Claresholm

Associated Engineering | 75 YEARS

Town of Claresholm

Infrastructure Master Plan

May 2021

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1 INTRODUCTION

The Town of Claresholm (Town) retained Associated Engineering (AE) to conduct an Infrastructure Master Plan (IMP) for the municipality. **Figure 1-1** shows the study area described in this report.

The IMP objectives as requested by the Town include:

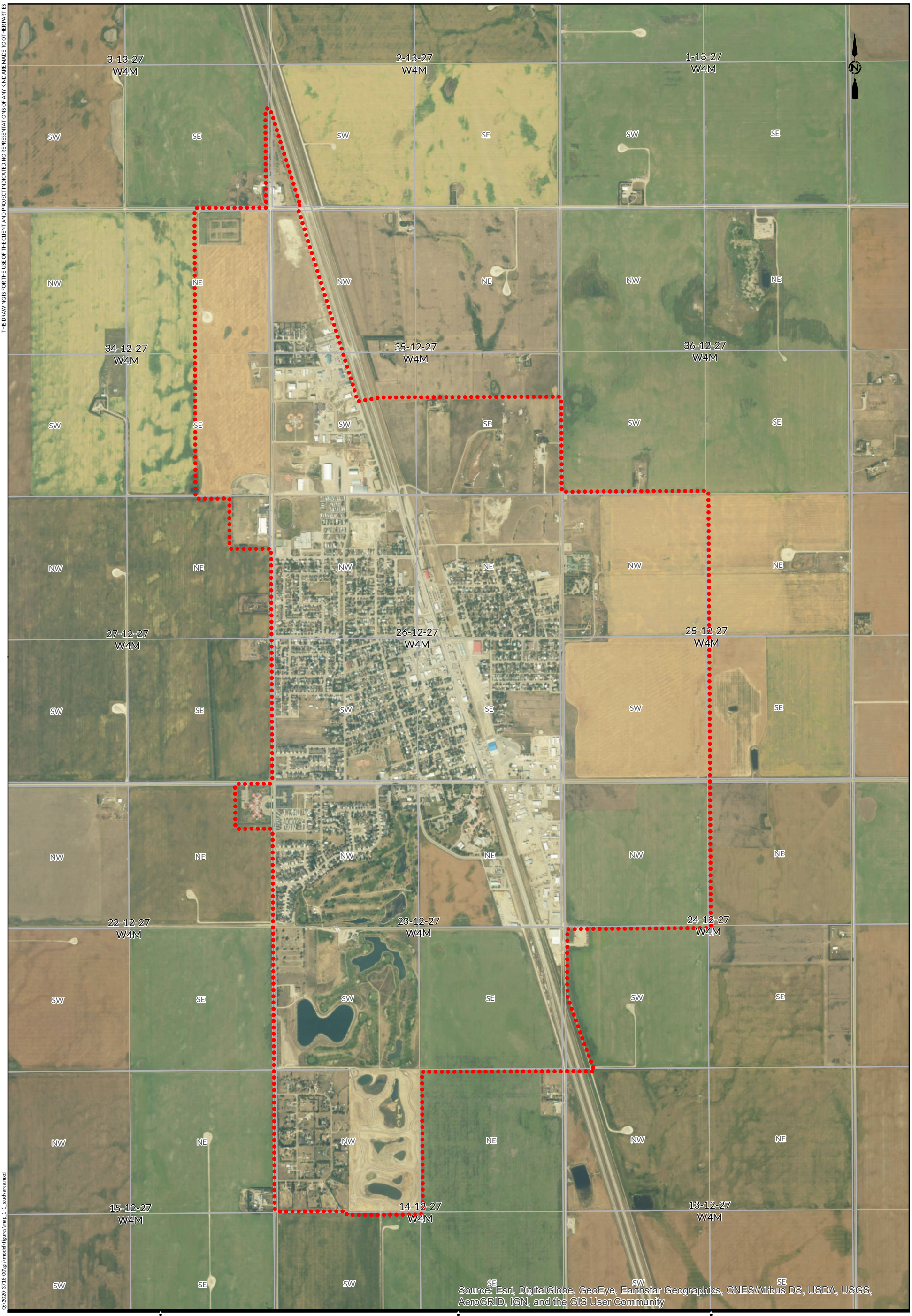
- A review of the level of service provided by the existing infrastructure systems, the current condition, and capacity.
- Framework of infrastructure network extensions to support the growth of the community, and to maintain acceptable levels of service.
- A prioritized list of capital and operational projects that address infrastructure constraints that impact the level of service provided to residents.
- A list of recommended actions and associated costs for each proposed project.
- Development of a 10-year infrastructure plan that allows the Town to forecast long-term revenue and expenditure requirements.

