TOWN OF GIBBONS ANNEXATION APPLICATION

Report to the Municipal Government Board

July 2017

Gibbons

ROOTED IN FAMILY

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EXECUTIVE SUMMARY

The Town of Gibbons Annexation Application Report is intended to provide the Municipal Government Board with the information required to make an informed decision on the Town of Gibbons' proposed annexation application.

The Town of Gibbons has applied to the Municipal Government Board to annex land from Sturgeon County (SW 11-56-23-W4, NW 2-56-23-W4, SW 2-56-23-W4, and Parcel A, Plan 6971KS). This annexation application has been proposed by the Council of the Town of Gibbons to:

- Align the Town of Gibbons' plans for future growth and development with Alberta Transportation's Functional Planning Study (2011), which recommends a realignment of Highway 28A; and
- Ensure that there is a long-term supply of developable and appropriately-sited industrial, and commercial lands within the Town of Gibbons.

Alberta Transportation's Functional Planning Study (2011) identifies the proposed location of a new interchange with the realigned Highway 28A and 50 Street as within an area designated Industrial Commercial (M-1) in the Town of Gibbons' Land Use Bylaw. The development of this interchange and realigned Highway 28A would result in the loss of a significant portion of the Town's current industrial land base. This proposed annexation would seek to ensure that the Town of Gibbons has a sufficient long term supply of accessible and serviceable industrial and commercial land.

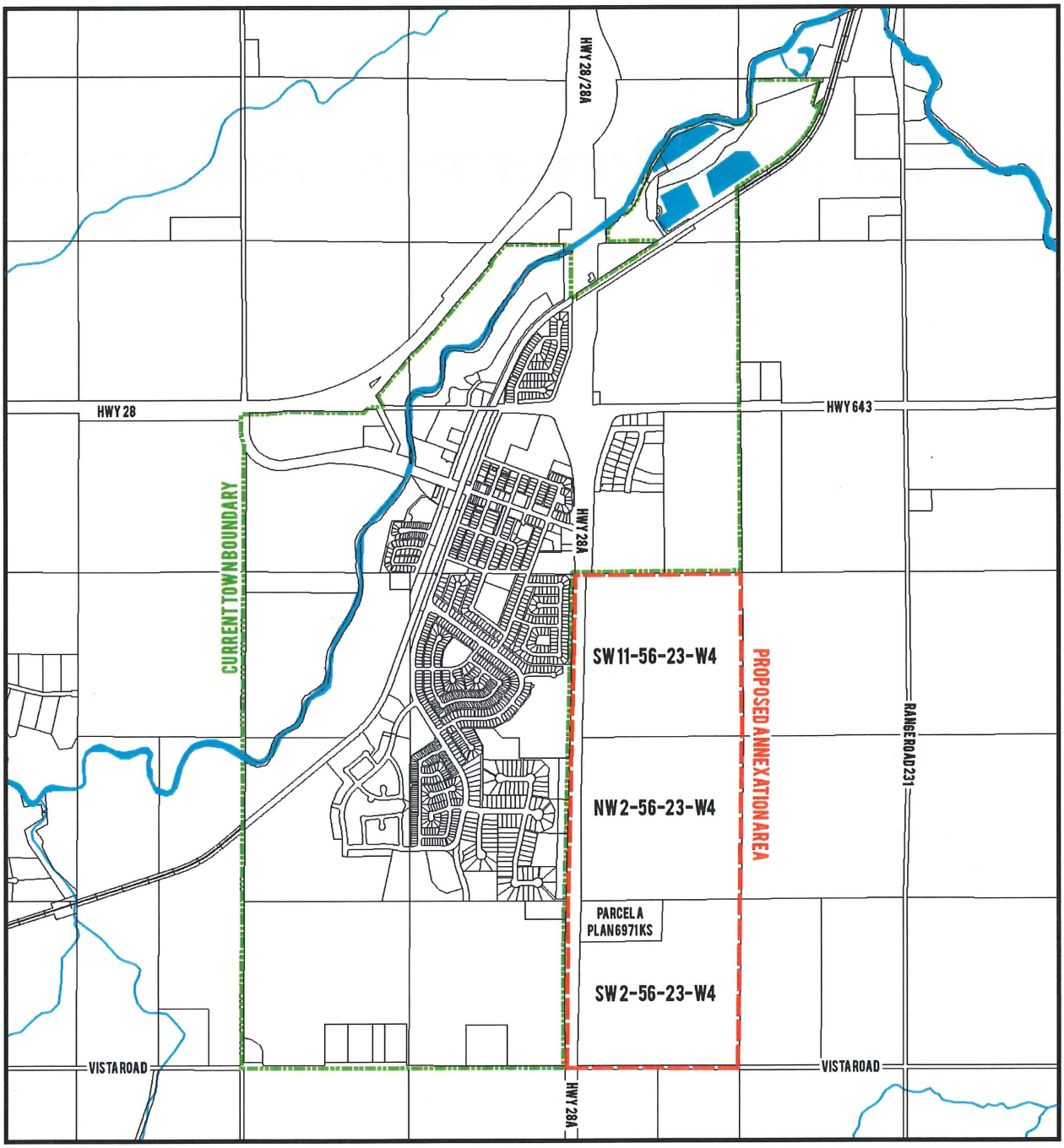
This report has been structured according to the Municipal Government Board's Annexation Checklist, and addresses the Annexation Principles contained in MGB Order 123/06.

1| APPLICATION FEE

A cheque in the amount of $400 (payable to the Government of Alberta) has been provided to the Municipal Government Board in support of this annexation application.

Application Fee + First Quarter Section (SW 11-56-23-W4)	$300
Second Quarter Section (NW 2-56-23-W4)	$50
Third Quarter Section (SW 2-56-23-W4, including Parcel A, Plan 6971 KS)	$50
TOTAL APPLICATION FEE	**$400**

2 | ANNEXATION LOCATION MAP



TOWN OF GIBBONS ANNEXATION LOCATION MAP

INFORMATION: GEOGRATIS & ALTALIS
PROJECTION: UTM NAD83 12N

0 0.5 1 KM

NORTH

MPS
MUNICIPAL PLANNING SERVICES LTD.

3 | EXCERPTS FROM STATUTORY PLANS AND LAND USE BYLAWS

3.1 TOWN OF GIBBONS MUNICIPAL DEVELOPMENT PLAN

The Town of Gibbons Municipal Development Plan (MDP) (Bylaw PLU 12/06) identifies directions for future urban expansion on Map 3: Future Development Concept. The Future Development Concept identifies SW 11-56-23-W4 as a potential location for future Highway Commercial and Residential development.

The Town is currently in the process of reviewing and updating the Town of Gibbons MDP. It is anticipated that (amongst other matters), the updated MDP will reflect the outcome of the proposed annexation application to ensure consistency with the land use concept from the Servicing Design Brief (see **Appendix C – Servicing Design Brief**).

The Town of Gibbons MDP recognizes that a future upgrade/realignment of Highway 28A will have a significant impact on "vehicular circulation throughout the community and on all forms of development within the community." The MDP states that the Town must ensure "that the various forms of commercial and industrial development in the area to the east of Highway 28A complement and enhance the Town's development pattern."

3.2 TOWN OF GIBBONS LAND USE BYLAW

The Town of Gibbons Land Use Bylaw (Bylaw PLU 8/06) does not specifically address the proposed annexation area.

3.3 OTHER TOWN OF GIBBONS STATUTORY PLANS

The Town of Gibbons has not approved any other statutory plans (intermunicipal development plans, area structure plans, area redevelopment plans) that specifically address the proposed annexation area.

3.4 STURGEON COUNTY MUNICIPAL DEVELOPMENT PLAN

Sturgeon County's Municipal Development Plan (Bylaw 1313/13) identifies the proposed annexation area as within Sturgeon County Neighbourhood C. Sturgeon County's Municipal Development Plan includes policies for Neighbourhood C that address residential development, commercial development, agricultural activities, and environmental protection.

Relevant excerpts from Sturgeon County's Municipal Development Plan are included as an appendix (**Appendix A – Sturgeon County Municipal Development Plan Excerpts**) with this report.

3.5 STURGEON COUNTY LAND USE BYLAW

Sturgeon County's Land Use Bylaw (Bylaw 819/96) identifies the proposed annexation area as within the UF – Urban Fringe District. The purpose of the Urban Fringe District is to "accommodate land uses in the fringe area that are compatible with Gibbons, Legal, Redwater and Gibbons while having regard for the rural, agricultural character of the area."

Relevant excerpts from Sturgeon County's Land Use Bylaw are included as an appendix (**Appendix B – Sturgeon County Land Use Bylaw Excerpts**) with this report.

3.6 OTHER STURGEON COUNTY STATUTORY PLANS

Sturgeon County has not approved any other statutory plans (intermunicipal development plans, area structure plans, area redevelopment plans) that specifically address the proposed annexation area.

3.7 EDMONTON METROPOLITAN REGION GROWTH PLAN

The Edmonton Metropolitan Region Growth Plan states that all municipalities should be allowed to have growth, appropriate to their size and as per the Policies and Principles of the Plan. The growth that can be accommodated by the proposed annexation area aligns with the Capital Region's population projection for the Town of Gibbons to 2044 and complies with the Policies and Principles of "Growing Forward: The Capital Region Growth Plan" and the Edmonton Metropolitan Regional Growth Plan (currently pending ministerial approval).

The Edmonton Metropolitan Regional Growth Plan identifies that the number of jobs in the Town of Gibbons is projected to increase almost 75%, from 651 (in 2014) to 1,135 (in 2044). The development of the proposed annexation area for industrial and commercial purposes would support the Town of Gibbons' efforts to accommodate this projected increase in local employment.

4 | INTENDED USES

4.1 INTENDED USES

The Town of Gibbons Annexation Lands Servicing Design Brief (the Design Brief) was commissioned by the Town of Gibbons and prepared by Select Engineering Consultants Ltd. (SEC) in 2017, and included as **Appendix C – Servicing Design Brief** with this Report. The Design Brief includes a future land use concept. This land use concept (Figure 2.2) illustrates the general location of future industrial and commercial development within the proposed annexation, as well as the possible location of future roads and municipal/environmental reserves.

Industrial and commercial development within the proposed annexation area is intended ensure that the Town of Gibbons meets the employment projection targets identified in the Edmonton Metropolitan Region Growth Plan.

Within the proposed annexation area, it is assumed that municipal reserves, municipal school reserves, and environmental reserves will be provided to the Town at the time of subdivision to accommodate future parks and school sites, and to protect important/sensitive natural features. As part of the Servicing Design Brief, significant wetlands within the proposed annexation area were identified to provide additional information about future development considerations within the area.

Future development within the proposed annexation area will be guided by the Town of Gibbons' Municipal Development Plan, and will be subject to the preparation of one or more area structure plans by development proponents.

4.2 WATER SERVICING

The Design Brief identifies that water servicing to the Town is provided via the Capital Region Northeast Water Commission.

The proposed annexation area can be safely and efficiently provided with municipal water services in the future when developed for urban industrial and commercial purposes. Extensions from existing watermain from the Town of Gibbons can be made to service the entire proposed annexation area.

Based on the results of the water system assessment, it has been concluded that the proposed water system within the Annexation Lands will be serviced by a looped system extended from the existing water system servicing Town of Gibbons. The proposed watermains are comprised of pipe sizes between 250 and 300 mm diameter. Design Brief report concluded that the proposed water system with in the Annexation Lands will have the capacity to meet the minimum 235 L/s fire flow as required by the Town of Gibbons.

A full detailed explanation of how the proposed annexation area can be serviced with municipal water services can be found in **Appendix C – Servicing Design Brief** with this report.

4.3 SEWER / SANITARY SERVICING

The Design Brief identifies that the Town is serviced by the Alberta Capital Region Wastewater Commission. Wastewater is pumped from the Town of Gibbons to the Alberta Capital Region Wastewater Commission's regional treatment plan locates south of the City of Fort Saskatchewan, where it is treated and discharged into the North Saskatchewan River basin.

The Design Brief indicates that that the proposed annexation area can be safely and effectively provided with municipal sewer/sanitary services when developed for future urban industrial and commercial purposes. The Design Brief identifies that a new lift station will need to be constructed in conjunction with future development phases to accommodate additional demand on the Town's sanitary servicing system.

The area within Annexation lands can be serviced by a gravity sewer system draining to a proposed lift station. From the lift station, the sewage flows will be discharged via a forcemain into the existing ACWRC wastewater system. However, previous

studies identified the existing ACWRC forcemain to be upgraded due to insufficient capacity for existing and future developments. Therefore the Design Brief study is proposing the following modifications to the existing ACWRC wastewater system:

- Instead of twining the existing 300 mm diameter sanitary forcemain, it is proposed a new ACWRC forcemain with a capacity to service existing and future developments
- The existing 300 mm diameter ACWRC forcemain to be decommissioned and re-used as the forcemain servicing the proposed Annexation Lands.
- The existing ACWRC lift station, including all the details of the tie in has to be confirmed and approved by the Wastewater Regional Commission

The proposed Annexation Lands sanitary system will also be designed to have capacity to service the proposed country residential communities of maximum 2,000 people, located east of the annexation lands, Casa Vista, Riverside Springs, and Sierra Ridge. These areas will be serviced by a forcemain proposed to discharge into the ACWRC wastewater system.

A full detailed explanation of how the proposed annexation area can be serviced with municipal sewer/sanitary services can be found in **Appendix C – Servicing Design Brief** with this Report.

4.4 STORM WATER SERVICING

The Design Brief illustrates that storm water management for the proposed annexation area can be safely and effectively provided through the construction of three stormwater management facilities. Three catchment areas were identified based on the proposed annexation area's natural topography, each of which includes dedicated stormwater management facilities to collect and store runoff water. The ultimate configuration/number/size of stormwater management facilities in the proposed annexation area will be dependent on a number of important factors including: proposed development densities, subdivision design, and recreational/natural uses.

The Annexation Lands area is proposed to be serviced by a combination of three stormwater management facilities interconnected through a buried pipe. Peak Flows of the stormwater management facility will discharge cascading from one pond to another into the SWMF with the lowest water levels. The cumulated peak outflow from all stormwater facilities will be regulated and discharged into the existing downstream drainage course by a lift station proposed to be located at the lowest SWMF. This lift station will be sized to discharge the control peak outflow from the combined SWMF's at the maximum allowable flow rate of 2.5 L/s/ha.

A full detailed explanation of how the proposed annexation area can be serviced for stormwater management can be found in **Appendix C – Servicing Design Brief** with this Report.

4.5 TRANSPORTATION AND FRANCHISE UTILITY SERVICING

The Design Brief illustrates how a collector road network in the proposed annexation area can be connected to existing collector and arterial roads within the Town of Gibbons, and provide access to neighbouring properties in Sturgeon County. The proposed road network is based on the Town of Gibbons' Municipal Development Standards for commercial and industrial development.

A local road network has not been included with the Servicing Study, as this level of detail is typically undertaken during the preparation of an area structure plan.

Local franchise utilities (i.e. power, gas, telephone, internet, etc.) can be safely and effectively provided to future area residents/businesses within the ultimate road network.

A full detailed explanation of how the proposed annexation area can accommodate a collector road network can be found in **Appendix C – Servicing Design Brief** with this report.

5 | WRITTEN CONSENT – LAND OWNERS

11 months of consultation with the affected surface and subsurface rights holders the Town ser
questionnaire providing a summary of the conditions proposed to mitigate concerns raised by r
annexation area and requesting confirmation in writing regarding their support or non-support
annexation.

The letter and questionnaire were originally sent on March 1, 2017. A deadline to respond was
At the request of one of the affected landowners the Town sent out a follow up letter on March
response deadline two weeks, to April 13, 2017.

The Town received the following responses to their verbal request for confirmation of support

NAME	TYPE	LEGAL DESCRIPTION	RE
	Surface	Parcel A, Plan 6971 KS	No
	Surface	NW 2-56-23-W4	In
	Surface	SW 11-56-23-W4	In
	Surface	SW 2-56-23-W4	No

Where provided by the affected landowners, letters of consent have been included in this repo
Record of Consultation.

6 | PUBLIC CONSULTATION PROCESS

The following is a summary of key milestones in the public consultation programme for the Town of Gibbon's proposed annexation application, concerns raised by public and private interests, and the Town's response to these concerns. For detailed information concerning elements of this process, please see copies of public consultation materials provided as an appendix to this report (see **Appendix E – Record of Consultation**).

6.1 INITIAL NOTIFICATION

The Town of Gibbons first notified affected landowners of the Town's notice of intent to annex the proposed annexation area from Sturgeon County in 2013 (via telephone conversations). Responses from three of the four landowners were received by the Town of Gibbons after this notice was given.

6.2 NEGOTIATION COMMITTEE

On November 12, 2014 the Council of the Town of Gibbons approved a motion to establish the Town of Gibbons Negotiation Committee. The Negotiation Committee was commissioned to engage in notifications, consultations, and negotiations with affected landowners, agencies, and Sturgeon County for the purpose of the proposed annexation application.

6.3 NOTICE OF INTENT

On September 24, 2014 a Notice of Intent was sent (via mail) on behalf of the Negotiation Committee and the Town of Gibbons to Sturgeon County, the Municipal Government Board, and affected agencies indicating the Town's intent to proceed with the proposed annexation application. A second Notice of Intent was sent to Sturgeon County, the Municipal Government Board, and affected agencies on March 7, 2016 following a delay in the proposed annexation application.

6.4 PUBLIC OPEN HOUSE #1

Date and Time:	March 16, 2016 6:30 PM
Venue:	Gibbons Cultural Centre
Attendance:	24 (including Town of Gibbons Councillors but not including Town Administration) Based on sign-in sheet results and visual estimate)
Presentation by:	Jane Dauphinee and Lyndsay Francis of Municipal Planning Services (2009) Ltd.
Purpose:	To provide information to the community and stakeholders regarding the proposed annexation including information about: the annexation process, the consultation programme, who can contest the annexation, the timeline(s), and the next steps

Summary

After a presentation, a group discussion was facilitated which consisted of a questions and answer session and one on one conservations with attendees. Overall, attendees of the open house did not express objections to the annexation; rather they asked questions for clarification and some attendees indicated that they supported the Town's annexation proposal.

The following is a list of questions and responses from the open house:

Q: Why were these quarter sections chosen for annexation?

A: These quarter sections were identified as being the most suitable for annexation because:

The Town requires additional commercial and industrial lands to provide opportunities to expand and diversify the local tax base and to ensure that after the proposed highway realignment occurs there will be sufficient land available to relocate the existing industrial developments which will be impacted by the realignment.

This location is separated from existing and proposed residential areas as well as being adjacent to existing industrial developments. Industrial and commercial uses are appropriate adjacent to the realigned highway.

It may be good location for extending municipal services.

There are no oil or gas wells and only one pipeline in the area.

It is close to existing major intersections and planned major intersections.

Q: How will the proposed highway realignment affect the approval of development or subdivision within the annexation area? When should we expect the highway to be realigned?

A: There is no timeframe for the highway realignment at the moment. It is not on the 5 year plan for Alberta Transportation. Subdivision and development may be approved in these areas as long as they do not occur within the proposed highway right-of-way or negatively impact the proposed realignment.

Q: What will happen to the old highway?

A: There is a proposal to twin the highway. Some of this land may be incorporated into the twinning. The Town will have to look at the approved study to see if it identifies what the plan will be for the existing highway.

Q: Who will be responsible for the cost of servicing the annexed lands? What will these costs be?

A: Council will ultimately decide how to assign costs for providing servicing to the annexed lands. Normally, costs associated with providing services to a new development area are borne by the developer. The Town's engineer will be reviewing information to assess the viability of providing municipal services to the site. This information will be part of the annexation submission package and will help the Town to identify if portions of the annexed land should be left unserviced.

Q: What if there are wetlands in the annexed lands and compensation payments are required?

A: If the wetland assessment identifies significant wetlands within the proposed annexation area that would require compensation to facilitate development then the Town will have to consider those costs when assessing the viability of developing those areas and calculating how much land within the proposed annexation area can reasonably be converted to future commercial or industrial land uses.

Q: What kind of industrial uses will be allowed the new annexed lands?

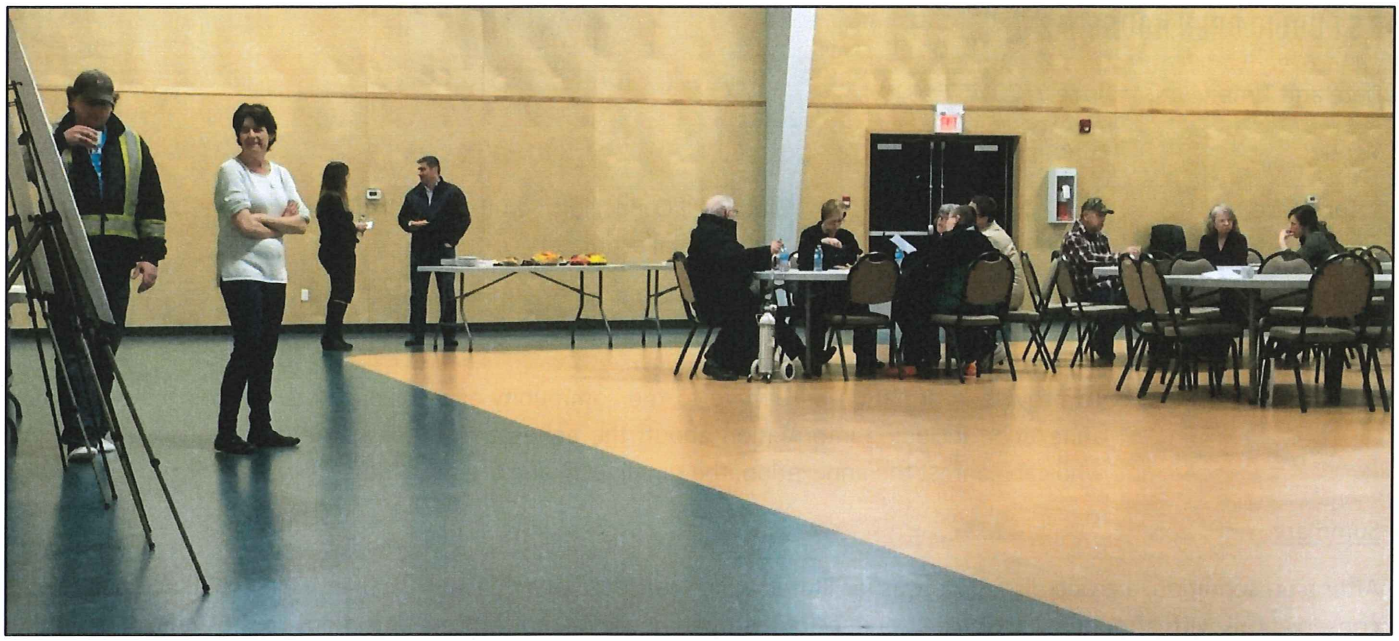
A: The Town has not identified a list of specific uses that would be allowed within the annexed area. However our expectation at this time is that the permitted and discretionary uses would be similar to the permitted and discretionary uses allowed in the Town's existing industrial district. Those uses are primarily light to medium industrial uses.

Q: Who can contest an annexation?

A: Anyone who is negatively impacted by the proposed annexation can contest the annexation.

Q: Will copies of the presentation be available online?

A: Yes. The Town will make the annexation presentation available online and will set up an annexation link on the Town website to provide information about the annexation.



WHAT IS ANNEXATION?

Annexation is the process of changing the boundaries between one or more municipalities.

The process involves:
- Negotiation between local governments
- Public engagement
- Formal review by the Municipal Government Board
- Final decision by the Lieutenant Governor in Council

Municipalities initiate annexation to ensure that there is enough developable land within the boundaries to provide reasonable opportunities for growth and development.

The annexation process is regulated by the Municipal Government Act and the annexation principles & rules developed by the Municipal Government Board.

WHY THIS LOCATION?

- Best satisfies annexation considerations
- Suitable for the extension of municipal services

- Existing Major Intersection
- Future Major Intersection
- Pipeline, Well and 100 Metre Setback

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ANNEXATION PROCESS

STEP 1	Town of Gibbons proposes annexation
STEP 2	Town undertakes site analysis to determine: • Potential costs for servicing the subject land • Development constraints (including access, environmental features, wellsite activity and topography) • Rational growth directions • Growth projections • Potential impacts on regional infrastructure and the County
STEP 3	Town consults with affected landowners and the County
STEP 4	Town provides official notice to the Municipal Government Board and the County of intent to annex
STEP 5	Town initiates broader consultation program including: • Consultation with the community • Consultation with agencies

UNCONTESTED PROCESS | **CONTESTED PROCESS**

STEP 6	Required information is provided to the Municipal Government Board
STEP 7	MGB prepared report and recommendations are forwarded to the Minister of Municipal Affairs
STEP 8	Lieutenant Governor of Alberta considers the MGB report and signs an Order-in-Council
STEP 9	MGB provided notice of Order to all parties affected by the decision

STEP 6	Town and County meet and negotiate in good faith
STEP 7	If agreement - then negotiation report is submitted to the Board with associated documents
STEP 8	Board advertises the proposed annexation
STEP 9	If no objection then the MGB prepared report and recommendations are sent to the Minister of Municipal Affairs
STEP 10	Lieutenant Governor of Alberta considers the board report and signs an Order-in-Council if the annexation is approved or approved in part
STEP 11	MGB provided notice of Order to all parties affected by the decision

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6.5 PUBLIC OPEN HOUSE #2

Date and Time:	June 7, 2017 7:00 PM
Venue:	Gibbons Cultural Centre
Attendance:	9 (including Town of Gibbons Councillors but not including Town Administration) Based on sign-in sheet results and visual estimate)
Presentation by:	Jane Dauphinee of Municipal Planning Services (2009) Ltd. and Steve Brittain of Select Engineering Consultants
Purpose:	To provide information an update to the community and stakeholders regarding the proposed annexation including information about: the annexation process, the consultation programme, who can contest the annexation, the timeline(s), and the next steps

Summary

After a presentation, a group discussion was facilitated which consisted of a questions and answer session and one on one conservations with attendees. Overall, attendees of the open house did not express objections to the annexation; rather they asked questions for clarification and some attendees indicated that they supported the Town's annexation proposal.

Questions

1. Q -How much industrial land will the Town be getting? What's the net gain of industrial land (what is lost compared to what is gained)? Will any of the current industrial park be salvaged/able to be kept?

   A – Most of the current industrial park will be lost in the highway realignment. The lost amount of industrial lands will be approximately 60 ha. The annexation lands will provide 62.14 ha of new light industrial lands within the Town of Gibbons. This will replace the lost industrial lands and may provide a slight increase to the net area of available light industrial lands within the Town.

2. Q – Have all landowners provided letters of support?

   A – No- but all of the landowners have responded (except 1) and they have indicated verbally that they have no objections to the annexation.

3. Q- How will taxation work in the annexation areas?

   The Town originally proposed to maintain the same taxation and assessment rates within the annexation area for a period of 15 years if the use of the land did not change. Trigger s have been identified which would result in an end to the taxation and assessment concession. However, the Town is currently in discussions with one of effected land owners and as a result will increase the taxation and concession period to 25 years. The annexation conditions will be revised to reflect this discussion and increase the number of years offered for taxation and assessment relief from 15 to 25.

4. Q- Clarification requested re: requirement and/or replacement of a lift station in annexation lands.

   The information from the Servicing study was provided to address this question.

5. The Town indicated that some redistricting may be done in conjunction with the MDP update (currently underway) to help expedite the future development process by the Town. The Town wishes to clarify that any redistricting initiated by the Town will not trigger the end of the agreed to annexation concessions.

CONDITIONS OF ANNEXATION

Proposed Annexation Conditions & Triggers

- Offer tax protection to annexation landowners (continue to be assessed and taxed at Sturgeon County rates)
- This tax protection period of up to 15 years, or until such time as:
  - Subdivision/separation of title at the request of the landowner; or
  - Redistricted at the request of the landowner; or
  - Connection to municipal water/sewer services; or
  - Redevelopment of the site or a portion of the site for a different land use or new building at the request of the landowner (intensification)

Annexation Considerations ✓

MGB Checklist & Annexation Principles ✓

Sturgeon County Annexation Principles ✓

Landowner Support ✓

WHAT IS ANNEXATION?

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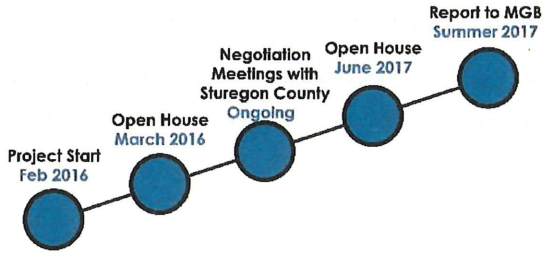
The process involves:
- Negotiation between local governments
- Public engagement
- Formal review by the Municipal Government Board
- Final decision by the Lieutenant Governor in Council

Municipalities initiate annexation to ensure that there is enough developable land within the boundaries to provide reasonable opportunities for growth and development.

The annexation process is regulated by the Municipal Government Act and the annexation principles & rules developed by the Municipal Government Board.

PROGRESS REPORT



WHY THIS LOCATION?

- Best satisfies annexation considerations
- Suitable for the extension of municipal services

Existing Major Intersection

Future Major Intersection

Pipeline, Well and 100 Metre Setback

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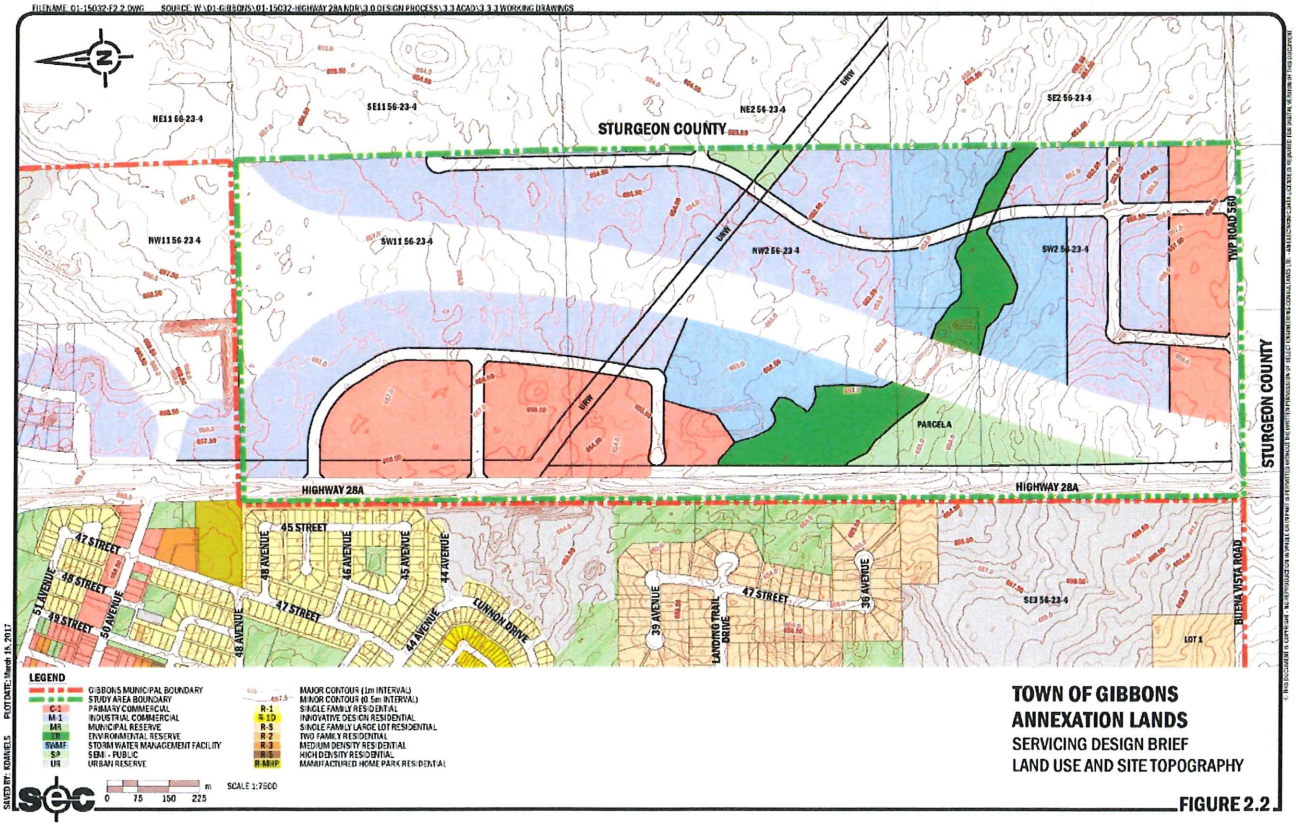


Figure 1: Annexation Public Open House #2

6.6 SUBSEQUENT NOTIFICATION

Following the initial phone consultation and public open house the Town sent a subsequent notification to landowners within the annexation area on May 3, 2017.

The intent of this letter was to:

- Provide an update on the annexation process;
- Respond to landowner concerns that have been presented to the Town of Gibbons to date; and
- Outline the Town's proposal to mitigate landowner annexation impacts; and
- Provide a summary of next steps for the proposed annexation application.

Landowners were invited to meet with Town administration in order to share information about the process and to identify and resolve any outstanding concerns. Between April 2017 and June 2017 the Town continued to engage in direct and open consultation with those affected landowners who responded to the Town's notification letter and phone calls.

During this round of consultation one of the landowners requested that the timeframe for taxation and assessment concessions be increased. The Town addressed this request by revising the annexation conditions to extending the period for taxation and assessment concessions from 15 years to 25 years.

6.7 ADJACENT LANDOWNER NOTIFICATION

Adjacent Landowners in Sturgeon County were mail notified on April 27, 2017 of the proposed annexation and invited to provide the Town with their comments. Town residents were notified of the proposed annexation through notice placed in the local paper and on the Town's website.

6.8 RECORD OF CONSULTATION

Copies of public consultation notification letters, presentations, and other materials are included with this report as a part of **Appendix E – Record of Consultation**.

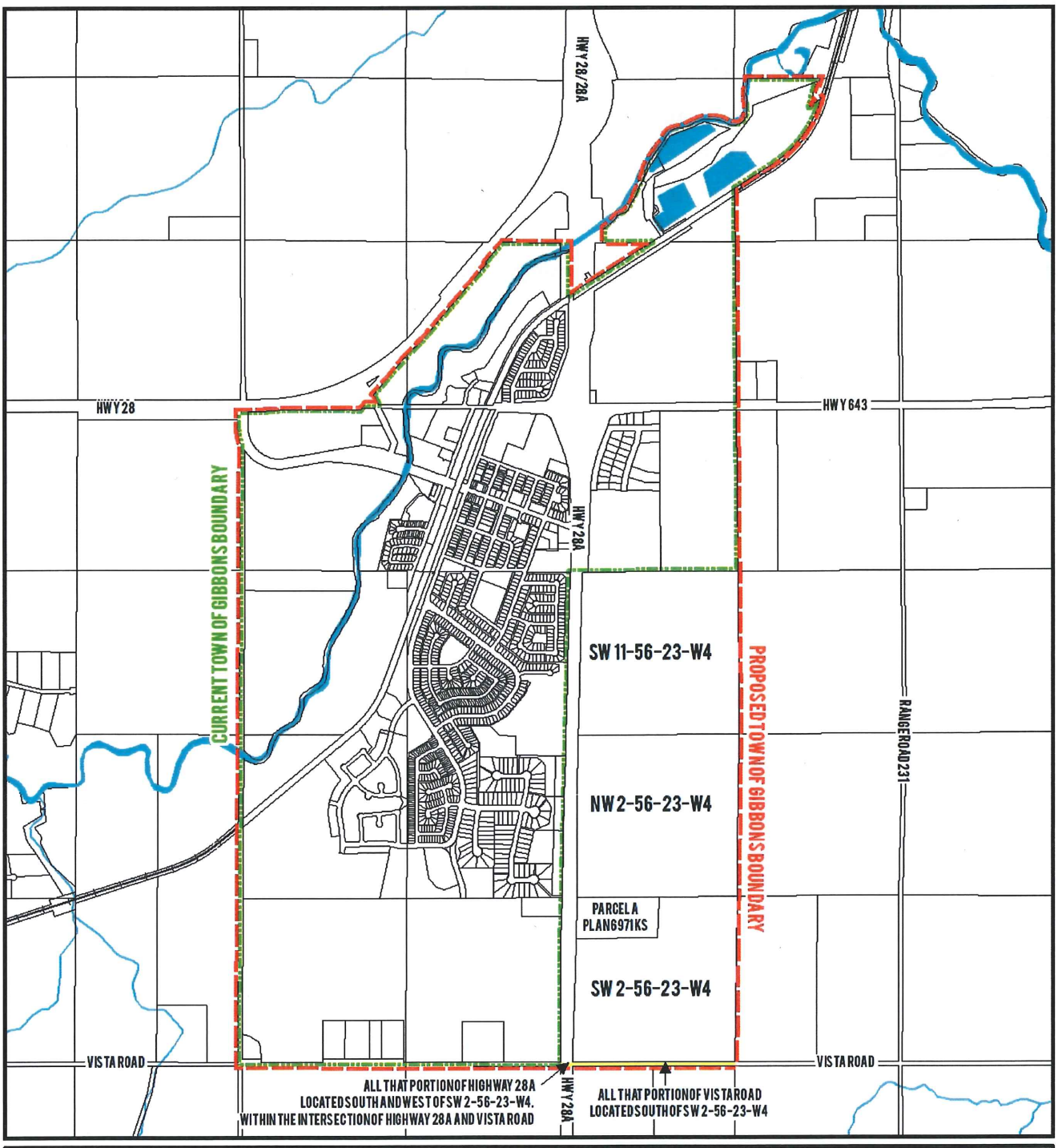
7| BOUNDARY ROADS

The proposed annexation application affects two existing roads and road plans.

This application proposes to transfer from the jurisdiction of Sturgeon County to the Town of Gibbons All that portion of Highway 28A located south and west of SW 2-56-23-W4, and within the intersection of Highway 28A and Vista Road.

This application also proposes to transfer from the jurisdiction of Sturgeon County to the Town of Gibbons all that portion of Vista Road located south of SW 2-56-23-W4.

The affected areas of these roads are illustrated on the map provided on the following page of this report.



TOWN OF GIBBONS INCLUDED BOUNDARY ROADS

INFORMATION: GEOGRATIS & ALTALIS
PROJECTION: UTM NAD 83 12N

0 0.5 1 KM

NORTH

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8 | LAND TITLE CERTIFICATES

Land title certificates have been provided for all parcels included within the proposed annexation area. These copies of certificate have been issued within the last six months (prior to the submission of this report), and include surface rights land title certificates.

A search of mineral rights for lands within the proposed annexation area on March 28, 2017 returned no results.

SURFACE TITLES		
LINC	**SHORT LEGAL**	**TITLE NUMBER**
0010 856 318	SW 11-56-23-W4	952 060 451
0023 307 879	NW 2-56-23-W4	882 246 541 A
0010 340 867	SW 2-56-23-W4	892 081 734
0011 887 312	Parcel A, Plan 6971 KS	132 120 864

9 | LANDOWNER LIST

NAME OF LANDOWNER	ADDRESS	TYPE OF LANDOWNER	DATES OF CORRESPONDENCE
		Surface	May 3, 2017
		Surface	May 3, 2017
		Surface	May 3, 2017
		Surface	May 3, 2017

10 | PROPOSED EFFECTIVE DATE

The Town of Gibbons proposes that this annexation come into effect on January 1, 2018.

11| IDENTIFICATION OF SPECIAL CONDITIONS

11.1 CONDITIONS

Subject to "Triggering Events" described in Section 12: Taxation and Assessment, the Town has proposed the following conditions of annexation:

(a) For taxation purposes in 2018 and subsequent years, the annexed land and the assembled improvements to it must be assessed and taxed by the Town of Gibbons for the purpose of property taxes in the same manner as other property of the same assessment class in the Town of Gibbons is assessed and taxed.

(b) For taxation purposes in 2018 and subsequent years up to and including 2043, the annexed land and the assessable improvements to it:

  (i) Must be assessed by the Town of Gibbons on the same basis as if they had remained in Sturgeon County; and

  (ii) Must be taxed by the Town of Gibbons in respect of each assessment class that applies to the annexed land and the assessable improvements to it using the municipal tax tare established by Sturgeon County.

11.2 TAXATION & ASSESSMENT

The Town acknowledges that the landowners within the affected annexation area may be impacted by this proposed annexation. As a result, the Town is committed to mitigating any impacts on landowners and has committed, in writing to each landowner, to advocate for long term assessment and taxation transition provisions. In order to allow landowners within the annexation area an opportunity to adjust to taxation or assessment changes which would occur as a result of annexation, the Town proposes that for a period of twenty-five (25) years the annexed land and assessable improvements to it be assessed by the Town of Gibbons on the same basis as if the annexed lands had remained in Sturgeon County.

Assessment and tax protection will be lost if, in any taxation year, a portion of the annexed land:

(a) becomes a new parcel of land created:

  (i) as a result of subdivision;

  (ii) as a result of separation of title by registered plan of subdivision; or

  (iii) by instrument or any other method that occurs at the request of or on behalf of the landowner; or

(b) is redistricted at the request of or on behalf of the landowner, under the land use bylaw in effect at the time for the Town of Gibbons, to another land use designation; or

(c) receives a permit from the Town of Gibbons for a development; or

(d) is connected to water and sewer services provided by the Town of Gibbons.

Section 12.1(b) in this report will cease to apply at the end of that taxation year in respect of that portion of annexed land and the assessable improvements to it.

After Section 12.1(b) ceases to apply to a portion of the annexed land in a taxation year, that portion of the annexed land and the assessable improvements to it must be assessed and taxed for the purposes of property taxes in that year in the same manner as other property of the same assessment class in the Town of Gibbons is assessed and taxed.

11.3 COMPENSATION

The Town of Gibbons does not propose to provide compensation to Sturgeon County for the proposed annexation, as the affected area is currently only developed for agricultural and rural residential uses, and does not represent a significant loss in the County's population, total land area, or taxation base.

Sturgeon County currently receives linear assessment for a pipeline that runs through the proposed annexation area. This pipeline is assessed at $240,000, and Sturgeon County receives $2,900 in taxes annually.

There will be no stranded assets within the proposed annexation area.

11.4 SUBJECT TO REMOVAL CLAUSE

The 'Subject to Removal Clause' – also referred to as "a triggering event" - effecting the proposed annexation application is identified in **Section 12.1** of this report.

12 | OTHER RELEVANT MATTER

12.1 AGREED UPON ISSUES

1. The Town of Gibbons and Sturgeon County agree to the annexation of the lands within three (3) quarter sections, described as SW 11-56-23-W4, NW 2-56-23-W4, and SW 2-56-23-W4.

2. The Town of Gibbons and Sturgeon County are in agreement that the proposed annexation is consistent with the Municipal Government Board and Sturgeon County's Annexation principles.

3. The Town of Gibbons and Sturgeon County are in agreement that the Town of Gibbons will not pay Sturgeon County any compensation for lost revenue for the annexation given that:

    a. The lost revenues account for less than $10,000/year;

    b. The annexation does not compete with the County's growth aspirations, and is relatively small in proposed size; and

    c. The proposed sanitary system will be designed to service the country residential communities of Casa Vista, Riverside Park and Sierra Ridge.

4. The Town of Gibbons and Sturgeon County are in agreement that subject to any mutually agreed upon servicing agreements, upon the effective date of the annexation, the Town of Gibbons should be responsible for:

    a. the direction, control and management of all roads within the annexed land; and

    b. providing municipal services within the annexed land.

5. The Town of Gibbons and Sturgeon County are in agreement that the Town of Gibbons should provide long term assessment and tax protection for a period of twenty-five (25) years to lessen the impacts of the annexation on impacted landowners, and that the annexed land and assessable improvements to it will be assessed by the Town of Gibbons on the same basis as if the lands had remained in Sturgeon County, and further the annexed land and the assessable improvements will be taxed by the Town of Gibbons using:

    a. The municipal tax rate established by Sturgeon County; or

    b. The municipal tax rate established by Gibbons,

    Whichever is lower for property of the same assessment class.

6. The Town of Gibbons and Sturgeon County are in agreement that assessment and tax protection (described in section 13.1.5 above) will be lost if, in any taxation year, a portion of the annexed land:

    a. Becomes a new parcel of land

        i. as a result of subdivision,

        ii. as a result of separation of title by registered plan or subdivision, or

        iii. by instrument or any other method that occurs at the request of or on behalf of the registered landowner, or

    b. Is redistricted at the request of or on behalf of the landowner, under the land use bylaw in effect at the time for the Town of Gibbons, to a land use designation other than the land use designation that was in effect for that portion immediately before the effective date of the annexation, or

c. Ceases to be used as farmland a development permit is issued for a change in use of the land at the request of or on behalf of the landowner, under the land use bylaw in effect at the time for the Town of Gibbons.

[Subsections A to C above are collectively referred to as "triggering events"]

7. The Town of Gibbons and Sturgeon County are in agreement that, as of the effective date of the annexation, the proposed annexed lands should be governed by Sturgeon County's Municipal Development Plan and Land Use Bylaw until the Town of Gibbons redesignates the land to provide stability and predictability for landowners and developers.

8. The Town of Gibbons and Sturgeon County are in agreement that all development or subdivision applications as of the effective date of the annexation should be managed by the Town of Gibbons, but be assessed in accordance with Sturgeon County's current Municipal Development Plan until such time as the Town of Gibbons redesignates the lands.

9. The Town of Gibbons and Sturgeon County are in agreement that once the annexation is completed, the Town of Gibbons will:

   a. maintain that portion of the future service road identified in the Highway 28A Functional Planning Study prepared by Alberta Transportation in 2011, within the new municipal boundaries of the Town of Gibbons. The future service road will be constructed and maintained to the same standard as provided by Sturgeon County for industrial roads; and,

   b. upgrade and maintain, to the same standard as provided by Sturgeon County for industrial roads, that portion of Range Road 231 adjacent to the eastern boundary of S ½ 11-56-23-W4 when development within the annexed lands triggers the need for improvements; and

   c. Register, upgrade and maintain, to the same standard as provided by Sturgeon County for industrial roads, a new registered roadway adjacent to the southern boundary of SE 11-56-23-W4 when development within the annexed lands triggers the need for improvements.

10. The Town of Gibbons and Sturgeon County are in agreement that the Town will not apply for another annexation for 30 years from the effective date of the annexation.

11. The Town of Gibbons and Sturgeon County are in agreement that all communications are to be confidential and without prejudice.

Deputy Mayor of the Town of Gibbons

18 Day of July, 2017

Mayor of Sturgeon County

18 Day of July, 2017

12.2 PUBLIC CONSULTATION ACTIVITIES

See Section 7 of this report for a summary of public consultation activities and feedback.

12.3 PUBLIC CONSULTATION SUMMARY

See Section 7 of this report for a summary of public consultation activities and feedback.

12.4 NON- AGREEMENT ISSUES

No non-agreement issues were deemed necessary by the Town of Gibbons or Sturgeon County for the purpose of this annexation application.

12.5 MEDIATION ATTEMPTS

No mediation was necessary for the purpose of this annexation application.

12.6 REASONS MEDIATION FAILED

No mediation was necessary for the purpose of this annexation application.

13 | OTHER INFORMATION – 15 ANNEXATION PRINCIPLES

13.1 INTERMUNICIPAL COOPERATION

The Town of Gibbons and Sturgeon County have cooperated and worked together to reach an agreement on the terms of the proposed annexation.

13.2 ACCOMMODATION OF GROWTH

The proposed annexation area will not negatively affect Sturgeon County's residential, commercial, or industrial development prospects. There are no County Hamlets, country residential subdivisions, or growth nodes within the proposed annexation area. The annexation area will permit the development of a safe, and efficient commercial/industrial development area within the Town. The Town of Gibbons will encourage the use of the lands for agricultural and rural residential purposes that are compatible with the Town until future industrial and commercial development occurs.

13.3 RECOGNITION OF LOCAL AUTONOMY

The proposed annexation recognizes the local autonomy of both the Town of Gibbons and Sturgeon County. The proposed annexation area (approximately 191 hectares) represents 0.09% of Sturgeon County's total area. With an estimated population of 2 residents, the annexation of these parcels by the Town of Gibbons will not create a significant financial impact for Sturgeon County.

There are no other proposed conditions of this annexation that would infringe on local autonomy. No conditions infringe on any individual rights under the Municipal Government Act.

13.4 LAND REQUIREMENT AND GROWTH PROJECTION CONSIDERATIONS

The Edmonton Metropolitan Region Growth Plan indicates that the Town of Gibbons' population is anticipated to grow from 3,200 in 2014 to 5,400 in 2044 (an increase of 68.75%). The Growth Plan also indicates that the Town's employment positions are projected to increase from 651 in 2014 to 1,135 in 2044 (an increase of over 74%).

To meet the Town's obligations under the Edmonton Metropolitan Region Growth Plan, the proposed annexation area represents an opportunity to ensure that the Town of Gibbons has sufficient room to accommodate anticipated commercial and industrial development to support existing and new residents.

13.5 LOGICAL EXTENSION OF GROWTH PATTERNS, TRANSPORTATION, AND SERVICING

The annexation area represents a logical extension of commercial and industrial development in the Town of Gibbons. Safe and efficient road networks can be developed extending from the Town's existing collector and arterial roads, as well as existing and planned highways.

Municipal water, sanitary, and stormwater management service (as well as franchise utility services) can be extended to the annexation area via connections and upgrades to the Town of Gibbons' existing municipal services.

A description of how the annexation area can be provided with municipal services is included Section 4 of this report. See **Appendix C – Servicing Design Brief** for more detailed information on the logical extension of growth patterns, transportation and Servicing to the annexation area by the Town of Gibbons.

13.6 ADMINISTRATION OF SERVICES

The Town of Gibbons will provide municipal water, sanitary, and stormwater management services to the annexation area as future development occurs.

Current and future residents of the annexation area will have access to recreation facilities and social services provided by the Town. The Town provides a wide range of recreational and social services to its current residents and anticipates to be in a position to offer the same services to the future residents of the annexation area as future development occurs.

The Town of Gibbons has reviewed costs associated with the provision of public works services such as road maintenance, water services, and sanitary services to the annexation area. The Town public works shop and yard are well situated to provide services to the annexation area, and have the required space to accommodate the additional resources that needed to support anticipated commercial and industrial development growth.

Waste collection for general waste, organics, and recycling will advance as the annexation area develops. Future long term strategic planning by the Town will incorporate planned growth in the annexation area.

13.7 ENVIRONMENTAL AND NATURAL FEATURES

The Servicing Design Brief prepared for this annexation application (See **Appendix C – Servicing Design Brief**) identifies the general location of wetlands within the annexation area. Future development in the annexation area will proceed in accordance with environmental policies set out in the Town of Gibbons Municipal Development Plan, approved area structure plans, and all provincial Acts and regulations respecting significant environmental and natural features.

13.8 ALIGNMENT WITH PLANS

Sturgeon County and the Town of Gibbons do not share an Intermunicipal Development Plan. The Town of Gibbons is currently (as 2017) reviewing the Town's Municipal Development Plan. If the annexation application is successful, the Town will proceed with a review of the Municipal Development Plan to ensure its proper inclusion in the statutory plan, and provide a vision, goals, and policies for future development within the annexation area.

Future urban industrial and commercial development within the annexation area will be undertaken in conjunction with the preparation of one or more area structure plans.

13.9 FINANCIAL IMPACT

The annexation area (approximately 191 hectares) is represents 0.09% of Sturgeon County's current land area (214,425 hectares), and 0.01% of the County's total tax assessment (approximately $6B). The potential financial impact on Sturgeon County's ability to collect tax assessment would be very minimal.

13.10 AGENCY CONSULTATION

The Town of Gibbons has notified affected local authorities and agencies of the proposed annexation application. The proposed notice of annexation was sent to 25 local agencies with interests in the area (See Section 14 of this report for the complete list of agencies). These letters and responses provided to the Town of Gibbons and Municipal Planning Services are included with this report as **Appendix E – Record of Consultation**.

13.11 REASONABLE SOLUTIONS TO IMPACTS ON OWNERS/CITIZENS

The Town acknowledges that the landowners within the affected annexation area may be impacted by this proposed annexation. As a result, the Town is committed to mitigating any impacts on landowners and has committed, in writing to each landowner, to advocate for long term assessment and taxation transition provisions. In order to allow landowners

within the annexation area an opportunity to adjust to taxation or assessment changes which would occur as a result of annexation, the Town proposes that for a period of fifteen (15) years the annexed land and assessable improvements to it be assessed by the Town of Gibbons on the same basis as if the annexed lands had remained in Sturgeon County.

Where in any taxation year, a portion of the annexed land:

(a) becomes a new parcel of land created:

  (i) as a result of subdivision;

  (ii) as a result of separation of title by registered plan of subdivision; or

  (iii) by instrument or any other method that occurs at the request of or on behalf of the landowner; or

(b) is redistricted at the request of or on behalf of the landowner, under the land use bylaw in effect at the time for the Town of Gibbons, to another land use designation; or

(c) receives a permit from the Town of Gibbons for a development; or

(d) is connected to water and sewer services provided by the Town of Gibbons.

Section 12.1(b) in this report will cease to apply at the end of that taxation year in respect of that portion of annexed land and the assessable improvements to it.

After Section 12.1(b) ceases to apply to a portion of the annexed land in a taxation year, that portion of the annexed land and the assessable improvements to it must be assessed and taxed for the purposes of property taxes in that year in the same manner as other property of the same assessment class in the Town of Gibbons is assessed and taxed.

13.12 PUBLIC/LANDOWNER CONSULTATION PROCESS

The following is a summary of key milestones in the public consultation programme for the Town of Gibbons' proposed annexation application. For detailed information concerning elements of this process, please see copies of public consultation materials provided as **Appendix E – Record of Consultation**.

Initial Notification

The Town of Gibbons first notified affected landowners of the Town's notice of intent to annex the proposed annexation area from Sturgeon County in 2013 (via telephone conversations). Responses from three of the four landowners were received by the Town of Gibbons, with no significant opposition to the proposed annexation noted.

Negotiation Committee

On November 12, 2014 the Council of the Town of Gibbons approved a motion to establish the Town of Gibbons Negotiation Committee. The Negotiation Committee was commissioned to engage in notifications, consultations, and negotiations with affected landowners, agencies, and Sturgeon County for the purpose of the proposed annexation application.

