

**LETHBRIDGE COUNTY
IN THE PROVINCE OF ALBERTA**

BYLAW NO. 21-010

**A BYLAW OF LETHBRIDGE COUNTY BEING A BYLAW PURSUANT TO
SECTION 633(1) OF THE MUNICIPAL GOVERNMENT ACT, REVISED
STATUTES OF ALBERTA 2000, CHAPTER M.26**

WHEREAS the landowner wishes to develop lands within Plan 0912279, Block 1, Lots 2 and 3 in the NE 21-9-22-W4;

AND WHEREAS the County's Municipal Development Plan and the Lethbridge County and Town of Coalhurst Intermunicipal Development Plan requires that developers prepare an Area Structure Plan to ensure sound development occurs within Lethbridge County;

AND WHEREAS the total area considered by the Area Structure Plan is 13.43 hectares;

AND WHEREAS the landowner/developer have prepared the "Ramias Subdivision Area Structure Plan" which contains engineering, survey, and geotechnical information to support the above conditions.


NOW THEREFORE BE IT RESOLVED, under the Authority and subject to the provisions of the Municipal Government Act, Revised Statutes of Alberta, 2000, Chapter M-26, as amended, the Council of Lethbridge County in the Province of Alberta duly assembled does hereby enact the following:

1. The "Ramias Area Structure Plan" Bylaw No. 21-010, attached as "Appendix A".

GIVEN first reading this 3rd day of June, 2021.



Reeve



CAO

GIVEN second reading this 5 day of May, 2022.
As Amended




Reeve



CAO

GIVEN third reading this 5 day of May, 2022.



Reeve



CAO

Reading	June 3, 2021
2 nd Reading	May 5, 2022
Public Hearing	August 5, 2021
3 rd Reading	May 5, 2022

AREA STRUCTURE PLAN
RAMIAS SUBDIVISION
A RESIDENTIAL SUBDIVISION
IN
NE ¼ 21-9-22-W4
LETHBRIDGE COUNTY, AB



Bylaw 21-010
Approved May 5, 2022

Submitted by:



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AREA STRUCTURE PLAN RAMIAS SUBDIVISION NE ¼ 21-9-22-W4

Submitted to
Lethbridge County



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1. VISION

The Ramias residential subdivision Area Structure Plan has been developed through rigorous planning and careful consideration of the needs of the future property owners while considering the potential impact to neighboring existing landowners. The focus in developing this plan was to put forward a development proposal which would minimize the impact on area infrastructure, ensure a good fit with adjacent land uses and ultimately provide Lethbridge County with a cost-effective model for future acreage development.

The proposed Ramias subdivision is a Country Residential Development proposed to be sited to the northeast of Coalhurst, located at NE ¼ of Section 21, Township 9, Range 22, West of the 4th Meridian. The goal of this 5-lot development (3 existing and 2 new) is to create an environment where residents can enjoy the peace and quiet of country residential living, but can have easy and convenient access to the municipalities of Coalhurst and Lethbridge. Key to achieving this goal is sizing the lots to a 2-acre minimum to allow for the low density feeling of the area. This lower density also minimizes the environmental impact and gives a feel of integrating into the natural environment.

In addition, the planning of the development was purposely kept at low density to match the existing surrounding properties. Maintaining similar density allows for expansion of development in the area without changing the feel that country residential exudes.

Coalhurst and the surrounding community have deep agricultural roots and there is a strong cultural trend to embrace rural and farm living. However, there is still a desire to access amenities located in Coalhurst and other surrounding communities. As such there is a large demand for the feel of country living while still being able to access the urban areas.

As with any development there are numerous challenges and opportunities. The opportunity is to provide a unique living experience to the residents of the County that is rare in southern Alberta. Key challenges to this development are identified and ultimately addressed in the remainder of this document.

Overall, the development concept acknowledges and seeks to positively integrate with the existing natural and built conditions in the area while successfully offering a diverse range of housing opportunities to satisfy a broad demand for country residency. The proposal and plan have been designed to:

- Offer a new high-quality rural residential area to Lethbridge County residents
- Be compatible and complimentary with existing adjacent country residential acreages which similarly enjoy the enviable location.

2. INTRODUCTION

This Area Structure Plan has been prepared by Hasegawa Engineering Ltd. on behalf of Ron Ramias to describe the development concept and municipal servicing strategy to be provided for the proposed country residential development. The site lies at NE-21-9-22-W4 at the intersection of Range Road 223 and Township Road 9-4 and is bordered on the south side by the existing CPR rail line (refer to Figure 1). The Area Structure Plan describes the ultimate development of the subject lands, which are contained within an existing parcel (refer to Figure 3).

As the development is intended to have five lots, an Area Structure Plan is required under Section 6.2 of the Municipal Development Plan of Lethbridge County.

This Area Structure Plan is submitted as support for the application to adopt the Plan as a by-law of Lethbridge County and the subsequent change to the Land Use By-Law. The Area Structure Plan will provide a basis for evaluation of future applications for subdivision of parcels and building development.

3. PLANS, DRAWINGS, AND CONCEPT

3.1 PLANS AND DRAWINGS

To illustrate the location of the property, site drainage, and the proposed subdivision layout, seven figures have been prepared. The figures are provided in *Appendix A* and are as follows:

- Figure 1 – Area Map
- Figure 2 – Existing Lots and Topography
- Figure 3 – Conceptual Lot Layout
- Figure 4 – Servicing Plan
- Figure 5 – Stormwater Management Plan
- Figure 6 – Lot Access Details
- Figure 7 – Sections & Details

These plans are conceptual in nature and are to be used for planning purposes only. Upon ASP acceptance, detailed design plans will be prepared and submitted with any subdivision application.

3.2 EXISTING CONDITIONS

The proposal is designed with the existing conditions of the land in mind. The impact on adjacent landowners and residents was carefully considered in the preparation of the plan.

The lands within the boundaries of the proposed Area Structure Plan are currently used as cultivated land (irrigated and non-irrigated) or lie in a natural state. Adjacent land owners include:

- To the north – agricultural lands under irrigation
- To the east, west, and south – country residential lot acreages.
- To the north and east – developed roads with the road allowances

The boundary of the proposed Area Structure Plan is the boundary of the single parcel containing the lands to be developed.

3.3 DEVELOPMENT OBJECTIVES

Preferred Development Concept

The preferred development concept appears in Figure 3. Note that the lot layouts are tentative and may vary slightly due to design considerations. The ultimate development will create approximately 5.47 ha (13.52 acres) of net developable area. The remainder of the land is dedicated to roads, utility lots for stormwater retention ponds, and open areas.

Lot sizes will be a minimum of 0.81 ha (2.0 acres) in size. Some lots will be slightly larger. The result is a proposed 5-lot development (existing plus Lots 4 and 5) in Phase 1 with one lot being designated for pastureland/stormwater drainage retention.

All of the lots will be accessed from Township Road 9-4 (refer to Figure 6).

Land Use Classification

The existing land use classification of the land for the proposed development is RUF (Rural Urban Fringe). The proposed land use classification of the subdivision is Grouped Country Residential as per the Lethbridge County Land Use Bylaw.

Lethbridge County Municipal Development Plan

The Lethbridge County Municipal Development Plan contains directives for residential development. The location of the proposed development meets these directives for the following reasons:

- The site is located adjacent to an existing area of Country Residential Development
- The site does not contain any sensitive environmental, cultural or historical features.

3.4 POPULATION ESTIMATES

With 4 residential use lots, and assuming a dwelling on each lot, the estimated population for the development at full build out is 10 additional residents based on an assumed population of 2.5 people per household.

3.5 PROPOSED LAND USE AREAS

The distribution of land use within the proposed ASP is shown in *Table 1* below.

Table 1. Land Use Statistics

	Hectares (Acres)	Percent of Gross Area
Net Developable Area	5.47 (13.52)	47%
Country Residential Lots 1,2,4,5	5.47 (13.52)	47%
Utility Lots – Lot 3	6.15 (15.20)	53%
Gross Developable Area	11.62 (28.72)	100%

4. SERVICING

In order to determine the viability of this development, preliminary evaluations have been performed with respect to servicing. Key service items include sewer, water, natural gas, telephone, television, and electric. Additional information on services is included in this section.

4.1 SANITARY SEWER SYSTEM

Sanitary sewage from each lot will be handled by individual private sewage treatment systems which meet or exceed the Alberta Private Sewage System Standard of Practice (2015). All systems will be approved as meeting these required standards prior to installation.

County development requirements indicate that prior to building on a lot, a soil test is required to determine the suitability of soil for supporting a septic field system. For the purpose of this ASP, two test pits were advanced and soil samples taken to be analyzed to provide a representative indication of soil suitability for septic field. Prior to the development of each parcel, additional soil testing will be required. The soil characteristics, as detailed in this section, verify the suitability of the soil for this type of a disposal system and supply the base design criterion for the required septic fields.

Soil samples were taken from two test holes on the property (refer to Figure 3 for test pit locations). Both samples were taken to Roseke Engineering to be tested for grain size analysis and suitability for septic fields (refer to *Appendix C*). The two test pits were dug to a total depth between 96" and 120" and logged for soil type. No water was observed in either of the test pits. Observed soils consisted mostly of sandy, silty clay till and were massive or blocky in nature (refer to attached soil logs).

The soils were classified using the soil texture classification triangle (Figure 8.1.1.10, Alberta Private Sewage System Standard of Practice 2015) and then that was used to determine Hydraulic Linear loading rates for the area. The results of this analysis are shown in Table 1 below.

Table 2. Soil Classification and Estimated Loading Rates Results

	Soil Classification	Hydraulic Linear Loading Rate (L/d/m)
Test Pit #1 (3-4 feet deep)	Silty clay loam (SICL)	37-50
Test Pit #2 (4 feet deep)	Clay (CL)	37-50

The results of this analysis indicate both locations are able to accept infiltration at a rate facilitating installation and use of septic fields.

Septic fields and septic tanks are to be designed, installed, and operated as per Alberta Private Sewage Systems Standard of Practice latest edition. Figure 4 in *Appendix A* shows approximate septic field sizes and locations on each lot based on estimated population of each lot.

4.2 WATER SYSTEMS

4.2.1 Potable Water

Potable water will be the responsibility of each residential lot owner. Each owner will be required to install a cistern and have water trucked to that cistern. Individual wells may also be installed in the future upon gaining water rights and AENV approval.

4.3 GAS

Natural gas distribution infrastructure in the area surrounding the site is operated by ATCO Gas. Each landowner will pay for the installation of natural gas distribution infrastructure to their lot. ATCO Gas will distribute natural gas within the development and lot purchasers will be able to select a retailer for natural gas supply. An existing ATCO high pressure natural gas line runs through the east side of the development which is a potential tie in point for servicing of the residential use lots within the subdivision. Refer to Figure 4 in *Appendix A* for high pressure gas line location and potential servicing to each residence.

4.4 ELECTRICAL POWER

The existing electrical service for the area is overhead power lines. Fortis Alberta Inc. will provide services to the proposed subdivision and services to each property line off the existing infrastructure (refer to Figure 4).

Electrical services are to be provided by the lot owner, not by the developer.

4.5 TELEPHONE

Telus will provide services to the lots, but each individual owner must apply for the service when building.

4.6 SOLID WASTE DISPOSAL

Lot purchasers will be responsible for making arrangements for solid waste disposal. The City of Lethbridge Regional Solid waste facility is located approximately 21km driving distance from the development. Alternatively, lot purchasers may contract with a private solid waste hauler.

4.7 MAIL DELIVERY

At the time of subdivision an application will be made to Canada Post for mail service to the development. The design of the subdivision will include an appropriate location per Canada Post guidelines. A community mailbox area at the entrance to the development will likely be required.

5. ROADS AND TRANSPORTATION

5.1 EXTERNAL ROADS

The main access to the development will be from Township Road 9-4 which runs east/west along the north side of the development. Township Road 9-4 is paved in asphalt and maintained by Lethbridge County. Most of the traffic flow to and from the subdivision is anticipated to head east/west from the subdivision along Twp Rd 9-4 to access Highway 3 travelling either north or southbound.

Approaches from Twp Rd 9-4 will be gravel construction to County standards. Lots 4 and 5 already have approaches connected to the paved County roads which will be utilized for the driveways for these lots. Prior to subdivision the developer will work with the County to determine what improvement, if any will be required for road approaches and the access road.

6. SITE DRAINAGE AND GRADING

The objective of the stormwater management design is to ensure that there is no impact on the surrounding properties and landowners from changing the drainage pattern within the development.

This analysis was based on creating a total of eight (8) lots. However, the analysis provides conservative results for a 4-lot development. All drainage onsite will conform to Lethbridge County and Alberta Environment and Parks requirements. The intent of stormwater management for the development is to control runoff with the use of stormwater management retention areas such that runoff is contained and released only when permission is granted. A Site Drainage Analysis was completed for the site (*Appendix D*) and is summarized below.

6.1 SITE DRAINAGE

Stormwater runoff from the subject lands presently flows from the north side of the development down to the south where there is a natural depression just north of the CPR railway. A combination of swales, berms, and culverts will be used to convey overland storm water from the northern 4 lots, down toward the retention area to the south. Figure 5 shows the topography of the site and proposed grading and infrastructure. The stormwater retention will still occur on the low area on the south side of the property and will continue to capture runoff from existing and proposed country residential lots. We have shown the drainage way as a stormwater easement. A swale system will be used to bypass offsite drainage from the north through the development to lot 3.

6.2 DRAINAGE MODELING

To determine the required active storage volume of the pond, a hydrologic model of the site was prepared using the PC SWMM hydrologic modeling software package. The hydrologic model of the site post-development was then analyzed using a 1:100 year 24-hour design storm event. The stormwater management area was sized to retain runoff volume generated. The hydrologic model will be reviewed during the detailed design stage to confirm the required capacity of the overland drainage system and culverts.

7. OPEN SPACES AND RESERVOIR ACCESS

The pastureland/drainage retention area will be left in a natural state as much as possible. The care and maintenance for these areas will be the responsibility of the Lethbridge County. It is not intended for these areas to be manicured parks but to remain or be restored to natural areas.

8. MUNICIPAL RESERVE

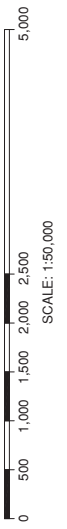
Due to the small nature of the development and the large lots, we have not included Municipal Reserve. However, there is a large area of the development that is within the flood plain that will remain natural land. The owner will provide a cash equivalent for the land requirement based on current market value of undeveloped land.

9. ARCHITECTURAL CONTROLS

Due to the small nature of this development, the developer has elected to not implement any development-specific architectural controls.

