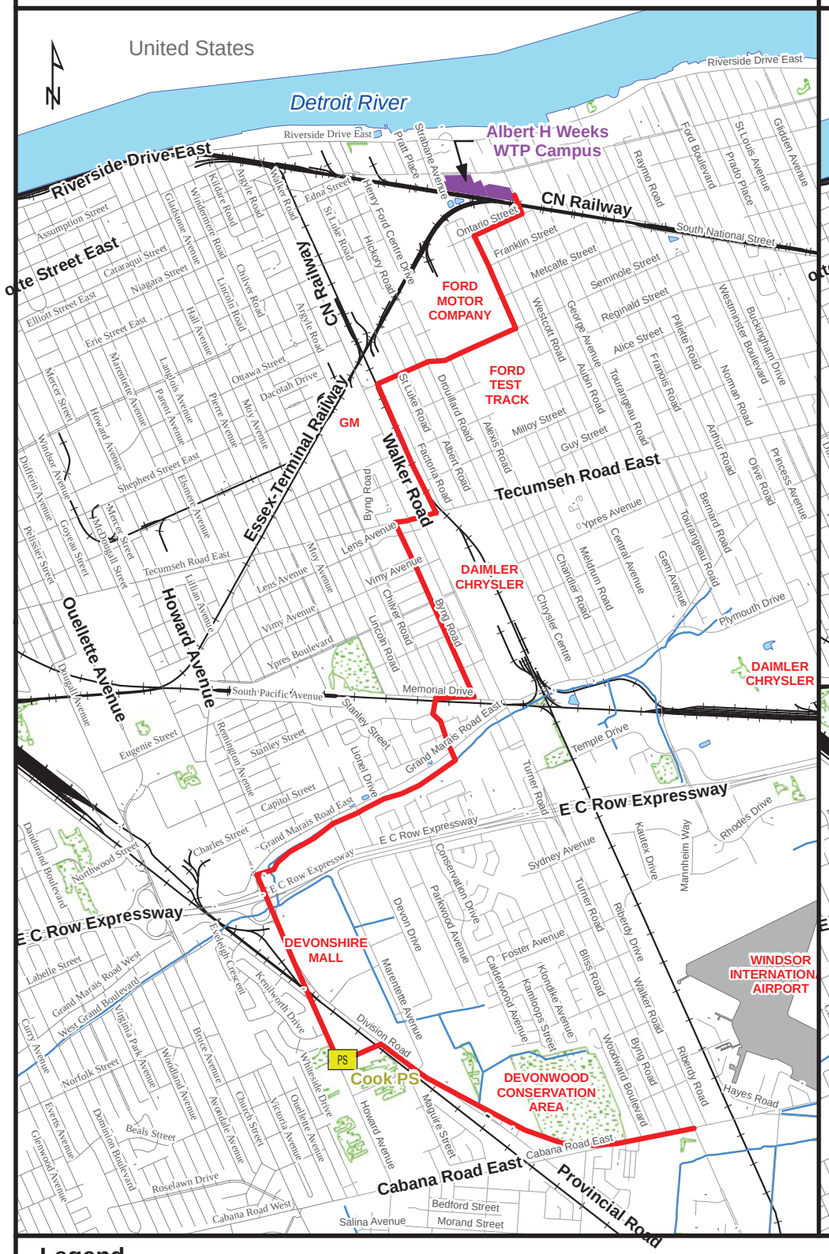
- **Do Nothing:** This alternative has been included to provide a base to which other alternatives could be compared. Under this alternative, the recommendations of the WMP as they relate to the construction of the central corridor feedermain (WM1a) would not be implemented.

- **Alternative Route 1:** This route is the longest of the three alternatives (12.4km). The route follows municipal roadways from the WTP to Memorial Drive where it crosses into Southdale Park before returning to a municipal roadway. Upon reaching the Grand Maris Drain it follows the drain west to Howard Avenue and then proceeds south along Howard Avenue to the Cook Pumping Station. From the Cook Pumping Station it proceeds east to Provincial Road where it is routed south and east along Division Road to Walker Road.

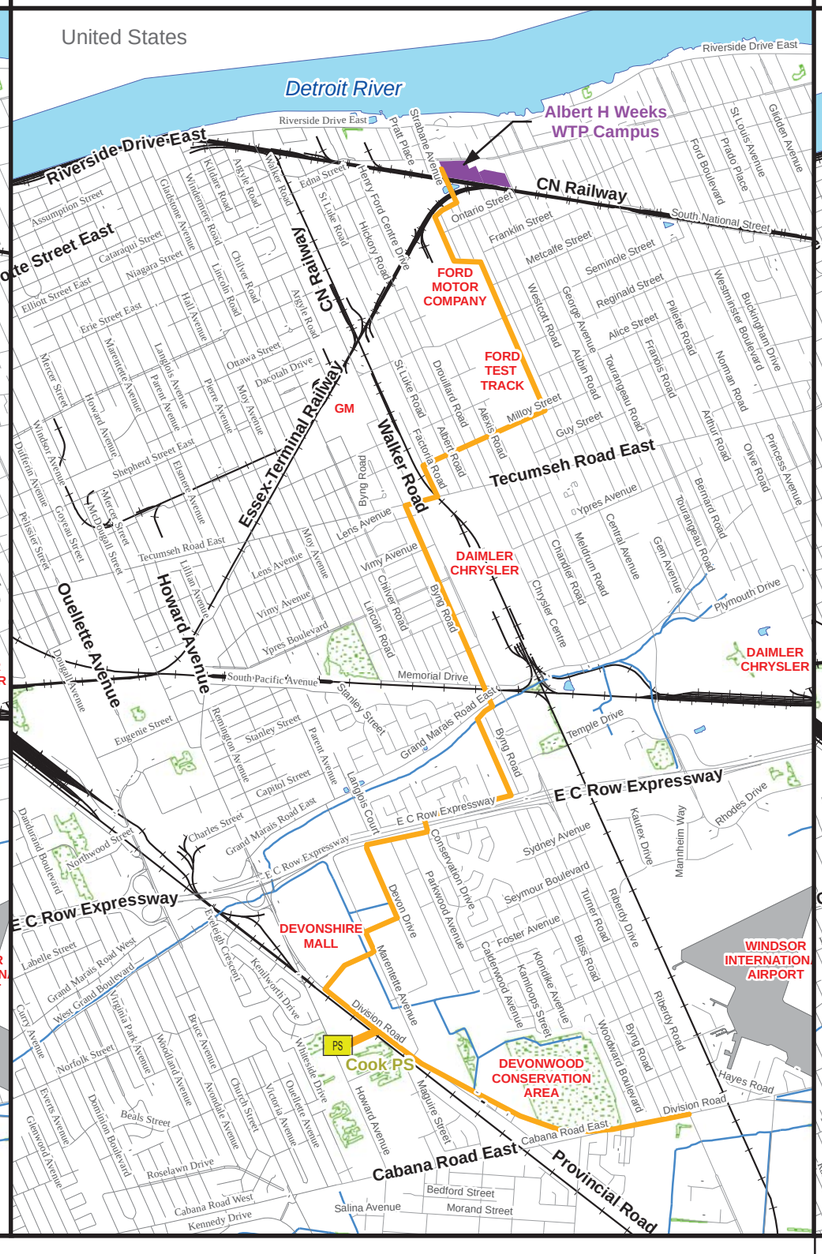
- **Alternative Route 2:** is the middle length route (12.0km) and utilizes green space between the WTP and the Cook Pumping Station and Reservoir. The routing begins in a proposed easement along the east side of the Ford Motor Company and Ford Test Track properties. At Milloy Street it is directed west to Factoria Road, south to Tecumseh Road and then west to Turner Road. On Turner Road it routes south to the Grand Marais Drain where it jogs west to the east side of the Udine Park and the Fogolar Furlan Club which it follows to North Service Road. The route parallels E.C. Row Expressway to Devon Drive crossing at Conservation Drive. From there it proceeds south and west to the Cook Pumping Station and Reservoir along municipal ROWs. From the Cook Pumping Station it proceeds east to Provincial Road where it travels south and east along Division Road to Walker Road.

- **Alternative Route 3:** is the shortest route (11.7km) and generally follows the path of Route 2. However, this route uses less easement on the Ford Motor Company property and uses the existing feedermain easement on the west side of Walker Road between Tecumseh Road and St. Julien Avenue. It also utilizes more of the Grand Marais Drain/Udine Park to route from Turner Road to the Conservation Drive crossing of E.C. Row Expressway. At Devon Drive the feedermain approaches the Cook Pumping Station and Reservoir from the south rather than the north.

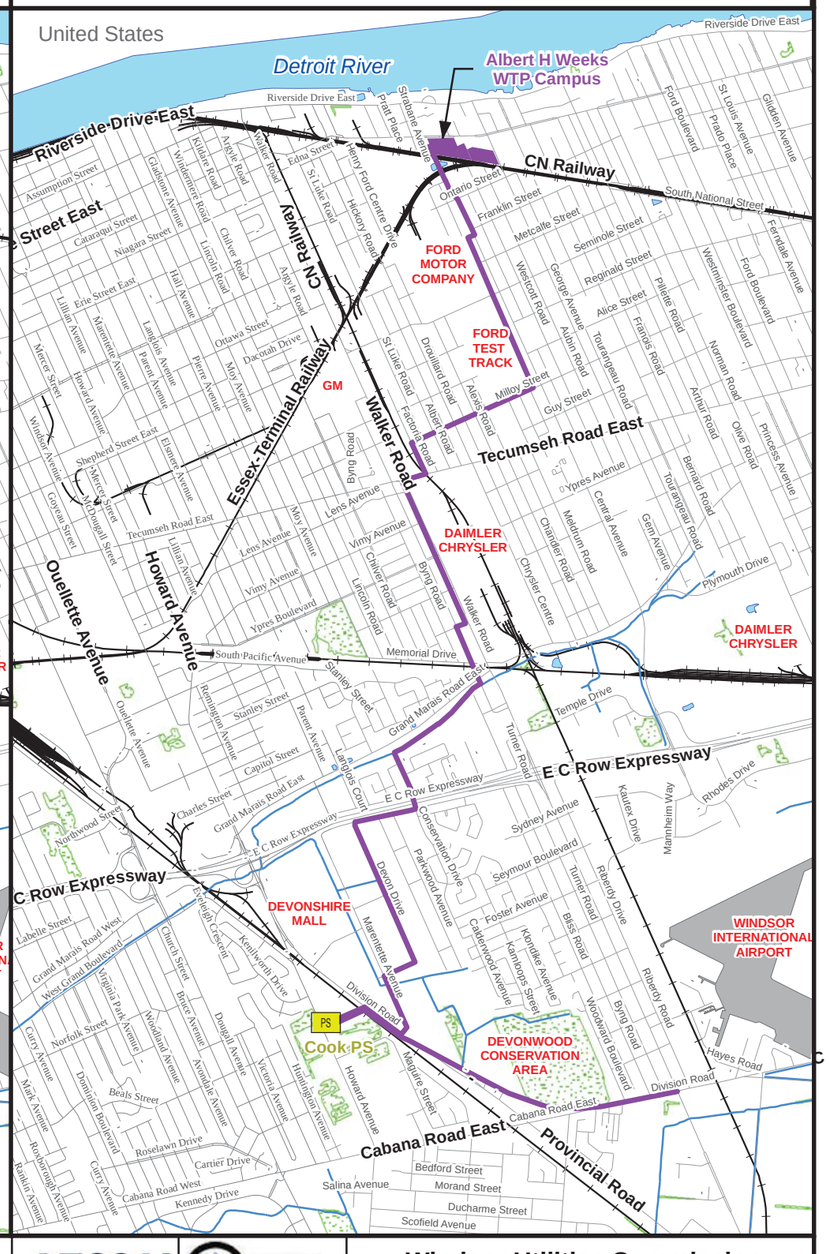
Alternative 1



Alternative 2



Alternative 3



Legend

- Central Corridor Feedermain Alternative 1 (12393 m)
- Central Corridor Feedermain Alternative 2 (11990 m)
- Central Corridor Feedermain Alternative 3 (11716 m)
- Existing Pump Station
- Watercourse/Drain
- Railway
- Wetland
- Wooded Area