Notice of Intent

On September 24, 2014 a Notice of Intent was sent (via mail) on behalf of the Negotiation Committee and the Town of Gibbons to Sturgeon County, the Municipal Government Board, and affected agencies indicating the Town's intent to proceed with the proposed annexation application. A second Notice of Intent was sent to Sturgeon County, the Municipal Government Board, and affected agencies on March 7, 2016 following a delay in the proposed annexation application.

Public Open House #1

An initial public open house was held to provide information to Town and County residents about the proposed annexation. Information from the public open house is summarized below:

Date and Time:	March 16, 2016 6:30 PM
Venue:	Gibbons Cultural Centre
Attendance:	24 (including Town of Gibbons Councillors but not including Town Administration) Based on sign-in sheet results and visual estimate)
Presentation by:	Jane Dauphinee and Lyndsay Francis of Municipal Planning Services (2009) Ltd.
Purpose:	To provide information to the community and stakeholders regarding the proposed annexation including information about: the annexation process, the consultation programme, who can contest the annexation, the timeline(s), and the next steps

Summary

After a presentation, a group discussion was facilitated which consisted of a questions and answer session and one on one conservations with attendees. Overall, attendees of the open house did not express objections to the annexation; rather they asked questions for clarification and some attendees indicated that they supported the Town's annexation proposal.

Public Open House #2

An additional public open house was held to provide an update to Town and County residents about the status of the proposed annexation. Information from the 2nd public open house is summarized below:

Date and Time:	June 7, 2017 7:00 PM
Venue:	Gibbons Cultural Centre
Attendance:	(including Town of Gibbons Councillors but not including Town Administration) Based on sign-in sheet results and visual estimate)
Presentation by:	Jane Dauphinee and Lyndsay Francis of Municipal Planning Services (2009) Ltd.
Purpose:	To provide an update on the annexation proses to the community and stakeholders regarding the proposed annexation including information about: the annexation process, the consultation programme, findings form the engineering study, proposed conditions of annexation, the timeline(s), and the next steps

Summary

After a presentation, a short group discussion was facilitated which consisted of a questions and answer session and one on one conservations with attendees. Overall, attendees of the open house did not express objections to the annexation; rather they asked questions for clarification and some attendees indicated that they supported the Town's annexation proposal.

13.13 INTERMUNICIPAL REVENUE SHARING/COMPENSATION

The annexation area is currently used for agricultural and rural residential use, which does not contain any significant revenue generating opportunities that would create the need for revenue sharing. As a result, no revenue sharing or compensation provisions are included with the annexation agreement between the Town of Gibbons and Sturgeon County.

13.14 RATIONALE FOR ANNEXATION

The annexation area (191 hectares) is represents 0.09% of Sturgeon County's current land area (214,425 hectares), and 0.01% of the County's total tax assessment.

The financial impact to the County is minimal. The land is not a significant revenue generator for the County; it is primarily undeveloped and of marginal agricultural land.

The Town of Gibbons' primary rationale for annexation is to ensure that a sufficient long-term supply of developable commercial and industrial land is available within the Town's boundaries to support the economic and social sustainability of the Town of Gibbons, in order to satisfy the Town's employment projection responsibilities established in the draft Capital Region Board's Edmonton Metropolitan Region Growth Plan.

The proposed Highway 28A realignment will absorb the majority of the Town's current industrial land base. This annexation has been proposed to ensure that when the highway realignment occurs there will be lands available within the Town's boundary for industrial and commercial development in an alternative location.

13.15 CONDITIONS OF ANNEXATION

The Town submits that the proposed annexation meets the condition that the annexation "must be certain, unambiguous, enforceable and be time specific."

The boundary of the annexation area follows legal lot lines, providing a sufficiently clear boundary for the municipal boundary description.

The other conditions as set out in the annexation agreement are identified in Section 12 of this report.

14 | INVOLVEMENT OF PUBLIC INTERESTS

Copies of letters to public interests in the Town of Gibbons' annexation application and responses received by the Town and Municipal Planning Services (2009) Ltd. are included with this report as **Appendix E – Record of Consultation.**

A complete list of public interests (not including landowners and adjacent landowners) notified and consulted as a part of this annexation application is as follows:

- Sturgeon County
- Municipal Government Board
- Capital Region Board
- Town of Bon Accord
- Town of Redwater
- Town of Legal
- City of Fort Saskatchewan
- Sturgeon School Division
- Greater St. Albert Schools
- Alberta Health Services
- Alberta Capital Region Wastewater Commission
- Capital Region Northeast Water Services Commission
- Roseridge Waste Management Commission
- Alberta Transportation
- Alberta Environment & Parks
- Alberta Energy Regulator
- AltaGas Utilities
- ATCO Electric
- ATCO Gas
- ATCO Pipelines
- Direct Energy Regulated Services
- Fortis Alberta
- Telus Alberta (Northeast)
- Canadian National Railway
- Canada Post

APPENDIX A – STURGEON COUNTY MUNICIPAL DEVELOPMENT PLAN EXCERPTS

APPENDIX B – STURGEON COUNTY LAND USE BYLAW EXCERPTS

APPENDIX C – TOWN OF GIBBONS ANNEXATION LANDS SERVICING DESIGN BRIEF

APPENDIX D – WETLAND ASSESSMENT FOR ANNEXATION LANDS

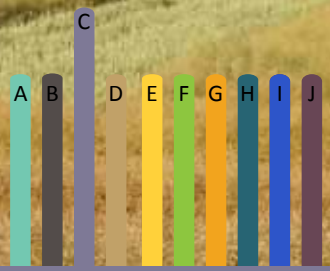
APPENDIX E – RECORD OF CONSULTATION

APPENDIX A – STURGEON COUNTY MUNICIPAL DEVELOPMENT PLAN EXCERPTS

Neighbourhood C

Distinctive Neighbourhood Role

To secure Sturgeon County's position as an agricultural **leader, and facilitate subsequent agricultural activity that** sustains its provincial importance.



Sturgeon County will support the distinctive Neighbourhood Role through the following Outcomes:

- C 1 Supporting the agricultural industry by acknowledging the unique features of the working landscape.
- C 2 Building on the symbiotic relationships that exist between the agricultural community and neighbouring municipalities.
- C 3 Supporting agricultural sustainability by promoting best management practices that contribute to healthy land, water and air.
- C 4 Encouraging value-added initiatives that recognize and contribute to agricultural industries.
- C 5 Ensuring infrastructure service delivery that meets the needs of the rural community and the residents of Cardiff.

Neighbourhood Growth and Population Forecasts

Total of ±206,399ac (83,527ha) of land
Represents ±38% of SC land mass

Current Population (2011 census): 6,042
Estimated Annual Growth Rate:
2.0% for Cardiff and 0.5% for rural areas
Estimated Future Population (2042): 7,777
Estimated Change in Pop. Across Neigh C (▲1,735)

Key Regional Planning Documents

Statutory Plan: Legal Crossroads Area Structure Plan

Neighbourhood

Manawan Lake is a 1,100-hectare lake deemed important for the staging, moulting and breeding of wetland waterfowl. It is also home to one of western Canada's largest colonies of Franklin's gulls.

The former community of Fedorah, located north of Bon Accord on Lily Lake Road, is home to two historical churches (Ukrainian Catholic and Orthodox Church) and a small community hall.

From 1902 until 1930, the Cardiff Mining Company was in operation with mines located near Cardiff, near Carbondale and within the Sturgeon Valley.

The Roseridge Regional Waste Management Facility is situated approximately 1.5 km east of the Town of Morinville and provides a region-wide essential service.

Cardiff Park, located on a 66-hectare site adjacent to the Hamlet of Cardiff, is Sturgeon County's main recreation facility. The park supports a variety of active and passive recreation activities, and includes a pond, sports fields, a playground, trails, a picnic area, a golf course and equestrian facilities.

Farms in in the region have traditionally produced grains, oilseed and seasonal produce for sale at local markets. Mixed farm operations produce cattle, bison, elk, pork and poultry for regional consumption.

Sturgeon County contains a high percentage of Class 1 soils, making it one of the most arable agricultural regions in Alberta. Sturgeon County is located in Alberta's Black Soil zone. The black chernozemic soils are high in organic matter, nutrient rich and have some resistance to drought.

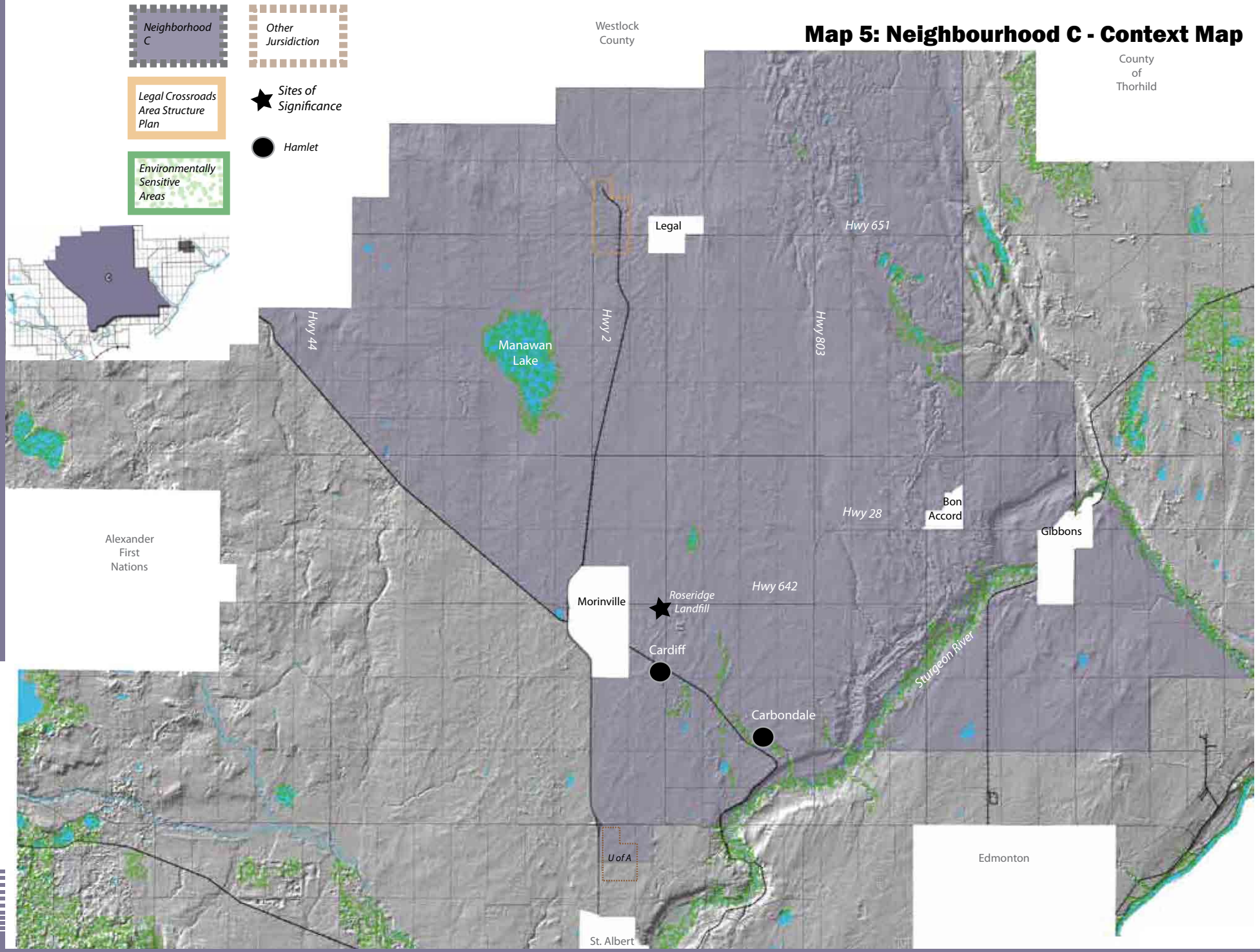
Legal Crossroads Industrial Park, situated adjacent to Highway 2 is best suited for light to medium, rural industries that require large areas of land.

The Dominion Lands Act of 1872 outlined the provisions for granting homesteads to settlers: free homesteads of 160 acres were offered to farmers who cleared ten acres and built a residence within three years of a registered intent to settle a specific land claim.

The Sturgeon Agriplex Society (located at Cardiff Park) operates an outdoor arena and barn, which are used for livestock events.

Agriculture is one of Sturgeon County's primary industries and has significantly influenced the County's development as a region for more than a century.

Map 5: Neighbourhood C - Context Map



RR 244 near Carbondale

C 1

residential character outcome

Supporting the agricultural industry by acknowledging the unique features of the working landscape.

Residential development in the Neighbourhood closely reflects the Primary Industry extraction activities historically found in the area. Following the closure of the coal mines, the Hamlets of Cardiff and Carbondale established themselves as residential subdivisions in the County. The desired intent is to accommodate agricultural lifestyles and to support existing rural communities, while recognizing the significant economic and cultural ties between the rural population and neighbouring Towns.

C.1 residential character output actions Sturgeon County will support the long-term outcome of the Neighbourhood by:

ⓐStrengthening the viability of the agricultural industry and lifestyles (outside of the Hamlets of Cardiff and Carbondale) through the implementation of Residential Type 4 policies.

ⓑDiscouraging the development or expansion of Confined Feeding Operations (as per the AOPA notification schedule detailed in Appendix A-2) from the municipal boundaries of Bon Accord, Gibbons, Morinville, Legal and Sturgeon County communities with densities in exceedance of Residential Type 4, in an effort to minimize land-use conflicts between working landscapes and residential communities.

ⓒEstablishing an administrative boundary for the Hamlets of Cardiff and Carbondale and implementing Residential Type 2 policies within the Hamlet of Cardiff. Until an administrative boundary is identified through the Planning Document process, existing land-use zoning shall be used to identify where Residential Type policies are applicable.

ⓓDeveloping a statutory Regional Planning Document for the Hamlet of Cardiff to give more certainty to local communities, investors, service providers and municipal neighbours regarding the Hamlets' long-term growth aspirations.

ⓔGiving regard to the existing residential character of the Hamlets of Cardiff and Carbondale by requiring proposals for residential infill density to ensure that proposed lot location, size and servicing complement the existing community. Depending on the scale and impact of the proposed development, the approving authority may require additional Planning Documents to accurately assess the application.

ⓕConsidering the diversification of residential options for the Hamlet of Carbondale through the allowance of increased residential densities to Residential Type 3 levels. Sturgeon County may contemplate applications that exceed Residential Type 4 levels, if the parcel densities range from five (5) to fifty (50) units per 64 hectares/160 acres and are detailed within an approved Local Planning Document.

ⓖLimiting the infill of existing country residential subdivisions and Hamlets, where no approved Plan is in place, until the applicant provides a Needs Assessment (deemed complete to the satisfaction of the approving authority) that demonstrates a need for the additional residential development proposed.

C 2

cultural vitality outcome

Building on the symbiotic relationships that exist between the agricultural community and neighbouring municipalities.

With its focus on open space and outdoor activities, Cardiff Park is Sturgeon County's premier recreation facility. The 160-acre park, located on a reclaimed/repurposed coal mine site, provides residents of all ages with a range of activities. The desired intent is to facilitate regional recreation and cultural activities that reflect the needs of both rural and urban communities.

C.2 cultural vitality output actions Sturgeon County will support the long-term outcome of the Neighbourhood by:

ⓐLocating institutional, recreation and cultural facilities that require significant infrastructure servicing in the Hamlet of Cardiff.

ⓑConsidering the development of a regional approach to funding recreation, arts and cultural facilities and open spaces that benefit the residents of the Neighbourhood and the Towns of Morinville, Gibbons, Bon Accord and Legal.

ⓒDeveloping, in conjunction with the Town of Morinville, walking/cycling linkages to recreation and cultural facilities in the Hamlet of Cardiff to the Town of Morinville.

ⓓWorking in conjunction with stakeholders and local communities to assist with the coordination of special events, activities and programs that promote the diversity of the Neighbourhood.

ⓔReviewing and developing a long-term management plan for Cardiff Park that incorporates key cultural and recreational assets.

Sunnyside School (1894-1947) - Sturgeon County

C 3

environmental stewardship outcome

Supporting agricultural sustainability by promoting best management practices that contribute to healthy land, water and air.

Significant potential exists for the Neighbourhood because of its rich soil and its proximity to a large and accessible marketplace. The soil in the Neighbourhood is primarily Class 1 (black chernozemic) - a high organic, nutrient rich soil with some natural resistance to drought. Shifts in bio-climate will continue to challenge agricultural operations, resulting in fluctuating crop yields due to changes in growing season and soil moisture levels. With continued growth and development in areas of historic mining activity (such as the Hamlets of Carbondale and Cardiff), additional due diligence on these lands, which are deemed hazardous, will be required to address ongoing development concerns. The desired intent is to ensure the future supply of agriculture lands for the long-term viability of farming operations.

C.3 environmental stewardship output actions Sturgeon County will support the long-term outcome of the Neighbourhood by:

ⓐPromoting regional dialogue between individual landowners and industry to determine environmental issues affecting agricultural producers across the Neighbourhood.

ⓑDeveloping Environmental Indicators to monitor identified environmental issues affecting agricultural producers. Information will be integrated into ongoing County operations and decision-making processes wherever possible.

ⓒPromoting subdivision layouts of Agricultural Parcels and Acreage Lots that focus Acreage Lots to one general area of the former quarter section, as a way to assist in the viability of agricultural operations, reduce land-use conflicts and encourage the retention of large tracts of agricultural land.

ⓓRequiring that proposed non-Primary Industry development on lands identified with Class 1 or Class 2 soil designations (as identified by the Canadian Land Inventory: Land Capability for Agriculture) support the agricultural industry or its associated operations.

ⓔLiaising with the Province of Alberta regarding long-term management plans for Manawan Lake and ensuring that any subsequent changes to the drainage network or potential flooding risks are communicated to local residents.

ⓕEnsuring that the shores of Manawan Lake will continue to be preserved in their natural state through the application of an environmental conservation district detailed in the Land Use Bylaw.

ⓖEnsuring the long-term environmental viability of the Roseridge Landfill by maintaining environmental compliance, completing regular compliance audits and meeting yearly groundwater quality performance standards.

ⓗRequiring due diligence be exercised on lands with historic mining activities (deemed Hazardous Lands) by restricting subdivision and development that would increase the risk of slumping and subsidence (see Historic Mining Activities Map in Appendix A-3).

C 4

economic health outcome

Encouraging value-added initiatives that recognize and contribute to agricultural industries.

Since European settlement in the late 1800s, livelihoods in the Neighbourhood have been intrinsically linked to the agricultural capacity and productivity of the land. Evolving from small family farms to larger cereal crop operations, it is anticipated that larger-scale farming operations will be the primary driver of the local economy. The desired intent is to support the viability of farming operations, and associated agricultural opportunities, by limiting proposed development that may negatively impact the agricultural industry.

C.4 economic health output actions Sturgeon County will support the long-term outcome of the Neighbourhood by:

ⓐEnsuring that proposed non-Primary Industry development in the Neighbourhood (and outside of the existing Hamlets) will have limited adverse impact on agricultural operations, activities or industry.

ⓑDeveloping, in conjunction with Sturgeon County agri-tourism and eco-tourism operators, a Tourism Strategy that supports sector growth while accounting for the impact to Sturgeon County's infrastructure networks.

ⓒEncouraging Non-Residential Type 4 HBB that complement local agricultural activities (such as agri-tourism, value-added agriculture and agricultural support services) and that meet the HBB requirements outlined in the Land Use Bylaw.

ⓓRequiring proposed or expanding development that exceeds Non-Residential Type 4, to relocate to identified Non-Residential centres in the County. HBBs, where the Non-Residential type and scale conflicts with residential uses, are to relocate to an existing Non-Residential Development Park or an appropriate location identified in an approved Planning Document.

ⓔPromoting value-added agricultural operations to locate to the lands indentifed in the Legal Crossroads Area Structure Plan.

ⓕCollaborating with the Town of Morinville in investigating Non-Residential development opportunities. The municipalities should develop an overall Regional Planning Document to take advantage of shared transportation networks and infrastructure investments.

ⓖConducting a Needs Assessment for future Non-Residential Development that investigates specific Non-Residential type and scale for the lands connected to the St. Albert West Regional Road, Highway 37 and Highway 2. Based upon a demonstrated need for Non-Residential development in this area, a Planning Document should be developed to provide direction regarding the transportation networks, infrastructure capacities, levy distribution and any associated community services requirements.

ⓗEnsuring that proposed development in close proximity to the Roseridge Landfill does not infringe on daily operations or future development plans of the facility.

ⓘApplying Canadian Forces Base (CFB) Edmonton's Approach Path overlay to ensure that the Federal Government's development restrictions are enforced and that proposed development does not negatively infringe on CFB operations (see Map 21 in Appendix A-3).

North of Mearns

C 5

infrastructure outcome

Ensuring infrastructure service delivery that meets the needs of the rural community and the residents of Cardiff.

While agriculture is viewed as a priority in the Neighbourhood, non-farm related uses and growth in existing Hamlets (and neighboring Towns) are acknowledged for their ability to enhance and strengthen agriculture networks. From a regional perspective, adequate drainage, servicing and infrastructure are required so that the overall quality of air, land and water is maintained for agricultural viability. The desired intent is to provide agricultural producers with the necessary support, services and infrastructure required to maintain agricultural viability and to support expanding communities with efficient and effective infrastructure services.

C.5 infrastructure output actions Sturgeon County will support the long-term outcome of the Neighbourhood by:

ⓐSeeking a regional understanding of the overall integrity of existing drainage networks and ensuring that any drainage improvements are made in consultation with the agricultural community.

ⓑDesigning and building road networks (outside of the existing Hamlets and country residential subdivisions) to support Primary Industry activities. Non-gravel serviced roadways will be limited to existing residential communities, unless the traffic counts support an identified long-range need for upgrading.

ⓒReviewing options to minimize the impact of non-farm traffic on farm traffic by providing safe turn-offs for farm vehicles on identified agricultural corridors with high volumes of traffic.

ⓓEngaging with and seeking formal commitment from the Provincial government regarding intersection improvements and highway re-alignments of Provincial regional roadway infrastructure, including (but not limited to) Highways 2, 28, 37 and 651.

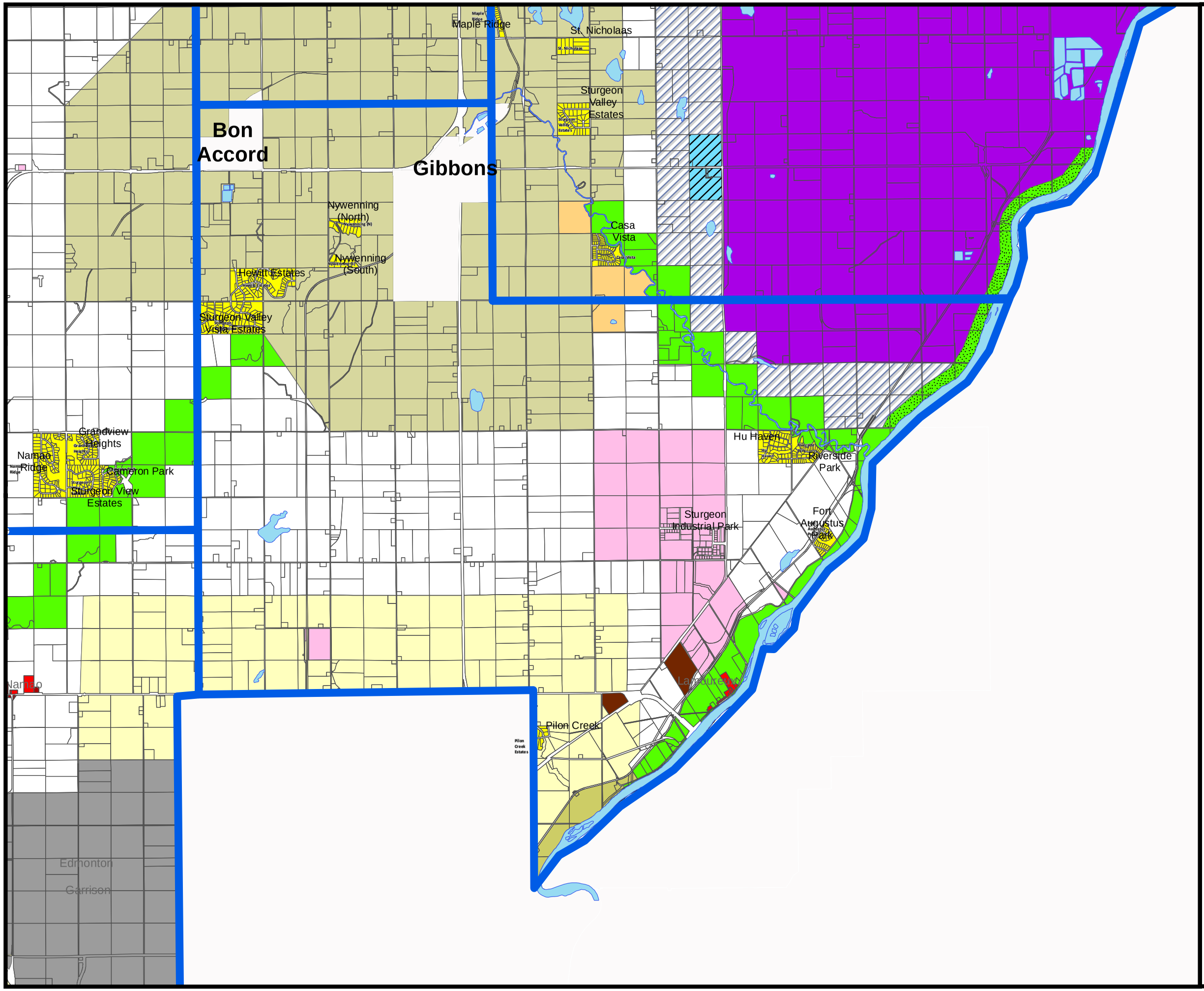
ⓔEnsuring that development in the Hamlet of Cardiff coincides with identified long-range municipal services capacities. Future areas for growth and development within the Hamlet's identified boundaries are to be prioritized based on community needs and relative costs. Areas not currently serviced by existing municipal infrastructure will continue to be responsible for independent service provision (to the most current Provincial standards).

ⓕRequiring residential infill (in the Hamlet of Cardiff) to demonstrate that servicing capacity is available and that connection to the existing municipal infrastructure systems will be completed as a condition of development.

ⓖCollaborating with the Roseridge Waste Management Services Commission to ensure that future infrastructure requirements account for the longterm viability and operation of the facility.

APPENDIX B – STURGEON COUNTY LAND USE BYLAW EXCERPTS

Part 9.0
Land Use District
Map 7



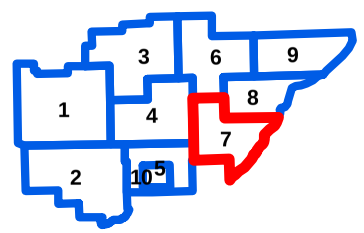
Legend

- Agricultural
- Agricultural - Heartland
- Agricultural - Calahoo/Villeneuve Area
- Agricultural - No Gravel Extraction
- Agricultural - Nature Conservation
- Agricultural - Nature Conservation - Heartland
- Country Residential - One
- Country Residential - Two
- Country Residential - Estate
- Hamlet Residential
- Gravel Extraction
- Airport
- Hamlet Commercial
- Highway Commercial
- Industrial - Heavy
- Industrial - Rural
- Business Industrial
- Industrial Service Centre - Heartland
- Edmonton Garrison
- Specific - Development Control (See S-DC Part 8 of Land Use Bylaw)
- Intermunicipal Fringe - A
- Intermunicipal Fringe - B
- Urban Fringe

N W E S

0 1.25 2.5

Kilometers



Mapping Consolidation: January 2015
Dept. Planning and Development

8.23 UF URBAN FRINGE DISTRICT

.1 Purpose

The general purpose of this district is to accommodate land uses in the fringe area that are compatible with Gibbons, Legal, Redwater and Bon Accord while having regard for the rural, agricultural character of the area.

.2 Permitted Uses

Accessory building and use
Bed and breakfast
Confined feeding operation with *farmstead* on a *lot* located a minimum of 1.0 mile from the boundary of an urban centre or hamlet
Day care
Extensive agricultural use with *farmstead* on a 32 ha (80 ac +/-) parcel
Extensive livestock with *farmstead* on a 32 ha (80 ac +/-) parcel
Family day home
Home Based Business (Level 1, 2, 3)
Intensive agricultural use with *farmstead*
Kennels, boarding and breeding use located more than 1000 ft. from a dwelling on an *adjacent lot*.
Mobile home
Oilfield Waste Biodegradation Treatment Facility only on NW 09-57-21 W4M
Single detached dwelling
Temporary dwelling

.3 Discretionary Uses

Aerodrome
Agricultural industrial use
Campground only on SE 27-56-23-W4M
Confined feeding operation with *farmstead* on a *lot* located between 0.5 mile and 1.0 mile from the boundary of an urban centre or hamlet
Gas processing plant
Group home
Guest ranch
Institutional use
Kennels, boarding and breeding use located less than 1000 ft. from a dwelling on an *adjacent lot*.
Public use
Recreational use
Resource extraction
Second *temporary dwelling* which is 32.4 ha (80 ac +/-) or larger
Sod farm with *farmstead*
Specialty agricultural use with *farmstead*

.4 Regulations

(a) Parcel Density – shall be as provided for in Section 8.2.4(a).

(b) Parcel size and Siting Criteria – shall be as provided for in Section 8.2.4 (b), (c) and (d)

(c) Minimum *Floor area* – 95 m^2 (1000 $ft.^2$) for a *farmstead*.

(d) Minimum Setbacks:

Front yard setback	▪ *35 m (114.83 ft.)**
Side yard setback	▪ *6 m (19.69 ft.); or* ▪ *10 % of the mean parcel width; or* ▪ *35 m (114.83 ft.)* if abutting a public road*
Rear yard setback	▪ *6 m (19.69 ft.)**

**Or as required by Alberta Transportation*

Accessory Building and Use:

Front yard setback:	▪ *20 m (65.62 ft.)**
Side yard setback:	▪ *3 m (9.84 ft.)** ▪ *20 m (65.62 ft.)* if abutting a public road*
Rear yard setback:	▪ *3 m (9.84 ft.)**

**Or as required by Alberta Transportation*

(e) No driveway shall be located closer than 100 m (330 ft.) from the intersection of two municipal roadways

(f) The minimum setback distance that shall be maintained between a dugout and property line is as follows;

(i) Front Yard: 40 m (131.23 ft.);
(ii) Side Yard: 15 m (49.21 ft.) or 40 m (131.23 ft.) if abutting a public road;
(iii) Rear Yard: 15 m (49.21 ft.).

(g) Campground

(i) A concept plan shall be submitted to the satisfaction of Council and prior to the submission of a plan of subdivision or the issuance of a development permit. The concept plan shall:

(a) Identify and mitigate public safety concerns, incompatible land use issues, environmentally sensitive areas, development constraints, and the topography of the site;

(b) Conduct a historical resource overview, from which the findings will determine if a historical resources impact assessment is required;

(c) Include the density and sequence of the development proposed, including the preliminary lot layout and the general location of the transportation networks, land use, public utilities and reserve land;

(d) Include and address the findings of a Transportation Impact Assessment, which must be designed and sealed by a professional engineer; and,

(e) Incorporate the site servicing report and how it conforms to the Sturgeon County General Municipal Servicing Standards, including (but not limited to), water distribution, sanitary sewer provision, stormwater management, internal road ways, landscaping, and street lighting.

(ii) An approved Roadside Development Application from Alberta Transportation shall be submitted, prior to issuance of a development permit; and

(iii) No permanent structures shall be located within the 1:100 year flood zone or land deemed hazardous.

In addition, at the discretion of the developing approving authority, the following may be requested as part of the development application:

(iv) A preliminary geotechnical investigation, conducted and sealed by a qualified professional;

(v) A biophysical assessment of the impacted site, including conservation measures for the natural features;

(vi) An environmental site assessment; and

(vii) Any additional information deemed necessary by Sturgeon County.

.5 Municipal Specific Use Provisions

The above referenced permitted and discretionary land uses are subject to the following provisions:

(a) Town of Legal

(i) Any enlargement of existing *Confined feeding operation*s is to be done in a direction away from the urban centre and not towards nor *adjacent* to the boundary of Legal. If an enlargement of an existing *livestock* operation increases by 25% or more within 2 miles of Legal's boundary, the application shall be referred to the Town for review and comment prior to a decision by the County.

(ii) Any new *Confined feeding operation*s located within 2 miles of Legal's boundary shall be referred to the Town for review and comment prior to a decision by the County.

(iii) Any new or expanding dog *kennel* within 2 miles of Legal's boundary shall be referred to the Town for review and comment prior to a decision by the County.

(iv) Any new or expanding multi-*lot country residential* subdivision within 2 miles of Legal's boundary require an *area structure plan* and shall be referred to the Town for review and comment prior to a decision by the County.

(v) Any new or expanding industrial or commercial development located within 2 miles of Legal's boundary requires an *area structure plan*.

(b) Town of Bon Accord

(i) Any new *Confined feeding operation* located within 2 miles of Bon Accord's boundary shall be referred to the Town for review and comment prior to a decision by the County. Any expansion of an existing *Confined feeding operation* currently within or on the edge of the 2-mile fringe area will be directed outward from Bon Accord's boundary.

(ii) A new or expanding multi-*lot* (more than 2 per *quarter section*) *country residential* subdivisions within 2 miles of Bon Accord's boundary require the preparation of an *area structure plan* and shall be referred to the Town for review and comment prior to a decision by the County.

(iii) Any new or expanding dog *kennel* within 2 miles of Bon Accord's boundary shall be referred to the Town for review and comment prior to a decision by the County.

(iv) A new or expanding industrial, institutional or commercial development within 2 miles of Bon Accord's boundary requires an *area structure plan* and shall be referred to the Town for review and comment prior to a decision by the County.

(v) Any new or expanding multi-*lot country residential* subdivision, industrial, commercial, institutional, Confined Feeding development located within the aquifer as shown on Map C1 shall be referred to the Town for review and comment prior to a decision by the County.

(c) Town of Gibbons

(i) Any new *Confined feeding operation*s within 2 miles of Gibbon's boundary shall be referred to the Town for review and comment prior to a decision by the County. Any expansion of an existing *livestock* operation located within the 2 mile fringe will be referred to the Town for review and comment prior to a decision by the County.

(ii) Any new or expanding multi-*lot country residential* subdivisions located within 2 miles of Gibbon's boundary require an *area structure plan* and shall be referred to the Town for review and comment prior to a decision by the County.

(iii) Any new or expanding dog *kennel*s located within 2 miles of Gibbon's boundary shall be referred to the Town for review and comment prior to a decision by the County.

(iv) Any new or expanding industrial and commercial developments located within 2 miles of Gibbon's boundary require an *area structure plan*.

(d) Town of Redwater

(i) Any new *Confined feeding operation*s located within 2 miles of Redwater's boundary shall be referred to the Town for review and comment prior to a decision by the County. The Town agrees to provide a letter not objecting to the

expansion of an existing *Confined feeding operation* located within the 2 mile fringe.

(ii) A new or expanding multi-*lot country residential* subdivision located within 2 miles of Redwater's boundary requires an *area structure plan* and shall be referred to the Town for review and comment prior to a decision by the County.

(iii) A new or expanding industrial, commercial or institutional development located within 2 miles of Redwater's boundary requires an *area structure plan*.

.6 Additional Regulations

Within this district, the permitted and discretionary land uses shall adhere to Part 6.0: General Regulations and Section 8.23.5. Where discrepancies exist between Part 6.0 and Section 8.23.5 regarding the development of *confined feeding operation*s, *kennel*s, multi-*lot country residential* subdivisions, industrial, commercial or *institutional* land uses, and the latter shall govern.

APPENDIX C – TOWN OF GIBBONS ANNEXATION LANDS SERVICING DESIGN BRIEF

TOWN OF GIBBONS
ANNEXATION LANDS

SERVICING DESIGN BRIEF – 4TH SUBMISSION

May 2017

Prepared for: Town of Gibbons
Presented by: Select Engineering Consultants Ltd.
Date: May 18, 2017

RPT-01-15032-3.2-Gibbons-DB-4th subm-170505.docx

Disclaimer

The attached Report has been prepared by Select Engineering Consultants Ltd. on behalf of the Client in accordance with the agreement between Select Engineering Consultants Ltd. and Client for the services described in the Report (the "Agreement"), and is subject to the budgetary, time and other constraints and limitations set forth in the Agreement.

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This Disclaimer is attached to and forms part of the Report.

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1.0 Executive Summary

1.1 Overview

The Town of Gibbons is spearheading processes per the Municipal Government Act to expand its municipal boundary by annexation of three (3) quarter sections of land along the southerly east municipal perimeter; presently Sturgeon County's jurisdiction. The three quarter sections, will be referred to as the Study Area, are geographically described as:

- Quarter Section – SW11 56-23-4
- Quarter Section – SW2 56-23-4
- Quarter Section – SW2 56-23-4

Acknowledging that growth and development of a community is influenced by its ability to provide the required municipal infrastructure, such as road networks, potable water, fire protection, sanitary and stormwater servicing.

The Town of Gibbons has retained Select Engineering Consultants (Select) to prepare a Servicing Design Brief to address long term planning for municipal servicing that will be required to develop a sustainable Commercial/Light Industrial district within the Study Area.

Select's planning and engineering team has reviewed various alternatives for networking and servicing schemes to address the Study Area. This Servicing Design Brief focuses on a conceptual scheme derived with input from the Town of Gibbons, Sturgeon County and Alberta Transportation.

This Design Brief concludes that the Highway 28A Neighborhood development can be successfully serviced and constructed to the Town's current Municipal Development Standards.

1.2 Transportation

Alberta Transportation plays a significant role within the Study Area. A Functional Planning Study was completed in 2011 for the portion of Highway 28A adjacent to and running through the Town of Gibbons. The ultimate expansion of this "Level 1" provincial highway will realize alignment changes that split the Study Area into two distinct halves, West and East; with the new Highway 28A alignment dedicated to a majority of the site running north/south through the center of the Study Area. The Town's industrial park development on the east side of Highway 28A will be impacted by the final highway alignment (outside of the Study Area).

The development strategy and phasing within the Study Area will be dependent on the progression of improvements projected for Highway 28A. Several options are referred to in Alberta Transportations' Functional Planning Study, each of which would have different impacts to phasing developments within the Study Area.

Local road networks will not be able to connect directly to Highway 28A. Local roads may relieve the requirement for an east service road within the Study Area. Ultimately, Township Road 560 (Vista Road) will not cross Highway 28A, but a flyover may be an alternative, but Alberta Transportation has already stated they would not fund this improvement.

1.3 Sanitary System

The sanitary sewer collection system within the proposed Annexation Lands was evaluated using the Excel computer based spreadsheet model. Based on the results of the sanitary sewer system assessment, it has been concluded that:

- The area within Annexation lands can be serviced by a gravity sewer system draining to a proposed lift station. From the lift station, the sewage flows will be discharged via a forcemain into the existing ACWRC wastewater system.
- Previous studies identified the existing ACWRC forcemain to be upgraded due to insufficient capacity for existing and future developments. This study is proposing the following modifications to the existing ACWRC wastewater system:
  - Instead of twining the existing 300 mm diameter sanitary forcemain, it is proposed a new ACWRC forcemain with a capacity to service existing and future developments
  - The existing 300 mm diameter ACWRC formain to be decommissioned and re-used as the forcemain servicing the proposed Annexation Lands.
  - The existing ACWRC lift station, including all the details of the tie in has to be confirmed and approved by the Wastewater Regional Commission
- The proposed Annexation Lands sanitary system will also be designed to have capacity to service the proposed country residential communities of maximum 2,000 people, located east of the annexation Lands, Casa Vista, Riverside --- and Sierra Ridge. These areas will be serviced by a forcemain proposed to discharge into the ACWRC wastewater system

1.4 Stormwater System

The stormwater management facility within the proposed Annexation Lands was evaluated using the XPswmm computer model. Based on the results of the stormwater management assessment, it has been concluded that:

- Based on the existing ground elevations, future Highway 28A re-alignment and existing drainage course, the Annexation Lands area is proposed to be serviced by a combination of three stormwater management facilities interconnected through a buried pipe installed at the NWL as follows:
  - Each additional interconnecting pipe will be sized to facilitate controlled peak outflow from each upstream stormwater facility to discharge into the downstream stormwater facility
  - SWMF 1 peak outflow will be regulated by the interconnecting storm pipe with SWMF 2 to discharge into the SWMF 2 at the maximum allowable flow rate of 2.5 L/s/ha.

- SWMF 3 peak outflow will be regulated by the interconnecting storm pipe with SWMF 2 to discharge into the SWMF 2 at the maximum allowable flow rate of 2.5 L/s/ha.
- SWMF 2 has the lowest water levels out of the three stormwater facilities. The cumulated peak outflow from all stormwater facilities will be regulated and discharged into the existing downstream drainage course by a lift station proposed to be located on the south side of SWMF 2. This lift station will be sized to discharge the control Peak outflow from the combined SWMF's at the maximum allowable flow rate of 2.5 L/s/ha.

1.5 Water System

The water system within the proposed Annexation Lands was evaluated using the WaterCAD/GEMS computer model. Based on the results of the water system assessment, it has been concluded that:

- The proposed water system within the Annexation Lands will be serviced by a looped system extended from the existing water system servicing Town of Gibbons, as illustrated in Figure 5.4
- The proposed watermains is comprised of pipe sizes between 250 and 300 mm diameter
- To meet the required 235 L/s fire flows, the water system is recommended to be extended, as a minimum, as illustrated in Figure 5.4
- The existing water system capacity within the Town of Gibbons was not evaluated as it was not part of this assessment. However, an updated analysis of the "2006 Water Distribution System Assessment" it is recommended to be undertaken by the Town

1.6 Cost Estimate

Cost Estimates based on the conceptual design level and current (2017) construction dollars are as follows:

Table 1.1: Preliminary Cost Estimate – Underground Work Summary

Item No.	Description	Annexation Lands Stages				Total
		Stage 1	Stage 2	Stage 3	Stage 4	
1	Sanitary System	$ 2,450,000	$ 150,000	$ 600,000	$ 950,000	$4,150,000
2	Storm System	$ 1,300,000	$ 600,000	$ 5,030,000	$2,200,000	$ 9,130,000
3	Watermain	$ 850,000	$ 300,000	$ 900,000	$ 1,100,000	$ 3,150,000
	Total	$ 4,600,000	$ 1,050,000	$ 6,530,000	$ 4,250,000	**$16,430,000**

Table 1.2: Preliminary Cost Estimate – Earthwork and Roadways Summary

Item No.	Description	Option 1 (SWMF discharges through Lift station and Forcemain)	Option 2 (SWMF discharges by gravity)
1	Earthwork	$ 18,750,000	$ 9,150,000$
2	Roadways	$ 6,700,000	$ 6,700,000
	Total	**$ 25,450,000**	**$ 15,850,000**

2.0 Introduction

2.1 Background

The Town of Gibbons is spearheading processes per the Municipal Government Act to expand its municipal boundary by annexation of three (3) quarter sections of land along the southerly east municipal perimeter; presently Sturgeon County's jurisdiction. The three quarter sections, will be referred to as the Study Area, are geographically described as:

- Quarter Section – SW11 56-23-4
- Quarter Section – SW2 56-23-4
- Quarter Section – SW2 56-23-4

Town of Gibbons is looking to expand by absorbing three quarter sections of land into its boundary.

Select Engineering Consultants was retained by the Town of Gibbons to prepare a Water, Sanitary and Storm Sewer Servicing Design Brief (SDB) to the Town of Gibbons Annexation Land Development.

2.2 Purpose

Acknowledging that growth and development of a community is influenced by its ability to provide the required municipal infrastructure, such as road networks, potable water, fire protection, sanitary and stormwater servicing.

The purpose of this report is to prepare a high level servicing concept to support the annexation process of the proposed three quarter sections within the Study Area. This SDB is intended to outline the proposed stormwater management, sanitary collection and potable water servicing systems that will be required to develop Commercial/Light Industrial districts within the Study Area.

The following tasks were performed to develop the servicing schemes within this SDB:

- Review relevant reports and documents to obtain background information;
- Collection of relevant data;
- Develop reasonable layouts for local road networking, stormwater management, sanitary and water servicing; and
- Determine development implications to stormwater runoff and allocate adequate land use to facilitate stormwater management features.

2.3 Study Area

Approximately three quarters of land (191.12 hectares) located north of Township Road 560 (Vista Road) and east of the existing registered Highway 28A road right of way. The central portion of these subject lands will ultimately be acquired by Alberta Transportation to accommodate a realigned future Highway 28A corridor. This wide corridor separates the subject lands into two distinct east and west parcels.

Except for a small environmental reserve (ER) parcel conceptually identified in the south plan area, the east parcel is all designated for Industrial Commercial land use in this Servicing Design Brief.

The plan area west of the future Highway 28A corridor has a range of land use categories designated within its boundary. Municipal Reserve, environmental reserve and a stormwater management facility are designated in the triangular south plan area of the west parcel. Primary Commercial and Industrial Commercial land uses are designated as the parcel widens out to the north. A 30m wide local road provides a safe and convenient internal loop and access to all parcels. Three accesses are provided from the existing Highway 28A road allowance. This minimizes direct access onto Highway 28A. Accesses must be a minimum of 400m apart unless otherwise approved through a Transportation Impact Assessment. When the future Highway 28A corridor is constructed the status of the existing Highway 28A right of way will be downgraded and it will fall under the Town of Gibbon's jurisdiction at that time.

Figure 2.1 illustrates the Location and Study Area Plan.

2.4 Land Use and Site Topography

The proposed three quarter sections incorporate primarily light industrial and Highway Commercial land use.

The existing ground contours were generated in AutoCAD Civil 3D from LIDAR data and shows that the existing topography has a gentle slope with an overall 5.0 m change in elevation. A high elevation of 757.0m exists in the north east of the Plan area to a low of approximately 752.0m in the south west. Drainage generally flows from the north east to the lower south. The Study Area drains east to the Sturgeon River.

Generally the soils are predicted to be similar to those found within the Town of Gibbons area and would be considered suitable for light industrial/commercial development. A geotechnical investigation will be completed prior to the detailed design.

Figure 2.2 illustrates the Land Use and Topography overall plan of the Study Area and is summarized in the following table:

Table 2.1: Annexation Lands – Land Use Summary

Description	Area (ha)
Light industrial	62.14
Environmental Reserve	10.08
Municipal Reserve	12.39
SWMF	9.91
Highway 28A	51.33
Total	**191.12**

2.5 Existing Site Description

A topographical Lidar data of the subject lands provided to Select Engineering Consultants Ltd. by a third party was used to generate surface contours as well as determine locations of tree stands, drainage features and any other physical features within and adjacent to the site. Aerial imagery and field evaluation were also used to identify site-specific information and indicators of wetlands in the project area.

The lands within the study area are primarily used for agricultural purpose. Among this farmed area, a shallow natural drainage course flows west to south east through the middle of the proposed development. The flows continue eastward past the easterly boundary of the site. This existing drainage channel will be used as the peak flow discharge of the proposed stormwater facilities servicing the development.

To date, a Biophysical Environmental Assessment within the study area has not been completed. As wetlands play a fundamental role in water quality, biodiversity, as well as having a recreational value within the area, a detailed assessment will be completed to clearly identify any wetlands classification within the site, before the detailed design stage and prior to submission of Water Act Approval.

2.6 Staging Plan

The development of the Study Area is proposed to be developed in four (4) key stages. The staging of development is based on accessibility to/from Highway 28A (in its current 2-lane configuration). **Figures 2.3 to Figure 2.7** illustrate the proposed staged sequences as summarized in the following table:

Table 2.2: Annexation Lands – Proposed Staging

Description	Area (ha)
Stage 1	31.60
Stage 2	22.10
Stage 3	44.10
Stage 4	33.70
Others (SWMF, ER, MR, etc.)	59.62
Total	**191.12**

2.7 Supporting Documentation

The following reports have been used in support for the SDB of this area:

Town of Gibbons Water and Sanitary Sewer Assessment report completed by UMA (currently AECOM).

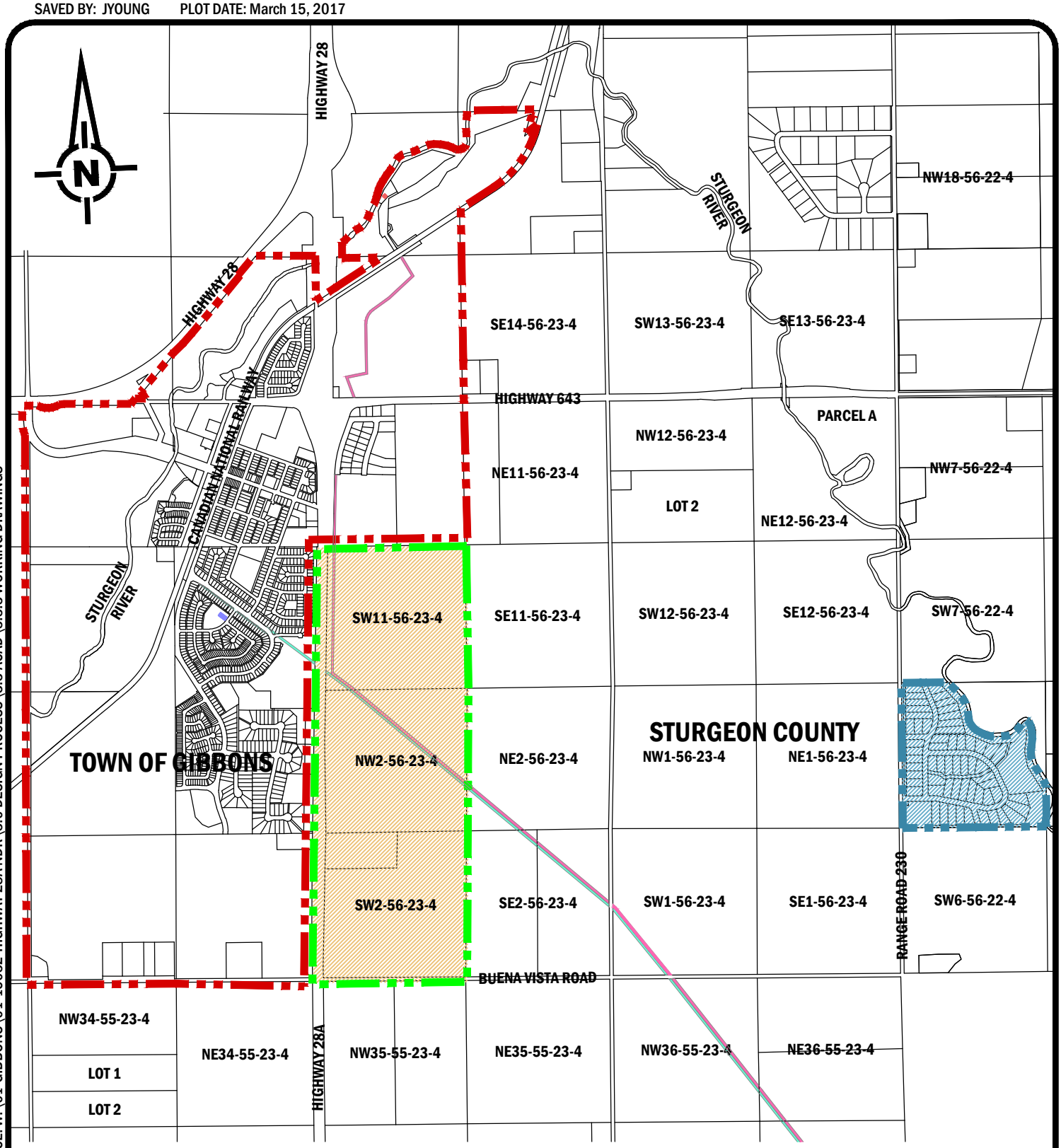
Town of Gibbons Sanitary Servicing Concept Update, August 2007 letter report completed by UMA (currently AECOM), attached in **Appendix A**.

Highway 28/28A Stormwater Management-Functional planning study completed by AMEC for Alberta Transportation, and attached in **Appendix B**.

Town of Gibbons Water Model (by others) provided by the Town.

Town of Gibbons Municipal Servicing Standards, August 2003.