APPENDIX A

FIGURES



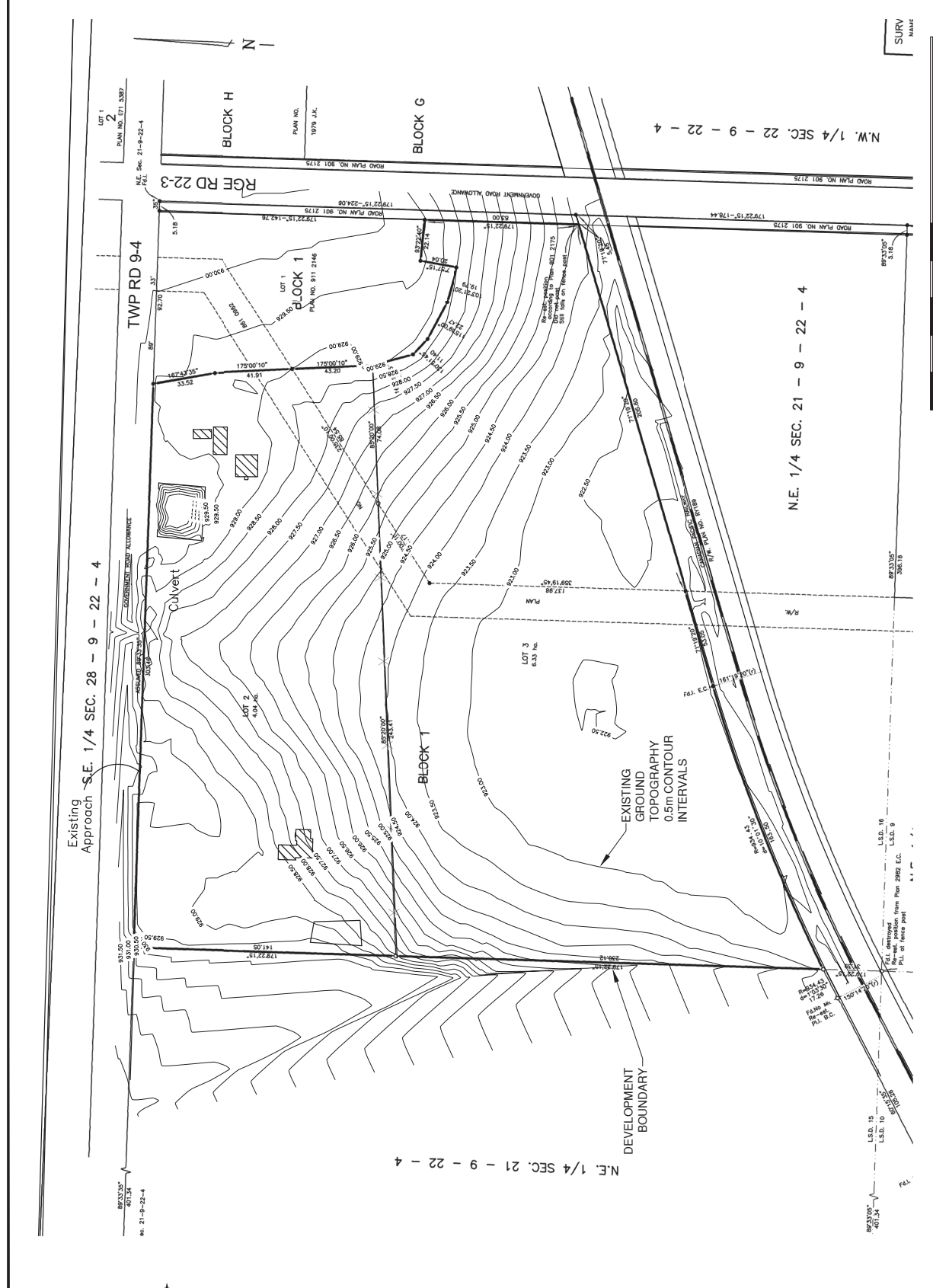
NOTES

#	DATE	DRAWING STATUS	BY	CHK	APP
1	21/04/27	FOR APPROVAL	DC	DPB	MH
0	20/12/19	FOR REVIEW	DC	NO	MH

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 SUBDIVISION
 AREA MAP

17-068 **FIG. 1**



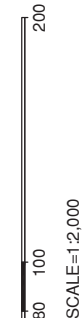
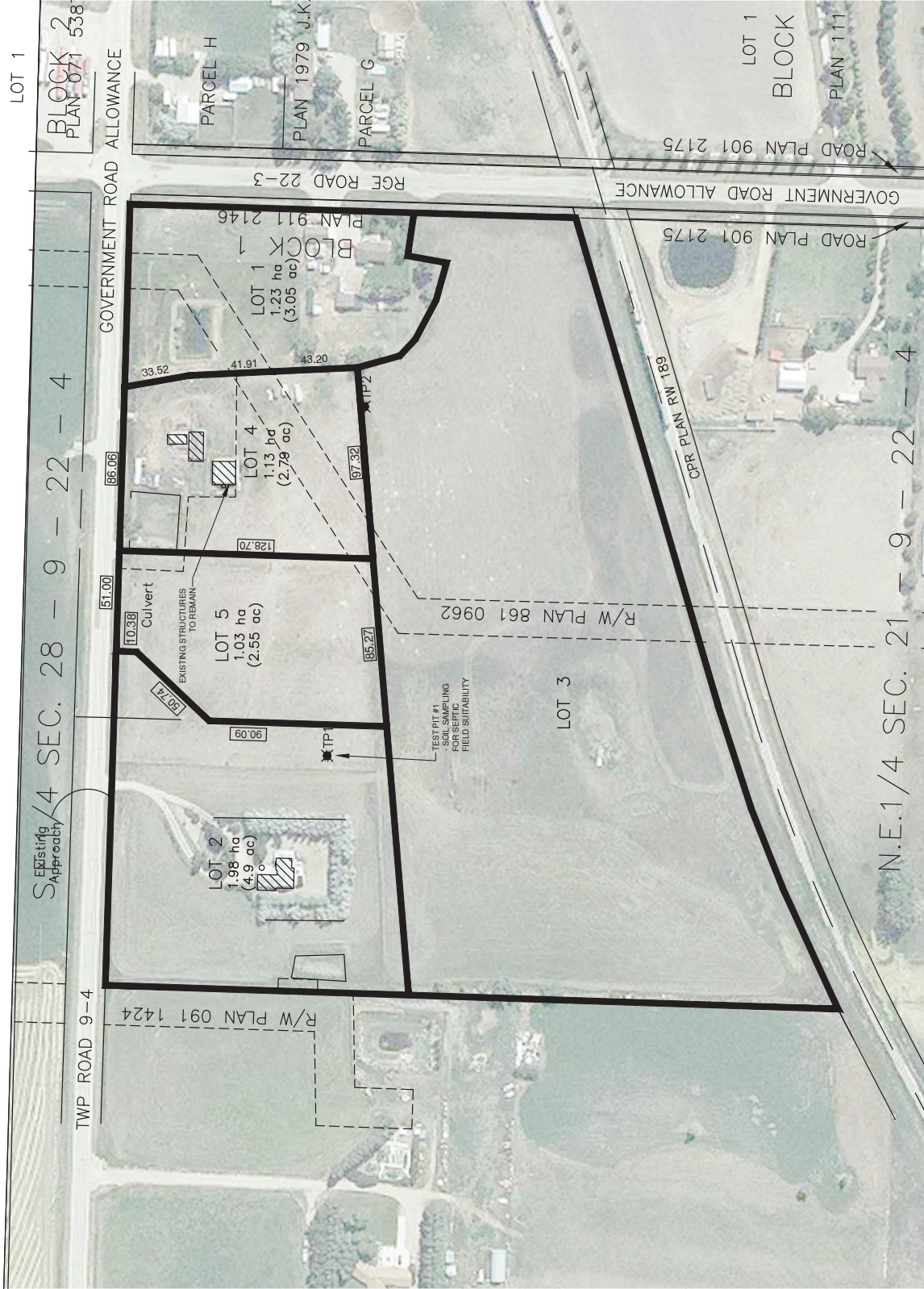
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2	03/12/19 FOR REVIEW
3	20/12/19 FOR APPROVAL
4	12/04/20 FOR APPROVAL
5	04/01/21 FOR APPROVAL
6	04/01/21 FOR APPROVAL
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9	04/01/21 FOR APPROVAL
10	04/01/21 FOR APPROVAL
11	04/01/21 FOR APPROVAL
12	04/01/21 FOR APPROVAL
13	04/01/21 FOR APPROVAL
14	04/01/21 FOR APPROVAL
15	04/01/21 FOR APPROVAL
16	04/01/21 FOR APPROVAL
17	04/01/21 FOR APPROVAL
18	04/01/21 FOR APPROVAL
19	04/01/21 FOR APPROVAL
20	04/01/21 FOR APPROVAL

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 EXISTING LOTS AND
 TOPOGRAPHY

17-068
FIG. 2



LEGEND
 54.78 EXISTING LOT DIMENSIONS
 [54.78] PROPOSED LOT DIMENSIONS
 ■■■■■■■■■■ CURRENT PROPOSED LOTS
 ■■■■■■■■■■ FUTURE LOTS

LOT 1
 BLOCK 2
 PLAN 071 538
 GOVERNMENT ROAD ALLOWANCE
 TWP ROAD 9-4
 Existing Approach
 1/4 SEC. 28 - 9 - 22 - 4
 [86.06]
 [51.00]
 [10.38]
 [50.24]
 [90.09]
 [85.27]
 [97.32]
 [43.20]
 [41.91]
 [33.52]
 [128.70]
 R/W PLAN 091 1424
 R/W PLAN 861 0962
 RFE ROAD 22-3
 ROAD PLAN 901 2175
 ROAD PLAN 901 2175
 ROAD PLAN 901 2175
 C/R PLAN R/W 1 891 891
 N.E.1/4 SEC. 21 - 9 - 22 - 4

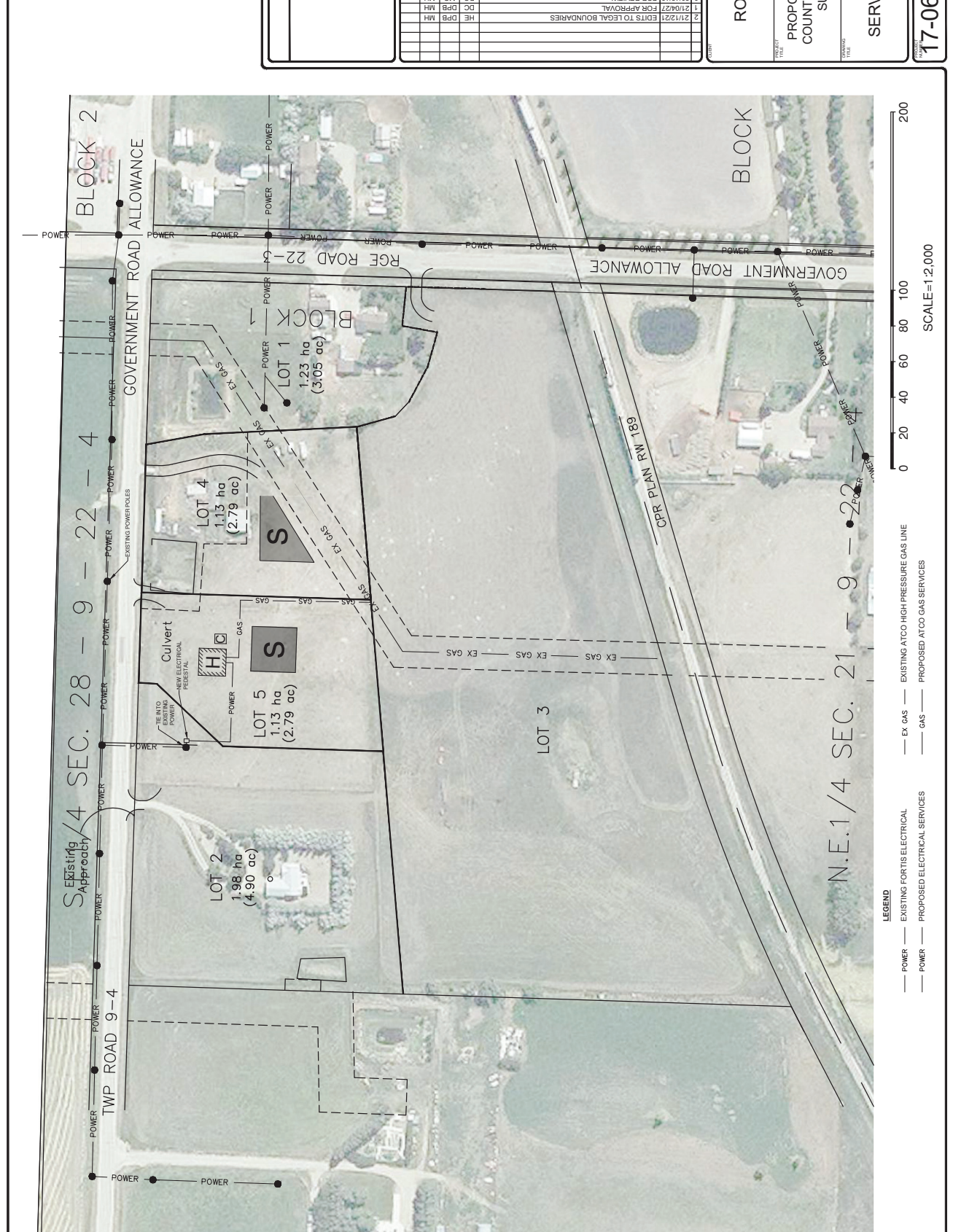
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1	20/12/18	FOR REVIEW
2	21/12/21	EDITS TO LEGAL BOUNDARIES
3	20/12/18	FOR APPROVAL
4	20/12/18	FOR APPROVAL
5	20/12/18	FOR APPROVAL
6	20/12/18	FOR APPROVAL
7	20/12/18	FOR APPROVAL
8	20/12/18	FOR APPROVAL
9	20/12/18	FOR APPROVAL
10	20/12/18	FOR APPROVAL
11	20/12/18	FOR APPROVAL
12	20/12/18	FOR APPROVAL
13	20/12/18	FOR APPROVAL
14	20/12/18	FOR APPROVAL
15	20/12/18	FOR APPROVAL
16	20/12/18	FOR APPROVAL
17	20/12/18	FOR APPROVAL
18	20/12/18	FOR APPROVAL
19	20/12/18	FOR APPROVAL
20	20/12/18	FOR APPROVAL

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RON RAMIAS
 PROPOSED GROUPED
 COUNTRY RESIDENTIAL
 SUBDIVISION
 CONCEPTUAL LOT
 LAYOUT

17-068 **FIG. 3**



Existing Approach / 4 SEC. 28 - 9 - 22 - 4

BLOCK 2

GOVERNMENT ROAD ALLOWANCE

BLOCK

LOT 1
1.23 ha
(3.05 ac)

LOT 4
1.13 ha
(2.79 ac)

LOT 5
1.13 ha
(2.79 ac)

LOT 2
1.98 ha
(4.90 ac)

LOT 3

GOVERNMENT ROAD ALLOWANCE

BLOCK

N.E. 1/4 SEC. 21 - 9 - 22

CPR PLAT N 189



LEGEND
 --- POWER --- EXISTING FORTIS ELECTRICAL
 --- POWER --- PROPOSED ELECTRICAL SERVICES
 --- EX GAS --- EXISTING ATCO HIGH PRESSURE GAS LINE
 --- GAS --- PROPOSED ATCO GAS SERVICES