AECOM

WINDSOR UTILITIES COMMISSION

Datum:
NAD 83 UTM Zone 17 N
Source:
WUC

0 0.5 1 2
Kilometres

August 2014

Scale: 1:43,000

Windsor Utilities Commission
Potable Water Reservoir and Central Corridor Feedermain Municipal Class EA Schedule 'B'

Figure 5.1
Central Corridor Feedermain Location of Alternatives

5.1.2 Potable Water Reservoir Location Alternatives

A thorough review of potential reservoir locations was completed with the following options considered for initial review. These options were identified as potential alternatives based upon: considerations identified in historical design reports and studies, aerial imagery of vacant lands in the immediate vicinity of the WTP; and information provided by WUC staff.

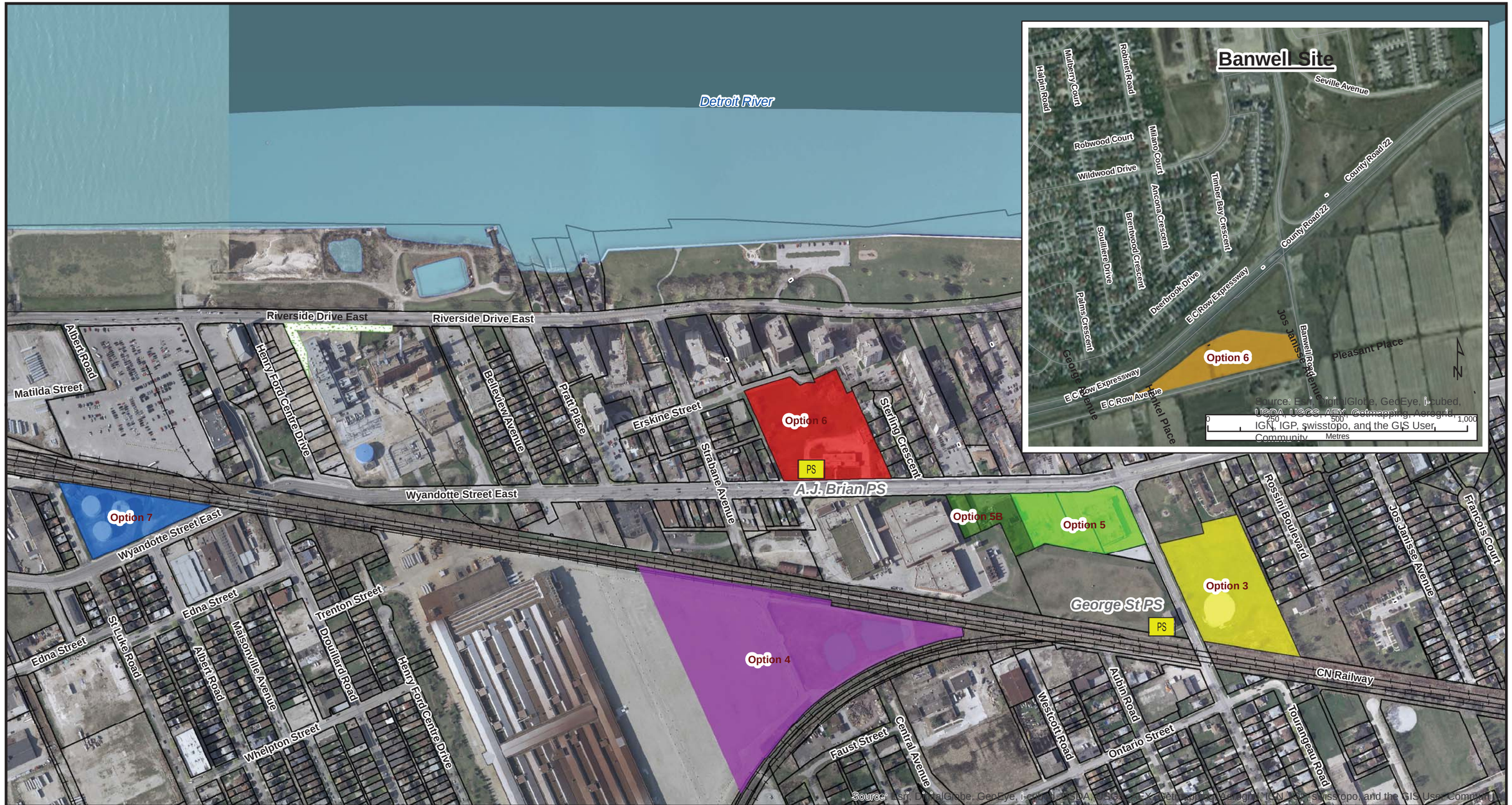
- **Option 1:** Do Nothing (required by MEA Class EA policies)
- **Option 2:** Adjacent to A.J. Brian Pumping Station (3650 Wyandotte Street E.)
- **Option 3:** George Avenue Park
- **Option 4:** Ford Motor Company Property
- **Option 5:** Commercial Lands Adjacent to the Existing Water Treatment Plant
    - **Option 5a**: Single Parcel
    - **Option 5b:** Several Parcels
- **Option 6:** Banwell Site Identified by historical studies
- **Option 7:** Former Hiram Walker Site

Figure 5.2 illustrates locations of the options identified above.

To limit a detailed evaluation of the potable water reservoir locations, a pre-screening approach was completed whereby each option was assessed against the key technical criteria identified in Section 4.5.2. Of the sites reviewed, four locations did not meet the minimum requirements and were therefore not carried forward for further evaluation. A summary of the pre-screening evaluation is provided by **Table 5.1** below.

Table 5.1: Pre-Screening Evaluation of Reservoir Location Alternatives

Alternative Solution	Screened	Rationale
1. Do Nothing	✓	**Carried Forward** – must be considered for baseline purposes but this alternative does not meet the project objectives.
2. A.J. Brian Pump Station 3650 Wyandotte Street E.	*X*	**Screened** – Property size is insufficient to accommodate the minimum design criteria of 35 ML. Pumps at A.J. Brian would require lowering, or a new PS constructed in order to accommodate a deeper reservoir.
3. George Avenue Park No Municipal Address	✓	**Carried Forward** – this is a feasible alternative solution and meets the project objective. Can accommodate a +35ML reservoir.
4. Ford Motor Company Property	✓	**Carried Forward** – this is a feasible alternative solution and meets the project objective. Can accommodate a +35ML reservoir.
5. Commercial Site(s) - (Options 5a & 5b) 3975 Wyandotte Street E.	*X*	**Screened** – initially deemed a feasible alternative solution as it met the project objectives and could accommodate a +35ML reservoir. However, the property could not be acquired from the Owner given its recent revitalization into a grocery store.
6. Banwell Site No Municipal Address	*X*	**Screened** – not a feasible alternative since it is not located near the WTP site, as such this option does not facilitate rehabilitation of Reservoir D. Cannot take Reservoir D out of



Legend

- PS — Existing Pump Station
- Railway
- Watercourse/Drain
- Lot Line
- Wooded Area

New Potable Water Reservoir Options

- Option 1 - Do Nothing
- Option 2 - A.J Brian PS
- Option 3 - George Avenue Park
- Option 4 - Ford Site
- Option 5 - Vacant Commercial Site
- Option 5B - Vacant Commercial Site
- Option 6 - Banwell Road
- Option 7 Former Hiram Walker Site

AECOM

WINDSOR UTILITIES COMMISSION

Datum:
NAD 83 UTM Zone 17 N
Source:
WUC

0 50 100 200
Metres

August 2014

Scale: 1:5,000

Windsor Utilities Commission
Potable Water Reservoir and Central Corridor Feedermain Municipal Class EA Schedule 'B'

Figure 5.2
New Potable Water Reservoir Location of Options

		service for rehabilitation without additional onsite storage in place for operation of the water treatment plant. A new large distribution pumping station and transmission main would be required to pump from the new reservoir to the distribution system. A new transmission main would also be required to transfer water to the new reservoir site.
7. Former Hiram Walker site 2072 Riverside Drive E.	*X*	**Screened** – not a feasible alternative since it is not located near the WTP site. As such, this option does not facilitate rehabilitation of Reservoir D. Cannot take Reservoir D out of service for rehabilitation without additional onsite storage in place for operation of the water treatment plant. Connections to the existing pumping station would be required to maintain distribution pumping or a new larger dedicated pumping station would be required.

As a result of pre-screening the comprehensive list of alternatives for the potable water reservoir location, the following were identified for further review and evaluation:

- **Option 1:** Do Nothing
- **Option 3:** George Avenue Park
- **Option 4:** Ford Motor Company Property

5.2 Evaluation Framework and Criteria

The evaluation of alternative solutions for the central corridor feedermain and the potable water reservoir was based on a qualitative assessment to consider the feasibility of solutions/strategies and to identify significant advantages and disadvantages of each alternative with regard to the evaluation criteria developed. This framework forms the rationale for the identification of preferred solutions. A qualitative evaluation based on the environmental components, representing a broad definition of the environment as outlined in the EA Act was used and is described below in **Table 5.2**.

Table 5.2: Environmental Components

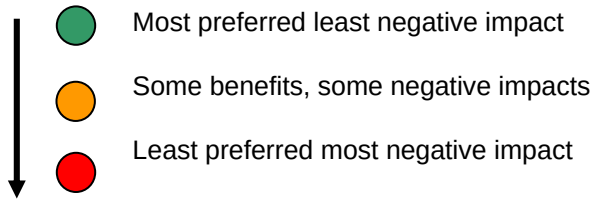
Environmental Component	Description
Social/Cultural	Component that evaluates potential effects on residents, neighbourhoods, businesses, community character, social cohesion, community features, and historical/archaeological and heritage components.
Natural Environment	Component having regard for protecting significant natural and physical elements of the environment (i.e. air, land, water and biota) including natural heritage and environmentally sensitive policy areas.
Technical	Component that considers technical suitability and other engineering aspects of the servicing options.
Economic/ Financial	Component that addresses the potential effect on servicing costs.

