

University of Alberta Properties Trust

West 240

Neighbourhood Design Report

December 19, 2025

DRAFT

Neighbourhood Design Report

UAPT West 240

December 19, 2025

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Contents

1	Introduction	1
1.1	Location	1
1.2	Site Features and Existing Topography	3
1.3	Geotechnical Investigation	3
1.3.1	Development Near Top of Bank	5
1.3.2	Lot Grading Along Top of Bank	6
1.3.3	Implication of Sand Deposits	6
1.4	Existing Studies, Reports and Engineering Drawings	7
1.5	Existing Land Use and Ownership	7
1.6	Proposed Site Plan and Land Use	9
1.7	Proposed Development Staging	12
2	Sanitary Sewer System	14
2.1	Design Criteria	16
2.2	Area Master Plan Recommended Servicing	17
2.3	Proposed Sanitary Sewer System	17
2.4	Permanent Area Contribution	21
3	Stormwater Management System	22
3.1	Design Criteria	23
3.2	Higher Level Recommended Servicing	24
3.3	Boundary Conditions and Adjacent Servicing Considerations	24
3.4	Proposed Stormwater Management System	28
3.4.1	General Stormwater Servicing Scheme	28
3.4.2	Major System	33
3.4.2.1	Major Drainage System and Overland Flow	33
3.4.2.2	Stormwater Management Facilities	35
3.4.2.3	Constructed Wetland Offset Value	44
3.4.3	Minor Drainage System	44
3.4.4	Low Impact Development (LID)	52
3.5	Permanent Area Contribution	53
4	Erosion and Sedimentation Control (ESC)	54
5	Proposed Roadway Network	55
6	Conclusions and Recommendations	57
6.1	Sanitary Sewer System	57
6.2	Stormwater Management System	57

Tables

Table 1.1 - Land Use and Population Statistics.....	11
Table 2.1 – Sanitary System Calculations.....	18
Table 3.1 Flow Comparison in Grandview Heights Pipes	30
Table 3.2 SWMF 1 (Constructed Wetland) Sizing Parameters Used in PCSWMM Model Set Up	35
Table 3.3 SWMF 2 (DRY Pond) Sizing Parameters Used in PCSWMM Model Set Up.....	35
Table 3.4 - Runoff Coefficient Calculation	39
Table 3.5 – Minor Storm System Calculations.....	46

Figures

Figure 1.1 Project Location Plan
Figure 1.2 Existing Topography
Figure 1.2a Geotechnical Considerations at Top of Bank
Figure 1.3 Existing Land Use and Ownership
Figure 1.4 Proposed Land Use
Figure 1.5 Proposed Staging Plan
Figure 2.1 Existing Sanitary Trunk
Figure 2.2 Proposed Sanitary Servicing Concept
Figure 2.3 Proposed Sanitary Trunk Plan/Profile
Figure 3.1 Predevelopment Flow Pattern
Figure 3.2 Grading Interface with Northern Forestry Center and Tree Hedgerows
Figure 3.2a Whitemud Creek Grading Interface
Figure 3.3 Existing Storm Outfall
Figure 3.4 PCSWM Model of Existing Grandview Minor System
Figure 3.5 PCSWM Model of West 240
Figure 3.6 Major Storm Approach Considerations
Figure 3.7 Proposed Major Storm Plan
Figure 3.8 Storm Water Management Facility 1
Figure 3.8a Storm Water Management Facility 1 Control Manhole
Figure 3.9 Storm Water Management Facility 2
Figure 3.10 Proposed Minor Storm Servicing Concept
Figure 3.11a Proposed Storm Interconnecting Pipes Plan/Profile
Figure 3.11b Proposed Storm Interconnecting to Outfall Pipes Plan/Profile
Figure 3.12a Proposed Storm Trunk Lines Plan/Profile
Figure 3.12b Proposed Storm Trunk Lines Plan/Profile
Figure 5.1 Roadway Network Plan

Appendices

- A - Drainage Utility Servicing Calculations**
- B - Geotechnical Reports**
- C - Existing City/Adjacent Area Infrastructure Data**
- D - PCSWMM Model Details**
- E - Permanent Area Contribution Cost Details**
- F - Pre and Post Development Runoff Analysis**

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1 Introduction

This neighbourhood design report was prepared by Arcadis on behalf of the University of Alberta Properties Trust (UAPT) in support of the Neighbourhood Area Structure Plan (NASP) submission by B&A under separate cover (December 2025). This report outlines the general grading and servicing scheme for the development of the West 240 Development Site.

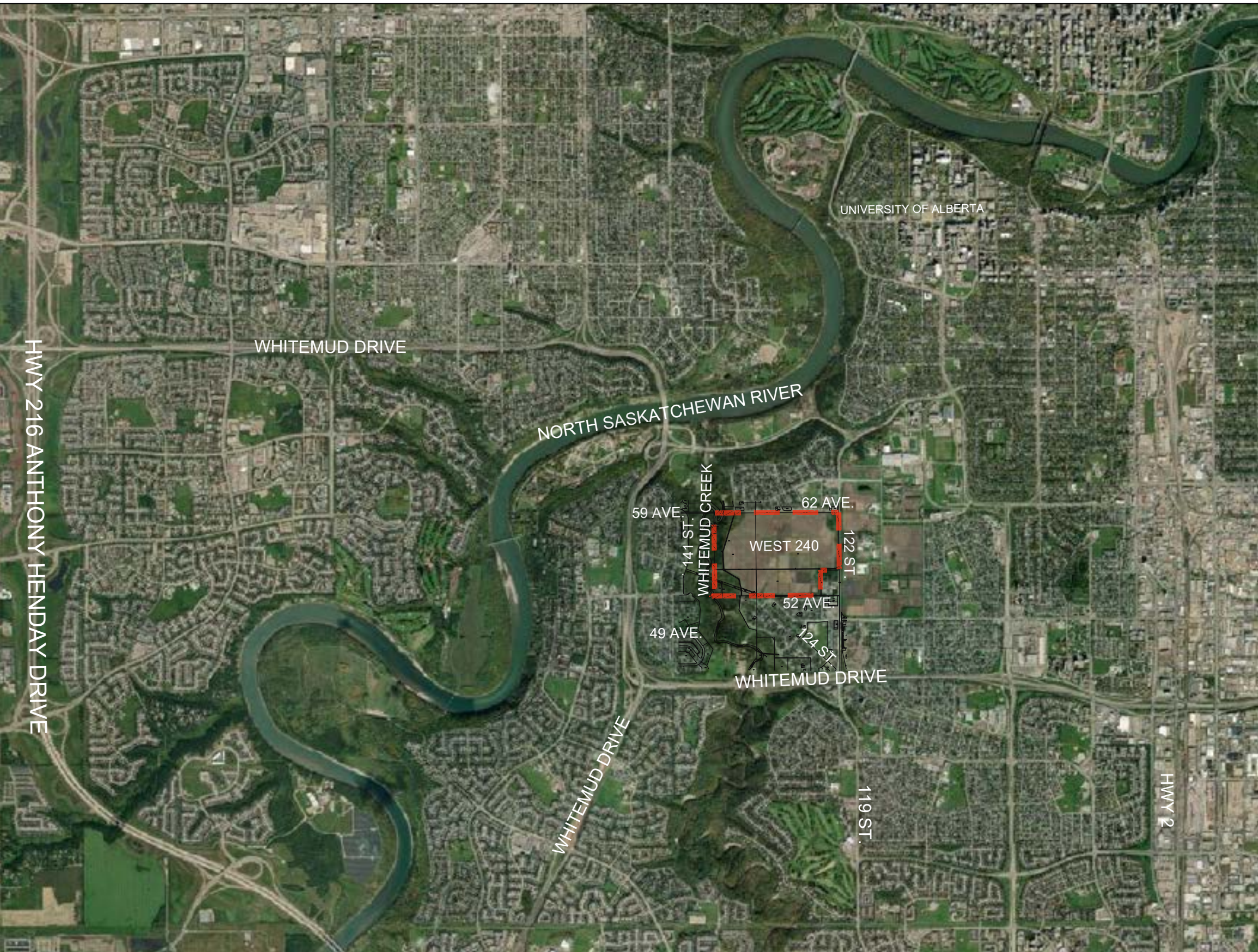
This document is intended to supersede the Storm Servicing Report submitted by Arcadis to the City of Edmonton in January 2024.

1.1 Location

The site is located west of 122 Street, east of Whitemud Creek and south of 62nd Avenue within the City of Edmonton. The proposed Neighbourhood Design Report covers a gross area of approximately 93.59 hectares within the City of Edmonton, with legal descriptions:

- Block A, Plan 4971AJ;
- Block A, Plan 3347EO;
- Block C, Plan 4971AJ; and,
- Block B, Plan 4971AJ; to form the full project site.

Figure 1.1 illustrates the proposed development area located south of 62 Avenue and north of the Lansdowne neighbourhood, west of 122 Street and east of Whitemud Creek. The development is situated within an established Edmonton, AB area and is not currently part of any existing Area Structure Plan or NASP in effect. The available as-built existing infrastructure information made available by the City of Edmonton has been used to inform the design approach outlined within this report.



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LEGEND

 PROPERTY BOUNDARY

WEST 240

NEIGHBOURHOOD
DESIGN REPORT

Figure 1.1

**PROJECT
LOCATION PLAN**



FILE NO. E0-145328

1.2 Site Features and Existing Topography

The site is currently used for agriculture and farming research and is relatively flat with localized ridges and depressions where several natural marshes appear to be or have historically been. The proposed project site is located in the uplands of the Whitemud Creek side slopes and elevations within range from 663.50m to 678.50m. General site topography slopes from east to west with the lowest point being the northwest corner. A portion of the drainage flows to a tree stand in the northeast corner where it appears to dissipate through transpiration and flow to 62 Avenue. Topography and pre-development flow patterns are as shown in **Figure 1.2**. Further calculation and comparison of pre- and post-development flows for the purposes of determining existing tree retention, as well as allowable runoff directly into the Whitemud Creek and other adjacent areas are as shown in **Figures F.1** and **Figure F.2**, with details of calculated pre vs post development flows found in **Appendix F**. Runoff not contained within the West 240 Major Storm Basin is further described in **Section 3.0**.

1.3 Geotechnical Investigation

A Geotechnical Investigation has been conducted by CT & Associates Engineering Inc. for the property situated at the municipal address of 5510 – 122 Street, Edmonton, Alberta (legal addresses as outlined in **Section 1.1**). A Slope Stability Evaluation was also conducted by CT & Associates Engineering Ltd. to determine building setback distances and fill constraints along the top of bank. The purpose of these analyses is to review the surficial soils and groundwater conditions on the subject site, to identify and assess potential areas of concern, and ensure development adjacent to the top of bank will not result in any adverse effects to the natural area. Recommendations for buildings, grading and the stormwater management facility have been confirmed and the concept plan conforms to these recommendations. The geotechnical report is included in **Appendix B**. The report notes that the site is generally comprised of 150 - 200mm of topsoil atop high plastic clay with sand deposits found in various locations. More information regarding the impact of these deposits can be found in **Section 1.4.3 Implication of Sand Deposits**.

The historical air photo review and regulatory agency searches indicated there were no well sites within the project area. There is an existing high pressure pipeline corridor at the southwest corner of the site, which will be maintained as an existing boundary condition. There is an existing 1200mm sanitary pipe within a 6.10m easement running east/west within the site that will be maintained, and the intent is to tie the sanitary servicing into this existing sanitary trunk.

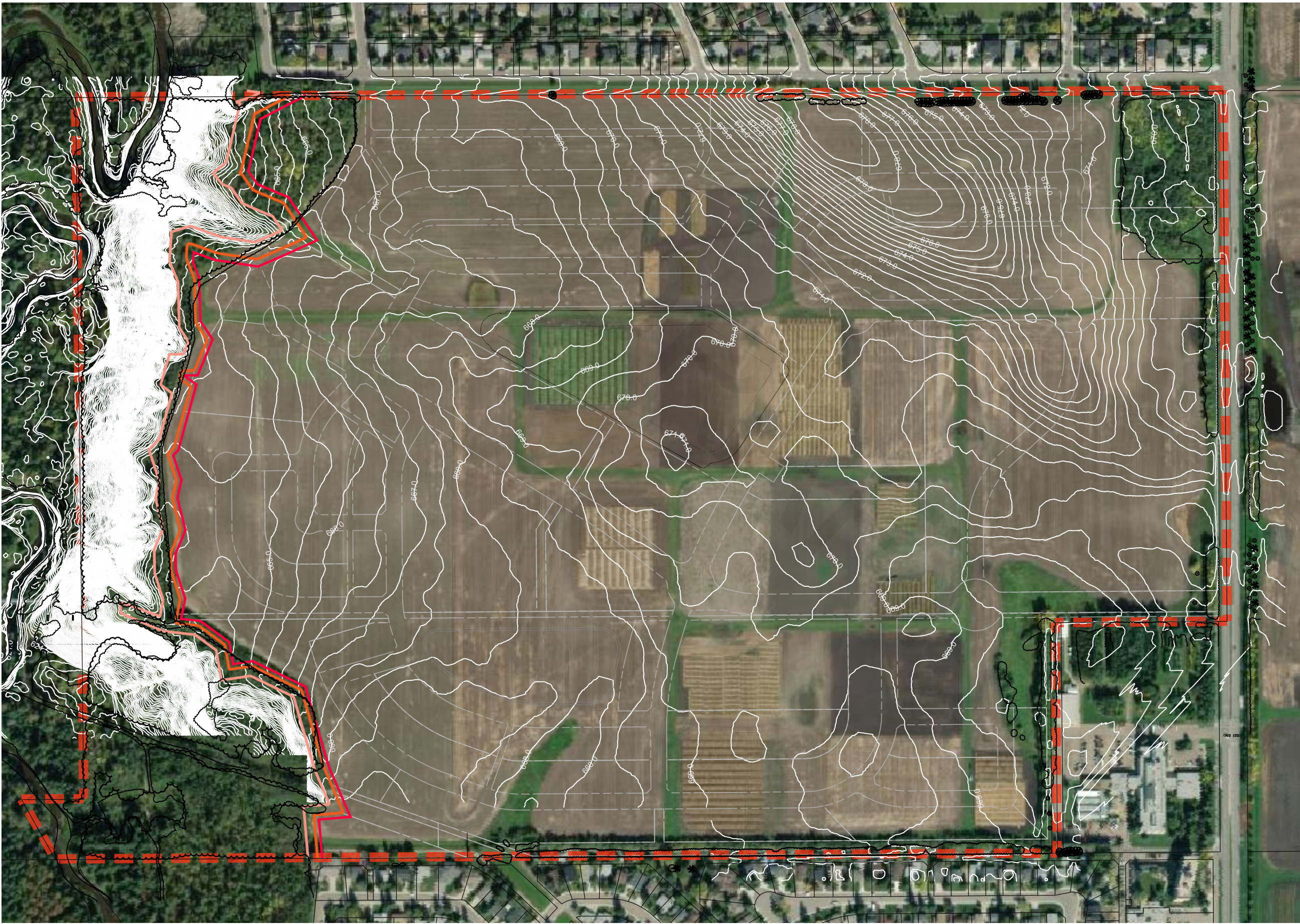
As development proceeds, site specific geotechnical investigations will further inform the design criteria and construction recommendations for the development, and these reports will be included as part of the detailed design of each phase/stage. For stages adjacent to the creek and top of bank (TOB) setback areas, additional slope stability analysis will be conducted with proposed detailed design grades.

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LEGEND

-  PROPERTY BOUNDARY
-  PROPOSED STAGING
-  TOP OF SLOPE
-  URBAN DEVELOPMENT LIMIT (UDL)
-  BUILDING LIMIT LINE
-  EXISTING CONTOURS PER SURVEY 2025-06-05
-  EXISTING TREE
-  TREES POTENTIALLY RETAINED

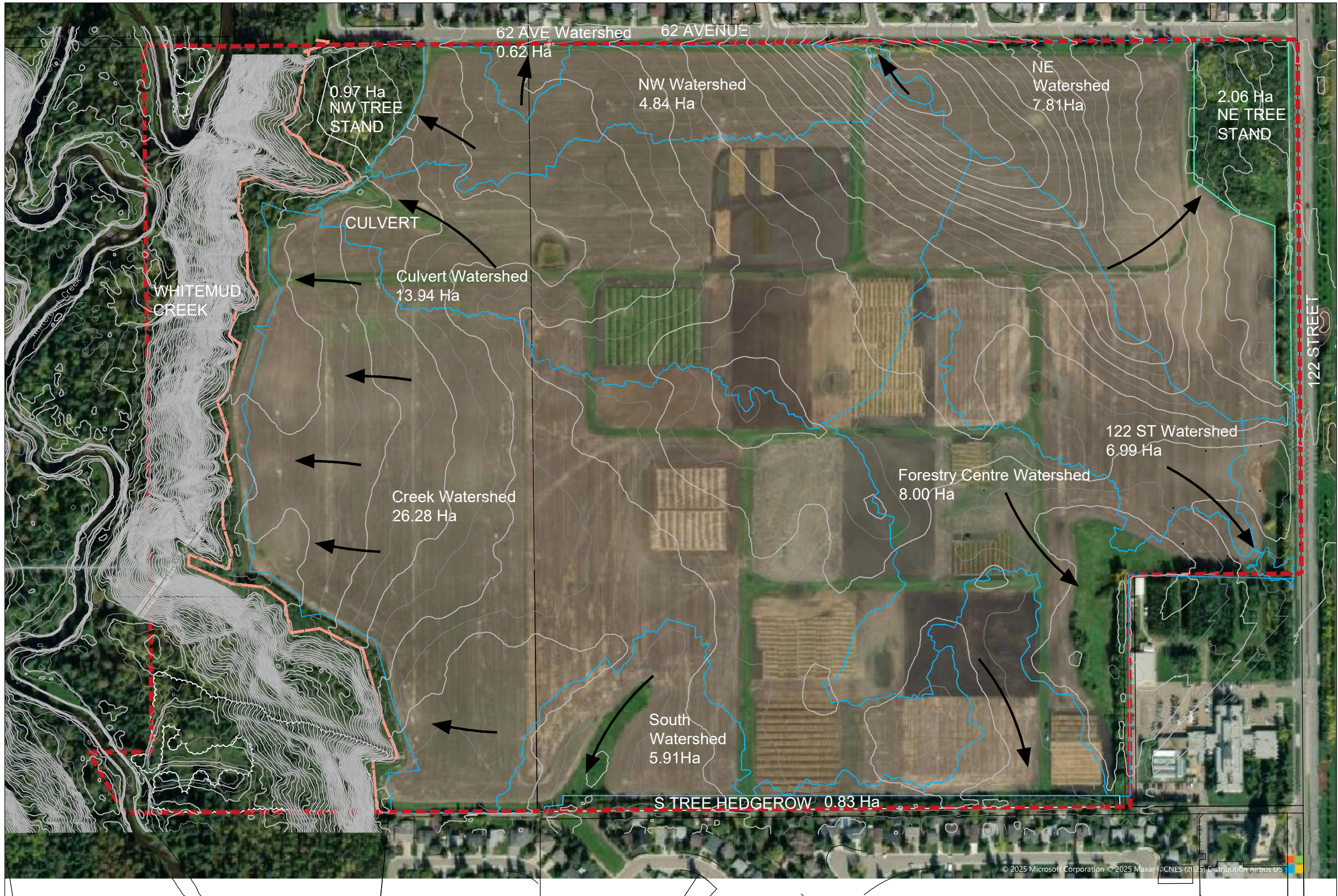


WEST 240
NEIGHBOURHOOD
DESIGN REPORT
Figure 1.2
EXISTING SITE
TOPOGRAPHY



FILE NO. E0-145328

C:\Users\lucierc394\OneDrive\Arcadis\ACCC\Bos Meent\10_WP04-CIV\Sheets\Pre-Post_LDev\Flows Figure 20251112.dwg Plotted At: Dec. 20, 25 1:02 AM Last Saved By: lucker394 Last Saved At: Dec. 17, 25 4:31 PM



1 : 2000



- Legend**
- PROPERTY BOUNDARY
 - TOP OF SLOPE
 - EXISTING CONTOURS
PER SURVEY 2025-05-06
 - GENERAL
PRE-DEVELOPMENT
FLOW DIRECTION

- ASSUMPTIONS:**
1. Calculated Watershed area excludes the area of the tree stands and any area west of development boundary.

WEST 240
NEIGHBOURHOOD
DESIGN REPORT

Figure F.1
PRE-DEVELOPMENT
RUNOFF



FILE NO. E0-145328

1.3.1 Development Near Top of Bank

The Whitemud Creek is a key feature and design constraint for the West 240 development. The neighbourhood design balances stormwater runoff being directed away from the top of bank (TOB) and minimizing engineered fill requirements. Unlike adjacent neighbourhoods, developed in the 1960s and 70s, where runoff from larger storm events flows directly over roads into the creek, West 240 incorporates a stormwater management facility (SWMF) to collect and treat runoff before discharge. Regulatory requirements from Alberta Environment, City Drainage Planning, and EPCOR Drainage now prohibit direct runoff to the creek due to water quality and bank erosion concerns. Geotechnical analysis recommends maintaining slope stability by keeping the SWMF at least 75 meters from the development limit, which is defined as the TOB plus an additional 17.5 meters into the site. This approach is shown in **Figure 1.2a** below.

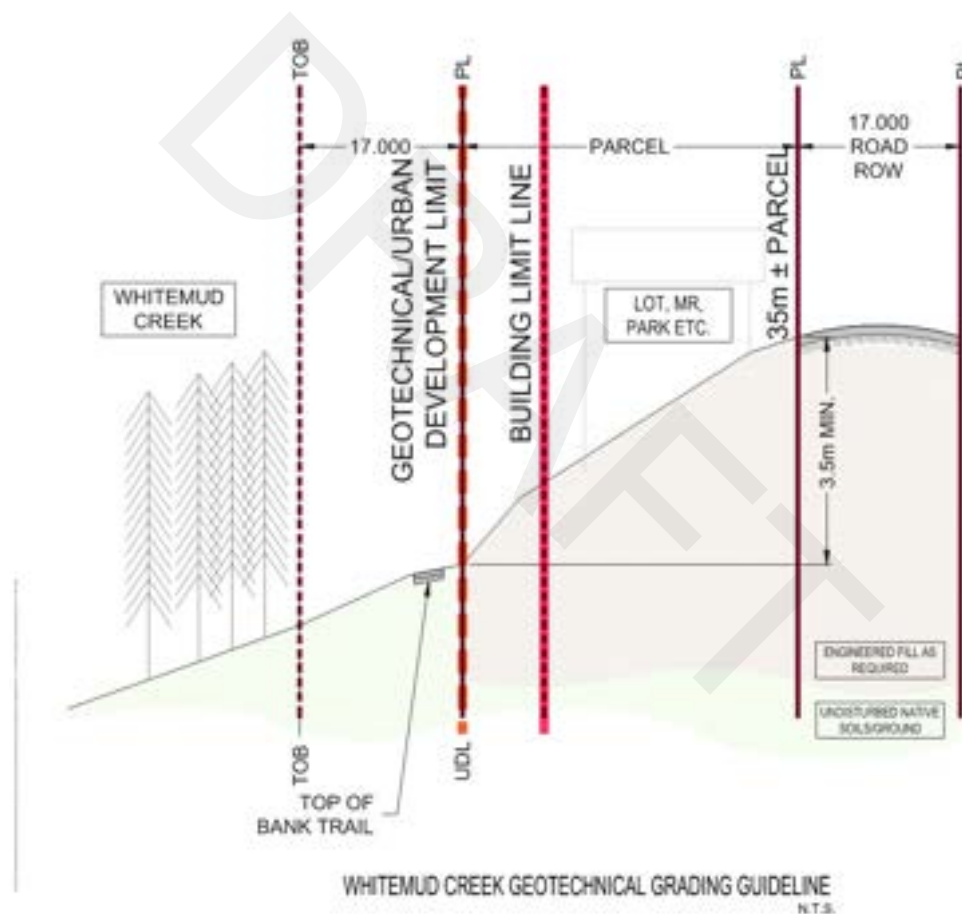


Figure 1.2a - Geotechnical Considerations at TOB

Additional considerations for future stages adjacent to the top of bank include:

- No construction shall occur within the creek delineation past the development limit line or TOB;
- All existing vegetation between the top of bank and development limit line, apart from the construction limits for the TOB walkway, should remain undisturbed to protect the integrity and stability of the slopes (referred to as the vegetated edge);
- No buildings or major structures should be constructed beyond the building limit line;

- No swimming pools, fishponds, or other water retention facilities shall be permitted within 75m of the TOB line;
- Stormwater management facilities shall be located at least 25m from the TOB line (as illustrated in **Figure 3.6**;
- All underground service construction including storm, sanitary and water lines, shall be adequately designed and installed according to geotechnical specifications specific to the site slope stability report(s);
 - Construction shall be monitored and inspected to ensure appropriate practices are maintained within areas adjacent to the TOB and development limit line; and,
- If plans should change with TOB roads, UG utilities within the road right-of-way (ROW) shall be situated on the furthest side of the ROW from the TOB;
 - Construction shall be monitored and inspected to ensure appropriate practices are maintained within areas adjacent to the TOB and development limit line.

1.3.2 Lot Grading Along Top of Bank

Considerations for stages requiring grading adjacent or within the top of bank include:

- Localized grading for development (residential, community, and commercial sites) adjacent to the TOB shall be completed to ensure positive drainage away from the TOB, where possible;
 - Construction of these developments shall be monitored to ensure appropriate practices are maintained within areas adjacent to the TOB and development limit line;
 - Where grading is planned to split a portion of site runoff into the creek directly, pre- and post-development flow analysis has been performed, and can be referenced in **Appendix F**.
- Maintenance of an undisturbed vegetative edge along the development limit line, apart from where the TOB walkway construction is to occur, to protect the integrity and stability of the slopes;
- All roof leaders and foundation drainage weeping tile service connections for buildings adjacent to the TOB shall be connected directly to the storm sewer main;
- No underground sprinkler systems, nor landscaping that includes significant gravel placement at the rear of the lot, shall be permitted for lots adjacent to the TOB; and,
- No grading shall occur that results in concentrated flows toward the TOB that differ from those occurring in pre-development conditions. Change from pre-development flows via development work may be permitted where implemented to improve existing areas of erosion or flooding concern.

1.3.3 Implication of Sand Deposits

The location of a known sand deposit within the site is as shown in the Geotechnical Report found in **Appendix B**. It appears to extend through much of the east portions of the site.

Based on the preliminary grading concept associated with this report, and as illustrated in **Figure 3.7**, no concerns were raised by geotechnical subconsultants, particularly due to large cuts in the areas of concern. The sand deposits were encountered at between 3.0m and 6.5m depth.