SAVED BY: JYOUNG PLOT DATE: March 15, 2017



LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- COUNTRY RESIDENTIAL DEVELOPMENT (VISTA HOMES)
- TRUNK SEWER PIPELINE RIGHT OF WAY
- WATER SUPPLY LINE RIGHT OF WAY
- SANITARY LIFT STATION
- WATER RESERVOIR AND PUMPHOUSE

TOWN OF GIBBONS ANNEXATION LANDS

SERVICING DESIGN BRIEF

LOCATION AND STUDY AREA PLAN

0 300 600 900 m

SCALE 1:30,000

FIGURE 2.1

FILENAME: 01-15032-F2.1.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

FILENAME: 01-15032-F2.2.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

NE11 56-23-4
SE11 56-23-4
NE2 56-23-4
SE2 56-23-4
NW11 56-23-4
SW11 56-23-4
NW2 56-23-4
SW2 56-23-4
SE3 56-23-4
LOT 1
PARCEL A
STURGEON COUNTY
URW
TWP ROAD 560
HIGHWAY 28A
45 STREET
47 STREET
48 STREET
49 STREET
51 AVENUE
50 AVENUE
48 AVENUE
46 AVENUE
45 AVENUE
44 AVENUE
LUNNON DRIVE
39 AVENUE
LANDING TRAIL DRIVE
36 AVENUE
BUENA VISTA ROAD

LEGEND

	GIBBONS MUNICIPAL BOUNDARY
	STUDY AREA BOUNDARY
C-1	PRIMARY COMMERCIAL
M-1	INDUSTRIAL COMMERCIAL
MR	MUNICIPAL RESERVE
ER	ENVIRONMENTAL RESERVE
SWMF	STORM WATER MANAGEMENT FACILITY
SP	SEMI - PUBLIC
UR	URBAN RESERVE
658	MAJOR CONTOUR (1m INTERVAL)
657.5	MINOR CONTOUR (0.5m INTERVAL)
R-1	SINGLE FAMILY RESIDENTIAL
R-1D	INNOVATIVE DESIGN RESIDENTIAL
R-S	SINGLE FAMILY LARGE LOT RESIDENTIAL
R-2	TWO FAMILY RESIDENTIAL
R-3	MEDIUM DENSITY RESIDENTIAL
R-5	HIGH DENSITY RESIDENTIAL
R-MHP	MANUFACTURED HOME PARK RESIDENTIAL

0 75 150 225 m SCALE 1:7500

TOWN OF GIBBONS ANNEXATION LANDS

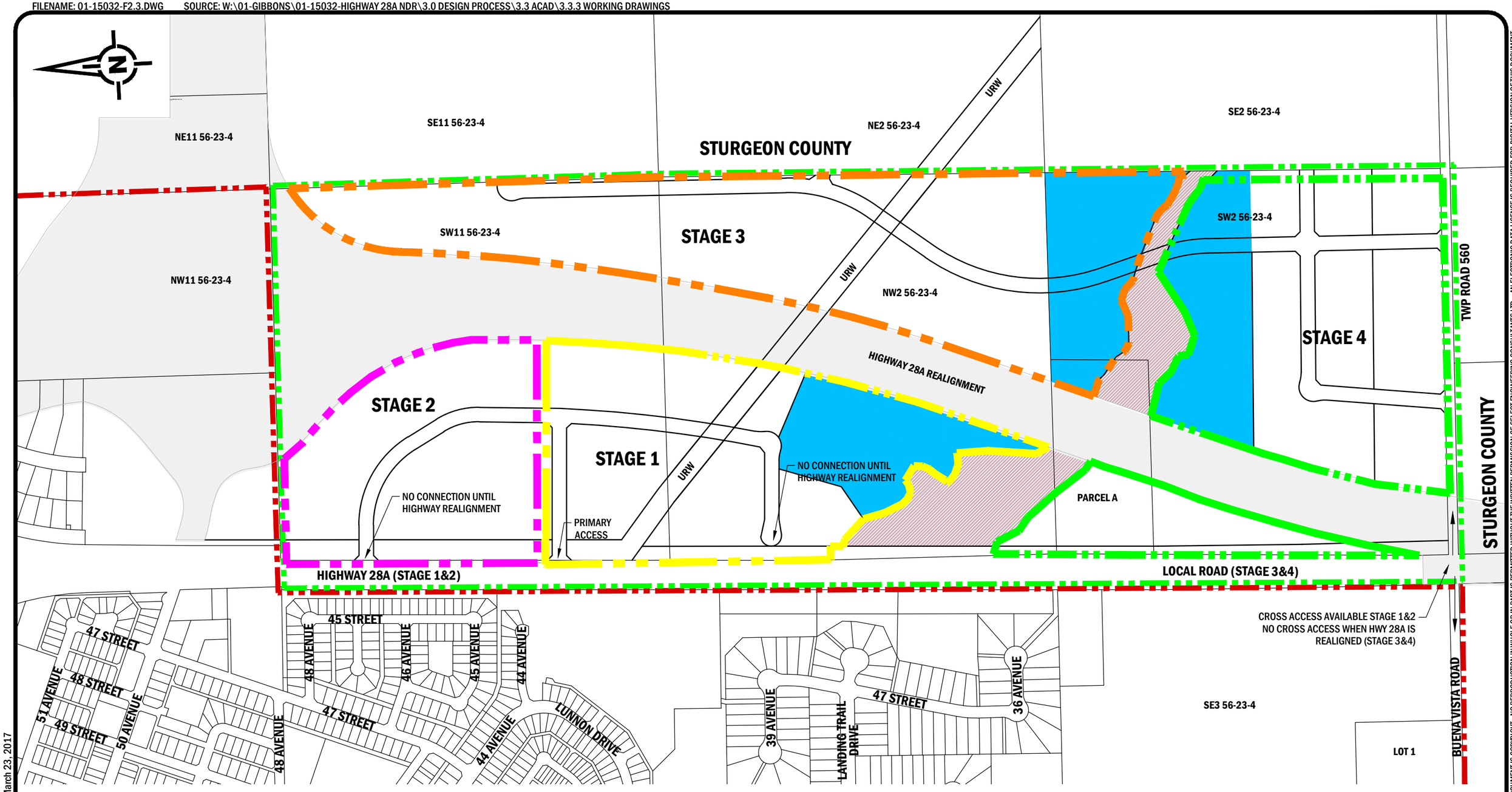
SERVICING DESIGN BRIEF

LAND USE AND SITE TOPOGRAPHY

FIGURE 2.2

SAVED BY: KDANIELS PLOT DATE: March 15, 2017

FILENAME: 01-15032-F2.3.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS



LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS

STAGING

- STAGE 1
- STAGE 2
- STAGE 3
- STAGE 4

0 75 150 225 m

SCALE 1:7500

TOWN OF GIBBONS ANNEXATION LANDS

SERVICING DESIGN BRIEF

STAGING PLAN

FIGURE 2.3

SAVED BY: FZERFASS PLOT DATE: March 23, 2017

FILENAME: 01-15032-F2.4.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

NE11 56-23-4
SE11 56-23-4
NE2 56-23-4
SE2 56-23-4
STURGEON COUNTY
SW11 56-23-4
SW2 56-23-4
NW11 56-23-4
NW2 56-23-4
URW
URW
URW
TWP ROAD 560
HIGHWAY 28A REALIGNMENT
31.6 HA
PARCEL A
PRIMARY ACCESS
HIGHWAY 28A (STAGE 1&2)
LOCAL ROAD (STAGE 3&4)
45 STREET
47 STREET
48 AVENUE
46 AVENUE
45 AVENUE
44 AVENUE
51 AVENUE
48 STREET
50 AVENUE
49 STREET
47 STREET
48 AVENUE
44 AVENUE
LUNNON DRIVE
39 AVENUE
LANDING TRAIL DRIVE
47 STREET
36 AVENUE
SE3 56-23-4
BUENA VISTA ROAD
LOT 1
STURGEON COUNTY

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- STAGE BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS

0 75 150 225 m

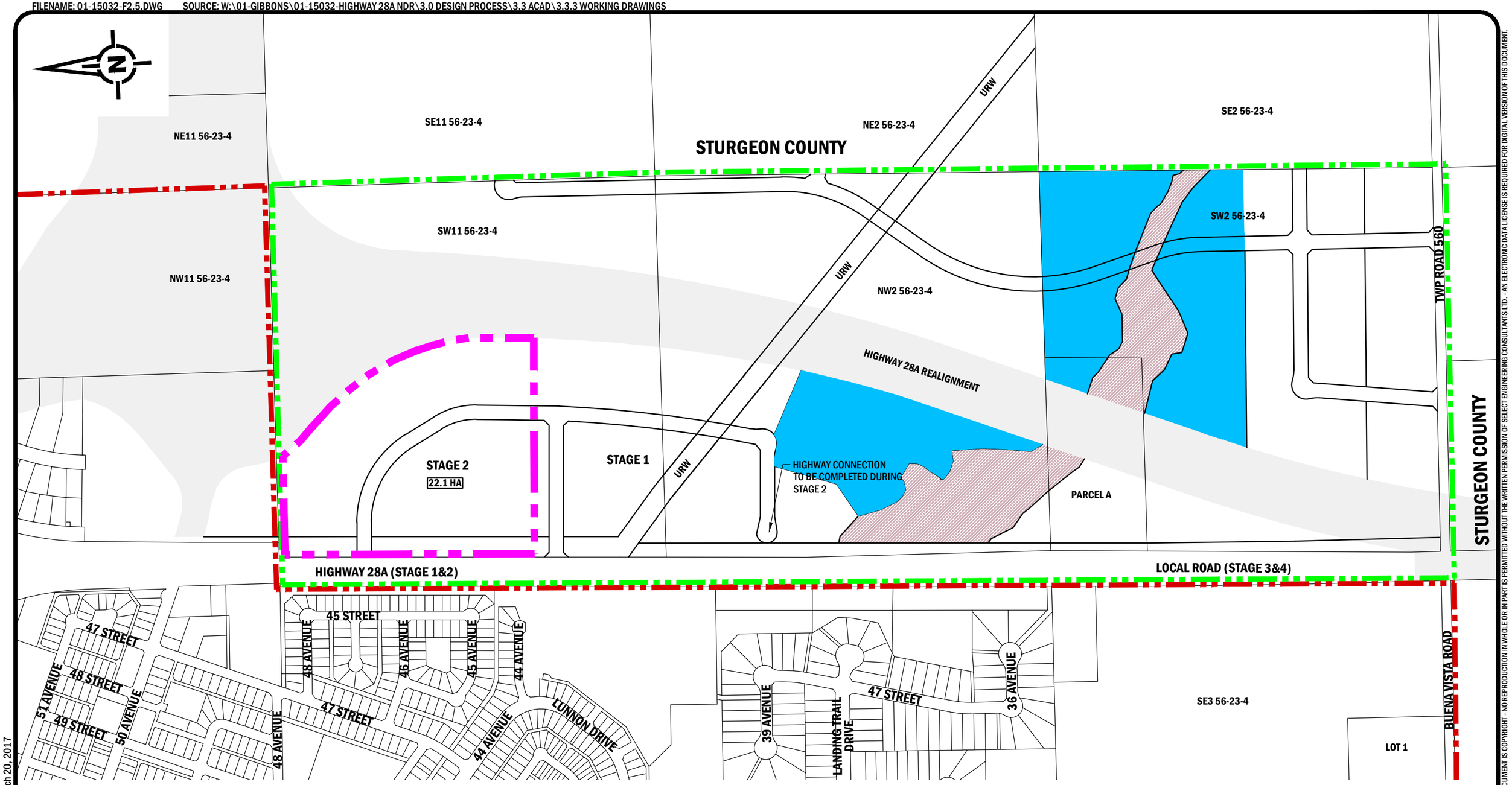
SCALE 1:7500

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
STAGING PLAN
STAGE 1

FIGURE 2.4

SAVED BY: JYOUNG PLOT DATE: March 20, 2017

FILENAME: 01-15032-F2.5.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS



LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- STAGE BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS

0 75 150 225 m

SCALE 1:7500

SAVED BY: JYOUNG PLOT DATE: March 20, 2017

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
STAGING PLAN
STAGE 2

FIGURE 2.5

FILENAME: 01-15032-F2.6.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

NE11 56-23-4

SE11 56-23-4

NE2 56-23-4

SE2 56-23-4

STURGEON COUNTY

SW11 56-23-4

STAGE 3
44.1 HA

SW2 56-23-4

NW11 56-23-4

NW2 56-23-4

URW

URW

URW

HIGHWAY 28A REALIGNMENT

TWP ROAD 560

STAGE 2

STAGE 1

PARCEL A

STURGEON COUNTY

HIGHWAY 28A (STAGE 1&2)

LOCAL ROAD (STAGE 3&4)

45 STREET

47 STREET

48 AVENUE

46 AVENUE

45 AVENUE

44 AVENUE

51 AVENUE

48 STREET

50 AVENUE

49 STREET

47 STREET

48 AVENUE

44 AVENUE

LUNNON DRIVE

39 AVENUE

LANDING TRAIL DRIVE

47 STREET

36 AVENUE

SE3 56-23-4

BUENA VISTA ROAD

LOT 1

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- STAGE BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS

0 75 150 225 m

SCALE 1:7500

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
STAGING PLAN
STAGE 3

FIGURE 2.6

SAVED BY: JYOUNG PLOT DATE: March 20, 2017

FILENAME: 01-15032-F2.7.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

NE11 56-23-4
SE11 56-23-4
NE2 56-23-4
SE2 56-23-4
STURGEON COUNTY
SW11 56-23-4
STAGE 3
SW2 56-23-4
NW11 56-23-4
NW2 56-23-4
URW
URW
URW
TWP ROAD 560
STAGE 4
33.7 HA
HIGHWAY 28A REALIGNMENT
STAGE 2
STAGE 1
PARCEL A
STAGE 4
0.79 HA
STURGEON COUNTY
HIGHWAY 28A (STAGE 1&2)
LOCAL ROAD (STAGE 3&4)
45 STREET
47 STREET
48 AVENUE
46 AVENUE
45 AVENUE
44 AVENUE
51 AVENUE
48 STREET
50 AVENUE
49 STREET
47 STREET
48 AVENUE
44 AVENUE
LUNNON DRIVE
39 AVENUE
LANDING TRAIL DRIVE
47 STREET
36 AVENUE
SE3 56-23-4
BUENA VISTA ROAD
LOT 1

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- STAGE BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS

0 75 150 225 m

SCALE 1:7500

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
STAGING PLAN
STAGE 4

FIGURE 2.7

SAVED BY: JYOUNG PLOT DATE: March 20, 2017

3.0 Highway 28A and Local Access

3.1 Background

The Town of Gibbons is located along Highway 28A which has been classified as a "Level 1" roadway (equivalent to freeway/expressway) by Alberta Transportation authorities. Level 1 roadways accommodate the movement of people, goods and services mainly through inter-provincial and international travel.

Alberta Transportation funded the 'Highway 28/28A Functional Planning Study' in 2011 which provides a guide to transition the current 2 lane Highway 28A to an ultimate 6 lane divided roadway with a major interchange planned at 50 Avenue and Highway 643. The transition of this highway involves changes to the current roadway alignment to better skirt the Town of Gibbons community.

The implementation of phasing the realignment of Highway 28A within the annexation lands will result with land ownership impacts and access to the current industrial park located south east of the existing Highway 28A and Highway 643 intersection. The highway realignment within the annexation area also opens up the opportunity to provide for additional developable commercial and light industrial based business parks on both sides of Highway 28A.

For the purposes of this servicing report, all phased municipal servicing of the lands within the annexation program will follow the phasing strategy predicted by Alberta Transportation.

3.2 Purpose

The purpose of this review is to evaluate the proposed plan layout within the Study Area affected by the phasing the construction of the development within the Study Area; and propose key public access locations (and timing) that adhere to both local municipal standards as well as Alberta Transportation guidelines and specifications. The 'Highway 28/28A Functional Planning Study' report was the basis for all references to Alberta Transportation's position within this report.

3.3 Study Area

Although AT's Highway 28/28A Functional Planning Study encompasses approximately 20.3 km of Highway 28A between Highway 37 and Highway 651, the portion within the Study Area is only approx. 2.5km.

3.4 Phasing of Highway 28A/28 Corridor

Alberta Transportation funded the 'Highway 28/28A Functional Planning Study' in 2011 which provides a guide to transition the current 2 lane Highway 28A to an ultimate 6 lane divided roadway with a major interchange planned at 50 Avenue and Highway 643.

Staged options were reviewed in the Functional Plan Study and are summarized for reference:

Stage 1- Option A (**See Appendix B**):

- A low cost solution for a first stage to meet forecasted traffic demands between the Town of Gibbons and Highway 37;
- Poses a potential 10-15 year delay of the re-alignment around the Town of Gibbons;
- Includes twinning Highway 28A between Highway 37 and Twp Rd 560;
- Includes widening Highway 28A to a 4 lane undivided roadway within the vicinity of the Town of Gibbons;
- Traffic signals would be required at the intersection of Highway 28A and 50 Avenue.

Stage 1- Option B (**See Appendix B**):

- Development of a 'freeway' standard between Highway 37 and Highway 28A/28 interchange;
- The highway alignment will be relocated around the Town of Gibbons;
- Highway cross section will be 4 lane divided;
- Construction of a new CN Rail structure and two bridge structures over the Sturgeon River.
- No improvements to the current Highway 28A roadway would be required, and would most likely be re-dedicated as a local 2 lane service road.

Stage 2- (**See Appendix B**):

- Twinning of Highway 28 continues north of Highway 28A/28 interchange to approx. 1.6km north of Twp Rd 570;
- Stage 2 are outside of the annexation lands in the Town of Gibbons and do not interfere with development within the annexation lands.

Stage 3- (**See Appendix B**):

- Intersection upgrades to diamond configurations at Twp Rd 554, Highway 643 and Twp Rd 564;
- Only the diamond interchange improvements at Highway 643 are within the annexation lands but will not impose development restrictions within the annexation lands per the proposed local road networking.

Stage 4- (**See Appendix B**):

- The three diamond interchanges will be upgraded to ultimate configurations that include loops and wider overpass structures;
- Highway widening from 4 lane to 6 lane configuration between Highway 37 and Twp Rd 554;
- Highway widening from 4 lane to 8 lane configuration between Twp Rd 554 and Twp Rd 564 – these improvements will be within the annexation lands but will not impose development restrictions within the annexation lands per the proposed local road networking.

At the time of the Functional Planning Study, Alberta Transportation's preferred staging strategy to transition this highway alignment is referenced as follows:

First stage of the ultimate improvements:

- Include/combine Stage 1, Option B and Stage 2
  - The twinning of Hwy 28A:03 from north of Highway 37 to the Town of Gibbons south municipal boundary;
  - The realignment of Highway 28A:03 around the Town of Gibbons;
  - Development of new structures under the CN Rail Corridor and over the Sturgeon River, connecting to the existing Highway 28A/28 interchange; and
  - Continuing the twinning to the north study limits in the vicinity of Township Road 571.

The timeline for the highway alignment relocation has not been determined to date and will be based on factors that Alberta Transportation will consider.

3.5 Local Road Networks

The local road network within the annexation lands is essentially split into two separate road networks due to the re-alignment of Highway 28A through the middle of the study area. The westerly portion lies between the existing community of Gibbons and the ultimate Highway 28A alignment, while the easterly portion is separated from mainstream Gibbons by the ultimate Highway 28A alignment.

All local roads will be developed as urban roadways with consideration to the Town of Gibbon's Municipal Development Standards and to a Commercial/Industrial standard. Road allowances will encompass all required municipal infrastructure including potable water, sewers and storm water diversion/collection.

Although a geotechnical investigation has not been completed within the study area at this time, it is predicted that the local soils are similar to those found within the Town of Gibbons and surrounding developments constructed to date and are therefore suitable for traditional roadway construction.

West Local Road Network

The current alignment of Highway 28A aligns north/south and consists of a 2 lane bi-directional highway with a posted speed limit of 80 km/h. This portion of highway is governed by Alberta Transportation along with their regulations including minimum spacing requirements to accommodate local road intersection placement.

The Town of Gibbons has been investigating an additional access to Highway 28A approximately 800m south of 50th Avenue (approx. 44th Avenue). This proposed intersection along the current highway would serve as an alternate route for residents of Gibbons to access the highway. This same location has been selected as the initial local road access to the westerly portion of the annexation lands.

As mentioned, this proposed access location for Phase 1 development within the Study Area is approximately 800m south of 50 Avenue which may be considered by Alberta Transportation as a reasonable intersection to intersection distance given the imminent re-alignment of the highway.

It is presumed that when Highway 28A is re-aligned through the Study Area, that the current highway will be reduced to a local road, allowing additional access points to the proposed westerly local road network for future phasing of development.

If Alberta Transportation entertains constructing two additional lanes parallel to the current highway to function as an undivided 4 lane road (as opposed to re-aligning the highway away from Gibbons), considerations for this proposed access at 44 Avenue may be more prudently reviewed. This twinning alternative for the Highway 28A upgrade may defer reasonable accesses for development of the west local road network. Interim solutions would need to be developed to ensure adequate emergency access/egress could be maintained until the Highway 28A alignment is re-aligned and the current highway alignment is downgraded to local road status, allowing for less restrictive intersection spacing.

Ultimately, the local road network for the westerly portion of the study area will entertain three public accesses along the previous Highway 28A. – **See Figure 2.2**.

East Local Road Network

The re-alignment of Highway 28A though the middle of the Study Area will in essence create a transportation road block between the easterly developable lands within the Study Area and the Town of Gibbons community. A direct road access will not be achievable between the westerly and easterly annexation lands due to the highway alignment through the middle of the Study Area.

The current road access at Highway 28A and Twp Rd 560 (Vista Road) is planned to be sustained in the interim. Should Alberta Transportation twin Highway 28A to a 4-lane roadway within its current alignment, this intersection at Twp Rd 560 will remain.

When Alberta Transportation re-aligns Highway 28A through the Study Area, the intersection at Twp Rd 560 will be reconfigured to allow service road access only. No direct access to Highway 28A will be permitted at this location. A possible alternative to provide a crossing of Highway 28A at this location would be an overpass that would not be funded by Alberta Transportation, but would need to meet their approval.

The Highway 28/28A Functional Planning Study illustrates a service road alignment along the easterly side of the proposed Highway 28A re-alignment that would function as a perimeter roadway for local accesses for the easterly developments. A candid discussion with Alberta Transportation regarding the requirement for this east service road was held. Considerations to not require this easterly service road and utilize the proposed local roadway system may be better suited for the proposed development. Further discussions with Alberta Transportation are encouraged to determine a feasible solution on this matter.

The south easterly local road network is proposed to include two intersections along Twp Rd 560 (Vista Road). This local road system will lead to the north to allow development of the remaining developable lands within the Study Area. Allocation for future road network extensions to the east (Sturgeon County) is accounted for in the conceptual layout. This allows for an integral local road network designed for future generations of municipal expansion.

The easterly local road network will have connectivity to Highway 643 to the north via a service road configuration. This access connection will be required outside of the Study Area and should be considered before development occurs to ensure that adequate access is readily available for local emergency vehicles.

4.0 Sanitary Sewer System

4.1 Existing Sanitary Sewer System

The existing sanitary sewer system within the Town of Gibbons is serviced by a combination of gravity and lift station/forcemain system. The sanitary sewers convey flows to the Town of Gibbons Final Lift Station, which pumps to the ACWRC Sanitary Lift Station located north of the Town of Gibbons and east of Highway 28A. Based on the October 2010 ACRWC Commissioning Plan for the Town of Gibbons PS Flow control, the Town of Gibbons is allowed a maximum of 70.0 L/s to discharge into the ACRWC lift station. A copy of this document is attached in **Appendix A-0**. The ACRWC lift station is part of the Alberta Capital Region Wastewater Commission (ACRWC) and consists of the following components:

- The ACRWC lift station currently has two pumps, but has space for 6 pumps, as identified in the "Town of Gibbons Sanitary Servicing Concept Update attached in **Appendix A**.
- 300 mm diameter forcemain conveying the sewage flows from the above lift station to the existing gravity trunk than to the ACRWC wastewater treatment plant. The maximum capacity of the existing forcemain is estimated based on a maximum velocity of 2.0 m/s, to 140 L/s (see **Appendix A**). However the Commission allows for a maximum 70 L/s to discharge into the lift station from the Town of Gibbons. For any additional flow, it will be required the ACRWC approval.
- The ACRWC lift station also receives wastewater from the Town of Bon Accord wastewater lagoons. These lagoons discharge off-peak time, early mornings or late evenings, unless the levels in the lagoons are too high. There is the potential to operate the wastewater system such that Bon Accord discharges only when there is capacity at the ACRWC lift station.
- Any increase in the pumping capacity in the ACRWC lift station will also affect the downstream trunk (NERTS Line) which should be examined as development proceeds.

Town of Gibbons Sanitary Sewer Servicing Concept Update, August 2007 letter report identified the sanitary sewer system concept servicing scheme for the proposed Annexation Land. This letter is an update to the "Town of Gibbons Water and Sanitary Sewer Assessment", 2006 report and describes two servicing alternatives for the proposed Study Area, see attached **Appendix A**. This report indicates that the existing 300 mm diameter ACRWC forcemain requires to be upgraded, (it is recommended to be twinned), to have the capacity to service the Town of Gibbons and all the other stakeholders.

Based on the above studies, the existing sanitary sewer system doesn't have the capacity to service the proposed Annexation Lands without upgrades. Therefore, due to the lack of capacity and existing ground elevations, the proposed Study Area will be service by its own sanitary sewer system discharging into the existing ACRWC wastewater system through a dedicated lift station and forcemain.

The major changes from the above previous reports are:

- The total annexation land area (Study Area)

- The land use of the annexation area (Study Area)

This Servicing Design Brief report will address the sanitary servicing scheme for the proposed Study Area.

Figure 4.1 illustrates the existing sanitary sewer system.

4.2 Design Criteria and Standards

The sanitary sewer system has been developed based on the Town of Gibbons Municipal Servicing Standards.

The applicable design criteria are listed as follows:

Commercial / Industrial Flows:

- Average Sewage Flow Rate = 6,170 L/ha/d
- Minimum Peaking Factor of 3.0 shall apply

Extraneous Flow Allowances:

- Sag Manhole Inflow = 0.40 L/s per sag manhole
- Infiltration Allowance = 0.28 L/s/ha
- Additional 0.05 L/s/ha for commercial, industrial land

Pipe Sizing:

- Minimum Pipe Size – Commercial / Industrial = 250 mm
- Required Pipe Capacity determined using Manning's Formula using a minimum 'n' value of 0.013 and the following formula:

$$\text{Required sewer capacity} = \frac{\text{Estimated Design Flow}}{0.86}$$

- Minimum flow velocity = 0.6 m/sec
- Maximum flow velocity = 3.0 m/sec

4.3 Proposed Sanitary Sewer System

The annexation lands are proposed to be serviced by a sanitary system as illustrated in **Figure 4.2** as described in details below:

- As described under Section 4.1, the existing ACWRC sanitary system doesn't have the capacity to service additional lands at this time.
- The study area within the Annexation Lands is proposed to be serviced by a gravity sewer system, comprised in pipe sizes between 250 mm and 300 mm diameter.

- The gravity sewer system will collect the sewage within the Study Area to the proposed Annexation Lands lift station. The detailed calculation of the sewage flow generated by the study area is summarized in **Table 4.0** and **Figure 4.3** illustrates the gravity sanitary sewer system and catchment area.

- The Annexation Lands lift station is proposed to be located on the west side of the Study Area, south of the existing ACRWC forcemain.

PROJECT: Annexation Lands
CLIENT: Town of Gibbons

Table 4.0
SANITARY SEWER DESIGN CALCULATIONS

Assumptions:
n = 0.013
Population Density (P/ha)=
MH Sumps (MH/ha)=1/3

Flows:
Per Capita (m3/c/d)= 4E-06
MH Sump Inflow (m3/s/MH)= 0.00000
MH Flowby and Pipe Infiltration (m3/s/ha)= 0.00028
Industrial (m3/s/ha)= 0.00007
6170
350

Project # 01-15032
Modified from:
Designed by: FZ
Modified by:
Checked by:
Date:
Revised Date:

							Population			Flow (m3/s)						Pipe					
Location	Up MH	DN MH	Comm Area Ha	Total Comm Ha	ZONE	# of Lots	Pop. Density	Pop.	Total Pop.	Peak Factor	Peak Flow	MH Sump Inflow	MH Inflow Pipe Infilt	Design Flow	Req'd Cap	Cap. Flow m3/s	Len. m	Size mm	Slope %	Full Flow Vel m/s	Des. Flow Vel m/s
Annexation Lands	MH10	MH20	22.44	22.44	ind	0	0	0.0	0.00	3.000	0.005	0.0000	0.0031	0.0079	0.0092	0.0315	414.00	250	0.28	0.6	0.5
	MH20	MH30	19.80	42.24	ind	0	0	0.0	0.00	3.000	0.009	0.0000	0.0059	0.0150	0.0174	0.0315	182.00	250	0.28	0.6	0.6
	MH40	MH40-1	5.47	5.47	ind	0	0	0.0	0.00	3.000	0.001	0.0000	0.0008	0.0019	0.0023	0.0315	414.00	250	0.28	0.6	0.4
	MH40-1	MH50	13.04	18.51	ind	0	0	0.0	0.00	3.000	0.004	0.0000	0.0026	0.0066	0.0076	0.0315	182.00	250	0.28	0.6	0.5
	MH60	MH50	17.12	17.12	ind	0	0	0.0	0.00	3.000	0.004	0.0000	0.0024	0.0061	0.0071	0.0315	414.00	250	0.28	0.6	0.5
	MH50	MH30	0.00	35.63	ind	0	0	0.0	0.00	3.000	0.008	0.0000	0.0050	0.0126	0.0147	0.0315	182.00	250	0.28	0.6	0.6
	MH30	MH70	3.22	81.09	ind	0	0	0.0	0.00	3.000	0.017	0.0000	0.0114	0.0287	0.0334	0.0530	182.00	300	0.30	0.7	0.8
	MH80	MH90	24.85	24.85	ind	0	0	0.0	0.00	3.000	0.005	0.0000	0.0035	0.0088	0.0102	0.0315	414.00	250	0.28	0.6	0.5
	MH90	MH100	7.86	32.71	ind	0	0	0.0	0.00	3.000	0.007	0.0000	0.0046	0.0116	0.0135	0.0315	182.00	250	0.28	0.6	0.6
	MH100	MH70	0.00	32.71	ind	0	0	0.0	0.00	3.000	0.007	0.0000	0.0046	0.0116	0.0135	0.0454	182.00	300	0.22	0.6	0.5
	MH70	LS	0.00	113.80	ind	0	0	0.0	0.00	3.000	0.024	0.0000	0.0159	0.0403	**0.0469**	0.1022	182.00	375	0.34	0.9	0.9
Sturgeon County Residential	MH-	MH-		51.00	ind	0	0	0.0	2000.00	3.000	0.024	0.0000	0.0071	0.0314	0.0366	0.0512	414.00	300	0.28	0.7	0.8

- The proposed Annexation Lands lift station will be sized to service the lands within the Study Area.

- As described under Section 4.1, the existing ACRWC forcemain is recommended to be twinned to meet the existing and future developments sanitary sewage flow requirements. However for the forcemain located between the ACWRC lift station and intersection with the Range Road 230 (see **Figure 4.4**), after a preliminary assessment, it is proposed the following alternative to the sanitary system:

  - Rather than twinning the existing 300 mm diameter ACWRC forcemain, a new forcemain is proposed to be installed with the sewage flow capacity to service the ultimate developments.

  - The existing 300 mm diameter ACRWC forcemain within this area to be decommissioned.

  - A section of the forcemain located between the ACRWC lift station and the proposed Annexation Lands lift station is proposed to be re-used and extended to the Annexation Lands lift station becoming the forcemain servicing these developments, by reversing the direction of flow.

  - The existing ACWRC lift station to be modified to allow the reversed forcemain to discharge into it.

  - The remaining forcemain between the Annexation Lands lift station and Range Road 230 to be abandoned.

  - The remaining of the existing ACWRC forcemain, east of the Range Road 230 it is proposed to be extended north along the Range Road 230 to the Sturgeon County residential community, and service this area.

- The size of the new forcemain servicing ACRWC lift station will be determined at the preliminary design or detail design stage.

- Any work involving the ACRWC wastewater system will be done in agreement and as approved by the Wastewater Commission.

The detailed characteristics of the proposed Annexation Lands lift station and forcemain servicing the Study Area and the Sturgeon county residential lands are summarized below:

Table 4.1: Proposed Lift Stations and Forcemain

Description	Peak Flow L/s	Forcemain	
		Diameter mm	Velocity m/s
Annexation Lands lift station	46.7	300	0.88
Sturgeon County lift station	36.6	300	0.69

The above forcemains are recommended to be further assessed at the detailed design stage.

FILENAME: 01-15032-F4.1.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

SE14 56-23-4
NE11 56-23-4
SE11 56-23-4
NE2 56-23-4
SE2 56-23-4
STURGEON COUNTY
SW11 56-23-4
SW2 56-23-4
NW11 56-23-4
NW2 56-23-4
SW14 56-23-4
SE3 56-23-4

SANITARY FORCEMAIN TO ACWRC TREATMENT FACILITY
FLOW
URW
ACWRC SANITARY SEWER FORCEMAIN
HIGHWAY 28A REALIGNMENT
PARCEL A
ACWRC LIFT STATION
LIFT STATION
41 STREET
43 STREET
ACWRC SANITARY SEWER FORCEMAIN
HIGHWAY 28A
HIGHWAY 28A
45 STREET
47 STREET
48 STREET
49 STREET
53 AVENUE
50 AVENUE
48 AVENUE
38 AVENUE
46 AVENUE
45 AVENUE
44 AVENUE
47 STREET
44 AVENUE
CUNNION DRIVE
39 AVENUE
LANDING TRAIL DRIVE
47 STREET
36 AVENUE
LIFT STATION
FINAL LIFT STATION

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- SANITARY FORCEMAIN PIPELINE RIGHT OF WAY

- 200mm SANITARY MAIN
- 250mm SANITARY MAIN
- 300mm SANITARY FORCEMAIN
- MANHOLE

0 75 150 225 m SCALE 1:7500

TOWN OF GIBBONS ANNEXATION LANDS

SERVICING DESIGN BRIEF
EXISTING SANITARY SEWER SYSTEM

FIGURE 4.1

SAVED BY: JYOUNG PLOT DATE: March 20, 2017

EXISTING 300mm ACWRC FORCEMAIN TO BE USED TO CARRY THE FLOWS FROM THE ANNEXATION LANDS LIFT STATION TO THE EXISTING ACWRC LIFT STATION

EXISTING ACWRC LIFT STATION TO BE MODIFIED BASED ON THE TWO PROPOSED FORCEMAINS

HIGHWAY 28

HIGHWAY 28A

RANGE ROAD 230

HIGHWAY 643

STURGEON COUNTY

53 STREET

PROPOSED LIFT STATION SERVICING ANNEXATION LANDS, THE LIFT STATION WILL USE THE EXISTING UPSTREAM 300mm ACWRC FORCEMAIN TO DISCHARGE INTO THE EXISTING ACWRC LIFT STATION. SEE FIGURE 4.3 & 4.4 FOR DETAIL

STURGEON COUNTY RESIDENTIAL

EXISTING 300mm ACRWC FORCEMAIN TO BE ABANDONED

PROPOSED NEW ACWRC FORCEMAIN (SIZE TO BE DETERMINED)

PROPOSED LIFT STATION

BUENA VISTA ROAD

TWP ROAD 560

HIGHWAY 28A

STURGEON COUNTY

PROPOSED STURGEON COUNTY FORCEMAIN

EXISTING 300mm ACRWC FORCEMAIN TO BE ABANDONED

PROPOSED STURGEON COUNTY CONNECTION LOCATION, PROPOSED STURGEON COUNTY FORCEMAIN TO CONNECT TO THE EXISTING 300mm ACRWC FORCEMAIN AND TO BE USED TO SERVICE VISTA HOMES

TO ACRWC WASTE WATER LAGOONS

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- COUNTRY RESIDENTIAL DEVELOPMENT (VISTA HOMES)
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS

	EXISTING	PROPOSED
200mm SANITARY MAIN		
250mm SANITARY MAIN		
300mm SANITARY MAIN		
375mm SANITARY MAIN		
FORCEMAIN		
MANHOLE		
FORCEMAIN ROW		

0 250 500 750 m

SCALE 1:25000

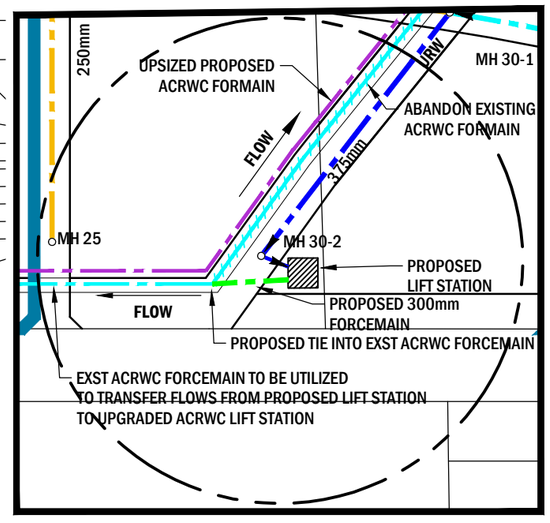
TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
PROPOSED SANITARY SEWER SYSTEM
LIFT STATION & FORCEMAIN

FIGURE 4.2

FILENAME: 01-15032-F4.3.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

NE11 56-23-4
SE11 56-23-4
NE2 56-23-4
SE2 56-23-4
NW11 56-23-4
SW11 56-23-4
NW2 56-23-4
SW2 56-23-4
SE3 56-23-4
LOT 1

A=5.47 ha
MH 40
250mm
A=13.04 ha
MH 40-1
250mm
MH 50
ABANDON EXISTING FORCEMAIN
FLOW
URW
A=17.12 ha
250mm
MH 60
INSTALL NEW FORCEMAIN
(SIZE TO BE DETERMINED)
SANITARY SEWER FORCEMAIN
HIGHWAY 28A
TWP ROAD 560
250mm
MH 120
MH 110
250mm
A=24.85 ha
MH 85
250mm
MH 105
MH 80
UPSIZED PROPOSED
ACRWC FORMAIN
A=22.44 ha
MH 20
250mm
MH 30
ABANDON EXISTING
ACRWC FORMAIN
MH 30-1
FLOW
375mm
URW
250mm
300mm
A=19.80 ha
PARCEL A
A=7.86 ha
A=3.22 ha
MH 70
300mm
MH 100
250mm
MH 90
INSTALL NEW FORCEMAIN
(SIZE TO BE DETERMINED)
SANITARY SEWER FORCEMAIN
EXISTING FORCEMAIN TO BE USED FOR
NEW INSTALLED LIFT STATION
MH 10
FLOW
MH 25
MH 30-2
PROPOSED
LIFT STATION
EXST 300mm ACRWC FORCEMAIN
FLOW
PROPOSED 300mm
FORCEMAIN
PROPOSED TIE INTO EXST ACRWC FORCEMAIN
LOCAL ROAD
LOCAL ROAD
EXST ACRWC FORCEMAIN TO BE UTILIZED
TO TRANSFER FLOWS FROM PROPOSED LIFT STATION
TO UPGRADED ACRWC LIFT STATION
BUENA VISTA ROAD
45 STREET
47 STREET
48 STREET
49 STREET
51 AVENUE
50 AVENUE
48 AVENUE
46 AVENUE
45 AVENUE
44 AVENUE
LUNNON DRIVE



LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- COUNTRY RESIDENTIAL DEVELOPMENT (VISTA HOMES)
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- SANITARY CATCHMENT AREA

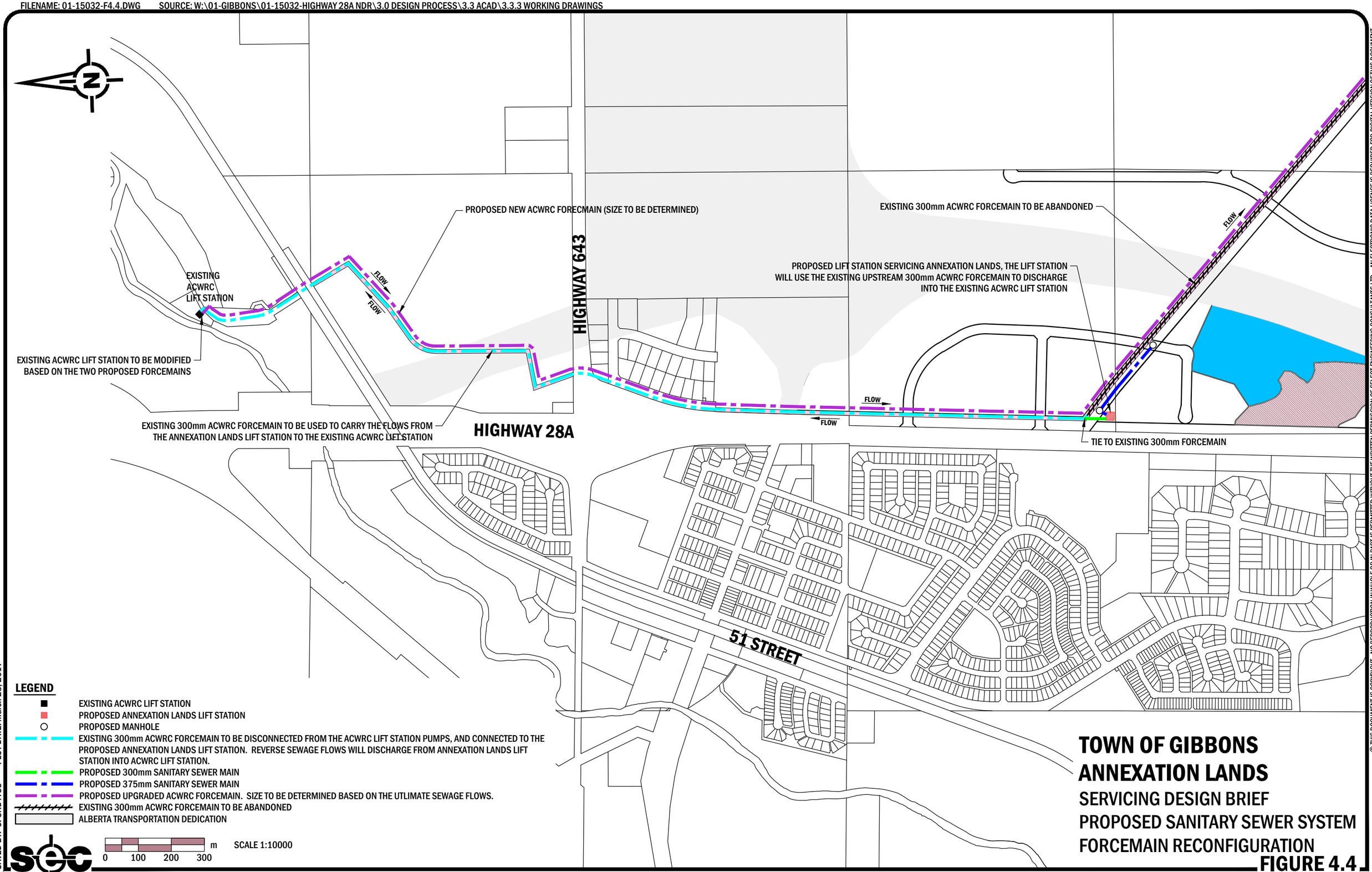
	EXISTING	PROPOSED
200mm SANITARY MAIN		
250mm SANITARY MAIN		
300mm SANITARY MAIN		
375mm SANITARY MAIN		
FORCEMAIN		
MANHOLE		
FORCEMAIN ROW		

0 75 150 225 m SCALE 1:7500

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
PROPOSED SANITARY SEWER SYSTEM
CATCHMENT AREA

FIGURE 4.3

SAVED BY: JYOUNG PLOT DATE: March 23, 2017



LEGEND

- EXISTING ACWRC LIFT STATION
- PROPOSED ANNEXATION LANDS LIFT STATION
- PROPOSED MANHOLE
- EXISTING 300mm ACWRC FORCEMAIN TO BE DISCONNECTED FROM THE ACWRC LIFT STATION PUMPS, AND CONNECTED TO THE PROPOSED ANNEXATION LANDS LIFT STATION. REVERSE SEWAGE FLOWS WILL DISCHARGE FROM ANNEXATION LANDS LIFT STATION INTO ACWRC LIFT STATION.
- PROPOSED 300mm SANITARY SEWER MAIN
- PROPOSED 375mm SANITARY SEWER MAIN
- PROPOSED UPGRADED ACWRC FORCEMAIN. SIZE TO BE DETERMINED BASED ON THE UTLIMATE SEWAGE FLOWS.
- EXISTING 300mm ACWRC FORCEMAIN TO BE ABANDONED
- ALBERTA TRANSPORTATION DEDICATION

0 100 200 300 m SCALE 1:10000

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
PROPOSED SANITARY SEWER SYSTEM
FORCEMAIN RECONFIGURATION
FIGURE 4.4

5.0 Storm Water Management Concept

5.1 Background

Based on the existing ground contours the Study Area drains from north west to lower south where is an existing low area identified as been the appropriate proposed location for the proposed stormwater management facilities.

A stormwater assessment for the future Highway 28A realignment area was completed by AMEC in 2011, and attached in **Appendix B**. The Highway 28A realignment within the Study Area was identified as Area 6 in this report and indicated a required storage volume of 11,601.5 m3 to be stored based on a release rate of 4.0 L/s/ha. This stormwater volume will be added to the calculated stormwater volume generated by the Study Area as described in the sections below.

To date, there is no stormwater management plan for the Town of Gibbons Study Area.

5.2 Minor Storm System

Figure 5.1 illustrates the proposed overall plan concept for the minor storm system within the Study Area.

The minor storm was design for 1:5 year service level and will consists of a piped network sized to convey runoff from minor storm events to the proposed SWMF's. Design was based on the Rational Method. Storm pipe sizes range from 450 mm to 1,500 mm. Sewer design calculations are provided in **Table 5.1.**

5.3 Major Storm System

Figure 5.2 illustrates the proposed overall plan concept for the major storm system within the Study Area.

The above plan shows the proposed three quarters as been serviced by the proposed three SWMF's, located south, on each side of the future Highway 28A realignment. The SWMF's for this development will be servicing both, the major storm system (1:100 year storm) and the minor storm system (1:5 year storm). One storm facility (SWMF 1) will be located north of the existing drainage area (ER), west of Highway 28A, the second storm facility (SWMF 2) will be located north of the existing drainage area (ER), east of Highway 28A, and the third storm facility (SWMF3) will be located south of the existing drainage area (ER), east of the Highway 28A. The location of the three stormwater management facilities is determined by the existing drainage course, running west to south east on the south side of the Study Area. All three facilities will be interconnected through a storm pipe at the NWL, working together as one stormwater facility, discharging at a controlled flow rate through a proposed lift station and forcemain located at the SWMF 2, into the existing drainage course.

The stormwater management system will be designed to service the study area as described below:

- 1:5 year storm event
- 1:100 year storm event

There are no requirements for any off-site drainage from the surrounding lands.

5.4 Design Criteria and Standards

The storm sewer system has been designed based on the Alberta Environment and the Town of Gibbons current Municipal Servicing Standards.

5.4.1 Minor Drainage System

- Basin areas greater than 65 hectares to be supported by a complete hydraulic model.
- Basin areas smaller than 65 hectares a Rational Method is acceptable where; Q=C*I*A / 360.
- A 5 year rainfall intensity table to be used in accordance with the applicable design standards.
- Maximum inlet time of 15 minutes shall be used for Residential Areas. Commercial and Industrial areas must be less than 15 minutes due to site imperviousness subject to percent imperviousness as well as the servicing area.
- Applicable runoff coefficients are:

Parks	0.10
Residential	0.40
Industrial, Commercial and Multi Family	0.65
Paved and Roof areas	0.90

Pipe Sizing:

- Minimum pipe size 300mm
- Storm Trunk Sewers servicing areas greater that 30ha shall be designed to accommodate the anticipated design flow multiplied by a safety factor of 1.25
- Pipe Capacity determined using Manning's Formula using a minimum 'n' value of 0.013
- Minimum flow velocity = 0.6 m/sec
- Maximum flow velocity = 3.0 m/sec or (special provisions for erosion and impact)

5.4.2 Major Drainage System

The following Alberta Environment and the Town of Gibbons design criteria were used in the assessment of the SWMF's:

- Provide adequate storage volume based on the 1:100 year-24 hour Huff distribution storm event.
- The Peak Outflow is based on a controlled release rate of 2.5 L/s/ha. This flow rate is less than the 4.0 L/s/ha used for the SWMF design for the Highway 28A SWMF report completed by AMEC. The reason for a lower release rate is to decrease the peak outflow discharging into the existing drainage course downstream of this development. Due to the existing topographic conditions, this drainage course has a limited capacity. Therefore a lower release rate will help to mitigate this issue.
- Peak runoffs for return periods greater than a 1:5 year storm event shall be multiplied by 1.1 (1:10 to 1:25), 1.2 (1:25 to 1:50) and 1.25 (1:50 to 1:100) to a maximum value of 0.95. The runoff coefficients are described in detailed below.
- Grassed Areas & Parks 0.10
- Single Family Homes 0.55
- Industrial 0.60
- Neighborhood Commercial 0.70
- Multifamily Residential 0.65
- Large Commercial 0.90
- Pavement & Roof Area 0.95
- Ponding depths shall not exceed 0.25m along major system conveyance components.
- Flow depths shall not exceed 300mm during the 1:100 year storm event on Arterial Roads.
- Provide a minimum 0.50m freeboard to protect against flooding from storm events higher than the one designed for.
- Maximum interior side slopes in active storage zone: 7:1
- Stormwater Management Facility (SWMF)

5.4.2.1 Stormwater Management Facilities (SWMF)

The following criteria were considered in sizing the SWMF's:

- Develop the overall Master Drainage Plan.
- Define the applicable drainage basins(s).
- Define the most critical storm event in accordance with the applicable design standards.
- Define the applicable storage alternative(s) and capacities.
- Low Impact Development principles.
- Computer Simulation Model Development.
- Hydraulic Parameters.

5.4.2.2 Storm Lift Station Design

- The Town's Engineer shall approve the configuration of the pump well.
- The location shall allow for easy access by road.
- All piping shall be minimum 100 mm in diameter and 900 kPa pressure rating.
- The storage capacity of the wet well shall be determined such that each pump won't start more than 5 to 6 times in 1 hour period.

The Hydraulic assessment was completed using the XP-SWMM v.2014 computer simulation model to determine peak flows and water levels for 1:100 year design event.

The Horton's Infiltration method was used to estimate runoff, with the general model input parameters as provided in the following table:

Table 5.1: General Model Input Parameters

Parameters	Value	Unit
Horton Initial Infiltration Rate	75	mm/h
Horton Final Infiltration Rate	2.5	mm/h
Horton Decay Rate	0.00115	1/s
Depression Storage for Impervious Area	2	mm
Depression Storage for Pervious Area	8	mm
Surface Roughness for Impervious Area	0.015	Manning's n
Surface Roughness for Pervious Area	0.25	Manning's n

5.5 Hydraulic Assessment

5.5.1 Minor Drainage System Assessment

The minor system was designed for 1:5 year service level plus 25% for areas greater than 30 ha. The piped systems were sized to convey runoff from minor storm events to the SWMF's as described below:

Stage 1 & 2 is comprised of industrial land use and will be serviced by a storm pipe system varying in sizes from 450 mm to 1500 mm diameter. The proposed minor system will discharge into the proposed SWMF at two locations. One storm system will discharge through the proposed 1500mm storm inlet located north of the SWMF 1, and the second storm system will discharge through the proposed 675 mm storm inlet located west of the SWMF 1.

Stage 3 is comprised of industrial land use and will be serviced by a storm pipe system varying in sizes from 450 mm to 1350 mm diameter. The proposed minor storm system within Stage 3 will convey flows to the proposed SWMF 2 through the proposed 1350 mm diameter inlet located north west of the SWMF 2.

Stage 4 is comprised of industrial land use. The development will be serviced by a storm pipe system varying in sizes from 450 mm to 1,350 mm diameter. The minor system will convey flows to the proposed SWMF 3 through the proposed 1350 mm diameter inlet located north west of the SWMF 3.

Two preliminary grading options were assessed for the study area.

Under first option, the finished grade elevations were determined based on the proposed stormwater management facilities water levels. These were established based on the capability of the storm outlets to discharge downstream by gravity. This option required a large amount of Fill over the entire site, over 2,000,000 m3 of material, making the site undevelopable.

Under second option, the finished grade elevations were determined to match as close as possible the existing ground and to meet the minimum required cover over the minor storm system. Preliminary grade determined that the Fill/Cut within the site can balance. However, this option will require for the proposed water levels of the stormwater facilities to be lowered. By lowering the SWMF water levels, the storm facilities won't be able to discharge downstream by gravity and a lift station will be required. The estimated cost of the proposed storm lift station is estimated to be much lower than the cost of filling the site as determined under first option. Therefore the proposed stormwater management assessment was done based on the second option.

Figure 5.1 illustrates the proposed minor storm water system.

The minor system catchment area is mainly following the catchment area of the major system.

Preliminary storm inverts were determined based on the storm sewer condition to meet the minimum pipe cover over the pipes. The lowest invert of each SWMF inlet was also determining the NWL for each storm facility.

The detailed calculation of the storm minor system and the catchment area plan (**Figure C.1**) is attached in **Appendix C**.

5.5.2 Major Drainage System Assessment

The following drainage basins have been defined define for each stormwater management facility and incorporated into the stormwater management plan:

Table 5.2: Proposed Drainage Basins

Description	Drainage Basin	Area (ha)			Receiving Waterbody
		Annexation Lands	Highway 28A	Total	
SWMF 1	Basin 1	56.09	14.47	70.56	Sturgeon River
SWMF 2	Basin 2	40.24	18.64	58.88	Sturgeon River

SWMF 3	Basin 3	42.27	8.56	50.83	Sturgeon River
ER				10.85	
Total				**191.12**	

Figure 5.2 identifies the major storm drainage basins and the proposed location of the SWMF's.
Stormwater Management Facility locations were determined based on the existing topography and are generally located at the lowest lying area of each basin.

As described under section 5.5.1, the storm minor system and overall grading of the site will determine the water levels of each storm facility. Preliminary design has determined that the minor storm system is the determining factor for site grades. The key elevations of the proposed three (3) SWMF's used in the hydraulic model assessment are summarized in the following table:

Table 5.3: Proposed SWMF's Water Levels

Description	SWMF 1	SWMF 2	SWMF 3
Normal Water Level (NWL), m	648.20	648.00	650.00
High Water Level (HWL), m	650.50	650.00	651.50
FREEBOARD (FB), m	651.50	651.50	652.00

The proposed NWL's are below the adjacent drainage course elevation. Therefore the SWMF's are proposed to be interconnected as follows:

- All SWMF's will be connected through a buried pipe installed at the NWL of the upstream facility (SWMF 1).
- Each additional interconnecting pipe will be sized to facilitate controlled peak outflow from each upstream stormwater facility to discharge into the downstream stormwater facility:
  - SWMF 1 peak outflow will be regulated by the interconnecting storm pipe with SWMF 2 to discharge into the SWMF 2 at the maximum allowable flow rate of 2.5 L/s/ha.
  - SWMF 3 peak outflow will be regulated by the interconnecting storm pipe with SWMF 2 to discharge into the SWMF 2 at the maximum allowable flow rate of 2.5 L/s/ha.
  - SWMF 2 has the lowest water levels out of the three facilities. The cumulated peak outflow from all storm facilities will be regulated and discharged into the existing downstream drainage course by a lift station proposed to be located on the south side of SWMF 2. This lift station will be sized to discharge the control Peak outflow from the combined SWMF's at the maximum allowable flow rate of 2.5 L/s/ha.

The peak outflow for each SWMF is summarized below:

Table 5.4: Proposed SWMF's Peak Outflows

Location	Peak Outflow, L/s
SWMF 1	178.15
SWMF 2*	449.05
SWMF 3	125.40

*The peak outflow includes the release controlled flow from SWMF 1 (178.15 L/s), the release controlled flow from SWMF 2 (145.5 L/s) and the release controlled flow from SWMF 3 (125.4 L/s).