NOTES

#	DATE	DRAWING STATUS
1	21/04/21	FOR APPROVAL
2	21/12/21	EDITS TO LEGAL BOUNDARIES
3	20/12/19	FOR REVIEW
4	DC	NO MH
5	DC	NO MH
6	NSN	DRW CHK APP



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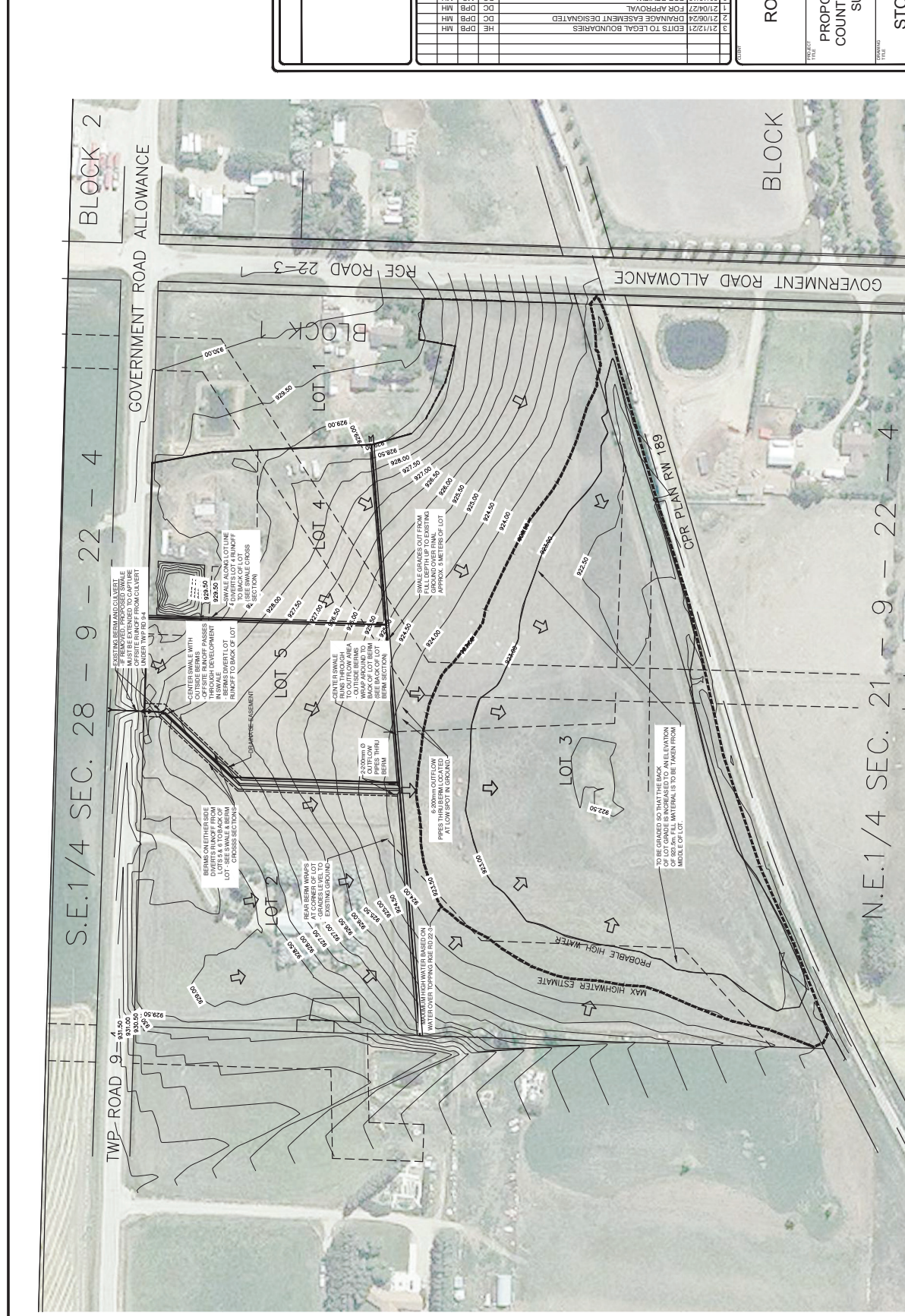
RON RAMIAS

PROPOSED GROUPED
 COUNTRY RESIDENTIAL
 SUBDIVISION

SERVICING PLAN

17-068

FIG. 4



S.E.1/4 SEC. 28 - 9 - 22 - 4
 BLOCK 2
 GOVERNMENT ROAD ALLOWANCE
 BLOCK 1
 LOT 1
 LOT 4
 LOT 5
 LOT 2
 LOT 3
 LOT 7
 LOT 8
 LOT 9
 TWP ROAD 9
 RFE ROAD 22-3
 GOVERNMENT ROAD ALLOWANCE
 BLOCK
 N.E.1/4 SEC. 21 - 9 - 22 - 4
 DRP PLAN 189

NOTES:
 • LOTS 7 & 8 TO BE GRADED SO THAT THE BACK OF LOT GRADE IS INCREASED TO AN ELEVATION OF 923.5m. MATERIAL FOR FILL IS TO BE TAKEN FROM LOT 9.

LEGEND
 - - - - - CURRENT PROPOSED LOTS
 - - - - - FUTURE LOTS
 - - - - - PROPOSED OVERLAND DRAINAGE DIRECTION
 - - - - - FINISH GRADE TOPOGRAPHY CONTOUR LINE (0.5m INTERVALS)

SCALE = 1:2,000
 0 20 40 60 80 100 200

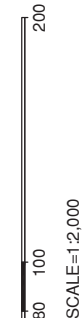
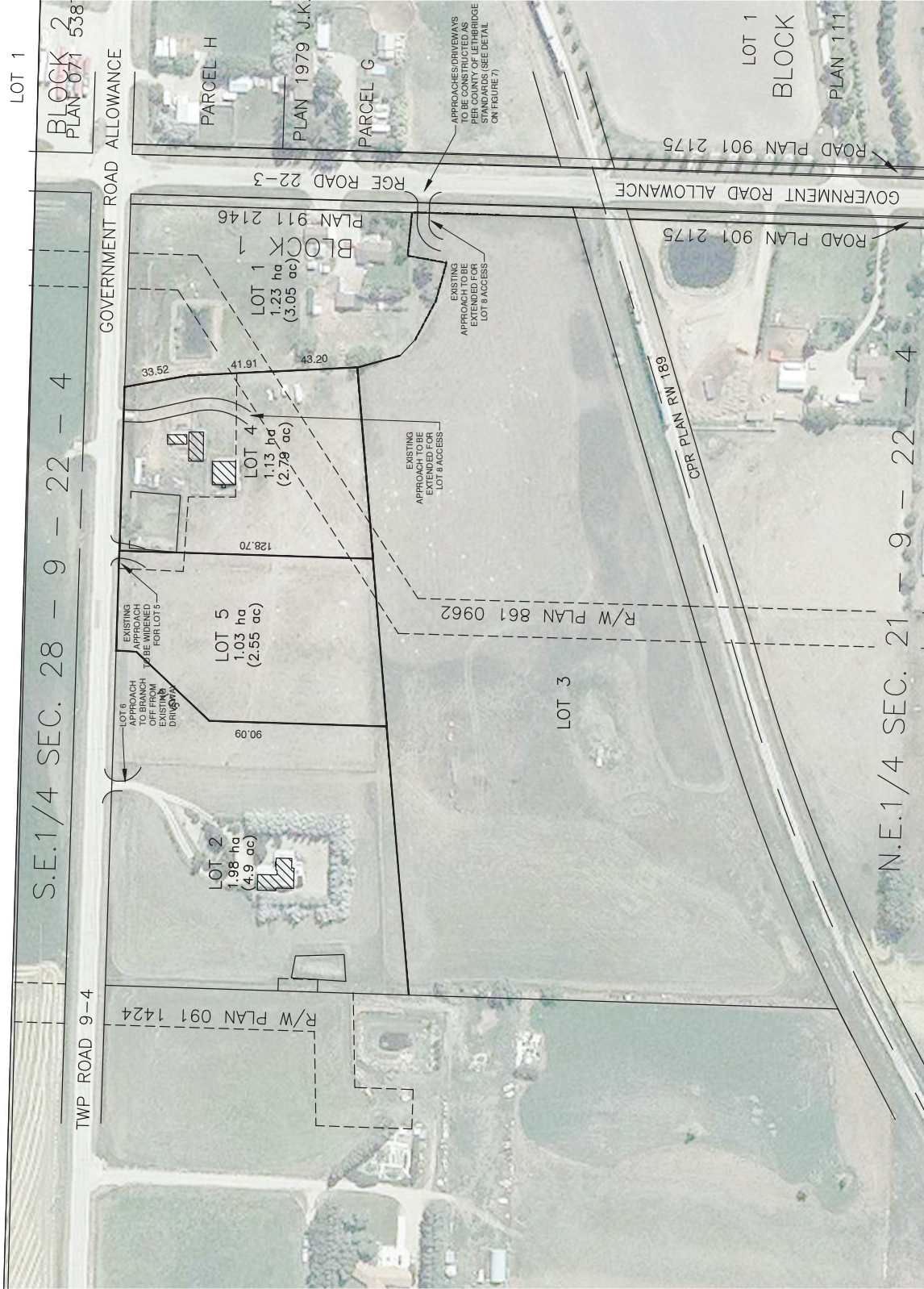
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2	21/06/24	DRAINAGE EASEMENT DESIGNATED
1	21/04/27	FOR APPROVAL
0	20/12/19	FOR REVIEW
NSN	DRM	CHK
APF		

NOTES

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RON RAMIAS
 PROPOSED GROUPED
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 STORMWATER
 MANAGEMENT PLAN

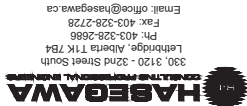
17-068
 FIG. 5



LEGEND
 54.78 EXISTING LOT DIMENSIONS
 [54.78] PROPOSED LOT DIMENSIONS
 ■■■■■■ FUTURE LOTS

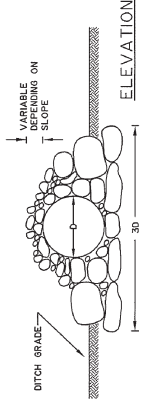
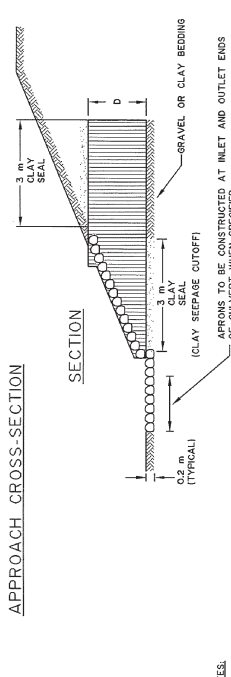
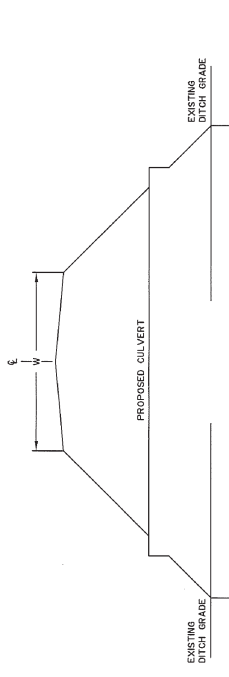
NOTES

#	DATE	DRAWING STATUS
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4	20/12/19	FOR APPROVAL
5	20/12/19	FOR APPROVAL
6	20/12/19	FOR APPROVAL
7	20/12/19	FOR APPROVAL
8	20/12/19	FOR APPROVAL
9	20/12/19	FOR APPROVAL
10	20/12/19	FOR APPROVAL



RON RAMIAS
 PROPOSED GROUPED
 COUNTRY RESIDENTIAL
 SUBDIVISION
 LOT
 ACCESS DETAILS

17-068 **FIG. 6**



- NOTES:**
1. THE SIDE SLOPES OF THE APPROACH SHALL BE A MINIMUM OF 5% ON APPROACHES TO ALL RD. ROADS.
 2. THE MINIMUM USABLE CULVERT DIAMETER IS 300 mm. APPROACHES SHALL BE PROVIDED FROM THE DIRECTOR OF OPERATIONAL SERVICES, OR DESIGNATE.
 3. THE CULVERT SHALL BE ALIGNED WITH THE BACK SLOPE OF THE DITCH. THE CULVERT IS TO BE CONSTRUCTED 100 mm OF THE PIPE DIAMETER BELOW THE DITCH BOTTOM.
 4. THE CULVERT SHALL BE OF SUCH LENGTH AS TO PROVIDE A NEAT, FINISHED APPEARANCE, WITHOUT EXCESS EXPOSED PIPE.
 5. STRAIGHT END CULVERTS ARE NOT ACCEPTABLE. CURVED END CULVERTS SHALL BE OBTAINED FROM THE DIRECTOR OF OPERATIONAL SERVICES, OR DESIGNATE.
 6. ROCK RIP-RAP SHALL BE HAND LAID AT BOTH ENDS OF THE CULVERT IN ACCORDANCE WITH THE ACCOMPANYING DRAWINGS.
 7. THE MUNICIPAL DISTRICT USES THE EXPECTED TRAFFIC TYPE AND VOLUME TO DETERMINE THE MINIMUM WIDTH OF THE DRIVING SURFACE OF THE APPROACH.
 8. 300 mm DEPTH OF COVER OVER C.S.P. IS PREFERRED.
 9. APPROACH SURFACE TO BE AS DESIGNATED BY THE M.D.
 10. RIP-RAP SHALL BE PLACED WITH THEIR BEDS AT RIGHT ANGLES TO THE SLOPE, THE LARGER STONES BEING USED IN THE BOTTOM COURSES AND THE SMALLER STONES AT TOP.
 11. RIP-RAP SHALL BE LAID IN CLOSE CONTACT SO AS TO BREAK JOINTS AND IN SUCH A MANNER THAT THE WEIGHT OF THE STONE IS CARRIED BY THE EARTH AND NOT BY THE ADJACENT STONES.