As development proceeds, site specific geotechnical investigations of the areas of sand will further inform the design criteria and construction recommendations for the development. These reports will be included with the detailed design drawing submissions for any stage located in an impacted area.

1.4 Existing Studies, Reports and Engineering Drawings

Contributing to this neighbourhood design report are the following documents:

- West 240 Storm Servicing Design Report submitted by Arcadis January 2024
- West 240 Neighbourhood Area Structure Plan, by B&A December 2025
- 2025 City of Edmonton Engineering Design Standards
- Existing plans from the Grandview neighbourhood sewer relining project
- Existing plans of Outfall No. 6
- Existing plans of the sanitary trunk
- Blackmud/Whitemud Creek Surface Water Management Group Blackmud/Whitemud Creek Surface Water Management Study Final Report, 2017

1.5 Existing Land Use and Ownership

The current approved land use for the subject site is Alternative Jurisdiction (AJ) owing to its status as a site under the jurisdiction of provincial or federal laws and being part of the University of Alberta. The Northern Forestry Centre is situated in the southeast corner of the quarter section (Block A, Plan 4971 AJ). The neighbourhoods located to the north, and south of the subject site are zoned Small Scale Residential (RS). The parcel east of 122 Street is zoned as AJ with no current plans for redevelopment. At present, the subject land is utilized as crop/farmland for the University of Alberta faculty of Agriculture. The University of Alberta Properties Trust group will submit an NASP to support the rezoning of the site to develop the area into RSF, commercial and multi-unit areas in January 2026. **Figure 1.3** shows the study area and existing land use and ownership.



WHITEMUD CREEK



LEGEND
— PROPERTY BOUNDARY

WEST 240
NEIGHBOURHOOD
DESIGN REPORT

Figure 1.3
EXISTING LAND USE
AND OWNERSHIP



FILE NO. E0-145328

SOURCE: B&A NASP DECEMBER 2025

1.6 Proposed Site Plan and Land Use

As per the NASP prepared by B&A, the land is proposed to consist of a mix of residential, commercial, and community uses. A combination of low, medium and high-density residential sites are proposed, featuring both street oriented and multifamily residential, providing many options for future residents and contributing to the completeness of the site.

Other features of the proposed site plan will include:

- A mixed-use village centre;
- Two stormwater management facilities;
- Mixed-use/income development intended to provide commercial and residential services;
- MR park space as required under the MGA; and,
- Retained ER wherever required.

The concept site plan is as shown in **Figure 1.4**.

The current concept plan proposes a dry pond located on the south side of the site which will manage drainage from the southern portions of the proposed development, and a Constructed Wetland centrally located within the site to manage stormwater runoff for the majority of the site.

Table 1.1 outlines the land use and population statistics as proposed in the NASP (2025).



LEGEND

- Subject Lands
 - Mixed-Use Urban Village
 - Top of Bank
 - Urban Development Line (UDL)
 - Building Limit Line
 - Top of Bank Walkway
 - Future Location of Mobility Hub
-
- Environmental Reserve (ER)
 - Pipeline & Utility ROW
 - Municipal Reserve (MR)*
 - Public Utility Lot / SWMF
 - Mixed Use / Urban Village
 - Road & Lanes
 - Low Density Residential
 - Medium Density Residential
 - High Density Residential
 - Mixed Use / Urban Village Flex Area (High Density Residential)**



SOURCE: B&A NASP DECEMBER 2025

WEST 240
NEIGHBOURHOOD
DESIGN REPORT

Figure 1.4
**PROPOSED
LAND USE**



FILE NO. E0-145328

DECEMBER, 2025

Table 1.1 - Land Use and Population Statistics

	Area (ha)	Area (ac)	% of GA	% of GDA				
Gross Area (GA)	93.64	231.39						
Non-developable Area	14.38	35.53	15.36%					
Environmental Reserve (ER)	13.57	33.53	14.49%					
Pipeline & Utility ROW	0.81	2.00	0.87%					
Gross Developable Area (GDA)	79.26	195.86		100%				
Municipal Reserve (MR)*	7.93	16.21		10.00%				
Public Utility Lot / SWMF	6.46	13.24		8.20%				
Mixed Use (Commercial)**	4.06	10.05		5.10%				
Road & Lanes	13.4	32.07		16.80%				
Total Non-Residential Area	31.85	76.13		40.20%				
Net Residential Area (NRA)	47.41	119.73		59.80%				
Residential Land Use Area	Area (ha)	Area (ac)	%of GDA	Units/ha	Units	People/ Unit	Population	%of NRA
Low Density Residential	17.75	43.86	22.4%	25	444	2.8	1243	37%
Street Oriented (Medium Density Residential)	9.85	24.34	12.4%	45	443	2.8	1241	21%
Medium Density Residential	13.72	33.90	17.3%	90	1235	1.8	2223	29%
Mixed Use (Multi-Family / High Density Residential)**	6.09	15.05	7.7%	175	1066	1.8	1918	13%
Total Residential Area	47.41	117.15	59.80%		3188		6625	100%
Population Density	139		persons per net residential hectare			*** not directly used in Sanitary Flow Generation Calculations		
Unit Density	67		units per net residential hectare					
Low Density / Medium Density / High Density Unit Ratio	14% / 53% / 33%							

*Municipal Reserve dedication to be determined at time of subdivision

**Mixed Use areas assumed to be 60% Residential Uses and 40% Non-residential Uses

1.7 Proposed Development Staging

As shown in **Figure 1.5**, the preliminary staging of the development will provide multiple accesses to the site, supporting emergency and maintenance services for residents. It is proposed that the north constructed wetland (SWMF 1) will be constructed with the first phase of development to ensure management of storm flows until the south dry pond (SWMF 2) is constructed. This facility *may* be constructed in segments with interim portions sized to service the first stages of development. Regardless of sequence for SWMF 1 construction, the ultimate connection from this storm pond to the downstream tie-in in the Grandview Heights neighbourhood shall be established to convey discharge of the pond to the existing outfall. The interim discharge will be controlled to match predevelopment flows. Ultimately, SWMF 1 will be constructed in full, followed by interconnecting pipes to bring on to the dry SWMF (2) flows. SWMF 2 will service the southwest portion of the development site and will then discharge via gravity into the downstream SWMF (1). Further detail on this connection is as outlined in **Section 3.4 Proposed Stormwater Management System**.

The proposed staging and development of the site is subject to market demands and may be further revised as the subdivision develops.

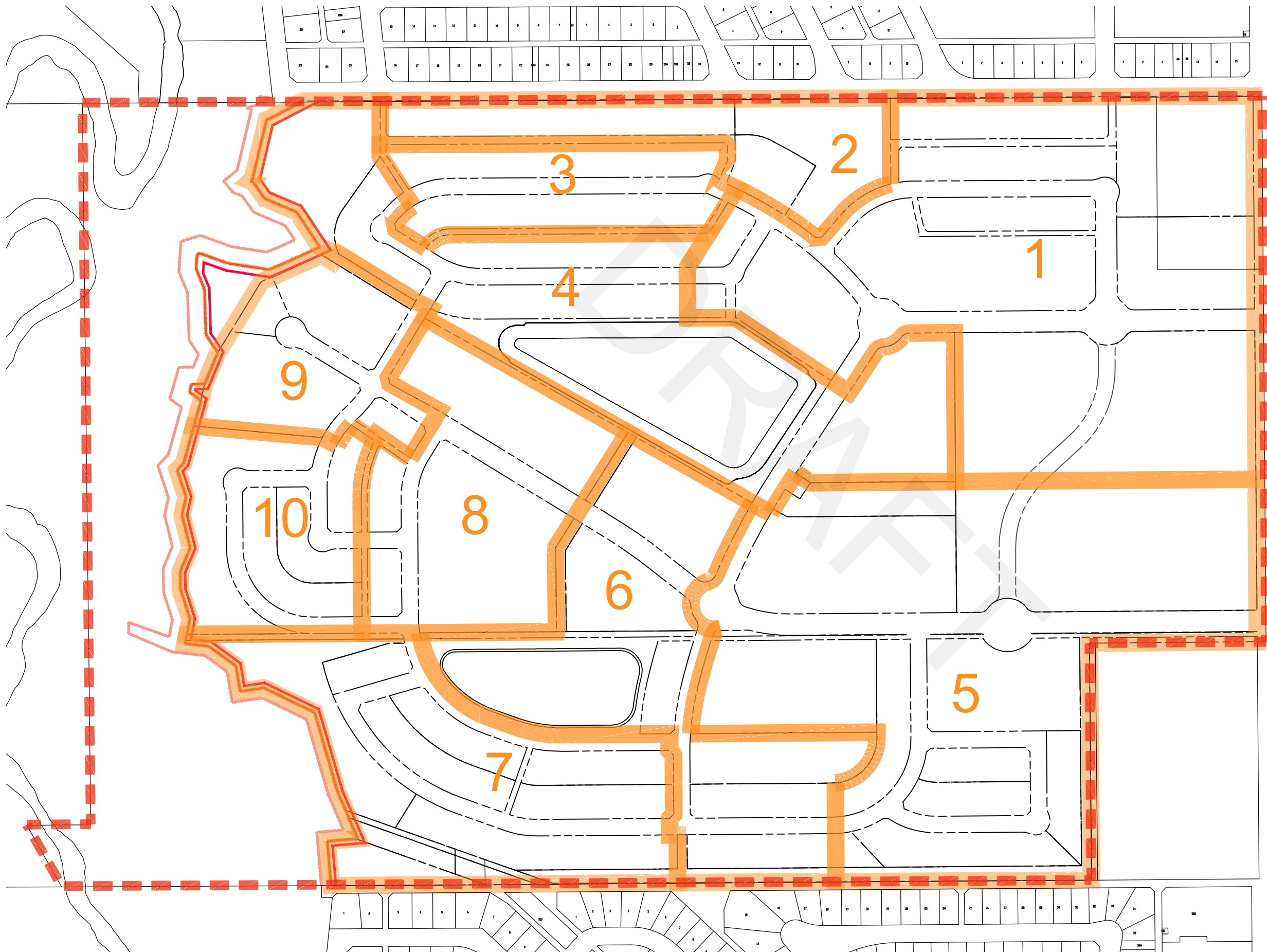
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LEGEND

- PROPERTY BOUNDARY
- PROPOSED STAGING
- TOP OF SLOPE
- URBAN DEVELOPMENT LINE (UDL)
- BUILDING LIMIT LINE

NOTE:
STAGING SEQUENCE SUBJECT TO
CHANGE PENDING MARKET
CONDITIONS



WEST 240

NEIGHBOURHOOD
DESIGN REPORT

Figure 1.5

PROPOSED
STAGING PLAN



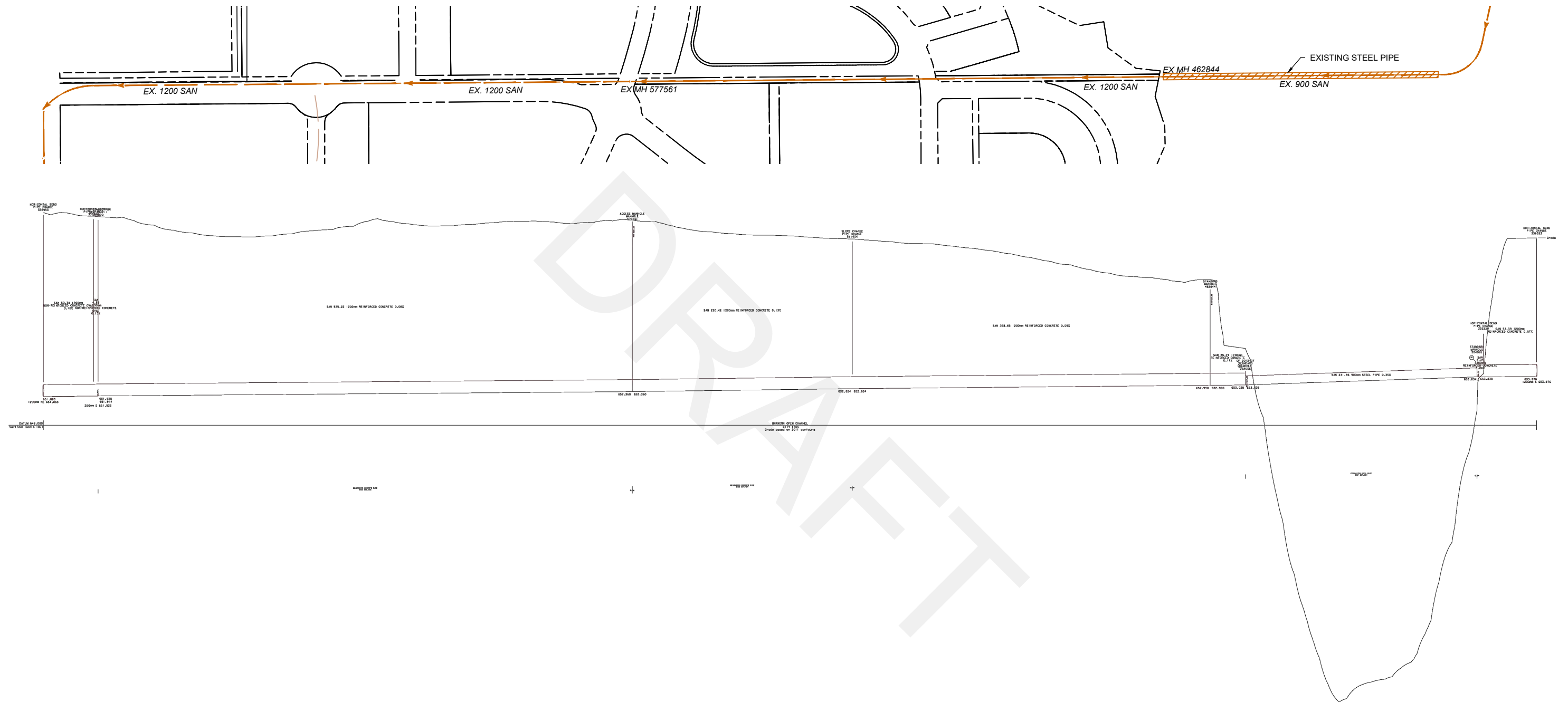
FILE NO. E0-145328

2 Sanitary Sewer System

The West 240 neighbourhood development will be serviced using gravity laterals and mains to convey flows to an existing sanitary sewer trunk that traverses the subject site. Contained within an existing drainage URW, the 1200mm trunk line flows west to east after crossing the Whitemud Creek via a utility bridge west of the site. The system then flows to 122 Street, to an existing combined sewer trunkline which ultimately flows northeast to the Gold Bar Wastewater Treatment Plant. The existing trunk line detail is as shown in **Figure 2.1**.

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SOURCE: CITY OF EDMONTON DRAINS REQUEST NOVEMBER 2023

WEST 240

NEIGHBOURHOOD
DESIGN REPORT

Figure 2.1

EXISTING
SANITARY TRUNK



FILE NO. E0-145328

2.1 Design Criteria

As defined by the City of Edmonton Design and Construction Standards (2025), and Sanitary Flow Generation For Neighbourhood Design Report (NDR) Design Guidelines (2024), the Sanitary System consists of conveyance from developments within West 240 to a discharge tie-in to the existing system. This section outlines specifics of the system as required to develop the West 240 lands. Guiding the design are the criteria below:

Residential	Peaking Factor	$PFF = 1.5 \leq 2.6(P \div 1000)^{-0.1}$ where: P = Population Min. PF = 1.5
	Design Flow	$Q_{RES} = \frac{[(RDW \div 1000) \times P \times PFF]}{86400}$ where: P = Population RDW = Residential Dry Weather Flow = 160 L/person/day
	Infiltration and Inflow	= 0.14 L/s/ha
	Sag Maintenance Hole	= 0 L/s/maintenance hole (From CoE NDR Design Guideline-Nov 2024)
	Total Flow	$Q = Q_{RES} + Q_{BASELINE} + I\&I$ where: $Q_{BASELINE} = \sum Q_{C10} + \sum Q_{BACKGROUND}$
Capacity	Non-Pressure Pipe/Gravity Flow	$CAP = \frac{\pi \times (\frac{D}{1000})^2 \times (\frac{D}{4000})^{\frac{2}{3}} \times \frac{1}{N} \times \sqrt{S \div 100}}{4}$ where: D = Pipe Diameter in mm N = Manning's Roughness Coefficient = 0.013 S = Slope in decimal
	Required Full Flow Sewer Capacity	$\frac{Estimated\ Design\ Flow}{0.86}$
	Minimum Pipe Size	200mm
	Minimum Pipe Slope	As per Tables 1.1, and 1.2 of Volume 3-03 EPCOR Design Guidelines
	Minimum Flow Velocity at Capacity	Not less than 0.6 m/s
	Maximum Flow Velocity	3.0 m/s
Population Generation	Small Scale Flex Residential Zone (RS)	121.1 People/Ha
	Small-Medium Scale Transition Residential Zone (RSM)	133.14 People/Ha
	Medium Scale Residential Zone (RMh23)	271.25 People/Ha

2.2 Area Master Plan Recommended Servicing

As the development is situated within an established City area there is no location specific higher level planning document in effect to guide the sanitary design. The existing sanitary sewer infrastructure is shown in **Figure 2.1**.

There is no additional sanitary flow to be considered from any adjacent area being conveyed through the proposed sanitary system within West 240. There are, however, existing flows conveyed through the 1200mm sanitary trunk line that traverses the development site from west to east. The flows within this pipe leave capacity for the addition of West 240 drainage without entering a surcharge condition. The existing peak flow within this pipe, as provided by EPCOR is 0.2525 m³/s (provided via email August 30, 2024 – peak flow for 2023 = 21,820 m³/day measured at EX MH 462844).

2.3 Proposed Sanitary Sewer System

The proposed Sanitary Sewer System is shown in **Figure 2.2**.

As part of the original due diligence for the development, it was determined that the existing Sanitary Sewer trunk line runs through the south portion of the subject lands. This offers the best opportunity to service the development. The existing line is comprised of a 1200mm sanitary sewer trunk, which is accessible via two maintenance holes (462844 along the western side of the subject site and 577561 centrally located within the site). The proposed system within the site will direct flows aligned within defined road rights of ways and public utility lots toward the existing MH577561. This maintenance hole has a proposed rim elevation of 668.85m (existing rim elevation is 669.40m), and upstream invert elevation of 652.36m allowing sufficient depth for the West 240 system connection. The capacity within the existing line immediately downstream of the tie-in is 1.103 m³/s, following which two slope changes increases the capacity to 1.406 m³/s and 1.233 m³/s respectively, with flow generation within the subject lands as shown in **Table 2.1**. The available capacity after considering current flows through this trunk system is 0.8505 m³/s. This was determined based on data provided by EPCOR.

Proposed trunks internal to the subject site are as detailed in **Figure 2.3**.

The servicing infrastructure for the area consists of 200mm sanitary lines collecting wastewater from the outer extents and conveying them via the roadway network to the collection point at MH 577561. The pipes range in size from 200mm to 450mm as they approach the tie-in location. The total sanitary basin area for the development is 75.36 ha and produces total flows of 0.0724 m³/s. Thus, there is capacity within the existing trunk.

Investigation was also undertaken to locate the tie into the existing sanitary trunk further upstream at MH 462844, but elevation changes adjacent to the creek bank make this a less viable option. Tie-in to the existing MH 577561 will require detailed design analysis to determine the age of the existing maintenance hole structure and whether it is suitable for coring/connection or not. Due to the depth of the existing 1200mm trunk, a drop structure will likely be required at the existing maintenance hole or at an adjacent maintenance hole in coordination with EPCOR.

Table 2.1 Sanitary Design Form

Project: West 240
Municipality: City of Edmonton
Design By: PP
Job Number: 145328
Date: 2025-OCT-26
Checked By: CTP
File: C:\Users\boniecd8486\DC\ACCDocs\Arcadis ACC US\ACA-00145328-West_240\Project Files\10_WIP\04-



Location	Maintenance hole			Tributary Area					Total Area	Total Population	Residential		Ind., Com., and Other		Infiltration and Inflow		Total Baseline Flow	Total Design Q	Design Capacity	Sewer Design						Upstream MH		Downstream MH			Average Cover to Invert																	
	From	To	Sag Location?	A	Land Use	Units	Population Density	Population			Peak Flow Factor	Design Q	Peak Flow Factor	Design Q	Current Pipe	Total				Slope	Diameter	Length	Capacity	Velocity @ Capacity	Velocity @ Design Flow	Rim Elevation	Invert Elevation	Rim Elevation	Invert Elevation	Jump in MH																		
																																ha	people/unit	ha	m³/s	m³/s	m³/s	m³/s	m³/s	m	m³/s	m/s	m/s	m	m	m	m	m
																																(Y/N)	ha	people/unit	ha	m³/s	m³/s	m³/s	m³/s	m	m³/s	m/s	m/s	m	m	m	m	m
Phase 1	400	401		0.59	RS	21	3.460	73	0.59	73	3.38	0.0005			0.0001	0.0001	0.0000	0.0005	0.0006	1.000	200	110.627	0.0328	1.04	0.39	671.668	668.466	673.661	667.360		4.751																	
	401	402		0.54	RS	19	3.460	66	1.13	139	3.17	0.0008			0.0001	0.0002	0.0000	0.0010	0.0011	0.400	200	104.345	0.0207	0.66	0.34	673.661	667.330	673.999	666.913		6.708																	
	402	405		0.00					1.13	139	3.17	0.0008			0.0000	0.0002	0.0000	0.0010	0.0011	0.400	200	49.785	0.0207	0.66	0.34	673.999	666.853	671.785	666.654		6.138																	
	403W	404		0.49	RSM	21	3.170	67	0.49	67	3.41	0.0004			0.0001	0.0001	0.0000	0.0005	0.0006	1.000	200	53.726	0.0328	1.04	0.38	671.175	667.975	671.551	667.438		3.656																	
	404	405		0.19	RSM	8	3.170	26	0.68	93	3.30	0.0006			0.0000	0.0001	0.0000	0.0007	0.0008	0.400	200	33.596	0.0207	0.66	0.30	671.551	667.408	671.785	667.274		4.327																	
	405	406		0.00					1.81	232	3.01	0.0013			0.0000	0.0003	0.0000	0.0015	0.0018	0.400	200	53.368	0.0207	0.66	0.39	671.785	666.594	670.462	666.381		4.636																	
	406	418		0.00					1.81	232	3.01	0.0013			0.0000	0.0003	0.0000	0.0015	0.0018	0.400	200	54.232	0.0207	0.66	0.39	670.462	666.351	669.526	666.134		3.752																	
	403E	407		1.20	RSM	51	3.170	162	1.20	162	3.12	0.0009			0.0002	0.0002	0.0000	0.0011	0.0013	1.000	200	135.008	0.0328	1.04	0.48	671.175	667.975	670.212	666.625		3.393																	
	407PLUG	407		1.81	RSM	77	3.170	245	1.81	245	2.99	0.0014			0.0003	0.0003	0.0000	0.0016	0.0019	2.000	200	39.911	0.0464	1.48	0.69	671.969	667.423	670.212	666.625		4.066																	
	407	408	Y	0.00					3.01	407	2.84	0.0021			0.0000	0.0004	0.0000	0.0026	0.0030	0.400	200	80.824	0.0207	0.66	0.45	670.212	666.565	670.006	666.242		3.705																	
	408PLUG	408	Y	1.63	MU				1.63	0	0.00	0.0000	16.56	0.0054	0.0002	0.0002	0.0054	0.0056	0.0065	2.000	200	40.004	0.0464	1.48	1.00	670.460	667.072	670.006	666.272		3.561																	
	408	411		0.00					4.64	407	2.84	0.0021			0.0000	0.0006	0.0054	0.0082	0.0095	0.400	200	61.549	0.0207	0.66	0.62	670.006	666.212	670.006	665.966		3.764																	
	409	411							0.00	0	0.00	0.0000			0.0000	0.0000	0.0000	0.0000	0.0000	1.000	200	146.745	0.0328	1.04	0.00	669.241	666.047	669.700	664.580		4.157																	
	410	411		3.32	MU				3.32	0	0.00	0.0000	12.02	0.0080	0.0005	0.0005	0.0080	0.0084	0.0098	1.000	200	111.373	0.0328	1.04	0.88	670.597	667.097	669.700	665.983		3.609																	
	411	412							7.96	407	2.84	0.0021			0.0000	0.0011	0.0134	0.0166	0.0193	0.400	200	104.263	0.0207	0.66	0.73	669.700	664.550	668.991	664.133		5.004																	
	412	420	Y						7.96	407	2.84	0.0021			0.0000	0.0011	0.0134	0.0166	0.0193	0.400	200	135.048	0.0207	0.66	0.73	668.991	664.103	668.574	663.563		4.949																	
Phase 2	413E	414		0.63	RS	23	3.460	80	0.63	80	3.35	0.0005			0.0001	0.0001	0.0000	0.0006	0.0007	1.000	200	135.731	0.0328	1.04	0.40	669.724	666.524	670.643	665.167		4.338																	
	414	415		0.00					0.63	80	3.35	0.0005			0.0000	0.0001	0.0000	0.0006	0.0007	0.400	200	23.383	0.0207	0.66	0.29	670.643	665.107	670.806	665.013		5.665																	
	415	416		0.00					0.63	80	3.35	0.0005			0.0000	0.0001	0.0000	0.0006	0.0007	0.400	200	32.391	0.0207	0.66	0.29	670.806	664.983	670.605	664.853		5.788																	
	416	417		0.00					0.63	80	3.35	0.0005			0.0000	0.0001	0.0000	0.0006	0.0007	0.400	200	58.828	0.0207	0.66	0.29	670.605	664.793	670.027	664.558		5.640																	
	417PLUG	417		0.56	RSM	24	3.170	77	0.56	77	3.36	0.0005			0.0001	0.0001	0.0000	0.0006	0.0006	2.000	200	40.038	0.0464	1.48	0.50	672.034	663.112	670.027	662.311		8.319																	
	413W	421		0.56	RS	20	3.460	70	0.56	70	3.39	0.0004			0.0001	0.0001	0.0000	0.0005	0.0006	1.000	200	125.493	0.0328	1.04	0.38	669.724	666.524	668.845	665.269		3.388																	
	421	422		0.44	RS	16	3.460	56	1.00	126	3.20	0.0007			0.0001	0.0001	0.0000	0.0009	0.0010	0.400	200	95.017	0.0207	0.66	0.33	668.845	665.239	668.262	664.859		3.504																	
	422	423		0.00					1.00	126	3.20	0.0007			0.0000	0.0001	0.0000	0.0009	0.0010	0.400	200	14.874	0.0207	0.66	0.33	668.262	664.799	668.391	664.740		3.557																	
	423	424		0.00					1.00	126	3.20	0.0007			0.0000	0.0001	0.0000	0.0009	0.0010	0.400	200	53.005	0.0207	0.66	0.33	668.391	664.710	668.157	664.498		3.670																	
	416W	425		1.22	RS	43	3.460	149	1.22	149	3.15	0.0009			0.0002	0.0002	0.0000	0.0010	0.0012	1.000	200	135.771	0.0328	1.04	0.47	670.605	667.405	669.548	666.047		3.351																	
	425	426		0.42	RS	15	3.460	52	1.64	201	3.05	0.0011			0.0001	0.0002	0.0000	0.0014	0.0016	0.400	200	48.808	0.0207	0.66	0.37	669.548	666.017	669.116	665.822		3.412																	
	426	427		0.84	RS	30	3.460	104	2.48	305	2.93	0.0017			0.0001	0.0003	0.0000	0.0020	0.0023	0.400	200	97.480	0.0207	0.66	0.42	669.116	665.680	668.240	665.290		3.193																	
	427	424		0.38	RS	14	3.460	49	2.86	354	2.88	0.0019			0.0001	0.0004	0.0000	0.0023	0.0027	0.400	200	35.455	0.0207	0.66	0.43	668.240	665.260	668.157	665.118		3.010																	