As indicated above, the peak outflow from SWMF 1and 3 will be conveyed to SWMF 2. SWMF 2 will be conveyed to the existing drainage course utilizing a lift station and forcemain. The main characteristics of the lift station and forcemain are summarized below:

Table 5.5: Proposed Lift Station and Forcemain

Description	Location	Peak Outflow, L/s	Forcemain		
			Size, mm	Approx. Length, m	Velocity, m/s
Storm Lift Station	SWMF 2	449.05	650	80	2.0

The details of the storm lift station and forcemain will be determined at the detailed design stage of the development.

Based on the above hydraulic parameters, the storm water model results are attached in **Appendix C** and summarized in the following table:

Table 5.6: SWMF Model Results

Description	Storm Event	Storage Volume*, m3
SWMF 1	100 yr, 24h Huff	59,410
SWMF 2	100 yr, 24h Huff	55,450
SWMF 3	100 yr, 24h Huff	37,530

Total Storage Volume	**152,390**

* The Highway 28A/28 Functional Planning Study, May 31, 2011 report completed by AMEC, indicates that the stormwater within the Highway right-of-way will require 11,601.5 m3 of storage volume based on 1:100 year storm event. This represents approximately 8% of the total required storage within the Annexation Lands. The Highway 28A contributory area was included in the sizing of the SWMF's based on a 2.5 L/s/ha release rate.

This hydraulic assessment provides storm sizing and water levels developed through XP-SWMM computer simulation modeling for the stormwater management facility proposed for the development within the Study Area in the Town of Gibbons. However, the SWMF's are recommended to be reviewed at the detailed design stage.

Figure 5.3 illustrates the proposed SWMF 1 overall plan, a typical cross section and the staged storage of the SWMF 1.

Figure 5.4 illustrates the proposed SWMF 2 overall plan, a typical cross section and the staged storage of the SWMF 2.

Figure 5.5 illustrates the proposed SWMF 3 overall plan, a typical cross section and the staged storage of the SWMF 3.

FILENAME: 01-15032-F5.1.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

NE11 56-23-4
SE11 56-23-4
NE2 56-23-4
SE2 56-23-4
STURGEON COUNTY
NW11 56-23-4
SW11 56-23-4
NW2 56-23-4
SW2 56-23-4
SE3 56-23-4
LOT 1
PARCEL A
TWP ROAD 560
STURGEON COUNTY
URW
URW
URW
MH 260
MH 270
MH 280
MH 290
MH 300
MH 310
MH 320
MH 200
MH 210
MH 220
MH 230
MH 240
MH 250
MH 10
MH 20
MH 30
MH 40
MH 50
MH 70
MH 80
MH 90
MH 100
1350mm
1500mm
300mm
SWMF 1
SWMF 2
SWMF 3
SWMF 2
SWMF 3
STORM LIFT STATION
HIGHWAY 28A REALIGNMENT
INSTALL NEW FORCEMAIN (SIZE TO BE DETERMINED)
SANITARY SEWER FORCEMAIN
EXISTING FORCEMAIN TO BE USED FOR NEW INSTALLED LIFT STATION
EXST 300mm ACRWC FORCEMAIN
HIGHWAY 28A (STAGE 1&2)
LOCAL ROAD (STAGE 3&4)
BUENA VISTA ROAD
45 STREET
47 STREET
48 STREET
49 STREET
51 AVENUE
50 AVENUE
48 AVENUE
47 STREET
46 AVENUE
45 AVENUE
44 AVENUE
44 AVENUE
LUNNON DRIVE
39 AVENUE
LANDING TRAIL DRIVE
47 STREET
36 AVENUE

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- STORM WATER MANAGEMENT FACILITY
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- STORM LIFT STATION

	EXISTING	PROPOSED
450mm STORM MAIN		
525mm STORM MAIN		
675mm STORM MAIN		
750mm STORM MAIN		
900mm STORM MAIN		
1050mm STORM MAIN		
1200mm STORM MAIN		
1350mm STORM MAIN		
1500mm STORM MAIN		
MANHOLE		
CULVERT		
INTERCONNECTING PIPE		

0 75 150 225 m

SCALE 1:7500

SAVED BY: JYOUNG PLOT DATE: March 23, 2017

TOWN OF GIBBONS ANNEXATION LANDS

SERVICING DESIGN BRIEF
MINOR STORM SEWER SYSTEM

FIGURE 5.1

FILENAME: 01-15032-F5.2.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

NE11 56-23-4

SE11 56-23-4

NE2 56-23-4

SE2 56-23-4

STURGEON COUNTY

SW11 56-23-4

NW11 56-23-4

57.55ha

URW

NW2 56-23-4

SWMF 2
FB = 650.0
HWL = 650.0
NWL = 648.0

SWMF 3
FB = 652.0
HWL = 651.5
NWL = 650.0

STORM LIFT STATION

SWMF 2
FB = 652.5
HWL = 650.0
NWL = 648.0

SW2 56-23-4

TWP ROAD 560

56.50ha

HIGHWAY 28A REALIGNMENT

SWMF 3
FB = 652.0
HWL = 651.5
NWL = 650.0

SWMF 1
FB = 651.5
HWL = 650.5
NWL = 648.2

67.00ha

URW

PARCEL A

STURGEON COUNTY

HIGHWAY 28A (STAGE 1&2)

LOCAL ROAD (STAGE 3&4)

47 STREET

45 STREET

48 AVENUE

46 AVENUE

45 AVENUE

44 AVENUE

51 AVENUE

48 STREET

49 STREET

50 AVENUE

47 STREET

48 AVENUE

44 AVENUE

LUNNON DRIVE

39 AVENUE

LANDING TRAIL DRIVE

47 STREET

36 AVENUE

SE3 56-23-4

BUENA VISTA ROAD

LOT 1

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- STORM WATER MANAGEMENT FACILITY
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- STORM LIFT STATION
- CATCHMENT AREA BOUNDARY
- 50.16ha CATCHMENT AREA
- DITCH FLOW
- MAJOR OVERLAND FLOW
- PROPOSED CULVERT
- PROPOSED INTERCONNECTING PIPE

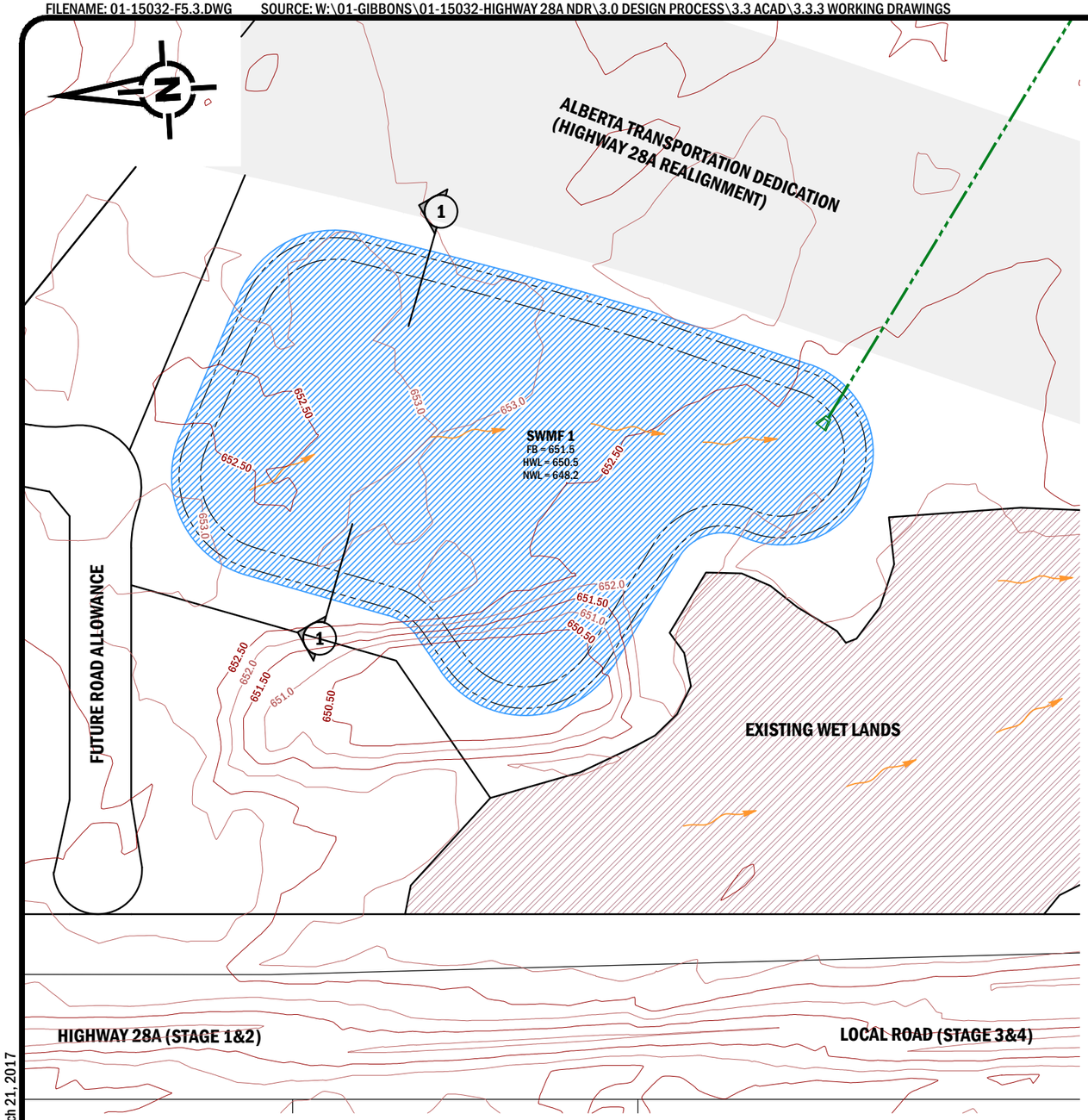
0 75 150 225 m

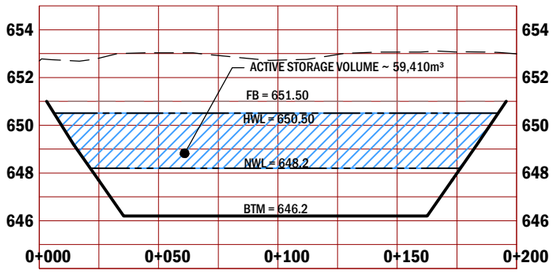
SCALE 1:7500

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
MAJOR STORM SYSTEM
PROPOSED SWMF'S

FIGURE 5.2

SAVED BY: JYOUNG PLOT DATE: March 23, 2017





SWMF 1

LEGEND

- EXISTING GROUND CONTOURS (634.0 – 639.0)
- STORM WATER MANAGEMENT FACILITY
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS

	EXISTING	PROPOSED
CULVERT		
INTERCONNECTING PIPE		

0 25 50 75 m — SCALE 1:2500

0 2.5 5 7.5 m — VERT 1:250

0 25 50 75 — HORZ 1:2500

TOWN OF GIBBONS ANNEXATION LANDS

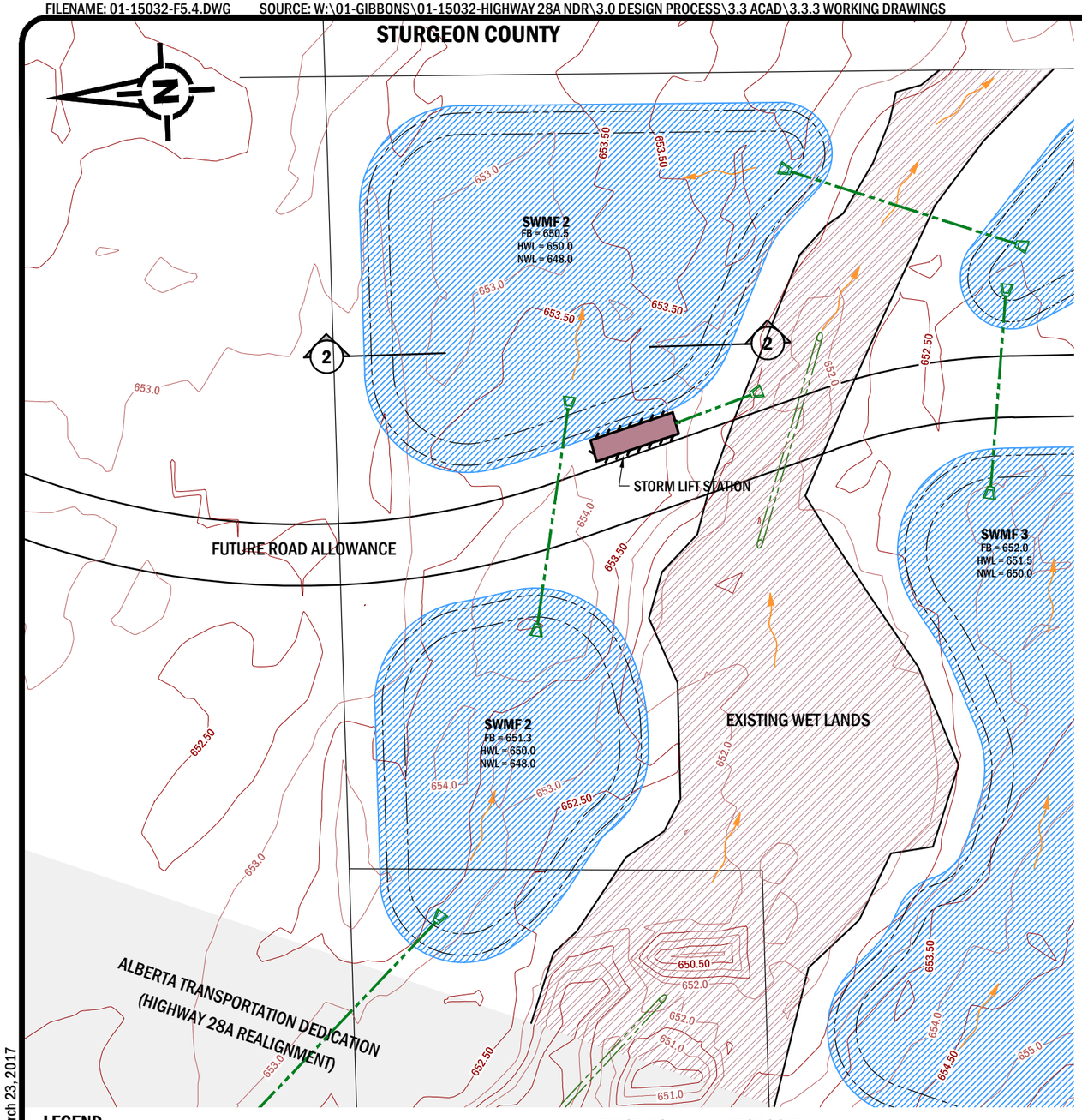
SERVICING DESIGN BRIEF

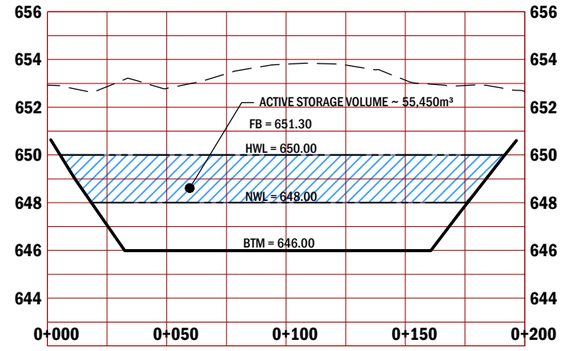
PROPOSED SWMF 1

CROSS SECTION AND STAGE STORAGE

FIGURE 5.3

SAVED BY: JYOUNG PLOT DATE: March 21, 2017





SWMF 2

LEGEND

- EXISTING GROUND CONTOURS (652.50)
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- STORM WATER MANAGEMENT FACILITY
- STORM LIFT STATION

	EXISTING	PROPOSED
CULVERT		
INTERCONNECTING PIPE		

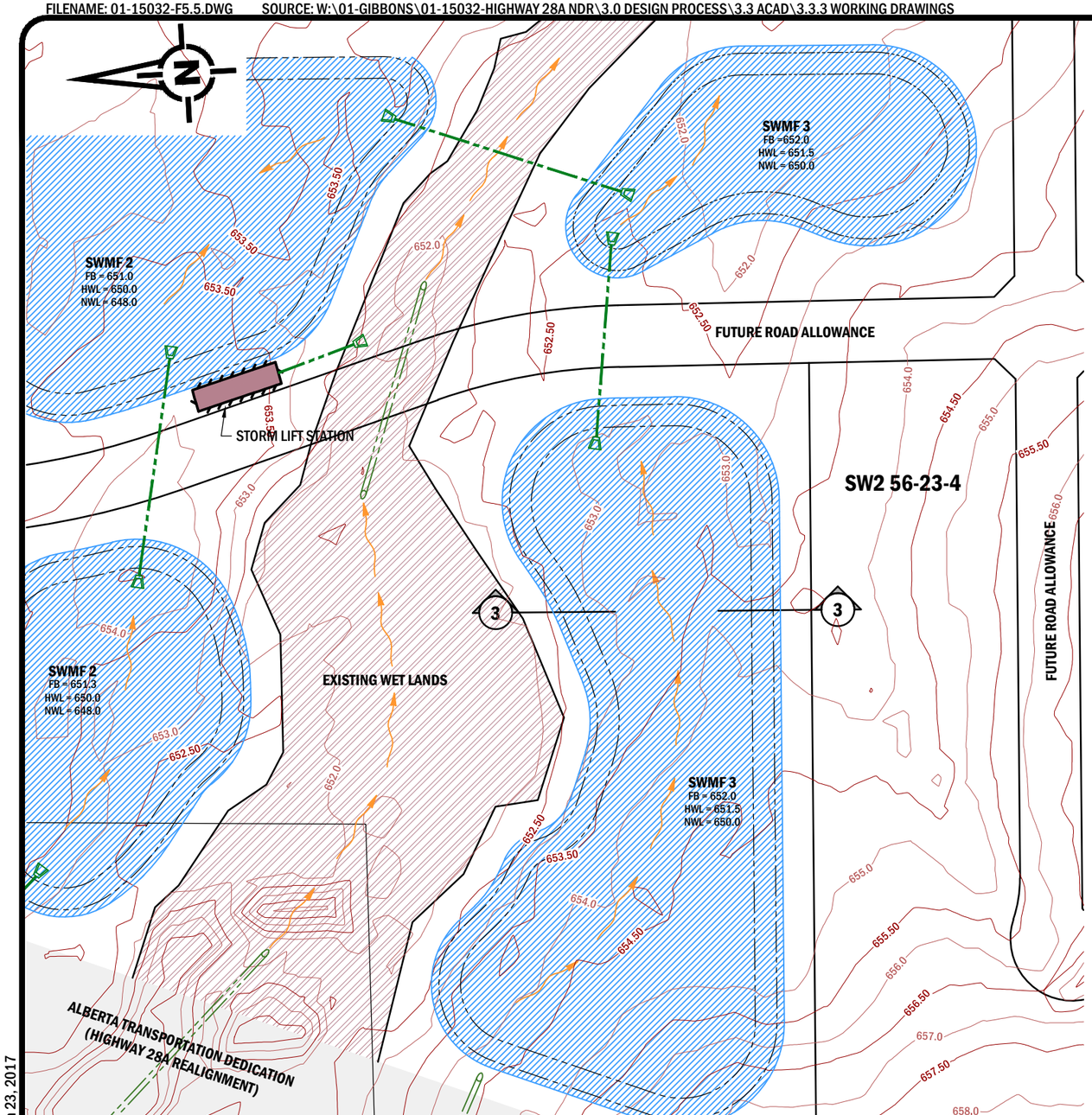
0 75 150 225 m SCALE 1:7500

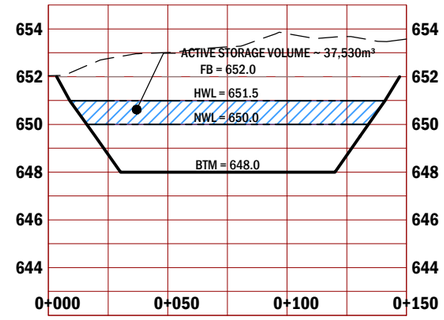
0 2.5 5 7.5 m VERT 1:250

0 25 50 75 HORZ 1:2500

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
PROPOSED SWMF 2
CROSS SECTION AND STAGE STORAGE
FIGURE 5.4

SAVED BY: JYOUNG PLOT DATE: March 23, 2017





SWMF 3

LEGEND

- EXISTING GROUND CONTOURS
- STORM WATER MANAGEMENT FACILITY
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- STORM LIFT STATION

	EXISTING	PROPOSED
CULVERT		
INTERCONNECTING PIPE		

0 75 150 225 m SCALE 1:7500

0 2.5 5 7.5 m VERT 1:250

0 25 50 75 HORZ 1:2500

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
PROPOSED SWMF 3
CROSS SECTION AND STAGE STORAGE

FIGURE 5.5

SAVED BY: JYOUNG PLOT DATE: March 23, 2017

6.0 Water System – Hydraulic Network Analysis

6.1 Background

Water and Sanitary Sewer Assessment, 2006 report describes the existing and future water system within the Town of Gibbons. At the time of this report the proposed Annexation Lands were not considered as part of the water system assessment. Therefore, this section will address the overall water concept for the Town of Gibbons Annexation Lands.

The purpose of this report is to establish pipe sizes and fire flow requirements within the proposed development.

6.2 Existing Water System

The following is a short description of the Town of Gibbons water distribution system, consisting of the following components:

- Treated water supply Line from the Capital Region Northeast Water Services Commission
- One (1) Pump Houses
- One (1) Treated water reservoir
- Water distribution system

Figure 5.1 identifies the overall existing water system including the existing watermains in the the vicinity of the Annexation Lands.

6.3 Pump House and Reservoir

Town of Gibbons Pump House and Reservoir is located north east of Poplar Drive and includes the followings:

- Storage water reservoir with a capacity of 8,330 m^3.
- Three electrical distribution pumps (50 hp, 15 hp and 25 hp)
- One variable speed pump.
- One Fire Pump (variable speed pump - stand-by).

The pumps capacity is summarized in the following table:

Table 6.1: Pump house Pumping Capacity

Description	Status	Design Capacity (l/s)	TDH (m) (Total Dynamic Head)	Hydraulic Grade Line, HGL (m)
Pump-1 (50 hp)	ON	50.0	56.0	701.66
Pump-2 (15 hp)	OFF	15.0	56.0	701.66
Pump-3 (25 hp)	OFF	25.0	56.0	701.66
Total Distribution Pumps		**90.0**		
Pump-5 (Fire Pump)	standby	114	56	712.22
Pump-6 (100% backup)	standby	114	56	712.22
Total Fire Pumps		**114**		

6.4 Operating Philosophy

The current operating philosophy of the Town of Gibbons Pump house and reservoirs is described below:

- The existing electrical pumps are set to automatically start in sequence when the pressure at the pump house drops below 450 kPa (65 psi).
- The 50 hp variable speed pump is the lead pump. When this pump reaches 100% speed, the 15 hp pump starts and operates in unison with the lead pump. When the two pumps reaches 100 % speed again, the 25 hp pump starts. All three pumps operate together until the demand decreases and the pumps shut down.
- The variable speed pump was installed in 2004 and it maintains a pressure of 550 kPa (80 psi) at the pump house.
- The fire pump can be started by one of the following three methods:
  - Local manual start in the pump house
  - Remote manual start from the fire hall
  - Automatic start if there is a power outage
- The pressure maintaining engine driven pump is a stand-by pump (100% backup) pump. This pump doesn't operate under normal conditions. It starts when the water system drops under 380 kPa (55 psi) and it stops when the system pressure exceeds 586 kPa (85 psi).

6.5 Design Criteria

The design criteria have been adopted from:

- Town of Gibbons – Municipal Engineering Standards, April 2006 edition
- Town of Gibbons – Water and Sanitary Sewer Assessment, November 2006 report
- Fire Underwriters Survey-Water Supply for Public Fire Protection.

6.5.1 Water Demand

As described under Section 2.4, the proposed development is comprised of light industrial and Highway Commercial land use. Town of Gibbons recommends the following water consumption rates:

- Industrial/Commercial
  - ADD 4,320 L/ha/d
  - MDD 8,640 L/ha/d
  - PHD 12,960 L/ha/d

Water demands for the study areas are based on the specified average day demands with a maximum day demand peaking factor of 2.0 and a peak hour demand peaking factor of 3.0, as recommended under Water and Sanitary Sewer Assessment 2006 report.

Figure 6.2 identifies the water demand contributory area to each junction and is summarized in the following table:

Table 6.2: Annexation Land - Projected Water Demand

Junction Number	Area (ha)	Water Consumption	Water Demand		
		Non-Residential (l/ha/d)	ADD (L/s)	MDD (L/s) (ADD x 2)	PHD (L/s) (ADD x 3)
J-31	9.41	4,320	0.47	0.94	1.41
J-32	6.00	4,320	0.30	0.60	0.90
J-33	6.75	4,320	0.34	0.68	1.01
J-34	10.79	4,320	0.54	1.08	1.62
J-38	6.54	4,320	0.33	0.65	0.98
J-48	11.24	4,320	0.56	1.12	1.69
J-49	14.06	4,320	0.70	1.41	2.11
J-71	11.71	4,320	0.59	1.17	1.76
J-72	6.11	4,320	0.31	0.61	0.92
J-73	6.29	4,320	0.31	0.63	0.94

Junction Number	Area (ha)	Water Consumption	Water Demand		
		Non-Residential (l/ha/d)	ADD (L/s)	MDD (L/s) (ADD x 2)	PHD (L/s) (ADD x 3)
J-74	18.83	4,320	0.94	1.88	2.82
J-84	8.00	4,320	0.40	0.80	1.20
Total			**5.79**	**11.57**	**17.36**

6.5.2 Operating Pressure

The minimum recommended pressure is as follows:

- Minimum Peak Hour Pressure 273 kPa (40 psi)
- Minimum Pressure with Automatic Sprinkler 350 kPa (50 psi)
- Minimum Maximum Day + Fire Flow Residual Pressure 140 kPa (20 psi)
- Maximum Pressure 700 kPa (100 psi)

6.5.3 Fire Flows

As required by the City of Lloydminster Design Standards, the water distribution system was evaluated for the following fire flow:

- Light Industrial/Highway Commercial 235 L/S

6.5.4 Pipe Requirements

Minimum recommended pipe diameters are:

- Industrial 250 mm
- Maximum Hazen – Williams Coefficient, c 125

6.5.5 Pipe Velocity

Water velocity is one of the main criteria in pipeline design. Sudden changes in velocity can create pressure surge and possible negative pressure, which can results in serious pipe and equipment damage.

- Maximum desired velocity under normal operating conditions 1.5 m/s
- Maximum desire velocity under maximum Day plus Fire Flow 3.0 m/s

Due to high friction losses that occur at greater velocities, under normal operating condition the maximum velocity should not exceed 1.5 m/s. However, this may be difficult to obtain under peak day plus fire flow conditions without sizing large watermains. Fire flow is a temporary condition of the water system and it happens at a particular location throughout a

community. Therefore, under maximum day plus fire flow condition, most of the municipalities accept a velocity of 3.0 m/s.

6.6 Hydraulic Network Analysis (HNA)

6.6.1 Hydraulic Network Description

The water distribution system analysis was assessed using WaterCAD, V8XM modeling software. The water model build by AECOM (previously UMA) was used to determine the required watermain sizes within the Annexation lands. All the components of the water system required to run the model were entered. These components are:

- Existing distribution and fire pumps curve
- Pipes, complete with pipe material, diameter, length, roughness coefficients,
- Junctions, complete with ground elevation, water consumption demands, and
- Reservoirs, complete with hydraulic grade line (HGL)

Although the water model represents the entire Town of Gibbons, this report will assess the water system within the Annexation Lands only.

The water distribution system layout was established based on the proposed layout within the Annexation Lands. The ground elevations at node locations were obtained from the existing ground contours within the proposed development.

Figure 6.3 illustrates the water system modelling.

Hydraulic analysis was carried out under Ultimate development conditions, for the following scenarios:

- Average Day Demand;
- Maximum Day Demand;
- Maximum Day Demand plus Fire Flow; and
- Peak Hour Demand

Figure 6.4 illustrates the proposed water system within the Annexation Lands.

6.6.2 Average Day Demand

The Average day scenario was modelled to determine the operating pressure throughout the Town. The existing lead pump was assumed to be ON at the Pump house.

The minimum and maximum simulated pressure under existing average day demand within the Annexation Lands is summarized in the following table:

Table 6.3: Annexation Lands: Summary of Average Day Demand Simulation Results

Description	(HGL, m)	Minimum Simulated Pressure			Maximum Simulated Pressure		
		kPa	psi	Location	kPa	psi	Location
Pump-1 (50 hp): ON	701.66 m	409	59.32	J-80	483	70.05	J-78

The above table shows that the pressure under ADD is within the recommended limits.

The detail simulation results for the Average Day Demand (ADD) are included in **Appendix H**.

6.6.3 Maximum Day Demand

Under this scenario, similar to Average day demand, one single pump was assumed to be ON at the Pumphouse.

Model results shows that the existing water system is adequate to meet the maximum day demand. The minimum and maximum simulated pressure for each of the water system conditions under maximum day demand is summarized in the following table:

Table 6.4: Annexation Lands: Summary of Maximum Day Demand Simulation Results

Description	HGL, m	Minimum Simulated Pressure			Maximum Simulated Pressure		
		kPa	psi	Location	kPa	psi	Location
Pump-1 (50 hp): ON	701.66 m	407	59.03	J-80	481	69.76	J-78

The above table shows that the pressure under MDD is within the recommended limits.

The detail simulation results for the Maximum Day Demand (ADD) are included in **Appendix I.**

6.6.4 Maximum Day plus 235 L/s Fire Flow Demand

Based on table 5.1 (under Section 5.3), the existing fire pump doesn't have the capacity to meet the required 235 L/s fire flow. Therefore, this scenario was analyzed under the assumption that the fire pump will be upgraded to meet maximum day plus 235 L/s fire flow demand.

The simulation results indicate that the proposed water system meet the required 235 l/s fire flow at all locations and the velocities are less than 3.0 m/s within the Annexation Lands.

Model results for MDD plus 235 l/s Fire Flows are included in **Appendix J**.

6.6.5 Peak Hour Demand

Model results shows that the existing water system is adequate to meet the peak hour demand. The minimum and maximum simulated pressure for each of the water system conditions under peak hour demand is summarized in the following table:

Table 6.5: Annexation Lands: Summary of Peak Hour Demand Simulation Results

Description	HGL, m	Minimum Simulated Pressure			Maximum Simulated Pressure		
		kPa	psi	Location	kPa	psi	Location
Pump-1 (50 hp): ON	701.66 m	392	56.85	J-80	467	67.73	J-78

The above table shows that the pressure under PHD is within the recommended limits.

The detail simulation results for the Peak Hour Demand (PHD) are included in **Appendix L**.

6.6.6 Ultimate Water Distribution System

Based on the future developments (proposed layout as provided by the Town and the overall Land use plan), the existing Town of Gibbons water system is proposed to be extended as illustrated in **Figure 6.5** to meet ultimate development. However, the assessment of the existing and ultimate water system within the Town of Gibbons is not part of this report and the proposed water system illustrated in **Figure 6.5** should be confirmed by a detailed water network analysis for the Town of Gibbons.

A detailed assessment of the water system within the Town it is recommended to identify the shortfalls and the proposed upgrades for the water system within the Town of Gibbons.

FILENAME: 01-15032-F6.1.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

STURGEON COUNTY

SW11 56-23-4

NW11 56-23-4

NW2 56-23-4

SW2 56-23-4

WATER SUPPLY MAIN

URW

WATER SUPPLY MAIN

URW

PARCEL A

TWP ROAD 560

STURGEON COUNTY

HIGHWAY 28A

HIGHWAY 28A

45 STREET

47 STREET

48 STREET

49 STREET

50 STREET

51 STREET

52 STREET

48 AVENUE

46 AVENUE

45 AVENUE

44 AVENUE

51 AVENUE

50 AVENUE

49 AVENUE

48 AVENUE

45 AVENUE

44 AVENUE

43 AVENUE

LUNNON DRIVE

39 AVENUE

LANDING TRAIL DRIVE

47 STREET

36 AVENUE

51 STREET

53 STREET

CANADIAN NATIONAL RAILWAY

SE3 56-23-4

LOT 1

BUENA VISTA ROAD

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- WATER RESERVOIR AND PUMPHOUSE
- WATER SUPPLY LINE RIGHT OF WAY

EXISTING

- 50mm WATER MAIN
- 100mm WATER MAIN
- 150mm WATER MAIN
- 200mm WATER MAIN
- 250mm WATER MAIN
- 300mm WATER MAIN
- 350mm WATER MAIN
- 250mm WATER SUPPLY LINE

0 80 160 240 m

SCALE 1:8000

TOWN OF GIBBONS ANNEXATION LANDS

SERVICING DESIGN BRIEF

EXISTING WATER SYSTEM

FIGURE 6.1

SAVED BY: JYOUNG PLOT DATE: March 17, 2017

FILENAME: 01-15032-F6.2.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

STURGEON COUNTY

NW11 56-23-4

SW11 56-23-4

NW2 56-23-4

SW2 56-23-4

SE3 56-23-4

J-48 11.24 HA J-49 14.06 HA

J-74 8.80 HA

J-71 8.20 HA J-72 6.11 HA

J-70 7.13 HA J-73 6.29 HA

200mm WM SUPPLY LINE

TWP ROAD 560

STURGEON COUNTY

WATER SUPPLY MAIN

URW

HIGHWAY 28A REALIGNMENT

J-32 6.0 HA

J-33 6.75 HA

J-38 6.54 HA J-37

J-31 9.41 HA

J-34 10.79 HA J-35

2.48 HA

PARCEL A

J-84 7.88 HA J-85

HIGHWAY 28A (STAGE 1&2)

LOCAL ROAD (STAGE 3&4)

J-351F

J-210F

J-36

J-350F

J-356F

J-199E

J-351F

LOT 1

BUENA VISTA ROAD

45 STREET

47 STREET

48 STREET

49 STREET

50 STREET

51 STREET

52 STREET

53 STREET

48 AVENUE

46 AVENUE

45 AVENUE

44 AVENUE

51 AVENUE

50 AVENUE

49 AVENUE

48 AVENUE

45 AVENUE

44 AVENUE

43 AVENUE

39 AVENUE

36 AVENUE

LUNNON DRIVE

LANDING TRAIL DRIVE

CANADIAN NATIONAL RAILWAY

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- CATCHMENT AREA
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- WATER RESERVOIR AND PUMPHOUSE
- WATER SUPPLY LINE RIGHT OF WAY

	EXISTING	PROPOSED
50mm WATER MAIN		
100mm WATER MAIN		
150mm WATER MAIN		
200mm WATER MAIN		
250mm WATER MAIN		
300mm WATER MAIN		
350mm WATER MAIN		
200mm WATER SUPPLY LINE		
250mm WATER SUPPLY LINE		

0 80 160 240 m

SCALE 1:8000

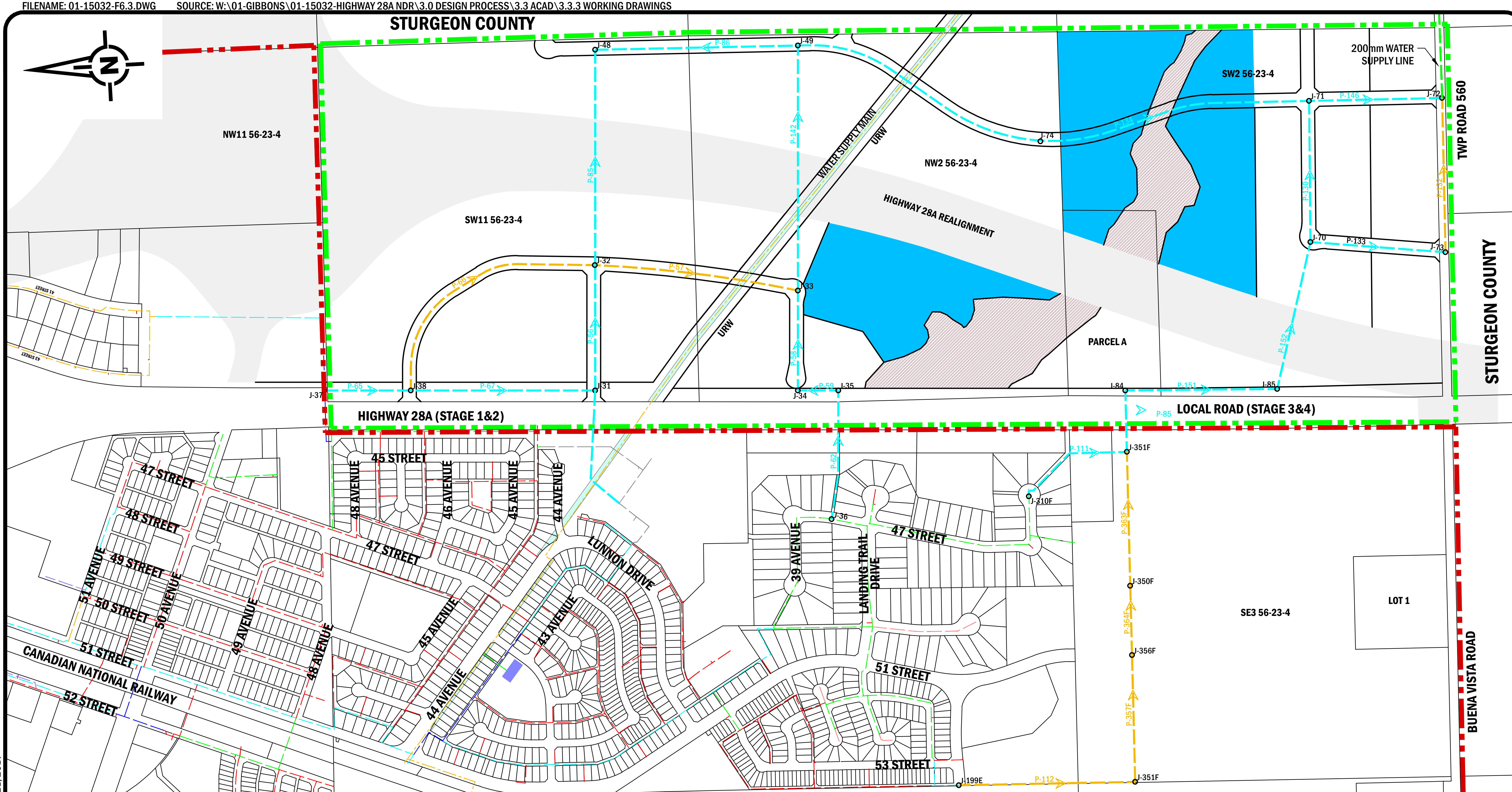
SAVED BY: FZERFASS PLOT DATE: May 5, 2017

TOWN OF GIBBONS ANNEXATION LANDS

SERVICING DESIGN BRIEF LOAD CALCULATION AND CONTRIBUTORY AREA

FIGURE 6.2

FILENAME: 01-15032-F6.3.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS



STURGEON COUNTY
NW11 56-23-4
SW11 56-23-4
NW2 56-23-4
SW2 56-23-4
WATER SUPPLY MAIN
URW
HIGHWAY 28A REALIGNMENT
200mm WATER SUPPLY LINE
TWP ROAD 560
PARCEL A
HIGHWAY 28A (STAGE 1&2)
LOCAL ROAD (STAGE 3&4)
SE3 56-23-4
LOT 1
BUENA VISTA ROAD
45 STREET
47 STREET
48 STREET
49 STREET
50 STREET
51 STREET
52 STREET
53 STREET
51 AVENUE
50 AVENUE
49 AVENUE
48 AVENUE
46 AVENUE
45 AVENUE
44 AVENUE
43 AVENUE
39 AVENUE
LUNNON DRIVE
LANDING TRAIL DRIVE
CANADIAN NATIONAL RAILWAY

LEGEND

GIBBONS MUNICIPAL BOUNDARY
STUDY AREA BOUNDARY
SWMF
ALBERTA TRANSPORTATION DEDICATION
NATURAL WETLANDS
WATER RESERVOIR AND PUMPHOUSE
WATER SUPPLY LINE RIGHT OF WAY

	EXISTING	PROPOSED
50mm WATER MAIN		
100mm WATER MAIN		
150mm WATER MAIN		
200mm WATER MAIN		
250mm WATER MAIN		
300mm WATER MAIN		
350mm WATER MAIN		
200mm WATER SUPPLY LINE		
250mm WATER SUPPLY LINE		

m
0 80 160 240
SCALE 1:8000

TOWN OF GIBBONS ANNEXATION LANDS

SERVICING DESIGN BRIEF
WATER SYSTEM MODELLING

FIGURE 6.3

PLOT DATE: March 21, 2017
SAVED BY: JYOUNG

FILENAME: 01-15032-F6.4.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

STURGEON COUNTY

NW11 56-23-4

SW11 56-23-4

NW2 56-23-4

SW2 56-23-4

PHASE 1

PHASE 2

PHASE 3

PHASE 4

PARCEL A

HIGHWAY 28A REALIGNMENT

HIGHWAY 28A (STAGE 1&2)

LOCAL ROAD (STAGE 3&4)

WATER SUPPLY MAIN

URW

TO COUNTRY RESIDENTIAL

TWP ROAD 560

STURGEON COUNTY

BUENA VISTA ROAD

SE3 56-23-4

LOT 1

300mm

250mm

200mm

41 STREET

43 STREET

45 STREET

47 STREET

48 STREET

49 STREET

50 STREET

51 STREET

52 STREET

53 STREET

48 AVENUE

46 AVENUE

45 AVENUE

44 AVENUE

51 AVENUE

50 AVENUE

49 AVENUE

43 AVENUE

39 AVENUE

LUNNON DRIVE

LANDING TRAIL DRIVE

CANADIAN NATIONAL RAILWAY

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- WATER RESERVOIR AND PUMPHOUSE
- WATER SUPPLY LINE RIGHT OF WAY

	EXISTING	PROPOSED
50mm WATER MAIN		
100mm WATER MAIN		
150mm WATER MAIN		
200mm WATER MAIN		
250mm WATER MAIN		
300mm WATER MAIN		
350mm WATER MAIN		
200mm WATER SUPPLY LINE		
250mm WATER SUPPLY LINE		

WATERMAIN PHASE

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4

0 80 160 240 m

SCALE 1:8000

SAVED BY: JYOUNG PLOT DATE: May 17, 2017

TOWN OF GIBBONS ANNEXATION LANDS

SERVICING DESIGN BRIEF
PROPOSED WATER SYSTEM
STAGING CONCEPTS

FIGURE 6.4

FILENAME: 01-15032-F6.5.DWG SOURCE: W:\01-GIBBONS\01-15032-HIGHWAY 28A NDR\3.0 DESIGN PROCESS\3.3 ACAD\3.3.3 WORKING DRAWINGS

STURGEON COUNTY

NW11 56-23-4

SW11 56-23-4

NW2 56-23-4

SW2 56-23-4

HIGHWAY 28A REALIGNMENT

PARCEL A

WATER SUPPLY MAIN

URW

URW

TO COUNTRY RESIDENTIAL

TWP ROAD 560

STURGEON COUNTY

HIGHWAY 28A (STAGE 1&2)

LOCAL ROAD (STAGE 3&4)

SE3 56-23-4

LOT 1

BUENA VISTA ROAD

41 STREET

43 STREET

45 STREET

47 STREET

48 STREET

49 STREET

50 STREET

51 STREET

52 STREET

53 STREET

48 AVENUE

46 AVENUE

45 AVENUE

44 AVENUE

51 AVENUE

50 AVENUE

49 AVENUE

48 AVENUE

45 AVENUE

44 AVENUE

43 AVENUE

39 AVENUE

36 AVENUE

LUNNON DRIVE

LANDING TRAIL DRIVE

CANADIAN NATIONAL RAILWAY

300mm

250mm

200mm

LEGEND

- GIBBONS MUNICIPAL BOUNDARY
- STUDY AREA BOUNDARY
- SWMF
- ALBERTA TRANSPORTATION DEDICATION
- NATURAL WETLANDS
- WATER RESERVOIR AND PUMPHOUSE
- WATER SUPPLY LINE RIGHT OF WAY

	EXISTING	PROPOSED
50mm WATER MAIN		
100mm WATER MAIN		
150mm WATER MAIN		
200mm WATER MAIN		
250mm WATER MAIN		
300mm WATER MAIN		
350mm WATER MAIN		
200mm WATER SUPPLY LINE		
250mm WATER SUPPLY LINE		

0 80 160 240 m

SCALE 1:8000

TOWN OF GIBBONS
ANNEXATION LANDS
SERVICING DESIGN BRIEF
PROPOSED ULTIMATE WATER SYSTEM

FIGURE 6.5

SAVED BY: FZERFASS PLOT DATE: June 22, 2017

7.0 Cost Estimate

Cost Estimates were provided based on the conceptual design level and current (2017) construction dollars. The estimates presented include an allowance for engineering (15%) and contingency (20%). The cost estimates are as follows:

7.1 Sanitary Sewer System

Table 7.1: Sanitary System – Preliminary Cost Estimate

Item No.	Description	Annexation Lands Stages				Total
		Stage 1	Stage 2	Stage 3	Stage 4	
1	Sanitary Sewer Main	$ 450,000	$ 150,000	$ 600,000	$ 950,000	
2	Sanitary Lift Station	$ 2,000,000				
3	Forcemain					
	Total	$ 2,450,000	$ 150,000	$ 600,000	$ 950,000	**$ 4,150,000**

7.2 Storm System

Table 7.2: Storm System – Preliminary Cost Estimate

Item No.	Description	Annexation Lands Stages				Total
		Stage 1	Stage 2	Stage 3	Stage 4	
1	Storm Sewer Mains & SWMF	$ 1,300,000	$ 600,000	$ 3,000,000	$ 2,200,000	
2	Sanitary Lift Station			$ 2,000,000		
3	Forcemain			$ 30,000		
	Total	$ 1,300,000	$ 600,000	$ 5,030,000	$ 2,200,000	**$ 9,130,000**

7.3 Water System

Table 7.3: Water System – Preliminary Cost Estimate

Item No.	Description	Annexation Lands Stages				Total
		Stage 1	Stage 2	Stage 3	Stage 4	
1	Watermains	$ 850,000	$ 300,000	$ 900,000	$ 1,100,000	
	Total	$ 850,000	$ 300,000	$ 900,000	$ 1,100,000	**$ 3,150,000**

7.4 Earthworks

Table 7.4: Earthwork– Preliminary Cost Estimate

Item No.	Description	Option 1 (SWMF discharges through Lift station and Forcemain)	Option 2 (SWMF discharges by gravity)
1	Topsoil	$ 2,700,000	$ 2,700,000
2	Common Excavation	$ 16,000,000$	6,400,000
	Total	**$ 18,750,000**	**$ 9,150,000**

7.5 Roadways

Table 7.4: Roadways – Preliminary Cost Estimate

Item No.	Description	Preliminary Cost
1	Stage 1	$ 1,500,000
2	Stage 2	$ 900,000
3	Stage 3	$ 2,200,000
4	Stage 4	$ 2,100,000
	Total	**$ 6,700,000**

8.0 Recommendations and Conclusions

The Town of Gibbons Annexation Lands Servicing Design Brief was undertaken to study the sanitary, storm and water system alternatives for the proposed Annexation Lands. Based on the results, the following conclusions can be drawn:

8.1 Sanitary Servicing System

The proposed sanitary system presented in this SDB will provide a sanitary system that benefits all lands within the study area boundary. The sanitary servicing concept shown in **Figure 4.2** is recommended to service the Study Area. The design criteria used to develop this concept meets the Town of Gibbons Municipal Design Standards.

Based on the results of the sanitary sewer system assessment, it has been concluded that:

- The area within the Study Area can be serviced by a gravity sewer system draining to a proposed lift station. From the lift station, the sewage flows will be discharged via forcemain into the existing ACRWC wastewater system.
- The existing capacity and potential required upgrades, including all the details of the tie in to the existing ACRWC sanitary system, has to be confirmed and approved by the Wastewater Regional Commission.
- The proposed Study Area sanitary system will also be design to have capacity to service the proposed country residential communities (Sturgeon County residential) of maximum 2,000 people, located east of the annexation Lands. These areas will be serviced by a forcemain discharging to the ACRWC wastewater system.

8.2 Storm Servicing System

The minor storm servicing concept shown in **Figure 5.1** is recommended to service the development within the Study Area. The design criteria used to develop concept meets the Town of Gibbons Design Standards.

The major storm servicing concept use three (3) Storm Water Management Facilities (SWMF) interconnected at NWL through a storm pipe, and is consistent with the existing drainage pattern of the site. **Figure 5.2** shows the recommended major storm concept. Discharge from the SWMF's will be controlled to the maximum allowable rate of 2.5 l/s/ha by a proposed Storm Lift Station located south west of SWMF 2.

The stormwater management facilities assessment is recommended to be reviewed at the detailed design stage.

8.3 Water System

- Under ADD scenario, the simulated pressure is within the recommended pressure range of 280 kPa to 551 kPa and the velocity is significantly lower than 3.0m/s.
- Under MDD scenario the simulated pressure is within the recommended pressure range of 280 kPa to 551kPa and the velocity is significantly lower than 3.0m/s. Under MDD + 115 L/s the water system has adequate fire flows and the velocity is under 3.0m/s.
- Under MDD + 235 L/s, the water system has adequate fire flows and the velocity is under 3.0m/s within the Annexation Lands.

  Under PHD scenario, the simulated pressure is within the recommended pressure range of 280 kPa to 551kPa and the velocity is significantly lower than 3.0m/s.

9.0 Report Submittal

This report has been prepared and submitted by Select Engineering Consultants Ltd., as documented below:

May 18, 2017

Steve Brittain, C.E.T.
Project Manager

Floarea Zerfass, P.Eng.
Project Engineer

Permit to Practice No. 10261

APPENDIX A-0.

ACRWC – Commissioning Plan for the Town of Gibbons PS Flow Control, October 2010 report

Alberta Capital Region Wastewater Commission

Commissioning Plan for Town of Gibbons' PS Flow control

No.: CP 10-002
Prepared by: Engineering Department
Date: October 2010

CONTENT

INTRODUCTION

The ACRWC Gibbons pump station (GIPS) receives wastewater flows from the Town of Gibbons and the Town of Bon Accord.

The Town of Gibbons is building a new pump station and forcemain for their wastewater flow conveyance. The new station and its forcmain will discharge the Town's wastewater into an on-line storage pipe for flow adjustment. The flow out of the storage pipe is controlled by a sluice gate and is conveyed to our pump station through a gravity sewer.

To meet the ACRWC's required flow rate of 70 litres/s, the theoretical calculated cross section area of the sluice gate is 145.5 cm^2. However, the gate actual open position has to be determined during the commissioning.

The scope of this commissioning includes:

1. Determine the inline storage pipe discharge valve position to discharge the required flow.
2. Assess the potential impact to the ACRWC GIPS

The commissioning will test the worst operation condition:

- The ACRWC GIPS wet well is full
- The online storage facility is discharging flow with 70L/s rate
- Only one pump works in the ACRWC GIPS

The Commissioning of the Town of Gibbons' new pump station is not ACRWC's responsibility and therefore not included in the work scope.

COMMISSIONING AND MONITORING

Preparation

1. Tools and equipment required:

Cell phone: #1_____; #2_____
Gas Detectors
Flash lights
Watches

2. People to conduct the Commissioning

   ACRWC: 2 Operators: 1 one site, one in control room
   1 Project manager

   Gibbons/Select: _____

3. Water source from hydrant of the Town of Gibbons.

Commissioning

1. ACRWC operator to confirm the influent flow number is displayed normally on the meter LCD located at the back of PLC cabinet door.

   Y/N _____

2. ACRWC operator to close the overflow chamber before commissioning.

   Y/N _____

3. Gibbons operators and their engineers to confirm the old gravity system has been totally shut down and all Town's wastewater flows into their pump station.

   Y/N _____

4. ACRWC operator to confirm from the overflow chamber that no flow coming through and the meter reading is zero on DeltaV.

   Y/N _____

5. ACRWC operator to inform Gibbons people to set the storage pipe sluice gate at the 50% determined height.

   The valve open time: _____
   Valve position 50% of determined height:

   Valve turns:_____

6. The Town's wastewater flows into their pump station wet well. The volume will not be enough for the commissioning. Gibbons people to operate hydrant to supply water into their pump station wetwell. The Town's people should monitor their wetwell level to avoid flooding.

   Y/N _____

7. Gibbons people to inform ACRWC operator when their pump starts.

   Y/N_____

8. ACRWC people record the time that water goes through the overflow chamber again.

   Flow appearance time at ACRWC influent meter: _____
   Calculated the water retention time from the storage facility to the GIPS
   _____ minutes

9. ACRWC operator to check the flow from DeltaV and communicate with Gibbons people about the flow rate.

10. Gibbons people adjust the valve positions open or close depending on the flow rate to obtain the 70L/s, record the position and inform ACRWC operator

11. ACRWC operator needs to operate one of the pumps to make sure no flooding happens in the ACRWC GIPS.

12. Fine tuning of the influent L/s to the ACRWC GIPS by moving the sluice gate

Valve position at Storage facility (Turns)	Flow rate at GIPS

(Note: more than one pump cycle in the Town's station may need to achieve the above objective.)

13. Once the storage gate position is confirmed, refill the ACRWC GIPS wet well to pump start up level.

Y/N _____

14. ACRWC operator observes the water level changing in the wet well and record the observation.

_____
_____
_____
_____
_____

15. If there are no problems after one pump cycle, the commissioning can be terminated.

16. ACRWC operator to set the pump back to auto control. Y/N _____

17. ACRWC and Gibbons/Select people to lock the online pipe sluice gate position

Feb 22/11

SELECT ENGINEERING LTD.