To assess the suitability of each alternative solution, a qualitative evaluation was used to identify significant advantages and disadvantages using a specific set of criteria developed for each environmental component (social/cultural, natural environment, technical and economic environments). **Table 5.3** outlines the evaluation criteria identified for the central corridor feedermain routing alternatives and for the potable water reservoir location options.

Table 5.3: Evaluation Factor Groups and Criteria

FACTOR GROUP	CRITERIA	RATIONALE
SOCIAL / CULTURAL	Public Health and Safety	• Safety and movement of pedestrians/traffic
	Cultural Heritage Resources	• Disruption of site/structures having significant archaeological, historical, or architectural value
	Aesthetics	• Visual appearance with/without mitigation • Visual impact to adjacent properties/land uses
	Aboriginal Issues	• Land Claims/Treaty Rights
	Construction Related Impacts	• Noise • Traffic • Dust, debris, vibration • Property Access (feedermain)
NATURAL ENVIRONMENT	Terrestrial Wildlife / Vegetation	• Effects on wildlife and habitat. • Effects of timing of construction on breeding periods. • Effects on significant trees and/or ground flora.
	Aquatic Life/Vegetation	• Effects on aquatic life and habitat. • Effects of timing of construction on spawning periods. • Effects on aquatic vegetation
TECHNICAL	Design	• Available space for storage requirements/PS/ standby power (reservoir) • Hydraulic grade line (reservoir) • Pumping Capacity – during/after construction (reservoir) • New infrastructure - yard piping, chambers (reservoir) • Conflicts with existing infrastructure • Crossing requirements – road, rail, drain, expressway • Need for additional storage capacity (reservoir) • Need for standby power (reservoir) • Transient pressures (feedermain) • Air valves (feedermain) • Phasing
	Construction	• Special construction measures (reservoir) • Construction access • Impact of existing operations during construction (reservoir) • Live interconnections (reservoir)
	Operation & Maintenance	• Redundancy (reservoir) • Ability to operate with Reservoir D (reservoir) • Operator safety
	Approval Requirements & Regulatory Requirements	• Federal • Provincial • Municipal
ECONOMIC	Conceptual Capital Costs	• Total Project Costs (design/construction)
	Operating	• Costs associated with operation and maintenance

To provide an impartial, traceable and consistent evaluation, as required by the Class EA process, the following was used to illustrate the highest and lowest impact of each alternative relative to the evaluation criteria for each category considered (e.g., social/cultural, natural environment, technical and economic). Green text illustrates the ***least negative impact*** or the ***most preferred alternative***, while red text illustrates the ***greatest negative impact*** or the ***least preferred alternative***.



Each of the alternatives outlined in Section 5.1 of this report has been assessed against the selected evaluation criteria to determine their relative impact or benefit. The evaluation of alternatives has been captured in a matrix format to allow for direct comparison between the alternative solutions. Refer to **Table 5.4 - Evaluation of Alternative Solutions – Central Corridor Feedermain** and **Table 5.5 - Evaluation of Alternative Solutions – Potable Water Reservoir.**

5.3 Preliminary Recommended Alternatives

All viable solutions were evaluated to identify a recommended solution to address the deficiencies of the existing services.

5.3.1 Central Corridor Feedermain

The recommended alternative planning solution is **Alternative Route 2 (Figure 5.3)**. This option addresses the project needs and objectives in the following ways:

- Lowest capital cost due to reduced restoration costs resulting from extensive use of open space and green space areas for construction.
- Restoration costs on Turner Road are reduced, as the local distribution watermain would be replaced at the same time.
- Fewer air valves required than for Route 3.
- One crossing required for the Grand Marais Drain.
- Second lowest operation and maintenance costs.
- Better option than Route 3 in regard to potential for operational and transient pressure issues under normal and emergency operations.
- Reduced social impact through minimizing on-road construction which impacts traffic flows and access to adjacent properties.

5.3.2 Potable Water Reservoir

The recommended alternative planning solution is **Option 3 – George Avenue Park (Figure 5.3)**. This option best addresses the project needs and objectives as follows:

- The property is of sufficient size to accommodate a new 35 ML reservoir.
- Since the George Avenue property is immediately adjacent to the existing facility, operation within the existing hydraulic grade line is feasible without a pumping station.

Table 5.4: Evaluation of Alternative Solutions – Central Corridor Feedermain Routing

Options / **CRITERIA**	**Do Nothing** **Central feedermain would not be constructed.**	**Alternative 1** **Route 1 (Red)**	**Alternative 2** **Route 2 (Yellow)**	**Alternative 3** **Route 3 (Purple)**
Social/Cultural Impacts • Public Health & Safety • Cultural Heritage Resources • Aesthetics • Aboriginal Issues • Noise and vibration • Property access issues • Traffic re-routing	• Potential impacts to existing water pressure in southern part of the system resulting in reduced pressures and available fire flows as demand increases. • No cultural heritage impacts. • No impacts to aesthetics. • No known Aboriginal issues. • No noise & vibration impact as nothing is being implemented. • No property access impacts. • No impacts to existing traffic routing.	• Route 1 is adjacent to the hospital – potential disruption to EMS. • Temporary disruption to bus routes, bike lanes. • Route crosses through an area of high archaeological potential. • Vent pipes associated with vacuum/air release chambers may impact aesthetics. • No known Aboriginal issues. • Short term noise and vibration impacts from heavy equipment and sewer/road construction. • Temporary disruption of access to existing businesses and industry. • Temporary disruption of access to existing residences and parks. • Temporary traffic re-routing required.	• Route 2 is adjacent to hospital resulting in the potential disruption to EMS. • Temporary disruption to bus routes, bike lanes. • Route crosses through an area of high archaeological potential. • Vent pipes associated with vacuum/air release chambers may impact aesthetics. • No known Aboriginal issues. • Short term noise and vibration impacts from heavy equipment and sewer/road construction. • Temporary disruption of access to existing businesses and industry. • Temporary disruption of access to existing residences and parks. • Temporary traffic re-routing required.	• Route 2 is adjacent to hospital resulting in the potential disruption to EMS. • Temporary disruption to bus routes, bike lanes. • Route crosses through an area of high archaeological potential. • Vent pipes associated with vacuum/air release Chambers may impact aesthetic. • No known Aboriginal issues. • Short term noise and vibration impacts from heavy equipment and sewer/road construction. • Temporary disruption of access to existing businesses and industry. • Temporary disruption of access to existing residences and parks. • Temporary traffic re-routing required.
Natural Environmental • Terrestrial Wildlife & Vegetation • Aquatic Life & Vegetation	• No impacts to terrestrial wildlife & vegetation. • No removal of street trees required as no construction will occur. • No impacts to aquatic life & vegetation.	• Removal/replacement of street trees may be required. • No impacts to terrestrial wildlife &vegetation. • Unknown impacts to aquatic life & vegetation. • SAR mapping shows there are no fish/mussel species at risk within the study area.	• Removal/replacement of street trees may be required. • No impacts to terrestrial wildlife & vegetation. • Unknown impacts to aquatic life & vegetation. • SAR mapping shows there are no fish/mussel species at risk within the study area.	• Removal/replacement of street trees may be required. • No impacts to terrestrial wildlife & vegetation. • Unknown impacts to aquatic life & vegetation. • SAR mapping shows there are no fish/mussel species at risk within the study area.
Technical/ Engineering • Design o Transient Pressures o Air valves • Phasing • Construction • Implementation • Operation & Maintenance • Applicable Policies/Approvals	• Future water needs would not be met. • System security would not be achieved. • No design related issues. • No construction impacts. • No applicable policies/approvals required.	• Provides most operational flexibility as it passes the George Ave. Pump Station which could be used as an alternate supply for the feedermain. • Transient (surge) protection could be installed at either the George Ave. Pump Station or the A.J. Brian Pump Station. (Increased flexibility over Route 2 and 3). • Route 1 will have the lowest proportion of its profile below Cook Reservoir low operating level at normal cover. This reduces the potential for operational and transient issues under normal/emergency operations. (Similar to Route 2). • Route 1 profile will have the least potential for negative and vacuum pressures (operational issues) under transient conditions. • Number of air valves required for preventing negative pressures is likely less than Route 2 and less than Route 3. • Existing utilities located along Route 1 include more sewer crossings than Route 2 and 3. • There are 4 potential interconnection points with existing distribution system where system pressures and flows could be improved. • Longest of all routes (+/- 106% of Route 3).	• Additional piping and valving required at George Ave. Pump Station in order for it to be used as an alternate supply for the feedermain for operational flexibility. • Transient (surge) protection installed at A.J. Brian Pump Station. (Less flexibility over installation location than Route 1). • Route 2 will have a higher proportion of its profile below Cook Reservoir low operating level at normal cover than Route 1, but lower than Route 3. This reduces the potential for operational and transient issues under normal/emergency operations. • Operation of the main at low reservoir levels will result in depressurizing high areas of the main when pumps are off. This will require specialized deeper watermain construction to keep watermain below the low reservoir elevation and / or control valving (back pressure sustaining) to maintain pressurized flow conditions. • The profile of Route 2 has more potential for negative and vacuum pressures (operational issues) under transient conditions compared to Route 1, but less than Route 3.	• Additional piping and valving required at George Ave. Pump Station in order for it to be used as an alternate supply for the feedermain for operational flexibility. • Transient (surge) protection installed at A.J. Brian Pump Station. (Less flexibility over installation location than Option 2). • Route will have the highest proportion of its profile above Cook Reservoir low operating level. This increases the potential for operational and transient issues during normal/emergency operations. • Operation of the main at low reservoir levels will result in depressurizing high areas of the main when pumps are off. This will require specialized deeper watermain construction to keep watermain below the low reservoir elevation and / or control valving (back pressure sustaining) to maintain pressurized flow conditions. • Route profile will have the most potential for negative and vacuum pressures (operational issues) under transient conditions.