Location	Maintenance hole			Tributary Area					Total Area	Total Population	Residential		Ind., Com., and Other		Infiltration and Inflow		Total Baseline Flow	Total Design Q	Design Capacity	Sewer Design						Upstream MH		Downstream MH		Average Cover to Invert								
	From	To	Sag Location?	A	Land Use	Units	Population Density	Population			Peak Flow Factor	Design Q	Peak Flow Factor	Design Q	Current Pipe	Total				Slope	Diameter	Length	Capacity	Velocity @ Capacity	Velocity @ Design Flow	Rim Elevation	Invert Elevation	Rim Elevation	Invert Elevation		Jump in MH							
																																(Y/N)	ha	people/unit	ha	m³/s	m³/s	m³/s
	451S	456		0.95	RS	34	3,460	118	0.95	118	3.22	0.0007			0.0001	0.0001	0.0000	0.0008	0.0010	1.000	200	117.059	0.0328	1.04	0.44	668.343	665.143	668.684	663.972		3.956							
	456	457		0.35	RS	13	3,460	45	1.30	163	3.12	0.0009			0.0000	0.0002	0.0000	0.0011	0.0013	0.400	200	100.750	0.0207	0.66	0.35	668.684	663.942	668.900	663.539		5.051							
	457	458	Y	0.00					6.31	815	2.65	0.0040			0.0000	0.0009	0.0000	0.0049	0.0057	0.400	200	59.168	0.0207	0.66	0.54	668.900	662.335	668.589	662.098		6.528							
	459E	458	Y	0.54	RS	19	3,460	66	0.54	66	3.41	0.0004			0.0001	0.0001	0.0000	0.0005	0.0006	1.000	200	85.649	0.0328	1.04	0.38	668.567	665.616	668.589	664.760		3.390							
	458	462		0.50	RS	18	3,460	63	7.35	944	2.62	0.0046			0.0001	0.0010	0.0000	0.0056	0.0065	0.400	200	87.448	0.0207	0.66	0.56	668.589	662.068	668.789	661.718		6.796							
	462	463	Y	0.23	RS	9	3,460	32	7.58	976	2.61	0.0047			0.0000	0.0011	0.0000	0.0058	0.0067	0.400	200	44.672	0.0207	0.66	0.57	668.789	661.688	668.494	661.509		7.043							
	459S	460		0.70	RS	25	3,460	87	0.70	87	3.32	0.0005			0.0001	0.0001	0.0000	0.0006	0.0007	1.000	200	136.007	0.0328	1.04	0.41	668.567	665.616	669.061	664.256		3.878							
	460	461		0.64	RS	23	3,460	80	1.34	167	3.11	0.0010			0.0001	0.0002	0.0000	0.0011	0.0013	0.400	200	74.764	0.0207	0.66	0.35	669.061	664.226	669.078	663.927		4.993							
	463	466		0.79	RS	28	3,460	97	8.37	1073	2.58	0.0051			0.0001	0.0012	0.0000	0.0063	0.0073	0.400	200	150.066	0.0207	0.66	0.58	668.494	661.479	668.939	660.879		7.537							
Phase 7	461E	464		0.33	RS	12	3,460	42	0.33	42	3.57	0.0003			0.0000	0.0000	0.0000	0.0003	0.0004	1.000	200	40.104	0.0328	1.04	0.33	669.078	665.891	669.344	665.490		3.520							
	464	465		1.21	RS	43	3,460	149	1.54	191	3.07	0.0011			0.0002	0.0002	0.0000	0.0013	0.0015	0.400	200	140.011	0.0207	0.66	0.37	669.344	665.460	669.112	664.900		4.048							
	468W	465		1.24	RS	44	3,460	153	1.24	153	3.14	0.0009			0.0002	0.0002	0.0000	0.0011	0.0012	1.000	200	144.841	0.0328	1.04	0.48	670.150	666.950	669.112	665.502		3.405							
	465	466		0.00					2.78	344	2.89	0.0018			0.0000	0.0004	0.0000	0.0022	0.0026	0.400	200	90.067	0.0207	0.66	0.43	669.112	664.840	668.939	664.480		4.365							
	466	467	Y	0.50	RS	18	3,460	63	11.65	1480	2.50	0.0069			0.0001	0.0016	0.0000	0.0085	0.0099	0.400	200	95.698	0.0207	0.66	0.63	668.939	660.819	668.563	660.436		8.124							
	467PLUG	467	Y	1.46	RSM	62	3,170	197	1.46	197	3.06	0.0011			0.0002	0.0002	0.0000	0.0013	0.0015	2.000	200	40.008	0.0464	1.48	0.65	669.240	654.076	668.563	653.276		15.225							
Tie In	467	577561		0.00					13.11	1677	2.47	0.0077			0.0000	0.0018	0.0000	0.0095	0.0110	0.400	200	18.887	0.0207	0.66	0.65	668.563	653.216	668.848	653.140		15.528							
Ex 1200 San	577561	335969		0.00					62.5	8944	2.09	0.0346			0.0000	0.0088	0.2085	0.2519	0.2929	0.080	1200	540.000	1.1027	0.98	0.79													

General Residential Area: 0.00 ha

Apartment Residential Area: 0.00 ha

User-Defined Residential Area: 63.9 ha

Total Residential Area: 63.9 ha

Commercial Area: 0.00 ha

Industrial Area: 0.00 ha

Other Area: 0.00 ha

Non-contributing Area: 0.00 ha

Total Area: 63.9 ha

General Population: 0

Apartment Population: 0

User-Defined Population: 9111

Total Population: 9111

Residential Zones

RS (Small Scale Flex Residential Zone)

35.0 Units/ha 3.46 People/Unit

RSM (Small-Medium Scale Transition Residential Zone)

42.0 Units/ha 3.17 People/Unit

RM23 (Medium Scale Residential Zone)

125 Units/ha 2.17 People/Unit

() 0.0 Units/ha 0.00 People/Unit

() 0.0 Units/ha 0.00 People/Unit

() 0.0 Units/ha 0.00 People/Unit

() 0.0 Units/ha 0.00 People/Unit

() 0.0 Units/ha 0.00 People/Unit

Zoning Information

Industrial Zones

Commercial Zones

Other Zones - Such as hospitals, schools, etc.

MU

Non-contributing Area

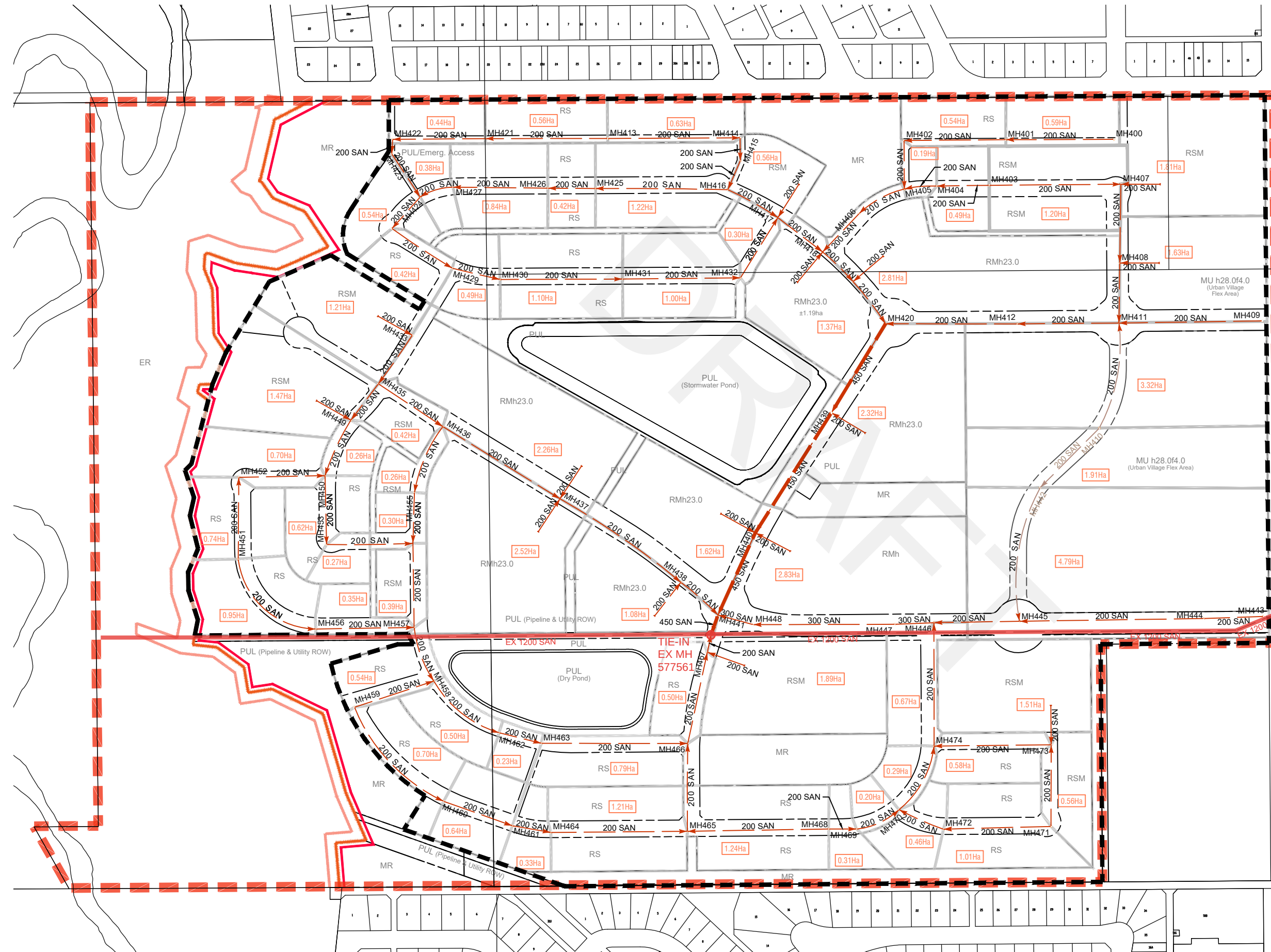
N - Areas that contribute infiltration and inflow only (i.e. Transmission Mains).

1 : 4000



LEGEND

- PROPERTY BOUNDARY
- PROPOSED STAGING
- TOP OF SLOPE
- URBAN DEVELOPMENT LINE (UDL)
- BUILDING LIMIT LINE
- - - SAN. MAJOR CATCHMENT BOUNDARY
- SAN. MINOR CATCHMENT BOUNDARY
- MH404 → SAN. MINOR PIPE, MH# AND DIRECTION OF FLOW
- MH404 → SAN. TRUNK LINE



WEST 240

NEIGHBOURHOOD
DESIGN REPORT

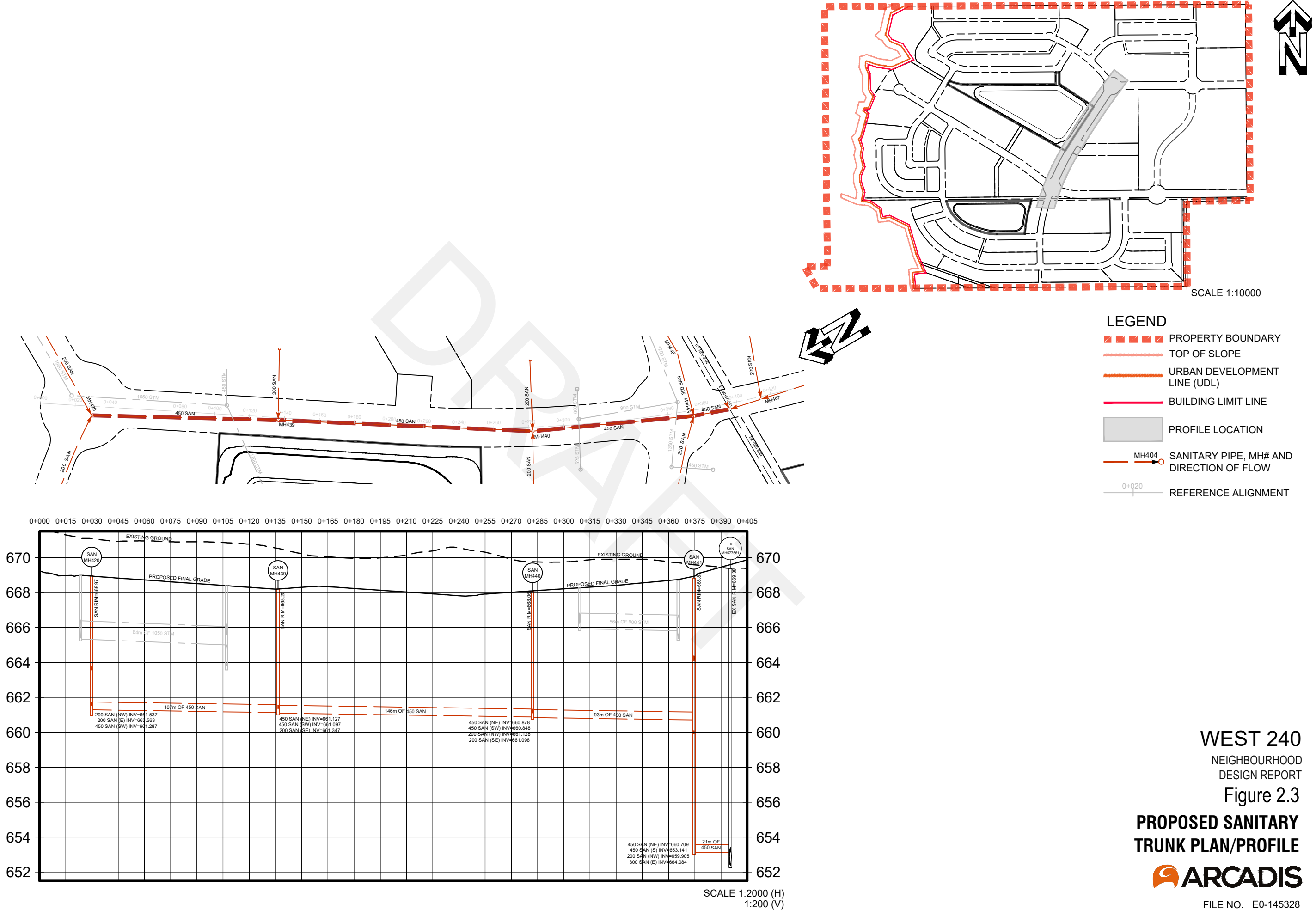
Figure 2.2

PROPOSED SANITARY
SERVICING CONCEPT



FILE NO. E0-145328

C:\Users\boniecd86\Documents\Arcadis ACC US\ACA-30145328-West_240\Project Files\10_WIP\04-CIV\Sheets\NDR_2_0\Figures\PROFILE-for figures.dwg Layout Name: San Trunk Plot Style: — Plot Scale: 1:1 Plotted At: 12/19/2025 11:21 AM Last Saved By: boniecd86 Last Saved At: Dec. 17, 25



2.4 Permanent Area Contribution

PAC costing can be referenced in **Appendix E**.

DRAFT

3 Stormwater Management System

This section outlines the proposed storm drainage system within the subject area and includes both major and minor storm system details. The major system includes the development of two stormwater management facilities (SWMFs) which are used to provide the necessary storage volume for critical rainfall events, as calculated based on design criteria outlined by the City of Edmonton and EPCOR Design standards. Also part of the major system design are the overland major drainage routes which convey peak flows to the SWMFs, and the method for controlled release to the existing outfall located at the west end of the adjacent Grandview Heights neighbourhood. The minor system is designed to accommodate the 5-year storm event flows and convey them toward the SWMFs.

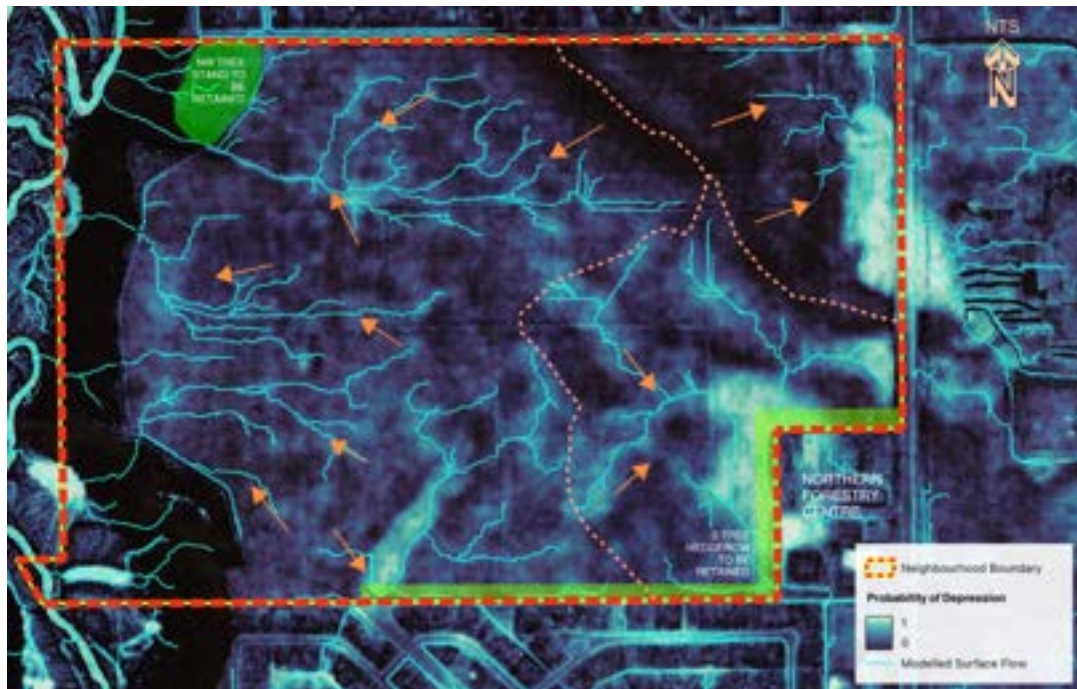


Figure 3.1 Predevelopment Flow Pattern - excerpt from Figure 4 Probability of depression mapping and modelled surface water flow paths in the West 240 neighbourhood.

*Lighter areas on the map indicate depressional areas and modelled surface flows show the general extent and direction of existing drainage.

Source: West 240 Phase II Ecological Network Report SECOND SUBMISSION by Fiera Biological Consulting (2025)

LIDAR Data Source: LIDAR DEM, City of Edmonton, Open Data Portal

3.1 Design Criteria

As defined by the City of Edmonton Design and Construction Standards (2025), the Stormwater Management System encompasses requirements from Volume 3 for the conveyance of both minor and major stormwater flows in a developed West 240 neighbourhood. Guiding the design are the criteria below:

Time of Concentration	Imperviousness	$IMP = \frac{C - 0.10}{0.85}$				
		where: C	=	Run-off Co-efficient		
	Minimum Time of Concentration	Area (ha)	Imperviousness			
			I<30%	30%<=I<=70%	70%<=I	
		A ≤ 8ha	8.00	8.00	5.00	
		8ha < A <40 ha	9.20	9.20	6.00	
	40 ha ≤ A	10.40	10.40	7.25		
Design Flow	Intensity	$I = a(t + c)^b$				
		Storm Return Period	a	b	c	R ²
		1:2 Year	370.26	-0.74	4.83	0.994
		1:5 Year	587.05	-0.76	6.56	0.997
		1:10 Year	798.40	-0.78	7.83	0.998
		1:25 Year	1044.56	-0.78	8.70	0.998
		1:50 Year	1145.99	-0.77	8.63	0.998
		1:100 Year	1290.08	-0.75	8.76	0.997
		1:200 Year	1554.16	-0.75	9.73	0.994
	Flow	$Q = (A \times C_{Multiplier}) \times \frac{C \times I \times A}{360} + \sum Q_{Upstream\ Baseline\ Flow}$				
		where: A	=	Total area		
		C	=	Run-off Coefficient		
		I	=	Intensity as defined above		
	Runoff Coefficients	Parks/Schools	=	0.30		
		Single Family	=	0.65		
		Commercial	=	0.90		
		Paved Areas and Roofs	=	0.95		
Intensity-Duration-Frequency (IDF)	As per Table 2.4 of Volume 3-02 EPCOR Stormwater Management and Design Manual					
Capacity	Minimum Pipe Size	300mm				
	Minimum Pipe Slope	As per Table 2.3 of Volume 3-03 EPCOR Stormwater Management and Design Manual				
	Minimum Flow Velocity	Not less than 0.6 m/s				
	Maximum Flow Velocity	3.0 m/s				

3.2 Higher Level Recommended Servicing

The Stormwater Management System for this development area is not part of any existing plan in effect. The area has not previously been assessed for development. As noted in the “Blackmud/Whitemud Creek Surface Water Management Group 2017 Blackmud/Whitemud Creek Surface Water Management Study Final Report” the discharge from the basin shall be limited to 3.0 L/s/ha.

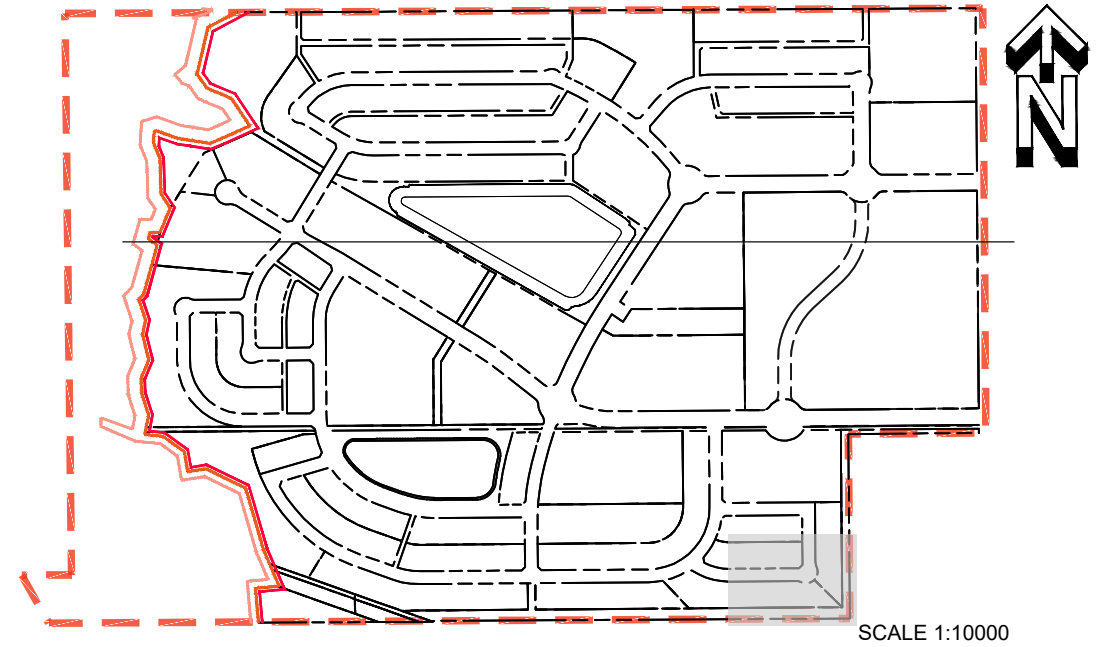
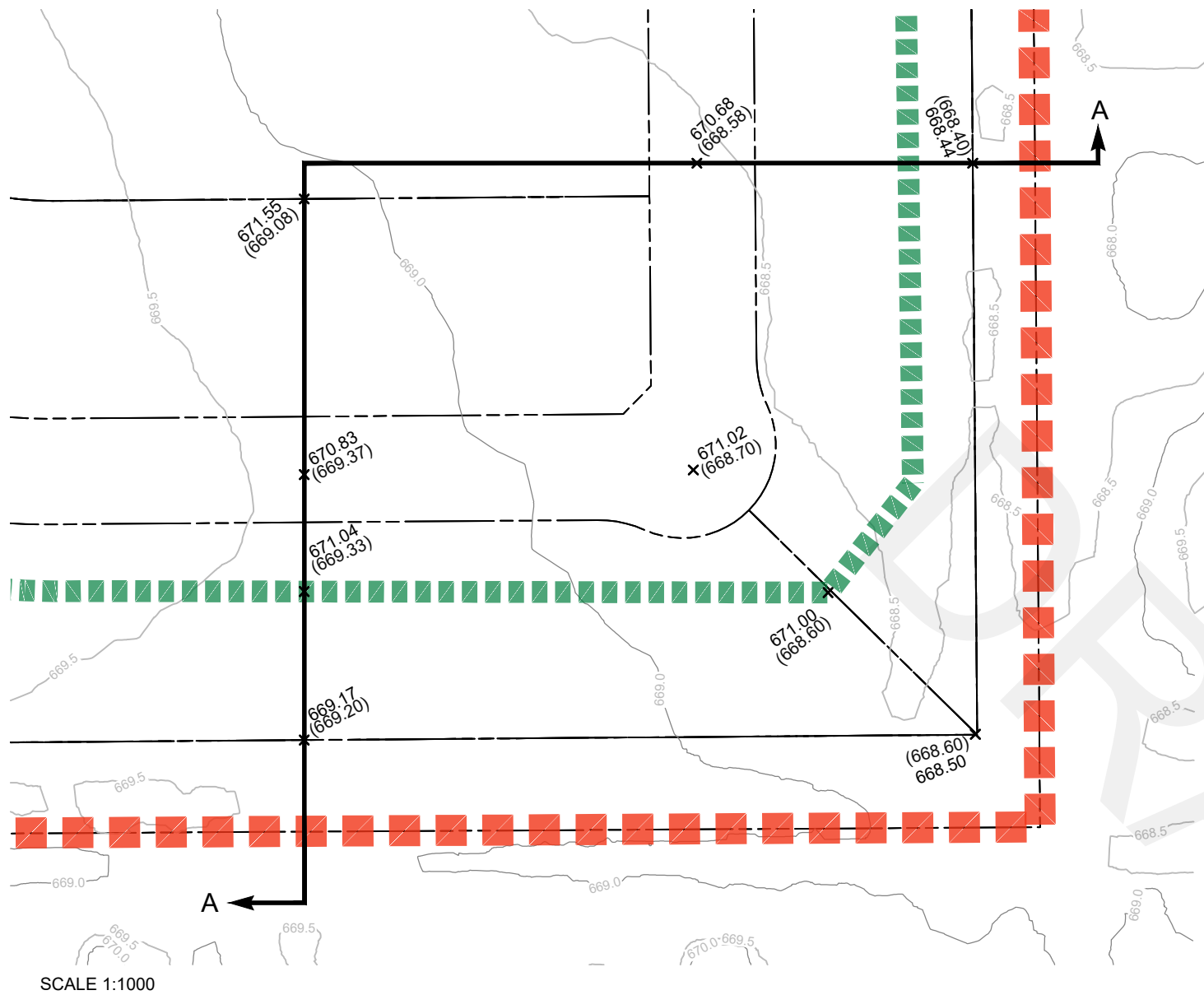
3.3 Boundary Conditions and Adjacent Servicing Considerations

It is assumed that all runoff from 122 Street, 62 Ave to the north, and the laneway at the south boundary of the project site is conveyed via minor and major systems to existing infrastructure as per existing plans and will not contribute flows to the proposed project area. Similarly, it is assumed that no flows from the Northern Forestry Centre in the southeast corner of the quarter section (Block A, Plan 4971 AJ) will be accommodated within the West 240 storm system outlined in this report.