1.2 Inflows and Overflows

The Town of Gibbons owns and operates a Town Lift Station that collects all flow from Gibbons, and pumps via a forcemain to a control structure upstream the ACRWC Pump Station. From the control structure the wastewater flows through a Manual Flow Control Valve operated exclusively by ACRWC. The valve is located west of access road to the ACRWC Pump Station and will be permanently locked in position with an ACRWC lock. This is to limit the flow to ACRWC Pump Station, as the Gibbons pump station has the capacity to flood ACRWC's station. Note that Bon Accord Lagoons flow directly to ACRWC Gibbons Pump Station and is separate from the Town Lift Station.

WARNING

As circumstance dictates, a Town of Gibbons Utilities Personnel may contact the ACRWC Control Room to request that we adjust the flowrate entering our station by opening / closing the ACRWC Manual Flow Control Valve.

If this is the case, the valve may not be adjusted until direct approval from the Operations Supervisor.

If ACRWC Gibbons Pump Station's influent flowrate exceeds the pump discharge flowrate capacity and flooding is imminent, the immediate action for ACRWC operations is to temporarily discontinue flows from Bon Accord Lagoons by closing the Flow Control Valve.

The sewage collected from the Town of Gibbons enters the pump station via the Overflow Structure and the influent sluice gates. If there is an urgency to bypass the pump station, the influent sluice gate in the pump station must be closed. The sewage will then back up into the inflow line to reach the Overflow Structure.

The Overflow Structure is equipped with a 600 mm x 600 mm slide gate over the 600 mm overflow pipe. The sewage overflows, if allowed to take place, will be discharged to the Sturgeon River. For normal operation, the overflow slide gate should be in a closed position at all times. A flap gate is installed at the outfall headwall structure (at the end of the 600 mm dia. overflow pipe to the river). The flap gate will prevent the river water from backing up into the sewer system in case the river water rises due to flooding. The slide gate can also be utilized as a back-up to the flap gate malfunction to prevent the river water back-up.

The substructure consists of a dry well and divided wet well. The dry well houses the process piping and associated equipment including pumps. The wet well has two compartments; wet well No. 1 and wet well No. 2 for operation of the dry well pumps. The other flow channel serves as a standby unit for use when the flows cannot be handled through one channel. Each wet well compartment can be isolated by closing the cross-flow sluice gate for flushing or cleaning.

Feb 22/11

SELECT ENGINEERING LTD.

APPENDIX A.

Town of Gibbons Sanitary Servicing Concept Update, August 2007 letter report completed by UMA (currently AECOM)

UMA Engineering Ltd.
17007 107 Avenue
Edmonton, Alberta T5S 1G3
T 780.486.7000 F 780.486.7070 www.uma.aecom.com

August 3, 2007

File Name: C392-047-00-4.6.1

Maisie Metrunec
Town Manager
Town of Gibbons
Box 68
Gibbons AB T0A 1N0

Dear Ms. Maisie Metrunec:

Re: Town of Gibbons Sanitary Servicing Concept Update

We are pleased to submit the results of our update to the Sanitary Servicing Concept Study for the Town of Gibbons. The study revised the overall servicing concept based on the revised staging plans and the proposed annexation areas. The objective of the study was to develop a sanitary servicing concept for the future areas as well as to identify the impact on the existing infrastructure.

SCOPE OF WORK

In addition to the data collected as part of the Water and Sanitary Sewer Assessment completed in December 2006, the following was collected and reviewed:

- the proposed development staging for the Landrex lands within Gibbons and associated land use and development plans. This was collected at the meeting of May 8, 2007 and was confirmed with the Town of Gibbons and Landrex.
- the proposed annexation areas.

A meeting was also held with Alberta Capital Region Wastewater Commission.

Using the model developed as part of the 2006 Water and Sanitary Sewer Assessment, alternative sanitary servicing concepts were evaluated.

The alternatives were developed at a conceptual design level and associated cost estimates developed.

SANITARY SYSTEM ASSESSMENT

Land Use and Development Staging

The sanitary system model developed as part of the December 2006 study was used for this project. Development plans were provided by Landrex and ISL Engineering.

The study area is shown on Figure 1 and includes the Town of Gibbons boundary as well as the potential annexation area east of the Town. Existing and future land use is shown on Figure 2.

Staging is shown on Figure 3. Areas which plan to connect very shortly are labeled near future. Phase 1 development includes the remainder of the area within the town boundary. Phase 2 development includes the potential annexation areas. The potential annexation area east of Highway 28A was assessed as residential however, it will likely include highway commercial area. This will not affect the sanitary servicing concept.

Population and land use is summarized in Table 1.

Table 1: Population and Land Use Summary

Phase	Residential Area (ha)	Non-residential Area (ha)	Total Population*
Existing	101.3	96.8	2,727
Near Future	101.6	43.6	6,788
Phase 1	158.3	47.5	13,434
Phase 2 (Ultimate)	181.2	120.8	21,045

*future population is based on 3.5 people per lot or 42 people per hectare

Several Alternatives are proposed to service the future development areas. Flows were estimated based on the Town of Gibbons design standards. The standards specify:

- A residential sewage generation rate of 350 L/c/d
- A residential density of 3.5 people per lot or 42 people per hectare
- A Harmon's peaking factor
- An infiltration and inflow (I/I) allowance of 0.28 L/s/ha
- A non-residential sewage generation rate of 18,000 L/ha/d with a peaking factor of 3

A non-residential sewage generation rate of 6170 L/ha/d with a peaking factor of 3 was assumed for the Phase 2 industrial area.

ACRWC Pump Station and Force Main

The existing ACRWC pump station in the Town of Gibbons is located in the Sturgeon River valley, east of Highway 28A and north of the CN railway. The pump station was originally constructed around 1988. The station currently has two pumps but has space for a total of 6 pumps and is in very good condition.

The existing force main from the ACRWC pump station is 300 mm in diameter. A maximum velocity of 2 m/s is recommended in sanitary force mains to prevent hammer. At 2 m/s velocity the existing force main capacity is 140 L/s. Any increase in pumping capacity greater that 140 L/s will require upgrades to the existing force main. An increase in pumping capacity in the Town of Gibbons will also affect the downstream trunk (NERTS line) which should be examined in more detail as development proceeds. As development proceeds, the ACRWC pump station and force main will require upgrading to convey dry weather flow at a minimum. Storage can be provided for wet weather flow in excess of the pump station capacity.

The Gibbons pump station also receives wastewater from the Town of Bon Accord lagoons. The discharge is currently automatically controlled based on the level in the lagoons. The normal discharge time is during the late evening and early morning unless the level in the lagoons is too high. There is potential to operate the system such that Bon Accord only discharges when there is capacity at the Gibbons pump station.

SERVICING ALTERNATIVES

Two alternatives were developed for the servicing of the future development areas.

Alternative 1

Alternative 1 includes servicing the near future areas to the outfall trunk and the future areas in the south to a lift station. The annexation area was also included. Required improvements are summarized below:

- The outfall trunk requires replacement with 600 and 675 mm diameter pipe from Manhole OS44-53 to 53rd Avenue.
- Near 53rd Avenue, a lift station is required to pump 450 L/s to the existing industrial area east of Highway 28A via a 600 mm force main.
- A new 750 mm trunk extending from the Industrial Park east of Highway 28A to the ACRWC pump station is required. The size of the new trunk to the ACRWC pump station should be confirmed once the design slope is established.
- The development areas to the south flow east to a new lift station which is required to pump 275 L/s via a 450 mm force main running along Highway 28A to the existing industrial park.
- The ACRWC pump station requires an increase in capacity of approximately 265 L/s (for a total capacity of 355 L/s) to convey dry weather flow. A storage facility with a volume of approximately 7000 m^3 is required. Twinning of the ACRWC force main with a 400 mm pipe is also required. Upgrades to the downstream regional trunk are also required at this flow rate. Alternatively, the pump station and force main could be upgraded to convey both dry and wet weather flow and storage could be eliminated. This would require a pump station capacity of 795 L/s and an additional 750 mm force main.
- The industrial annexation area requires a lift station to pump 27 L/s and a 200 mm force main to tie into the proposed trunk flowing to the existing ACRWC pump station.

Alternative 1 is shown on Figure 4.

Alternative 2

Alternative 3 includes the installation of a lift station on the ACRWC force main south of the existing pump station which will allow the lands to the south and annexation area to the east to connect by gravity to this point.

- The outfall trunk requires replacement with 600 and 675 mm diameter pipe from Manhole OS44-53 to 53rd Avenue.
- Near 53rd Avenue, a lift station is required to pump 450 L/s to a the existing industrial area east of Highway 28A via a 600 mm force main

- A new 600 mm trunk extending from the Industrial Park east of Highway 28A to the ACRWC pump station is required. The size of the new trunk to the ACRWC pump station should be confirmed once the design slope is established.

- The development areas to the south flow east by a 525 mm line by gravity to a new ACRWC pump station which is required to pump a peak flow of 430 L/s. An additional 450 mm force main is required to convey the flow to the regional trunk. Upgrades to the downstream regional trunk are also required at this flow rate.

- To reduce the effect on the downstream trunk, the new pump station could convey only dry weather flow (350 L/s) and storage (2900 m^3) could be provided for wet weather flow

- The existing ACRWC pump station requires an increase in capacity of approximately 80 L/s (for a total capacity of 165 L/s) to convey dry weather flow. A storage volume of approximately 3900 m^3 is required as well as an additional 200 mm force main.

- Alternatively, the existing ACRWC pump station capacity could be increased to 515 L/s to convey both dry and wet weather flow and eliminate storage. The force main would then need to be twinned with a 500 mm pipe and the downstream pump station and force main would need to be increased to 985 L/s and 750 mm respectively.

- The industrial annexation area requires a lift station to pump 27 L/s and a 200 mm force main to tie into the proposed trunk flowing to the existing ACRWC pump station.

Alternative 2 is shown on Figure 5.

Staging

Required pump station capacities and upgrades for each development phase are shown in Table 2.

Table 2: Staging Requirements

	Phase	53rd Ave Pump Station	53rd Ave Force Main	Gravity Trunk to Pump Station	ACRWC Pump Station (L/s)	ACRWC Force Main (mm)	Storage (m^3)	South Pump Station (L/s)	South Force Main (mm)
Alternative 1									
	Near Future	450	600	750	140	-	1600	-	-
	Phase 1	450	-	-	205	250	6200	120	300
	Phase 2 (Ultimate)	450	-	-	355	450	7000	275	450
Alternative 2									
	Near Future	450	600	600	140	-	1600	-	-
	Phase 1	450	-	-	140	-	4100	260	300
	Phase 2 (Ultimate)	450	-	-	165	200	3900	430	450

Pump station capacities shown for each phase represent the total pumping capacity required. The required force main sizing is shown each development phase, however, it is recommended that the force mains be sized for ultimate development when constructed.

COST ESTIMATES

Cost estimates for each alternative are provided in Tables 3 and 4.

Table 3: Alternative 1 Cost Summary

Alternative 1	Capacity (L/s)	Diameter (m)	Length (m)	Unit Cost ($)	Total
Trunk Replacement		.600/.675	1282	varies	$1,546,488
53rd Avenue Lift Station	450				$4,080,000
53rd Avenue Forcemain		0.6	1200	850	$1,020,000
New gravity trunk		0.75	1540	1620	$2,494,800
South area Lift Station	275				$2,240,000
South area forcemain		0.45	2500	650	$1,625,000
ACRWC PS Improvements	265				$360,000
ACRWC Forcemain twinning		0.4	7560	600	$4,536,000
Storage	7000			650	$4,550,000
				Subtotal	$15,805,800
				Engineering (10%) and Contingencies (25%)	$5,532,030
				Total	$21,337,900

Table 4: Alternative 2 Cost Summary

Alternative 2	Capacity (L/s)	Diameter (m)	Length (m)	Unit Cost ($)	Total
Trunk Replacement		.600/.675	1282	varies	$1,546,488
53rd Avenue Lift Station	450				$4,080,000
53rd Avenue Forcemain		0.6	1200	850	$1,020,000
New gravity trunk		0.6	1540	1320	$2,032,800
South area gravity main		0.525	900	1025	$922,500
ACRWC PS Improvements	80				$235,000
ACRWC Forcemain twinning		0.2	2060	300	$618,000
New South Regional PS	430				$4,080,000
ACRWC Forcemain twinning		0.45	5500	700	$3,850,000
Storage	3900			700	$2,730,000
				Subtotal	$14,468,300
				Engineering (10%) and Contingencies (25%)	$5,063,905
				Total	$19,532,300

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CONCLUSIONS AND RECOMMENDATIONS

- Phase 2 development corresponds to a population of 21,045 people. This is approximately 8 times the current population of the Town of Gibbons.
- The existing outfall trunk is in poor condition and may contribute a significant amount of I/I to the system. Flow monitoring is recommended after the portion of the outfall trunk is replaced to determine if the I/I recorded from the existing system decreases. Sizing of improvements should be confirmed once the flow monitoring has taken place.
- Sizing of improvements for Alternatives 2 and 3 is provided for ultimate development however; where possible improvements should be staged as development proceeds.
- The ACRWC pump station has space for four additional pumps and the capacity can readily be increased. However the existing ACRWC force main will need to be twinned once the flow rate reaches 140 L/s or greater. In addition, the downstream gravity trunk (NERTS line) is affected and should be addressed in more detail.

Sincerely,

UMA Engineering Ltd.

J Cherdarchuk

Jody Cherdarchuk, P.Eng.
Water Resources Engineer
jody.cherdarchuk@uma.aecom.com

JC:blb

Encl. – Figures 1 to 5

cc: Bob Hanewich, UMA Engineering Ltd.
Marcel LeBlanc, UMA Engineering Ltd.

PROFESSIONAL ENGINEER ALBERTA
M.R. LEBLANC
August 3, 2007

PERMIT TO PRACTICE
UMA ENGINEERING LTD.
Signature
Date 03/03/07
PERMIT NUMBER: P 0329
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

B SIZE 11" x 17" (279.4mm x 431.8mm)

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N

14
56-23-4

11
56-23-4

2
56-23-4

CANADIAN NATIONAL RAILWAY

INDUSTRIAL PARK

HIGHWAY 28

HIGHWAY 28A

53 AVENUE

51 AVENUE

50 AVENUE

47 STREET

44 AVENUE

POPLAR PARK

LANDING TRAILS

51 STREET

HIGHWAY 28A

STURGEON RIVER

HIGHWAY 28

15
56-23-4

10
56-23-4

3
56-23-4

CANADIAN NATIONAL RAILWAY

LEGEND:

STUDY AREA

TOWN OF GIBBONS BOUNDAR

0 150 300 m

SCALE 1:15000

Town of Gibbons
Sanitary Servicing Concept Update

Study Area

UMA | AECOM

Figure - 1

B SIZE 11" x 17" (279.4mm x 431.8mm)

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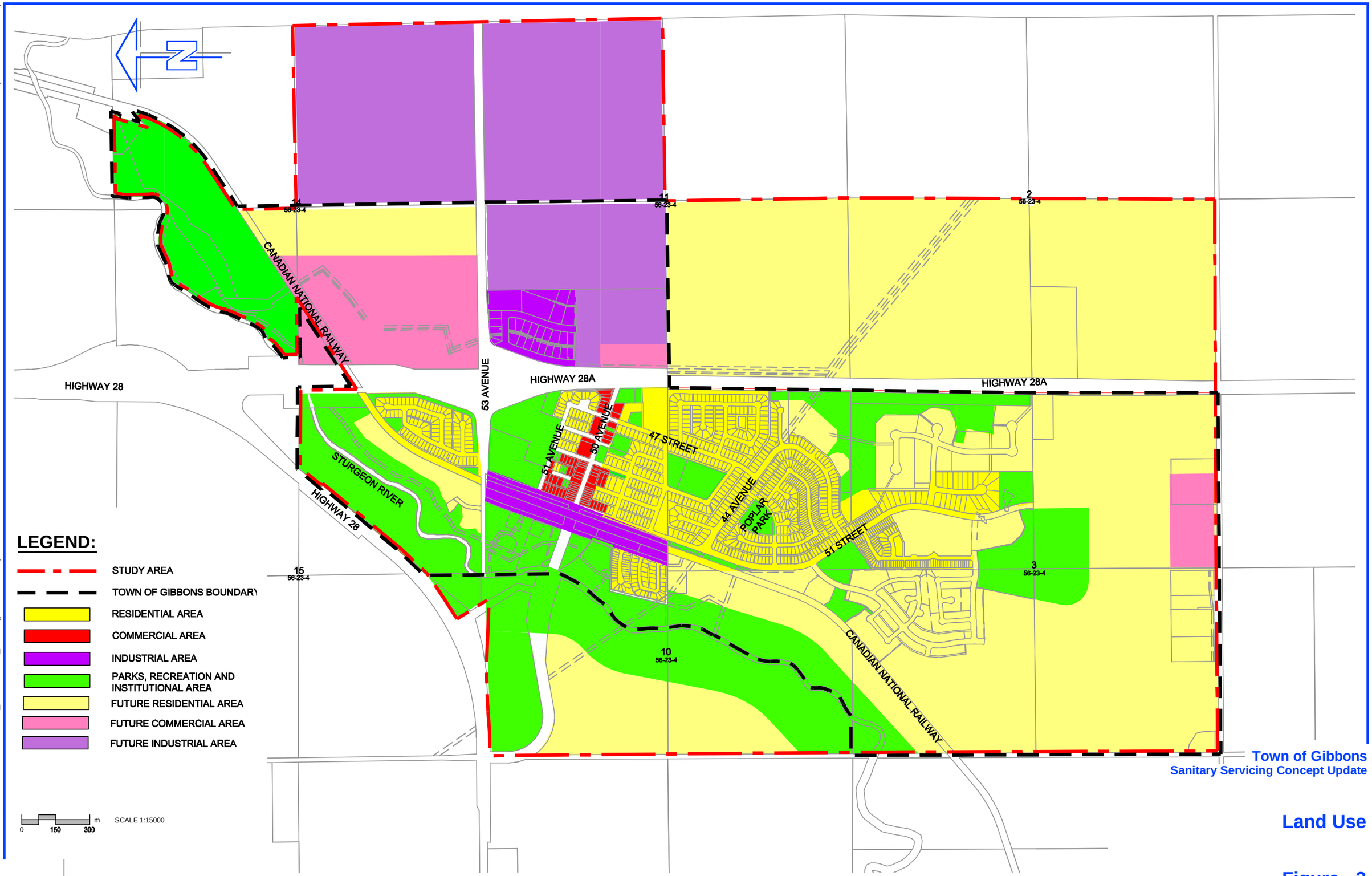

LEGEND:

- STUDY AREA
- TOWN OF GIBBONS BOUNDARY
- RESIDENTIAL AREA
- COMMERCIAL AREA
- INDUSTRIAL AREA
- PARKS, RECREATION AND INSTITUTIONAL AREA
- FUTURE RESIDENTIAL AREA
- FUTURE COMMERCIAL AREA
- FUTURE INDUSTRIAL AREA

0 150 300 m

SCALE 1:15000

UMA | AECOM

Town of Gibbons

Sanitary Servicing Concept Update

Land Use

Figure - 2

INDUSTRIAL
INDUSTRIAL
INDUSTRIAL
INDUSTRIAL
RESIDENTIAL
AND COMMERCIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
AND COMMERCIAL
RESIDENTIAL
(100 LOTS)
(60 LOTS)
CANADIAN NATIONAL RAILWAY
CANADIAN NATIONAL RAILWAY
HIGHWAY 28
HIGHWAY 28
HIGHWAY 28A
HIGHWAY 28A
53 AVENUE
51 AVENUE
50 AVENUE
47 STREET
44 AVENUE
POPLAR PARK
51 STREET
STURGEON RIVER
1
56-23-4
2
56-23-4
11
56-23-4
15
56-23-4
10
56-23-4
3
56-23-4

LEGEND:

- STUDY AREA
- TOWN OF GIBBONS BOUNDARY
- NEAR FUTURE
- PHASE 1 DEVELOPMENT
- PHASE 2 DEVELOPMENT (ULTIMATE)

0 150 300 m SCALE 1:15000

Town of Gibbons
Sanitary Servicing Concept Update

Development Staging

UMA | AECOM

Figure - 3

PROPOSED PUMP STATION (27 L/s)

200mm

14 56-23-4

11 56-23-4

2 56-23-4

TWIN FORCE MAIN 400mm

7000m³

STORAGE

ACRWC PUMP STATION (355 L/s)

CANADIAN NATIONAL RAILWAY

750mm

INDUSTRIAL PARK

53 AVENUE

600mm

HIGHWAY 28

HIGHWAY 28A

450mm

PROPOSED PUMP STATION (275 L/s)

OUTFALL TRUNK

STURGEON RIVER

HIGHWAY 28

51 AVENUE

50 AVENUE

47 STREET

44 AVENUE

POPLAR PARK

LANDING TRAILS

51 STREET

675 mm

675mm 600mm

DS44-53

3 56-23-4

10 56-23-4

PROPOSED PUMP STATION (450 L/s)

REPLACEMENT OF OUTFALL TRUNK (600mm AND 675mm)

CANADIAN NATIONAL RAILWAY

LEGEND:

- STUDY AREA
- TOWN OF GIBBONS BOUNDARY
- PROPOSED IMPROVEMENTS
- EXISTING FORCE MAIN
- PROPOSED FORCE MAIN
- EXISTING PIPE AND NODE
- PROPOSED PIPE AND NODE
- STORAGE LOCATION
- PUMP STATION

0 150 300 m

SCALE 1:15000

Town of Gibbons
Sanitary Servicing Concept Update

Alternative 1

UMA | AECOM

Figure - 4

B SIZE 11" x 17" (279.4mm x 431.8mm)

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PROPOSED PUMP STATION (27 L/s)

200mm

TWIN FORCE MAIN 450mm

11 56-23-4

11 56-23-4

2 56-23-4

3900m³

STORAGE

ACRWC PUMP STATION (165 L/s)

CANADIAN NATIONAL RAILWAY

600mm

INDUSTRIAL PARK

PROPOSED PUMP STATION (430L/s)

525mm

525mm

HIGHWAY 28

HIGHWAY 28A

200mm

53 AVENUE

600mm

HIGHWAY 28A

51 AVENUE

60 AVENUE

47 STREET

44 AVENUE

POPLAR PARK

51 STREET

LANDING TRAILS

OUTFALL TRUNK

STURGEON RIVER

HIGHWAY 28

675 mm

600 mm

DS44-53

3 56-23-4

PROPOSED PUMP STATION (450L/s)

REPLACEMENT OF OUTFALL TRUNK (600 AND 675mm)

10 56-23-4

CANADIAN NATIONAL RAILWAY

LEGEND:

- STUDY AREA
- TOWN OF GIBBONS BOUNDARY
- PROPOSED IMPROVEMENTS
- EXISTING FORCE MAIN
- PROPOSED FORCE MAIN
- EXISTING PIPE AND NODE
- PROPOSED PIPE AND NODE
- STORAGE LOCATION
- PUMP STATION

0 150 300 m SCALE 1:15000

Town of Gibbons
Sanitary Servicing Concept Update

Alternative 2

UMA | AECOM

Figure - 5

APPENDIX B

Highway 28/28A Functional Planning Study, completed by AMEC for Alberta Transportation (Excerpts)

PRELIMINARY FUNCTIONAL PLAN

PLAN DESCRIPTION
HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY

BAR CODE

PLAN No.
CONTRACT No.
INTERSECTION ID

No	BY	DATE

	BY	DATE
SURVEYED	UMA ENG. LTD.	04/08
DESIGNED	AKH & TCD	01/09
CHECKED		
DRAWN	AKH & TCD	02/09

PHOTO No.
TITLE SEARCH DATE 04/08
GRAPHICS FILE

CONSULTANT
PROJECT NO.

FUNCTIONAL PLAN
SUBJECT TO REVISION
DATE: JULY 2010
CastleGlenn Consultants Inc.
Engineers, Project Managers & Planners

HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY
[N OF HWY 37 TO S. OF HWY 651 (TWP RD. 571)]

STAGE I-A

REGION	PLAN No.	PROJECT	CONTRACT No.	SHEET
NORTHERN CENTRAL	P-3349	HWY 28A/28		4 OF 12

Government of Alberta
Transportation

EXISTING SERVICE ROAD
EXISTING HWY 28A
PROPOSED HWY 28A NB LANES
PROPOSED SERVICE ROAD
PROPOSED SERVICE ROAD
EXISTING HWY 28A
PROPOSED SERVICE ROAD
HWY 28A/TWP RD 560 INTERIM INTERSECTION - TO BE REMOVED DURING STAGE 1-B
R 20060
UTILITY CORRIDOR
UTILITY CORRIDOR
UTILITY
TWP RD 560
TWP RD 560
TO RR 233
TO RR 231
S5-28-4
S5-28-4

PLAN DESCRIPTION
HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY

BAR CODE

PLAN No.
CONTRACT No.
INTERSECTION ID

NO	BY	DATE

	BY	DATE
SURVEYED	UMA ENG. LTD.	04/08
DESIGNED	AKH & TCD	01/09
CHECKED		
DRAWN	AKH & TCD	02/09

PHOTO No
TITLE SEARCH DATE 04/08
GRAPHICS FILE

CONSULTANT
PROJECT NO.

FUNCTIONAL PLAN
SUBJECT TO REVISION
DATE: JULY 2010
CastleGlenn Consultants Inc.
Engineers, Project Managers & Planners

HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY
[N OF HWY 37 TO S. OF HWY 651 (TWP RD. 571)]

STAGE I-A

REGION	PLAN No.	PROJECT	CONTRACT No.	SHEET
NORTHERN CENTRAL	P-3349	HWY 28A/28		5 OF 12

Government of Alberta
Transportation

0 100m
HORIZONTAL

PRELIMINARY
FUNCTIONAL PLAN

TOWN OF GIBBONS
50th AVE
53RD AVE
STURGEON RIVER
EXISTING HWY 28A
UTILITY CORRIDOR
UTILITY CORRIDOR
CANADIAN NATIONAL RAILWAY
STURGEON RIVER
EXISTING HWY 643

PRELIMINARY FUNCTIONAL PLAN

CONSULTANT

PROJECT NO.

FUNCTIONAL PLAN
SUBJECT TO REVISION
DATE: JULY 2010

CastleGlenn Consultants Inc.
Engineers, Project Managers & Planners

HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY
[N OF HWY 37 TO S. OF HWY 651 (TWP RD. 571)]

STAGE I-B

Government of Alberta
Transportation

REGION	PLAN No.	PROJECT	CONTRACT No.	SHEET
NORTHERN CENTRAL	P-3349	HWY 28A/28		6 OF 12

HORIZONTAL

PLAN DESCRIPTION
HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY

BAR CODE

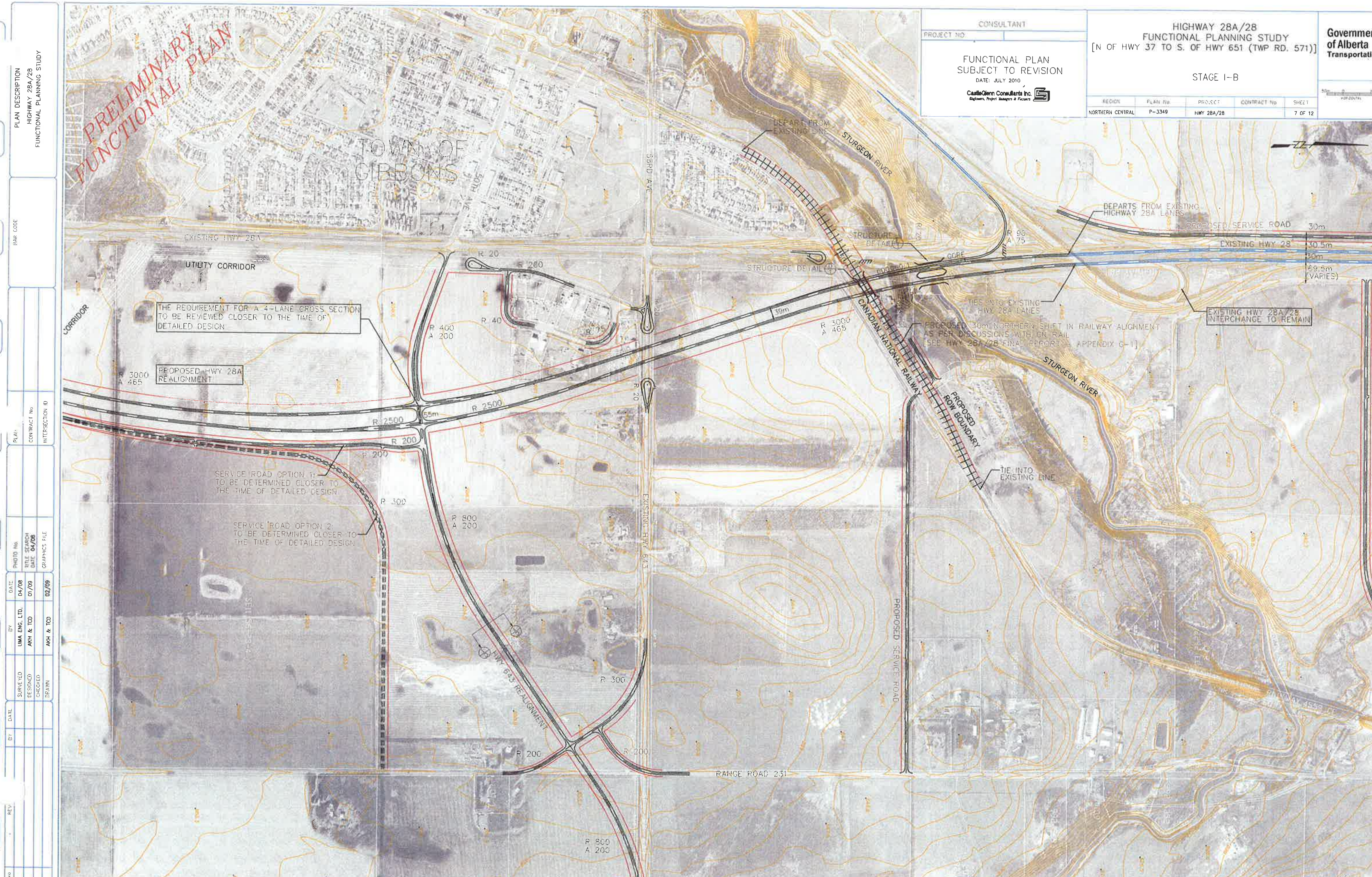
No	REVISION	BY	DATE

	BY	DATE
SURVEYED	UMA ENG. LTD.	04/08
DESIGNED	AKH & TCD	01/09
CHECKED		
DRAWN	AKH & TCD	02/09

PLAN No.
CONTRACT No.
INTERSECTION ID

PHOTO No.
TITLE SEARCH DATE 04/05
GRAPHICS FILE

UTILITY CORRIDOR
EXISTING SERVICE ROAD
EXISTING HWY 28A
R 20000
PROPOSED HWY 28A NB LANES
PROPOSED SERVICE ROAD
PROPOSED SERVICE ROAD
EXISTING HWY 28A
PROPOSED SERVICE ROAD
TO RR 233
TWP RD 560
TIES INTO EXISTING HWY 28A ALIGNMENT
HWY 28A/TWP RD 560 INTERSECTION CLOSED
R 3000
A 465
PROPOSED HWY 28A
PROPOSED SERVICE ROAD
40.5m
39m
30.5m
30m
UTILITY CORRIDOR
UTILITY CORRIDOR
TO RR 231


CONSULTANT
PROJECT NO
FUNCTIONAL PLAN
SUBJECT TO REVISION
DATE: JULY 2010
CastleGlenn Consultants Inc.
HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY
[N OF HWY 37 TO S. OF HWY 651 (TWP RD. 571)]
STAGE I-B
REGION
NORTHERN CENTRAL
PLAN No
P-3349
PROJECT
HWY 28A/28
CONTRACT No
SHEET
7 OF 12
Government of Alberta
Transportation
PRELIMINARY
FUNCTIONAL PLAN
TOWN OF GIBBONS
50TH AVE
53RD AVE
EXISTING HWY 28A
UTILITY CORRIDOR
CORRIDOR
THE REQUIREMENT FOR A 4-LANE CROSS SECTION
TO BE REVIEWED CLOSER TO THE TIME OF
DETAILED DESIGN
PROPOSED HWY 28A
REALIGNMENT
R 3000
A 465
R 2500
R 200
55m
R 20
R 280
R 400
A 200
R 40
R 75
39m
SERVICE ROAD OPTION 1:
TO BE DETERMINED CLOSER TO
THE TIME OF DETAILED DESIGN
SERVICE ROAD OPTION 2:
TO BE DETERMINED CLOSER TO
THE TIME OF DETAILED DESIGN
R 300
R 800
A 200
HWY 643 REALIGNMENT
EXISTING HWY 643
RANGE ROAD 231
DEPART FROM
EXISTING LINE
STURGEON RIVER
STRUCTURE
DETAIL
STRUCTURE DETAIL
R 90
A 75
GORE
CANADIAN NATIONAL RAILWAY
PROPOSED
ROW BOUNDARY
PROPOSED 30m NORTHERN SHIFT IN RAILWAY ALIGNMENT
AS PER DISCUSSIONS WITH CN RAIL
[SEE HWY 28A/28 FINAL REPORT - APPENDIX G-1]
TIES INTO EXISTING
HWY 28A LANES
TIE INTO
EXISTING LINE
PROPOSED SERVICE ROAD
DEPARTS FROM EXISTING
HIGHWAY 28A LANES
PROPOSED SERVICE ROAD
EXISTING HWY 28
30m
30.5m
30m
69.5m
(VARIES)
EXISTING HWY 28A/28
INTERCHANGE TO REMAIN
PLAN DESCRIPTION
HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY
BAR CODE
PLAN
CONTRACT No
INTERSECTION ID
PHOTO No.
TITLE SEARCH DATE 04/08
GRAPHICS FILE
SURVEYED
DESIGNED
CHECKED
DRAWN
BY
UMA ENG. LTD.
AKH & TCD
AKH & TCD
DATE
04/08
01/09
02/09
No
REV
BY
DATE


CONSULTANT
PROJECT NO
FUNCTIONAL PLAN
SUBJECT TO REVISION
DATE: JUNE 2010
CastleGlenn Consultants Inc.
Engineers, Project Managers & Planners
HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY
[N OF HWY 37 TO S. OF HWY 651 (TWP RD. 571)]
STAGE II – DIAMOND INTERCHANGE
HIGHWAY 28A AND HIGHWAY 643
REGION
NORTHERN CENTRAL
PLAN No
P-3349
PROJECT
HWY 28A/28
CONTRACT No
SHEET
11 OF 12
Government of Alberta
Transportation
PRELIMINARY FUNCTIONAL PLAN
PLAN DESCRIPTION
HIGHWAY 28A/28
FUNCTIONAL PLANNING STUDY
PLAN No
CONTRACT No
INTERSECTION ID
PHOTO No
TITLE SEARCH DATE 04/08
GRAPHICS FILE
SURVEYED UMA ENG. LTD. 04/08
DESIGNED AKH 01/09
CHECKED TD 02/09
DRAWN
BY
DATE
REVISION
No
EXISTING HWY 28A
UTILITY CORRIDOR
PROPOSED HWY 28A
PROPOSED SERVICE ROAD
WEST RAMP TERMINAL
SEE SHEET 13 QUADRANT ACCOMMODATES FUTURE LOOP
SEE STRUCTURE DETAIL
SIGNALIZED RAMP TERMINAL
R 2500
R 300
R 800
A 200
R 200
RANGE ROAD 231
EXISTING HWY 643
53RD AVE
50TH AVE
PROPOSED REALIGNED HWY 643
CANADIAN NATIONAL RAILWAY
STURGEON RIVER
GORE

APPENDIX C

Stormwater Model Results

Current Directory: C:\PROGRA~2\XPSOLU~1\XPSWMM~1

Engine Name: C:\PROGRA~2\XPSOLU~1\XPSWMM~1\SWMMEN~2.EXE

Input File : gn and Survey Data\Storm\SWMF-interconnected-170316_100yr Huff.XP

==

| xpswmm |

| Storm and Wastewater Management Model |

| Developed by XP Solutions Inc. |

|==|

| Last Update : Jan., 2013 |

| Interface Version: 2012 |

| Engine Version : 12.0 |

| Data File Version: 12.6 |

==

Engine Name: C:\PROGRA~2\XPSOLU~1\XPSWMM~1\SWMMEN~2.EXE

##

Rainfall input summary from Runoff

##

Total rainfall for gage # 1 is 126.6297 mm

##############################

Data Group F1

Evaporation Rate (mm/day)

##############################

Table R1. S U B C A T C H M E N T D A T A

Physical Hydrology Data

##

Subcatchment Number	Channel Name	Width or inlet (m)	Area (Ha)	Per-cent Imperv	Slope ft/ft	"n" Imprv	"n" Perv	Storge Imprv	Storge Perv	Deprs -sion Imprv	Deprs -sion Perv	Prcnt Zero -tion

1	Node61#1	Node61	500.00	31.770	70.00	0.001	0.015	0.250	2.000	8.000	25.00
2	Node60#1	Node60	150.00	8.0000	70.00	0.005	0.015	0.250	2.000	8.000	25.00
3	Node71#1	Node71	100.00	14.340	70.00	0.001	0.015	0.250	3.200	6.400	30.00
4	SWMF3#1	SWMF3	200.00	3.0000	100.00	0.001	0.015	0.250	2.000	8.000	25.00
5	Node59#1	Node59	200.00	11.240	70.00	0.002	0.015	0.250	2.000	8.000	25.00
6	Node66#1	Node66	450.00	14.060	70.00	0.001	0.015	0.250	2.000	8.000	25.00
7	Node66#2	Node66	350.00	15.830	65.00	0.001	0.015	0.250	2.000	8.000	25.00
8	Node67#1	Node67	100.00	13.400	70.00	0.001	0.015	0.250	3.200	6.400	30.00
9	Node1#1	Node1	100.00	15.130	70.00	0.025	0.015	0.250	2.000	8.000	25.00
10	Node58#1	Node58	300.00	35.000	70.00	0.002	0.015	0.250	2.000	8.000	25.00
11	Node57#1	Node57	30.000	4.6700	80.00	0.005	0.015	0.250	3.200	6.400	30.00
12	Node64#1	Node64	200.00	4.9300	20.00	0.001	0.015	0.250	3.200	6.400	30.00
13	Node68#1	Node68	100.00	15.130	70.00	0.001	0.015	0.250	3.200	6.400	30.00
14	Node72#1	Node72	150.00	2.5000	70.00	0.001	0.015	0.250	2.000	8.000	25.00
15	SWMF1#1	SWMF1	100.00	3.5000	100.00	0.001	0.015	0.250	2.000	8.000	25.00
16	SWMF2#1	SWMF2	250.00	3.0000	100.00	0.005	0.015	0.250	2.000	8.000	25.00

==========

| Table E15 - SPREADSHEET INFO LIST |

| Conduit Flow and Junction Depth Information for use in |

| spreadsheets. The maximum values in this table are the |

| true maximum values because they sample every time step.|

| The values in the review results may only be the |

| maximum of a subset of all the time steps in the run. |

| Note: These flows are only the flows in a single barrel.|

==========

Conduit Name	Maximum Flow (cms)	Total Flow (m^3)	Maximum Velocity (m/s)	Maximum Volume (m^3)	##	Junction Name	Invert Elevation (m)	Maximum Elevation (m)

chanel1	0.5423	15451.9763	0.5019	3066.0338	##	SWMF1	648.2000	650.4782
Link53	1.1993	33868.6009	1.5547	809.9752	##	Node1	648.6500	650.4783
Link54	0.1814	4980.9701	0.7125	791.7894	##	Node57	649.2000	650.4785
Link56	0.4247	11220.9183	0.9373	863.4191	##	Node58	649.2000	652.0000
Link59	-0.1524	3116.3353	0.4172	164.6703	##	Node59	649.1000	649.9525
Link61	1.0684	29112.9105	1.4268	492.2612	##	Node60	650.1750	651.4540
Link62	0.4587	14498.5690	0.7889	644.7389	##	Node61	650.1750	651.8004
Link63	0.4253	12920.5367	0.7821	632.1275	##	SWMF2	648.0000	649.9523
Link65	1.1222	31317.6537	1.5047	287.4340	##	Node63	647.9970	648.4115
Link66	0.3023	8048.0755	0.7525	287.4377	##	Node64	648.3000	650.8499
Link67	0.4496	13782.4625	0.8086	407.8654	##	Node66	648.6000	650.5411
Link68	-0.1614	2571.5469	0.5113	164.6703	##	Node67	648.4800	649.9542
Link69	0.1383	71448.7476	0.6330	112.0294	##	Node68	648.6800	650.4803
Link70	0.2952	56223.2922	1.8536	22.9081	##	SWMF3	650.0000	651.4459
o-2	0.4526	176158.1943	3.2829	40.9772	##	Node71	650.2500	651.4525
FREE # 1	0.4541	176168.6892	0.0000	0.0000	##	Node72	648.3000	650.9228

==========

| Table E15a - SPREADSHEET REACH LIST |

| Peak flow and Total Flow listed by Reach or those |

| conduits or diversions having the same |

| upstream and downstream nodes. |

==========

Upstream Node	Downstream Node	Maximum Flow (cms)	Total Flow (m^3)
Node1	SWMF1	0.5423	15451.9763
Node58	SWMF1	1.1993	33868.6009

Node57	SWMF1	0.1814	4980.9701
Node59	SWMF2	0.4247	11220.9183
Node64	SWMF1	-0.1524	3116.3353
Node66	SWMF2	1.0684	29112.9105
Node68	SWMF1	0.4587	14498.5690
Node67	SWMF2	0.4253	12920.5367
Node61	SWMF3	1.1222	31317.6537
Node60	SWMF3	0.3023	8048.0755
Node71	SWMF3	0.4496	13782.4625
Node72	SWMF1	-0.1614	2571.5469
SWMF1	SWMF2	0.1383	71448.7476
SWMF3	SWMF2	0.2952	56223.2922
SWMF2	Node63	0.4526	176158.194

##

Table E16. New Conduit Information Section

Conduit Invert (IE) Elevation and Conduit

Maximum Water Surface (WS) Elevations

##

Conduit Name	Upstream Node	Downstream Node	IE Up	IE Dn	WS Up	WS Dn	Conduit Type
chanel1	Node1	SWMF1	648.6500	648.2000	650.4783	650.4782	Natural
Link53	Node58	SWMF1	649.2000	648.2000	652.0000	650.4782	Circular
Link54	Node57	SWMF1	649.2000	648.2000	650.4785	650.4782	Circular
Link56	Node59	SWMF2	649.1000	648.0000	649.9525	649.9523	Circular
Link59	Node64	SWMF1	648.3000	648.2000	650.8499	650.4782	Circular
Link61	Node66	SWMF2	648.6000	648.0000	650.5411	649.9523	Circular
Link62	Node68	SWMF1	648.6800	648.2000	650.4802	650.4782	Circular
Link63	Node67	SWMF2	648.4800	648.0000	649.9542	649.9523	Circular
Link65	Node61	SWMF3	650.1750	650.0000	651.8004	651.4459	Circular

Link66 Node60 SWMF3 650.1750 650.0000 651.4540 651.4459 Circular

Link67 Node71 SWMF3 650.2500 650.0000 651.4525 651.4459 Circular

Link68 Node72 SWMF1 648.3000 648.2000 650.9014 650.4782 Circular

Link69 SWMF1 SWMF2 648.2000 648.0000 650.4782 649.9523 Circular

Link70 SWMF3 SWMF2 650.0000 649.0000 651.4459 649.9523 Circular

o-2 SWMF2 Node63 648.0000 647.9970 649.9523 648.4115 Circ Orif

==========

| Table E18 - Junction Continuity Error. Division by Volume added 11/96 |

| Continuity Error = Net Flow + Beginning Volume - Ending Volume |

| Total Flow + (Beginning Volume + Ending Volume)/2 |

| Net Flow = Node Inflow - Node Outflow |

| Total Flow = absolute (Inflow + Outflow) |

| Intermediate column is a judgement on the node continuity error. |

| Excellent < 1 percent Great 1 to 2 percent Good 2 to 5 percent |

| Fair 5 to 10 percent Poor 10 to 25 percent Bad 25 to 50 percent |

| Terrible > 50 percent |

==========

Junction Name	<------Continuity Error -------> Volume	% of Node	% of Inflow	Remaining Volume	Beginning Volume	Net Flow Thru Node	Total Flow Thru Node	Failed to Converge
SWMF1	-136.0443	-0.0884	0.0707	7359.7806	0.0000	7223.7363	150179.0584	0
Node1	-395.4803	-1.2912	0.2056	73.2630	0.0000	-322.2173	30592.3277	0
Node57	-65.2613	-0.6557	0.0339	37.4029	0.0000	-27.8584	9934.3512	0
Node58	175.9534	0.2582	0.0915	37.4029	0.0000	398.5413	68137.6192	0
Node59	-68.6848	-0.3061	0.0357	43.9504	0.0000	-24.7344	22418.0391	0
Node60	-17.5218	-0.1090	0.0091	0.4081	0.0000	-17.1137	16079.6342	0
Node61	9.8482	0.0157	0.0051	0.4081	0.0000	10.2563	62647.6137	0
SWMF2	-176.7898	-0.0484	0.0919	8598.9289	0.0000	8422.1391	360740.1088	0

Node63	-15.1214	-0.0043	0.0079	14.6754	0.0000	-0.4460	352326.8835	0
Node64	-74.6527	-1.2047	0.0388	17.9070	0.0000	-56.7457	6187.7625	0
Node66	32.9015	0.0564	0.0171	23.9727	0.0000	56.8741	58284.8626	0
Node67	-59.2288	-0.2293	0.0308	31.9635	0.0000	-27.2652	25815.1078	0
Node68	-44.5115	-0.1535	0.0231	29.9223	0.0000	-14.5892	28985.6816	0
SWMF3	-14.1513	-0.0125	0.0074	586.0223	0.0000	571.8710	113019.2717	0
Node71	-23.4637	-0.0852	0.0122	0.5831	0.0000	-22.8806	27543.8618	0
Node72	-83.3582	-1.6344	0.0433	17.9070	0.0000	-65.4511	5091.2110	0

The total continuity error was -955.57 cubic meters

The remaining total volume was 16874. cubic meters

Your mean node continuity error was Excellent

Your worst node continuity error was Excellent

===

| Table E20 - Junction Flooding and Volume Listing. |

| The maximum volume is the total volume |

| in the node including the volume in the |

| flooded storage area. This is the max |

| volume at any time. The volume in the |

| flooded storage area is the total volume|

| above the ground elevation, where the |

| flooded pond storage area starts. |

| The fourth column is instantaneous, the fifth is the|

| sum of the flooded volume over the entire simulation|

| Units are either ft^3 or m^3 depending on the units.|

===

Junction Name	Surcharged Time (min)	Flooded Time(min)	Out of 1D-System (Flooded Volume)	Passed to 2D cell OR Volume Stored Maximum	in allowed Flood Pond of 1D-System

SWMF1	6738.0000	0.0000	0.0000	59407.9836	0.0000
Node1	4864.7500	0.0000	0.0000	2.2305	0.0000
Node57	2160.4375	0.0000	0.0000	1.5598	0.0000
Node58	2671.2500	66.4375	185.1849	3.4160	0.0000
Node59	0.0000	0.0000	0.0000	1.0400	0.0000
Node60	1332.9375	0.0000	0.0000	1.5604	0.0000
Node61	1627.5208	0.0000	0.0000	1.9830	0.0000
SWMF2	3664.5000	0.0000	0.0000	55446.7961	0.0000
Node63	9970.0000	0.0000	0.0000	0.5058	0.0000
Node64	6326.2500	0.0000	0.0000	3.1108	0.0000
Node66	3534.5000	0.0000	0.0000	2.3682	0.0000
Node67	3616.7250	0.0000	0.0000	1.7985	0.0000
Node68	4805.2500	0.0000	0.0000	2.1963	0.0000
SWMF3	1754.4375	0.0000	0.0000	37527.2399	0.0000
Node71	1176.1667	0.0000	0.0000	1.4671	0.0000
Node72	6326.0000	0.0000	0.0000	3.1737	0.0000

==================================

| Simulation Specific Information |

==================================

Number of Input Conduits..... 14 Number of Simulated Conduits..... 16

Number of Natural Channels..... 1 Number of Junctions..... 16

Number of Storage Junctions..... 3 Number of Weirs..... 0

Number of Orifices..... 1 Number of Pumps..... 0

Number of Free Outfalls..... 1 Number of Tide Gate Outfalls..... 0

==

| Average % Change in Junction or Conduit is defined as: |

| Conduit % Change ==> 100.0 (Q(n+1) - Q(n)) / Qfull |

| Junction % Change ==> 100.0 (Y(n+1) - Y(n)) / Yfull |

==========

The Conduit with the largest average change was..Link59 with 0.013 percent

The Junction with the largest average change was.Node64 with 1.018 percent

The Conduit with the largest sinuosity was.....Link59 with 598.491

==========

| Table E21. Continuity balance at the end of the simulation |

| Junction Inflow, Outflow or Street Flooding |

| Error = Inflow + Initial Volume - Outflow - Final Volume |

==========

Junction	Inflow Volume, m^3	Average Inflow, cms
SWMF1	4242.3123	0.0070
Node1	15140.3515	0.0250
Node57	4953.3811	0.0082
Node58	34269.0182	0.0567
Node59	11197.1208	0.0185
Node60	8031.5587	0.0133
Node61	31329.9600	0.0518
SWMF2	3655.5093	0.0060
Node64	3071.4273	0.0051
Node66	29171.9521	0.0482
Node67	12894.5711	0.0213
Node68	14487.1126	0.0240
SWMF3	3647.7878	0.0060
Node71	13761.3993	0.0228
Node72	2519.6641	0.0042
Node58	-185.1849	-0.0003
Node63	-176168.6892	-0.2913

```
     Outflow     Outflow       Average
     Junction  Volume m^3    Outflow, cms
---------------  ------------  ------------
      Node58     185.1849       0.0003
      Node63   176168.6892       0.2913
*=====================================================*
| Initial system volume       =        0.0000 Cu M  |
| Total system inflow volume   =    192369.3114 Cu M  |
| Inflow + Initial volume     =    192369.3114 Cu M  |
*=====================================================*
| Total system outflow        =    176353.8741 Cu M  |
| Volume left (Final volume)   =     16874.4984 Cu M  |
| Evaporation                 =        0.0000 Cu M  |
| Basin Infiltration          =        0.0000 Cu M  |
| Outflow + Final Volume      =    193228.3726 Cu M  |
*=====================================================*
*=============================================*
| Total Model Continuity Error                |
| Error in Continuity, Percent =       -0.4466 |
| Error in Continuity, m^3     =      -859.061 |
| + Error means a continuity loss, - a gain     |
*=============================================*
#####################################################
# Table E22. Numerical Model judgement section    #
#####################################################
Overall error was (minimum of Table E18 & E21)           -0.4466 percent
Worst nodal error was in node Node1          with       -1.2927 percent
Of the total inflow this loss was                     0.2056 percent
```

Your overall continuity error was Excellent

Excellent Efficiency

Efficiency of the simulation 1.51

Most Number of Non Convergences at one Node 0.

Total Number Non Convergences at all Nodes 0.

Total Number of Nodes with Non Convergences 0.