Table 5.4: Evaluation of Alternative Solutions – Central Corridor Feedermain Routing

Options **CRITERIA**	**Do Nothing** **Central feedermain would not be constructed.**	**Alternative 1** **Route 1 (Red)**	**Alternative 2** **Route 2 (Yellow)**	**Alternative 3** **Route 3 (Purple)**
Technical/ Engineering (continued)		• Route 1 includes 4 rail crossings. • There are 3 crossings of the Grand Marais Drain of which 2 must be trenchless (bore and jack) installation. • Significant road crossings at Wyandotte, Walker, Tecumseh, Memorial, E.C. Row, Howard and Division Road. • Implementation and Phasing for all routes are similar. • MOE (Environmental Compliance Approval), City of Windsor, Essex Region Conservation Authority approvals required. • Railway approval required for each railway crossing. • Ford Motor Company easement *required.*	• Number of air valves required for preventing negative pressures is higher than both Route 1 and Route 3, affecting overall cost. • Existing utilities located along Route 2 include less sewer crossings than Route 1 and 3. • There are 3 potential interconnection points with existing distribution system where system pressures and flows could be improved. • Route 2 is the mid-length route. • Route 2 includes 5 rail crossings. • Route 2 crosses the Grand Marais Drain at one location. • Significant road crossings at Walker, Tecumseh, Memorial, EC Row, and Division Road. • Implementation and Phasing for all routes are similar. • MOE (Environmental Compliance Approval), City of Windsor, Essex Region Conservation Authority approvals are required. • Railway approval required for each railway crossing. • Easements required on Ford Motor Company and a Grand Marias Road property.	• Number of air valves required for preventing negative pressures is higher than that for Route 1 but lower than for Route 2. • Existing utilities along Route 3 include more sewer crossings than Route 2 and less than Route 1. • 4 potential interconnection points with existing distribution system where system pressures and flows could be improved. • Route 2 is the shortest route. • Route 3 includes 6 rail crossings. • Route 3 crosses the Grand Marais Drain at one location. • Significant road crossings at Walker, Tecumseh, Memorial, EC Row, and Division Road. • Implementation and Phasing for all routes are similar. • MOE (Environmental Compliance Approval), City of Windsor, Essex Region Conservation Authority approvals required. • Railway approval required for each railway crossing. • Easements required on Ford Motor Company property, Chrysler Property and a Grand Marias Road property.
Economic • Initial Capital Costs • Operating & Maintenance Costs	• No capital costs. • No operating costs.	• Highest capital cost due to length and location (passes through least amount of open space). • Highest operation & maintenance costs.	• Lowest capital cost due to length and amount of feedermain located in open space. Resulting in less restoration costs during construction. • Lowest operation & maintenance costs.	• Capital cost is higher than Route 2, but lower than Route 1 due to overall length of feedermain to be located in open space. • Operation & maintenance costs higher than Route 2 but less than for Route 1.
EVALUATION SUMMARY	**Not Preferred**	**Not Preferred**	**Preferred**	**Not Preferred**

Legend	**Least Impact** **Most Preferred**	**Low to Moderate Impact**	**Moderate Impact**	**Moderate to High Impact**	**Highest Impact** **Least Preferred**

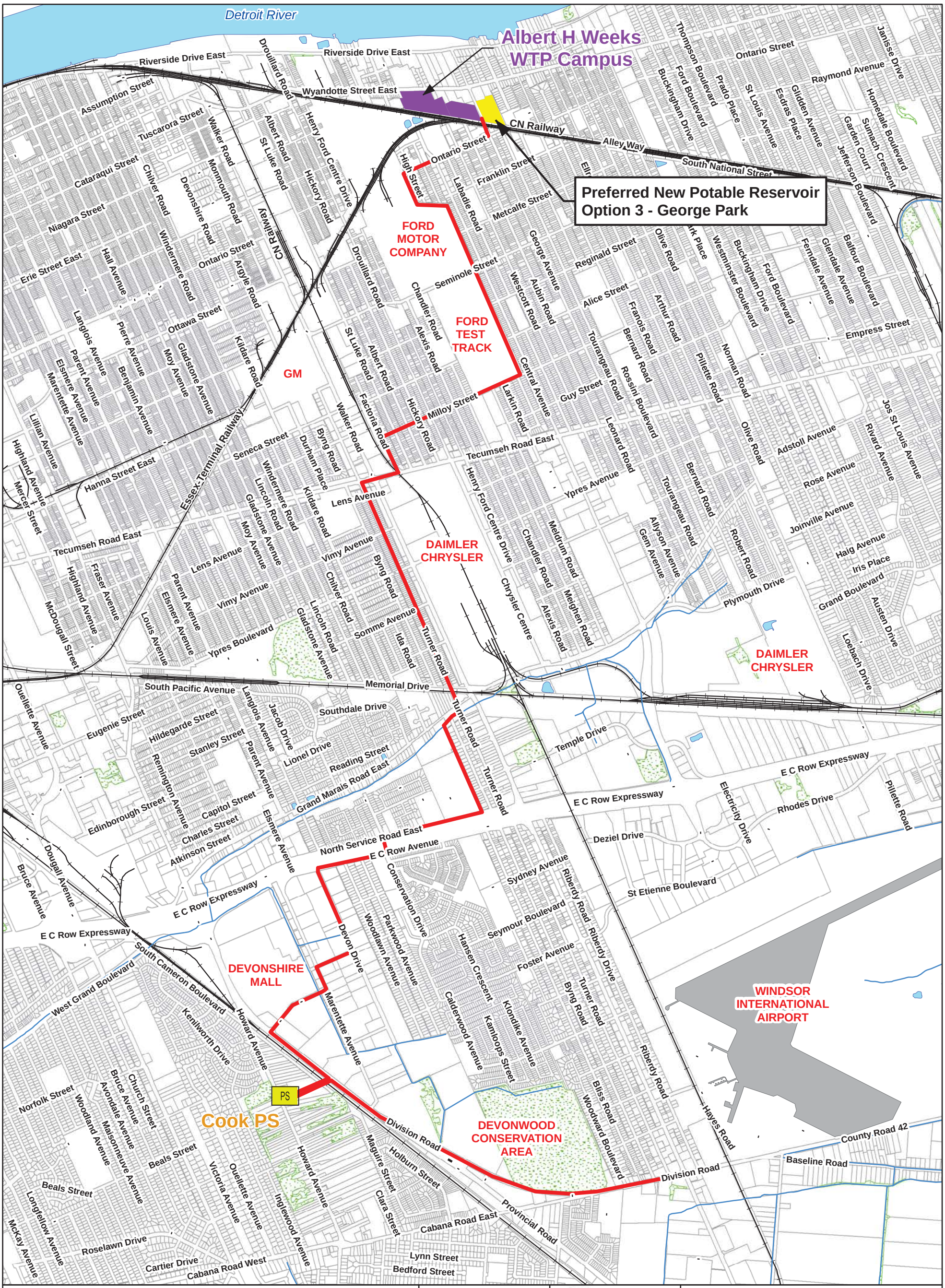
Table 5.5: Evaluation of Alternative Solutions – Potable Water Reservoir Locations

Options / **CRITERIA**	**OPTION 1** **Do Nothing**	**OPTION 3** **George Avenue Park**	**OPTION 4** **Ford Motor Company**
Social/Cultural Impacts Public Health & Safety Cultural Heritage Resources Aesthetics Aboriginal Issues Construction related impacts ➢ Noise ➢ Traffic ➢ Dust, Debris, Vibration, etc.	• No impacts to cultural heritage resources. • No change of existing aesthetics. • No known impacts to Aboriginal issues. • No construction impacts.	• Temporary loss of park during construction. • Potential re-purposing of park. • Potential for new park amenities. • Not in close proximity to residential area. • Area of low archaeological potential. • Potential loss of existing trees. • No known impacts to Aboriginal issues. • Temporary construction related impacts (noise, emissions, vibration). • Impact to local road - temporary road closures/lane reductions during construction. • No impact to bikeway.	• Not adjacent to residential area. • Area of low archaeological potential. • No known impacts to Aboriginal issues. • No existing trees to be removed. • Temporary construction related impacts (noise, emissions, vibration). • Impact to arterial road - temporary road closures/lane reductions during construction. • Temporary impacts to bikeway.
Natural Environmental Terrestrial Wildlife & Vegetation Aquatic Life & Vegetation	• No terrestrial impacts. • No aquatic impacts.	• No terrestrial impacts. • No aquatic impacts	• No terrestrial impacts. • No aquatic impacts.
Technical/ Engineering ***Design*** Available space; ➢ For storage requirements - 35 ML to facilitate rehabilitation of Reservoir D while satisfying MOE guidelines and operational requirements ➢ For pumping station (if required) ➢ For standby power (if required) Ability to operate within the existing Hydraulic Grade Line; ➢ Need for new dedicated pumping station ➢ Available active volume Need for additional pumping capacity for the water supply system; ➢ During rehabilitation of Reservoir D ➢ After rehabilitation of Reservoir D Need for new infrastructure ➢ Yard piping ➢ Chambers Conflicts with existing infrastructure ➢ Yard piping ➢ Chambers ➢ Watermain ➢ Sewer Crossing requirements ➢ Rail ➢ Street Need for additional pumping capacity at George Street PS Need for standby power; ***Construction*** Special construction measures ➢ Shoring ➢ Exposed walls ➢ Stockpiling / disposal of material ➢ Construction laydown area / site offices	• Lack of preventative maintenance (refurbishment) of Reservoir D could lead to unplanned failure (catastrophic failure) over time. o Extremely high capital costs and water supply risks associated with an unplanned failure of Reservoir D. • Does not facilitate rehabilitation of Reservoir D. o Taking Reservoir D offline without provision for additional storage compromises water system operational security and fire protection. o Will not meet current MOE storage requirements during rehabilitation of Reservoir D. o WTP is unable to operate without on-site storage for extended periods of time. • Does not provide additional storage for future growth. • Does not provide additional storage for water system operational security or redundancy. • Does not resolve existing pumping constraints from A.J. Brian PS. • The WUC water supply system currently has sufficient storage per the MOE storage requirements for growth to approximately 2048, per the most recent Water Master Plan.	• Property size is sufficient to accommodate the minimum design criteria of 35 ML reservoir to achieve MOE storage requirements when Reservoir D is offline for rehabilitation. • Sheet piling / shoring construction techniques may be required at critical locations to protect existing infrastructure. • The open space to the north (currently park) would be sufficient space for construction layout and contractor site offices. Likely insufficient space for stockpiling of material. • A significant watermain (1070 mm) is located within the park property and would need to be avoided through design or relocated during construction. • Construction within the existing hydraulic grade line is feasible; as such a pumping station would not be required to provide a practical operating volume. The available operating volume would be slightly less than the existing Reservoir D under gravity conditions due to the greater distance from water treatment plant. • Use of A.J. Brian PS would be limited under dedicated operation of the new reservoir due to hydraulic constraints. • George Avenue PS would be the primary pumping station during dedicated use of the new reservoir due to hydraulic constraints. • Any standby power requirements of the new reservoir could likely be accommodated by the existing standby power facility. • Does not resolve existing pumping constraints from A.J. Brian PS. • Yard piping and interconnection chambers would allow for the George Avenue PS and the A.J. Brian PS to be interconnected to each reservoir, thus providing redundancy. • Provides redundancy for Reservoir D. Will be designed with dual cells for added operational flexibility. • Road crossings (George Avenue). • Operation of Reservoir D and the new reservoir in series would be preferred. Parallel operation would be possible in an emergency, but challenging and would reduce the operating volume in the new reservoir. • Operational shut downs and live tie-ins required for inlet and outlet yard piping and chambers. • Location is not within proximity to the proposed route of the new corridor feedermain.	• Land acquisition from private entity is required. • Property size is sufficient to accommodate the minimum design criteria of 35 ML reservoir to achieve MOE storage requirements when Reservoir D is offline for rehabilitation. • Sufficient space for construction layout, material stock piling and contractor site offices. Space limited to potential land acquisition. • Significant space would limit the need for costly sheet piling / shoring construction techniques. • Preliminary calculations indicate that construction within the existing hydraulic grade line is feasible; as such a pumping station would not be required. The available operating volume would be similar to the existing Reservoir D under gravity conditions due to the greater distance from water treatment plant. • Both A.J. Brian PS and George Avenue PS could be used; however, long dedicated suction pipes to each PS are required. • Any standby power requirements of the new reservoir could likely be accommodated by the existing standby power facility. • Does not resolve existing pumping constraints from A.J. Brian PS. • Yard piping and interconnection chambers would allow for the George Avenue PS and the A.J. Brian PS to be interconnected to each reservoir, thus providing redundancy. • Provides redundancy for Reservoir D. Would be designed with dual cells for added operational flexibility. • No apparent infrastructure conflicts on Ford property. • One significant road crossings (Wyandotte) for A.J. Brian PS suction piping. • Significant rail crossings (2 minimum). • Yard piping and interconnections chamber requirements to facilitate interconnections with the existing plant(s), Reservoir D, A.J. Brian PS and George Avenue PS could infringe water treatment plant areas. • Operation of Reservoir D and the new reservoir must be in parallel. Series operation is not feasible. • Operational shut downs and live tie-ins required for inlet and outlet yard piping and chambers. • Major infrastructure requirements would consist of:

Table 5.5: Evaluation of Alternative Solutions – Potable Water Reservoir Locations

Options / **CRITERIA**	**OPTION 1** **Do Nothing**	**OPTION 3** **George Avenue Park**	**OPTION 4** **Ford Motor Company**
Ease of construction access Impact on existing operations during construction ➢ Shut downs ➢ Storage limitations ➢ Backwash limitations ➢ Pumping limitations Live interconnections ***Operation & Maintenance*** Redundancy ➢ During rehabilitation of Reservoir D ➢ After rehabilitation of Reservoir D Ability to operate in conjunction with Reservoir D ➢ Operate in parallel with Reservoir D ➢ Operate in series with Reservoir D ➢ Flexibility to operate in either mode Operator safety ***Applicable Policies/Approvals*** Compliance with Municipal requirements MOE approval requirements ➢ Water license ➢ Air & Noise ➢ Other		• Major infrastructure requirements would consist of: o 35 ML potable water reservoir and valve house; o Approx. 450 m of reservoir inlet piping; o Approx. 30 m of reservoir interconnection piping; o Approx. 140 m of suction piping to George Avenue PS; o Approx. 300 m of suction piping to A.J. Brian PS; and o 4 significant yard piping valve chambers.	o 35 ML potable water reservoir; o Approx. 210 m of reservoir inlet piping and valve house; o Approx. 220 m of combined PS suction piping; o Approx. 485 m of suction piping to George Avenue PS; o Approx. 280 m of suction piping to A.J. Brian PS; and o 3 significant yard piping valve chambers.
Economic Conceptual Capital Costs Operating Costs	• Least immediate capital cost option as no work would be completed. • Potential for significant future capital cost and operational risk should Reservoir D sustain an unplanned failure.	• Medium comparative capital cost. • Annual operating costs would not be significantly greater than existing as no new pumping is provided.	• Highest comparative capital cost due to infrastructure requirements, rail crossings and land acquisition. • Annual operating costs would not be significantly greater than existing as no new pumping is provided.
EVALUATION SUMMARY	**Not Preferred**	**Preferred**	**Not Preferred**

Legend	**Least Impact** **Most Preferred**	**Low to Moderate Impact**	**Moderate Impact**	**Moderate to High Impact**	**Highest Impact** **Least Preferred**


Detroit River
Albert H Weeks WTP Campus
Preferred New Potable Reservoir Option 3 - George Park
FORD MOTOR COMPANY
FORD TEST TRACK
GM
DAIMLER CHRYSLER
DAIMLER CHRYSLER
DEVONSHIRE MALL
WINDSOR INTERNATIONAL AIRPORT
DEVONWOOD CONSERVATION AREA
Cook PS
PS
Riverside Drive East
Wyandotte Street East
CN Railway
Alley Way
South National Street
Ontario Street
Franklin Street
Metcalfe Street
Seminole Street
Milloy Street
Lens Avenue
Tecumseh Road East
Memorial Drive
South Pacific Avenue
Grand Marais Road East
North Service Road East
E C Row Avenue
E C Row Expressway
Deziel Drive
St Etienne Boulevard
Rhodes Drive
Electricity Drive
Division Road
Baseline Road
County Road 42
Provincial Road
Cabana Road East
Cabana Road West
Turner Road
Howard Avenue
Devon Drive
Marentette Avenue
Essex-Terminal Railway
Assumption Street
Tuscarora Street
Cataraqui Street
Niagara Street
Erie Street East
Ottawa Street
Seneca Street
Hanna Street East
Mercer Street
Highland Avenue
Lillian Avenue
Ypres Boulevard
Somme Avenue
Vimy Avenue
Byng Road
Kildare Road
Walker Road
Albert Road
St Luke Road
Henry Ford Centre Drive
Hickory Road
Drouillard Road
Chandler Road
Alexis Road
Central Avenue
Larkin Road
Guy Street
Tourangeau Road
Bernard Road
Leonard Road
Ypres Avenue
Olive Road
Adstoll Avenue
Rose Avenue
Joinville Avenue
Haig Avenue
Iris Place
Grand Boulevard
Plymouth Drive
Robert Road
Chrysler Centre
Meldrum Road
Meighen Road
Alexis Road
Chandler Road
Gem Avenue
Allyson Avenue
Riberdy Road
Riberdy Drive
Hayes Road
Bliss Road
Woodward Boulevard
Foster Avenue
Seymour Boulevard
Sydney Avenue
Conservation Drive
Parkwood Avenue
Woodlawn Avenue
Calderwood Avenue
Kamloops Street
Klondike Avenue
Hansen Crescent
Turner Road
Byng Road
Lincoln Road
Windermere Road
Gladstone Avenue
Moy Avenue
Chilver Road
Devonshire Road
Monmouth Road
Walker Road
Argyle Road
Hall Avenue
Windermere Road
Langlois Avenue
Pierre Avenue
Benjamin Avenue
Parent Avenue
Elsmere Avenue
Marentette Avenue
Moy Avenue
Gladstone Avenue
Kildare Road
Lilian Avenue
Highland Avenue
Mercer Street
Fraser Avenue
McDougall Street
Louis Avenue
Lincoln Road
Gladstone Avenue
Somme Avenue
Ida Road
Turner Road
Labadie Road
High Street
Ontario Street
Thompson Boulevard
Ford Boulevard
Buckingham Drive
Prado Place
St Louis Avenue
Esdras Place
Glidden Avenue
Raymond Avenue
Janisse Drive
Homedale Boulevard
Sumach Crescent
Garden Court
Jefferson Boulevard
Balfour Boulevard
Glendale Avenue
Ferndale Avenue
Westminster Boulevard
Buckingham Drive
Ford Boulevard
Olive Road
Park Place
Reginald Street
George Avenue
Aubin Road
Westcott Road
Alice Street
Arthur Road
Franois Road
Bernard Road
Rossini Boulevard
Tourangeau Road
Pillette Road
Norman Road
Empress Street
Leonard Road
Olive Road
Adstoll Avenue
Rose Avenue
Rivard Avenue
St Louis Avenue
Joinville Avenue
Haig Avenue
Iris Place
Grand Boulevard
Austen Drive
Loebach Drive
Plymouth Drive
Temple Drive
Ouellette Avenue
Eugenie Street
Hildegarde Street
Stanley Street
Remington Avenue
Edinborough Street
Capitol Street
Charles Street
Atkinson Street
Jacob Drive
Lionel Drive
Reading Street
Southdale Drive
Langlois Avenue
Parent Avenue
Elsmere Avenue
Dougall Avenue
Bruce Avenue
West Grand Boulevard
South Cameron Boulevard
Kenilworth Drive
Howard Avenue
Norfolk Street
Woodland Avenue
Avondale Avenue
Maisonneuve Avenue
Bruce Avenue
Church Street
Beals Street
Longfellow Avenue
Mckay Avenue
Roselawn Drive
Cartier Drive
Victoria Avenue
Ouellette Avenue
Inglewood Avenue
Howard Avenue
Maguire Street
Clara Street
Holburn Street
Lynn Street
Bedford Street
Woodward Boulevard
Bliss Road
Riberdy Road
Hayes Road
Division Road
Provincial Road
Cabana Road East
Baseline Road
County Road 42
Legend
Existing Pump Station
Watercourse/Drain
Railway
Wetland
Wooded Area
Lot Line
Preferred Route: Alternative 2
Preferred New Potable Water Reservoir: Option 3 - George Avenue Park
AECOM
WINDSOR UTILITIES COMMISSION
Datum:
NAD 83 UTM Zone 17 N
Source:
WUC
0
0.375
0.75
1.5
Kilometres
August 2014
Scale: 1:23,000
Windsor Utilities Commission
Potable Water Reservoir and
Central Corridor Feedermain
Municipal Class EA
Schedule 'B'
Figure 5.3
Preferred Alternative Route/
Preferred Potable Water Reservoir
Location

- The City of Windsor and the WUC are committed to strategic rehabilitation of the park property as part of this project.
- The layout of the existing water treatment plant and its high lift pumping stations allows for a reservoir at the George Avenue Park to operate in both series and parallel modes of operation with the existing Reservoir D, once rehabilitated.
- Although operation of the new reservoir with the A.J. Brian Pumping Station will have operating restrictions slightly greater than those existing with Reservoir D, the George Avenue Pumping Station will be capable of providing a significant operating range within the new reservoir should it be necessary for operational purposes.
- Although significant lengths of large diameter interconnection piping (>1500mm dia.) is required to fill and draw from the new reservoir, the infrastructure requirements for a George Avenue Park location are less than those required for a reservoir at the Ford properties.

5.4 Consultation

Public involvement is an important and mandatory component of the Class EA process. Section 2.3 of this report provides an overview of the input received as part of the consultation and communication program for this project. This section details consultation undertaken with members of the public, stakeholders, Aboriginal communities and review agencies through meetings and correspondence.

5.4.1 Agency Consultation

AECOM met with City of Windsor staff (September 2012) to discuss preliminary alternatives for the central corridor feedermain. The 5 year capital plan for the Public Works department was reviewed to determine if restoration costs could be minimized by locating the feedermain in areas were future road work is needed.