The existing stormwater runoff pattern along the top of bank and in and around the northwest tree stand are proposed to be retained (as labelled in **Figure 3.1** above). These flows will be considered to ultimately drain west to Whitemud Creek as in the current predevelopment condition. As shown in **Table 3-3**, runoff coefficients and contributing areas have been developed based on the areas considered to retain predevelopment conditions. Per discussion between UAPT and EPCOR there may be opportunity to drain some of the overland flows from the Grandview Neighbourhood south toward the existing tree stand as opposed to directly discharging overland to the creek. This is preliminarily outlined in **Appendix F**.

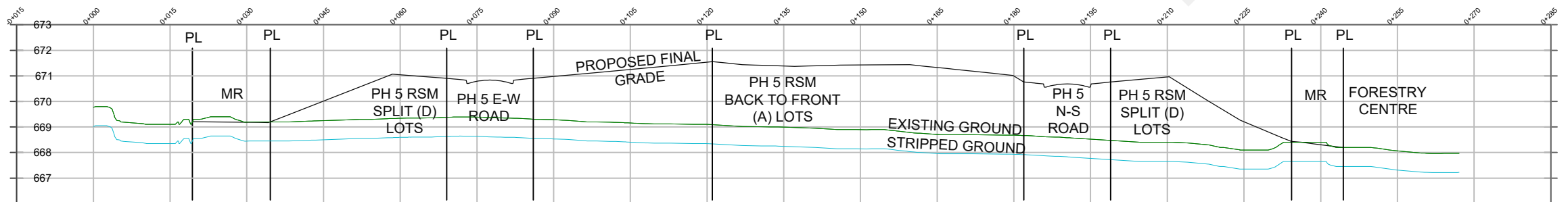
Based on existing topography, runoff from the southwest of the subject site travels toward existing tree stands in and around the Northern Forestry Centre. To achieve grades that minimize impacts to the existing lands, the boundary grades at the property line for the Forestry Centre and along much of the east boundary of the subject site present a grading challenge. As shown in **Figure 3.2**, it is proposed that parcels containing existing tree lines along the east and south boundaries of the development be retained and act to both feed the trees and convey flows from West 240 lots to major and minor flow systems internal to the neighbourhood. Split lots will allow the bulk of the runoff to drain north and west toward the West 240 SWMFs, with small portions off the back of the lots. A portion of the runoff from the Forestry Centre will likely be managed via the east tree hedgerow as occurs currently, and based on potential implementation of LID, some of the existing Landsdowne lane may be able to drain toward the West 240 storm system.

The Forestry Centre has been contacted regarding development work progressing in the West 240 lands and it was noted that regrading of portions of the site to accommodate and improve flooding conditions in the parcel would be considered. This coordination would occur at detailed design of Phase 5.



- LEGEND**
- PROPERTY BOUNDARY
 - TOP OF SLOPE
 - URBAN DEVELOPMENT LINE (UDL)
 - BUILDING LIMIT LINE
 - VIEWPORT LOCATION
 - MAJOR STORM BOUNDARY
 - EXISTING CONTOURS PER SURVEY 2025-06-05
 - (687.08) EXISTING ELEVATION
 - 668.50 PROPOSED ELEVATION

SECTION A-A



WEST 240

NEIGHBOURHOOD
DESIGN REPORT

Figure 3.2

**FORESTRY CENTER AND TREE
HEDGEROWS GRADING INTERFACE**



FILE NO. E0-145328

Similarly, based on existing grades at the south boundary of the neighbourhood, maintaining drainage toward the north is accomplished using split lot drainage with the south portion of the lots draining onto a proposed linear MR site containing existing trees. These trees will function to utilize the runoff water in a Low Impact Development approach to management. The pre and post development analysis for the water feeding these trees is included in **Appendix F**. It is assumed that this split lot drainage from the southernmost lots in Phases 5, 6 and 7 of the subject area onto the MR parcels containing the hedgerows there will be permitted. As part of detailed design for Phases 5, 6, and 7, or a City of Edmonton or EPCOR alley rehabilitation project in Landsdowne, specifics regarding the collection of runoff and required modification of the existing lane to improve flooding conditions could be investigated. Predevelopment flows going south will be reduced with development of the area.

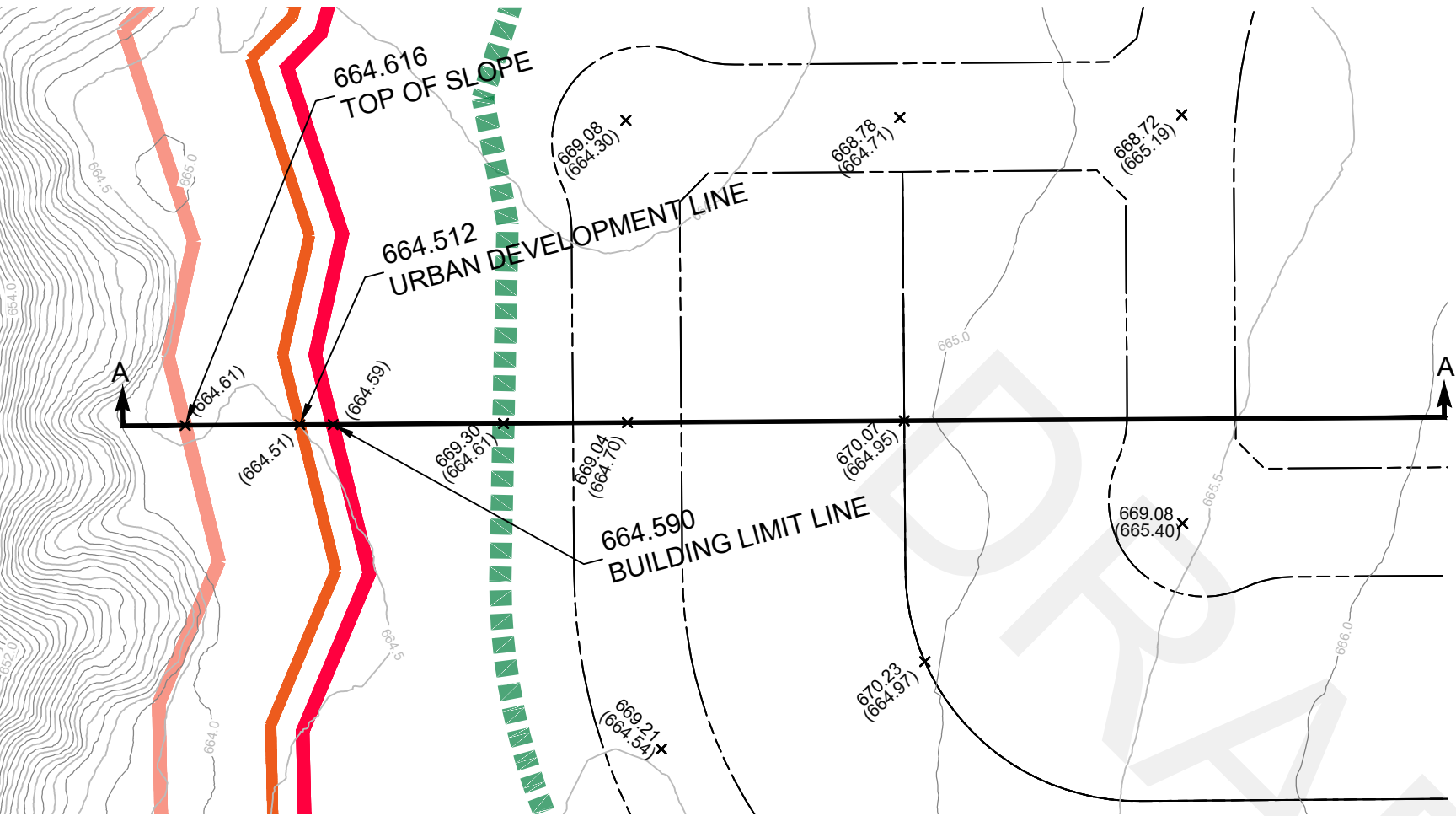
Given existing runoff conditions, lots at the north edge of the development are shown to drain back to front onto 62 Ave, which will increase flows accommodated by the major and minor system from the existing condition, but will ultimately be helped by the addition of the 750mm pipe connection from West 240.

Specific calculations performed to analyze the difference between pre-development and post-development runoff flows can be found in **Appendix F**. The changes to watershed conditions are specifically addressed with regard to ecological and biodiversity impacts within the Phase II Ecological Network Report (ENR) by Fiera Group (2025), also in Green Compass and Parks Impact Assessment support documentation submitted with the West 240 NASP (2025).

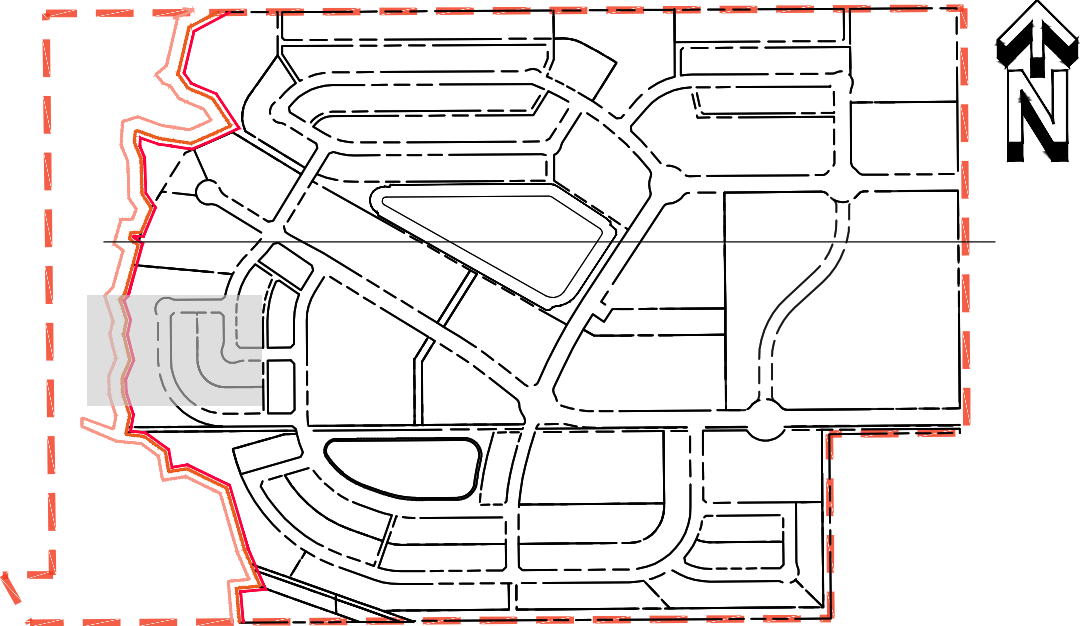
Figure 3.2a outlines the interface where runoff will flow from West 240 directly into Whitemud Creek via sheet flow.

All lots proposed to drain to adjacent areas outside of the subject lands will be required to connect roof leaders to the minor system within West 240 to reduce impacts (however minor) to adjacent systems.

PLAN VIEW



SCALE 1:1000

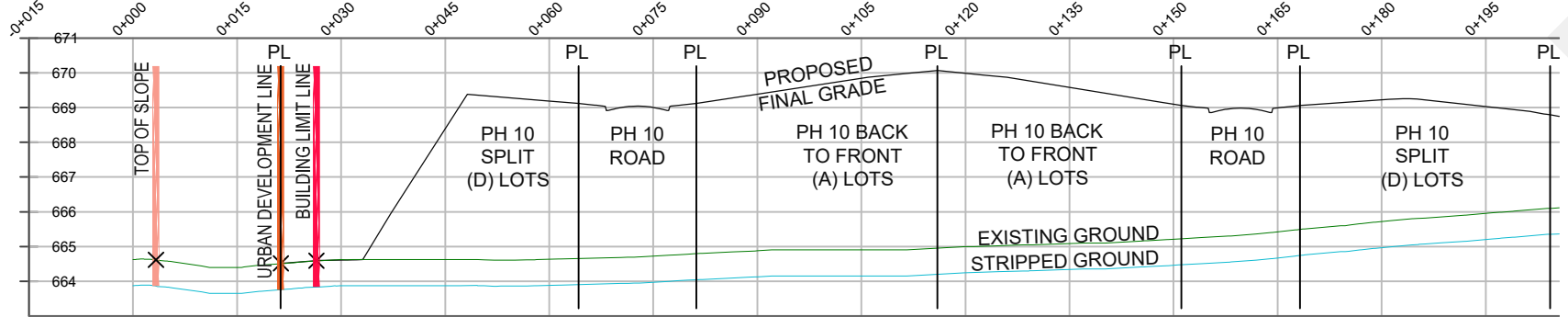


SCALE 1:10000

LEGEND

- PROPERTY BOUNDARY
- TOP OF SLOPE
- URBAN DEVELOPMENT LINE (UDL)
- BUILDING LIMIT LINE
- VIEWPORT LOCATION
- MAJOR STORM BOUNDARY
- EXISTING CONTOURS PER SURVEY 2025-06-05
- (687.08) EXISTING ELEVATION
- 668.50 PROPOSED ELEVATION

SECTION A-A



SCALE 1:1000 (H)
1:200 (V)

- NOTE:
- FILL OR RETAINAGE FOR LOTS ALONG BANK WILL REQUIRE ADDITIONAL GEOTECHNICAL AND STRUCTURAL ENGINEERING CONSULTATION
 - DRAINAGE INTO THE CREEK IS DETAILED WITHIN APPENDIX F OF THE WEST 240 NDR (DECEMBER 2025)

WEST 240
NEIGHBOURHOOD
DESIGN REPORT

Figure 3.2A
WHITEMUD CREEK
GRADING INTERFACE



FILE NO. E0-145328

3.4 Proposed Stormwater Management System

3.4.1 General Stormwater Servicing Scheme

The minor (1:5 year and smaller) stormwater runoff across the proposed site shall be conveyed via piped connections from the individual segments of development to two stormwater management facilities (SWMFs) with some exceptions where specified.

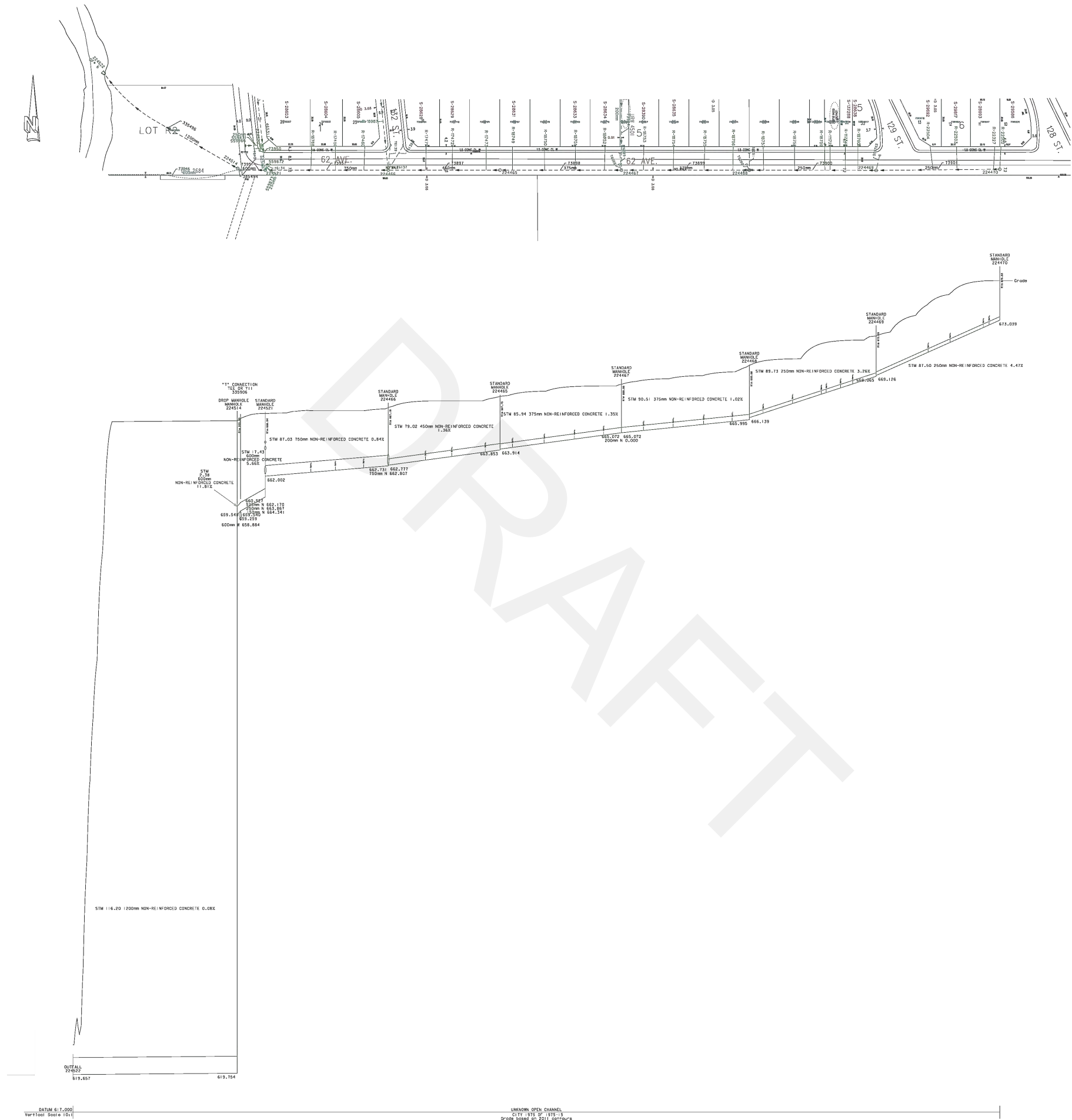
The proposed design utilizes the overall existing site topography and will carry runoff flows west to the lowest portions of the site at SWMF 1 while catching the higher southeast area runoff within the dry pond at SWMF 2. Facility #1 will be a constructed wetland and receive flows from SWMF 2 via an interconnecting storm pipe. SWMF 1 connects to an existing storm maintenance hole on 62 Avenue which flows west into existing Outfall No. 6 (per the City of Edmonton Asset Management and Public Works plans in **Appendix C**) which discharges to Whitemud Creek. To reduce long-term maintenance, control erosion and reduce the impact to Whitemud Creek, it is proposed that the West 240 storm runoff be discharged into the creek at a controlled flow via the existing storm system located on 62 Avenue and the existing outfall located northeast of the site.

PCSWMM was used to conduct a hydraulic assessment of the proposed and existing stormwater system, including capacity within existing Outfall No. 6, and the existing piped system immediately upstream of it. Proposed SWMF 1 will discharge into a 600mm interconnecting storm pipe joining the existing piped system on 62 Avenue via install of a 750mm line at MH 224466 (per City of Edmonton DRAINS records as shown in **Appendix C**). This storm connection discharge shall be governed by a control maintenance hole housing an orifice immediately downstream of proposed SWMF 1. Through this structure, flow will be limited to 3.0 L/s/ha per the Blackmud/Whitemud Creek Surface Water Management Study Final Report.

The existing piped system and Outfall No. 6 currently service approximately half of the Grandview Heights Neighbourhood, with major runoff sheet flowing along Grandview Drive to Whitemud Creek and the Ravine south of Fox Drive. Through detailed analysis and modelling of the existing flows within the Grandview Heights neighbourhood minor system, it was determined that one existing pipe upstream of MH 224466 is in a minor surcharged condition during the 1:5 year storm and that none of the storm pipes convey any major storm flows above the 1:5 year. It is proposed that flows from the West 240 neighbourhood be permitted to utilize the existing pipes and the existing outfall for minor and major stormwater management. The additional flow during the 1:5 year storm from West 240 was modelled to determine whether this flow causes further or additional surcharge conditions in the existing storm system. As **Section 3.4.3** outlines, the existing surcharging within the storm pipes upstream of MH 224466 is unchanged when the West 240 flows are added, and no further pipes surpass their capacity.

Comparison of the pre and post connection flows is as shown in **Table 3.1**. The details of the existing Storm Outfall are as shown in **Figure 3.3**.

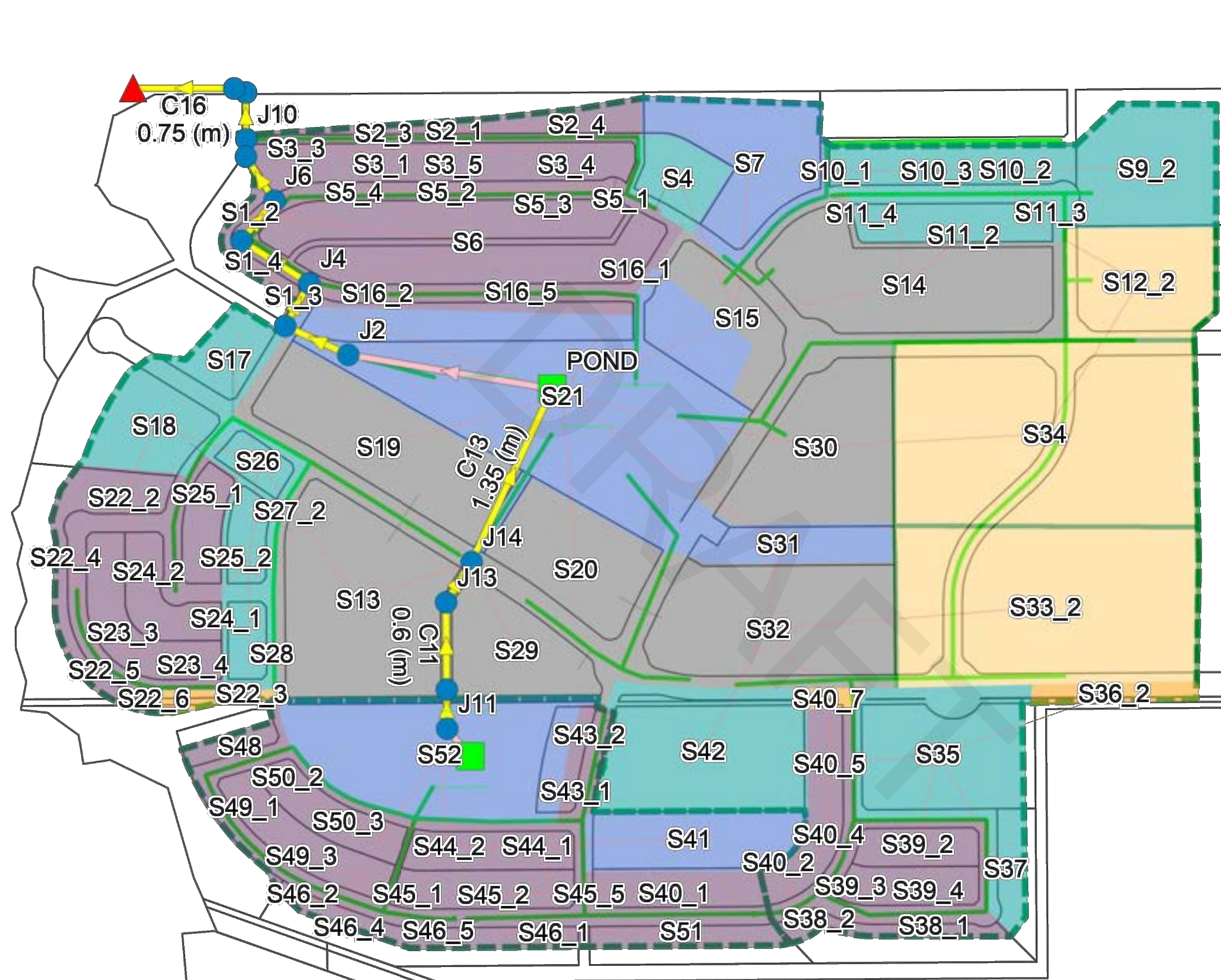
1 : 3000 (H)
1 : 300 (V)



SOURCE: CITY OF EDMONTON DRAINS REQUESTED NOVEMBER 2023

The above approach has been previously submitted via Storm Servicing Report to City of Edmonton Drainage Planning in January 2024 and was approved in principle. The model created to assess the Grandview system is as shown in **Figure 3.4**, and **Appendix D** and differs slightly from the January memo due to adjustments in design, as well as tie-in elevation at MH 226644.