○ ACCESS INSTALLATION DETAIL
SCALE: NTS

NOTES

#	DATE	DRAWING STATUS
1	21/04/27	FOR APPROVAL
0	20/12/19	FOR REVIEW
DC	NO	MH
DC	NO	MH
CSN	DRW	CHK
		AFR

HASLEGRAWA
 330, 3120 - 32nd Street South
 Lethbridge, Alberta T1K 7B4
 Ph: 403-328-2686
 Fax: 403-328-2728
 Email: office@haslegrawa.ca

RON RAMIAS

PROPOSED GROUPED
 COUNTRY RESIDENTIAL
 SUBDIVISION

SECTIONS & DETAILS

17-068

FIG. 7

APPENDIX B

LAND TITLES



CERTIFIED COPY OF
Certificate of Title

S

LINC
0033 880 097

SHORT LEGAL
0912279;1;2

TITLE NUMBER: 091 110 964
SUBDIVISION PLAN
DATE: 28/04/2009

AT THE TIME OF THIS CERTIFICATION

RONALD ERNEST RAMIAS (DRYWALLER)

AND
AARTJE JOHANNE RAMIAS
BOTH OF:
COALHURST
ALBERTA
AS JOINT TENANTS

ARE THE OWNERS OF AN ESTATE IN FEE SIMPLE
OF AND IN

PLAN 0912279
BLOCK 1
LOT 2
EXCEPTING THEREOUT ALL MINES AND MINERALS

SUBJECT TO THE ENCUMBRANCES, LIENS AND INTERESTS NOTIFIED BY MEMORANDUM UNDER-
WRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
1259DU .		AGREEMENT NORTH AMERICAN COLLIERIES LTD. "RE: MINING RIGHTS"
2834EH .	26/11/1930	CAVEAT CAVEATOR - PRAIRIE COAL LANDS LTD..
741 091 031	27/09/1974	IRRIGATION ORDER/NOTICE THIS PROPERTY IS INCLUDED IN THE LETHBRIDGE NORTHERN IRRIGATION DISTRICT
851 081 819	22/05/1985	UTILITY RIGHT OF WAY GRANTEE - CANADIAN WESTERN NATURAL GAS COMPANY LIMITED. "DISCHARGED EXCEPT FOR PLAN 8610962 BY #861187937 13/11/86"
881 009 454	20/01/1988	UTILITY RIGHT OF WAY GRANTEE - CANADIAN WESTERN NATURAL GAS COMPANY LIMITED.
911 245 275	29/10/1991	EASEMENT (OVER THE NE 1/4-21-9-22-4 FOR THE BENEFIT OF LOT 1 BLOCK 1 PLAN 9112146)

CERTIFIED COPY OF
Certificate of Title

SHORT LEGAL 0912279;1;3
NAME RONALD ERNEST RAMIAS ET AL
NUMBER 091 110 964 +1

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION

NUMBER	DATE (D/M/Y)	PARTICULARS
061 136 753	06/04/2006	CAVEAT RE : UTILITY RIGHT OF WAY CAVEATOR - LETHBRIDGE NORTHERN IRRIGATION DISTRICT. 334-13TH STREET NORTH, LETHBRIDGE ALBERTA T1H2R8 AGENT - PATRICK G SPANOS
081 182 879	21/05/2008	MORTGAGE MORTGAGEE - ROYAL BANK OF CANADA. 180 WELLINGTON STREET WEST TORONTO ONTARIO M5J1J1 ORIGINAL PRINCIPAL AMOUNT: \$360,000

THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE
REPRESENTED HEREIN THIS 28 DAY OF APRIL ,2009



SUPPLEMENTARY INFORMATION

MUNICIPALITY: COUNTY OF LETHBRIDGE
REFERENCE NUMBER:
921 111 143
AREA:
6.33 HECTARES (15.64 ACRES) MORE OR LESS
ATS REFERENCE:
4;22;9;21;NE
TOTAL INSTRUMENTS: 008



CERTIFIED COPY OF
Certificate of Title

5

LINC 0033 880 105
SHORT LEGAL 0912279;1;3

TITLE NUMBER: 091 110 964 +1
SUBDIVISION PLAN
DATE: 28/04/2009

AT THE TIME OF THIS CERTIFICATION

RONALD ERNEST RAMIAS (DRYWALLER)

AND
AARTJE JOHANNE RAMIAS
BOTH OF:
COALHURST
ALBERTA
AS JOINT TENANTS

ARE THE OWNERS OF AN ESTATE IN FEE SIMPLE
OF AND IN

PLAN 0912279
BLOCK 1
LOT 3
EXCEPTING THEREOUT ALL MINES AND MINERALS

SUBJECT TO THE ENCUMBRANCES, LIENS AND INTERESTS NOTIFIED BY MEMORANDUM UNDER-
WRITTEN OR ENDORSED HEREON, OR WHICH MAY HEREAFTER BE MADE IN THE REGISTER.

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION
NUMBER

DATE (D/M/Y) PARTICULARS

Table with 3 columns: REGISTRATION NUMBER, DATE (D/M/Y), PARTICULARS. Contains 6 entries detailing encumbrances such as AGREEMENT, CAVEAT, and EASEMENT.

CERTIFIED COPY OF
Certificate of Title

SHORT LEGAL 0912279;1;2
NAME RONALD ERNEST RAMIAS ET AL
NUMBER 091 110 964

ENCUMBRANCES, LIENS & INTERESTS

REGISTRATION NUMBER	DATE (D/M/Y)	PARTICULARS
061 136 753	06/04/2006	CAVEAT RE : UTILITY RIGHT OF WAY CAVEATOR - LETHBRIDGE NORTHERN IRRIGATION DISTRICT. 334-13TH STREET NORTH, LETHBRIDGE ALBERTA T1H2R8 AGENT - PATRICK G SPANOS
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THE REGISTRAR OF TITLES CERTIFIES THIS TO BE AN ACCURATE REPRODUCTION OF THE CERTIFICATE OF TITLE
REPRESENTED HEREIN THIS 28 DAY OF APRIL ,2009



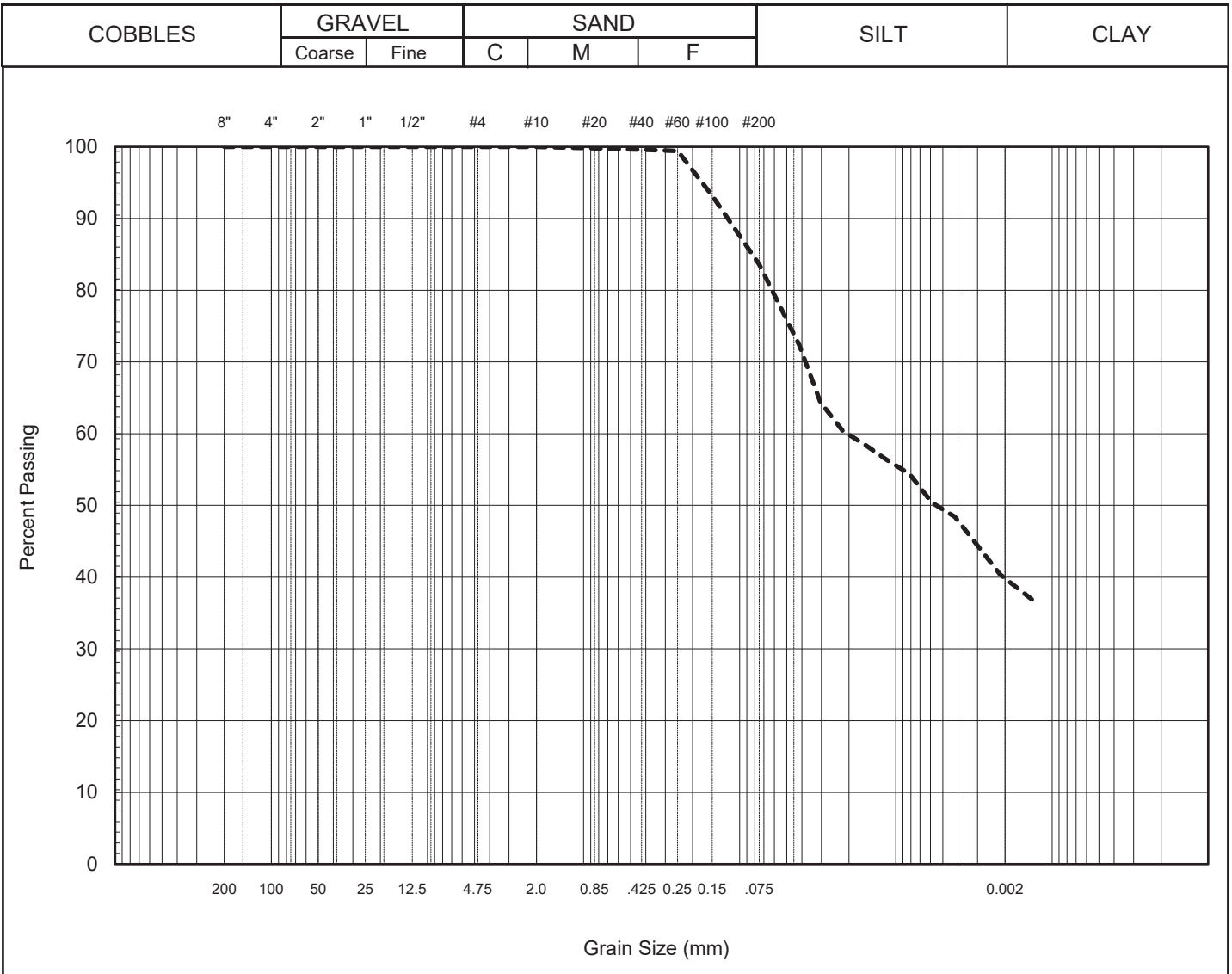
SUPPLEMENTARY INFORMATION

MUNICIPALITY: COUNTY OF LETHBRIDGE
REFERENCE NUMBER:
921 111 143
AREA:
4.04 HECTARES (9.98 ACRES) MORE OR LESS
ATS REFERENCE:
4;22;9;21;NE
TOTAL INSTRUMENTS: 008

APPENDIX C

SOIL ANALYSIS RESULTS

HYDROMETER TEST



Client: Hasegawa Engineering
 330, 3120 32nd Street South
 Lethbridge, AB T1K 7B4

Attention: Dave Chalmers, C.E.T.

Comments: Client Sample

Summary			
D10 =	#N/A	mm	Gravel 0 %
D30 =	#N/A	mm	Sand 16 %
D60 =	0.0207	mm	Silt 44 %
Cu =	#N/A		Clay 40 %
Cc =	#N/A		

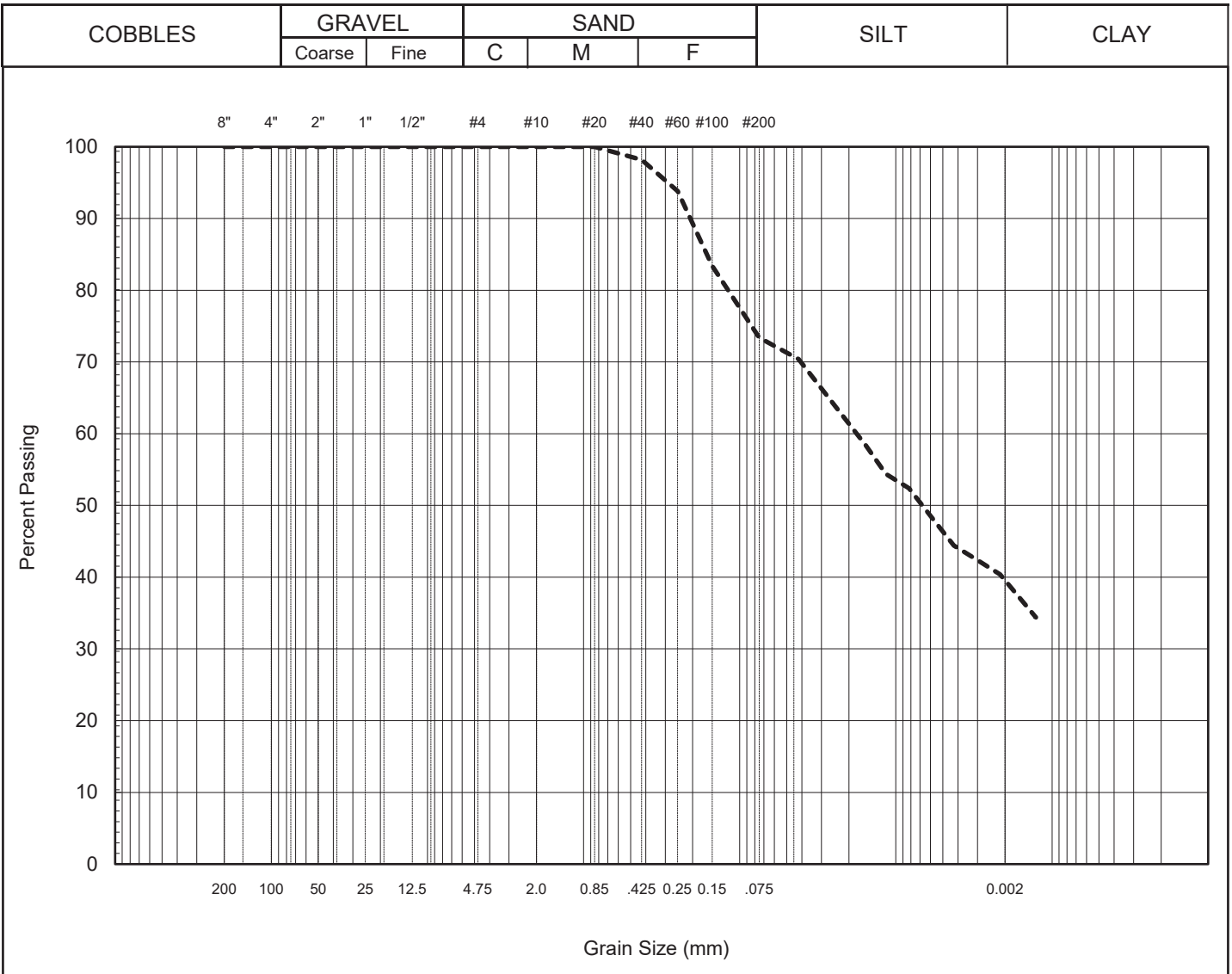
Project No: REL182016
Sample ID: Test Pit #1
Depth (m): 3 - 4 Ft.