5.4.2 Stakeholder Consultation

On September 19, 2013, AECOM met with Claudio Silvaggi, Plant Facilities & Engineering Manager for the Windsor Assembly Plant (Chrysler Canada). The focus of this meeting was to review and discuss the various alternatives for the central corridor feedermain routing along the plant parking lot on the west side of Walker Road. Currently, a WUC easement and watermain exist in this location. Discussions involved the possibility of adding the new feedermain to the existing easement.

AECOM also met with representatives of Ford Canada (December 14, 2013) to review and discuss feedermain routing within the Windsor Engine Plant site as well as the potential to utilize the former foundry site for the new reservoir location. Information was forwarded to the Ford legal department for future consideration of property easements and/or purchase.

On July 3, 2014, AECOM met with members of the board of directors of the Fogolar Furlan club to discuss expanding the existing on-site easement to accommodate the proposed central corridor feedermain routing.

5.4.3 Public Consultation

A PIC was held on July 3, 2014 at the Fogolar Furlan Club. The intent of the meeting was to provide the public with information on the study regarding existing conditions, environmental issues, alternatives considered and evaluated and to present the recommended preferred alternative. Eleven (11) people attended the meeting.

Table 5.4 provides a summary of all comments received.

Table 5.4: Summary of Comments

Public/Stakeholder/Review Agencies	Summary of Comments/Questions Received
Members of the Public	• Anticipated timing for construction? • Approximate offset of corridor from properties. • Will an access lane from a previous storm sewer project be used?
City Staff/Departments	• PIC should be held closer to study area. • Children's play area should remain in park. • Suggest a walkway around the perimeter with benches. • Excellent idea of locate park on top of reservoir.

All material related to public consultation for this project can be found in **Appendix D**.

5.4.4 Aboriginal Consultation

Consultation with Aboriginal communities and agencies was undertaken to determine the potential effect of the project on lands/treaty rights and their interest in the study. Consultation was carried out through direct correspondence to the Ministry of Aboriginal Affairs (MAA), Aboriginal Affairs and Northern Development Canada (AANDC) and local councils (Chippewas of the Thames, Oneida Nation of the Thames, Aamjiwnaang, Caldwell First Nation, Munsee-Delaware Nation, Bkejwanong Territory, Delaware Nation and Chippewas of Kettle & Stony Point).

Caldwell First Nation provided correspondence confirming their treaty rights to land within the vicinity of the study area and requested consultation. Information was sent to Caldwell First Nation (August 26, 2014) as provided at the PIC and follow up was made. No additional comments were received.

No other correspondence was received from Aboriginal communities.

All material related to Aboriginal consultation for this project can be found in **Appendix E**.

6. Preferred Solution

Further to the alternative evaluation and public, stakeholder, Aboriginal and review agency input, the preferred central corridor feedermain routing is Alternative 2 and the preferred potable water reservoir location is Option 3: George Avenue Park. This section of the report describes the conceptual design details, associated costs, environmental recommendations and monitoring.

6.1 Central Corridor Feedermain

6.1.1 Conceptual Design Details

The proposed route for the feedermain (Alternative 2) can be summarized as follows:

Phase 1: (1200mm diameter feedermain)

- South from the Albert H. Weeks WTP to Faust Street including two railway crossings and work within an existing easement (expansion required) from the Ford Motor Company property.
- West on Faust Street to the west side of High Street and onto the Ford Motor Company property.
- South along the east limit of the Ford Motor Company lands in a new easement partially within existing asphalt parking lot and partially within green space, across Seminole Street and along the east limit of the Ford Test Track green space to Milloy Street.
- West on Milloy Street to Factoria Road.
- South on Factoria Road to Tecumseh Road.

Phase 2: (1200mm diameter feedermain)

- West on Tecumseh Road to Turner Road. The Turner Road construction costs for the feedermain are shared with the replacement of the local distribution main that has been scheduled for replacement.
- South on Turner Road across the railway and onto a expanded easement at the 2181 Grand Marais Road.

Phase 3A: (1200mm diameter feedermain)

- West along the Grand Marais Drain to the east limit of the Fogolar Furlan Club lands.
- South in an expanded new easement along the eastern edge of the club property parallel to the existing storm sewer to North Service Road.
- West on North Service Road (within the ROW if possible), west to Conservation Drive
- South along Conservation Drive across E.C. Row Expressway
- West along E.C. Row Expressway within the ROW if possible, to Devon Drive.

Phase 3B: (1200mm diameter feedermain)

- South on Devon Drive to Sydney Avenue
- West on Sydney Avenue across the Marentette Drain and 3rd Concession Drain to Division Road.
- South on Sydney Avenue to approximately even with the Cook PS and Reservoir.
- West across the railway to the Cook PS and Reservoir.

Phase 4: (900mm diameter feedermain)

- East from the Cook PS and Reservoir across the railway to Division Road.
- South and east along Division Road to Walker Road.

At a minimum, valve chambers will be utilized at the end of each phase. Additional chambers may be included as well as air release chambers, valve chambers, interconnections to the existing system etc. These details will become more evident as the design process progresses.

See **Figure 6.1** for the central corridor feedermain Phasing Details.

6.1.2 Construction Staging and Management

Construction of the central corridor feedermain is expected to occur in 4 Phases as detailed above.

- Phase 1 would extend from the WTP to Tecumseh Road. As a majority of this phase is to be constructed in new and existing easements through open space and green space, roadway traffic impacts are limited. Co-ordination will be required with Ford Motor Company during work on their property to reduce the impact on internal traffic including scheduling construction activities around planned shut-downs as feasible.

- Phase 2 would cover Tecumseh Road and Turner Road south to the CPR line. While traffic will be impacted and require management on Tecumseh Road, Turner Road is primarily a residential street and therefore only local residents will be impacted. Construction along Turner Road will include replacement of the existing local distribution main resulting in a reduced overall impact to residents compared to both projects being constructed separately. Turner Road was also chosen as a preferred route as existing services reside in rear lanes behind the houses allowing for reduced conflicts within the ROW during construction. This phase will involve the rail crossing at Memorial Drive.

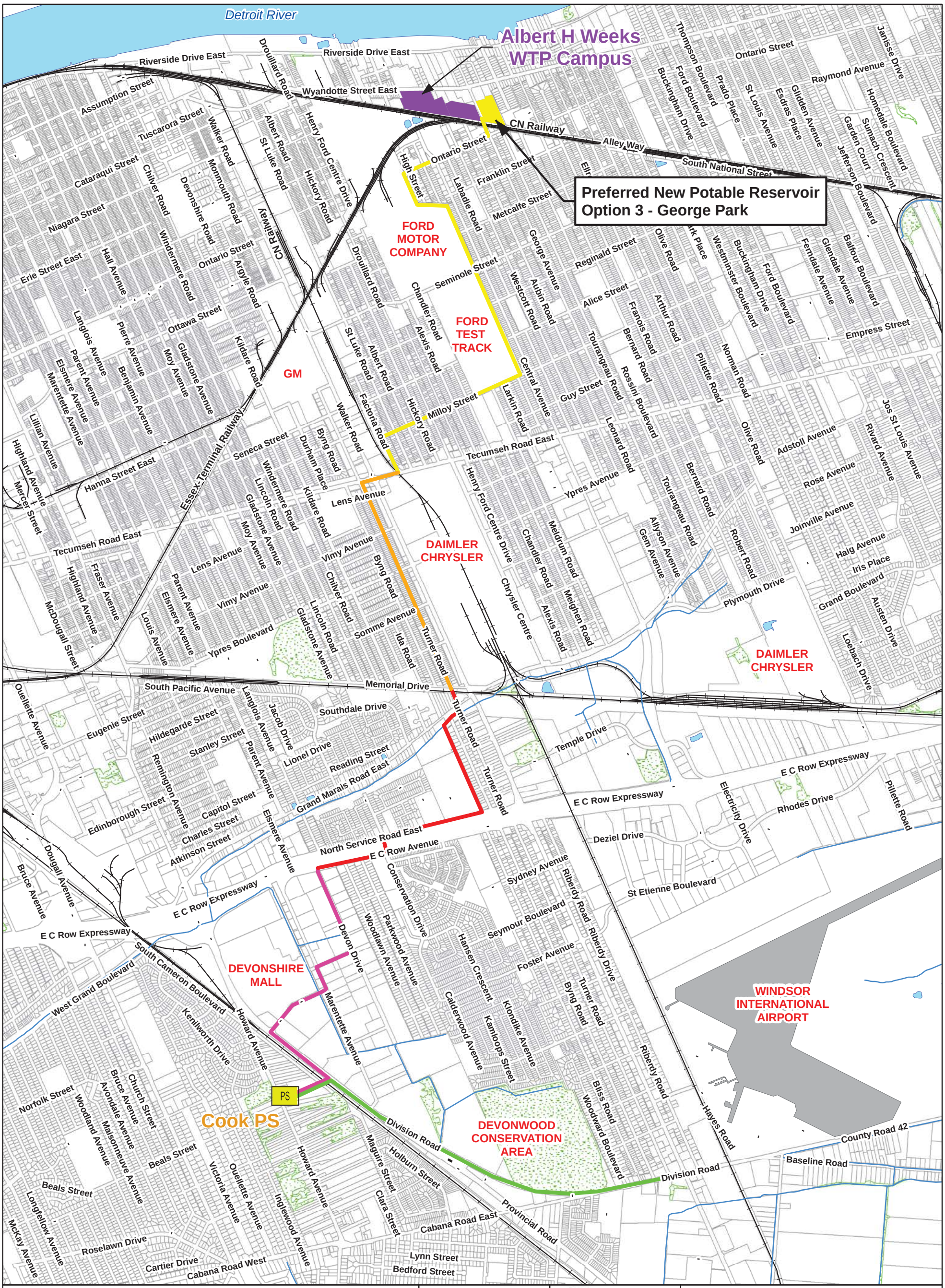
- Phase 3A will start just south of the Memorial Drive CPR rail crossing at Grand Marais Road East. This phase involves a crossing of the Grand Marais Drain before entering a north/south easement on the Fogolar Furlan property. It is anticipated that the boulevard area of the North Service Road will be used before crossing under E.C. Row Expressway at Conservation Drive.

- Phase 3B will commence at the intersection of E.C. Row Avenue and Devon Drive. It is anticipated that most of this route will be built within the roadway. Division Road, among others, is heavily traveled and will require much thought with regard to traffic control and construction staging. This phase will involve a rail crossing into the Cook Pumping Station property.

- Phase 4 extends from the Cook Pumping Station and Reservoir to Walker Road along Provincial and Division Roads. This phase will significantly impact traffic as both roads are heavily travelled.

6.1.3 Environmental Recommendations

The proposed route will pass through the Grand Marais Drain. Further assessment will be required prior to finalizing the central corridor feedermain routing as part of design activities. A meeting should be held with the City of Windsor to determine if an Environmental Evaluation Report will be required.