<i>Table 3.1 Flow Comparison in Grandview Heights Pipes</i>					
Pipe Segment/ Conduit (from PCSWMM Analysis)	Flow in Existing Condition (prior to West 240 Tie-in) (m ³ /s)	Flow after West 240 Tie-in (m ³ /s)	Pipe Capacity Check (%)		
			Before Tie-in	After Tie-in	Comments
C17	0.205	0.205	101%	101%	Surcharging before, no change after
C16	0.267	0.267	80%	80%	No change
C21	0.701	0.777	69%	76%	Increased flow, within allowable pipe capacity before and after
C22	0.701	0.777	37%	41%	Increased flow, within allowable pipe capacity before and after



NTS

LEGEND

PROPERTY BOUNDARY

PCSWMM Elements

CONDUIT

OVERLAND FLOW

JUNCTION

STORAGE

WEST 240

NEIGHBOURHOOD

DESIGN REPORT

Figure 3.5

PCSWMM MODEL

WEST 240

ARCADIS

FILE NO. E0-145328

Depending on the condition of the existing structure of MH224466, further analysis may be required to confirm the allowable tie-in elevation at this location. This maintenance hole currently has two pipes connected 180 degrees from one another, so integrity must be confirmed to add a third.

3.4.2 Major System

3.4.2.1 Major Drainage System and Overland Flow

Per the design philosophy described above, the proposed storm facilities will collect and retain the runoff for the development. The general existing topography of the area is such that stormwater flows from the northeast ridge outwards to lower lands. From these lower lands stormwater eventually flows north westwardly toward an existing culvert which currently channels onsite flows to Whitemud Creek (detailed in **Figure 1.2**). This existing low path for the area informs the general alignment of the proposed main pond location, as shown in **Figure 3.6** below:



Figure 3.6 West 240 Major Storm Servicing to Outfall No. 6

The major storm system for the area is split as shown in **Figure 3.7** into two basin areas, each conveyed to an associated central SWMF. Per City standards, the basins each contain their own drainage, except where otherwise noted along the boundaries. The basins are as below:

SWMF 1 – BASIN 1 = 56.95 ha

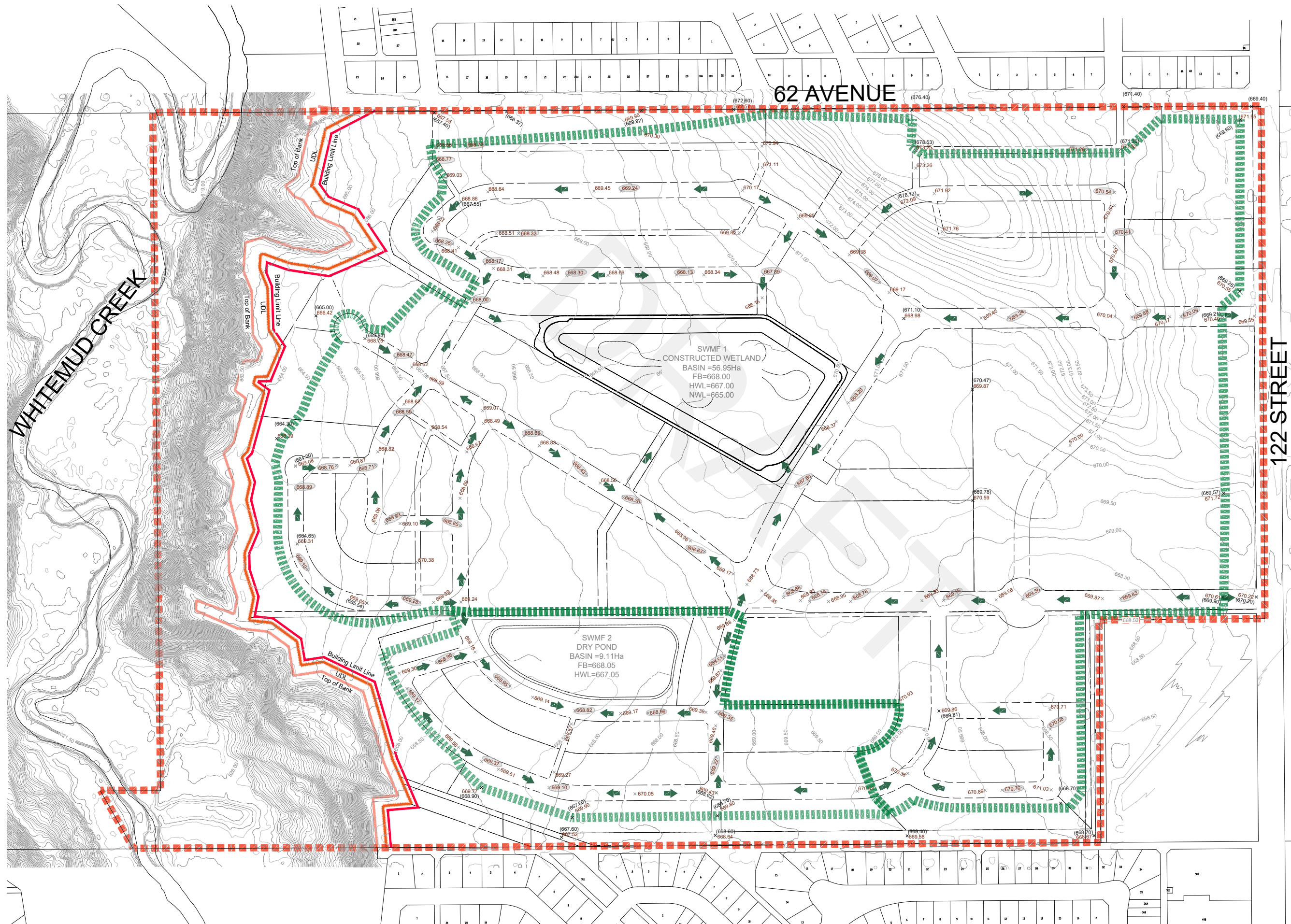
SWMF 2 – BASIN 2 = 9.13 ha

1 : 4000



LEGEND

- PROPERTY BOUNDARY
- TOP OF SLOPE
- URBAN DEVELOPMENT LINE (UDL)
- BUILDING LIMIT LINE
- EXISTING CONTOURS PER SURVEY 2025-06-05
- (687.08) EXISTING ELEVATION
- 687.08 PROPOSED ELEVATION
- 687.08 LOCALIZED LOW POINT
- MAJOR BASIN BOUNDARY
- MAJOR OVERLAND FLOW DIRECTION



WEST 240

NEIGHBOURHOOD
DESIGN REPORT

Figure 3.7

PROPOSED MAJOR
STORM PLAN



FILE NO. E0-145328

3.4.2.2 Stormwater Management Facilities

The design of the area will include two SWMFs, which will service the full West 240 development. A constructed wetland (SWMF 1) facility is proposed toward the northwest of the development, having a HWL area of 3.31 ha and elevation of 667.00m, and a dry pond facility (SWMF 2) toward the southwest, having a HWL area of 1.29 ha and elevation of 667.05 m. These facilities were sized using PCSWMM modelling based on the Huff 1:100 year storm event and using a gross contributing area of 66.08 ha. **Tables 3.2** and **3.3** below outline the parameters used in the sizing of the two facilities.

Table 3.2 SWMF 1 (Constructed Wetland) Sizing Parameters Used in PCSWMM Model Set Up



Storm Water Management Pond Information

Project: West 240 Neighbourhood Design Report
Job Number: 145328
Municipality: City of Edmonton
Date: 18-Nov-25
Design By: PP
Checked By: CET
File: [https://arcadis365.sharepoint.com/sites/145328/Internal Documents/8.01_Technical/8.01_General/04_Design-Analyses/SWMF \(Storm Pond Calculator-2025-10-26 - POND 1.xlsx/Pond 1](https://arcadis365.sharepoint.com/sites/145328/Internal Documents/8.01_Technical/8.01_General/04_Design-Analyses/SWMF (Storm Pond Calculator-2025-10-26 - POND 1.xlsx/Pond 1)

General Basin Data

Pond Name:	SWMF 1 (Constructed Wetland)		
Pond Location:	West 240		
Contributing Basin Area:	A=	56.95 ha	
Basin Runoff Co-efficient:	C=	0.81 (0.65 x 1.25)	
Upbasin Pond:			
Upbasin Area:	A _u =	9.13 ha	
Maximum Draw Down Rate:	3.00 L/s/ha		
Allowable Draw Down Rate:	2.25 L/s/ha (0.1982 m ³ /s)		

Table 3.3 SWMF 2 (DRY Pond) Sizing Parameters Used in PCSWMM Model Set Up



Storm Water Management Pond Information

Project: West 240
Job Number: 145328
Municipality: City of Edmonton
Date: 17-Nov-25
Design By: PP
Checked By: CTP
File: [https://arcadis365.sharepoint.com/sites/145328/Internal Documents/8.01_Technical/8.01_General/04_Design-Analyses/SWMF \(Storm Pond Calculator-2025-10-26 - POND 2.xlsx/Pond 1](https://arcadis365.sharepoint.com/sites/145328/Internal Documents/8.01_Technical/8.01_General/04_Design-Analyses/SWMF (Storm Pond Calculator-2025-10-26 - POND 2.xlsx/Pond 1)

General Basin Data

Pond Name:	SWMF 2 (Dry Pond)		
Pond Location:			
Contributing Basin Area:	A=	9.13 ha	
Basin Runoff Co-efficient:	C=	0.81	(0.65 x 1.25)
Upbasin Pond:			
Upbasin Area:	A _{up} =	0.00 ha	
Maximum Draw Down Rate:		3.00 L/s/ha	
Allowable Draw Down Rate:		2.25 L/s/ha	(0.0274 m ³ /s)

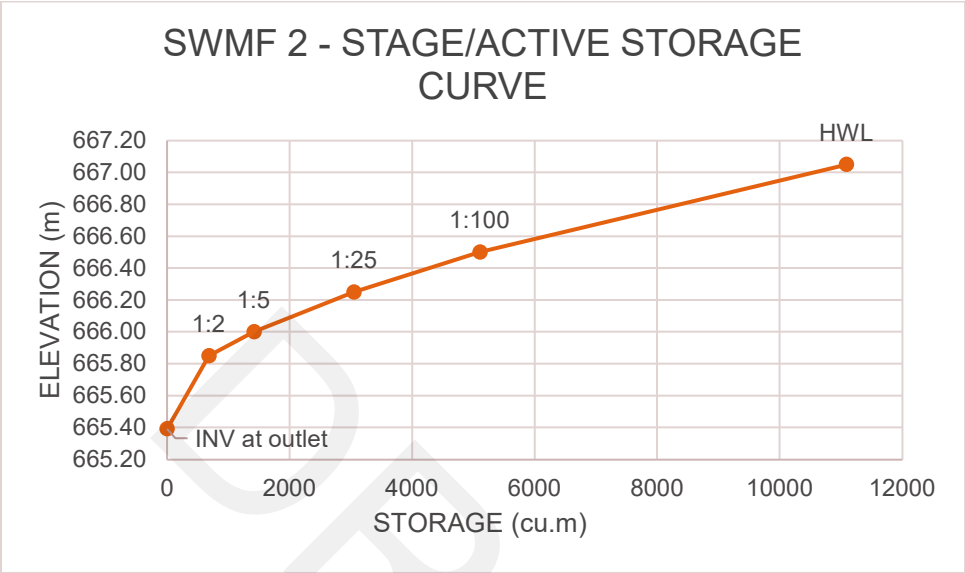
Table 3.2a SWMF 1 (Constructed Wetland) Data

1. DESCRIPTION	West 240 SWMF 1					
2. LOCATION	West 240 North Basin					
3. STAGE	1					
4. TYPE	Constructed Wetland					
5. SIZE	Dead Storage	NWL	1:5 yr	1:25 yr	1:100 yr	HWL
Active Storage Volume (m³)	33874	0.00	24128	32489	44474	54105
Depth (m)		0.00	1.00	1.30	1.70	2.00
Surface Area (ha)		2.27	2.70	2.88	3.12	3.31
Maximum Flowrate (m³/s)		0.00	0.1080	0.1160	0.1430	0.1600
Elevation (m)		665.00	666.00	666.30	666.70	667.00
6. FREEBOARD (m)	668.00					
7. CATCHMENT AREA						
Temporary (ha)						
Interim (ha)						
Ultimate (ha)	56.95					
8. STRUCTURES						
Inlet Inverts (m)	1350 mm 662.100 m	1200 mm 662.100 m	1200 mm 662.100 m			
Outlet Inverts (m)	600mm 662.100 m					
Control Type	Control Manhole with Sluice Gate and Orifice					

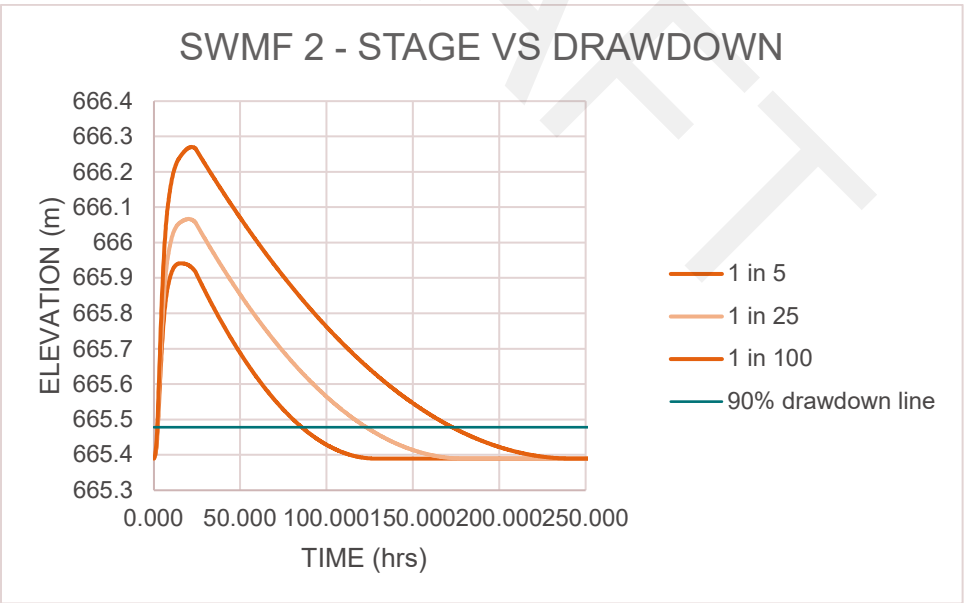
Table 3.3a STORMWATER MANAGEMENT FACILITY DATA

1. DESCRIPTION	West 240 SWMF 2					
2. LOCATION	West 240 South Basin					
3. STAGE						
4. TYPE	Dry Pond					
5. SIZE		BOL	1:5 yr	1:25 yr	1:100 yr	HWL
Active Storage Volume (cm)		0.00	1420	3052	5107	11093
Depth (m)		0.00	0.61	0.86	1.11	1.66
Surface Area (ha)		0.00	0.56	0.74	0.90	1.29
Maximum Flowrate (cms)		0.00	0.0120	0.0170	0.0170	0.0170
Elevation (m)		665.39	666.00	666.25	666.50	667.05
6. FREEBOARD (m)	668.05					
7. CATCHMENT AREA						
Temporary (ha)						
Interim (ha)						
Ultimate (ha)	9.13					
8. STRUCTURES						
Inlet Inverts (m)	1050 mm 666.200 m					
Outlet Inverts (m)	600 mm 665.392 mm					
Control Type	Orifice					

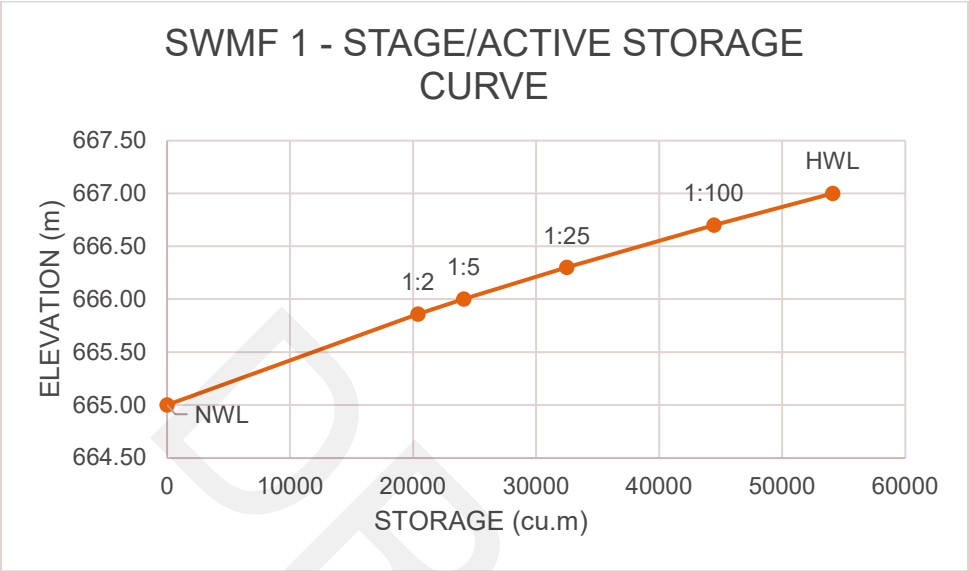
Using the allowable drawdown rate as shown above, with an orifice (radius of 0.05m and at an invert of ~665.992m) installed on the first downstream MH (1007) within the interconnecting pipe, the dry SWMF 2 will retain water as per the chart below:



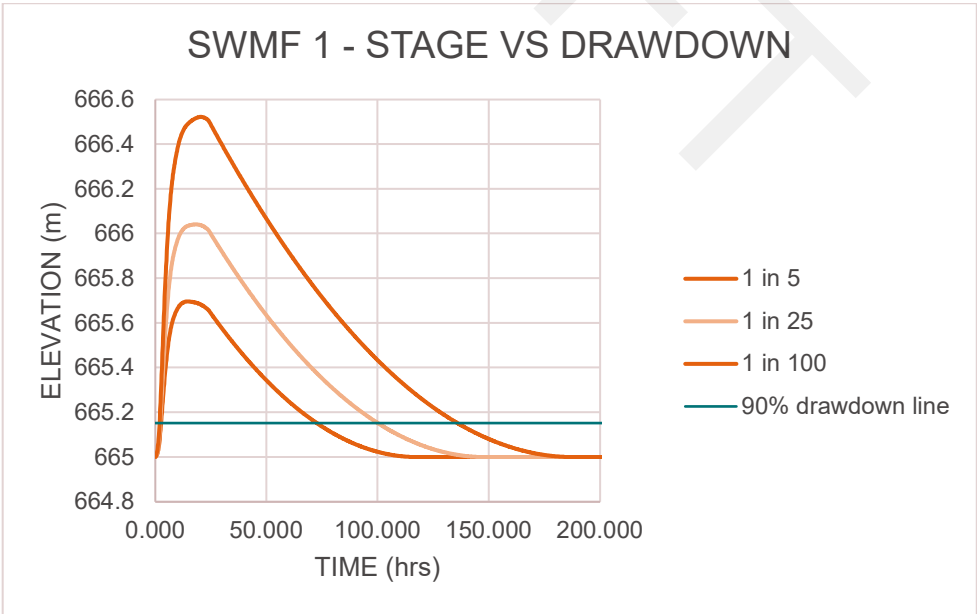
Additionally, given the orifice size, the drawdown of the facility, using Huff distribution events is as shown below:



SWMF 1 will retain major and minor runoff from the Basin 1 area, as well as convey interconnecting flows from SWMF 2. The interconnecting pipes range in size from 600mm to 1350mm to SWMF 1. SWMF 1 will retain water as per the below charts:



SWMF 1 will have controlled outflow governed by a Control MH at the NW of the facility. Using an orifice with a radius of 0.1225m, the outflow into the Grandview system and Outfall No. 6 will not exceed the allowable release rate associated with the Whitemud Creek Surface Water Management Study Final Report. Given this orifice size, the drawdown of the facility, using Huff distribution events is as shown below:



The SWMFs have been sized based upon the critical storm event, in this case Huff 1:100 year, and the overall basin size of 66.08 ha which encompasses the proposed development per the land use breakdown and weighted average runoff coefficient outlined in **Table 3.4** below:

Table 3.4 - Runoff Coefficient Calculation								
Land Use	Area (ha)	Area (ha) (A) with runoff to adjacent parcels removed	% of GA					
Gross Area (GA)	93.64	93.59	100.00%					
Area to WC	13.57	13.57	14.49%					
Pipeline and Utility ROW	0.81	1.02	0.87%					
Natural Area/PUL/MR (runoff to WC)		10.46	11.18%					
Gross Developable Area (GDA) contributing to runoff coefficient	79.26	68.56	84.64%					
		Gross Developable Area (GDA) contributing to runoff coefficient						
Land Use Breakdown	Area (ha)	Area (ha) (A) with runoff to adjacent parcels removed	% of GA	Basin 1 GA	Basin 2 GA	Runoff Coefficient (C)	Basin 1	Basin 2
MR - City Purchase	1.34	1.34	1.43%	1.3	0.0	0.20	0.3	0.0
MR	7.94	6.60	8.48%	5.0	1.7	0.20	1.0	0.3
Mixed Use/Commercial	4.06	2.97	4.34%	3.0	0.0	0.85	2.5	0.0
School/RMh	2.14	2.14	2.29%	2.1	0.0	0.70	1.5	0.0
Storm Water Management Facility	3.41	3.41	3.64%	2.6	0.9	0.20	0.5	0.2
Public Utility Lot	2.85	2.85	3.04%	2.1	0.7	0.30	0.6	0.2
Road and Lanes	12.98	12.48	13.86%	9.4	3.1	0.90	8.4	2.8
Total Non-Residential Area	34.72	31.79	37.08%	25.45	6.33		14.85	3.52
Net Residential Area (NRA)	44.54	36.78						
Residential Land Use	Area (ha)							
MDR	10.29	8.47	10.99%	6.4	2.1	0.70	4.4	1.5
HDR	11.58	11.58	12.37%	11.6	0.0	0.70	8.1	0.0
Low Density Residential (LDR)	17.75	13.4	18.96%	10.0	3.3	0.65	6.5	2.2
Mixed Use / Urban Village Flex Area	6.09	6.09	6.50%	6.1	0.0	0.80	4.9	0.0
				34.10	5.50		23.90	3.70
Total	45.71	39.52	48.81%	59.50	11.80		38.80	7.18
Weighted Average (C x A)/GA							0.65	0.61

Per the City of Edmonton Drainage Standards (2025) the assumption that planting will be incorporated into the Mixed Use/Urban village has resulted in the use of a lower coefficient for these areas.