Client Project ID: Project 17-068 (Ramus)

Date: September 9, 2018

REL Tech: KH

HYDROMETER TEST



<p>Client: Hasegawa Engineering 330, 3120 32nd Street South Lethbridge, AB T1K 7B4</p> <p>Attention: Dave Chalmers, C.E.T.</p> <p>Comments: Client Sample</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">Summary</th> </tr> <tr> <td>D10 =</td> <td>#N/A</td> <td>mm</td> <td>Gravel 0 %</td> </tr> <tr> <td>D30 =</td> <td>#N/A</td> <td>mm</td> <td>Sand 27 %</td> </tr> <tr> <td>D60 =</td> <td>0.0181</td> <td>mm</td> <td>Silt 34 %</td> </tr> <tr> <td>Cu =</td> <td>#N/A</td> <td></td> <td>Clay 39 %</td> </tr> <tr> <td>Cc =</td> <td>#N/A</td> <td></td> <td></td> </tr> </table>	Summary				D10 =	#N/A	mm	Gravel 0 %	D30 =	#N/A	mm	Sand 27 %	D60 =	0.0181	mm	Silt 34 %	Cu =	#N/A		Clay 39 %	Cc =	#N/A		
Summary																									
D10 =	#N/A	mm	Gravel 0 %																						
D30 =	#N/A	mm	Sand 27 %																						
D60 =	0.0181	mm	Silt 34 %																						
Cu =	#N/A		Clay 39 %																						
Cc =	#N/A																								

<p>Project No: REL182016</p> <p>Sample ID: Test Pit #2</p> <p>Depth (m): 4 Ft.</p>	<p>Client Project ID: Project 17-068 (Ramus)</p> <p>Date: September 9, 2018</p>	<p>REL Tech: KH</p>
---	---	----------------------------

SOIL DRILLING REPORT

Project Name:	Ramias	Project #:	17-068
Hole Description:	Test Pit 1	Bore Hole #:	
Drilling Procedure:	Excavated Pit	Hole Size:	96" deep
SPT Procedure:	NA	SPT Size: OD=	ID=
Sampling Procedure	NA	Sampler Size OD=	ID=
Logged By:	D. Chalmers	Date:	Aug 29, 2018

Depth (FT)	WT	USGS	Soil Sample Description	Moisture Content, w	Plasticity Index, PI	Dry Unit Weight, γ (pcf)	Friction Angle, ϕ	Penetro-meter (psf)	SPT Count, N	Compressive Strength, Cu (psf)
0-12"			Top Soil							
12-18"			B Horizon – dry, rootlets							
18-55"			Tan Sandy silty clay, Dry, Firm, Med. sub-angular blockv. Rootlets.							
55-62"			Drk brn, Silty sandy clay, Dry, Firm to very firm, Fine sub-angular blocky - Not continuous to endwalls of pit							
62-96"			Tan, Sandy silty clay, Moist, Firm to very firm, Med sub-angular blockv No sign of water table							

SOIL DRILLING REPORT

Project Name:	Ramias	Project #:	17-068
Hole Description:	Test Pit 2	Bore Hole #:	
Drilling Procedure:	Excavated Pit	Hole Size:	96" deep
SPT Procedure:	NA	SPT Size: OD=	ID=
Sampling Procedure	NA	Sampler Size OD=	ID=
Logged By:	D. Chalmers	Date:	Aug 29, 2018

Depth (FT)	WT	USGS	Soil Sample Description	Moisture Content, w	Plasticity Index, PI	Dry Unit Weight, γ (pcf)	Friction Angle, ϕ	Penetro-meter (psf)	SPT Count, N	Compressive Strength, Cu(psf)
0-12"			Top Soil							
12-20"			B Horizon – dry, rootlets							
20-32"			Tan Clay w/ sand/gravel, some cobbles, Dry, Hard, Med columnar Rootlets to 40"							
32-66"			Tan clay w/ sand, Dry, Hard, Massive							
66-72"			Tan clay w/ silty sand, Dry, Hard, Massive							
72-108"			Tan, Sandy clay, Moist, Friable, Massive							
108-120"			Tan, Silty Sandy Clay, Moist, Friable, Massive							
			No sign of water table							

APPENDIX D

SITE DRAINAGE ANALYSIS

SITE DRAINAGE ANALYSIS
Ron Ramias Proposed Subdivision
Located in NE 21-9-22-W4 in Lethbridge County



PREPARED FOR:
Ron Ramias
Box 605
Coalhurst, AB
T0L 0V0

PREPARED BY:
Hasegawa Engineering
A Division of 993997 Alberta Ltd.
330, 3120 – 32nd Street South
Lethbridge, Alberta T1K 7B4

TABLE OF CONTENTS

1.0	Introduction	2
2.0	Site Conditions	2
3.0	Runoff Design Criteria	3
3.1	Predevelopment	3
3.2	Post Development	3
4.0	Surface Runoff Results	4
5.0	Conclusion	4

APPENDICES

APPENDIX A-FIGURES

APPENDIX B-SWMM SUMMARIES

Note added April 27, 2021

This report was completed for a land use higher density and included the use of the land adjacent to the flood area. Since that time, the owner has modified their development to reduce density and remove development adjacent to the flood plain. The drainage bypass canal is unchanged. The developed lots within the development are unaffected by this change. As such, the analysis in this report still protects the landowners and environment from impact and is still valid.

1.0 Introduction

On behalf of Ron Ramias, Hasegawa Engineering (HE) has completed this hydrological analysis of the subject site. The hydrological analysis includes the following major aspects:

1. On site layout, topography and conditions
2. Offsite topography
3. Precipitation and runoff analysis
4. Retention storage size calculations

The site is within NE 21-9-22-W4 north of Coalhurst, AB between the railroad tracks and TWP Road 9-4 just west of RGE Road 22-3 as shown in Sheet 1.1 (Appendix A). The site currently has three lots – the proposed subdivision leaves Lot 1 unchanged, subdivides Lot 2 east of the existing house into three more residential lots (Lots 4, 5 and 6) fronting the County road, splits off a portion of Lot 3 to be combined with the existing house and leaves the residual portion of Lot 3 unchanged. The net effect in terms of land use at the present time is to create three new 2 to 3.2 acre residential lots. Land use for the remainder of Lot 3 is unknown at this time.

2.0 Site Conditions

Currently, the site consists mostly of pastureland sloping to the south, with a low spot in the south central portion. There is a home and farm buildings in Lot 1. The land to be subdivided into residential lots also has several hay sheds/out buildings. The surrounding land offsite generally slopes toward the property. There are culverts draining from the north under TWP Road 9-4 – this offsite flow then travels south along a natural swale between proposed residential Lots 5 and 6. There is also a culvert draining from the south under the railroad. The extent of offsite runoff makes modeling water levels in the low area difficult; however, the probable high water level at elevation 923.0 is shown on Sheet 1.1 based on surrounding topography, and the maximum possible high water level shown on the same drawing is elevation 923.60 based on the water overtopping RGE Rd 22-3 near the railroad crossing. This elevation is short of the proposed Lots 4, 5 and 6 but may impact future plans for the residual section of Lot 3.

3.0 Runoff Design Criteria

3.1 Predevelopment

As the only change in land use is to the proposed residential lots, predevelopment modeling was done on only the area of those lots to determine the effect of residential development. Existing farm outbuildings on proposed Lot 4 were modeled as 100% impervious surface; the remaining two proposed lots were modeled as native pasture using general drainage patterns, average slopes and assuming 100% pervious soil to obtain predevelopment flows. In addition, some modeling of the culvert under TWP Road 9-4 was done. As offsite flow is uncertain, the maximum culvert flow was used to size a swale capable of passing offsite flow through the development separate from Lot 5 and 6 runoff. Modeling used SWMM, a storm runoff software program developed by the United States Environmental Protection Agency and widely accepted for runoff analysis. The storm event used in the model is a 100 year/24 hour Modified Chicago method synthetic storm using rainfall intensity data obtained from the Atmospheric Environment Service of Environment Canada for the City of Lethbridge and accepted by the City of Lethbridge for modeling runoff. This rainfall data modeled in a Modified Chicago storm produces a peak intensity of 255mm/hour and 109mm of total rainfall (see Figure 2 in Appendix A). Infiltration was modeled using Green-Ampt methodology and typical City of Lethbridge values were assigned (suction head 253 mm, conductivity 3.5 mm/hr, initial deficit 0.15) along with 10mm depression storage assumed for pervious surfaces and 0.5mm depression storage for the impervious surfaces in Lot 4.

3.2 Post Development

The post development drainage model consists of the same predevelopment catchments updated to reflect residential development. Each lot was modeled as if developed with 625 m² of residential area (including sidewalk, garage, parking and deck), a 150 m² outbuilding and 550 m² total graveled driveways. Catchments use the same slopes and general flow paths as the predevelopment model but include a swale or berm to intercept flow across lot lines. Between Lots 4 and 5 this is a “V” swale 0.25m deep with 4h:1v side slopes. The lot line between Lots 5 and 6 is modeled differently – this lot line runs in a natural drainage swale. In order to pass the offsite runoff through the development, a 0.25m deep swale 1m wide at the bottom is modeled with a 0.25m high berm on either side running down this lot line as shown in Sheet 1.2. The swale ends at the back of the lot but the berms wrap around and continue across the back of all lots as described below. The offsite runoff passes in the swale while the side berms intercept lot runoff on either side and route it to temporary storage at the bottom of the respective lot. Offsite runoff comes from a culvert under TWP Road 9-4 and immediately passes through a second culvert in an existing berm before running down the natural swale – the model shows the swale beginning at the outlet of this second culvert. If the berm and culvert are removed during development, the swale would need to be extended to the outlet of the culvert under TWP Road 9-4. Swale and berm cross sections are detailed on Sheet 1.3. All residential area footprints were modeled as 100% impervious surface and all graveled area was modeled as 70% impervious. Depression storage for pervious surface remained at 10mm, depression storage for impervious surfaces was raised to 1 mm reflecting the new graveled surfaces. The post development drainage model is shown in Figure 1 (Appendix A).

The berms along the back proposed lot lines act as temporary storage to attenuate lot runoff. As runoff from all sources into the natural low spot cannot be accurately modeled, the goal is to attenuate peak flow rates from the proposed residential lots to predevelopment levels and

eliminate any net effect on existing drainage patterns. All berms are an inverted “V” 0.25m high (with 4h:1v side slopes). There are 8 drainage pipes in the berm walls – 2 pipes at the back of Lot 6 and 6 pipes at the back of Lots 5 and 6 spaced out across the lower ground. These drains are 200mm pipe placed at the bottom of the berm and running through the berm wall – outflow is restricted by these pipes to below predevelopment levels but erosion protection will be required at the outflow points. Pipe ends are mitered to prevent damage during yard maintenance. Note that water backing up at the berm makes the back 10-15 m portion of Lots 5 and 6 a temporary storage zone for runoff. Also, the inter-lot swale between Lots 4 and 5 can be graded out to zero depth over this storage zone to allow the swale to drain completely.

4.0 Surface Runoff Results

The predevelopment model using the design 100-year storm calculates peak predevelopment flows of 1.121 m³/sec – this has been used as an allowable release for post development modeling.

Post development modeling results are graphed in Figures 2 and 3 of Appendix A and summarized in Table 1 below. Peak system-wide post development runoff from the lots toward the back berm increases to 1.28 m³/sec as shown in Figure 2 - this is attenuated through the berm with peak outflow reduced to significantly below predevelopment levels and calculated as 0.96 m³/sec as shown in Figure 3. The berm fills to a depth of 0.21m and drain down is essentially over 1.5-2 hours (Figure 3). However, storm water release is a point flow, and erosion protection for the outflow will be necessary and should be extended to the point that the outflow is reduced to sheet flow or reaches established channels.

Table 1 – Predevelopment vs. Post Development System-wide Runoff Summaries & Retention Capacity

Catchment	Predevelopment Retention Inflow Vol/ Rate	Post-development Retention Inflow Vol/Rate	Post-development Outflow	Back Lot Berm Maximum Depth
Combined Areas	1270 m ³ 1.12 m ³ /sec	1475 m ³ 1.28 m ³ /sec	1473 m ³ 0.96 m ³ /sec	0.21 m

System-wide flows account for timing of individual flows and are not necessarily the sum of individual flows.

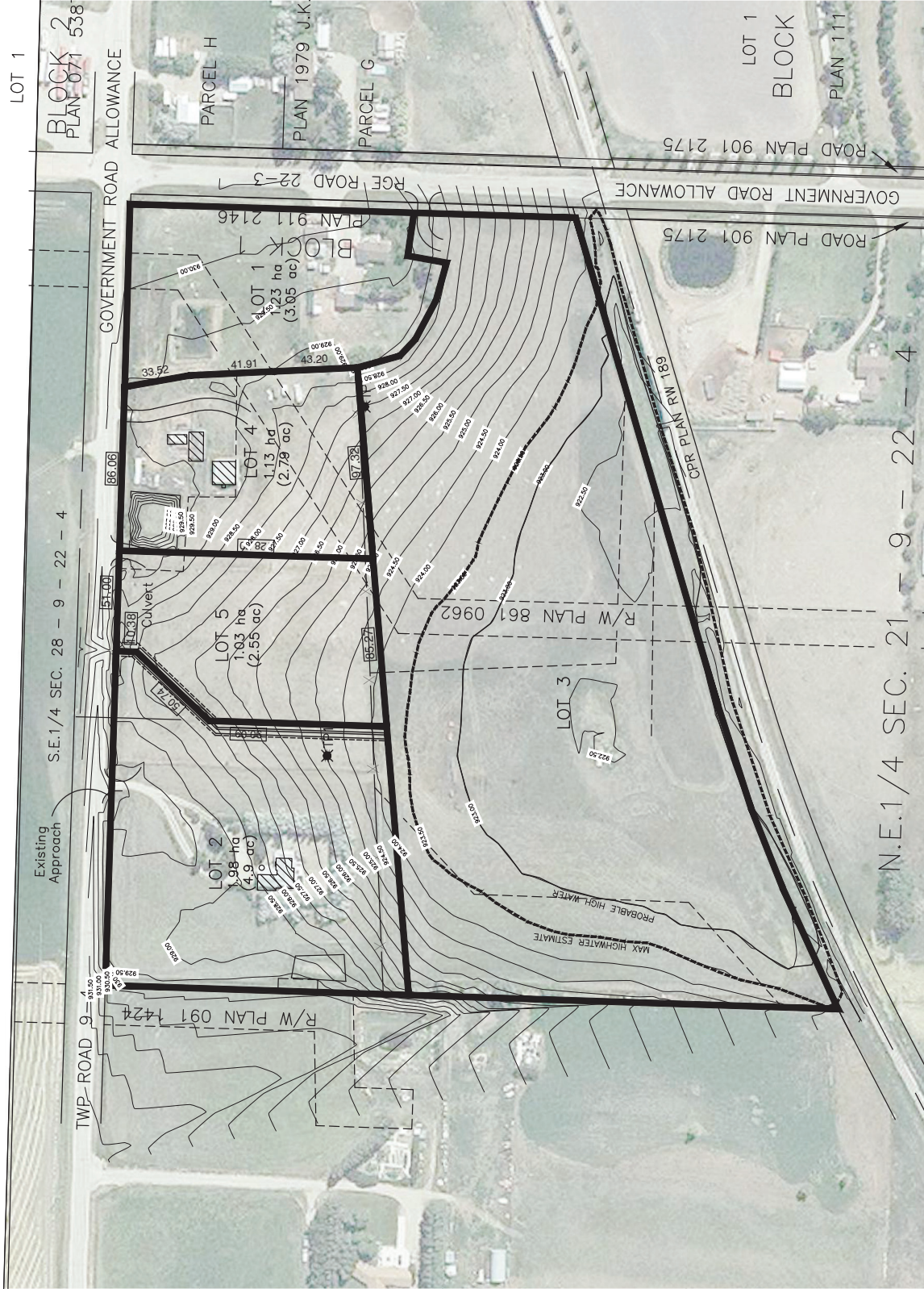
Detailed results of runoff models for SWMM analysis are attached in Appendix B.