##

Table E23. New Basin Design Information

Maximum Hydraulic Grade Line,

Out Conduit Sizes and Maximum Flow

##

A) Resize d/s Pipes based on given HGL

B) Resize Basin based on given HGL

C) Resize d/s Pipes and Basin based on HGL and max discharge

D) Resize d/s pipes based on given max discharge

Basin Name	Type	Max.HGL (m)	Conduit	Depth (m)	Width (m)	Barrels	Max.Flow (m^3/s)

==

| SWMM Simulation Date and Time Summary |

==

| Starting Date... March 17, 2017 Time... 8:45:17:42 |

| Ending Date... March 17, 2017 Time... 8:45:37:23 |

| Elapsed Time... 0.33017 minutes or 19.81000 seconds |

==

pond summary

Name	Storm	Max Water El	Max Volume	Max Surface	Final Elevation	Final Volume	Total Rainfall	Max Water De
SWMF1	100yr Huff	650.478	59407.984	31391.920	648.527	59407.980	126.630	2.278
Node1	100yr Huff	650.478	2.231	1.220	648.650	2.230	126.630	1.828
Node57	100yr Huff	650.479	1.560	1.220	649.200	1.560	126.630	1.279
Node58	100yr Huff	652.000	3.416	1.220	649.200	3.420	126.630	2.800
Node59	100yr Huff	649.952	1.040	1.220	649.100	1.040	126.630	0.852
Node60	100yr Huff	651.454	1.560	1.220	650.175	1.560	126.630	1.279
Node61	100yr Huff	651.800	1.983	1.220	650.175	1.980	126.630	1.625
SWMF2	100yr Huff	649.952	55446.796	33154.730	648.343	55446.800	126.630	1.952
Node63	100yr Huff	648.412	0.506	1.220	648.221	0.510	0.000	0.415
Node64	100yr Huff	650.829	3.111	1.220	648.526	3.110	126.630	2.529
Node66	100yr Huff	650.541	2.368	1.220	648.600	2.370	126.630	1.941
Node67	100yr Huff	649.954	1.799	1.220	648.480	1.800	126.630	1.474
Node68	100yr Huff	650.480	2.196	1.220	648.680	2.200	126.630	1.800
SWMF3	100yr Huff	651.446	37527.240	29243.210	650.026	37527.240	126.630	1.446
Node71	100yr Huff	651.453	1.467	1.220	650.250	1.470	126.630	1.203
Node72	100yr Huff	650.923	3.174	1.220	648.526	3.170	126.630	2.623

APPENDIX D

Water System – ADD Model Results

FlexTable: Junction Table

Active Scenario: ADD-Existing+Annexation

Current Time: 0.000 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
937	J-31	655.00	0.47	701.47	455
939	J-32	656.50	0.30	701.46	440
941	J-33	653.00	0.34	701.46	474
943	J-34	653.00	0.54	701.47	474
954	J-38	657.00	0.33	701.48	435
984	J-48	656.00	0.56	701.44	445
986	J-49	655.00	0.70	701.43	454
1050	J-70	659.00	0.00	701.32	414
1052	J-71	653.00	0.59	701.32	473
1054	J-72	655.00	0.31	701.29	453
1056	J-73	657.00	0.31	701.31	434
1059	J-74	654.00	0.94	701.40	464
1069	J-78	652.00	0.00	701.40	484
1071	J-79	654.48	0.00	701.43	459
1077	J-81	652.00	0.00	701.35	483
1159	J-84	654.00	0.40	701.33	463
1161	J-85	659.00	0.00	701.32	414

FlexTable: Pipe Table

Active Scenario: ADD-Existing+Annexation

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (mm)	material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Length (Scaled) (m)	Headloss Gradient (m/km)
P-56	J-31	J-32	300.0	pvc	120.0	4.47	0.06	286	0.024
P-57	J-32	J-33	250.0	pvc	120.0	1.89	0.04	441	0.012
P-58	J-33	J-34	300.0	pvc	120.0	-6.38	0.09	236	0.046
P-66	J-38	J-32	250.0	pvc	120.0	3.21	0.07	585	0.031
P-67	J-31	J-38	300.0	pvc	120.0	-4.94	0.07	402	0.029
P-68	J-31	J-34	250.0	pvc	120.0	(N/A)	(N/A)	445	(N/A)
P-85	J-32	J-48	300.0	pvc	120.0	5.49	0.08	464	0.034
P-86	J-48	J-49	300.0	pvc	120.0	4.93	0.07	550	0.028
P-130	J-70	J-71	300.0	pvc	120.0	-1.59	0.02	303	0.004
P-131	J-71	J-72	300.0	pvc	120.0	9.03	0.13	293	0.087
P-132	J-72	J-73	250.0	pvc	120.0	-4.24	0.09	330	0.052
P-133	J-73	J-70	300.0	pvc	120.0	-4.55	0.06	296	0.024
P-134	J-49	J-74	300.0	pvc	120.0	7.84	0.11	473	0.067
P-140	J-74	J-78	250.0	pvc	120.0	-4.32	0.09	116	0.054
P-141	J-49	J-79	300.0	pvc	120.0	-3.61	0.05	212	0.016
P-142	J-79	J-33	300.0	pvc	120.0	-7.93	0.11	338	0.068
P-143	J-78	J-79	250.0	pvc	120.0	-4.32	0.09	534	0.054
P-145	J-74	J-81	300.0	pvc	120.0	11.22	0.16	380	0.130
P-146	J-81	J-71	300.0	pvc	120.0	11.22	0.16	220	0.130
P-150	J-351F	J-84	300.0	pvc	120.0	3.35	0.05	146	0.014
P-151	J-84	J-85	300.0	pvc	120.0	2.95	0.04	355	0.011
P-152	J-85	J-70	300.0	pvc	120.0	2.95	0.04	312	0.011

APPENDIX E

Water System – MDD Model Results

FlexTable: Junction Table

Active Scenario: MDD-Existing+Annexation

Current Time: 0.000 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
937	J-31	655.00	0.94	701.23	452
939	J-32	656.50	0.60	701.22	438
941	J-33	653.00	0.68	701.21	472
943	J-34	653.00	1.08	701.24	472
954	J-38	657.00	0.66	701.24	433
984	J-48	656.00	1.12	701.19	442
986	J-49	655.00	1.40	701.17	452
1050	J-70	659.00	0.00	701.02	411
1052	J-71	653.00	1.18	701.02	470
1054	J-72	655.00	0.62	701.00	450
1056	J-73	657.00	0.62	701.01	431
1059	J-74	654.00	1.88	701.13	461
1069	J-78	652.00	0.00	701.14	481
1071	J-79	654.48	0.00	701.18	457
1077	J-81	652.00	0.00	701.06	480
1159	J-84	654.00	0.80	701.03	460
1161	J-85	659.00	0.00	701.03	411

FlexTable: Pipe Table

Active Scenario: MDD-Existing+Annexation

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (mm)	material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Length (Scaled) (m)	Headloss Gradient (m/km)
P-56	J-31	J-32	300.0	pvc	120.0	5.22	0.07	286	0.031
P-57	J-32	J-33	250.0	pvc	120.0	1.51	0.03	441	0.008
P-58	J-33	J-34	300.0	pvc	120.0	-9.47	0.13	236	0.095
P-66	J-38	J-32	250.0	pvc	120.0	3.91	0.08	585	0.045
P-67	J-31	J-38	300.0	pvc	120.0	-6.16	0.09	402	0.043
P-68	J-31	J-34	250.0	pvc	120.0	(N/A)	(N/A)	445	(N/A)
P-85	J-32	J-48	300.0	pvc	120.0	7.02	0.10	464	0.054
P-86	J-48	J-49	300.0	pvc	120.0	5.90	0.08	550	0.039
P-130	J-70	J-71	300.0	pvc	120.0	-2.36	0.03	303	0.007
P-131	J-71	J-72	300.0	pvc	120.0	9.37	0.13	293	0.093
P-132	J-72	J-73	250.0	pvc	120.0	-4.21	0.09	330	0.051
P-133	J-73	J-70	300.0	pvc	120.0	-4.83	0.07	296	0.027
P-134	J-49	J-74	300.0	pvc	120.0	9.49	0.13	473	0.095
P-140	J-74	J-78	250.0	pvc	120.0	-5.30	0.11	116	0.079
P-141	J-49	J-79	300.0	pvc	120.0	-4.99	0.07	212	0.029
P-142	J-79	J-33	300.0	pvc	120.0	-10.29	0.15	338	0.111
P-143	J-78	J-79	250.0	pvc	120.0	-5.30	0.11	534	0.079
P-145	J-74	J-81	300.0	pvc	120.0	12.91	0.18	380	0.168
P-146	J-81	J-71	300.0	pvc	120.0	12.91	0.18	220	0.168
P-150	J-351F	J-84	300.0	pvc	120.0	3.27	0.05	146	0.013
P-151	J-84	J-85	300.0	pvc	120.0	2.47	0.03	355	0.008
P-152	J-85	J-70	300.0	pvc	120.0	2.47	0.03	312	0.008

APPENDIX F

Water System – MDD+235 L/s Model Results

FlexTable: Junction Table

Active Scenario: MDD+FF-Existing+Annexation

MDD+ 235 L/s @ J-72

Current Time: 0.000 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
937	J-31	655.00	0.94	694.11	383
939	J-32	656.50	0.60	693.19	359
941	J-33	653.00	0.68	691.80	380
943	J-34	653.00	1.08	692.26	384
954	J-38	657.00	0.66	695.44	376
984	J-48	656.00	1.12	691.54	348
986	J-49	655.00	1.40	689.65	339
1050	J-70	659.00	0.00	676.88	175
1052	J-71	653.00	1.18	676.78	233
1054	J-72	655.00	235.62	671.18	158
1056	J-73	657.00	0.62	675.33	179
1059	J-74	654.00	1.88	686.22	315
1069	J-78	652.00	0.00	686.87	341
1071	J-79	654.48	0.00	689.86	346
1077	J-81	652.00	0.00	680.25	276
1159	J-84	654.00	0.80	681.92	273
1161	J-85	659.00	0.00	679.24	198

FlexTable: Pipe Table
Active Scenario: MDD+FF-Existing+Annexation
MDD+ 235 L/s @ J-72

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (mm)	material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Length (Scaled) (m)	Headloss Gradient (m/km)
P-56	J-31	J-32	300.0	pvc	120.0	63.43	0.90	286	3.207
P-57	J-32	J-33	250.0	pvc	120.0	38.95	0.79	441	3.160
P-58	J-33	J-34	300.0	pvc	120.0	-48.61	0.69	236	1.959
P-66	J-38	J-32	250.0	pvc	120.0	43.22	0.88	585	3.831
P-67	J-31	J-38	300.0	pvc	120.0	-64.37	0.91	402	3.296
P-68	J-31	J-34	250.0	pvc	120.0	(N/A)	(N/A)	445	(N/A)
P-85	J-32	J-48	300.0	pvc	120.0	67.10	0.95	464	3.560
P-86	J-48	J-49	300.0	pvc	120.0	65.98	0.93	550	3.450
P-130	J-70	J-71	300.0	pvc	120.0	18.08	0.26	303	0.314
P-131	J-71	J-72	300.0	pvc	120.0	166.48	2.36	293	19.156
P-132	J-72	J-73	250.0	pvc	120.0	-82.10	1.67	330	12.571
P-133	J-73	J-70	300.0	pvc	120.0	-82.72	1.17	296	5.245
P-134	J-49	J-74	300.0	pvc	120.0	98.41	1.39	473	7.235
P-140	J-74	J-78	250.0	pvc	120.0	-53.05	1.08	116	5.599
P-141	J-49	J-79	300.0	pvc	120.0	-33.83	0.48	212	1.001
P-142	J-79	J-33	300.0	pvc	120.0	-86.88	1.23	338	5.744
P-143	J-78	J-79	250.0	pvc	120.0	-53.05	1.08	534	5.599
P-145	J-74	J-81	300.0	pvc	120.0	149.58	2.12	380	15.710
P-146	J-81	J-71	300.0	pvc	120.0	149.58	2.12	220	15.710
P-150	J-351F	J-84	300.0	pvc	120.0	101.60	1.44	146	7.676
P-151	J-84	J-85	300.0	pvc	120.0	100.80	1.43	355	7.564
P-152	J-85	J-70	300.0	pvc	120.0	100.80	1.43	312	7.564

Fire Flow Node FlexTable: Fire Flow Report
Active Scenario: MDD+FF-Existing+Annexation

Current Time: 0.000 hours

Label	Fire Flow (Needed) (L/s)	Flow (Total Needed) (L/s)	Fire Flow (Available) (L/s)	Satisfies Fire Flow Constraints?	Pressure (Residual Lower Limit) (kPa)	Fire Flow Iterations	Pressure (Calculated Residual) (kPa)
J-31	235.00	235.94	250.00	True	140	2	288
J-32	235.00	235.60	250.00	True	140	2	293
J-33	235.00	235.68	250.00	True	140	2	320
J-34	235.00	236.08	250.00	True	140	2	312
J-38	235.00	235.66	250.00	True	140	2	297
J-48	235.00	236.12	250.00	True	140	2	250
J-49	235.00	236.40	250.00	True	140	2	276
J-70	235.00	235.00	244.97	True	140	3	140
J-71	235.00	236.18	250.00	True	140	2	195
J-72	235.00	235.62	242.03	True	140	3	140
J-73	235.00	235.62	235.14	True	140	2	140
J-74	235.00	236.88	250.00	True	140	2	255
J-78	235.00	235.00	250.00	True	140	2	242
J-79	235.00	235.00	250.00	True	140	2	285
J-81	235.00	235.00	250.00	True	140	2	225
J-84	235.00	235.80	250.00	True	140	2	172
J-85	235.00	235.00	241.93	True	140	3	140

APPENDIX G

Water System – PHD Model Results

FlexTable: Junction Table

Active Scenario: PHD-Existing+Annexation

Current Time: 0.000 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
937	J-31	655.00	1.41	699.81	439
939	J-32	656.50	0.90	699.80	424
941	J-33	653.00	1.02	699.79	458
943	J-34	653.00	1.62	699.81	458
954	J-38	657.00	0.99	699.84	419
984	J-48	656.00	1.68	699.76	428
986	J-49	655.00	2.10	699.74	438
1050	J-70	659.00	0.00	699.58	397
1052	J-71	653.00	1.77	699.58	456
1054	J-72	655.00	0.93	699.56	436
1056	J-73	657.00	0.93	699.57	417
1059	J-74	654.00	2.82	699.69	447
1069	J-78	652.00	0.00	699.70	467
1071	J-79	654.48	0.00	699.74	443
1077	J-81	652.00	0.00	699.62	466
1159	J-84	654.00	1.20	699.59	446
1161	J-85	659.00	0.00	699.59	397

FlexTable: Pipe Table

Active Scenario: PHD-Existing+Annexation

Current Time: 0.000 hours

Label	Start Node	Stop Node	Diameter (mm)	material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Length (Scaled) (m)	Headloss Gradient (m/km)
P-56	J-31	J-32	300.0	pvc	120.0	6.75	0.10	286	0.051
P-57	J-32	J-33	250.0	pvc	120.0	2.69	0.05	441	0.022
P-58	J-33	J-34	300.0	pvc	120.0	-9.54	0.13	236	0.096
P-66	J-38	J-32	250.0	pvc	120.0	5.13	0.10	585	0.074
P-67	J-31	J-38	300.0	pvc	120.0	-8.16	0.12	402	0.072
P-68	J-31	J-34	250.0	pvc	120.0	(N/A)	(N/A)	445	(N/A)
P-85	J-32	J-48	300.0	pvc	120.0	8.29	0.12	464	0.074
P-86	J-48	J-49	300.0	pvc	120.0	6.61	0.09	550	0.049
P-130	J-70	J-71	300.0	pvc	120.0	-1.56	0.02	303	0.003
P-131	J-71	J-72	300.0	pvc	120.0	9.56	0.14	293	0.097
P-132	J-72	J-73	250.0	pvc	120.0	-4.33	0.09	330	0.054
P-133	J-73	J-70	300.0	pvc	120.0	-5.26	0.07	296	0.032
P-134	J-49	J-74	300.0	pvc	120.0	10.06	0.14	473	0.106
P-140	J-74	J-78	250.0	pvc	120.0	-5.66	0.12	116	0.089
P-141	J-49	J-79	300.0	pvc	120.0	-5.55	0.08	212	0.035
P-142	J-79	J-33	300.0	pvc	120.0	-11.21	0.16	338	0.129
P-143	J-78	J-79	250.0	pvc	120.0	-5.66	0.12	534	0.089
P-145	J-74	J-81	300.0	pvc	120.0	12.89	0.18	380	0.168
P-146	J-81	J-71	300.0	pvc	120.0	12.89	0.18	220	0.168
P-150	J-351F	J-84	300.0	pvc	120.0	4.90	0.07	146	0.028
P-151	J-84	J-85	300.0	pvc	120.0	3.70	0.05	355	0.017
P-152	J-85	J-70	300.0	pvc	120.0	3.70	0.05	312	0.017

APPENDIX D – WETLAND ASSESSMENT FOR ANNEXATION LANDS

TOWN OF GIBBONS ANNEXATION LANDS WETLAND ASSESSMENT

SW-11-56-23-W4

NW-2-56-23-W4

SW-2-56-23-W4

Prepared for: Town of Gibbons

Completed on: June 19, 2017

CPP ENVIRONMENTAL

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Contents

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1. Introduction

The project location is SW-11-56-23-W4, NW-2-56-23-W4, and SW-2-56-23-W4 (the "project area") adjacent to the Town of Gibbons (Figure 1). The project is located in the North Saskatchewan Planning Region and the Aspen Parkland Ecoregion of Alberta. Typical overstory vegetation in the region consists of aspen and poplar stands with some spruce trees intermixed. The forested stands are typically interspersed with areas of prairie grasslands and shrublands, with numerous wetlands on the landscape. Climate is subhumid, with a mean annual precipitation of 456 mm/yr. Land use in the project area is primarily cropland with commercial and urban development occurring outside of project boundaries.

CPP Environmental (CPPENV) completed a wetland assessment within the project boundaries to meet wetland regulatory requirements (AEP, 2015. *Wetland Regulatory Requirements Guide*). Wetlands are administered under the Water Act and in some cases the *Public Lands Act*. Any activity that affects or has the potential to affect a water body and/or the aquatic environment requires an approval under one or both of these Acts. The purpose of this report is to assess wetlands within the project area, as per the *Wetland Assessment and Impact Report Directive* (AEP, 2015), which may support a Water Act/Public Lands Act application.

"water body" means any location where water flows or is present, whether or not the flow or the presence of water is continuous, intermittent or occurs only during a flood, and includes but is not limited to wetlands and aquifers …
- Water Act, 2000, 1(1)(ggg)

"wetland" means land saturated with water for long enough periods of time to promote water altered soils, growth of water tolerant vegetation, and biological activity adapted to a wet environment.
- Alberta Wetland Classification System

2. Methods

The following Alberta Government Directives were used to complete the wetland assessment:

- the Alberta *Wetland Identification and Delineation Directive,*
- the Alberta *Wetland Classification System (AWCS)*,
- the *Guide for Assessing Permanence of Wetland Basins*, and
- the *Wetland Assessment and Impact Report Directive.*

Wetlands were initially identified using a desktop delineation method as per the Alberta Wetland Identification and Delineation Directive (2015)[1]. The Alberta Merged Wetland Inventory was consulted to identify potential wetlands in the project area; however, multiple discrepancies in this dataset (such as identifying residential or upland areas as wetlands) limited its utility for this project. To assess the permanence of wetlands over time, aerial imagery from eight time periods was obtained from the Alberta Environment and Parks Air Photo Distribution Library and evaluated through photo interpretation. While air photo selection was somewhat limited by availability and quality, we selected imagery that was representative of different climatic conditions over a 55 year period (Appendix 1)

Historic climate records for the project area were obtained from the Agro Climatic Information Services (ACIS; Alberta Agriculture and Rural Development; Appendix 4). Precipitation records were analyzed for each air photo to determine average, maximum and minimum values for precipitation in the year, month

[1] Government of Alberta. 2015. Alberta Wetland Identification and Delineation Directive. Alberta Environment and Parks.

and day preceding the photo capture date. The precipitation values were identified as being wetter, dryer or normal conditions and used to support historic air photo interpretation. For each time period, the interpretation process included identifying possible wetlands (within or adjacent to the development area) and delineating the maximum extent of each wetland in each year.

Permanence was determined by assessing the presence and extent of open water over time (both seasonally and inter-annually). Ephemeral waterbodies (i.e., small areas that are wet for only a few days following snowmelt or major precipitation events) were noted in several locations among the years, but these were not sufficiently permanent to delineate. Once delineated, a map was produced for each wetland, showing the most current imagery (background) and polylines for each year/season delineation time (Appendix 2).

Aerial interpretation of vegetation, water flow, and topography was conducted on each of the identified wetlands. Aerial imagery coverage was sufficient across the entire project area (except for a lack of southern coverage in 1962), though because some wetland boundaries were not always obvious (due to both human disturbance and periodic presence of wetland indicators), Pathway 5, "Comprehensive desktop delineation with field verification" was implemented[2]. Field verification occurred on May 19, 2017 to document the soils and vegetation (tree, shrub, and ground strata) of the site and to confirm wetland boundaries and classes. Given the agricultural development in the area and the variable water levels over time, wetland boundaries were delineated in the field to provide an accurate representation of the current wetland extents. Photos from the field verification are included in Appendix 3.

3. Wetland Assessment Results

Eight wetlands were delineated within the proposed project boundaries, none of which were classified as being permanent (see Appendix 4). Table 1 summarizes the water, soil, and vegetation characteristics of each wetland, and a description of each wetland is provided below. Photos from the field verification visit are included in Appendix 3 for each wetland. No wildlife or federally- (SARA/COSEWIC) or provincially- (ACIMS) listed plant species were encountered or observed. All wetlands are depressional (i.e., occur in a low-lying basin on the landscape) and do not have permanent surface water connections to large waterbodies or streams, though some wetlands have ephemeral hydrologic connections to dugouts or each other during wet periods (see Appendix 1). The historical extents of all wetlands, as well as their 2017 field-delineated boundaries, are depicted in Appendix 2.

Wetland 1 (M-G-III), SW-11-56-23-W4

Wetland 1 has been classified as a marsh (M) in the graminoid form (G) and is of the seasonal (III) type. The desktop analysis using air photo interpretation revealed that Wetland 1 became visibly apparent on imagery around 1984, and was largely indistinguishable prior to this date. This may be the result of modifications to topography and drainage patterns elsewhere in the quarter section which led more water to accumulate in this basin. The wetland (as it exists today) had been cultivated in most years of the air photo record, though the presence of water is much more apparent in imagery from 1984 onwards. A small channel to the southwest of Wetland 1 may exist to further drain water from this area into the ditch adjacent to Highway 28A. The amount of water accumulating in the basin appears roughly proportional to the amount of precipitation that fell in the preceding days, weeks and months, which in turn influenced the extent of delineated wetland boundaries.

[2] Government of Alberta. 2015. Alberta Wetland Identification and Delineation Directive. Alberta Environment and Parks.

Field verification of Wetland 1 confirmed its classification as a 0.39 ha seasonal marsh (Table 1). At the time of field verification, there were standing dead cattails (*Typha latifolia*) within the wetland, which indicates in at least the preceding year the wetland had not been entirely cultivated (observable in current imagery as well; Figure 1). Cultivation in 2017 also did not occur in the entire wetland, though field-delineated boundaries extended somewhat into wetter tilled areas around the wetland. Two vegetation zones were observed: a wet meadow zone with plants such as sedges (*Carex* spp.), common dandelion (*Taraxacum officinale*), and juvenile grass, and a shallow wetland zone with cattails (a robust emergent). Standing surface water was observed in the shallow wetland zone and some mottling was observed in the soil pit (indicating fluctuation of the water table), however the water table was not intercepted within the soil pit. Water chemistry measurements of electrical conductivity (1117 µS/cm) and pH (8.8) indicated that this marsh would be considered to be slightly brackish.

Wetland 2 (M-G-III), NW-2-56-23-W4

Wetland 2 has been classified as a marsh (M) in the graminoid form (G) and is of the seasonal type (III). The desktop analysis using air photos found that this wetland has been cultivated in four out of the eight years of the photo record, yet in only one year was the wetland indistinguishable from the surrounding uplands (Appendix 4). This year, 1977, was normal in terms of precipitation volumes, but because the photo was taken in the fall, a wetland being dry at this time is expected for seasonal wetlands. Between 1962 and 1974 a large dugout was constructed southwest of Wetland 2, which may exist to drain water away from Wetland 2 (note the linear channel apparent in 1990, 1997, and 2006). Nevertheless, Wetland 2 appears be wet for a sufficiently long period of time to be classified as seasonal permanency, which is supported by the relatively consistent delineated boundaries over time.

The field verification confirmed the classification of Wetland 2 as a 0.44 ha seasonal marsh (Table 1). This wetland had been cultivated in the previous year, and no wetland vegetation was present at the time of the field verification (the ground was either submerged under water, covered in plant litter or crop stubble, or was exposed soil). This complicated field-level classification as vegetation are key indicators of wetland extent and permanency; however, a fairly large pond indicated that despite cultivation, snowmelt still accumulates in this basin. Within a soil pit, mottling was observed (indicating fluctuating water tables in this area) and the water table was encountered at a shallow depth. The air photo and precipitation record largely drove the classification of Wetland 2 in the absence of abundant vegetation indicators, though the presence of surface water over much of the wetland area and soil pit indicators corroborates the classification as a seasonal marsh.

Wetland 3 (M-G-III), NW-2-56-23-W4

Wetland 3 has been classified as a marsh (M) in the graminoid form (G) and is of the seasonal type (III)). The desktop analysis using air photo interpretation shows that the wetland boundaries have been largely consistent over time, and because this area does not appear to have been cultivated over the air photo record, it is likely that this wetland has not been directly impacted as other wetlands in the project area have. A dugout was constructed between 1962 and 1974 to the northeast of Wetland 3, which appears to influence the wetland's surface water levels. Water from this dugout likely passes through the wetland to another dugout on private property to the southeast (Figure 1).

The field verification confirmed the classification of the 5.41 ha marsh as seasonal (Table 1). Surface water connections with the northeast dugout were confirmed, as were connections with the dugout to the southeast (the latter was on private land and was not field delineated, though wetland extent has been inferred; see below and Figure 1). At the time of field verification, the southeast dugout and its associated wetland vegetation appeared to hydrologically connect Wetland 3 with Wetland 7. The soil had evidence

of mottling in the top 30 cm, indicating fluctuating water levels. Conductivity and pH values indicated a slightly alkaline and brackish wetland – consistent with similar wetlands in this region. The water table was encountered in the soil pit at a 40 cm depth, though surface water was abundant elsewhere in the wetland. Vegetation was dominated by wetland species consistent with the wetland type. The shrub stratum had some willow shrubs (*Salix* spp.) and common cattails (*Typha latifolia*) growing, and the ground stratum had extensive sedge (*Carex* spp.) cover.

Wetland 4 (M-G-III), NW-2-56-23-W4

Wetland 4 has been classified as a marsh (M) in the graminoid form (G) and is of the seasonal type (III). The desktop analysis using air photo interpretation shown that the wetland could be identified and delineated in all of the air photos, though delineation was challenging in 1962 and 1984 due to wetland vegetation being indistinguishable from the upland vegetation. Additionally, the wetland had been at least partially cultivated in five of the eight air photos. Delineated wetland boundaries change over time due to both agricultural disturbance and variable precipitation conditions. Some wetland zonation is apparent on the 1974 and 2012 air photos, indicating that Wetland 4 has multiple vegetation zones that are consistent with those of typical seasonal marshes.

The field verification confirmed the classification of Wetland 4 as a 1.19 ha seasonal marsh (Table 1). Similar to Wetland 2, Wetland 4 had been cultivated in the previous year and no wetland vegetation was apparent at the time of field verification. Surface water coverage in the wetland was extensive, with electrical conductivity measurements indicate that this is a freshwater marsh. While the water table was not encountered in the soil pit, some mottling was observed in the soil pit at a 25 cm depth. The fine-textured soils at this wetland will impede drainage, resulting in a ponding of water for several weeks after snowmelt. As with Wetland 2, field-level wetland indicators were not abundant, but are sufficient to confirm the classification of this wetland as a seasonal marsh when paired with permanency assessments from air photo interpretation and precipitation data.

Wetland 5 (M-G-II), NW-2-56-23-W4

Wetland 5 has been classified as a marsh (M) in the graminoid form (G) and is of the temporary type (II). The desktop analysis using air photo interpretation found that this wetland lies on the border of the project area, with the majority of the wetland area being within the project limits in most years. In all photo years analysed except for 1962, this marsh has been partly or entirely cultivated, to the extent that in 1984 and 2012 the wetland was indistinguishable from the cropland. That Wetland 5 is considered “dry” in the early spring in these years suggests that the wetland likely does not have semi-permanent or even seasonal permanence. Wetland boundaries and extent vary considerably among years, which is indicative of a temporary marsh whose limits are determined by the extent of standing surface water.

The field verification of Wetland 5 confirmed it to be a 0.25 ha wetland (Table 1). As with Wetlands 2 and 4, this wetland had been cultivated in the previous year and no wetland (or any) vegetation was present. Ground cover was a combination of water, plant litter and crop stubble, and exposed soil, with some seedlings (likely agricultural weeds) scattered about. Standing surface water was present in the basin, with an electrical conductivity indicating a freshwater marsh. In the soil pit, the water table was not encountered at a 50 cm depth, though some evidence of mottling and gleying were observed in the fine-textured, poorly-draining soils. Field delineation determined that – similar to desktop analyses – the wetland boundaries were partly within and partly beyond the project area. Cultivation had occurred in the entire wetland in previous years as evident by the crop stubble in the deeper part of the basin – this confirms that the wetland is likely temporary, as the water does not generally persist so long that the area cannot be cultivated.

Wetland 6 (M-G-II) SW-2-56-23-W4

Wetland 6 has been classified as a marsh (M) in the graminoid form and is of the temporary type (II). The desktop analysis using air photo interpretation found that this wetland was generally very small, and was indistinguishable from the surrounding uplands in 1977 and 2012. In 1974 and 1984, cultivation occurred around the wetland, suggesting that at these times the wetland was too wet to till, though in other years such as 1990 and 2006 the wetland itself was cultivated and difficult to delineate. Due to these ongoing disturbances little wetland vegetation persists over time, thus our desktop delineation was mostly based on the extent of standing water (where present) or wet soil. As such, the boundaries of Wetland 6 could not be readily delineated for all air photos. Note that in the 2006 air photo, a linear channel is apparent between Wetland 6 and the eastern portion of Wetland 7, which may be a drainage channel intended to dewater Wetland 6 to support future cultivation.

Field verification confirmed the classification of Wetland 6 as a 0.09 ha temporary marsh (Table 1). As cultivation in 2017 occurred as close to the wetland center as was feasible, wetland boundaries were delineated based on the presence of water, soil and vegetation wetland indicators in the tilled soil. No natural pools of surface water were present at the time of assessment, though the wetland was very mucky and water chemistry measurements were taken in tractor tire tracks that passed through the wetland. Electrical conductivity of the water was measured at 326 µS/cm and the pH was 7.4, indicating that this is a temporary freshwater marsh. Extensive mottling (an indicator of water table drawdown and fluctuation) was observed at a depth of 30 cm in the soil profile, which is consistent with the temporary permanency. Vegetation cover was difficult to assess due to the local disturbance and the early timing in the growing season, though some sedges (*Carex* spp.) were observed within the wetland.

Wetland 7 (M-G-III), SW-2-56-23-W4

Wetland 7 has been classified as a marsh (M) in the graminoid form (G) and is of the seasonal type (III). The desktop analysis using air photo interpretation found that this wetland has been identifiable in most years as a marsh with some scattered shrubby vegetation. Cultivation has often excluded this wetland, suggesting at least seasonal permanence, but agriculture may encroach on the wetland in dryer years (e.g., 2006) and the wetland appears to have been hayed in 1990. The shrubby vegetation is not always apparent on the air photos, suggesting that these plants are periodically cleared by humans and naturally regenerate. Wetland 7 appears to be hydrologically connected to wet areas on a different parcel of land northwest of the wetland, which may include Wetland 3 indirectly. Dugouts were constructed in this area between 1984 and 1990, possibly to facilitate drainage of wetter areas (see below). 1997 was a particularly wet year for this area (see Appendix 4), and inspection of this air photo (Appendix 1) shows the hydrological connectivity among many wetlands and ephemeral waterbodies in the project area. Ditch drainage appears to have been implemented on these fields, as evident by linear channels within the wetlands. In very wet periods, water appears to move from Wetland 2, to the dugout northeast of Wetland 3, to Wetland 3, to the wet areas and dugout on private land northwest of Wetland 7, to Wetland 7, and to Wetland 8 or otherwise out of the project area.

The field verification confirmed the classification of Wetland 7 as a 1.79 ha seasonal marsh. Field delineation did not include the wet areas northwest of the wetland on private property, though these areas are shown on Figure 1. The water table was above the ground surface in much of the wetland, and was encountered at a shallow depth in the soil pit. Soil texture was silty, and no mottles or gleying were observed at a depth of 10 cm, but these features likely exist further down the soil profile. Vegetation included typical wetland plants such as some willows (*Salix* spp.), cattails (*Typha latifolia*) in the wetter areas of the wetland, and a wet meadow community consisting of sedges (*Carex* spp.), field horsetail (*Equisetum arvense*), docks (*Rumex* spp.), and common dandelion (*Taraxacum officinale*). Despite the

presence of a robust emergent vegetation (i.e., cattail) zone at the center of the wetland which is usually typical of semi-permanent marshes, inspection of the air photo record (Appendices 1 and 4) and permanence table indicates that the wetland is generally not flooded for long enough to be classified as semi-permanent. As previously stated, surface water from the dugouts northwest of Wetland 7 (on private land) likely influences the wetness of this marsh. Field verification also found a small community of willow shrubs (*Salix* spp.) within the wetland; however, as this shrubby area occupied less than 25% of the total wetland area, it is not large enough to warrant classification of this wetland as a swamp instead of a marsh.

Wetland 8 (S-S), SW-2-56-23-W4

Wetland 8 has been classified as a swamp (S) in the shrubby form (S). The desktop analysis using air photos distinguished wetland wooded areas from upland wooded areas to the south of the wetland and to distinguish wetland herbaceous vegetation from other herbaceous vegetation between the wetland and cropland. Since 1974 (the earliest year in the air photo record), Wetland 8 appears to always have been excluded from cropping activities, though the distance between the wetland and cultivated areas is variable across years. Water appears to be in a long meandering channel in wet years such as 1984 or 1997, though in dryer periods water appears to be confined to a small pond or marshy area near the "corner" of the L-shaped wetland. The relative consistency of vegetation types and forms suggests that unlike in Wetland 7, woody vegetation such as trees or shrubs are not periodically cleared from this wetland.

The field verification confirmed the classification of Wetland 8 as a 1.27 ha shrubby swamp (Table 1). While some balsam poplar trees (*Populus balsamifera*) trees were present, they were not the dominant growth stratum. Instead, at least 25% willow (*Salix* spp.) cover led us to classify Wetland 8 as a swamp, rather than a marsh with some shrubby zones. Water was present in a main pond and also in smaller portions throughout the wetland; electrical conductivity was measured at 1025 µS/cm, indicating a freshwater to slightly brackish swamp. Based on the permanence of water in the pond, Wetland 8 is likely a seasonal shrubby swamp.

The linear area northeast of Wetland 8 appears to be a pathway for runoff from the agricultural fields to enter the pond. Inspection of air photos (Appendix 1) shows that this area contains water during wet periods of the year. The field verification visit found evidence supporting water movement following snowmelt, including a culvert joining this area with the main portion of the shrubby swamp, depressed vegetation in the inferred direction of water flow, and wet meadow vegetation. While this area was delineated on the field verification visit, for classification purposes we consider it to be an ephemeral drainage pathway and not part of the wetland itself. Based on the linear shape of this drainage pathway and the presence of a culvert, it is likely that this area is the result of human landscape modification several decades ago (i.e., before the air photo record). Considerable topographic relief (about 2 m) existed between some portions of Wetland 8 and the surrounding uplands, suggesting that additional landscape modification occurred in this wetland to promote drainage of the croplands.

Man-Made Wetlands on Private Land, SW-2-56-23-W4

Inspection of the historical air photo record found that Wetland 3 had previously extended further southeast than it currently does (i.e., wetland vegetation are apparent in this area of SW-2-56-23-W4 as far back as 1962; see Wetland 3 map in Appendix 2). This land appears to be under different land use and ownership than the rest of the section, as indicated by the fenceline separating buildings, lawns and forested areas from the adjacent cropland (Figure 1).

Over time, several modifications have been made in this area to control the distribution of water, thereby affecting the extent of wetland vegetation with this private land and possibly in other wetlands as well. Between 1984 and 1990 a small dugout was constructed immediately east of the private buildings, and in 1997 a drainage channel connecting Wetland 3 is apparent in this area. Between 1997 and 2006, an additional dugout was constructed, which has surface water connections to the drainage channel, the other dugout, and Wetland 3 as indicated by wetland vegetation. Between 2012 and the present day, a large, man-made pond was constructed, into which the drainage channel from Wetland 3 appears to export water. This pond does not appear on the historical air photos, but is apparent on the background imagery in Figure 1.

The field verification visit confirmed the presence of surface water and wetland vegetation in this area. However, detailed wetland assessment and delineation activities were not conducted here because private land access had not been secured. Photographs were taken of the pond, dugouts, and wetland vegetation in this area (Photos 14, 15, 36, 37), and typical marsh vegetation such as cattails (*Typha latifolia*) and sedges (*Carex* spp.) were observed in inundated soil. Cattails are typically associated with deeper water, so their prevalence here compared to Wetland 3 and 7 is consistent with the altered hydrology of these waterbodies. Following the field verification visit, the approximate boundaries of the pond, dugouts and wetland vegetation were delineated based on current aerial imagery (depicted as "Private Wetlands" in Figure 1).

This wetland area (dugouts, pond, and the associated aquatic vegetation) has been altered by human activities, and therefore cannot be classified under the AWCS as other wetlands described in this report have been. However, since the area has historically been wet, we recommend treating these areas as wetlands for planning purposes, where the dugouts and pond in this area and Wetlands 3 and 7 should be considered as one wetland complex (Figure 1) despite the differences in land ownership and wetland type. Given the extent of historical landscape modification in the project area (and within this parcel of land in particular), it is possible that future activities may further alter wetland hydrology or otherwise impact the distribution of water in the project area. As such, planners and developers should be aware that wetland boundaries may change over time and differ from those delineated in this report.

Table 1: Wetland characteristics documented during the field verification on May 19, 2017 and classification as per the *Alberta Wetland Classification System (AWCS)*.

Wetland #	Wetland Characteristics			Size (ha)	AWCS
	Water	Soil	Vegetation*		
1	Water Table: > 30 cm Conductivity = 1117 µS/cm pH = 8.8	Ah = 20 cm, Silty Clay Loam Bg = 20 cm+, Silty Clay Mottling/Gleying @ 25 cm	**Shrub stratum:** common cattail (*Typha latifolia*) **Ground stratum**: unidentifiable sedges (*Carex* spp.), common dandelion (*Taraxacum officinale*), unidentifiable grass	0.39	M-G-III
2	Water Table: 40 cm Conductivity = 626 µS/cm pH = 8.9	Ah = 25 cm, Silty Clay Loam Bt = 15 cm+, Silty Clay Mottling/Gleying @ 30 cm	No vegetation observed; entire wetland covered in either open water, plant litter, or bare soil.	0.44	M-G-III
3	Water Table: 40 cm Conductivity = 858 µS/cm pH = 8.1	Ah = 25 cm, Silty Clay Loam Bt = 15 cm+, Silty Clay Mottling/Gleying @ 30 cm	**Shrub stratum**: unidentifiable willow (*Salix* spp.), common cattail (*Typha latifolia*) **Ground stratum**: unidentifiable sedges (*Carex* spp.), Canada thistle (*Cirsium arvense*), unidentifiable grass	5.41	M-G-III
4	Water Table: > 30 cm Conductivity = 523 µS/cm pH = 8.7	Ah = 25 cm, Silty Clay Loam Bg = 15 cm+, Silty Loam Mottling/Gleying @ 25 cm	**Ground stratum**: few seedlings, likely of agricultural weeds	1.19	M-G-III
5	Water Table: > 50 cm Conductivity = 334 µS/cm pH = 8.5	Ah = 40 cm, Silty Clay Loam Bt = 10 cm+, Silty Clay Mottling/Gleying @ 20 cm	**Ground stratum**: few seedlings, likely of agricultural weeds	0.25	M-G-II
6	Water Table: 50 cm Conductivity = 326 µS/cm pH = 7.4	Ah = 23 cm, Silty Clay Loam Bg = 20 cm+, Silty Clay Loam Mottling/Gleying @ 30 cm	**Ground stratum**: unidentifiable sedges (*Carex* spp.), Canada thistle (*Cirsium arvense*), unidentifiable grass	0.09	M-G-II
7	Water Table: 15 cm Conductivity = 820 µS/cm pH = 8.6	Ah = 10 cm+, Silty B = unknown (inundated)	**Shrub stratum**: unidentifiable willow (*Salix* spp.), common cattail (*Typha latifolia*) **Ground stratum**: unidentifiable sedges (*Carex* spp.), common dandelion (*Taraxacum officinale*), unidentifiable dock (*Rumex* spp.), field horsetail (*Equisetum arvense*)	1.79	M-G-III
8	Water Table: 40 cm Conductivity = 1025 µS/cm pH = 7.5	Ah = 16 cm, Silty Loam Bg = 20 cm, Sandy Loam Mottling/Gleying @ 10 cm	**Tree stratum**: balsam poplar (*Populus balsamifera*) **Shrub stratum**: unidentifiable willow (*Salix* spp.), common cattail (*Typha latifolia*) **Ground stratum**: unidentifiable sedges (*Carex* spp.), field horsetail (*Equisetum arvense*), unidentifiable grass	0.29	S-S

* Note that due to the timing of the field survey early in the season, vegetation community characterization was limited**.**

4. Wetland Impact Avoidance, Mitigation, and Replacement

Management of wetlands under the Alberta Wetland Policy is based on an Avoid-Minimize-Replace hierarchy. According to the policy, the proponent must demonstrate efforts to avoid the wetlands. Where wetland impact is unavoidable, proponents must minimize wetland impacts. Where avoidance and minimization efforts are not feasible, wetland replacement will be required which typically involves a monetary transaction and direct cost to the project. See the *Alberta Wetland Mitigation Directive* for further detail (http://aep.alberta.ca/water/programs-and-services/wetlands/documents/AlbertaWetlandMitigationDirective-Jun2017.pdf).

Minimal management of lands adjacent to the wetland are recommended to provide an ecological buffer around wetland areas. Clearing, mowing and use of chemical fertilizers and herbicides should be avoided in these areas. Alberta's *Stepping Back from the Water: A Beneficial Management Practices Guide for New Development near Water Bodies in Alberta's Settled Region* recommends a setback distance of 20 meters for wetlands situated in glacial till. A setback of 50 meters is recommended for wetlands in coarse substrate, such as sand and gravel.

The following general mitigation measures are recommended to help ensure wetlands are not impacted and to protect wildlife in the area:

- Construction should occur in a manner to minimize damage to wetland areas. Silt fencing (or a similar material) can be used to isolate the wetland site and limit construction beyond the fencing.
- Works to be completed to minimize disturbance to vegetated areas. Any disturbed open ground near the wetland should be covered with a native seed mix that is certified weed free or planted with native shrubs.
- Vegetation and topsoil removed for construction should be placed only in designated storage areas.
- Erosion and sediment control should follow standard practices. See the Government of Alberta's Field Guide for Erosion and Sediment Control (http://www.transportation.alberta.ca/Content/docType372/Production/fieldguideerosionsedimentcontrol11.pdf)
- Domestic garbage should be managed using covered containers. Disposal arranged at approved landfill site. Any existing waste (pre-activity) to be cleaned and disposed as above.
- No clearing of vegetation during the migratory bird nesting period (April 15th to August 31st), unless nest sweeps are conducted, to protect migratory birds as per the Migratory Birds Act. The destruction of migratory birds and nests are strictly prohibited under Federal and Provincial legislation.
- Fuelling of all equipment should be done at least 100 m from any wetland or waterbody. A spill response plan should be in place by the construction contractor. The on-site construction contractor should be properly trained in the use and storage of hazardous materials.
- Hazardous material should be stored in designated sites and labelled clearly. Storage sites to have secondary containment.
- Equipment should be checked daily for fuel, oil, and hydraulic fluids. If leaks are found, repairs or replacement must occur promptly.
- Construction activity in an around any wetland or waterbody should be performed under dry or frozen conditions to prevent erosion and contamination.
- Housing development should be sited as far away from wetlands as possible to avoid any adverse effects from traffic and yard runoff.

5. Closure

This document was prepared by a registered Interim Wetland Science Practitioner (QWSP). Should there be any questions, please contact the undersigned.

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HST/GST Registration Number: 813914603
APEGA Permit to Practice #13028

Figures

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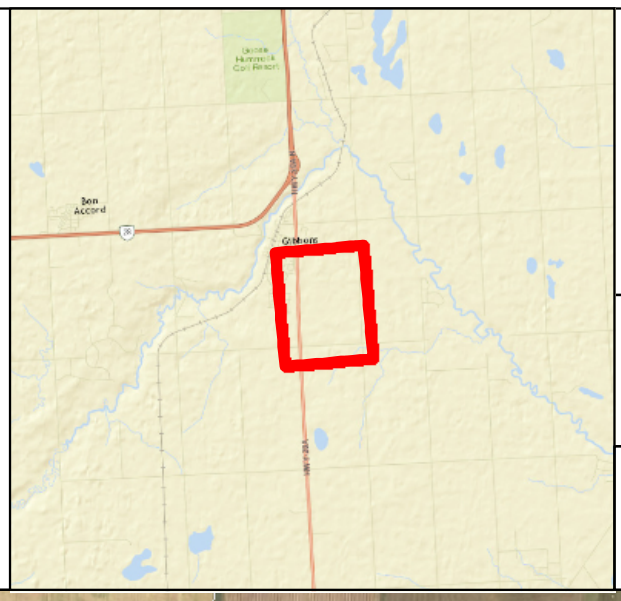
Figure 1
Town of Gibbons Annexation

Project Overview Map
2017

- Seasonal Marsh (M-G-III)
- Temporary Marsh (M-G-II)
- Shrubby Swam (S-S)
- Dugout
- Private Wetlands
- Roads
- Annexation
- Legal Land Description



Source: Altalis

Coordinates system: NAD 1983 UTM Zone 11N

1:9,000

0 100 200 300 400 m

Date: June 14, 2017

Prepared by: R. Laird

N W E S

CPP ENVIRONMENTAL

NE Sec-10 Twp-056 Rge-23 Mer-4
NW Sec-11 Twp-056 Rge-23 Mer-4
NE Sec-11 Twp-056 Rge-23 Mer-4
NW Sec-12 Twp-056 Rge-23 Mer-4
SE Sec-10 Twp-056 Rge-23 Mer-4
SW Sec-11 Twp-056 Rge-23 Mer-4
SE Sec-11 Twp-056 Rge-23 Mer-4
SW Sec-12 Twp-056 Rge-23 Mer-4
NE Sec-03 Twp-056 Rge-23 Mer-4
NW Sec-02 Twp-056 Rge-23 Mer-4
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SE Sec-02 Twp-056 Rge-23 Mer-4
SW Sec-01 Twp-056 Rge-23 Mer-4
NE Sec-34 Twp-055 Rge-23 Mer-4
NW Sec-35 Twp-055 Rge-23 Mer-4
NE Sec-35 Twp-055 Rge-23 Mer-4
NW Sec-36 Twp-055 Rge-23 Mer-4

Wetland 1
0.39 ha

Wetland 2
0.44 ha

Wetland 3
5.41 ha

Wetland 4
1.19 ha

Wetland 5
0.25 ha

Wetland 6
0.09 ha

Wetland 7
1.79 ha

Wetland 8
0.29 ha

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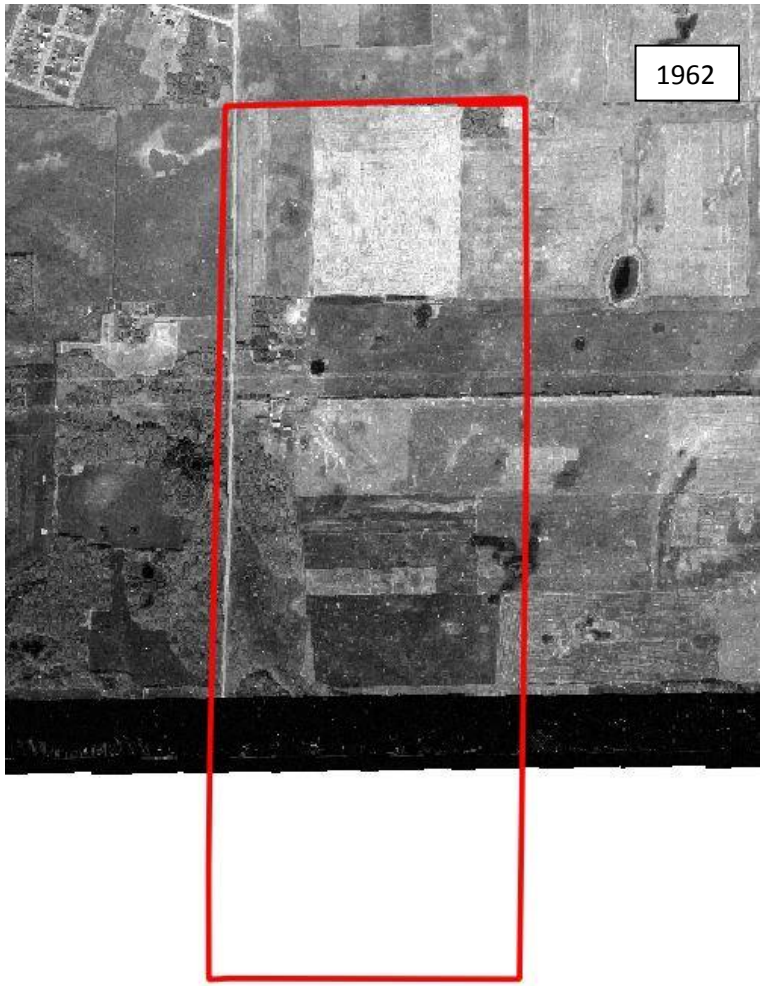
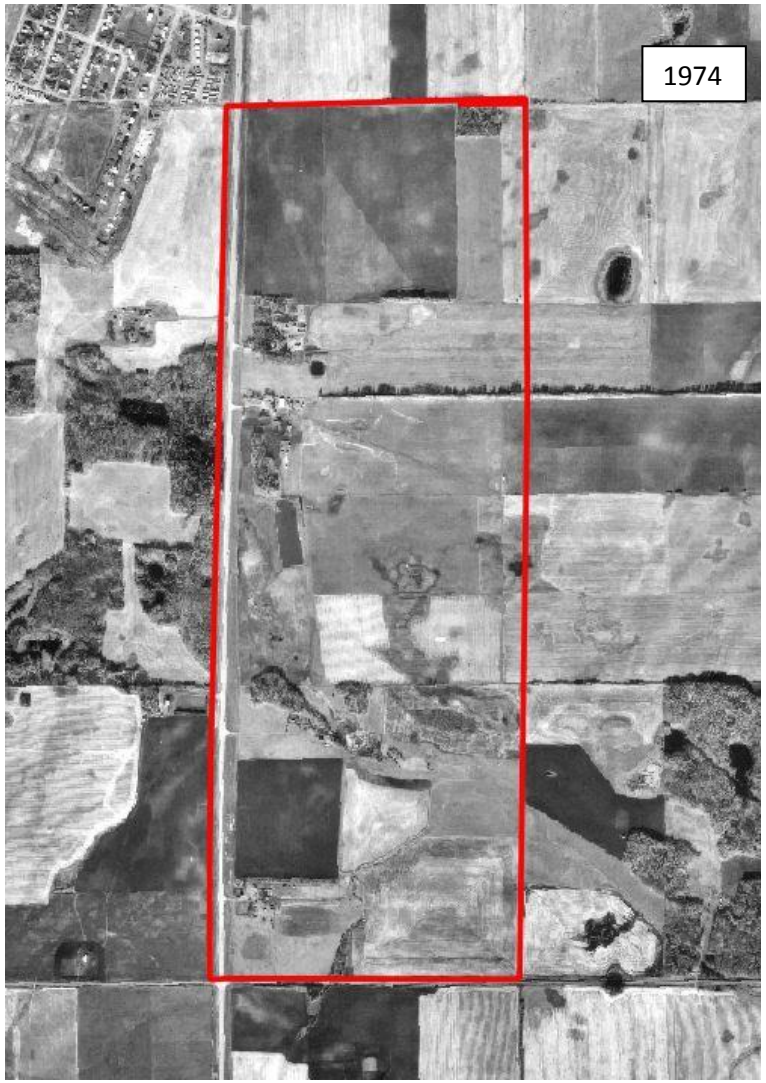
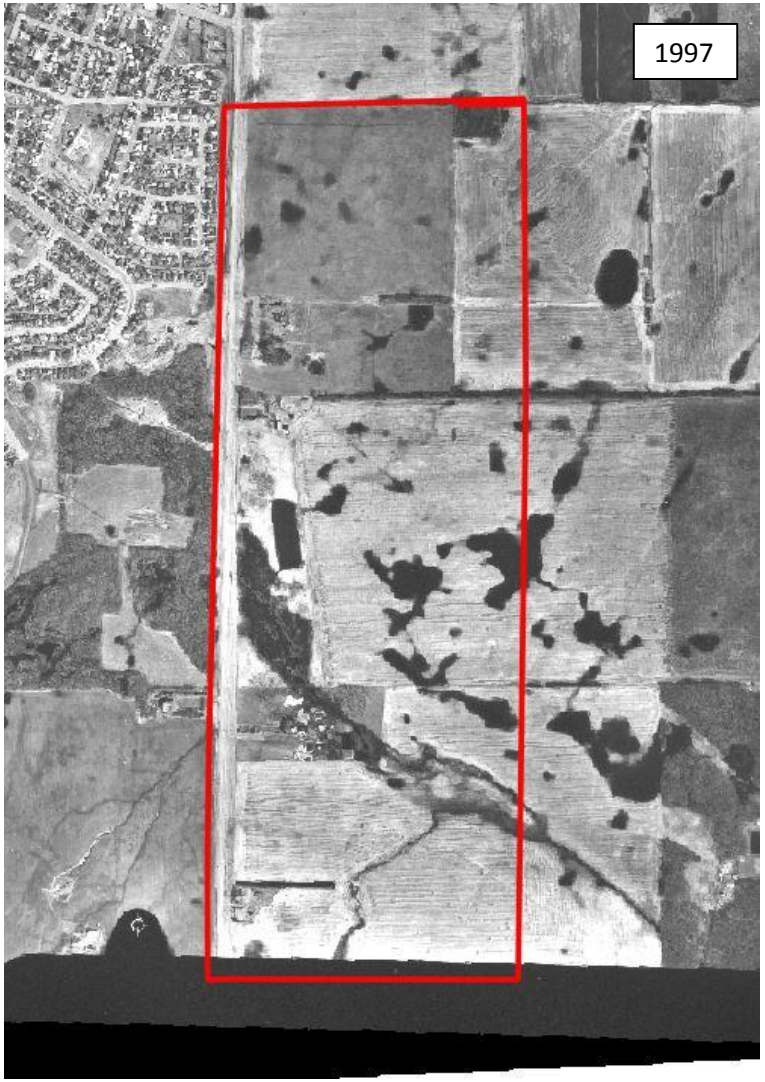
Appendix 1: Historical Air Photograph Review