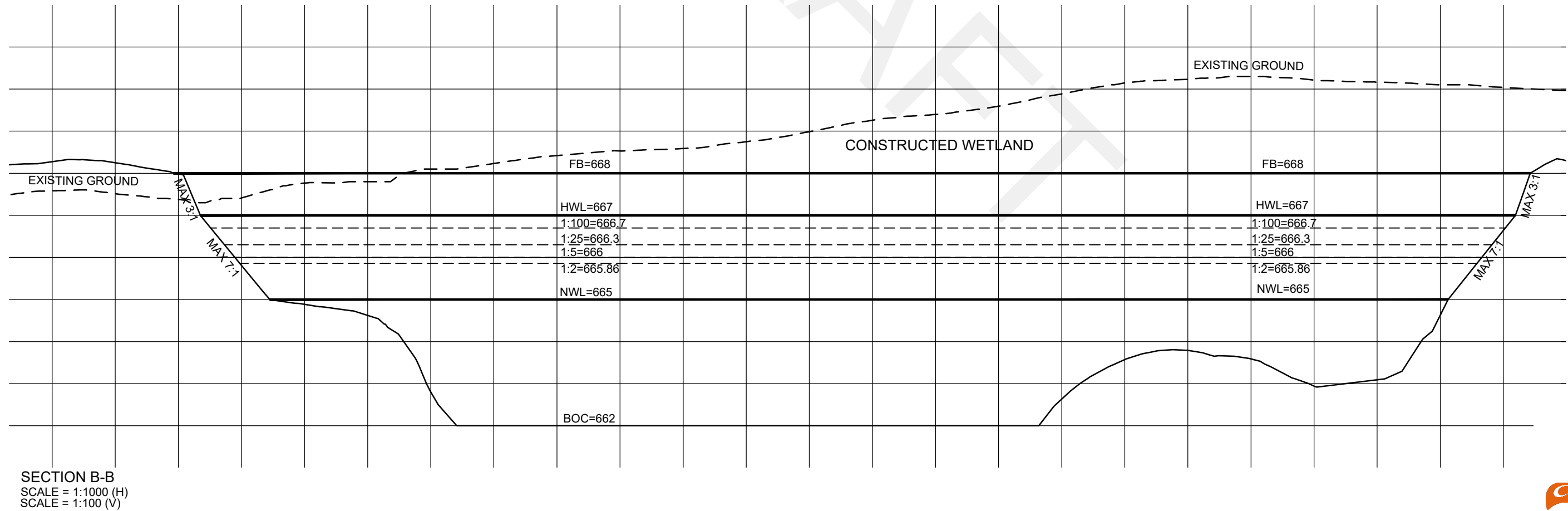
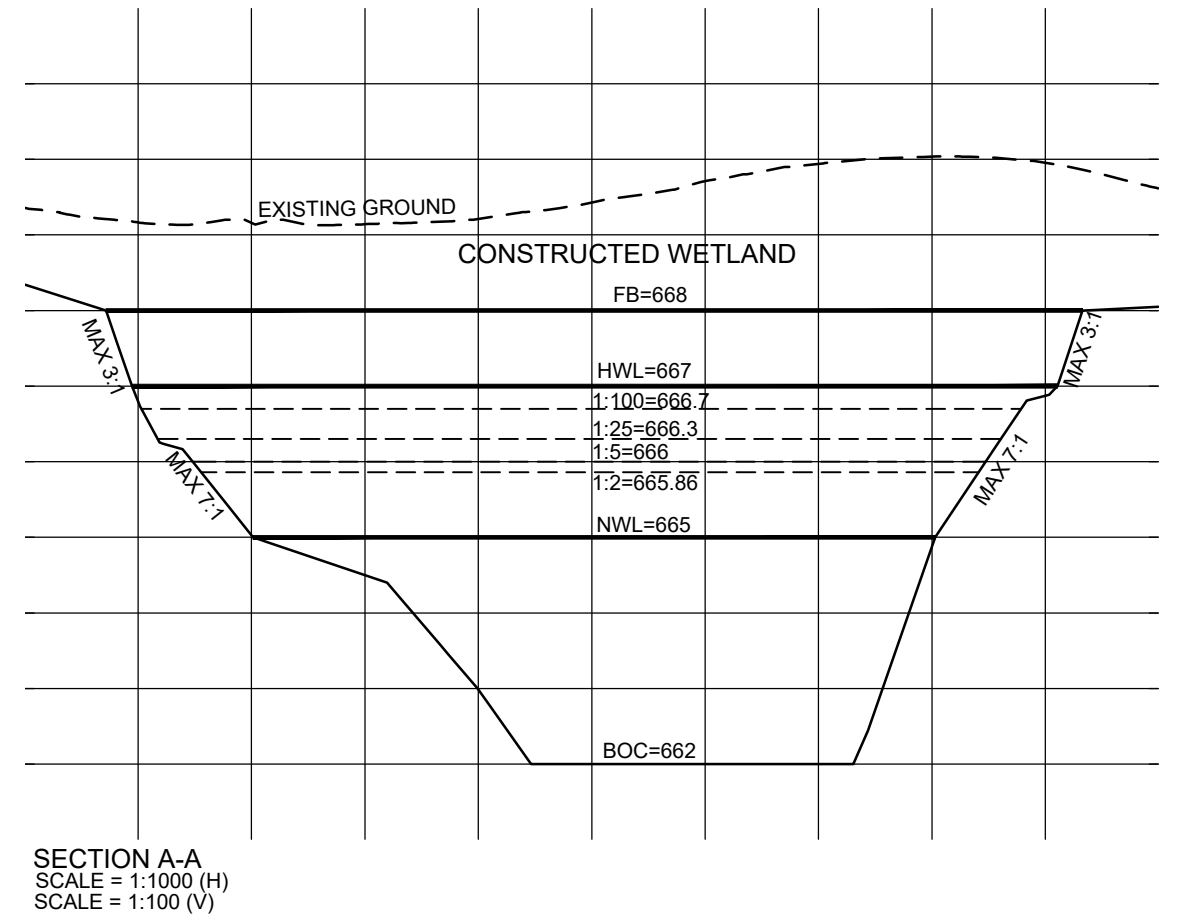
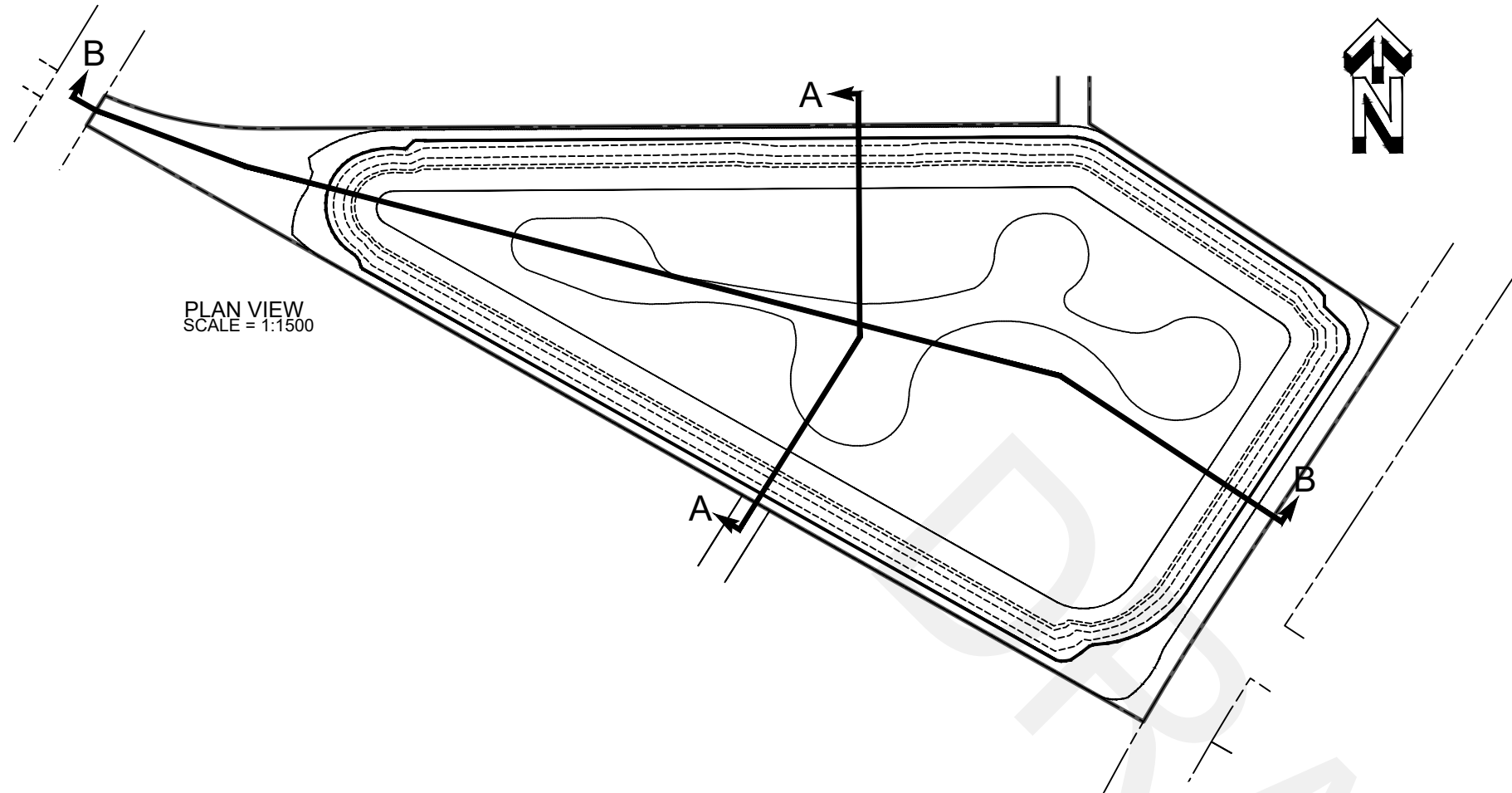
Locating the larger facility within the existing low-lying areas of the site reduces the need for excessive grading operations and maintains a drainage pattern for the area that more closely aligns with pre-development hydrology. The details of the proposed facilities are as summarized below:

	HWL Area (ha)	HWL Elevation	Services	Trigger for Construction
SWMF 1	3.31	667.00 m	56.95 ha	Start of neighbourhood construction – PHASE 1
SWMF 2	1.29	667.05 m	Remaining 9.13 ha	PHASE 6

All flows from the site are to be directed toward SWMF 1 for retention and treatment, and SWMF 2 for retention, followed by controlled discharge into the proposed 600-750 mm interconnecting pipe connection which will join the existing system at MH 224466 on 62 Avenue. The PCSWMM parameters used in the sizing exercise are provided in **Appendix D**.

The inclusion of stormwater management facilities to service the new development ensures adequate treatment of the runoff prior to discharge into Whitemud Creek and ensures that controlled discharge is maintained for erosion control and downstream flow control. Details for the design of SWMFs 1 and 2, are as shown in **Figure 3.8** and **Figure 3.9**, respectively, with Control Maintenance Hole details outline in **Figure 3.8a**.

C:\Users\boniectd486\Documents\Arcadis ACC US\ACA-40145328-West_240\Project Files\10_WIP\04-CIV\Sheets\NDR_2_0\Figures\PROFILE-for figures.dwg; Layout Name: SWMF 1 Plot Style: 1 Plot Scale: 1:1 Plotted At: 12/19/2025 3:41 PM Last Saved By: boniectd486 Last Saved At: Dec. 19, 25

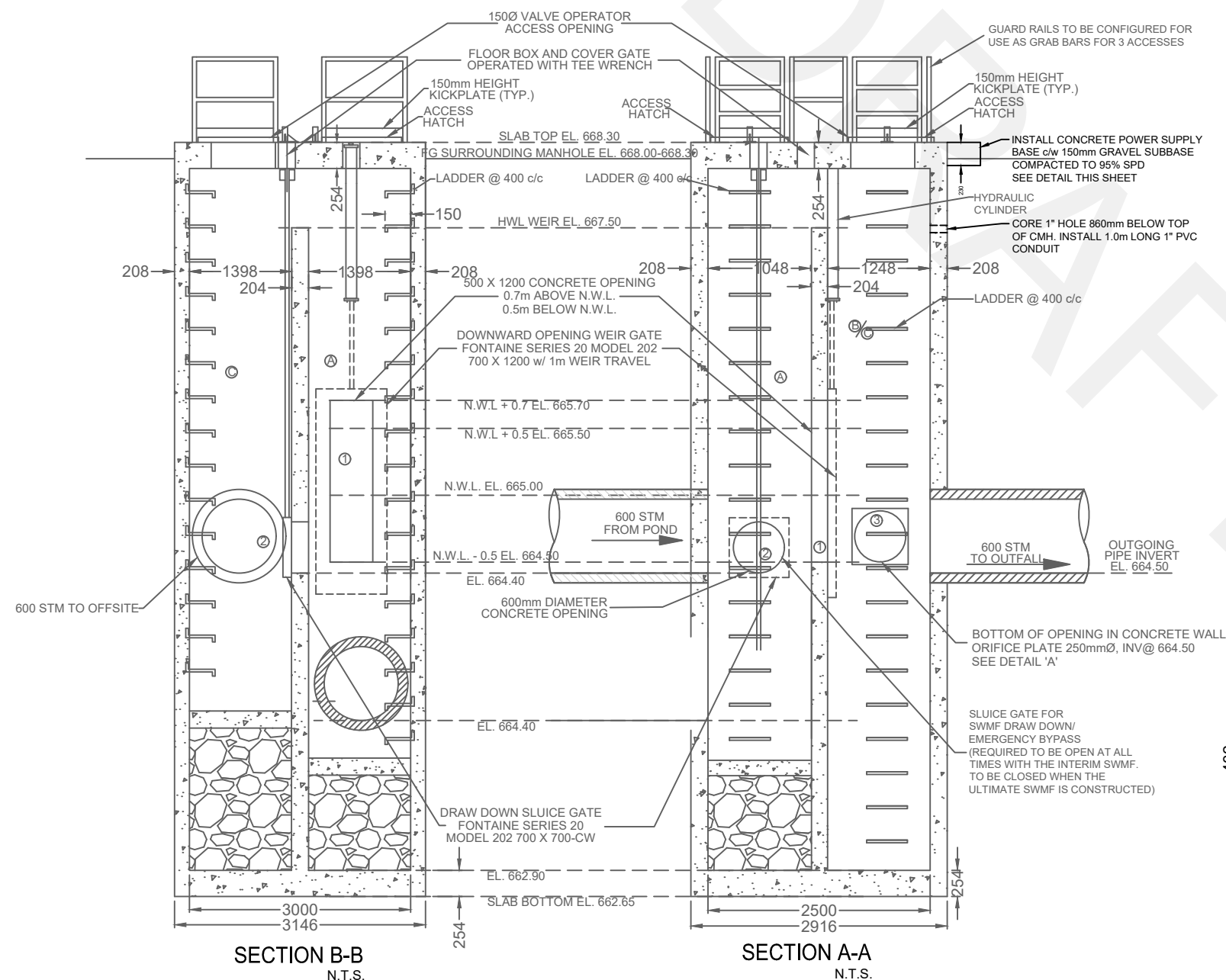
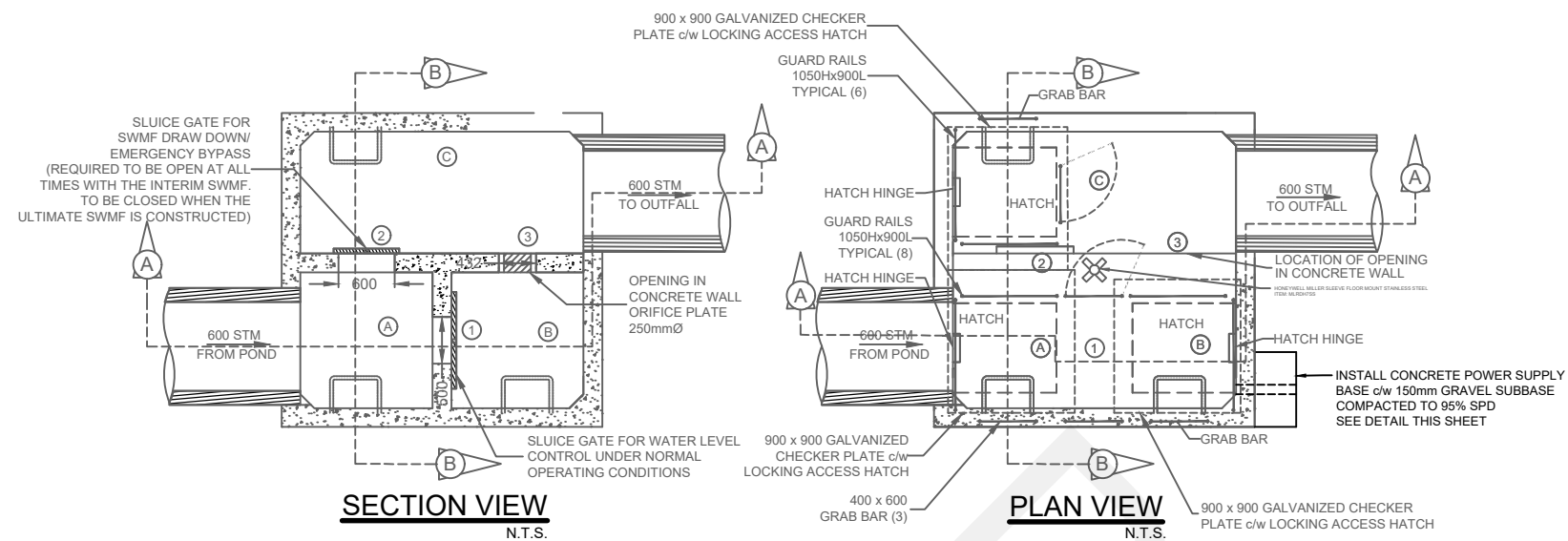


WEST 240
NEIGHBOURHOOD
DESIGN REPORT

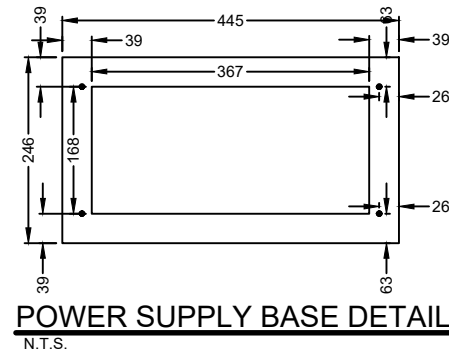
Figure 3.8
SWMF 1 PLAN
AND SECTIONS



FILE NO. E0-145328



NOTE:
POWER SUPPLY BASE TO BE
INSTALLED FOR WATER LEVEL
SENSOR



LOGIC OF OPERATION - CONTROL MANHOLE

WATER FLOWS FROM POND INTO COMPARTMENT (A), THEN THROUGH WEIR GATE [1] INTO COMPARTMENT (B). SLUICE GATE [2] IS NORMALLY CLOSED. WEIR GATE [1] IS NORMALLY SET AT NWL (665.00m ELEVATION). ANY INCREASE IN WATER LEVEL IN THE POND WILL PASSIVELY FLOW OVER THE WEIR TO MAINTAIN WATER LEVEL IN THE POND AT NWL.. WATER FLOWS FROM COMPARTMENT (B) THROUGH WALL OPENING [3] INTO COMPARTMENT (C) AND INTO CONNECTING STORM PIPE (600 STM).

OPERATION UNDER NORMAL CONDITIONS

1. WEIR GATE [1] IS NORMALLY SET TO NWL, BUT CAN BE ADJUSTED $\pm 0.5\text{m}$ TO RAISE OR LOWER THE WATER LEVEL IN THE POND BY THE CORRESPONDING AMOUNT AS NEEDED.
2. SLUICE GATE [2] IS NORMALLY CLOSED. TO BE OPENED UPWARDS FOR MAINTENANCE IN CASE WALL OPENING [3] OR SLIDE GATE [1] ARE PLUGGED AND BYPASS SYSTEM, OR IF LAKE DRAWDOWN IS REQUIRED.
3. WALL OPENING [3] IS SIZED TO ALLOW A PEAK DISCHARGE RATE (AT HWL) OF $0.1977\text{m}^3/\text{s}$, WHICH EQUATES TO 3.0 L/s/ha AS PER NDR.

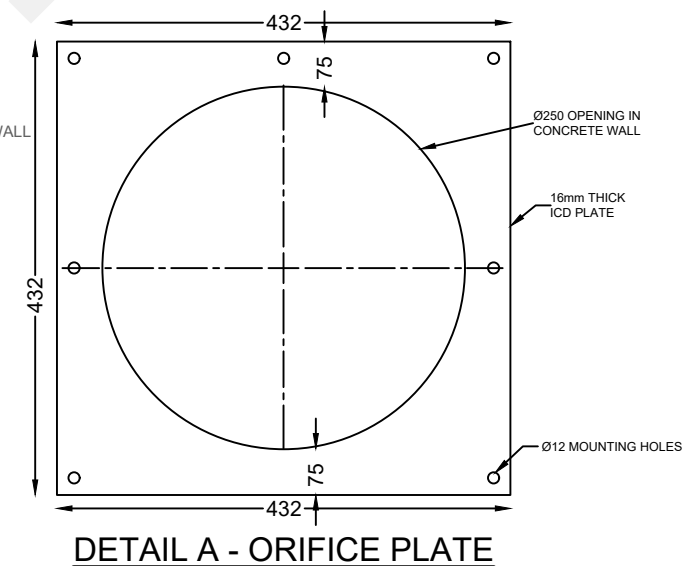
OPERATION UNDER EMERGENCY BYPASS

IN CASE OF EMERGENCY, RAISE WEIR GATE [1] AND OPEN SLUICE GATE [2]. THIS WILL ALLOW MAINTENANCE TO BE PERFORMED WITHIN COMPARTMENT (B).

MANHOLE STATISTICS

WEIR GATE [1] AREA=0.1-0.6m² WEIR ELEVATION - 664.50-665.50m (NORMALLY SET AT 665.00m)
SLUICE GATE [2] AREA=0.36m² INVERT ELEVATION - 664.40m
250Ø ORIFICE PLATE/OPENING IN CONCRETE WALL [3] AREA=0.049m² INVERT ELEVATION - 664.50m

TABLE 3.2a - SWMF 1 (Constructed Wetland) Data						
1. DESCRIPTION	West 240 SWMF 1					
2. LOCATION	West 240 North Basin					
3. STAGE	1					
4. TYPE	Constructed Wetland					
5. SIZE	Dead Storage	NWL	1.5 yr	1.25 yr	1.100 yr	HWL
Active Storage Volume (m ³)	33874	0.00	24128	32489	44474	54105
Depth (m)		0.00	1.00	1.30	1.70	2.00
Surface Area (ha)		2.27	2.70	2.88	3.12	3.31
Maximum Flowrate (m ³ /s)		0.00	0.1080	0.1160	0.1430	0.1600
Elevation (m)		665.00	666.00	666.30	666.70	667.00
6. FREEBOARD (m)	0.65.00					
7. CATCHMENT AREA						
Temporary (ha)						
Interim (ha)						
Ultimate (ha)		56.95				
8. STRUCTURES						
Inlet Inverts (m)	1350 mm 662.100 m	1200 mm 662.100 m	1200 mm 662.100 m			
Outlet Inverts (m)	600mm 662.100 m					
Control Type	Control Manhole with Stance Gate and Orifice					



WEST 240

NEIGHBOURHOOD DESIGN REPORT

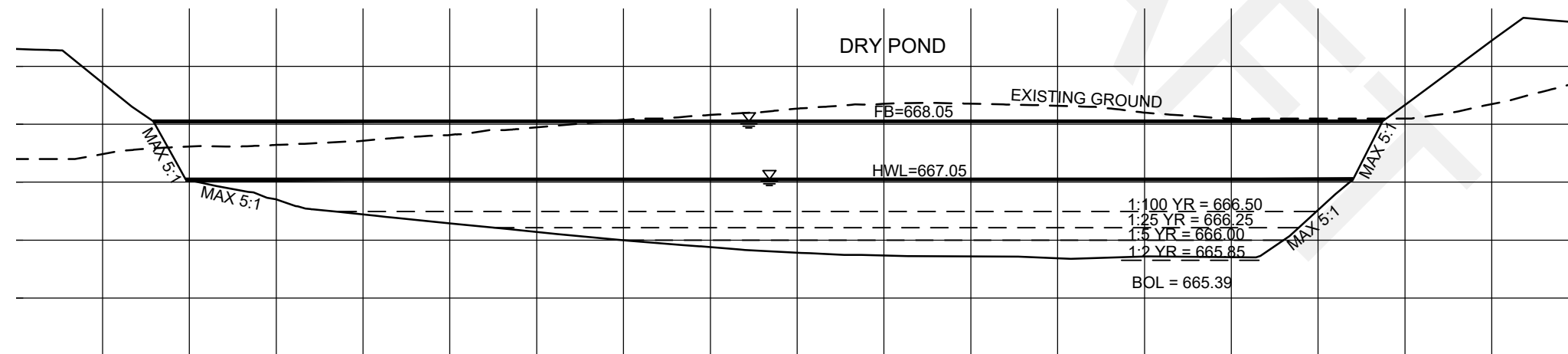
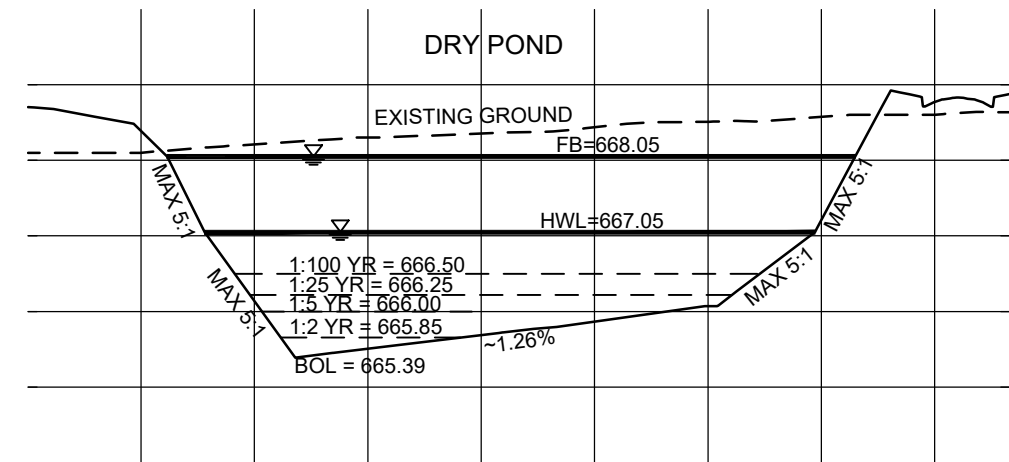
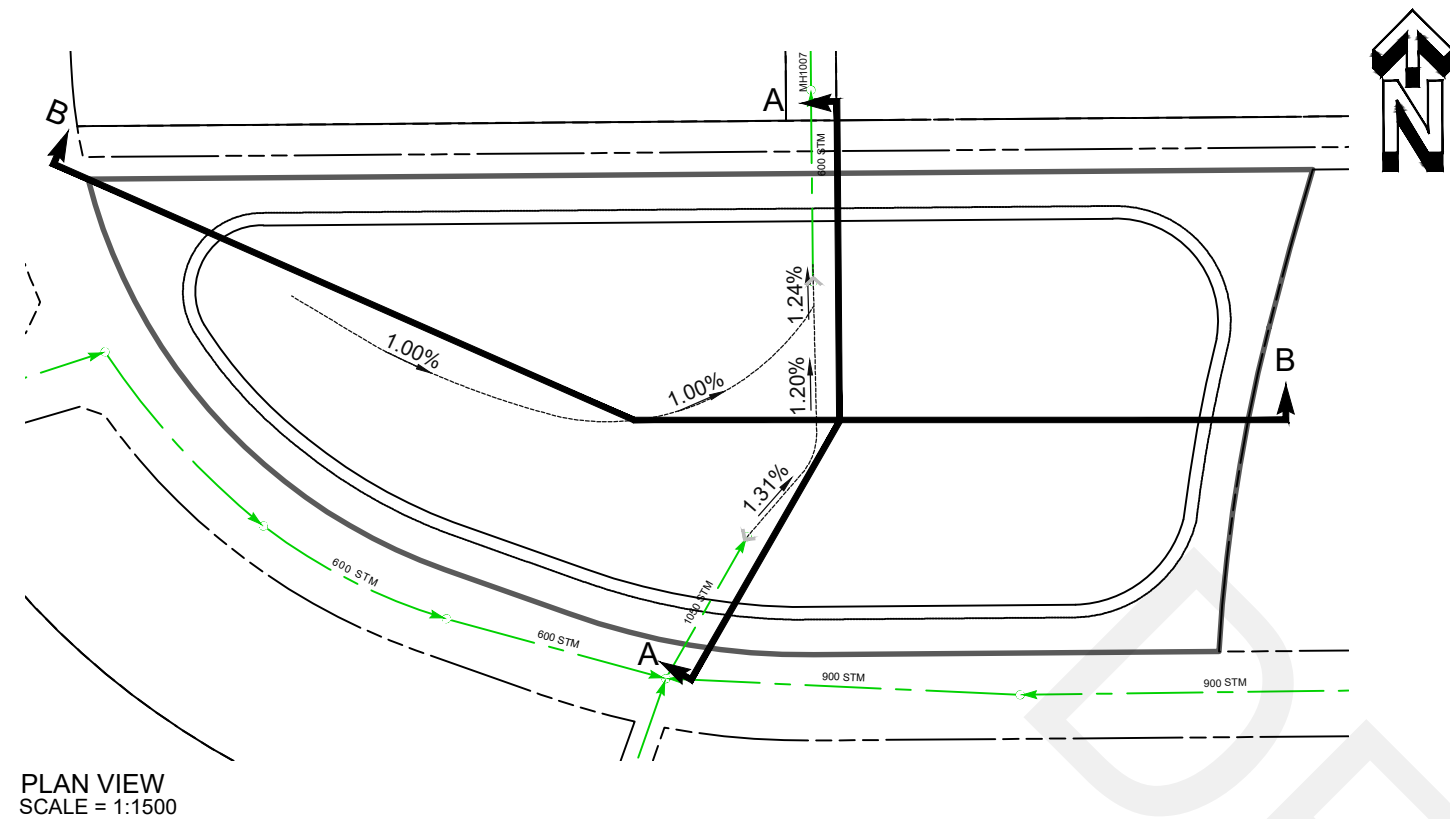
Figure 3.8A

SWMF 1 CONTROL MAINTENANCE HOLE DETAILS



FILE NO. E0-145328

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3.4.2.3 Constructed Wetland Offset Value

The development of the area will require removal of some existing marsh and swamp features, which include seven wetlands identified as part of the Phase II Ecological Network Report completed by Fiera Group in December 2025. It is noted that these wetlands have been impacted by human activity and were formed or altered within the site as cultivation proceeded on the land starting in the 1950s, continuing through its use by the University of Alberta for agriculture and farming research until 2026. These were assessed based on applicable regulatory guidelines and frameworks including the Alberta Wetland Classification System (AESRD 2015 referenced within the Fiera 2025 report), and the provincial wetland assessment tool (ABWRET-A referenced within the Fiera 2025 report), with boundaries determined using the Alberta Wetland Identification and Delineation Directive (Government of Alberta 2015 referenced within the Fiera 2025 report). Using the ABWRET-A the identified wetlands were found to meet either C-value or D-value criteria. In order to retain the ecological benefits of a wetland system comprised of these classes, a constructed wetland is proposed as SWMF 1. Designed to meet Alberta Environment and City of Edmonton/EPCOR parameters for such a facility, SWMF 1 presents an environment in which stormwater will be treated and flow slowed. Additional biodiversity and habitats will be created using soils harvested from the existing wetland formations on the property to the extent possible.