5.0 Conclusion

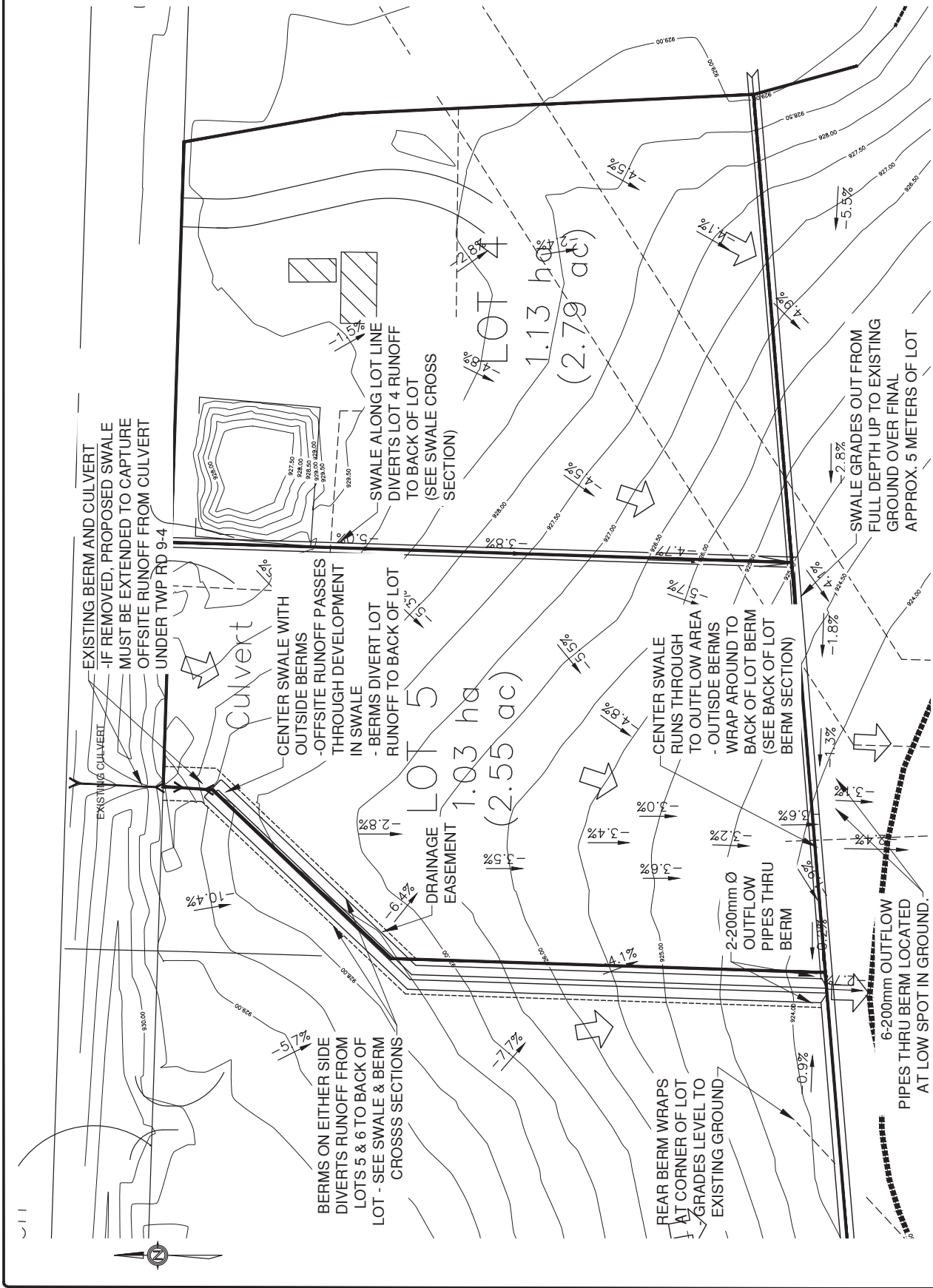
Computer modeling was used to estimate a predevelopment runoff and establish an allowable release of 1.12 m³/sec. Post development modeling was then used to determine that lot level swales and berms can be used to flow offsite runoff through the proposed development separate from the lot runoff, and attenuate post development peak lot runoff to below predevelopment levels using back lot berms. Outflow is into established natural drainage swales but it should be noted that although some attenuation is provided in all storm events, there will be release from any significant rainfall and the outflow path will need erosion protection. Offsite flow from existing culverts needs to be directed into the proposed swale between Lots 5 and 6 to prevent flooding the lot retention area at the back berm.

APPENDICES

APPENDIX A-FIGURES
(Figures 1.1-1.3 Revised April 20, 2022)



<p>NOTES</p>	<p>HASEGAWA 330, 3120 - 32nd Street South Lehigh, Alberta T1K 7B4 Ph: 403-328-2686 Fax: 403-328-2728 Email: office@hasegawa.ca</p>	<p>RON RAMIAS</p>	<p>PROPOSED SUBDIVISION</p>																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> <th>CHK</th> <th>APP</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>22/04/20</td> <td>FOR APPROVAL</td> <td>DC</td> <td>DPB</td> <td>MH</td> </tr> <tr> <td>0</td> <td>18/05/03</td> <td>FOR REVIEW</td> <td>DC</td> <td>DC</td> <td>MH</td> </tr> <tr> <td></td> <td></td> <td></td> <td>NSN</td> <td>DRM</td> <td>CHK</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	#	DATE	DESCRIPTION	BY	CHK	APP	1	22/04/20	FOR APPROVAL	DC	DPB	MH	0	18/05/03	FOR REVIEW	DC	DC	MH				NSN	DRM	CHK								<p>SITE PLAN</p>	<p>17-068</p>
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0	18/05/03	FOR REVIEW	DC	DC	MH																												
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NOTES
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Contractor to check and verify all dimensions before construction. All construction shall be in accordance with the specifications and codes. Any deviations shall be reported to the engineer immediately for approval. mechanical, etc.
Do not scale the drawing.

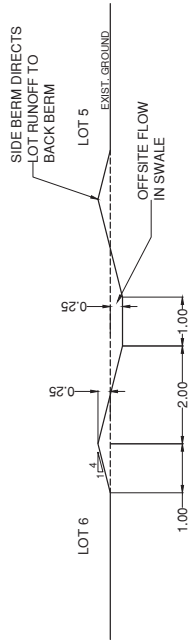
HASEGAWA
330, 3120 - 32nd Street South
Lethbridge, Alberta T1K 7B4
Ph: 403-328-2686
Fax: 403-328-2728
Email: office@hasegawa.ca

RON RAMIAS

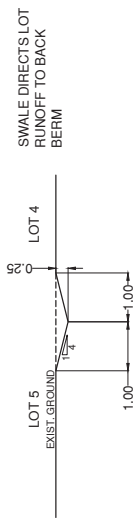
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PROPOSED RESIDENTIAL LOTS

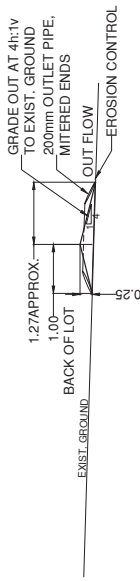
17-068	1.2
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SECTION OF SWALE AND BERM BETWEEN LOTS 5 & 6



SECTION OF SWALE BETWEEN LOTS 4 & 5



SECTION OF BACK LOT BERM



NOTES

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Contractor to check and verify all dimensions before construction. If any discrepancies or omissions shall be reported to the engineer immediately.

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HASLEGAWA

330, 3120 - 32nd Street South
Lethbridge, Alberta T1K 7B4
Ph: 403-328-2728
Email: office@haslegawa.ca

RON RAMIAS

PROPOSED
SUBDIVISION

LOT SWALE AND BERM
SECTIONS

17-068

1.3

LEGEND

- Subcatchments
- Conduits
- Outfalls
- Junctions

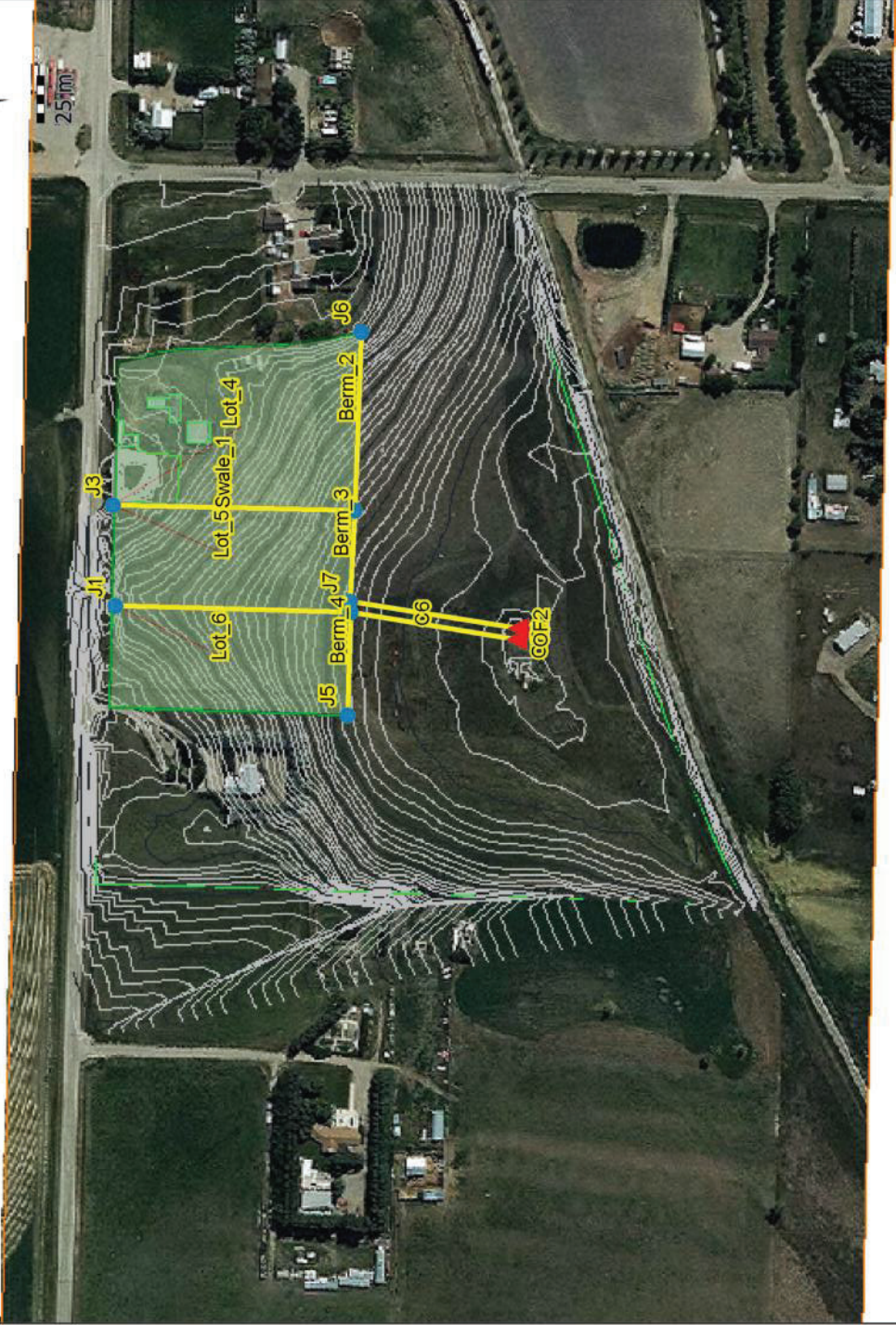


Figure 1 - Post Development Model

Figure 2 - 100 Year Rainfall and Post Development Runoff

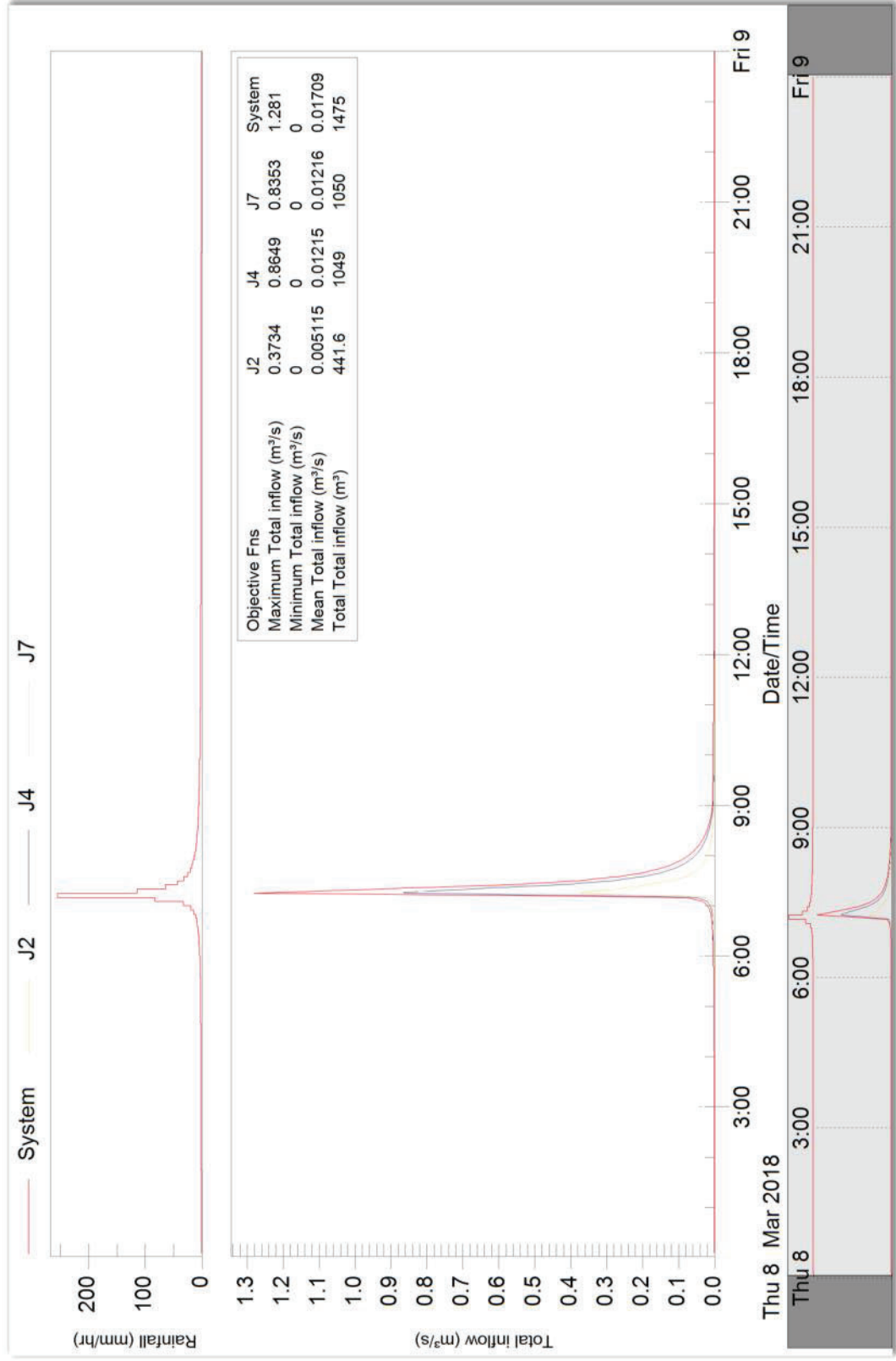
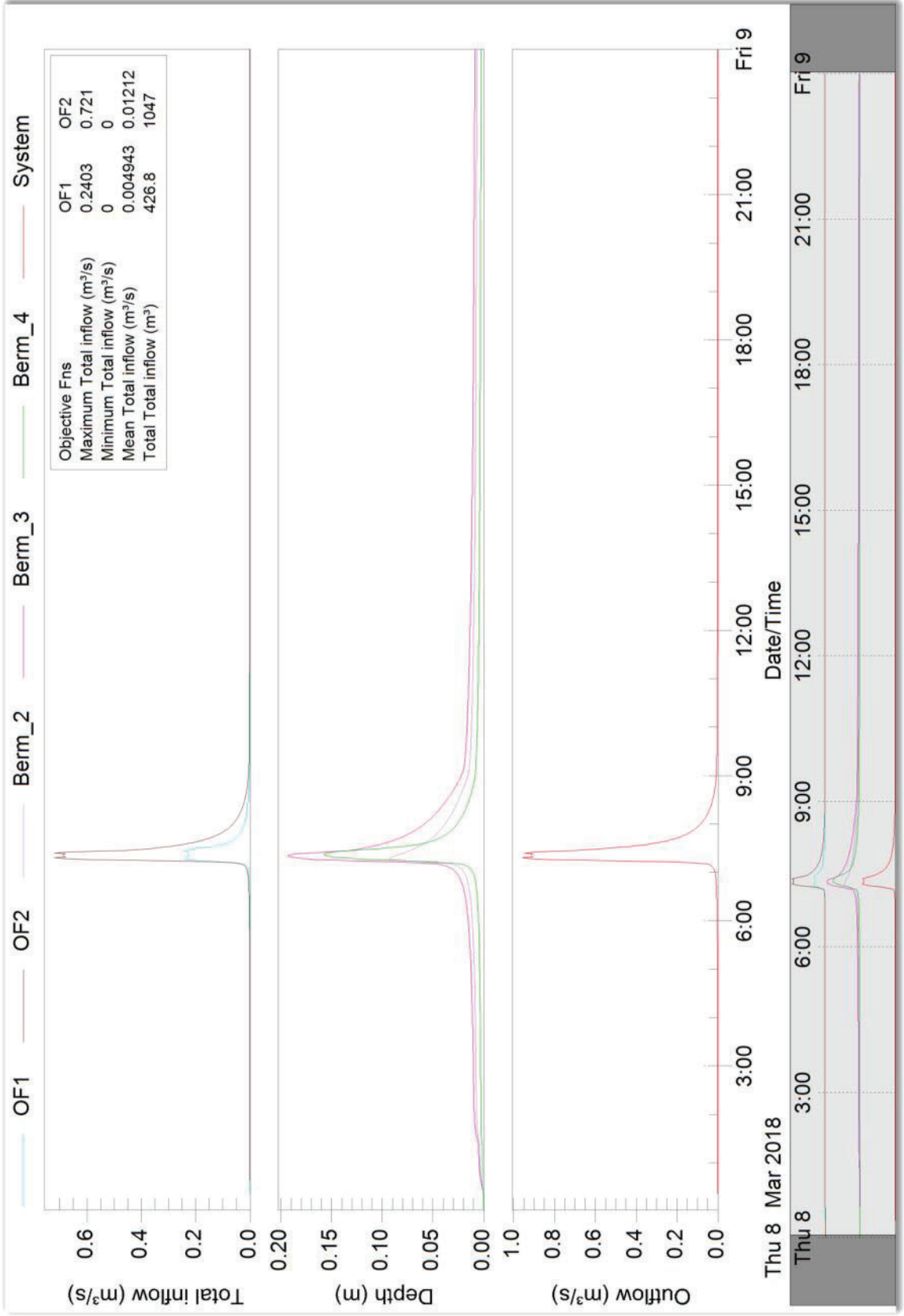