Legend

- PS — Existing Pump Station
- Watercourse/Drain
- Railway
- Wetland
- Wooded Area
- Lot Line
- Preferred New Potable Water Reservoir: Option 3 - George Avenue Park

Construction Phase

- Phase 1
- Phase 2
- Phase 3A
- Phase 3B
- Phase 4

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Datum:
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Source:
WUC

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August 2014

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Windsor Utilities Commission Potable Water Reservoir and Central Corridor Feedermain Municipal Class EA Schedule 'B'

Figure 6.1
Phasing

6.1.4 Archaeological Recommendations

During preliminary design and prior to any ground disturbance, a Stage 2 assessment will be required to assess the archaeological potential of the central corridor feedermain route. As the majority of work will be within the existing road allowance, it is assumed that the archaeological potential for the area will be low. However, this assessment will determine if further investigation is required.

6.1.5 Permits and Approvals

Prior to construction of the works, the following permits/approvals will be required.

- CNR, Essex Terminal and CPR – railway crossing permits
- Ford Motor Canada and the Fogolar Furlan Club – easement agreements
- City of Windsor – Environmental Evaluation Review (if required), George Avenue Park design
- ERCA – SAR permits (if required)
- MOE – Environmental Compliance Approval.

6.1.6 Key Preliminary Project Schedule

Subject to successful completion of the Class EA process, WUC is planning to begin the central corridor feedermain construction in 2017. The following is the proposed schedule for design and construction activities:

- Design & Approvals 2015/2016
- Tender & Contract Award Fall/Winter 2016/175 (subject to growth)
- Construction Commencement Spring 2017 (subject to growth)

6.1.7 Opinion of Probable Costs

The opinions of probable costs identified in this report are consistent with a level of detail required for planning purposes and completion of a municipal Class EA. Cost estimates should be considered -20% to +30% in recognition that sufficient work has been completed to define the project scope, capacities, processes, general arrangement and infrastructure requirements.

A comparison was undertaken of Alternatives 2 and 3. Alternative 2 is the least expensive cost at approximately $29.5M due to the amount of the route that is constructed in open spaces and green spaces outside of municipal ROWs. The conceptual cost estimate is based on 2014 dollars and does not include engineering, applicable taxes or future escalation.

Table 6.1: Conceptual Central Corridor Feedermain Construction Cost Estimate

ITEM	ESTIMATED COST
Phase 1	
George Street to Fractoria Road	$7,207,925
Phase 2	
Tecumseh Road to CP tracks	$3,910,300
Phase 3A	
Easement/Grand Marais Road to EC Row Avenue	$4,096,250
Phase 3B	
EC Row Avenue to CP tracks	$3,920,225
Phase 4	
CP tracks to Division Road	$4,516,685
Valve Chambers	$2,000,000
Sub Total	**$25,651,385**
Contingency (15%)	$3,847,708
TOTAL	**$29,499,093**

6.1.8 Potential Impacts and Mitigation

Effects on the natural environment and surrounding residents are expected to be short-term and related to construction activities with some restoration activities in green space areas requiring several months to become established.

6.1.9 Mitigation of Potential Impacts through Design

Impacts on the natural environment and residents are expected to be minimized by locating the feedermain such that requirements for lane closures are minimized. Similarly, the feedermain location through green space areas will be selected to minimize the impact on mature trees and sensitive vegetation.

6.1.10 Mitigation of Potential Impacts through Construction

Construction of the proposed potable water reservoir and feedermain will also present some impacts on the natural environment and to the surrounding residents and users of various green spaces impacted. Mitigating measures to minimize such impacts will include:

- Maintaining construction equipment in good repair,
- Ensuring refueling of construction vehicles is completed away from sensitive vegetation and waterways,
- Limiting road shutdowns and providing reasonable detours when necessary,
- Enforcing provincial and municipal noise ordinances and regulations,
- Covering loads of soil and debris leaving the construction area,
- Minimizing materials handling,
- Monitoring to ensure restoration works are effective and complete,

- Containing soil stockpile areas, and
- Cleaning any roads soiled by construction vehicles.
- Minimize the impacts to the natural environment by working with the local conservation authority ERCA and using trenchless techniques when possible.

6.1.11 Monitoring

Monitoring of environmental impacts and the effectiveness of any mitigation implemented as part of this project will include the following:

- Implementation of normal construction techniques to minimize the impact of dust, noise, run-off and spills,
- Inspection of the construction site following completion to ensure that restoration works are completed satisfactorily,
- Protection of adjacent structures and services, and
- Inspection by the City of Windsor, WUC and engineering staff of sediment control measures during construction to ensure worker safety and minimal sediment loading.

6.2 Potable Water Reservoir

6.2.1 Conceptual Design Details

The construction of a potable water reservoir in George Avenue Park is the preferred option to facilitate rehabilitation of Reservoir D and to improve system security by increasing the total storage capacity of the water supply system. Once the potable water reservoir and interconnection infrastructure is constructed and commissioned, Reservoir D will be taken out of service for rehabilitation. The existing George Avenue and A.J. Brian High Lift Pumping Stations will draw water from the potable water reservoir to feed the distribution system while Reservoir D undergoes rehabilitation. Preliminary design details of the potable water reservoir and associated works are described in the following subsections.

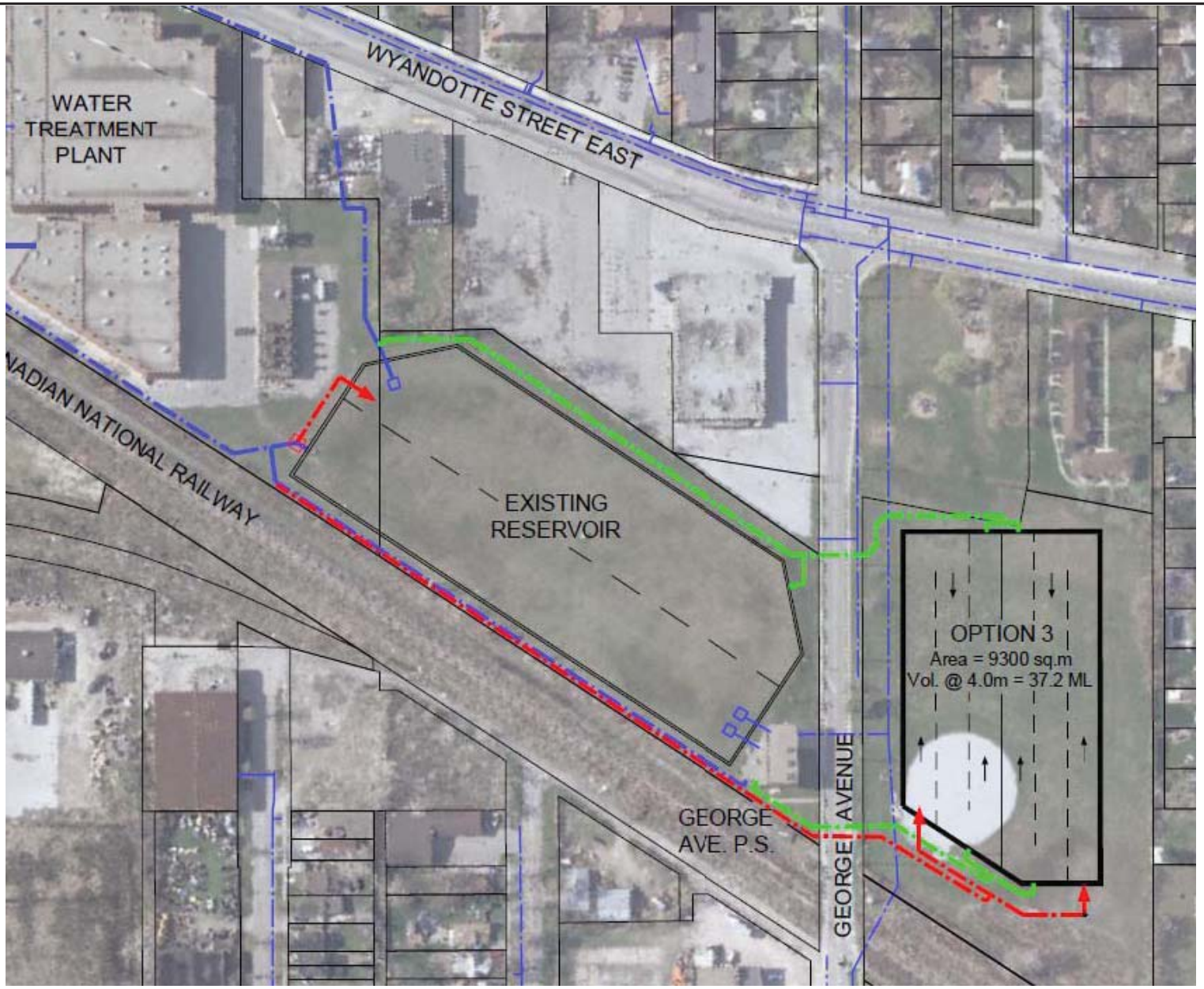
6.2.1.1 Capacity Requirements

As detailed in Section 4.5.2 herein, the potable water reservoir will be constructed for a nominal capacity of 35 ML in order to address the theoretical storage deficit, per MOE criteria, that will occur when Reservoir D is taken out of service for rehabilitation. A new 35 ML reservoir will also increase the total storage capacity of the water system above one average day of demand, which will reduce system security concerns and addresses operational vulnerabilities.

6.2.1.2 Site Layout

The preferred site for the proposed potable water reservoir is within George Avenue Park directly adjacent to the existing George Avenue High Lift Pumping Station. The new reservoir will be constructed at similar grades as the existing Reservoir D in order for it to operate within the existing hydraulic grade line and mitigate the need for a new pumping station. As such, the existing finished grade of George Avenue Park will be raised to accommodate the new reservoir, consistent with the finished grade above Reservoir D.

Reservoir inlet, outlet and interconnection piping will be routed from existing infrastructure on the existing water treatment plant property. Inlet and outlet piping will be of significant diameter to minimize hydraulic losses and, in turn, reduce operational constraints. **Figure 6.2** provides a conceptual sketch of the reservoir layout including the anticipated inlet, outlet and interconnection piping.



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P0TABLE WATER RESERVOIR AND CENTRAL CORRIDOR
FEEDERMAIN MUNICIPAL CLASS ENVIRONMENTAL
ASSESSMENT SCHEDULE 'B

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PN: 60239211

Figure 6.2:
Preferred New Potable Reservoir
Option 3 - George Park

Reservoir Layout (Conceptual)

The northwest corner of the park property will be utilized for construction activities (site trailers, etc.), but will be rehabilitated with park equipment following construction and commissioning of the reservoir. Park amenities in the northwest corner and above the reservoir will be coordinated with the City of Windsor throughout detailed design of the project. A preliminary concept of the rehabilitated park features is provided by **Figure 6.3**. The details and features of the amenities above the new reservoir will be coordinated through detailed design with the City of Windsor. Actual amenities will be dependent on design requirements, system security and the recommendations of the City.