Further detail on this, and the required monitoring and maintenance for this type of facility can be referenced within the ENR by Fiera (2025) and will be further developed with Stage 1 Detailed Design submissions for the neighbourhood.

3.4.3 Minor Drainage System

The minor storm flows from within the neighbourhood will be collected via catch basin or other conveyance features and flow to the SWMFs per the proposed grading scheme. The development is currently proposed to be graded such that Phases 1-5 will flow toward SWMF 1 via the minor pipe system. Phases 6-10 shall be conveyed toward SWMF 2. The proposed minor storm drainage system is as detailed in **Figure 3.10**.

Analysis of the existing stormwater system within the Grandview Heights neighbourhood to the north of the project area demonstrates that the 1:5 year (minor) events for the west half of the neighbourhood flow through the system within 62 Ave. Detail on this section of existing infrastructure was updated recently when the pipes within it were relined in 2017. Any event higher than the 1:5 year for Grandview is designed to be conveyed to either 122 Street, or directly overland to the creek to the west or ravine to the north. As a result, and given the available capacity of the existing storm system and outfall, it is proposed that both the minor and major flows generated by the West 240 site flow at a controlled rate from the proposed SWMF to the existing storm laterals and trunk to the existing Outfall No. 6 located in Whitemud Creek as shown in **Figure 3.3**.

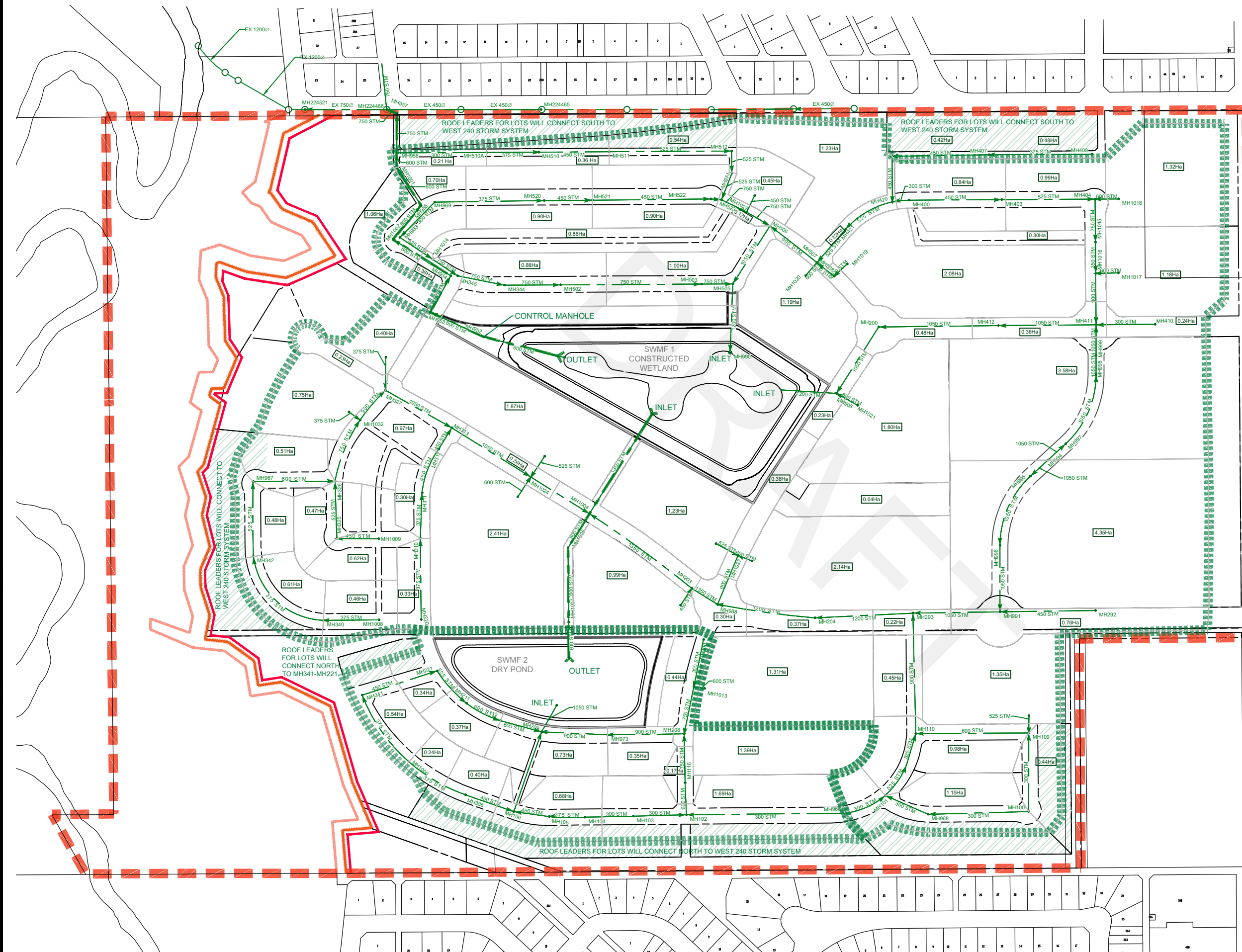
Both the flows from the minor system within Grandview and the interconnecting pipe have been considered in the storm sewer capacity calculations modelled in PCSWMM. **Figure 3.4** illustrates the neighbourhood pipe system and contributing flow with the corresponding PCSWMM node numbers. The existing flow mechanics of the 62 Avenue pipe system were modelled as they currently exist and modelled incorporating the proposed flow generated by the West 240 development. Under the current condition with West 240 contributing no flow in the 1:5 year

1 : 4000



LEGEND

- PROPERTY BOUNDARY
- PROPOSED STAGING
- TOP OF SLOPE
- URBAN DEVELOPMENT LINE (UDL)
- BUILDING LIMIT LINE
- STORM PIPE, MH# AND DIRECTION OF FLOW
- SWMF CONNECTOR
- STORM MINOR CATCHMENT BOUNDARY
- STORM MAJOR CATCHMENT BOUNDARY
- 0.51Ha TRIBUTARY AREA



WEST 240
NEIGHBOURHOOD
DESIGN REPORT

Figure 3.10
PROPOSED MINOR
STORM SERVICING



FILE NO. E0-145328

Table 3.1 Storm Design Form

Project:West 240

Municipality:City of Edmonton

Design By:PP

File:C:\Users\boniecd8486\DC\ACCDocs\Arcadis ACC US\ACA-00145328-West_240\Project Files\10_WIP\04-CIV\Sheets\NDR_2.0\STORM Sewer Network

Job Number:145328

Date:2025-OCT-26

Checked By:CTP

Default Storm:1:5 year

2022 EPCOR IDF Curves



Location	Manhole		Tributary Area			Total Area	Total A×C	Time of Conc.	Intensity	Total Baseline Flow	Design Q	Sewer Design					
	From	To	A	Runoff Co-Efficient "C"	A×C	ha		min	mm/hr	m³/s	m³/s	Slope	Diameter	Length	Capacity	Velocity @ Capacity	Velocity @ Design Flow
			ha									%	mm	m	m³/sec	m/s	m/s
South Basin	102	116	1.69	0.70	1.183	1.69	1.183	8.00	76.7	0.0000	0.2520	0.250	600	35.000	0.3070	1.09	1.21
	116	208	0.18	0.70	0.126	1.87	1.309	8.48	74.8	0.0000	0.2720	0.200	750	55.000	0.4979	1.13	1.15
	1013	1011	1.31	0.75	0.983	1.31	0.983	5.00	91.4	0.0000	0.2494	1.000	600	15.000	0.6140	2.17	2.06
	1011	208	0.00	0.70	0.000	1.31	0.983	8.00	76.7	0.0000	0.2093	0.200	750	52.000	0.4979	1.13	1.08
	MR	208	0.95	0.20	0.190	0.95	0.190	8.00	76.7	0.0000	0.0405	1.000	450	15.000	0.2851	1.79	1.27
	208	973	0.43	0.70	0.301	4.56	2.783	9.28	71.9	0.0000	0.5560	0.200	900	80.000	0.8096	1.27	1.37
	973	209	0.35	0.70	0.245	4.91	3.028	10.25	68.7	0.0000	0.5781	0.200	900	70.000	0.8096	1.27	1.38
	1000	306	0.25	0.70	0.175	0.25	0.175	8.00	76.7	0.0000	0.0373	0.250	375	70.000	0.0877	0.79	0.76
	306	106	0.40	0.70	0.280	0.65	0.455	9.53	71.1	0.0000	0.0898	0.200	450	55.000	0.1275	0.80	0.87
	106	209	0.68	0.70	0.476	1.33	0.931	10.59	67.7	0.0000	0.1751	0.200	525	90.000	0.1923	0.89	1.01
	341	221	0.55	0.70	0.385	0.55	0.385	8.00	76.7	0.0000	0.0820	0.250	450	85.000	0.1426	0.90	0.93
	221	210	0.47	0.70	0.329	1.02	0.714	9.53	71.1	0.0000	0.1410	0.200	525	90.000	0.1923	0.89	0.97
	210	209	0.37	0.70	0.259	1.39	0.973	11.07	66.3	0.0000	0.1792	0.200	600	45.000	0.2746	0.97	1.03
Dry Pond Inlet	209	SWMF 2	0.73	0.70	0.511	8.36	5.443	12.08	63.6	0.0000	0.9609	0.200	1050	50.000	1.2212	1.41	1.56
North East Area	403	404	0.73	0.75	0.548	0.73	0.548	5.00	91.4	0.0000	0.1390	0.750	450	100.000	0.2469	1.55	1.60
	Stub	404	1.61	0.75	1.208	1.61	1.208	5.00	91.4	0.0000	0.3065	0.500	600	25.000	0.4342	1.54	1.66
	404	1015	0.00	0.75	0.000	2.34	1.755	6.04	85.6	0.0000	0.4172	0.400	750	45.000	0.7041	1.59	1.66
	1015	1016	0.03	0.70	0.021	2.37	1.776	8.00	76.7	0.0000	0.3783	0.400	750	35.000	0.7041	1.59	1.62
	Stub 1	1016	1.34	0.85	1.139	1.34	1.139	5.00	91.4	0.0000	0.2891	0.500	600	25.000	0.4342	1.54	1.64
	1016	411	0.88	0.70	0.616	4.59	3.531	8.36	75.3	0.0000	0.7383	0.400	900	50.000	1.1449	1.80	1.91
	410	411	0.20	0.70	0.140	0.20	0.140	8.00	76.7	0.0000	0.0298	0.300	300	55.000	0.0530	0.75	0.77
East Mixed Use Area	994N	411	4.02	0.85	3.417	4.02	3.417	5.00	91.4	0.0000	0.8673	0.200	1050	120.000	1.2212	1.41	1.53
	411	412	0.00	0.70	0.000	8.81	7.088	9.19	72.2	0.0000	1.4223	0.400	1050	50.000	1.7271	1.99	2.23
	412	200	0.35	0.70	0.245	9.16	7.333	9.56	71.0	0.0000	1.4455	0.400	1050	125.000	1.7271	1.99	2.23
	200	908	0.48	0.70	0.336	9.64	7.669	10.50	68.0	0.0000	1.4484	0.400	1050	84.000	1.7271	1.99	2.23
	Stub3	908	1.80	0.75	1.350	1.80	1.350	5.00	91.4	0.0000	0.3427	0.500	600	25.000	0.4342	1.54	1.70
North East Inlet	908	NE Inlet	0.23	0.70	0.161	11.67	9.180	11.12	66.2	0.0000	1.6869	1.540	1200	75.000	4.8382	4.28	3.89
North Residential Area	408	407	0.48	0.75	0.360	0.48	0.360	5.00	91.4	0.0000	0.0914	0.400	375	110.000	0.1109	1.00	1.12
	407	405	0.42	0.75	0.315	0.90	0.675	6.64	82.6	0.0000	0.1549	0.400	450	102.000	0.1803	1.13	1.27
	405	420	0.00	0.75	0.000	0.90	0.675	7.97	76.8	0.0000	0.1440	0.400	450	50.000	0.1803	1.13	1.26
	420	507	1.37	0.20	0.274	2.27	0.949	8.63	74.2	0.0000	0.1957	0.400	525	25.000	0.2720	1.26	1.37
	1019	508	2.08	0.75	1.560	2.08	1.560	5.00	91.4	0.0000	0.3960	0.500	750	25.000	0.7872	1.78	1.78
	508	507	0.00	0.70	0.000	2.08	1.560	8.00	76.7	0.0000	0.3323	0.500	600	25.000	0.4342	1.54	1.69
	1020	507	1.19	0.75	0.893	1.19	0.893	5.00	91.4	0.0000	0.2265	0.500	600	25.000	0.4342	1.54	1.55
	507	506	0.33	0.70	0.231	5.87	3.633	8.94	73.1	0.0000	0.7380	0.200	900	25.000	0.8096	1.27	1.44
North East Residential Area	510A	511	0.50	0.70	0.350	0.50	0.350	8.00	76.7	0.0000	0.0745	0.200	375	25.000	0.0784	0.71	0.81
	511	512	0.53	0.70	0.371	1.03	0.721	8.52	74.7	0.0000	0.1496	0.300	450	25.000	0.1562	0.98	1.12
	512	971	0.00	0.70	0.000	1.03	0.721	8.89	73.3	0.0000	0.1468	0.200	525	25.000	0.1923	0.89	0.98
	971	523	0.00	0.70	0.000	1.03	0.721	9.31	71.8	0.0000	0.1438	0.200	525	25.000	0.1923	0.89	0.97
	521	523	0.90	0.70	0.630	0.90	0.630	8.00	76.7	0.0000	0.1342	0.300	450	25.000	0.1562	0.98	1.10
	523	1022	0.90	0.70	0.630	2.83	1.981	9.74	70.4	0.0000	0.3872	0.200	750	25.000	0.4979	1.13	1.25
	1023	1022	0.45	0.75	0.338	0.45	0.338	5.00	91.4	0.0000	0.0857	0.500	450	25.000	0.2016	1.27	1.22
	1022	506	0.12	0.70	0.084	3.40	2.403	10.08	69.3	0.0000	0.4624	0.300	750	25.000	0.6098	1.38	1.52
	506	505	0.00	0.70	0.000	9.27	6.035	10.35	68.4	0.0000	1.1472	0.200	1050	25.000	1.2212	1.41	1.60
	983	1014	1.06	0.70	0.742	1.06	0.742	8.00	76.7	0.0000	0.1580	0.200	525	25.000	0.1923	0.89	0.99
	1014	345	0.86	0.70	0.602	1.92	1.344	8.42	75.0	0.0000	0.2801	0.200	750	25.000	0.4979	1.13	1.16
	345	344	0.43	0.70	0.301	2.35	1.645	8.78	73.7	0.0000	0.3368	0.200	750	25.000	0.4979	1.13	1.21
	344	502	0.88	0.70	0.616	3.23	2.261	9.12	72.5	0.0000	0.4551	0.200	750	25.000	0.4979	1.13	1.28

Location	Manhole		Tributary Area			Total Area	Total A×C	Time of Conc.	Intensity	Total Baseline Flow	Design Q	Sewer Design					
	From	To	A	Runoff Co-Efficient "C"	A×C							Slope	Diameter	Length	Capacity	Velocity @ Capacity	Velocity @ Design Flow
			ha			ha		min	mm/hr	m³/s	m³/s	%	mm	m	m³/sec	m/s	m/s
	502	505	0.00	0.70	0.000	3.23	2.261	9.45	71.3	0.0000	0.4481	0.200	750	25.000	0.4979	1.13	1.28
North Inlet	505	North Inlet	1.00	0.70	0.700	13.50	8.996	10.61	67.6	0.0000	1.6904	1.440	1200	80.000	4.6785	4.14	3.80
South East Corner	101	110	1.28	0.70	0.896	1.28	0.896	8.00	76.7	0.0000	0.1908	0.300	525	75.000	0.2356	1.09	1.21
	1031	109	1.45	0.70	1.015	1.45	1.015	8.00	76.7	0.0000	0.2162	1.000	525	15.000	0.4301	1.99	1.99
	109	110	0.37	0.70	0.259	1.82	1.274	8.13	76.2	0.0000	0.2696	0.300	600	120.000	0.3363	1.19	1.32
	110	293	0.98	0.70	0.686	4.08	2.856	9.64	70.7	0.0000	0.5610	0.200	900	138.000	0.8096	1.27	1.37
East Mixed Use Area	994S	991	4.88	0.85	4.148	4.88	4.148	5.00	91.4	0.0000	1.0528	0.250	1050	150.000	1.3654	1.58	1.74
	292	991	0.77	0.70	0.539	0.77	0.539	8.00	76.7	0.0000	0.1148	0.400	450	100.000	0.1803	1.13	1.20
	991	293	0.00	0.70	0.000	5.65	4.687	9.39	71.6	0.0000	0.9316	0.200	1050	92.000	1.2212	1.41	1.55
	293	204	0.22	0.70	0.154	9.95	7.697	11.31	65.6	0.0000	1.4029	0.200	1200	105.000	1.7436	1.54	1.71
	204	988	0.37	0.70	0.259	10.32	7.956	12.33	62.9	0.0000	1.3902	0.200	1200	105.000	1.7436	1.54	1.71
	1028	1027	2.14	0.75	1.605	2.14	1.605	5.00	91.4	0.0000	0.4074	1.000	600	15.000	0.6140	2.17	2.32
	1029	1027	1.23	0.75	0.923	1.23	0.923	5.00	91.4	0.0000	0.2341	1.000	525	15.000	0.4301	1.99	2.03
	1027	988	0.00	0.70	0.000	3.37	2.528	8.00	76.7	0.0000	0.5383	0.200	900	75.000	0.8096	1.27	1.36
	988	203	0.31	0.70	0.217	14.00	10.701	13.36	60.4	0.0000	1.7963	0.200	1350	50.000	2.3870	1.67	1.83
	1130	203	0.99	0.75	0.743	0.99	0.743	5.00	91.4	0.0000	0.1885	1.000	450	15.000	0.2851	1.79	1.92
	203	1004	0.40	0.70	0.280	15.39	11.723	13.81	59.4	0.0000	1.9345	0.200	1350	50.000	2.3870	1.67	1.86
South West Area	340	342	0.46	0.70	0.322	0.46	0.322	8.00	76.7	0.0000	0.0686	0.200	375	110.000	0.0784	0.71	0.80
	342	967	0.61	0.70	0.427	1.07	0.749	10.29	68.6	0.0000	0.1428	0.200	525	80.000	0.1923	0.89	0.97
	967	326	0.48	0.70	0.336	1.55	1.085	11.66	64.7	0.0000	0.1949	0.200	600	90.000	0.2746	0.97	1.05
South West Area	1009	325	0.62	0.70	0.434	0.62	0.434	8.00	76.7	0.0000	0.0924	0.200	450	25.000	0.1275	0.80	0.87
	325	326	0.47	0.70	0.329	1.09	0.763	8.48	74.8	0.0000	0.1586	0.200	525	25.000	0.1923	0.89	0.99
	326	1032	0.55	0.70	0.385	3.19	2.233	13.08	61.1	0.0000	0.3788	0.200	750	25.000	0.4979	1.13	1.24
	1033	1032	0.75	0.75	0.563	0.75	0.563	5.00	91.4	0.0000	0.1428	1.000	375	25.000	0.1753	1.59	1.77
	1032	327	0.00	0.70	0.000	3.94	2.796	13.42	60.3	0.0000	0.4681	0.200	900	25.000	0.8096	1.27	1.32
	1034	327	0.40	0.75	0.300	0.40	0.300	5.00	91.4	0.0000	0.0761	1.000	375	25.000	0.1753	1.59	1.53
	327	313	0.23	0.70	0.161	4.57	3.257	13.74	59.6	0.0000	0.5389	0.200	1050	25.000	1.2212	1.41	1.37
	310	311	0.20	0.75	0.150	0.20	0.150	5.00	91.4	0.0000	0.0381	0.200	375	25.000	0.0784	0.71	0.70
	311	313	0.30	0.75	0.225	0.50	0.375	5.59	88.0	0.0000	0.0916	0.200	450	25.000	0.1275	0.80	0.87
Road South of SWMF #1	313	1024	0.97	0.70	0.679	6.04	4.311	14.04	58.9	0.0000	0.7052	0.200	1050	25.000	1.2212	1.41	1.46
	1026	1024	1.87	0.75	1.403	1.87	1.403	5.00	91.4	0.0000	0.3560	1.000	525	25.000	0.4301	1.99	2.22
	1025	1024	2.41	0.75	1.808	2.41	1.808	5.00	91.4	0.0000	0.4588	1.000	600	25.000	0.6140	2.17	2.38
	1024	1004	0.12	0.70	0.084	10.44	7.605	14.33	58.3	0.0000	1.2313	0.200	1200	25.000	1.7436	1.54	1.67
	1004	South Inlet	0.40	0.70	0.280	26.23	19.608	14.58	57.8	0.0250	3.1712	0.650	1350	130.000	10.4140	7.28	2.22
SWMF #1 Outlet Control Manhole	952	953	0.00	0.70	0.000	0.00	0.000	8.00	76.7	0.1700	0.1700	0.150	600	63.000	0.2378	0.84	0.91
	953	954	0.00	0.70	0.000	0.00	0.000	9.15	72.4	0.1700	0.1700	0.150	600	44.000	0.2378	0.84	0.91
	954	1002	0.00	0.70	0.000	0.00	0.000	9.95	69.7	0.1700	0.1700	0.150	600	73.000	0.2378	0.84	0.91
	1002	955	0.00	0.70	0.000	0.00	0.000	11.28	65.7	0.1700	0.1700	0.150	600	47.000	0.2378	0.84	0.91
	955	1001	0.00	0.70	0.000	0.00	0.000	12.14	63.4	0.1700	0.1700	0.150	600	48.000	0.2378	0.84	0.91
	1001	956	0.00	0.70	0.000	0.00	0.000	13.01	61.2	0.1700	0.1700	0.150	600	16.000	0.2378	0.84	0.91
	956	957	0.00	0.70	0.000	0.00	0.000	13.31	60.5	0.1700	0.1700	0.150	750	42.000	0.4312	0.98	0.92
Outlet tie to ex	957	EX 224466	0.97	0.70	0.679	0.97	0.679	14.07	58.8	0.1700	0.2810	0.150	750	12.000	0.4312	0.98	1.04
	EX 224466	EX 224521	0.00	0.70	0.000	0.97	0.679	14.26	58.4	0.8710	0.9812	0.840	750	88.000	1.0203	2.31	2.63

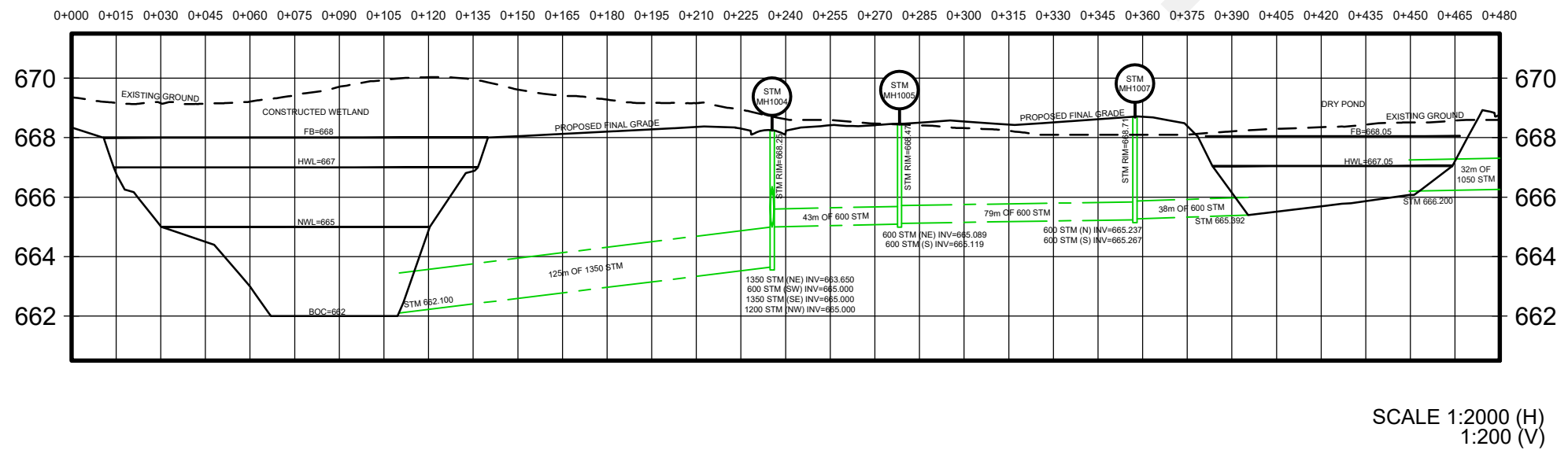
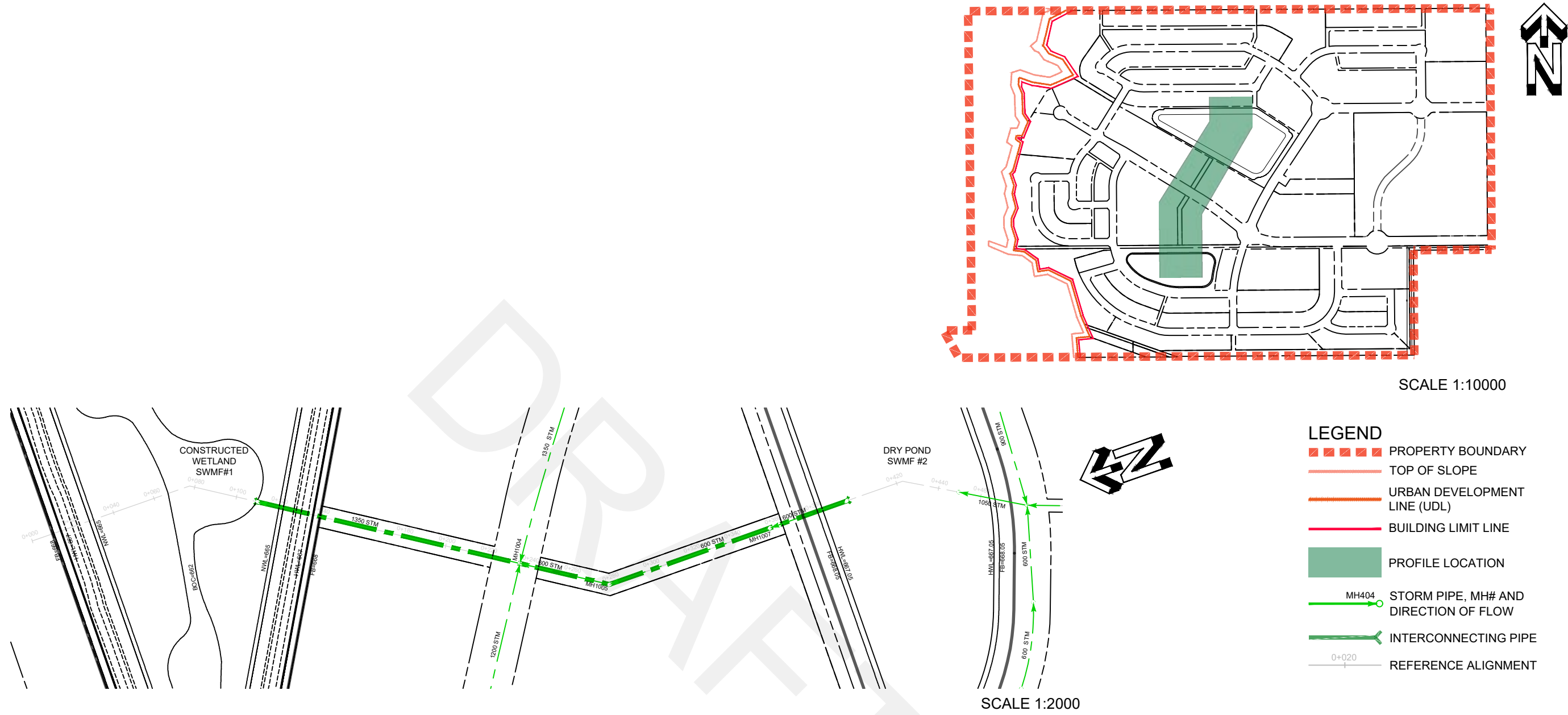
1:5 year Storm Area: 60.7 ha
Total Area: 60.7 ha

storm, flow in the 750 pipe (MH224466-MH224521) is 0.701 cu.m/s and flow in the 600mm pipe (MH224521-MH224514) is 0.701 cu.m/s. When PCSWMM is run with West 240 contributing flow in the 1:5 year, flow in the 750mm pipe is 0.777cu.m/s and flow in the 600mm pipe is 0.777cu.m/s. The PCSWMM inputs used for confirming flows from the existing neighbourhood, plus the addition of flow from the West 240 neighbourhood are as detailed in **Appendix D**.