Figure 3 - Post-Development Flow by Outfall and System-wide, Berm Depth



APPENDIX B-SWMM SUMMARIES

17-068 Ramius Subdivision Status report
 Allowable Release = 1.121 cu.m/sec

 NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

Analysis Options

Flow Units CMS

Process Models:

Rainfall/Runoff YES

Snowmelt NO

Groundwater NO

Flow Routing YES

Ponding Allowed NO

Water Quality NO

Infiltration Method GREEN_AMPT

Flow Routing Method DYNWAVE

Starting Date MAR-08-2018 00:00:00

Ending Date MAR-09-2018 00:00:00

Antecedent Dry Days 0.0

Report Time Step 00:01:00

Wet Time Step 00:05:00

Dry Time Step 00:05:00

Routing Time Step 5.00 sec

Runoff Quantity Continuity

	Volume hectare-m	Depth mm
Total Precipitation	0.322	109.858
Evaporation Loss	0.000	0.000
Infiltration Loss	0.179	61.220
Surface Runoff	0.148	50.381
Final Surface Storage	0.000	0.101
Continuity Error (%)	-1.679	

```

*****
Flow Routing Continuity
*****
Dry Weather Inflow ..... 0.000
Wet Weather Inflow ..... 0.148
Groundwater Inflow ..... 0.000
RDII Inflow ..... 0.000
External Inflow ..... 0.000
Internal Outflow ..... 0.147
Storage Losses ..... 0.000
Initial Stored Volume ... 0.000
Final Stored Volume ..... 0.000
Continuity Error (%) ..... 0.009
Volume
-----
10^6 ltr
-----
0.000
1.475
0.000
0.000
0.000
1.474
0.000
0.000
0.000
0.001

```

```

*****
Volume
-----
hectare-m
-----
0.000
0.148
0.000
0.000
0.000
0.147
0.000
0.000
0.000
0.000
0.001
0.009

```

```

*****
Time-Step Critical Elements
*****
Link C6 (18.42%)

```

```

*****
Highest Flow Instability Indexes
*****
All links are stable.

```

```

*****
Routing Time Step Summary
*****
Minimum Time Step : 0.50 sec
Average Time Step : 4.23 sec
Maximum Time Step : 5.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 2.00

```

```

*****
Subcatchment Runoff Summary
*****

```

```

-----
Subcatchment
Total Precip mm
Total Runon mm
Total Evap mm
Total Infil mm
Total Runoff mm
Total Runoff 10^6 ltr
Peak Runoff CMS
Runoff Coeff
-----

```

```

-----
Lot_6      109.86      0.00      0.00      59.58      52.10      0.43      0.39      0.474
Lot_5      109.86      0.00      0.00      59.59      52.06      0.43      0.38      0.474
Lot_4      109.86      0.00      0.00      63.30      48.22      0.62      0.51      0.439
-----

```

```

*****
Node Depth Summary
*****

```

```

-----
Node      Type      Average Depth Meters      Maximum Depth Meters      Maximum HGL Meters      Time of Max Occurrence days hr:min
-----
J1        JUNCTION  0.03      0.16      929.46      0 07:15
J2        JUNCTION  0.03      0.21      923.81      0 07:21
J3        JUNCTION  0.04      0.24      929.54      0 07:15
J4        JUNCTION  0.04      0.19      924.59      0 07:16
J5        JUNCTION  0.01      0.11      923.81      0 07:22
J6        JUNCTION  0.00      0.00      928.40      0 00:00
J7        JUNCTION  0.02      0.21      923.81      0 07:21
OF1       OUTFALL   0.03      0.20      923.45      0 07:15
OF2       OUTFALL   0.02      0.20      923.45      0 07:16
-----

```

```

*****
Node Inflow Summary
*****

```

```

-----
Node      Type      Maximum Lateral Inflow CMS      Maximum Total Inflow CMS      Maximum Time of Occurrence days hr:min      Maximum Lateral Inflow Volume 10^6 ltr      Maximum Total Inflow Volume 10^6 ltr
-----
J1        JUNCTION  0.386      0.386      0 07:15      0.427
J2        JUNCTION  0.000      0.382      0 07:15      0.441
J3        JUNCTION  0.895      0.895      0 07:15      1.048
J4        JUNCTION  0.000      0.895      0 07:15      1.049
J5        JUNCTION  0.000      0.063      0 07:17      0.016
J6        JUNCTION  0.000      0.000      0 00:00      0.000
J7        JUNCTION  0.000      0.842      0 07:17      1.050
OF1       OUTFALL   0.000      0.246      0 07:19      0.427
OF2       OUTFALL   0.000      0.735      0 07:19      1.047
-----

```

 Node Surcharge Summary

No nodes were surcharged.

 Node Flooding Summary

No nodes were flooded.

 Outfall Loading Summary

Outfall Node	Flow Freq. Pcnt.	Avg. Flow CMS	Max. Flow CMS	Total Volume 10 ⁶ ltr
OF1	98.40	0.022	0.246	0.427
OF2	97.63	0.053	0.735	1.047
System	98.01	0.075	0.964	1.474

 Link Flow Summary

Link	Type	Maximum Flow CMS	Time of Max Occurrence days hr:min	Maximum Veloc m/sec	Max/ Full Flow	Max/ Full Depth
Berm_1	CHANNEL	0.382	0 07:15	3.70	0.31	0.69
Swale_1	CHANNEL	0.895	0 07:15	5.16	0.77	0.84
Berm_2	CHANNEL	0.000	0 00:00	0.00	0.00	0.38
Berm_3	CHANNEL	0.842	0 07:17	0.93	0.45	0.77
Berm_4	CHANNEL	0.063	0 07:17	0.14	0.08	0.63
C6	CONDUIT	0.246	0 07:19	4.10	1.09	1.00
C7	CONDUIT	0.735	0 07:19	4.10	1.08	1.00

 Flow Classification Summary

Conduit	Adjusted /Actual Length	--- Fraction of Time in Flow Class ---						Avg. Flow Change							
		Up		Down		Sub			Sup		Down		Up		Avg. Froude Number
		Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet		
Berm_1	1.00	0.00	0.00	0.00	0.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	4.29	0.0000
Swale_1	1.00	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00	0.00	3.06	0.0001
Berm_2	1.00	0.01	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000
Berm_3	1.00	0.01	0.00	0.00	0.05	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.0000
Berm_4	1.00	0.01	0.26	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.0000
C6	1.00	0.01	0.00	0.00	0.02	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.35	0.0003
C7	1.00	0.02	0.00	0.00	0.01	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.32	0.0007

 Conduit Surcharge Summary

Conduit	Hours Full		Hours Above Full		Hours Capacity Limited	
	Both Ends	Upstream	Dnstream	Normal Flow	Flow Limited	Capacity Limited
C6	0.01	0.01	0.01	0.35	0.01	0.01
C7	0.01	0.01	0.01	0.58	0.01	0.01

Analysis begun on: Mon May 07 13:33:04 2018
 Analysis ended on: Mon May 07 13:33:06 2018
 Total elapsed time: 00:00:02

[TITLE]
 17-068 Ramius Subdivision Details report
 Allowable Release = 1.121 cu.m/sec

```

[OPTIONS]
FLOW_UNITS          CMS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         DYNWAVE
START_DATE          3/8/2018
START_TIME           00:00
REPORT_START_DATE   3/8/2018
REPORT_START_TIME   00:00
END_DATE             3/9/2018
END_TIME             00:00
SWEEP_START         1/1
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP          00:01:00
WET_STEP            00:05:00
DRY_STEP            00:05:00
ROUTING_STEP        5
ALLOW_PONDING       NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP    0
MIN_SURFAREA        0
NORMAL_FLOW_LIMITED BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
  
```

```

[EVAPORATION]
;;Type      Parameters
;;-----
CONSTANT    0.0
DRY_ONLY    NO
  
```

```

[RAINGAGES]
;;
;;Name      Rain Type      Time Intrvl  Snow Catch  Data Source
;;-----
100yr24hr  INTENSITY 0:05  1.0  TIMESERIES 100yr24hr
ZeroRain   INTENSITY 0:05  1.0  TIMESERIES ZeroRain24hr
  
```

[SUBCATCHMENTS]

```

;;
;;Name
;;
Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;            ;            Area      Imperv     Slope     Length   Pack
-----
Lot_6         J1            0.82      14.1      3.9       0
Lot_5         J3            0.8199   14.1      3.85      0
Lot_4         J3            1.2889   9         2.82      0

```

[SUBAREAS]

```

;;Subcatchment N-Imperv N-Perv S-Imperv S-Perv RouteTo PctRouted
;;
0.01           0.025      1         10        OUTLET      25
0.01           0.025      1         10        OUTLET      25
0.01           0.025      1         10        OUTLET      25

```

[INFILTRATION]

```

;;Subcatchment Suction HydCon IMDmax
;;
253            3.5        0.15
253            3.5        0.15
253            3.5        0.15

```

[JUNCTIONS]

```

;;Name
;;
Invert      Max.      Init.      Surchage      Poned
Elev.       Depth    Depth     Depth         Area
-----
J1          929.3    0.5        0             0
J2          923.6    0.25      0             0
J3          929.3    0.5        0             0
J4          924.4    0.25      0             0
J5          923.7    0.25      0             0
J6          928.4    0.25      0             0
J7          923.6    0.25      0             0

```

[OUTFALLS]

```

;;Name
;;
Invert      Outfall      Stage/Table      Tide
Elev.       Type         Time Series     Gate
-----
OF1         923.25      FREE            NO
OF2         923.25      FREE            NO

```

[CONDUITS]

```

;;Name
;;
Inlet      Outlet      Manning      Inlet      Outlet      Init.      Max.
Node       Node       N            Offset     Offset     Flow      Flow
-----
Berm_1    J1         0.01         0          0          0         0

```

	J3	J4	J4	J4	J4	J5	OF1	OF2	137	0.01	0	0	0	0
Swale_1														
Berm_2	J6	J4	J4	J4	J7	J5	OF1	OF2	101	0.01	0	0	0	0
Berm_3	J4	J7	J7	J7					80	0.01	0	0	0	0
Berm_4	J2	J2	J2	J2					57	0.01	0	0	0	0
C6	J2	OF1	OF1	OF1					5	0.01	0	0	0	0
C7	J7	OF2	OF2	OF2					5	0.01	0	0	0	0

[XSECTIONS]

```

; ; Link
; ; -----
; ; Shape      Geom1      Geom2      Geom3      Geom4      Barrels
; ; -----
Berm_1  IRREGULAR  .25m_swale  0          0          0          0          1
Swale_1  IRREGULAR  .25m_swale  0          0          0          0          1
Berm_2  IRREGULAR  .25m_berm  0          0          0          0          1
Berm_3  IRREGULAR  .25m_berm  0          0          0          0          1
Berm_4  IRREGULAR  .25m_berm  0          0          0          0          1
C6      CIRCULAR     0.2        0          0          0          0          2
C7      CIRCULAR     0.2        0          0          0          0          6

```

[TRANSECTS]

```

NC 0.025  0.025  0.025  0.025
X1 .25m_berm  0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
GR 0.25  0  13  0.25  15
NC 0.01  0.01  0.01  0.01
X1 .25m_swale  0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
GR 0.25  0  1  0.25  2

```

[LOSSES]

```

; ; Link
; ; Inlet      Outlet      Average      Flap Gate
; ; -----

```

[TIMESERIES]

```

; ; Name      Date      Time      Value
; ; -----
100Yr24hr  0:00  0
100Yr24hr  0:05  0.763
100Yr24hr  0:10  0.771
100Yr24hr  0:15  0.779
100Yr24hr  0:20  0.787
100Yr24hr  0:25  0.796
100Yr24hr  0:30  0.804
100Yr24hr  0:35  0.813
100Yr24hr  0:40  0.822
100Yr24hr  0:45  0.831
100Yr24hr  0:50  0.841