Figure 6.4 provides a preliminary architectural rendering of the potable water reservoir within George Avenue Park. A more detailed site plan will be developed in consultation with the WUC through preliminary and detailed design of the new facility.

6.2.1.3 Reservoir Layout

The potable water reservoir will be designed with a minimum of two independent cells to facilitate operational maintenance and inspections. Each cell will be equipped with baffle walls to inhibit circulation and limit dead zones. It is anticipated that the cells will operate in a north/south orientation whereby the reservoir is divided into east and west cells. A new valve house will be constructed to protect process piping, valves and electrical equipment. It is anticipated that the valve house will be constructed on the south side of the reservoir; however, this will be confirmed through the design phases.

6.2.1.4 Architectural Concept

In recognition of the valve house building being constructed within a park environment, the building will be designed with architectural features which complement the final park concept and amenities. It is anticipated that the building will be designed with a block/stone façade and/or details and architectural rooflines.

6.2.1.5 Electrical

The reservoir valve house will be serviced by a power supply sized to meet the maximum anticipated demand. While there is limited electrical equipment within the valve house, valve actuators, lighting, heating and instrumentation and controls will require a small electrical demand. Servicing requirements will be coordinated with the local utility to determine whether a new service is required or whether an extension of the water treatment plant service is feasible. The results of the electrical coordination through design will determine whether standby power can be provided from the existing water treatment plant standby power building. The standby power requirements will be reviewed during detailed design to confirm the sizing and configuration.

6.2.1.6 Mechanical (HVAC)

Mechanical ventilation will be designed in accordance with National Fire Protection Association (NFPA) Standard 70 *National Electrical Code* (NEC) and the Canadian Electrical Code (CEC).

6.2.1.7 Operation and Control

The potable water reservoir will be equipped with a SCADA System for direct communication and monitoring at the existing water treatment plant. Operation of all valves, gates and building systems will be possible locally, or through the existing SCADA system. Under normal conditions, both (all) cells will be in operation with the levels in each cell monitored via level monitoring instruments. Operators will have the ability to remove cells from operation and coordinate operation with Reservoir D, once rehabilitated. The SCADA System will also monitor the reservoir for alarm conditions and report all alarms back to the central monitoring station as either critical alarm or minor alarm.

Concept Only
Incorporation of various park amenities is subject to reservoir pre-design activities.

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Figure 6.3:
Preferred New Potable Reservoir
Option 3 - George Park

Park Rehabilitation (Conceptual)

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PN: 60239211

Figure 6.4:
Preferred New Potable Reservoir
Option 3 - George Park

Architectural Rendering
(Conceptual)

6.2.1.8 Outdoor Lighting and Security Considerations

Exterior lighting and a building security system will be provided at all doors to ensure personal security for workers and the public.

6.2.2 Construction Staging and Traffic Management

Construction of the potable water reservoir and associated infrastructure will primarily be confined to the boundaries of the WTP and George Avenue Park properties; however, large diameter interconnection piping will need to be installed beneath George Avenue. During periods of piping installation, George Avenue will need to be temporarily closed between Wyandotte Street E and Ontario Street. This section of road does not contain residential or commercial properties, but does provide a primary crossing of a CNR line. During the need for periodic closures of George Avenue, traffic will be detoured to Pillette Road, which provides another crossing location of the CNR line.

6.2.3 Environmental Recommendations

No environmental requirements are expected as part of this component of the project.

6.2.4 Archaeological Recommendations

No further assessment required.

6.2.5 Permits & Approvals

Prior to construction of the works, the following permits/approvals will be required.

- MOE - amendment to existing water permit.
- Electrical Safety Authority – electrical permit (if required).

6.2.6 Preliminary Project Schedule

Subject to successful completion of the Class EA process, WUC is planning to construct the proposed potable water reservoir in 2015/16. The following is the proposed schedule for design and construction activities:

- Design & Approvals Fall / Winter 2014/15
- Tender & Contract Award Spring 2015
- Construction 2015/16
- Substantial Performance Fall 2016

6.2.7 Opinion of Probable Costs

The opinions of probable costs identified in this report are consistent with a level of detail required for planning purposes and completion of a municipal Class EA. Cost estimates should be considered -20% to +30% in recognition that sufficient work has been completed to define the project scope, capacities, processes, general arrangement and infrastructure requirements.

Table 6.2 provides a breakdown of the conceptual cost estimate for the proposed potable water reservoir and associated infrastructure as described herein. The conceptual cost estimate is based on 2014 dollars and does not include engineering, applicable taxes or future escalation.

Table 6.2: Conceptual Potable Water Reservoir Construction Cost Estimate

ITEM	ESTIMATED COST
Property Acquisition	$0
General (Mob/Demob, Bonding, Insurance, etc.)	$1,765,000
Site Works & Restoration	$330,000
Rail Crossings	$0
Yard Piping & Chambers	$6,000,000
Excavation & Backfill	$2,400,000
Concrete	$18,200,000
Process Mechanical	$750,000
Potable Water Pumping Station	$0
Miscellaneous Metals	$150,000
HVAC Mechanical, Electrical, Instrumentation & Controls	$200,000
Sub Total	**$29,795,000**
Contingency (5%)	$1,490,000
Total	**$31,285,000**

6.2.8 Potential Impacts and Mitigation

Effects on the natural environment and surrounding residents are expected to be limited to short-term construction impacts in the immediate area. The project has the potential to have limited disruption to the use of portions of the WTP. George Avenue Park playground facilities will be removed during construction with recognition that park playground facilities will be restored following construction through coordination with the City of Windsor. Final details of the park amenities will be coordinated with the City of Windsor. Restoration works will be determined through detailed design to the approval of the City of Windsor, WUC and other agencies.

6.2.9 Mitigation of Potential Impacts through Design

The proposed potable water reservoir may present limited impacts on the natural environment and to the surrounding residents. Mitigating measures to minimize such impacts will include:

- Provide architectural valve house and access buildings to complement the park environment.
- Restore the park area with trees (adjacent to reservoir), walking paths, etc. to the discretion of the City of Windsor.

6.2.10 Mitigation of Potential Impacts through Construction

Construction of the proposed potable water reservoir and feedermain will also present some impacts on the natural environment and to the surrounding residents and users of various green spaces impacted. Mitigating measures to minimize such impacts will include:

- Maintaining construction equipment in good repair,
- Ensuring refueling of construction vehicles is completed away from sensitive vegetation and waterways,
- Limiting road shutdowns and providing reasonable detours when necessary,
- Enforcing provincial and municipal noise ordinances and regulations,
- Covering loads of soil and debris leaving the construction area,

- Minimizing materials handling,
- Monitoring to ensure restoration works are effective and complete,
- Containing soil stockpile areas, and
- Cleaning any roads soiled by construction vehicles.

6.2.11 Monitoring

Monitoring of environmental impacts and the effectiveness of any mitigation implemented as part of this project will include the following:

- Implementation of normal construction techniques to minimize the impact of dust, noise, run-off and spills,
- Inspection of the construction site following completion to ensure that restoration works are completed satisfactorily,
- Protection of adjacent structures and services, and
- Inspection by the City of Windsor, WUC and engineering staff of sediment control measures during construction to ensure worker safety and minimal sediment loading.

7. Municipal Class EA Project Completion

This Screening Report has been prepared as per the Municipal Class EA process for ***Schedule B*** projects. It outlines the process which the Windsor Utilities Commission has undertaken to address the problems identified, and the potential solutions to be implemented. This process has involved mandatory contact with the directly affected public, Aboriginal communities and review agencies to ensure that they were aware of the project and that their concerns have been addressed, along with a detailed evaluation of all reasonable and feasible solutions, leading to a recommended and preferred solution. This represents the conclusion of the planning procedures as outlined in the Municipal Class EA process. This section of the report outlines the next steps to be completed prior to the Windsor Utilities Commission proceeding with the outlined works.

7.1 Filing Procedure

By following the procedures outlined in the Municipal Class EA document (revised October 2000, as amended in 2007 and 2011), for the solicitation of input from members of the public, Aboriginal communities and interested agencies, all significant concerns were identified, discussed and where applicable, incorporated into the draft report, and development of the preferred solution documented herein.

The draft report will be placed on public record for the required thirty (30) day review period, during which time interested parties are invited to review its contents. The public thereby has the opportunity to change the status of this project from a Schedule 'B' Municipal Class EA to an individual environmental assessment, should any concerns remain unresolved. The procedure is termed a "Part II Order" and may result in a formal public hearing.

The "Part II Order" procedure is described by the "Municipal Class Environmental Assessment" document, (revised October 2000, as amended in 2007 and 2011), as follows:

1. A person with a concern brings it to the attention of the proponent (i.e. Windsor Utilities Commission) during the Planning Process;

2. If the concern cannot be resolved through discussions with the proponent, the person may request that the proponent voluntarily elevate the project to an individual environmental assessment;

3. If the proponent refuses and the person with the concern wishes to pursue the matter, they shall make a written submission to the Minister of the Environment, Environmental Approvals Access & Service Integration Branch at 2 St. Clair Avenue West, Floor 12A, Toronto, Ontario, M4V 1L5, with a copy to the proponent, requesting the Minister to comply with 'Part II" of the Environmental Assessment Act. This written request must be submitted to the Minister within the 30-calendar day review period after the proponent has filed the Screening Report in the public record for public review and issued the Notice of Completion;

4. The Minister shall consider both sides of the argument and make a decision;

5. If the Minister agrees to the "Part II Order" request, then the Minister shall give notice with reasons to the proponent and the person requesting the "Part II Order" that the Class EA approval does not apply to the specific project under discussion. The proponent shall then be required to prepare and submit an Individual EA for that project; or resolve the issue with the person making the request, or defer the project;

6. If the Minister does not agree to the "Part II Order" then the Minister shall give notice with reasons to the person making the request and to the proponent.

7.2 Notification of Completion

In accordance with the Class EA document, a Notice of Completion was advertised in the Windsor Star on September 24 & 27, 2014 and mailed out to each of the previously contacted property owners, stakeholders, Aboriginal communities and review agencies on September 24, 2014. This notice outlined the project's completion, included the recommended solution, identified the thirty (30) day review period and the right to request the Minister of the Environment to issue an order to comply with Part II of the EA Act. The report was placed on public record on September 29, 2014 for public and stakeholder review at the Windsor Utility Commission and the Windsor office of AECOM. Comments and/or concerns are to be submitted no later than October 28 2014. Anyone who still has any outstanding concerns, within the thirty (30) day review period can request the Minister of Environment to issue an order to comply with Part II of the EA Act if this concern cannot be addressed by the Proponent. This is known as a "Part II Order", bumping up the status of the project to a full Individual Environmental Assessment. Further details about the "Part II Order" procedure are included in Section 7.1 and in the Notice of Completion provided in **Appendix F**.

The work undertaken in preparing and filing this report represents completion of the Class EA process. Subject to the completion of the mandatory thirty (30) day review period, and no Part II Order requests, the Windsor Utilities Commission intends to proceed with implementation.