1977
1984


1990


1997


2006
2012

Appendix 2: Historical Wetland Boundaries

Town of Gibbons

Annexation
Historic Wetland
Delineation

Wetland 1
2017

Wetlands

- 2017
- 2012
- 2006
- 1997
- 1990
- 1984
- 1962

Source: Altalis

Coordinates system: NAD 1983 UTM Zone 12N

1:1,000

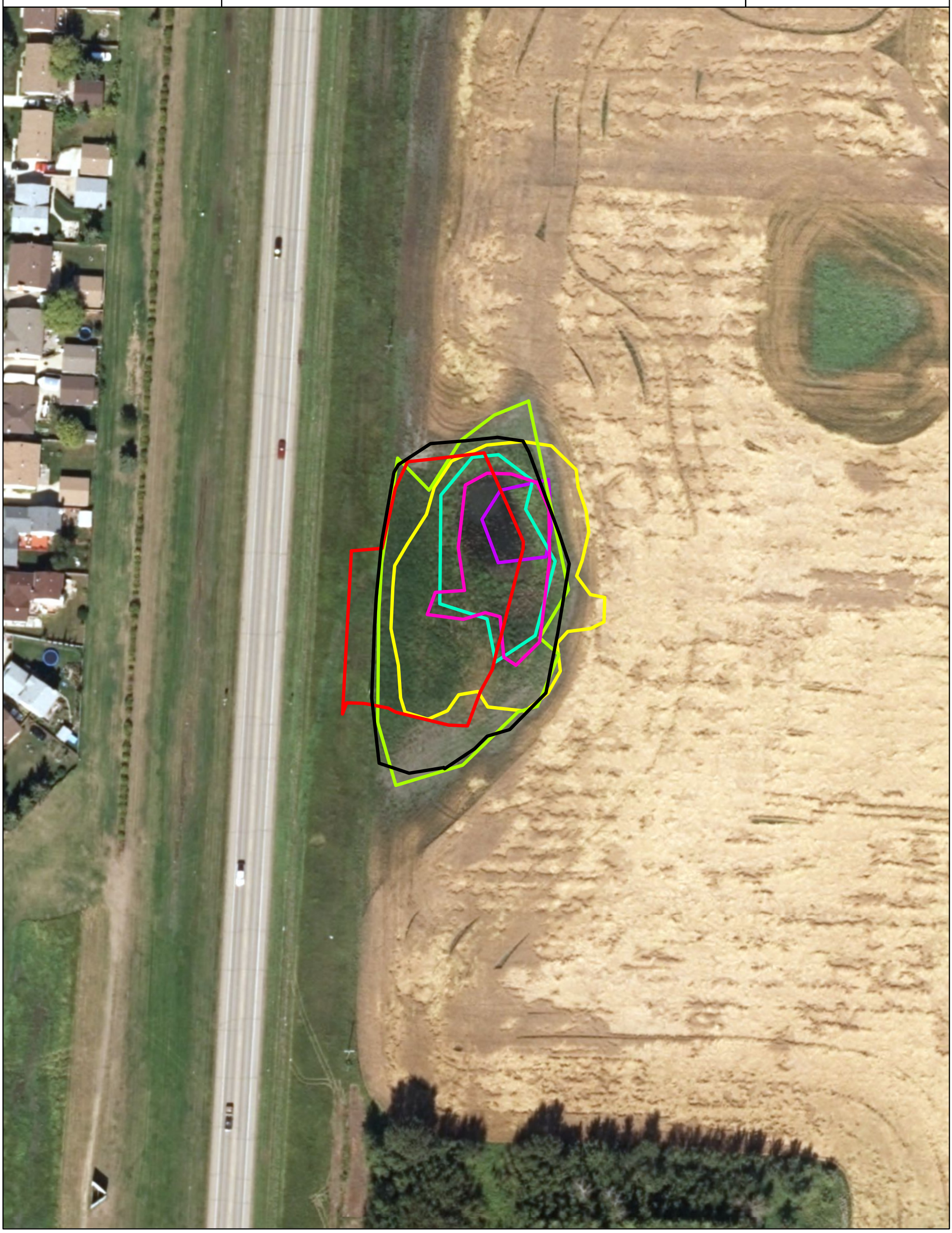
0 10 20 30 40 m

Date: June 19, 2017

Prepared by: R. Laird

N
W E
S

CPP ENVIRONMENTAL



Town of Gibbons

Annexation
Historic Wetland
Delineation

Wetland 2
2017

Wetlands

- 2017
- 2006
- 1997
- 1990
- 1984
- 1974
- 1962

Source: Altalis

Coordinates system: NAD 1983 UTM Zone 12N

1:1,000

0 10 20 30 40 m

Date: June 19, 2017

Prepared by: R. Laird

N
W E
S

CPP ENVIRONMENTAL

Town of Gibbons

Annexation
Historic Wetland
Delineation

Wetland 3
2017

Wetlands

- 2017
- 2012
- 2006
- 1997
- 1990
- 1984
- 1977
- 1974
- 1962

Source: Altalis

Coordinates system: NAD 1983 UTM Zone 12N

1:2,000

0 20 40 60 80 m

Date: June 19, 2017

Prepared by: R. Laird

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W E
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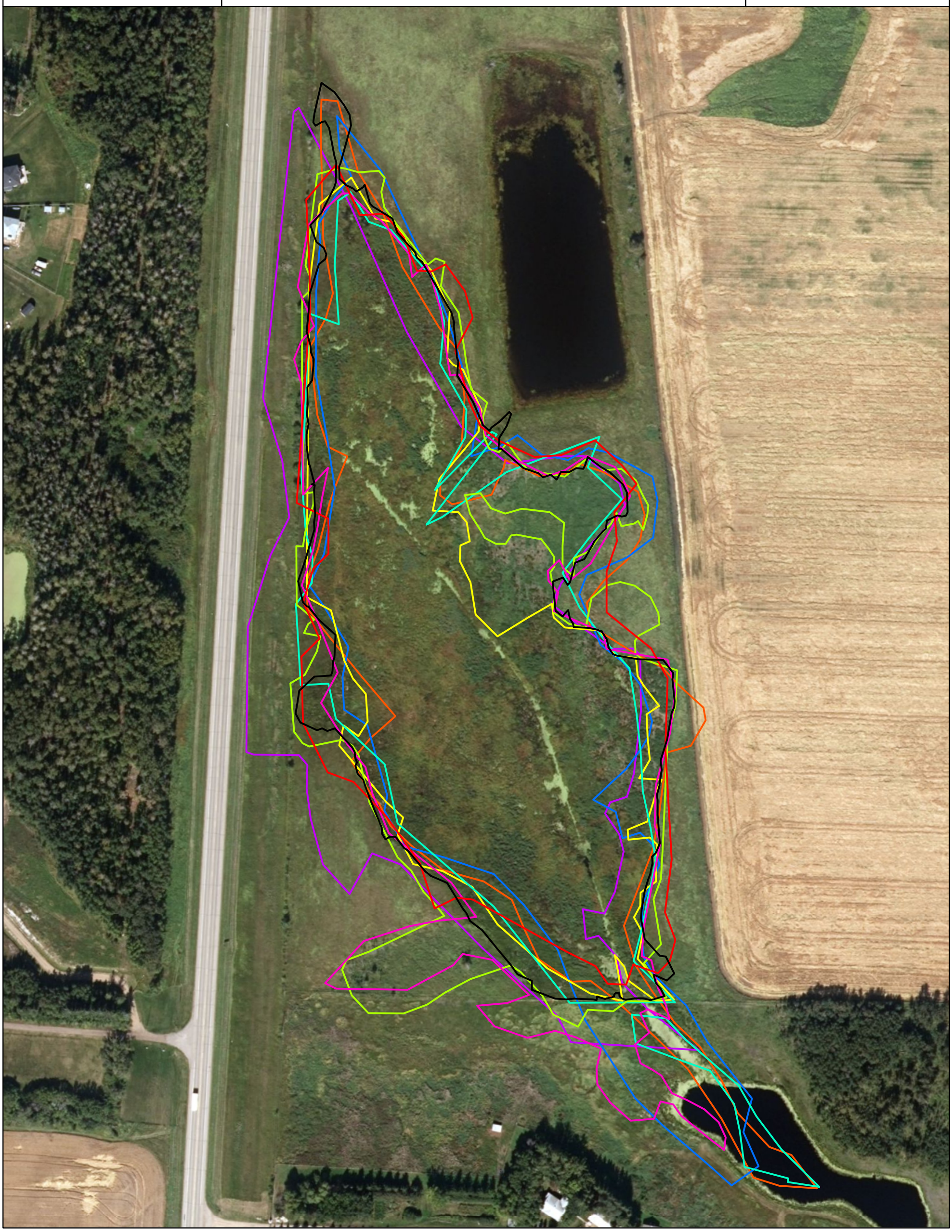
CPP ENVIRONMENTAL



Town of Gibbons

Annexation
Historic Wetland
Delineation

Wetland 4
2017

Wetlands

- 2017
- 2012
- 2006
- 1997
- 1990
- 1984
- 1977
- 1974
- 1962

Source: Altalis

Coordinates system: NAD 1983 UTM Zone 12N

1:1,750

0 20 40 60 80 m

Date: June 19, 2017

Prepared by: R. Laird

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W E
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CPP ENVIRONMENTAL

Town of Gibbons

Annexation
Historic Wetland
Delineation

Wetland 5
2017

Wetlands

- 2017
- 2012
- 2006
- 1997
- 1990
- 1977
- 1974
- 1962

Source: Altalis

Coordinates system: NAD 1983 UTM Zone 12N

1:1,250

0 10 20 30 40 m

Date: June 19, 2017

Prepared by: R. Laird

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W E
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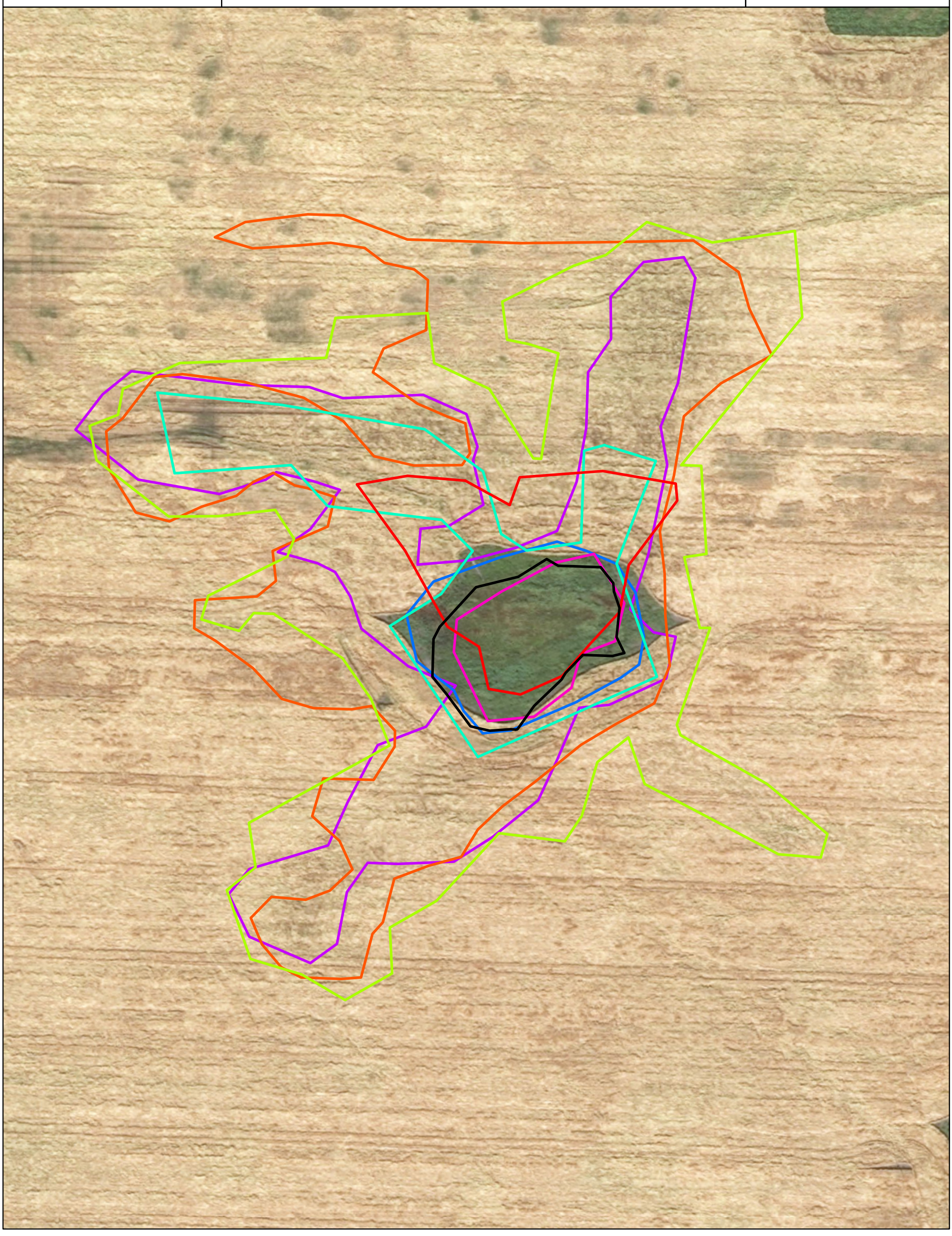
CPP ENVIRONMENTAL



Town of Gibbons

Annexation
Historic Wetland
Delineation

Wetland 6
2017

Wetlands

- 2017
- 2006
- 1997
- 1984
- 1977
- 1974
- 1962

Source: Altalis

Coordinates system: NAD 1983 UTM Zone 12N

1:1,250

0 10 20 30 40 m

Date: June 19, 2017

Prepared by: R. Laird

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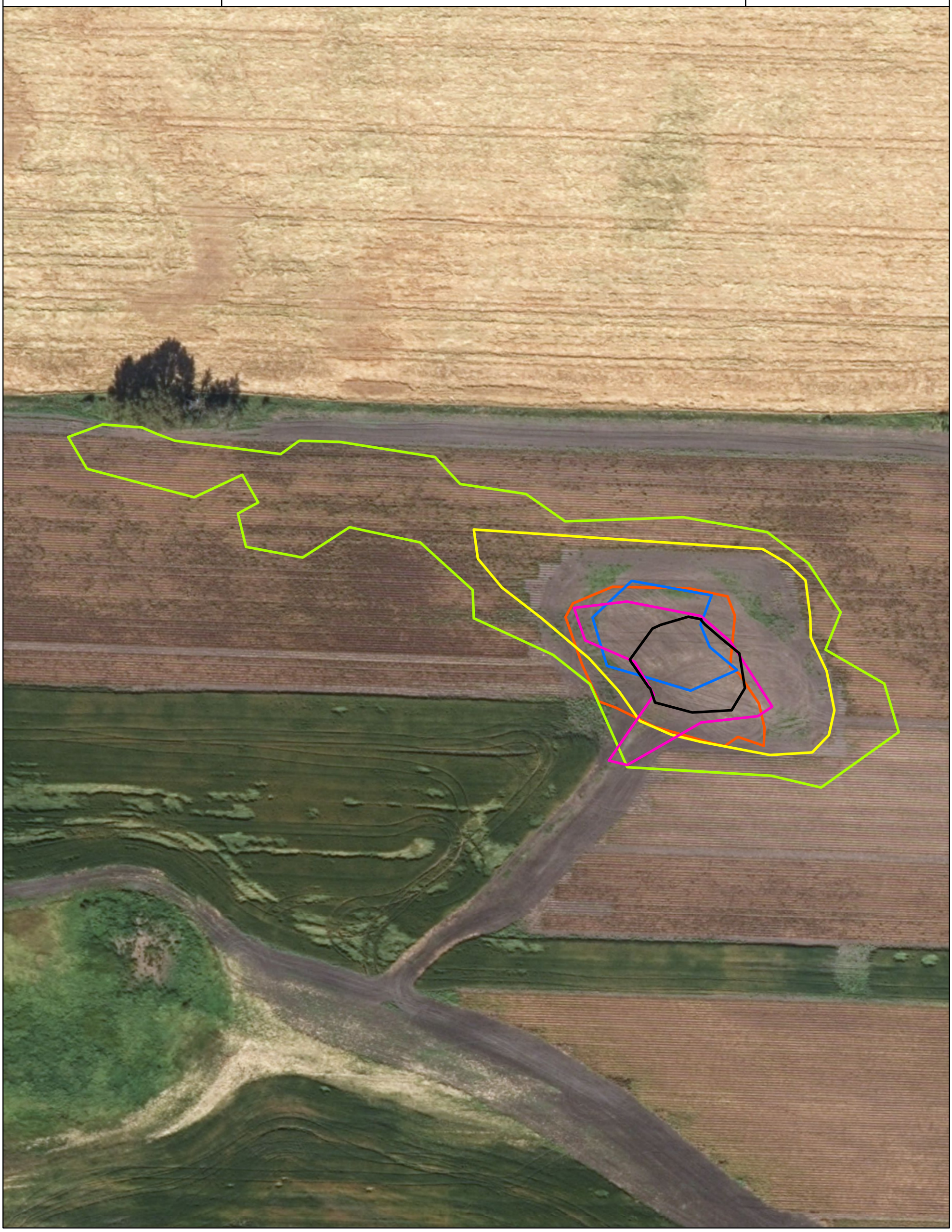
W E
S

CPP ENVIRONMENTAL



Town of Gibbons

Annexation
Historic Wetland
Delineation

Wetland 7
2017

Wetlands

- 2017
- 2006
- 1997
- 1984
- 1977
- 1974
- 1962

Source: Altalis

Coordinates system: NAD 1983 UTM Zone 12N

1:2,250

0 25 50 75 100 m

Date: June 19, 2017

Prepared by: R. Laird

N
W E
S

CPP ENVIRONMENTAL

Town of Gibbons

Annexation
Historic Wetland
Delineation

Wetland 8
2017

Wetlands

- 2017
- 2012
- 2006
- 1997
- 1990
- 1984
- 1977
- 1974
- 1962

Source: Altalis

Coordinates system: NAD 1983 UTM Zone 12N

1:1,250

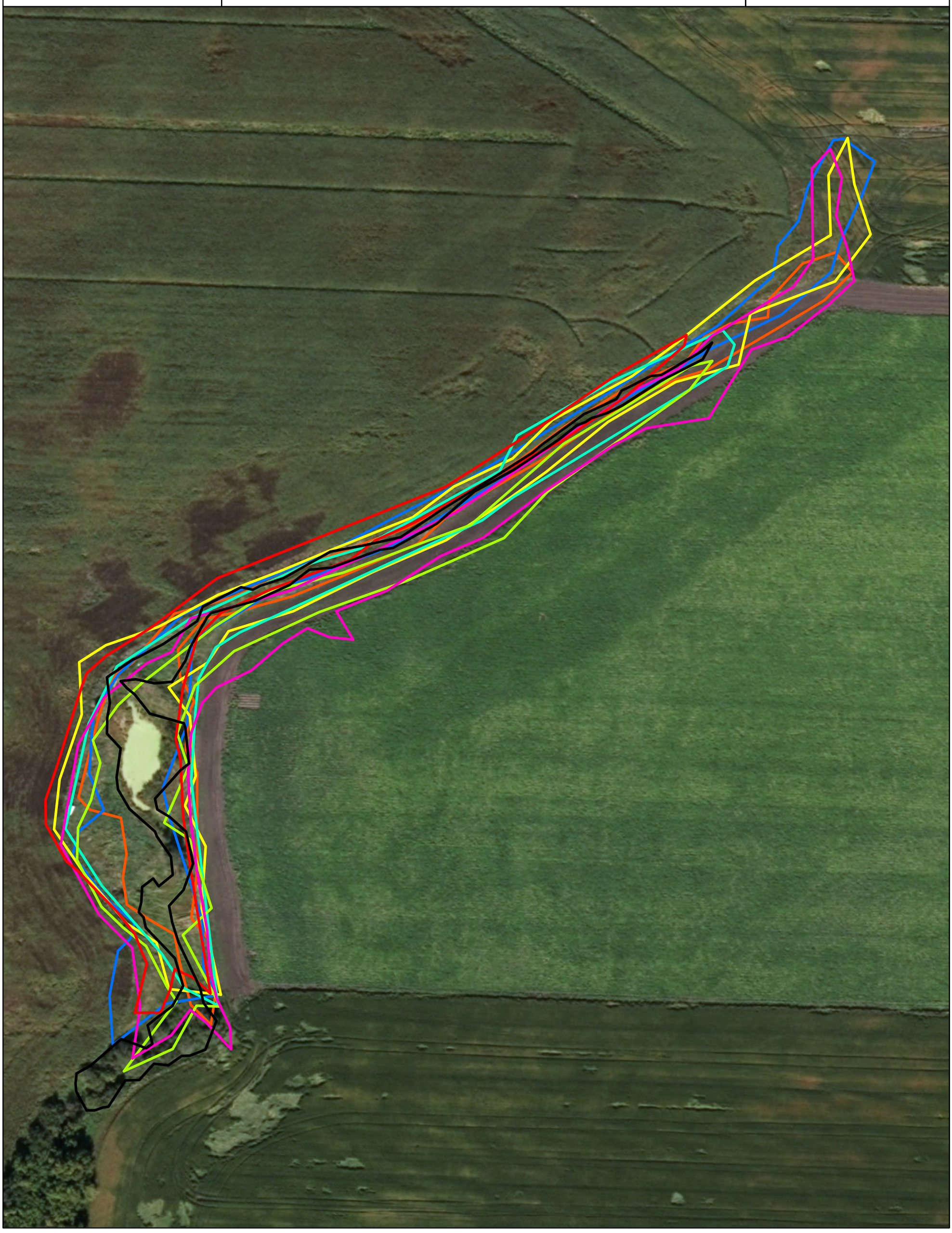
0 10 20 30 40 m

Date: June 19, 2017

Prepared by: R. Laird

N
W E
S

CPP
ENVIRONMENTAL



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Appendix 3: Wetland Field Verification Photos

Wetland 1 Field Verification Photos

Photo 1: Wetland 1 (facing N).

Photo 2: Wetland 1 (facing W).

Photo 3: Wetland 1 (facing SW).

Photo 4: Ground stratum in the wet meadow zone.

Photo 5: Soil profile in the wet meadow zone.

Photo 6: Minor mottling in soil at a depth of 20 cm.

Wetland 2 Field Verification Photos

Photo 7: Wetland 2 (facing S).

Photo 8: Wetland 2 (facing W).

Photo 9: Ground stratum showing no vegetation cover in wetland (note crop stubble from previous cultivation).

Photo 10: Soil profile (note shallow water table).

Photo 11: Mottling in soil at a depth of 30 cm.

Wetland 3 Field Verification Photos

Photo 12: Wetland 3 (facing E).

Photo 13: Wetland 3 (facing N).

Photo 14: Pond and wetland on private land, hydrologically connected to and S of Wetland 3 (facing SE, towards Wetland 7).

Photo 15: Dugout hydrologically connected to and NE of Wetland 3 (facing N).

Photo 16: Ground stratum, showing dominance of sedges (*Carex* spp.).

Photo 17: Minor mottling, high organic matter content in soil.

CPP ENVIRONMENTAL

Wetland 4 Field Verification Photos

Photo 18: Wetland 4 (facing S).

Photo 19: Wetland 4 (facing W).

Photo 20: Ground stratum, showing no vegetative cover except for few weed seedlings.

Photo 21: Soil profile, showing transition between Ah and Bg horizons.

Photo 22: Minor mottling in soil at 25 cm depth.

Wetland 5 Field Verification Photos

Photo 23: Wetland 5 (facing N).

Photo 24: Wetland 5 (facing N).

Photo 25: Wetland 5 (facing S).

Photo 26: Ground stratum, showing no vegetative cover except for few weed seedlings.

Photo 28: Soil profile, showing some mottling at about 20 cm depth.

Photo 29: Gleying evident in soil at 20 cm depth.

Wetland 6 Field Verification Photos

Photo 30: Wetland 6 (facing N).

Photo 31: Wetland 6 (facing E).

Photo 32: Ground stratum, showing sedges (*Carex* spp.) and litter accumulation.

Photo 33: Soil profile, showing extensive mottling and gleying at 30 cm depth.

Wetland 7 Field Verification Photos

Photo 34: Wetland 7 (facing N), showing shrub and ground strata.

Photo 35: Wetland 7 (facing W). Note cultivation within wetland edge.

Photo 36: Dugout and wetland on private land, hydrologically connected to and N of Wetland 7 (facing NW, towards Wetland 3).

Photo 37: Dugout on private land, hydrologically connected to and N of Wetland 7 (facing NE).

Photo 38: Marsh vegetation zone, showing cattail (*Typha latifolia*) stems from past growing seasons.

Photo 39: Ground stratum, showing sedge (*Carex* spp.) cover.

CPP ENVIRONMENTAL

Wetland 7 Field Verification Photos: continued

Photo 40: Ground stratum, showing extensive dandelion (*Taraxacum officinale*) cover in wet meadow/upland transition zone.

Photo 41: Soil profile, showing very shallow water table and high organic matter.

Wetland 8 Field Verification Photos

Photo 42: Wetland 8 (facing S).

Photo 43: Ephemeral pathway permitting water movement to Wetland 8 (facing NE). Note culvert connecting water to pond in Photo 42.

Photo 44: Ground stratum in ephemeral drainage pathway in NE portion of wetland, showing sedge (*Carex* spp.) cover.

Photo 45: Shrub stratum in S portion of wetland, dominated by willows (*Salix* spp.).

Photo 46: Mottling evident in soil at 10 cm depth.

Photo 47: Soil profile, showing mottling at within 10 cm of soil surface and shallow water table.

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Appendix 4: Wetland Permanence and Ownership Assessment

Photo Date (Y/M/D	Photo ID (Roll AS#-Photo #)	Resolution	Season *	Precipitation **			Wetland 1			Wetland 2			Photo Notes
				Year	Preceding Month	Preceding Week/Day	Open Water or Wetland Vegetation ***	Class	Assessment of Permanence ****	Open Water or Wetland Vegetation ***	Class	Assessment of Permanence ****	
1962/05/23	AS816-92	1:31680	Sum	N	D	N/D	DV	Marsh	N	DV	Marsh[C]	N	
1974/10/09	AS1306-50	1:24000	F	W	N	N/D	DVI	N/A[C]	N	DV	Marsh	N	Wetland 1 indistinguishable
1977/09/23	AS2972-27	1:25000	F	N	W	N/D	DVI	N/A[C]	N	DVI	N/A	N	Wetlands 1 and 2 indistinguishable
1984/04/15	AS2934-04	1:25000	S	N	D	D/D	W	Marsh	N	DV	Marsh[C]	N	
1990/09/24	AS4066-178	1:20000	F	N	W	D/D	DVI	Marsh[C]	N	DV	Marsh[C]	N	
1997/05/02	AS4756-38	1:20000	S	W	D	D/D	W	Marsh	N	W	Marsh	Y	
2006/04/24	AS5367 B-47	1:20000	S	N	W	D/D	W	Marsh[C]	N	W	Marsh	Y	
2012/05/01	AS5158-147	1:20000	S	W	N	N/D	DV	Marsh[C]	N	DV	Marsh[C]	N	
Number Years Dry Over Photo Record:							3			1			

*	F = Fall, S = Spring, Sum = Summer
**	D= Dryer; N=Normal; W=Wetter; N/A=Not Available
***	W=Water present/inundated; D=Dry; DV=Dry vegetated (consistent with wetland class); DVI=Dry, vegetated (indistinguishable from surrounding uplands)
****	Y= Reasonably Permanent (Sec 3 *Public Lands Act* body of water), N=No (Not permanent, a wetland regulated under the *Water Act)*
C	C= Area has been cultivated

Appendix 6: continued

Photo Date (Y/M/D	Photo ID (Roll AS#-Photo #)	Resolution	Season *	Precipitation **			Wetland 3			Wetland 4			Photo Notes
				Year	Preceding Month	Preceding Week/Day	Open Water or Wetland Vegetation ***	Class	Assessment of Permanence ****	Open Water or Wetland Vegetation ***	Class	Assessment of Permanence ****	
1962/05/23	AS816-92	1:31680	Sum	N	D	N/D	DV	Marsh	N	DVI	Marsh[C]	N	
1974/10/09	AS1306-50	1:24000	F	W	N	N/D	DV	Marsh	N	DV	Marsh	N	
1977/09/23	AS2972-27	1:25000	F	N	W	N/D	DV	Marsh	N	DV	Marsh	N	
1984/04/15	AS2934-04	1:25000	S	N	D	D/D	W/DV	Marsh	N	DVI	Marsh[C]	N	
1990/09/24	AS4066-178	1:20000	F	N	W	D/D	DV	Marsh	N	DV	Marsh[C]	N	
1997/05/02	AS4756-38	1:20000	S	W	D	D/D	W/DV	Marsh	N	W	Marsh	Y	
2006/04/24	AS5367 B-47	1:20000	S	N	W	D/D	DV	Marsh[C]	N	DV	Marsh[C]	N	
2012/05/01	AS5158-147	1:20000	S	W	N	N/D	DVI	Marsh[C]	N	DV	Marsh[C]	N	
Number Years Dry Over Photo Record:							1			2			

*	F = Fall, S = Spring, Sum = Summer
**	D= Dryer; N=Normal; W=Wetter; N/A=Not Available
***	W=Water present/inundated; D=Dry; DV=Dry vegetated (consistent with wetland class); DVI=Dry, vegetated (indistinguishable from surrounding uplands)
****	Y= Reasonably Permanent (Sec 3 *Public Lands Act* body of water), N=No (Not permanent, a wetland regulated under the *Water Act)*
C	C= Area has been cultivated

Appendix 6: continued

Photo Date (Y/M/D	Photo ID (Roll AS#-Photo #)	Resolution	Season *	Precipitation **			Wetland 5			Wetland 6			Photo Notes
				Year	Preceding Month	Preceding Week/Day	Open Water or Wetland Vegetation ***	Class	Assessment of Permanence ****	Open Water or Wetland Vegetation ***	Class	Assessment of Permanence ****	
1962/05/23	AS816-92	1:31680	Sum	N	D	N/D	W/DV	Marsh	N	N/A	N/A	N/A	Wetland 6 not covered by photo
1974/10/09	AS1306-50	1:24000	F	W	N	N/D	W/DV	Marsh[C]	N	DV	Marsh[C]	N	
1977/09/23	AS2972-27	1:25000	F	N	W	N/D	DV	Marsh[C]	N	DVI	N/A	N	Wetland 6 indistinguishable
1984/04/15	AS2934-04	1:25000	S	N	D	D/D	DVI	Marsh[C]	N	DV	Marsh	N	
1990/09/24	AS4066-178	1:20000	F	N	W	D/D	DV	Marsh[C]	N	DVI	N/A[C]	N	Wetland 6 indistinguishable
1997/05/02	AS4756-38	1:20000	S	W	D	D/D	W	Marsh[C]	Y	W	Marsh	N	
2006/04/24	AS5367 B-47	1:20000	S	N	W	D/D	DV	Marsh[C]	N	DV	Marsh[C]	N	
2012/05/01	AS5158-147	1:20000	S	W	N	N/D	DVI	Marsh[C]	N	DVI	N/A	N	Wetland 6 indistinguishable
Number Years Dry Over Photo Record:							2			3			

*	F = Fall, S = Spring, Sum = Summer
**	D= Dryer; N=Normal; W=Wetter; N/A=Not Available
***	W=Water present/inundated; D=Dry; DV=Dry vegetated (consistent with wetland class); DVI=Dry, vegetated (indistinguishable from surrounding uplands)
****	Y= Reasonably Permanent (Sec 3 *Public Lands Act* body of water), N=No (Not permanent, a wetland regulated under the *Water Act)*
C	C= Area has been cultivated

Appendix 6: continued

Photo Date (Y/M/D	Photo ID (Roll AS#-Photo #)	Resolution	Season *	Precipitation **			Wetland 7			Wetland 8			Photo Notes
				Year	Preceding Month	Preceding Week/Day	Open Water or Wetland Vegetation ***	Class	Assessment of Permanence ****	Open Water or Wetland Vegetation ***	Class	Assessment of Permanence ****	
1962/05/23	AS816-92	1:31680	Sum	N	D	N/D	N/A	N/A	N/A	N/A	N/A	N/A	Wetlands 7 and 8 not covered by photo
1974/10/09	AS1306-50	1:24000	F	W	N	N/D	DV	Marsh	N	DVI	Marsh	N	
1977/09/23	AS2972-27	1:25000	F	N	W	N/D	DV	Marsh	N	DV	Marsh	N	
1984/04/15	AS2934-04	1:25000	S	N	D	D/D	W/DV	Marsh	N	W/DV	Shrubby Swamp/ Marsh	N	
1990/09/24	AS4066-178	1:20000	F	N	W	D/D	DV	Marsh[C]	N	DV	Shrubby Swamp/ Marsh	N	
1997/05/02	AS4756-38	1:20000	S	W	D	D/D	W/DV	Marsh	N	W/DV	Shrubby Swamp/ Marsh[C]	N	
2006/04/24	AS5367 B-47	1:20000	S	N	W	D/D	DV	Marsh[C]	N	W/DV	Shrubby Swamp/ Marsh[C]	N	
2012/05/01	AS5158-147	1:20000	S	W	N	N/D	DVI	Marsh[C]	N	DVI	Shrubby Swamp/ Marsh[C]	N	Wetland 7 indistinguishable
Number Years Dry Over Photo Record:							1			2			

*	F = Fall, S = Spring, Sum = Summer
**	D= Dryer; N=Normal; W=Wetter; N/A=Not Available
***	W=Water present/inundated; D=Dry; DV=Dry vegetated (consistent with wetland class); DVI=Dry, vegetated (indistinguishable from surrounding uplands)
****	Y= Reasonably Permanent (Sec 3 *Public Lands Act* body of water), N=No (Not permanent, a wetland regulated under the *Water Act)*
C	C= Area has been cultivated

APPENDIX E – RECORD OF CONSULTATION

RECORD OF PUBLIC CONSULTATION

Town of Gibbons Annexation Application
Report to the Municipal Government Board
June 2017

Gibbons
ROOTED IN FAMILY

TABLE OF CONTENTS

1| INFORMATION ABOUT THE PROPOSED ANNEXATION

The Town of Gibbons has applied to the Municipal Government Board to annex land from Sturgeon County (SW 11-56-23-W4, NW 2-56-23-W4, SW 2-56-23-W4, and Parcel A, Plan 6971KS). This annexation application has been proposed by the Council of the Town of Gibbons to:

- Align the Town of Gibbons' plans for future growth and development with Alberta Transportation's Functional Planning Study (2011), which recommends a realignment of Highway 28A; and
- Ensure that there is a long-term supply of developable and appropriately-sited industrial, and commercial lands within the Town of Gibbons.

Alberta Transportation's Functional Planning Study (2011) identifies the proposed location of a new interchange with the realigned Highway 28A and 50 Street as within an area designated Industrial Commercial (M-1) in the Town of Gibbons' Land Use Bylaw. The development of this interchange and realigned Highway 28A would result in the loss of a significant portion of the Town's current industrial land base. This proposed annexation would seek to ensure that the Town of Gibbons has a sufficient long term supply of accessible and serviceable industrial and commercial land.

This Record of Public Consultation (an Appendix to the Town of Gibbons' Annexation Application Report to the Municipal Government Board) has been structured in accordance with the Municipal Government Board's Annexation Checklist, and addresses the Annexation Principles contained in MGB Order 123/06.

2 | OVERVIEW OF PUBLIC CONSULTATION

The following is a record of the consultation process undertaken by the Town of Gibbons as part of the Town's annexation application.

A Notice of Intent was sent via mail by the Town of Gibbons to Sturgeon County on September 24, 2013. The Notice of Intent contained a Public Consultation Proposal that Town Council and Administration committed the Town to follow as a part of annexation application procedures.

A follow-up Notice of Intent was sent to Sturgeon County by the Town of Gibbons on March 7, 2016. This Notice of Intent reaffirmed the Town's intent to proceed with the proposed annexation application, and identified a commitment to public consultation.

The following tables provide a summary of major public and stakeholder consultation meetings/events.

PUBLIC CONSULTATION TIMELINE OF MAJOR EVENTS	
Notice of Intent for Annexation and Agency Notification	September 24, 2013
Updated Notice of Intent for Annexation and Agency Notification	March 7, 2016
Notification Letter to Affected Landowners	July 11, 2013
Public Open House #1	March 16, 2016
Notification Letter to Affected Landowners	April 24, 2017
Notification Letter to Adjacent Landowners	April 24, 2017
Meetings with Affected Landowners	May 18-19, 2017
Public Open House #2	June 7, 2017

ANNEXATION NEGOTIATION COMMITTEE MEETINGS	
Sturgeon County and Town of Gibbons Negotiation Meeting	December 8, 2014
Sturgeon County and Town of Gibbons Negotiation Meeting	September 26, 2016
Sturgeon County and Town of Gibbons Negotiation Meeting	November 16, 2016
Sturgeon County and Town of Gibbons Negotiation Meeting	March 29, 2017
Sturgeon County and Town of Gibbons Negotiation Meeting	May 5, 2017

3 | AFFECTED LANDOWNERS

The annexation lands include four unique surface landowner interests. Landowners within the annexation area at the time of application by the Town of Gibbons include:

LEGAL DESCRIPTION	NAME OF LANDOWNER	ADDRESS	TYPE OF LANDOWNER
SW 11-56-23-W4			Surface
NW 2-56-23-W4			Surface
SW 11-56-23-W4			Surface
Parcel A, Plan 6971 KS			Surface

As of the time of submission by the Town of Gibbons, there are no subsurface rights holders within the annexation area.

4 | NOTICES OF INTENT & AGENCY NOTIFICATION/RESPONSES

In accordance with s. 116 of the *Municipal Government Act*, R.S.A. 2000, c. M-26 the Town of Gibbons provided Sturgeon County, Capital Region Board member municipalities, and local service authorities a formal Notice of Intent to Annex Lands (Parcel A, Plan 6971 KS, NW 2-56-23-W4, SW 11-56-23-W4, SW 2-56-23-W4) from Sturgeon County on September 24, 2013.

A complete listed of notified municipalities, boards, and agencies is as follows:

- Alberta Capital Region Wastewater Commission
- Alberta Energy Regulator
- Alberta Environment & Parks
- Alberta Health Services
- Alberta Transportation
- AltaGas Utilities
- ATCO Electric
- ATCO Gas
- ATCO Pipelines
- Canada Post
- Canadian National Railways
- Capital Region Board
- Capital Region Northeast Water Services Commission
- City of Fort Saskatchewan
- Direct Energy Regulated Services
- Fortis Alberta
- Greater St. Albert Catholic Schools Division
- Municipal Government Board
- Roseridge Waste Management Commission
- Sturgeon County
- Sturgeon School Division
- Telus Communications
- Town of Bon Accord
- Town of Legal
- Town of Redwater

An updated Notice of Intent was provided to the above mentioned recipients on March 7, 2016.

Copies of these Notices of Intent are provided on the following pages.

Also included are responses received from affected agencies consulted by the Town of Gibbons.

September 24, 2013

Sturgeon County
9613-100th Street
Morinville, AB T8R 1L9

Attention: Mayor Don Rigney and Members of Council

Dear Mayor Rigney and Members of Council

Re: Formal Notice of the Town of Gibbons Annexation Application

On June 12, 2013, Gibbons Town Council authorized the Town's Administration to proceed with a Notice of Annexation.

The purpose of this letter is to fulfil the requirements of Section 116 of the *Municipal Government Act* ("MGA") and to initiate an annexation application for the areas on the attached map. By copy of this letter, all affected authorities as required by Section 116 of the MGA have been notified.

NOTIFICATION

This notification is being sent to Sturgeon County (the municipal authority from which the land is to be annexed), to the Municipal Government Board, the Capital Region Board and all affected local authorities as defined in section 1(1)(m) of the MGA which includes the following:

- City of Fort Saskatchewan
- Town of Bon Accord
- Town of Morinville
- Town of Redwater
- Village of Legal
- Alberta Health Services Board
- Sturgeon School Division
- Greater St. Albert Schools
- Roseridge Waste Management Commission
- Alberta Capital Region Wastewater Commission
- Capital Region Northeast Water Services Commission

DESCRIPTION OF LANDS TO BE ANNEXED

Appendix 1 contains a map and a description of the lands that are the subject of this proposed annexation. The Town of Gibbons seeks to annex those lands outlined in blue on the map.

REASONS FOR THE PROPOSED ANNEXATION

Appendix 2 contains a summary of the reasons for the proposed annexation. A complete justification for the annexation will be provided as part of the report required under sections 118 and 119 of the MGA.

PROPOSALS FOR CONSULTING WITH THE PUBLIC AND LANDOWNERS

Appendix 3 contains the proposed public consultation program.

AUTHORIZATION

Appendix 4 includes a copy of the Town Council decision with respect to this notice, which authorizes the Town's Administration to proceed with the notice of annexation.

NEGOTIATION / MEDIATION COMMITTEE

In order to address the requirements of Section 117 of the MGA, members of a negotiation / mediation committee (political and administrative) will be appointed by Town Council.

ADDITIONAL NOTICE TO THE MUNICIPAL GOVERNMENT BOARD

Appendix 5 contains an expanded list of authorities that may be affected by the proposed annexation. These additional authorities have not been copied on this letter but are listed as required by Section 6.1 of the Municipal Government Board's Annexation Procedure Rules (effective January 1, 2013).

Should you have any further questions with respect to the proposed annexation, please contact Farrell O'Malley at (780) 923-3331 or fomalley@gibbons.ca.

Yours truly,

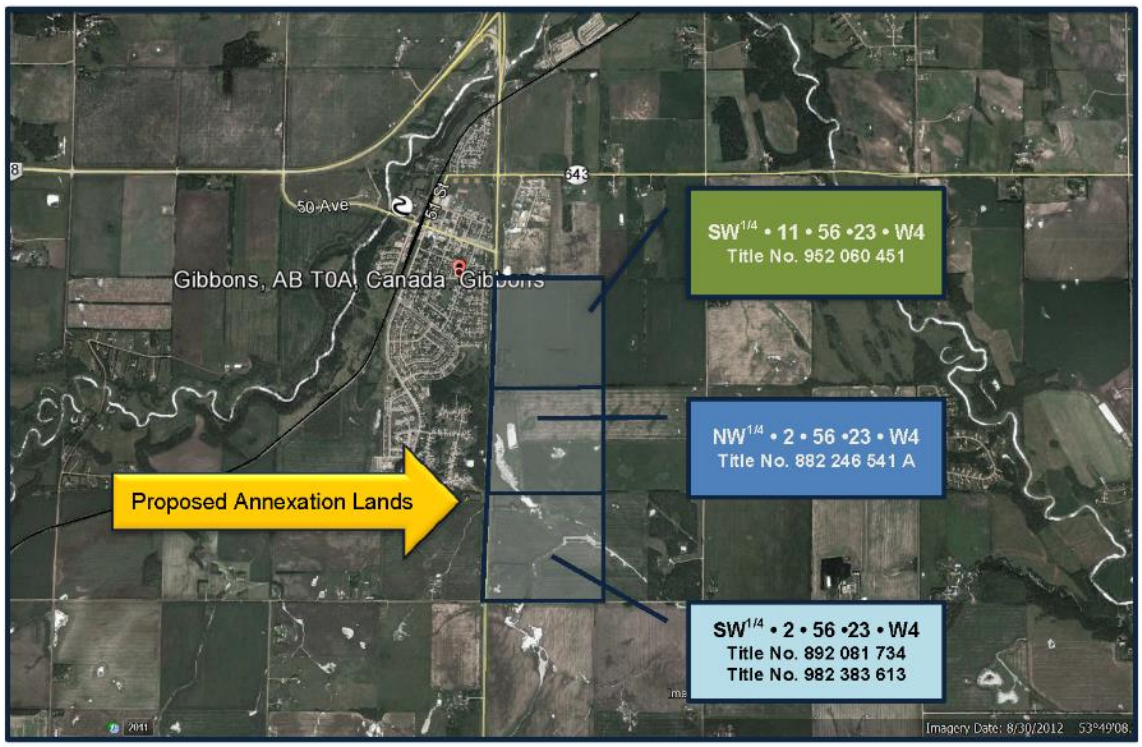
Farrell O'Malley
Chief Administrative Officer

Enclosures

Cc: Ken Lesniak, Chairman/Executive Officer, Municipal Government Board
Doug Lagore, Chief Executive Officer, Capital Region Board
Vicki Zinyk, Chief Administrative Officer, Town of Bon Accord
Kelly Kloss, City Manager, City of Fort Saskatchewan
Debbie Hamilton, Chief Administrative Officer, Town of Redwater
Robert Proulx, Chief Administrative Officer, Village of Legal
Dr. Michèle Dick, Superintendent, Sturgeon School Division
David Keohane, Superintendent of Schools, Greater St. Albert Schools
Dr. John Cowell, Chief Administrator, Alberta Heath Services
Tom Hutchison, Board Chair, Alberta Capital Region Wastewater Commission
Don McGeachy, Chairman, Capital Region Northeast Water Services Commission
Susan Berry, Manager, Roseridge Waste Management Commission

Appendix "A"

DESCRIPTION OF LAND TO BE ANNEXED



The lands proposed for annexation to the Town of Gibbons are described on the attached map forming part of Appendix "A", including all titles and road plans that lie within listed Sections or part of Sections unless otherwise stated, and are described as follows:

- **Township 56, Range 23, West of the 4th Meridian:**

All of those portions of the Southwest Quarter of Section 11 lying east of the boundary of the Highway 28A right-of-way.

Title No. 952 060 451

- **Township 56, Range 23, West of the 4th Meridian:**

All of those portions of the Northwest Quarter of Section 2 lying east of the boundary of the Highway 28A right-of-way.

Title No. 882 246 541 A

- **Township 56, Range 23, West of the 4th Meridian:**

All of those portions of the Southwest Quarter of Section 2 lying east of the boundary of the Highway 28A right-of-way.

Title No. 892 081 734

Title No. 982 383 613

REASONS FOR THE PROPOSED ANNEXATION

Section 116(2)(b) of the *Municipal Government Act* ("MGA") requires, as part of a written notice of a proposed annexation, that the notice "set out the reasons for the proposed annexation". The following is an **overview** of the context and major reasons why the Town of Gibbons is pursuing annexation of the lands identified on the map of proposed annexation areas. Further and more detailed annexation justification will be provided as part of the report to be prepared describing the results of the annexation negotiation / mediation, and public consultation processes.

The annexation justification is based on three categories: provision of an adequate land supply for long term sustainability, regional planning and growth coordination and the effective development and provision of community and core services that are outlined in detail with the Town of Gibbons' 2007 Municipal Development Plan Section 5.0:

1. Adequate Land Supply for Long-term Sustainability

At a high level, annexation of this area is required to provide Gibbons with an appropriate long term supply of developable land. This will enable Gibbons to continue as a strong and viable community, which is beneficial to the region as a whole.

The Town of Gibbons believes that it should have a 50 year holding of land within its boundaries for sound, long term planning. With an adequate inventory of land within its boundaries, the Town will be able to have a sufficient supply of affordable land that will enable the Town to supply the housing for the workers and operators of the Industrial sector to be constructed to the east of Town or simply to provide housing for persons not wanting to live in a large city. In doing so, the Town can realize a key long term sustainability plan objective of being able to achieve a level of critical mass. A critical mass that is integral to the efficient and effective delivery of a range of municipal and commercial services that will serve the substantial growth projected over the next 25 to 35 years with a total projected population being 7003 in 2041 as stated in a report completed by ISL Engineering for Alberta Infrastructure and Transportation in November of 2007.

Gibbons currently has two primary developers which are Landrex and Homestead. Landrex is in the process of completing the West Gibbons Area Structure Plan that is project through a phased in process, will accommodate approximately 3,900 residents when complete. Furthermore, Homestead is prepared to construct an additional 150-190 housing units over the next few years which will add housing for 500-700 people.

2. Regional Planning and Growth Coordination

The Town of Gibbons, with a long term supply of lands within its urban boundary, can undertake a meaningful planning process to create an Intermunicipal Development Plan that encompasses the fringe areas and those lands owned by current Sturgeon County residents (see enclosures) who have expressed the desire to be annexed into the Town of Gibbons to facilitate the maximization of land uses and the resources required to service said lands and do so to the satisfaction of both the County and the Town.

The annexation of the designated lands into the Town of Gibbons will enable the Town to better align itself to manage the growth pressures that are currently being experienced as a result of the Alberta Heartland but also those pressures anticipated through the addition of the Northwest Upgrader (Refinery) project that is estimated to create between 300 – 900 full-time positions and employ over 8,000 people during peak production and is scheduled to begin the first of three equal phases of construction in 2014.

The need for Commercial/Industrial land in the Town of Gibbons is paramount now that Alberta Transportation's Highway 28A realignment study is complete which significantly impacts over 50% of the Town's current land supply designated for Commercial/Industrial purposes on the east side of town directly parallel to Highway 28A. The Town through this annexation will gain the capacity and confidence necessary to forge ahead with carrying out its objectives for developing land as outlined in its 2007 Municipal Development Plan knowing that the land base for commercial and industrial purposes will be available.

3. Effective Development and Provision of Community and Core Services

The Town of Gibbons requires a sufficient land base in which to allow for the establishment of many core commercial services such as food stores, restaurants, hotels/motels, retail stores and other similar businesses that are needed to service the citizens of the Town of Gibbons, industry and the many visitors that attend major events such as sporting tournaments, festivals, weddings and "Boonstock." Further, it is important to note that the Town does have municipal services in close proximity to the identified lands which would allow for cost effective servicing of the lands that will enable these land to be put "on stream" in a relatively short time span.

Families and individuals want to live in a community that can provide the lifestyle that they desire. For a great many years, the onus has been primarily on the urban municipality to provide the people with "soft" services such as recreation facilities, cultural, library and other social programs and opportunities that citizens want and demand in their community. With the new lands within its boundary, the Town can build on the recently completed Regional Recreation Master Plan in an organized manner that will allow for the optimum utilization of these lands so that they can provide the much needed "soft" services but also do so utilizing tax revenues generated through new development to support the substantial population base of over 7000 that is projected in a sustainable and responsible manner.

PROPOSALS FOR CONSULTING WITH THE PUBLIC AND LANDOWNERS

Section 116 (2) (c) (i) and (ii) of the Municipal Government Act (MGA) requires that the notice for an annexation must include proposals for consulting with the public and meeting with the owners of the land to be annexed and keeping them informed about the progress of the negotiations. The following public consultation program is proposed in order to meet this requirement.

1. Website

A website will be set up in order to provide affected property owners and the general public with easy access to information. The website will utilize a Frequently Asked Questions format and includes a mechanism for contacting staff representatives from the Town of Gibbons. A link to the Sturgeon County will be included. In short order, a map of the proposed annexation boundaries will be placed on the website.

2. Mailing Lists

Three mailing lists will be set up. The first is a list of landowners within the annexation boundary. The second list includes those landowners within a specified distance from the boundaries of the annexation areas. The third list is comprised of members of the public and other parties who have expressed an interest in annexation.

3. Open Houses

Open House sessions will be planned at locations as follows:

First Open House session – proposed for the Fall/Winter of 2013 (November/December) for the purposes of presenting the Town of Gibbon's application, outlining the process of annexation, and solicit comments from affected landowners and other stakeholders.

Second Open House session – proposed for Winter 2014 (January/February) for the purposes of presenting progress of the inter-municipal negotiation and mediation process, and any conditions of annexation that have been agreed in principle.

Third Open House session (optional) – proposed for Winter 2014 (February/March) for the purposes of presenting progress since the previous open house, new conditions of annexation agreed upon and potential timing of formal application of annexation. The proposed open house dates are subject to the pace of progression of negotiations with Sturgeon County. Additional open houses may be scheduled throughout the negotiation/mediation process if required.

A compilation of all interests and concerns will be set up in order to document different issues and how they are dealt with. Email correspondence will be employed as much as possible for purposes of communication. However, it is recognized that not all interested parties may wish to communicate electronically. In those instances, communication by telephone and letter will be undertaken.

4. Newsletter Mail Outs*
Three direct mail outs are envisioned to individuals on the mailing lists during the public consultation processes:

Mail out Number 1 will be sent in November 2013. The purpose is to inform landowners and interested parties of the Town's decision to proceed with an annexation proposal, inform recipients of open house dates, and provide contact information including the website address.

Mail out Number 2 will be sent after the negotiation and mediation process has been substantially completed to inform landowners and interested parties of the outcome of the inter-municipal negotiating process and the dates of further open houses.

Mail out Number 3 will be sent out to inform landowners and interested parties of the annexation decision made by the Province of Alberta. The package will include any updated information regarding the implementation of the annexation decision.

*Note: additional update mail outs may be sent out throughout the negotiation / mediation process if required, particularly if there are any time delays.

Newspaper Ads

All open houses will be advertised in the Morinville Free Press and newspapers within the Sturgeon County, Redwater Review, and Fort Saskatchewan Record.

Summary of the Public Consultation Program

A summary will be included in the report to the Municipal Government Board as required in Sections 118 and 119 of the MGA.

Appendix "D"

AUTHORIZATION

On June 12, 2013, Town Council passed the following Motions:

1. That annexation of the land identified in Attachment 1 of the June 12, 2013, Sustainable Development verbal report, be initiated and that written notice of the proposed annexation be given pursuant to section 116 of the *Municipal Government Act*.

2. That the June 12, 2013, Sustainable Development verbal report and presentation remain private pursuant to sections 24, 25 and 27 of the *Freedom of Information and Protection of Privacy Act*.

ADDITIONAL NOTICE TO THE MUNICIPAL GOVERNMENT BOARD

Section 6.1 of the Municipal Government Board's (MGB) Annexation Procedure Rules (effective January 1, 2013) requires that written notice to the MGB under section 116(1)(b) of the Municipal Government Act (MGA) must be accompanied by a list of the authorities that the Town of Gibbons believes may be affected by the proposed annexation. The following list of authorities is provided in order to meet this requirement.

List of affected authorities that notice has been provided to by copy of this letter, as required by the MGA:

- Sturgeon County
- Municipal Government Board (MGB)
- Town of Bon Accord
- Town of Redwater
- Village of Legal
- City of Fort Saskatchewan
- Sturgeon School Division
- Greater St. Albert Schools
- Alberta Heath Services
- Alberta Capital Region Wastewater Commission
- Capital Region Northeast Water Services Commission
- Roseridge Waste Management Commission

List of authorities that may be affected, as required by the MGB's Annexation Procedure Rules:

- Alberta Transportation
- AltaGas Utilities Inc.
- ATCO Electric
- ATCO Gas
- Direct Energy Regulated Services
- ENMAX Energy Corporation
- EPCOR Distribution and Transmission Inc.
- EPCOR Energy Inc.
- Fortis Alberta Inc.
- TransAlta Utilities Corporation

March 7, 2016

Mr. Peter Tarnawsky, CAO
Sturgeon County
9613 100th Street
Morinvillae, AB T8R 1L9

Dear Mr. Tarnawsky:

RE: Proposed Annexation

As follow up to our letter of September 24, 2013 in which we provided formal notice of the Town of Gibbon's Annexation Application to Sturgeon County and our recent letter of March 4, 2016 the Town of Gibbons is proceeding with an annexation application to annex the area described on the attached map in Appendix "A". All affected authorities as required by Section 116 of the MGA were notified and with this letter have been further notified of the Town's intention to proceed with the annexation in 2016.