```

100yr24hr	0.851	0:55	100yr24hr
100yr24hr	0.861	1:00	100yr24hr
100yr24hr	0.871	1:05	100yr24hr
100yr24hr	0.881	1:10	100yr24hr
100yr24hr	0.892	1:15	100yr24hr
100yr24hr	0.903	1:20	100yr24hr
100yr24hr	0.914	1:25	100yr24hr
100yr24hr	0.926	1:30	100yr24hr
100yr24hr	0.938	1:35	100yr24hr
100yr24hr	0.95	1:40	100yr24hr
100yr24hr	0.963	1:45	100yr24hr
100yr24hr	0.976	1:50	100yr24hr
100yr24hr	0.99	1:55	100yr24hr
100yr24hr	1.004	2:00	100yr24hr
100yr24hr	1.018	2:05	100yr24hr
100yr24hr	1.033	2:10	100yr24hr
100yr24hr	1.048	2:15	100yr24hr
100yr24hr	1.064	2:20	100yr24hr
100yr24hr	1.08	2:25	100yr24hr
100yr24hr	1.097	2:30	100yr24hr
100yr24hr	1.114	2:35	100yr24hr
100yr24hr	1.132	2:40	100yr24hr
100yr24hr	1.151	2:45	100yr24hr
100yr24hr	1.17	2:50	100yr24hr
100yr24hr	1.191	2:55	100yr24hr
100yr24hr	1.211	3:00	100yr24hr
100yr24hr	1.233	3:05	100yr24hr
100yr24hr	1.256	3:10	100yr24hr
100yr24hr	1.279	3:15	100yr24hr
100yr24hr	1.304	3:20	100yr24hr
100yr24hr	1.329	3:25	100yr24hr
100yr24hr	1.356	3:30	100yr24hr
100yr24hr	1.384	3:35	100yr24hr
100yr24hr	1.413	3:40	100yr24hr
100yr24hr	1.443	3:45	100yr24hr
100yr24hr	1.475	3:50	100yr24hr
100yr24hr	1.509	3:55	100yr24hr
100yr24hr	1.544	4:00	100yr24hr
100yr24hr	1.581	4:05	100yr24hr
100yr24hr	1.62	4:10	100yr24hr
100yr24hr	1.661	4:15	100yr24hr
100yr24hr	1.705	4:20	100yr24hr
100yr24hr	1.751	4:25	100yr24hr
100yr24hr	1.8	4:30	100yr24hr
100yr24hr	1.853	4:35	100yr24hr
100yr24hr	1.908	4:40	100yr24hr

100yr24hr	4:45	1.967
100yr24hr	4:50	2.031
100yr24hr	4:55	2.099
100yr24hr	5:00	2.172
100yr24hr	5:05	2.251
100yr24hr	5:10	2.337
100yr24hr	5:15	2.43
100yr24hr	5:20	2.532
100yr24hr	5:25	2.643
100yr24hr	5:30	2.765
100yr24hr	5:35	2.9
100yr24hr	5:40	3.051
100yr24hr	5:45	3.219
100yr24hr	5:50	3.409
100yr24hr	5:55	3.625
100yr24hr	6:00	3.873
100yr24hr	6:05	4.159
100yr24hr	6:10	4.496
100yr24hr	6:15	4.897
100yr24hr	6:20	5.383
100yr24hr	6:25	5.985
100yr24hr	6:30	6.748
100yr24hr	6:35	7.75
100yr24hr	6:40	9.123
100yr24hr	6:45	11.117
100yr24hr	6:50	14.266
100yr24hr	6:55	19.931
100yr24hr	7:00	32.779
100yr24hr	7:05	83.515
100yr24hr	7:10	255.206
100yr24hr	7:15	114.934
100yr24hr	7:20	63.946
100yr24hr	7:25	43.017
100yr24hr	7:30	31.998
100yr24hr	7:35	25.321
100yr24hr	7:40	20.889
100yr24hr	7:45	17.754
100yr24hr	7:50	15.429
100yr24hr	7:55	13.641
100yr24hr	8:00	12.226
100yr24hr	8:05	11.08
100yr24hr	8:10	10.134
100yr24hr	8:15	9.34
100yr24hr	8:20	8.665
100yr24hr	8:25	8.083
100yr24hr	8:30	7.577

100yr24hr	8:35	7.133
100yr24hr	8:40	6.74
100yr24hr	8:45	6.39
100yr24hr	8:50	6.077
100yr24hr	8:55	5.794
100yr24hr	9:00	5.538
100yr24hr	9:05	5.304
100yr24hr	9:10	5.091
100yr24hr	9:15	4.895
100yr24hr	9:20	4.714
100yr24hr	9:25	4.547
100yr24hr	9:30	4.392
100yr24hr	9:35	4.248
100yr24hr	9:40	4.114
100yr24hr	9:45	3.989
100yr24hr	9:50	3.871
100yr24hr	9:55	3.761
100yr24hr	10:00	3.657
100yr24hr	10:05	3.559
100yr24hr	10:10	3.467
100yr24hr	10:15	3.38
100yr24hr	10:20	3.297
100yr24hr	10:25	3.219
100yr24hr	10:30	3.144
100yr24hr	10:35	3.073
100yr24hr	10:40	3.006
100yr24hr	10:45	2.941
100yr24hr	10:50	2.88
100yr24hr	10:55	2.821
100yr24hr	11:00	2.765
100yr24hr	11:05	2.711
100yr24hr	11:10	2.659
100yr24hr	11:15	2.61
100yr24hr	11:20	2.562
100yr24hr	11:25	2.516
100yr24hr	11:30	2.472
100yr24hr	11:35	2.43
100yr24hr	11:40	2.389
100yr24hr	11:45	2.35
100yr24hr	11:50	2.312
100yr24hr	11:55	2.275
100yr24hr	12:00	2.24
100yr24hr	12:05	2.205
100yr24hr	12:10	2.172
100yr24hr	12:15	2.14
100yr24hr	12:20	2.109

100yr24hr	12:25	2.079
100yr24hr	12:30	2.05
100yr24hr	12:35	2.021
100yr24hr	12:40	1.994
100yr24hr	12:45	1.967
100yr24hr	12:50	1.941
100yr24hr	12:55	1.916
100yr24hr	13:00	1.892
100yr24hr	13:05	1.868
100yr24hr	13:10	1.845
100yr24hr	13:15	1.822
100yr24hr	13:20	1.8
100yr24hr	13:25	1.779
100yr24hr	13:30	1.758
100yr24hr	13:35	1.738
100yr24hr	13:40	1.718
100yr24hr	13:45	1.699
100yr24hr	13:50	1.68
100yr24hr	13:55	1.661
100yr24hr	14:00	1.643
100yr24hr	14:05	1.626
100yr24hr	14:10	1.609
100yr24hr	14:15	1.592
100yr24hr	14:20	1.576
100yr24hr	14:25	1.56
100yr24hr	14:30	1.544
100yr24hr	14:35	1.529
100yr24hr	14:40	1.514
100yr24hr	14:45	1.499
100yr24hr	14:50	1.485
100yr24hr	14:55	1.47
100yr24hr	15:00	1.457
100yr24hr	15:05	1.443
100yr24hr	15:10	1.43
100yr24hr	15:15	1.417
100yr24hr	15:20	1.404
100yr24hr	15:25	1.392
100yr24hr	15:30	1.38
100yr24hr	15:35	1.368
100yr24hr	15:40	1.356
100yr24hr	15:45	1.344
100yr24hr	15:50	1.333
100yr24hr	15:55	1.322
100yr24hr	16:00	1.311
100yr24hr	16:05	1.3
100yr24hr	16:10	1.289

100yr24hr	16:15	1.279
100yr24hr	16:20	1.269
100yr24hr	16:25	1.259
100yr24hr	16:30	1.249
100yr24hr	16:35	1.239
100yr24hr	16:40	1.23
100yr24hr	16:45	1.221
100yr24hr	16:50	1.211
100yr24hr	16:55	1.202
100yr24hr	17:00	1.193
100yr24hr	17:05	1.185
100yr24hr	17:10	1.176
100yr24hr	17:15	1.168
100yr24hr	17:20	1.159
100yr24hr	17:25	1.151
100yr24hr	17:30	1.143
100yr24hr	17:35	1.135
100yr24hr	17:40	1.127
100yr24hr	17:45	1.119
100yr24hr	17:50	1.112
100yr24hr	17:55	1.104
100yr24hr	18:00	1.097
100yr24hr	18:05	1.089
100yr24hr	18:10	1.082
100yr24hr	18:15	1.075
100yr24hr	18:20	1.068
100yr24hr	18:25	1.061
100yr24hr	18:30	1.055
100yr24hr	18:35	1.048
100yr24hr	18:40	1.041
100yr24hr	18:45	1.035
100yr24hr	18:50	1.028
100yr24hr	18:55	1.022
100yr24hr	19:00	1.015
100yr24hr	19:05	1.01
100yr24hr	19:10	1.004
100yr24hr	19:15	0.998
100yr24hr	19:20	0.992
100yr24hr	19:25	0.986
100yr24hr	19:30	0.98
100yr24hr	19:35	0.974
100yr24hr	19:40	0.969
100yr24hr	19:45	0.963
100yr24hr	19:50	0.958
100yr24hr	19:55	0.952
100yr24hr	20:00	0.947

100yr24hr	20:05	0.942
100yr24hr	20:10	0.936
100yr24hr	20:15	0.931
100yr24hr	20:20	0.926
100yr24hr	20:25	0.921
100yr24hr	20:30	0.916
100yr24hr	20:35	0.911
100yr24hr	20:40	0.908
100yr24hr	20:45	0.901
100yr24hr	20:50	0.897
100yr24hr	20:55	0.892
100yr24hr	21:00	0.887
100yr24hr	21:05	0.883
100yr24hr	21:10	0.878
100yr24hr	21:15	0.874
100yr24hr	21:20	0.869
100yr24hr	21:25	0.865
100yr24hr	21:30	0.861
100yr24hr	21:35	0.856
100yr24hr	21:40	0.852
100yr24hr	21:45	0.848
100yr24hr	21:50	0.844
100yr24hr	21:55	0.84
100yr24hr	22:00	0.835
100yr24hr	22:05	0.831
100yr24hr	22:10	0.827
100yr24hr	22:15	0.823
100yr24hr	22:20	0.82
100yr24hr	22:25	0.816
100yr24hr	22:30	0.812
100yr24hr	22:35	0.808
100yr24hr	22:40	0.804
100yr24hr	22:45	0.801
100yr24hr	22:50	0.797
100yr24hr	22:55	0.793
100yr24hr	23:00	0.79
100yr24hr	23:05	0.786
100yr24hr	23:10	0.783
100yr24hr	23:15	0.779
100yr24hr	23:20	0.776
100yr24hr	23:25	0.772
100yr24hr	23:30	0.769
100yr24hr	23:35	0.766
100yr24hr	23:40	0.762
100yr24hr	23:45	0.759
100yr24hr	23:50	0.756

100yr24hr	23:55	0.752
100yr24hr	24:00	0.749
ZeroRain24hr	00:00	0
ZeroRain24hr	00:05	0
ZeroRain24hr	00:10	0
ZeroRain24hr	00:15	0
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ZeroRain24hr	01:05	0
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ZeroRain24hr	01:55	0
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ZeroRain24hr	03:05	0
ZeroRain24hr	03:10	0
ZeroRain24hr	03:15	0
ZeroRain24hr	03:20	0
ZeroRain24hr	03:25	0
ZeroRain24hr	03:30	0

ZeroRain24hr	07:25	0
ZeroRain24hr	07:30	0
ZeroRain24hr	07:35	0
ZeroRain24hr	07:40	0
ZeroRain24hr	07:45	0
ZeroRain24hr	07:50	0
ZeroRain24hr	07:55	0
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ZeroRain24hr	10:45	0
ZeroRain24hr	10:50	0
ZeroRain24hr	10:55	0
ZeroRain24hr	11:00	0
ZeroRain24hr	11:05	0
ZeroRain24hr	11:10	0

ZeroRain24hr	11:15	0
ZeroRain24hr	11:20	0
ZeroRain24hr	11:25	0
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ZeroRain24hr	14:45	0
ZeroRain24hr	14:50	0
ZeroRain24hr	14:55	0
ZeroRain24hr	15:00	0

ZeroRain24hr	15:05	0
ZeroRain24hr	15:10	0
ZeroRain24hr	15:15	0
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ZeroRain24hr	18:25	0
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ZeroRain24hr	18:35	0
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ZeroRain24hr	18:45	0
ZeroRain24hr	18:50	0

ZeroRain24hr	18:55	0
ZeroRain24hr	19:00	0
ZeroRain24hr	19:05	0
ZeroRain24hr	19:10	0
ZeroRain24hr	19:15	0
ZeroRain24hr	19:20	0
ZeroRain24hr	19:25	0
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ZeroRain24hr	22:15	0
ZeroRain24hr	22:20	0
ZeroRain24hr	22:25	0
ZeroRain24hr	22:30	0
ZeroRain24hr	22:35	0
ZeroRain24hr	22:40	0


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ZeroRain24hr      22:45      0
ZeroRain24hr      22:50      0
ZeroRain24hr      22:55      0
ZeroRain24hr      23:00      0
ZeroRain24hr      23:05      0
ZeroRain24hr      23:10      0
ZeroRain24hr      23:15      0
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ZeroRain24hr      23:30      0
ZeroRain24hr      23:35      0
ZeroRain24hr      23:40      0
ZeroRain24hr      23:45      0
ZeroRain24hr      23:50      0
ZeroRain24hr      23:55      0
ZeroRain24hr      24:00:00    0

```

```

[REPORT]
INPUT      NO
CONTROLS  NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

```

```

[TAGS]

```

```

[MAP]
DIMENSIONS      0
UNITS           None

```

```

[COORDINATES]
; ; Node      X-Coord      Y-Coord
; ; -----
J1      938.644      -172.487
J2      935.215      -300.33
J3      993.227      -171.336
J4      990.297      -302.528
J5      879.078      -298.544
J6      1087.211     -305.991
J7      940.911      -299.831
OF1     920.421      -390.037
OF2     926.511      -391.135

```

```

[VERTICES]
; ; Link      X-Coord      Y-Coord

```

```

; ; -----
[Polygons]
; ; Subcatchment      X-Coord      Y-Coord
; ; -----
Lot_6      938.815      -170.54
Lot_6      935.182      -300.675
Lot_6      879.024      -298.84
Lot_6      883.291      -169.123
Lot_6      938.815      -170.54
Lot_5      994.219      -172.12
Lot_5      990.138      -302.348
Lot_5      935.33       -300.282
Lot_5      938.597      -170.406
Lot_5      994.219      -172.12
Lot_4      1071.023      -174.024
Lot_4      1077.932      -206.788
Lot_4      1080.45       -266.068
Lot_4      1087.103      -305.879
Lot_4      990.105      -302.28
Lot_4      994.325      -172.014
Lot_4      1071.023      -174.024

[SYMBOLS]
; ; Gage
; ; -----

```