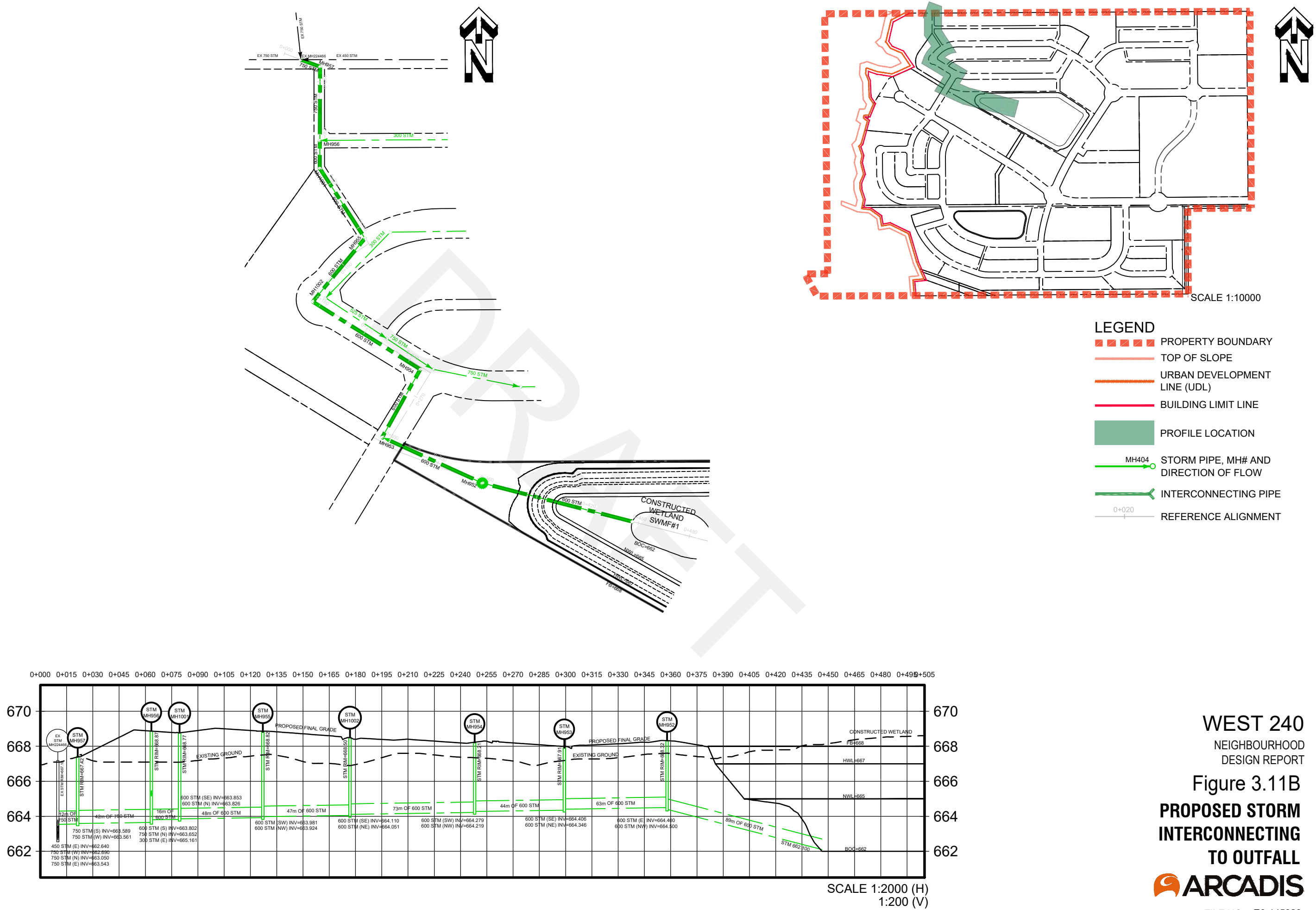
The pipe network components that convey minor and major flows between the two SWMFs, and to the existing system in Grandview are as detailed in **Figure 3.11A and 3.11B**. The pipe network components that achieve trunk status are as detailed in **Figures 3.12A and 3.12B**.

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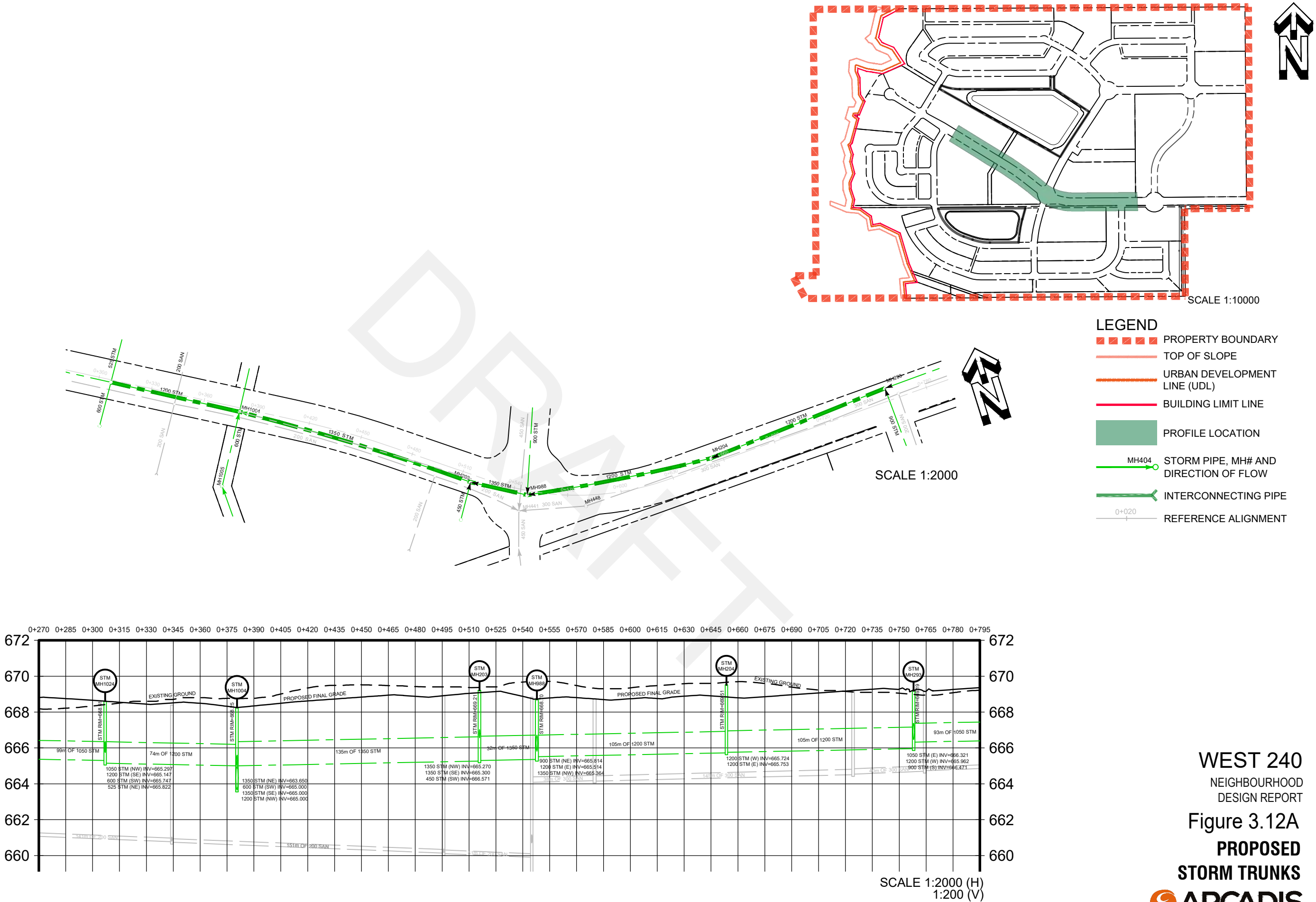
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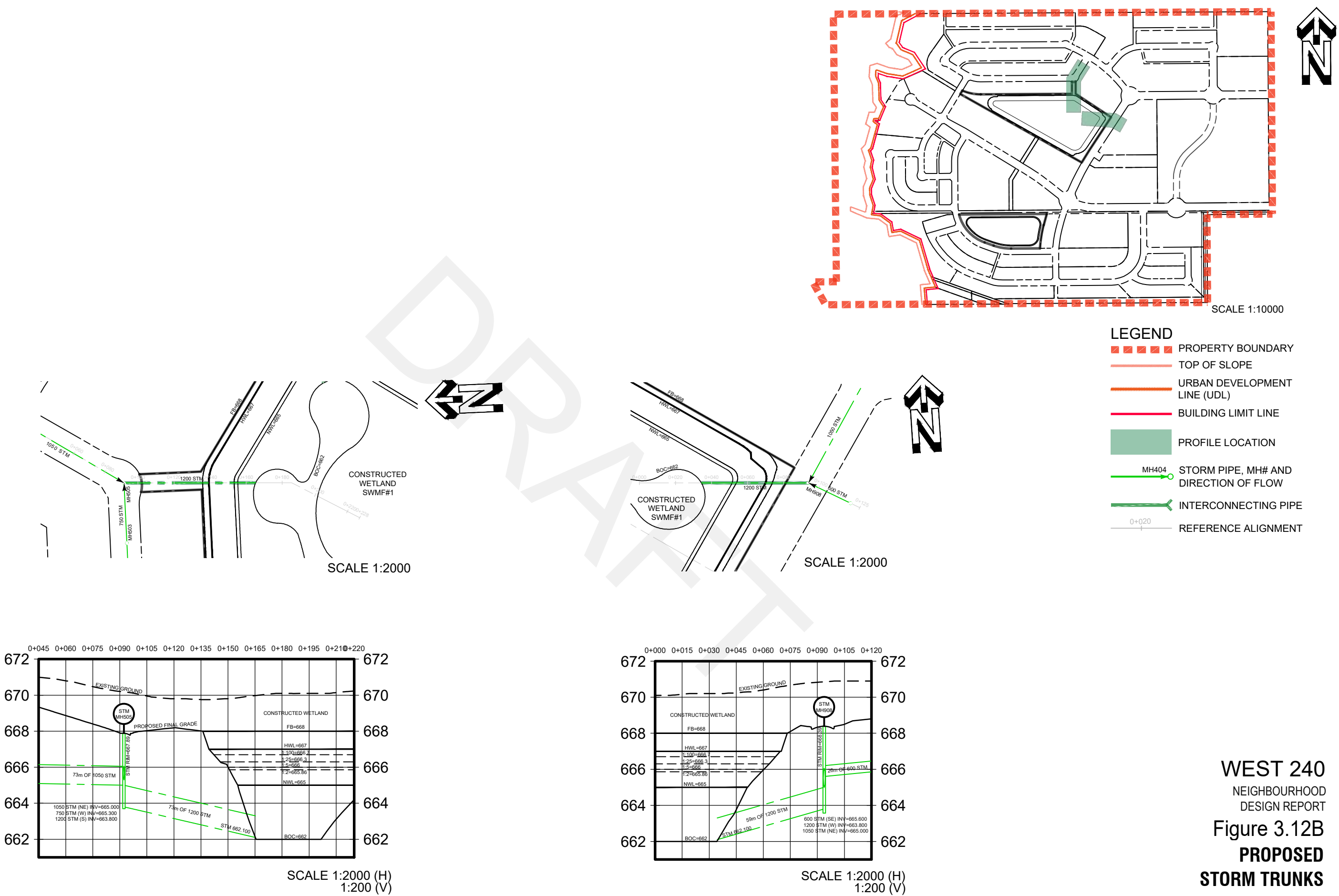
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WEST 240
NEIGHBOURHOOD
DESIGN REPORT
Figure 3.12B
**PROPOSED
STORM TRUNKS**

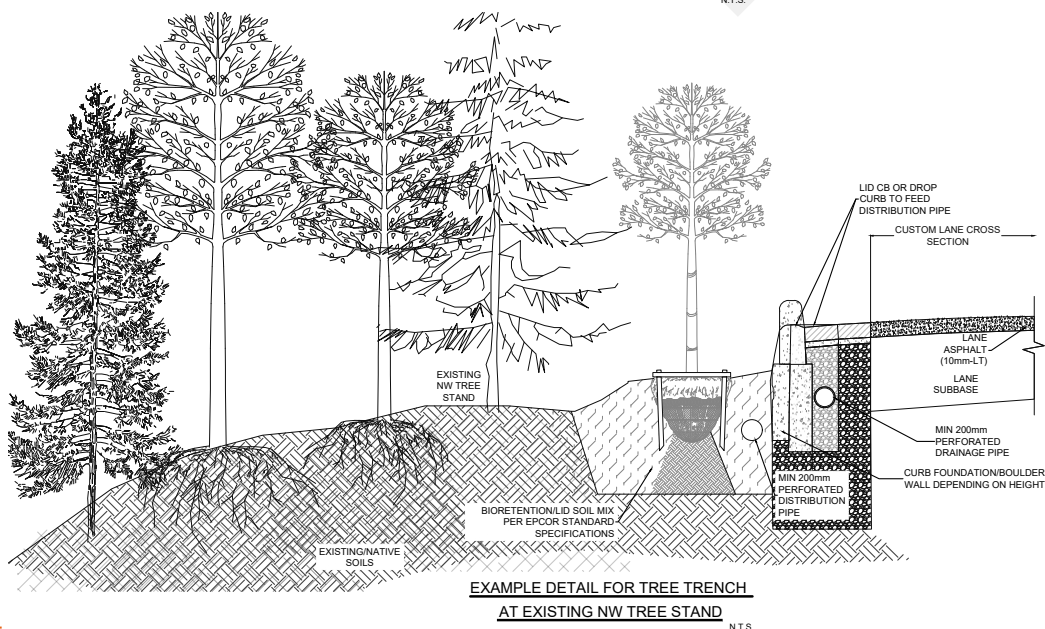
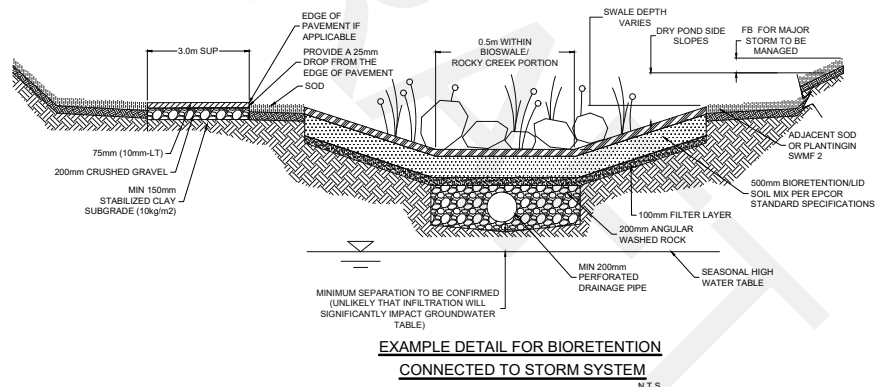


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3.4.4 Low Impact Development (LID)

Given the unique nature of the project site as a greenfield development project surrounded by established communities, there are constraints present that require unique solutions. There is opportunity to assess using Low-Impact Development strategies to minimize the size and maintenance requirements of the major and minor storm systems as well as to reduce impacts to existing pre-development watersheds. High-level analysis of soil cell compatibility and absorbent landscaping (thicker topsoil depths or bioretention gardens) are required to confirm the specifics of the retention possible on the site, which would function in the same way as the storm pond ultimately by controlling or reducing the flow to the ultimate system via onsite storage, retention, and use of stormwater.

For lot drainage proposed to be contained with berm designs or drainage onto existing tree stands there is a unique opportunity to utilize LID measures (infiltration pits, absorbent landscaping, eg.) to reduce any impacts on adjacent properties post-development. In all cases the volumes will be minimal or reduced from predevelopment flows. In the case of the Northern Forestry Centre it has been communicated that the landowner would be willing to regrade their site, but also to utilize tree trenches to feed the existing tree hedgerows in this area, and at the south boundary of the site. The specifics of this would be coordinated at detailed design in close collaboration with the City of Edmonton.



3.5 Permanent Area Contribution

Based on land ownership and benefitting areas, it is anticipated that there will be no PACs to be assessed for this development. Should ownership or development conditions change, high level PAC costing can be referenced in **Appendix E**.

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4 Erosion and Sedimentation Control (ESC)

Erosion and sedimentation shall be managed as construction of the area proceeds. The general flow of water across the site is from east to west and existing and natural watercourses shall be maintained for as long as possible during build out of the area. This will depend on the site development staging, and be closely monitored to ensure no adverse impacts occur to adjacent lands or the ecosystems proposed to be maintained.

The City of Edmonton Top of Bank Policy C542 will be adhered to wherever possible as erosion and sedimentation plans are developed. Natural vegetation should be maintained wherever possible and to the extent possible given development timing. Natural vegetation along the top of bank and within the top of bank walkway buffer will be left in place wherever possible and grading along the top of bank will be minimized within the established urban development demarcation.

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5 Proposed Roadway Network

Per the NASP submitted concurrent with this report, the proposed roadway network for the subject development provides conveyance routes for both overland major drainage, as well as right-of-way space for the majority of the underground servicing infrastructure. Statistics regarding this network and the requirements guiding the design are as included in the NASP and TIA developed and submitted by B&A and Bunt, respectively. This network is as detailed in **Figure 5.1**.

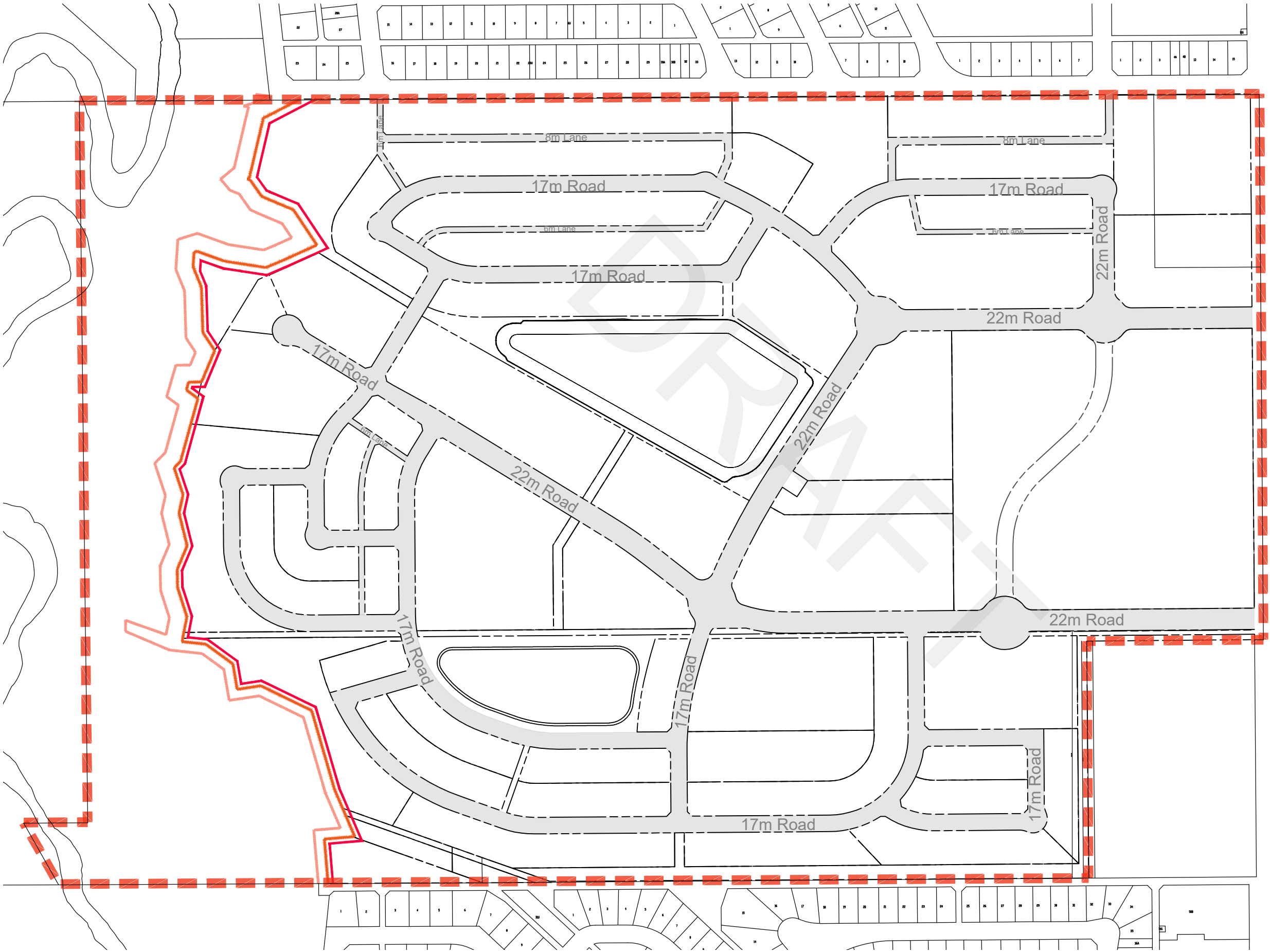
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LEGEND

- PROPERTY BOUNDARY
- TOP OF SLOPE
- URBAN DEVELOPMENT LINE (UDL)
- BUILDING LIMIT LINE
- ROADWAY NETWORK



WEST 240

NEIGHBOURHOOD
DESIGN REPORT

Figure 5.1

PROPOSED ROAD
NETWORK PLAN



FILE NO. E0-145328

6 Conclusions and Recommendations

To provide servicing for the subject site, recommendations are as outlined below.

6.1 Sanitary Sewer System

The sanitary flows from within the development will be conveyed to connect to existing City infrastructure at MH 577561 in the central south area of the subject lands. The existing sanitary system capacity and depth are sufficient to accommodate the additional flows from the subject area with adequate cover as required in the City of Edmonton standards.

6.2 Stormwater Management System

Major

The major flows from within the development will be contained within the West 240 boundaries and flow at a controlled discharge to an existing outfall along the Whitemud Creek. The storm water management facilities are sized to adequately accommodate the Huff 1:100 year event volumes as detailed in Section 3.4.2. Using the Blackmud/Whitemud Creek Surface Water Management Study Final Report, a maximum discharge of 3.0 L/s/ha was used as the primary parameter to be managed for the largest storm scenario and all scenarios beyond the 5-year flow. The existing 750mm storm pipe proposed as a connection to the Grandview Heights Neighbourhood to the north has sufficient capacity to include drainage of the project lands as detailed in Section 3.4.2. The existing storm system and existing Outfall No. 6 will be utilized for West 240 flows above the 1:5 year with orifice-controlled flow. It has been determined that the existing infrastructure in Grandview is only employed to manage the 1:5 year flows from the West portion of that area. The facilities designed using the latest City of Edmonton standards, and sized using calibrated PCSWMM models will have sufficient capacity to slow and treat the major runoff from within West 240. The existing 750mm and 600mm storm pipes have sufficient capacity to include drainage of the project lands as detailed in **Section 3.4.3**. Elevations within the proposed system align with existing boundary conditions and allow for minimum required cover of deep utilities.

By using the existing storm and outfall infrastructure already in place, long term EPCOR maintenance costs and impact to the Whitemud Creek can be reduced. Using the predetermined controlled discharge of 3.0L/s/Ha, discharged to an existing outfall, flows from the proposed site will have negligible impact to Whitemud Creek.

Minor

The minor storm runoff generated in the neighbourhood is managed within all City standard requirements to flow to the two proposed SWMFs, with the exception of those areas that are proposed to drain outward to adjacent parcels. The impacts of this are explored within **Section 3**, and **Appendix F**.