Copies of this letter have been sent to the Municipal Government Board, the Capital Region Board and all affected agencies and local authorities as defined in section 1(1)(m) of the MGA which includes the following:

- City of Fort Saskatchewan
- Town of Bon Accord
- Town of Morinville
- Town of Redwater
- Town of Legal
- Alberta Transportation
- Alberta Parks and Tourism
- Alberta Health Services
- Sturgeon School Division
- Greater St. Albert School
- Roseridge Waste Management Commission
- Alberta Capital Region Wastewater Commission
- Capital Region Northeast Water Services Commission
- Canadian National Railways
- Fortis Alberta
- Atco Gas
- Atco Pipelines
- Telus Communication Alberta NE

Box 68 ◆ Gibbons AB ◆ T0A 1N0 ◆ Phone: 780.923.3331 ◆ Fax: 780.923.3691
Website: www.gibbons.ca ◆ Email: gov@gibbons.ca

DESCRIPTION OF THE LANDS TO BE ANNEXED
Appendix "A" contains a map and description of the lands that are the subject of this proposed annexation. The Town of Gibbons seeks to annex the following quarter sections as identified on the attached Schedule A:

- SW 11-56-23-W4 (Title No. 952 060 451)
- NW 2-56-23-W4 (Title No. 882 246 541 A
- SW 2-56-23-W4 (Title No. 892 081 734 & 982 383 613)

REASONS FOR THE PROPOSED ANNEXATION
Appendix "B" contains a summary of the reasons for the proposed annexation. A complete justification for the annexation will be provided as part of the report required under sections 118 and 119 of the MGA.

PROPOSALS FOR CONSULTING WITH THE PUBLIC AND LANDOWNERS
Appendix "C" contains the proposed public consultation program.

AUTHORIZATION
Appendix "D" includes a copy of the Town Council decision with respect to this notice, which authorizes the Town's Administration to proceed with the notice of annexation.

NEGOTIATION / MEDIATION COMMITTEE
In order to address the requirements of Section 117 of the MGA, members of a negotiation / mediation committee (political and administrative) has been appointed by Town Council.

ADDITIONAL NOTICE TO THE MUNICIPAL GOVERNMENT BOARD
Appendix "E" contains an expanded list of authorities that may be affected by the proposed annexation. These additional authorities have not been copied on this letter but are listed as required by Section 6.1 of the Municipal Government Board's Annexation Procedure Rules (effective January 1, 2013).

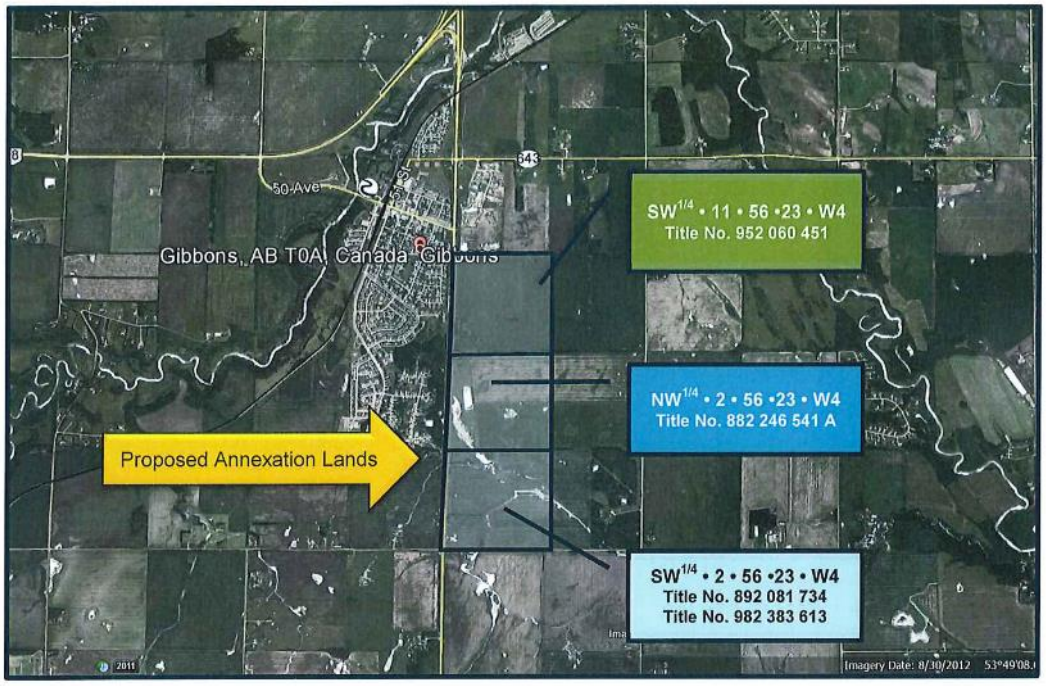
Should you have any further questions with respect to the proposed annexation, please contact me at (780) 923-3331 or fomalley@gibbons.ca.

Respectfully,

Farrell O'Malley
Chief Administrative Officer

Appendix "A"

DESCRIPTION OF LAND TO BE ANNEXED



Appendix "B"

REASONS FOR THE PROPOSED ANNEXATION

Section 116(2)(b) of the *Municipal Government Act* ("MGA") requires, as part of a written notice of a proposed annexation, that the notice "set out the reasons for the proposed annexation". The following is an **overview** of the context and major reasons why the Town of Gibbons is pursuing annexation of the lands identified on the map of proposed annexation areas. Further and more detailed annexation justification will be provided as part of the report to be prepared describing the results of the annexation negotiation / mediation, and public consultation processes.

The annexation justification is based on three categories:

1. Provision of an adequate land supply for long term sustainability,
2. Regional planning and growth coordination and the effective development and
3. Provision of community and core services that are outlined in detail with the Town of Gibbons' 2007 Municipal Development Plan Section 5.0:

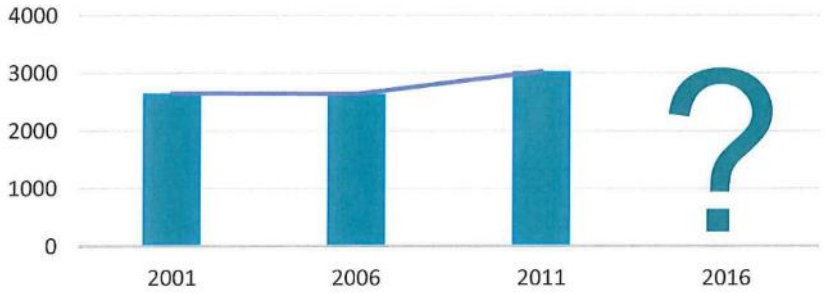
1. Adequate Land Supply for Long-term Sustainability

At a high level, annexation of this area is required to provide Gibbons with an appropriate long term supply of developable **commercial and light industrial** land. This will enable Gibbons to continue as a strong and viable community, which is beneficial to the region as a whole.

The Town of Gibbons believes that it should have a 50 year holding of land for commercial, industrial and residential uses within its boundaries for sound, long term planning. With an adequate inventory of land within its boundaries, the Town will be able to have a sufficient supply of affordable land that will enable the Town to support commercial and light industrial sector growth necessary to ensure the future viability of the Town's tax base and to ensure employment opportunities within the community for local residents and larger sub-region. By providing opportunities for additional commercial and industrial sector growth the Town can realize a key long term sustainability plan objective diversifying the local tax base.

The Town has experienced population and employment growth over the last 10 years and by actively engaging in pre-planning and consultation with regional partners it is the Town's goal to create the opportunity to maintain positive population and employment growth.

Town of Gibbons Population Growth



2. Regional Planning and Growth Coordination

The Town of Gibbons, with a long term supply of lands within its urban boundary, can undertake a meaningful planning process to create an Intermunicipal Development Plan that encompasses the fringe areas and those lands owned by current Sturgeon County residents (see enclosures) who have expressed the desire to be annexed into the Town of Gibbons to facilitate the maximization of land uses and the resources required to service said lands and do so to the satisfaction of both the County and the Town.

The annexation of the designated lands into the Town of Gibbons will enable the Town to better align itself to manage the growth pressures that are currently being experienced as a result of Alberta's Industrial Heartland but also those pressures anticipated through the addition of the Northwest Refinery project that is estimated to create between 300 – 900 full-time positions and employ over 8,000 people during peak production.of three phases.

The need for Commercial/Industrial land in the Town of Gibbons is paramount now that Alberta Transportation's Highway 28A realignment study is complete which significantly impacts over 50% of the Town's current land supply designated for Commercial/Industrial purposes on the east side of town directly parallel to Highway 28A. The Town through this annexation will gain the capacity and confidence necessary to forge ahead with carrying out its objectives for developing land as outlined in its 2007 Municipal Development Plan knowing that the land base for commercial and industrial purposes will be available.

3. Effective Development and Provision of Community and Core Services

The Town of Gibbons requires a sufficient land base in which to allow for the establishment of many core commercial services such as food stores, restaurants, hotels/motels, retail stores and other similar businesses that are needed to service the citizens of the Town of Gibbons, industry and the many visitors that attend major events such as sporting tournaments, festivals and weddings. Further, it is important to note that the Town does have municipal services in close proximity to the identified lands which would allow for cost effective servicing of the lands that will enable these land to be put "on stream" in a relatively short time span.

Families and individuals want to live in a community that can provide the lifestyle that they desire. For a great many years, the onus has been primarily on the urban municipality to provide the people with "soft" services such as recreation facilities, cultural, library and other social programs and opportunities that citizens want and demand in their community. With the new lands within its boundary, the Town can build on the recently completed Regional Recreation Master Plan in an organized manner that will allow for the optimum utilization of these lands so that they can provide the much needed "soft" services but also do so utilizing tax revenues generated through new development to support the substantial population base of over 7000 that is projected in a sustainable and responsible manner.

Appendix "C"

PROPOSALS FOR CONSULTING WITH THE PUBLIC AND LANDOWNERS

Section 116 (2) (c) (i) and (ii) of the Municipal Government Act (MGA) requires that the notice for an annexation must include proposals for consulting with the public and meeting with the owners of the land to be annexed and keeping them informed about the progress of the negotiations. The following public consultation program is proposed in order to meet this requirement.

1. Website
A website will be set up in order to provide affected property owners and the general public with easy access to information. The website will utilize a Frequently Asked Questions format and includes a mechanism for contacting staff representatives from the Town of Gibbons. A link to the Sturgeon County will be included. In short order, a map of the proposed annexation boundaries will be placed on the website.

2. Mailing Lists
Three mailing lists will be set up. The first is a list of landowners within the annexation boundary. The second list includes those landowners within a specified distance from the boundaries of the annexation areas. The third list is comprised of members of the public and other parties who have
expressed an interest in annexation.

3. Open Houses
Open House sessions will be planned at locations as follows:

First Open House session – proposed for the Winter of 2016 (March) for the purposes of presenting the Town of Gibbon's application, outlining the process of annexation, and solicit comments from affected landowners and other stakeholders.

Second Open House session – proposed for Spring 2016 (June/July) for the purposes of presenting progress of the inter-municipal negotiation and mediation process, and any conditions of annexation that have been agreed in principle.

Third Open House session (optional) – proposed for Winter 2016 (October/November) for the purposes of presenting progress since the previous open house, new conditions of annexation agreed upon and potential timing of formal application of annexation. The proposed open house dates are subject to the pace of progression of negotiations with Sturgeon County. Additional open houses may be scheduled throughout the negotiation/mediation process if required.

A compilation of all interests and concerns will be set up in order to document different issues and how they are dealt with. Email correspondence will be employed as much as possible for purposes of communication. However, it is recognized that not all interested parties may wish to communicate electronically. In those instances, communication by telephone and letter will be undertaken.

4. Newsletter Mail Outs*
Three direct mail outs are envisioned to individuals on the mailing lists during the public consultation processes:

Mail out Number 1 was sent early in March 2016. The purpose was to inform landowners of the Town's decision to proceed with an annexation proposal, inform recipients of open house dates, and provide contact information.

Mail out Number 2 will be sent after the negotiation and mediation process has been substantially completed to inform landowners and interested parties of the outcome of the inter-municipal negotiating process and the dates of further open houses.

Mail out Number 3 will be sent out to inform landowners and interested parties of the annexation decision made by the Province of Alberta. The package will include any updated information regarding the implementation of the annexation decision.

*Note: additional update mail outs may be sent out throughout the negotiation / mediation process if required, particularly if there are any time delays.

Newspaper Ads
All open houses will be advertised in newspapers within the Sturgeon County including the Morinville Free Press, Redwater Review, St Albert Gazzett and Fort Saskatchewan Record.

Summary of the Public Consultation Program
A summary will be included in the report to the Municipal Government Board as required in Sections 118 and 119 of the MGA.

ATCO Pipelines

March 24, 2016

Your File: Annexation
Our File: 16-0841

Attention: Lyndsay Francis
Town of Gibbons
Planning and Development Department

RE: Proposed Town of Gibbons Annexation - SW/NW 2 & SW 11-56-23-W4

The Engineering Department of ATCO Pipelines (a division of ATCO Gas and Pipelines Ltd.) has reviewed the above named plan and has no objections subject to the following conditions:

1. Any existing land rights shall be carried forward in kind and registered on any newly created lots, public utility lots, or other properties.

2. ATCO Pipelines requires a separate utility lot for its sole use.

3. A pipeline alteration may be required in this area.
   - All costs associated with any alterations to ATCO Pipelines' pipeline(s) and/or appurtenances to accommodate development will be borne by the developer/owner.
   - This process can take up to 18 months to complete.

4. Ground disturbances and surface works within 30 meters require prior written approval from ATCO Pipelines before commencing any work.
   - Municipal circulation file number must be referenced; proposed works must be compliant with ATCO Pipelines' requirements as set forth in the company's conditional approval letter.
   - Contact ATCO Pipelines' Land Department at 1-888-420-3464 for more information.

5. Road crossings are subject to Engineering review and approval.
   - Road crossing(s) must be paved and cross at a perpendicular angle.
   - Parallel roads are not permitted within ATCO Pipelines' right(s)-of-way.
   - If the road crossing(s) requires a pipeline alteration, the cost will be borne by the developer/owner and can take up to 18 months to complete.

6. Parking encroachments may be permitted within ATCO Pipelines' right-of-way, subject to Engineering approval.
   - Unpaved parking is not permitted (gravel, grass, etc.).
   - Parking directly above the pipeline is not permitted.

7. Storage is not permitted on ATCO Pipelines' pipeline(s) and/or rights(s)-of-way.

8. ATCO Pipelines recommends a minimum 15 meter setback from the centerline of the pipeline(s) to any buildings.

7210 - 42 Street NW, Edmonton, AB T6B 3H1
Tel: 780.420.8957 Fax: 780.420.7411
www.atcopipelines.com

ATCO Pipelines

9. Any changes to grading that alter drainage affecting ATCO Pipelines' right-of-way or facilities must be adequate to allow for ongoing access and maintenance activities.
    - If alterations are required, the cost will be borne by the developer/owner.

10. Any revisions or amendments to the proposed plans(s) must be re-circulated to ATCO Pipelines for further review.

If you have any questions or concerns, please contact the undersigned at 780.420.3896 or email Isabel.Solis@atcopipelines.com.

Yours truly,

ATCO Pipelines
A division of ATCO Gas and Pipelines Ltd.

Isabel Solis
Operations Engineering Department

APPROVED:
AS TO FORM
AS TO CONTENT
BC

IS

5 | 2013 AFFECTED LANDOWNER RESPONSES TO INITIAL NOTIFICATION

Initial notification to affected landowners within the annexation area was provided by the Town of Gibbons via phone conversations. In one instance, the Town of Gibbons was unable to contact a landowner via phone (Sami Ceylan & Sultan Ceylan). A follow-up notification letter was provided to this landowner on July 11, 2013. No written response (of support or objection) from this landowner was received by the Town of Gibbons.

The following are the written responses provided by landowners to the Town of Gibbons. In some instances, notes have been provided by Town Admininstration that highlights further consultation via phone and in-person meetings.

May 30, 2013

Lanny Boutin
Town of Gibbons
Box 68
Gibbons, AB
T0A 1N0

Dear Lanny;

As to our previous conversation and your letter we agree with the annexation of our land by the Town of Gibbons as long as our property taxes are not affected.

AND THAT THESE
TAXES REMAIN THE
SAME AS THE EAST
QUARTER (SE 11 56 23 4)
WHICH THEY ARE NOW

PUTNAM & LAWSON

Barristers & Solicitors

*ANDREW J. LAWSON
*GORDON D. PUTNAM, Q.C.

GIBBONS OFFICE
P.O. Box 1200
5028 – 49 St.
GIBBONS, AB
T0A 1N0
Ph. (780) 923-3500
Fax: (780) 923-2223
E-mail: mail@putnamlawson.ca

MORINVILLE OFFICE
9703A – 100 Street
MORINVILLE, AB
T8R 1R3
Ph. (780) 939-2001
Fax: (780) 939-6105

Reply to: MORINVILLE Office

Our File: M6342
Your File:

June 11, 2013

Town of Gibbons
Box 68
Gibbons, AB
T0A 1N0

Via Fax: (780)923-3691

Attention: Lanny Boutin

Dear Sir:

RE: Annexation of

Further to the above, this confirms that we act for regarding the proposed annexation of their land east of Gibbons. This confirms that they are in favor of the proposed annexation of their land.

We will be acting on their behalf regarding the proposed annexation and it is imperative that you provide us with any correspondence or updates as the process goes forward so that we may properly advise our clients.

Thank you.

Yours truly,

PUTNAM & LAWSON

Per:

GORDON D. PUTNAM, Q.C.

GP/bb

Aug 25, 2011

To whom it may concern;

RECEIVED JUL 0 3 2013

I , owner of and the land in question at SW ¼ 2 56 23 W4, have no objection to the Town of Gibbons annexing my land into the Town of Gibbons boundary.

Sincerely yours

Gibbons
ROOTED IN FAMILY

July 11, 2013

Dear Sirs;

I am contacting you in regards to the Town of Gibbons annexation plan. We are in the process of reopening talks with Sturgeon County regarding annexing your property which abuts Highway 28A, and would like to touch base with you to make sure you are still on board with the plan. Written letters from all effected residents, detailing their agreement with the annexation plan, are necessary to make the process move along smother.

If you could get back to me in writing, by mail or email regarding this annexation it would be greatly appreciated. If you have any question please do not hesitate to call me.

Sincerely yours,

Lanny Boutin
Manager of Sustainable Development
lboutin@gibbons.ca

Communities in Bloom / Collectivités en fleurs
2009 National Winner

6 | PUBLIC OPEN HOUSE #1 – MARCH 16, 2016

Date and Time:	March 16, 2016 6:30 PM
Venue:	Gibbons Cultural Centre
Attendance:	24 (including Town of Gibbons Councillors but not including Town Administration) Based on sign-in sheet results and visual estimate)
Presentation by:	Jane Dauphinee and Lyndsay Francis of Municipal Planning Services (2009) Ltd.
Purpose:	To provide information to the community and stakeholders regarding the proposed annexation including information about: the annexation process, the consultation programme, who can contest the annexation, the timeline(s), and the next steps

Summary

After a presentation, a group discussion was facilitated which consisted of a questions and answer session and one on one conservations with attendees. Overall, attendees of the open house did not express objections to the annexation; rather they asked questions for clarification and some attendees indicated that they supported the Town's annexation proposal.

The following is a list of questions and responses from the open house:

Q: Why were these quarter sections chosen for annexation?

A: These quarter sections were identified as being the most suitable for annexation because:

The Town requires additional commercial and industrial lands to provide opportunities to expand and diversify the local tax base and to ensure that after the proposed highway realignment occurs there will be sufficient land available to relocate the existing industrial developments which will be impacted by the realignment.

This location is separated from existing and proposed residential areas as well as being adjacent to existing industrial developments. Industrial and commercial uses are appropriate adjacent to the realigned highway.

It may be good location for extending municipal services.

There are no oil or gas wells and only one pipeline in the area.

It is close to existing major intersections and planned major intersections.

Q: How will the proposed highway realignment affect the approval of development or subdivision within the annexation area? When should we expect the highway to be realigned?

A: There is no timeframe for the highway realignment at the moment. It is not on the 5 year plan for Alberta Transportation. Subdivision and development may be approved in these areas as long as they do not occur within the proposed highway right-of-way or negatively impact the proposed realignment.

Q: What will happen to the old highway?

A: There is a proposal to twin the highway. Some of this land may be incorporated into the twinning. The Town will have to look at the approved study to see if it identifies what the plan will be for the existing highway.

Q: Who will be responsible for the cost of servicing the annexed lands? What will these costs be?

A: Council will ultimately decide how to assign costs for providing servicing to the annexed lands. Normally, costs associated with providing services to a new development area are borne by the developer. The Town's engineer will be reviewing information to assess the viability of providing municipal services to the site. This information will be part of the annexation submission package and will help the Town to identify if portions of the annexed land should be left unserviced.

Q: What if there are wetlands in the annexed lands and compensation payments are required?

A: If the wetland assessment identifies significant wetlands within the proposed annexation area that would require compensation to facilitate development then the Town will have to consider those costs when assessing the viability of developing those areas and calculating how much land within the proposed annexation area can reasonably be converted to future commercial or industrial land uses.

Q: What kind of industrial uses will be allowed the new annexed lands?

A: The Town has not identified a list of specific uses that would be allowed within the annexed area. However our expectation at this time is that the permitted and discretionary uses would be similar to the permitted and discretionary uses allowed in the Town's existing industrial district. Those uses are primarily light to medium industrial uses.

Q: Who can contest an annexation?

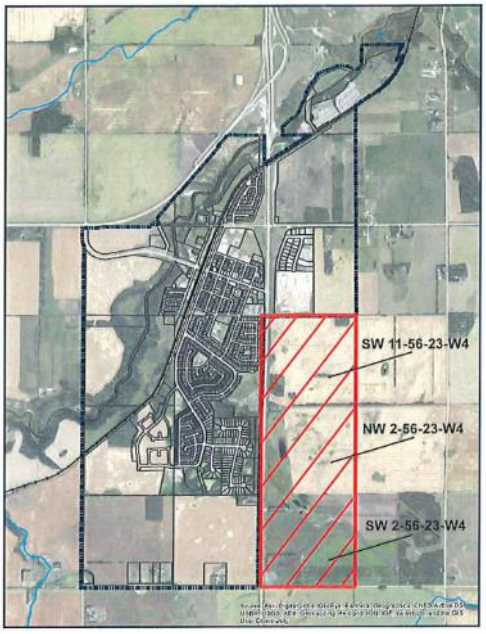
A: Anyone who is negatively impacted by the proposed annexation can contest the annexation.

Annexation Open House

The Town of Gibbons is proposing to annex approximately 194 hectares (480 acres) of land and road right-of-way adjacent to Highway 28A, from Sturgeon County. Gibbons and Sturgeon County area residents are invited to learn more about the proposed annexation and to provide feedback.

The Open House will be held:

Date: March 16, 2016
Time: 6:30 PM – 9:00 PM
Location: Gibbons Cultural Centre, 5115 – 51 St., Gibbons



The open house is part of the public engagement process and will be an opportunity for citizens and stakeholders to learn more about the annexation proposal, provide feedback, and speak with project team representatives.

For more information:

Lyndsay Francis
Municipal Planning Services
Planner
(780) 486-1991
l.francis@munplan.ab.ca

Gibbons
ROOTED IN FAMILY

2016 ANNEXATION LANDOWNERS

Mail Out #1 - March 16, 2016 Open House Notice

MAILED OUT	NOTES
03-Mar-16	Talked to on the phone March 3, 2016
08-Mar-16	sent open house notice by fax March 4, 2016
08-Mar-16	talked to Ernie on the phone March 7, 2016
08-Mar-16	

6.1 INFORMATION POSTERS, SIGN-IN SHEET, AND PHOTOS FROM PUBLIC OPEN HOUSE #1

WHAT IS ANNEXATION?

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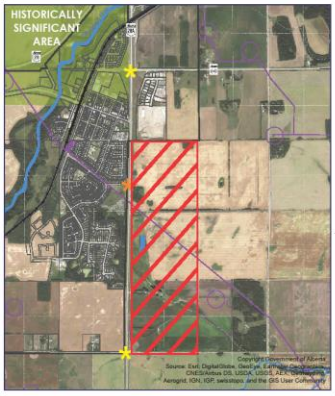
- Negotiation between local governments
- Public engagement
- Formal review by the Municipal Government Board
- Final decision by the Lieutenant Governor in Council

Municipalities initiate annexation to ensure that there is enough developable land within the boundaries to provide reasonable opportunities for growth and development.

The annexation process is regulated by the Municipal Government Act and the annexation principles & rules developed by the Municipal Government Board.

WHY THIS LOCATION?

- Best satisfies annexation considerations
- Suitable for the extension of municipal services



Existing Major Intersection

Future Major Intersection

Pipeline, Well and 100 Metre Setback

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ANNEXATION PROCESS

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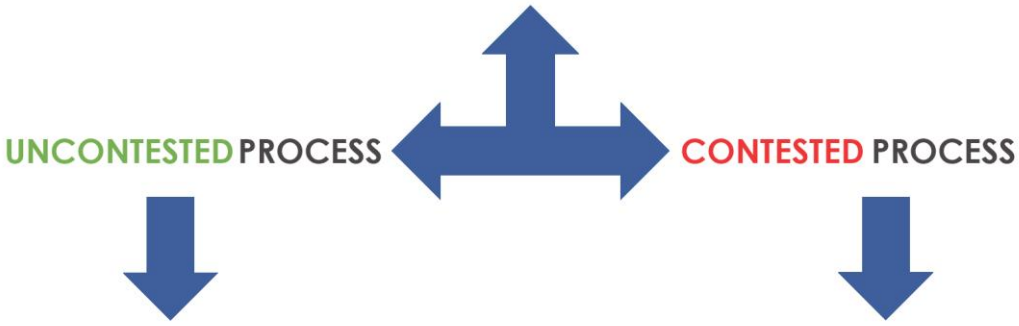

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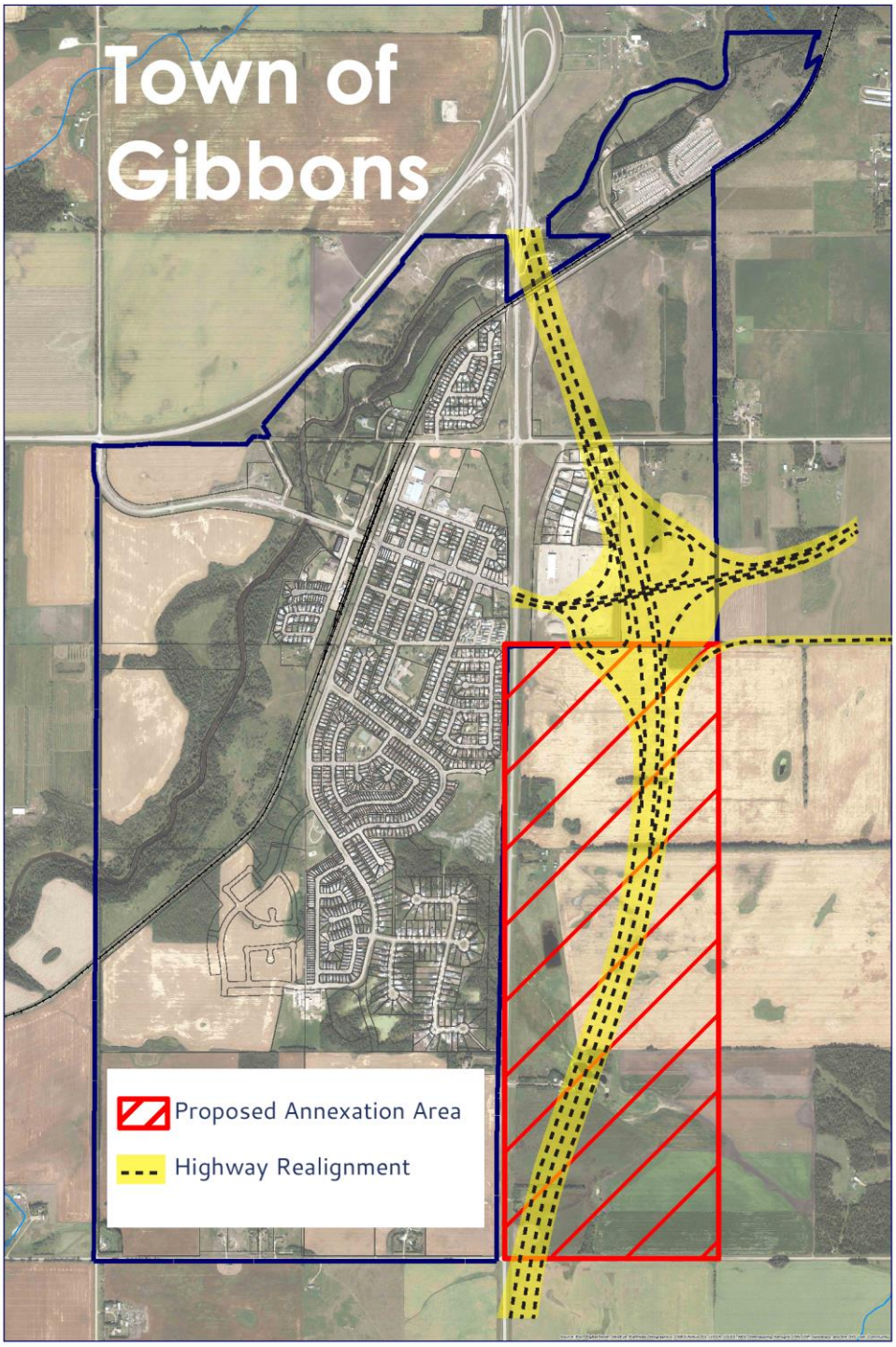

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PUBLIC OPEN HOUSE | SIGN-IN SHEET

Town of Gibbons – Annexation

March 16, 2016

Name	Address
Steve + Husan Visscher	Ex Legal
John Woodger	Gibbons
Bill [illegible]	Gibbons
Gordon Putnam	Morinville
Patrick Tighe	
Juanita Krause	Free Press Newspaper
Tim Bouwman	4111 50 Street
Carol Trensley	Town of Legal
Danielle Eyre	Gibbons
Craig Melovsky	St. Albert
Brian Ball	Sherwood Park
Tom + Anne Hutchings	Gibbons
Dawna Scott Rubin	Gibbons
Susan McCann + Daniel McCann	Gibbons
Dal Wauchle	SW 1 23 56 W4
Sharon Crocker	Box 113, Redwater
Nathan Smigyhyski	Gibbons

7| 2017 NOTIFICATION LETTER TO AFFECTED LANDOWNERS

In April 2017, a notification letter was mailed to affected landowners in the annexation area by the Town of Gibbons. This letter provided an update on the Town's annexation application proposal, progress made to date by the Town in negotiation efforts with Sturgeon County, the Town's proposal to mitigate impacts on affected landowners, and the next steps in the annexation process. The Town of Gibbons also included a questionnaire for recipients to provide the Town with feedback on focus questions.

Included on the following pages is a copy of the letter provided to affected landowners in the annexation area. No additional written responses were received by the Town of Gibbons as of the time of The Town's annexation application submission.

April 24, 2017

Good afternoon;

RE: Town of Gibbons Proposal to Annex three (3) quarter sections in Sturgeon County located east of the current corporate limits of the Town, namely: SW 11-56-23-W4, NW 2-56-23-W4, SW 2-56-23-W4, and Parcel A, Plan 6971KS

This letter is being sent to all landowners within the proposed annexation area described above. We are writing to provide you with an update on the annexation process as well as to outline the Town's proposal to mitigate any landowner annexation impacts which the Town intends to present to the Municipal Government Board as part of its annexation application.

Background

On September 24, 2014, the Council of the Town of Gibbons passed a motion directing Administration to provide a Notice of Intent to Annex to Sturgeon County and the Municipal Government Board and to begin the process of formal negotiations on the annexation.

This annexation application has been proposed by the Council of the Town of Gibbons to:

- Align the Town of Gibbons' plans for future growth and development with Alberta Transportation's Functional Planning Study (2011), which recommends a realignment of Highway 28A; and
- Ensure that there is a long-term supply of developable and appropriately-sited industrial, and commercial lands within the Town of Gibbons.

Annexation will provide additional land for commercial and industrial development near the highway and encourage competition to stimulate growth and development within the community.

The Annexation Process

The Town has had ongoing negotiations with Sturgeon County as well as public consultations regarding the proposed annexation. The Town hosted a public open house to engage residents of both Sturgeon County and the Town of Gibbons to gather input and feedback and identify the process and goals of the annexation.

The Town is now preparing its annexation submission report as required by the *Municipal Government Act*, RSA 2000, c. M-26 (the *"Act"*). Once the submission report is finalized it will be sent to Sturgeon County for review, along with a request for a letter of support for the annexation. The Town's report will then be submitted to the Municipal Government Board as the Town's annexation application.

The Municipal Government Board (the "MGB") is an independent and impartial quasi-judicial board established under the *Act*. The MGB has the authority to investigate, analyze and make

Box 68 ◆ Gibbons AB ◆ T0A 1N0 ◆ Phone: 780.923.3331 ◆ Fax: 780.923.3691
Website: www.gibbons.ca ◆ Email: gov@gibbons.ca

findings of fact about the proposed annexation and is required to prepare a written report with its recommendations on the proposed annexation that will be forwarded to the Minister of Municipal Affairs and then to the Provincial Cabinet for the final decision.

If the MGB is satisfied that the affected municipalities and public are generally in agreement, the MGB notifies the parties of its findings. Unless objections are filed with the MGB by a specific date, the MGB makes its recommendation to the Minister without holding a public hearing. If an objection is filed, the MGB must conduct one or more public hearings. The Minister has the authority to accept or reject in whole or in part the findings and recommendations made by the MGB. The Minister may bring a recommendation forward for consideration to the Lieutenant Governor in Council (i.e. the Provincial Cabinet). If Cabinet approves the annexation, an Order-In-Council will be issued describing the lands to be annexed, the effective date of the annexation and any terms and conditions associated with the transfer of jurisdiction of the lands from Sturgeon County to the Town of Gibbons, including terms and conditions intended to mitigate any landowner impacts in the annexed area.

Town's Proposal to Mitigate Landowner Impacts

First, it bears repeating that annexation is not expropriation – land ownership does not change with annexation. Annexation is a process for changing the jurisdictional boundaries between municipalities. If the Town's annexation application is approved by Cabinet, the annexation lands will transfer from the jurisdiction of Sturgeon County to the Town of Gibbons, but ownership of the annexed lands will remain the same. Your land will not be taken from you.

The Town is committed to mitigating any impacts on landowners within the annexation area and is prepared to submit and advance the following proposals for the MGB's consideration.

1. **Long Term Assessment and Tax Protection**

Assessment and taxation transition provisions allow landowners within the annexation area an opportunity to adjust to the financial changes that may occur as a result of the change in jurisdiction. The Town is proposing that landowners in the annexation area be given **fifteen (15) years of assessment and taxation protection**, subject to specific "triggering events" *initiated by the landowner*, which will remove these conditions.

In summary, the Town is proposing that for a period of fifteen (15) years, the annexed land and assessable improvements to it be assessed by the Town of Gibbons on the same basis as if the annexed lands had remained in Sturgeon County.

Further, the Town is proposing that for a period of fifteen (15) years, the annexed land and the assessable improvements to it be taxed by the Town of Gibbons using

(a) the municipal tax rate established by Sturgeon County, or

(b) the municipal tax rate established by Town of Gibbons,

whichever is lower, for property of the same assessment class.

Assessment and tax protection will be lost if, in any taxation year, a portion of the annexed land:

(a) becomes a new parcel of land created
    (i) as a result of subdivision,

(ii) as a result of separation of title by registered plan of subdivision, or

(iii) by instrument or any other method that occurs at the request of or on behalf of the landowner; or

(b) is redistricted at the request of or on behalf of the landowner, under the land use bylaw in effect at the time for the Town of Gibbons, to a land use designation other than the land use designation that was in effect for that portion immediately before the effective date of the annexation; or

(c) ceases to be used as farmland and a development permit is issued for a change in use of the land at the request of or on behalf of the landowner, under the land use bylaw in effect at the time for the Town of Gibbons; or

(d) is connected to water and sewer services provided by the Town of Gibbons [collectively referred to as "triggering events"].

If a "triggering event" occurs, then the assessment and tax protection will cease to apply to that annexed portion of land, and that land and any assessable improvements to it must be assessed and taxed for the purposes of property taxes in the following year in the same manner as other property of the same assessment class in the Town of Gibbons is assessed and taxed.

Next Steps

The Town believes that the proposed annexation is reasonable and necessary for its future sustainability. If approved by the Provincial Cabinet, the Town looks forward to working with Alberta Transportation, landowners, and the development community to ensure seamless integration of the long range Functional Planning Study with the Town's Commercial and Industrial Use areas.

At this time, the Town is formally requesting your support for the annexation. Attached to this letter is a landowner questionnaire we would appreciate you take a few moments to fill out and send back to us indicating your support/objection to the proposed annexation. **Please forward your completed questionnaire to the Town Office by no later than 4:00 P.M, May 12, 2017.**

If you have any questions or concerns or require any further information regarding this letter or the Town's proposed annexation, please contact me directly.

Respectfully,

Farrell O'Malley
Chief Administrative Officer
Town of Gibbons

CC: Sturgeon County, Attn. Peter Tarnawsky, Chief Administrative Officer

Attachments:
1. Map of Proposed Annexation Area;
2. Landowner Questionnaire

We're Listening...

You've received information from the Town of Gibbons about the proposed annexation application, which will facilitate future development within the Town.

A summary of all feedback received will be included in the report prepared by the Town and submitted to the Municipal Government Board, the quasi-judicial board that will review the annexation application and provide a recommendation to the Province. Note that no personal information will be included within the summary.

Legal Description of Lands: _____

Mailing Address: _____

Name: _____

Email Address: _____

1. Are you in favour of your parcel(s) of land being annexed to the Town of Gibbons?
   □Yes □No Please explain your reasons below.

_____
_____
_____
_____

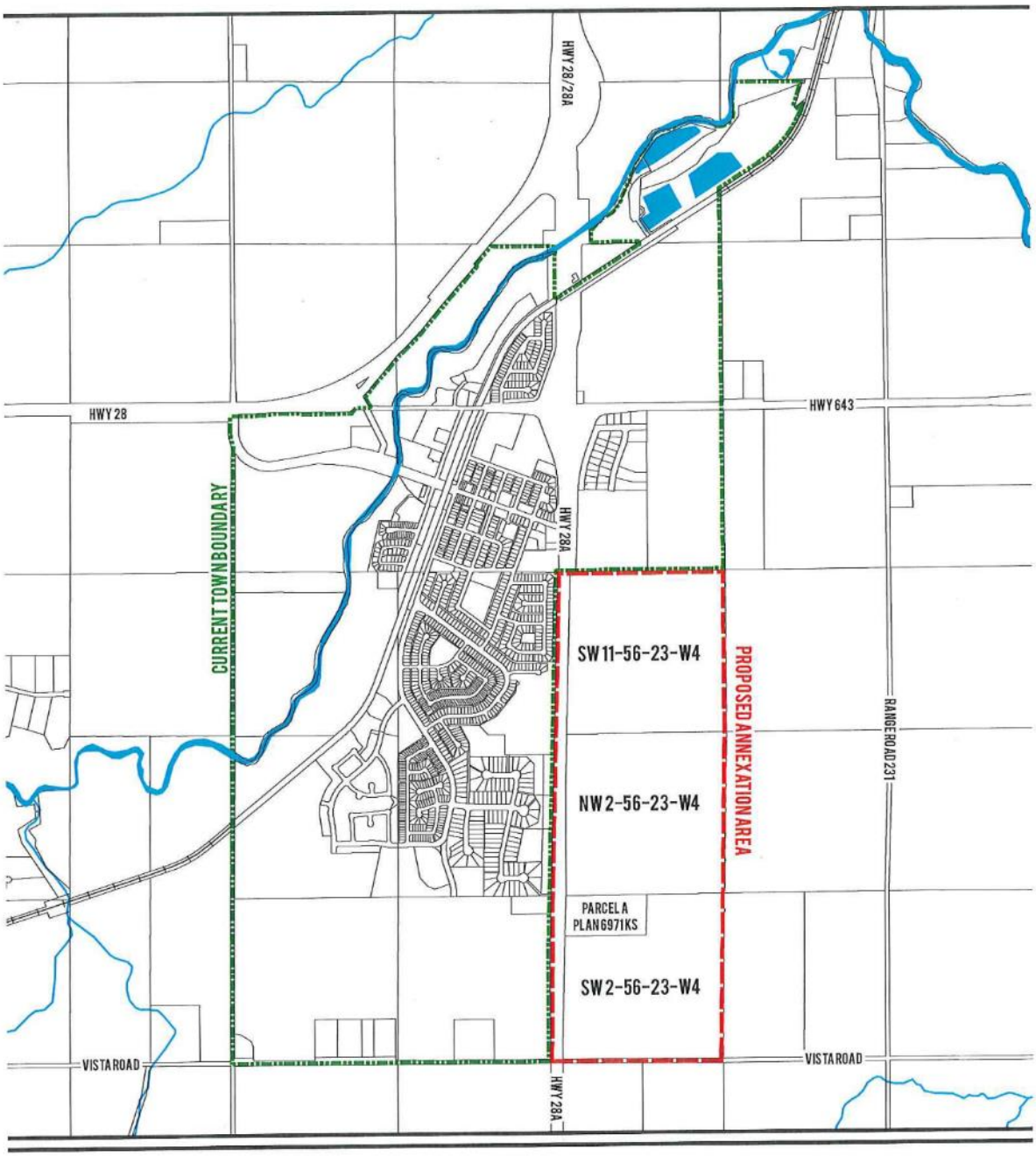
2. Do you have any concerns, questions, or comments regarding the Town of Gibbons' annexation proposal?

_____
_____
_____

Please return this completed questionnaire to the Town of Gibbons, admin@munplan.ab.ca, or

Town of Gibbons
Farrell O'Malley, Chief Administrative Officer
fomalley@gibbons.ca
Box 68
Gibbons, AB T0A 1N0

The personal information requested on this form is being collected under the authority of Section 33(c) of the Freedom and Information and Protection of Privacy Act (FOIP). The information collected will be used as required for public consultation purposes regarding the Town of Gibbons' annexation application.



TOWN OF GIBBONS ANNEXATION LOCATION MAP

INFORMATION: GEOGRATIS & ALTALIS
PROJECTION: UTM NAD 83 12N

0 0.5 1 KM

NORTH

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8 | 2017 ADJACENT LANDOWNER AND TOWN RESIDENTS' NOTIFICATION

In April 2017, the Town of Gibbons collaborated with Sturgeon County to notify all landowners in the County adjacent to the annexation area via mail.

In order to ensure that area residents were fully informed of the proposed annexation, the Town of Gibbons and Sturgeon County collaborated to mail notify Sturgeon County residents.

Notification of the proposed annexation was provided to all Town of Gibbons residents via the Town's electronic signs and website. Poster notifications were placed in the Town of Gibbons Cultural Centre and the Town of Gibbons Post Office.

A copy of the letter provided by the Town of Gibbons and Sturgeon County to adjacent landowners of the annexation area in Sturgeon County on April 24, 2017 is included on the following pages.

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24 April 2017

ADJACENT LANDOWNER

Dear Sir/Madam

Re: **Town of Gibbons Proposal to Annex three (3) quarter sections in Sturgeon County located east of the current corporate limits of the Town, namely: SW 11-56-23-W4, NW 2-56-23-W4, SW 2-56-23-W4, and Parcel A, Plan 6971KS**

This letter is being sent to all landowners in Sturgeon County who own property adjacent to the proposed annexation area described above.

The Town of Gibbons filed a Notice of Intent to Annex on 24 September 2014 with the Municipal Government Board and Sturgeon County. The lands, described above, are adjacent to the eastern boundary of the Town of Gibbons and are within Sturgeon County.

As an adjacent landowner, we are notifying you to give you with the opportunity to provide comments on this matter and to invite you to contact the Town office with any questions you may have pertaining to the proposed annexation.

If you have any further questions or wish to provide comments, please do not hesitate to contact **Lanny Boutin, Manager of Sustainable Development for the Town of Gibbons at (780) 923-3331 or by email at LBoutin@gibbons.ca**.

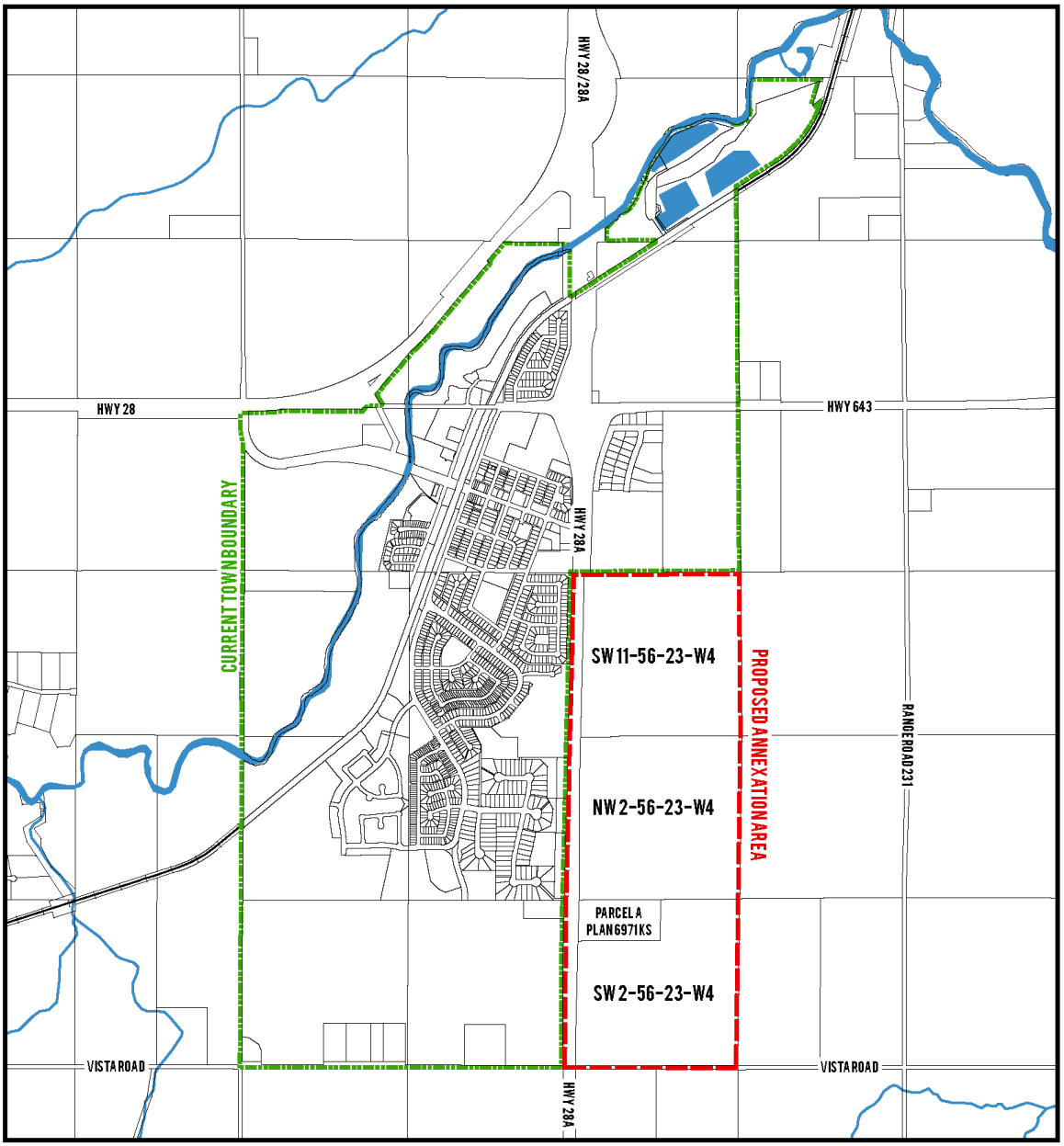
Yours truly,

Farrell O'Malley
Chief Administrative Officer
Town of Gibbons

cc: Sturgeon County

Attachments:

1. Map of Proposed Annexation Area



TOWN OF GIBBONS ANNEXATION LOCATION MAP

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NORTH

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9 | MEETINGS WITH AFFECTED LANDOWNER – MAY 2017

On May 18 and 19, 2017 Town of Gibbons Administration met individually with three of the four affected landowners in the annexation area to present information about the Town's annexation application, discuss the Town's proposal to address impacts on affect landowners, and to answer questions.

Town of Gibbons Administration was unable to meet with the owners of one affected property in the annexation area Repeated attempts to contact the landowners (mail, phone, and visits to the landowner's address) were unsuccessful.

10 | PUBLIC OPEN HOUSE #2 – JUNE 7 2017

Date and Time:	June 7, 2017 7:00 PM
Venue:	Gibbons Cultural Centre
Attendance:	8 - including Councillor but not including administration based on sign-in sheet results and visual count
Presentation by:	Jane Dauphinee of Municipal Planning Services (2009) Ltd. and Steve Brittain of Select Engineering
Purpose:	To provide information to the community and stakeholders regarding the proposed annexation including information about: the annexation process, the Engineering Servicing Report, who can contest the annexation, the anticipated timeline, and the next steps.

Summary

After a presentation, a group discussion was facilitated which consisted of a questions and answer session and one on one conservations with attendees. Overall, attendees of the open house did not express objections to the annexation; rather they asked questions for clarification and some attendees indicated that they supported the Town's annexation proposal.

Questions

Q – How much industrial land will the Town be getting? What's the net gain of industrial land (what is lost compared to what is gained)? Will any of the current industrial park be salvaged/able to be kept?

A – Most of the current industrial park will be lost in the highway realignment. The lost amount of industrial lands will be approximately 60 ha. The annexation lands will provide 62.14 ha of new light industrial lands within the Town of Gibbons. This will replace the lost industrial lands and may provide a slight increase to the net area of available light industrial lands within the Town.

Q – Have all landowners provided letters of support?

A – No- but all of the landowners have responded (except 1) and they have indicated verbally that they have no objections to the annexation.

Q – How will taxation work in the annexation areas?

A – The Town originally proposed to maintain the same taxation and assessment rates within the annexation area for a period of 15 years if the use of the land did not change. Trigger s have been identified which would result in an end to the taxation and assessment concession. However, the Town is currently in discussions with one of effected land owners and as a result will increase the taxation and concession period to 25 years. The annexation conditions will be revised to reflect this discussion and increase the number of years offered for taxation and assessment relief from 15 to 25.

Q – Clarification requested re: requirement and/or replacement of a lift station in annexation lands.

A – The information from the Servicing study was provided to address this question.

The Town indicated that some redistricting may be done in conjunction with the MDP update (currently underway) to help expedite the future development process by the Town. The Town wishes to clarify that any redistricting initiated by the Town will not trigger the end of the agreed to annexation concessions.

10.1 INFORMATION POSTERS FROM PUBLIC OPEN HOUSE #2

ANNEXATION PROCESS

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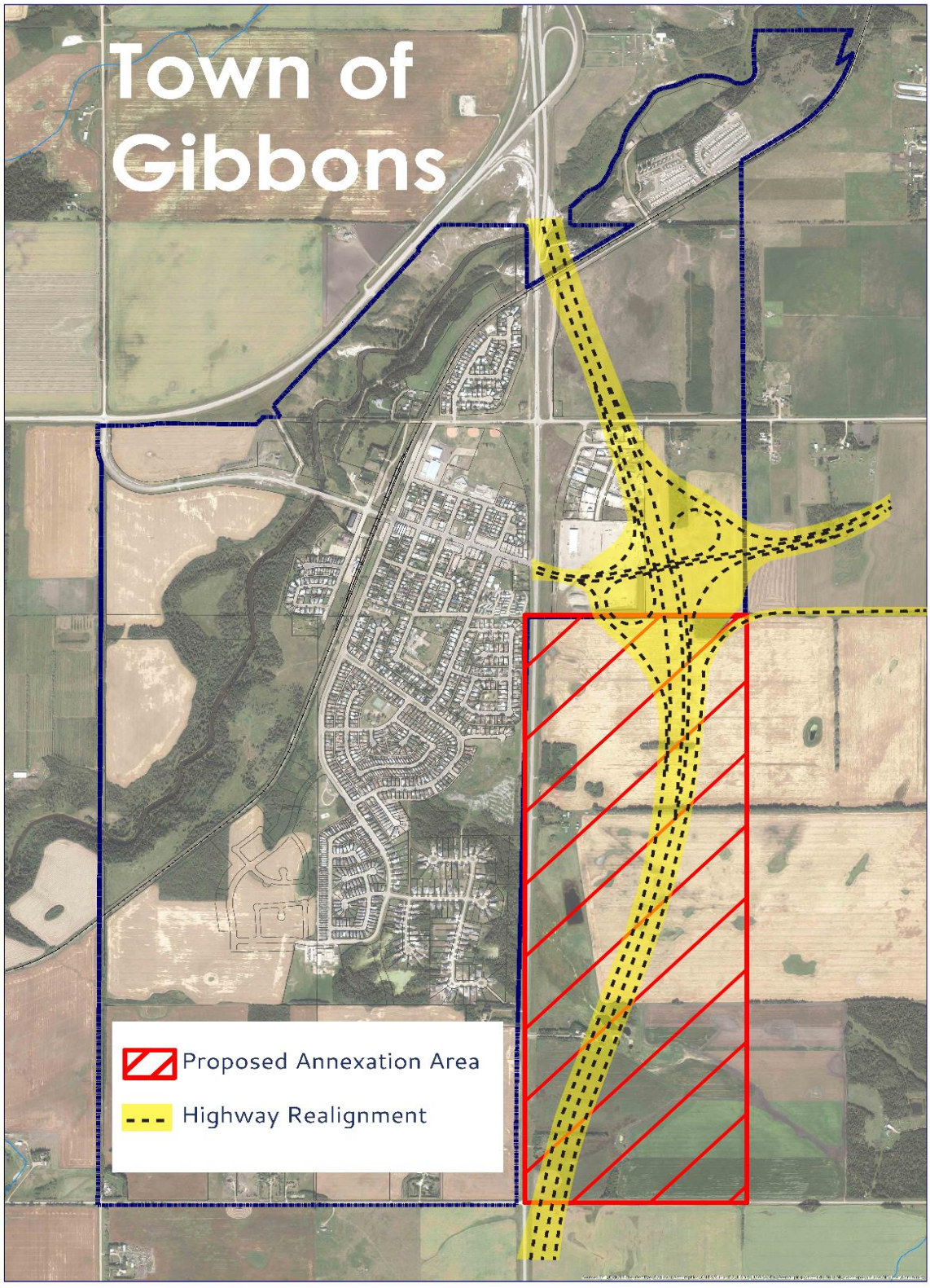

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