This report provides the Town with an IMP that forms the roadmap for infrastructure needs in the Town. The IMP identifies existing system improvement requirements, rehabilitation and servicing recommendations for the infrastructure systems owned and operated by the Town. The existing system improvements and future growth area servicing requirements were established based on analyses of the transportation, water distribution, wastewater collection, and stormwater management systems. Improvement projects and servicing strategies will be subject to further refinement at the respective preliminary and detailed design phases.

The IMP provides the general framework for providing infrastructure servicing for future development. Actual infrastructure requirements for new development areas must be determined during the preparation of the Town's Area Structure Plan (ASP) process. Improvements for the transportation, water, wastewater, and storm drainage systems identified in this report for the existing infrastructure systems will require further detailed assessment during the ASP process to confirm actual project requirements.

The results of this IMP will be incorporated into the Town's long-term development planning model and long-term capital planning to determine the improvement areas and future developments.

It is recommended that this report be reviewed and revised on a regular interval to allow the Town to adjust priorities and capital schedules based on real conditions. As development occurs the priority and timing of many of the projects described in this report will need to change and shift to accommodate changing conditions.



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:20,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
DRAWN BY	BM
CHECKED BY	AM

FIGURE 1-1
PLANNING STUDY AREA

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

2 BACKGROUND

The Town of Claresholm is located on Highway 2, between Lethbridge and Calgary. Elevations within the Town area range from 1049 m in the North area to 1015 m along the southern boundary.

For the purposes of this report, the study was divided into the following five components:

1) Transportation (including roads and sidewalks)
2) Water Distribution
3) Sanitary Collection
4) Stormwater Management System
5) Town Facilities

2.1 Data Collection

AE conducted several site visits and surveys to provide the required analysis of the sewage and road system of the Town. Data was provided by Oldman River Regional Services Commission (ORRSC) and the Town, including:

- CAD infrastructure mapping.
- Cadastral mapping.
- Water points, lines and hydrants.
- Sanitary manholes, lines and curb stops.
- Sanitary and storm lines; CCTV reports and videos.
- Storm sewer manholes, lines, catch basins and outfalls.
- Water treatment plant data.
- Flow monitoring data.
- Municipal building list.
- Road information.
- Contour data.
- Aerial photography.
- LiDAR data.

2.2 Survey

Below is a summary of the surveys conducted by AE:

- GPS pick-up survey of storm and sanitary manholes, fire hydrants and water valves, including the sanitary line at the west side of the Town that goes to the sewage lagoon.
- Pavement and sidewalk condition assessments, including field reviews completed by AE staff, using GIS linked, tablet-based inspections, and condition reporting.
- The TotalPave application was used to collect IRI, pavement smoothness information, linked with the GIS roadway network and factored into scoring for the roadway condition assessment.

2.3 Existing Land Use and Population

The Town of Claresholm's population has experienced variable growth throughout its history. For the purposes of this report, the population forecast from the Town's Municipal Development Plan was used to estimate the population of the Town for the design duration of the plan. Table 2-1 provides the population forecasts to 2041.

Table 2-1
Population Projections

Year	Population (Recorded)	Projected Population (Arithmetic)	Projected Population (Logorithmic)
1961	2143	-	-
1966	2569	-	-
1971	2935	-	-
1976	3281	-	-
1981	3493	-	-
1986	3382	-	-
1991	3297	-	-
1996	3427	-	-
2001	3622	-	-
2006	3700	-	-
2011	3758	-	-
2016	3780	3780	3780
2021	-	3910	3920
2026	-	3994	4012
2031	-	4078	4107
2036	-	4163	4203
2041	-	4247	4302

Source: Town of Claresholm Municipal Development Plan

In order to conduct capacity evaluations of each of the infrastructure systems, existing and future land uses were generalized and summarized for use in the analysis tools. There is a total of 864.5 ha of developed and undeveloped lands (excluding public right of way) included in this analysis. Table 2-2 provides a summary of existing land uses within the boundaries of the Town of Claresholm.

The data presented in Table 2-2 is also included in Figure 2-1.

Table 2-2
Existing Town Land Use

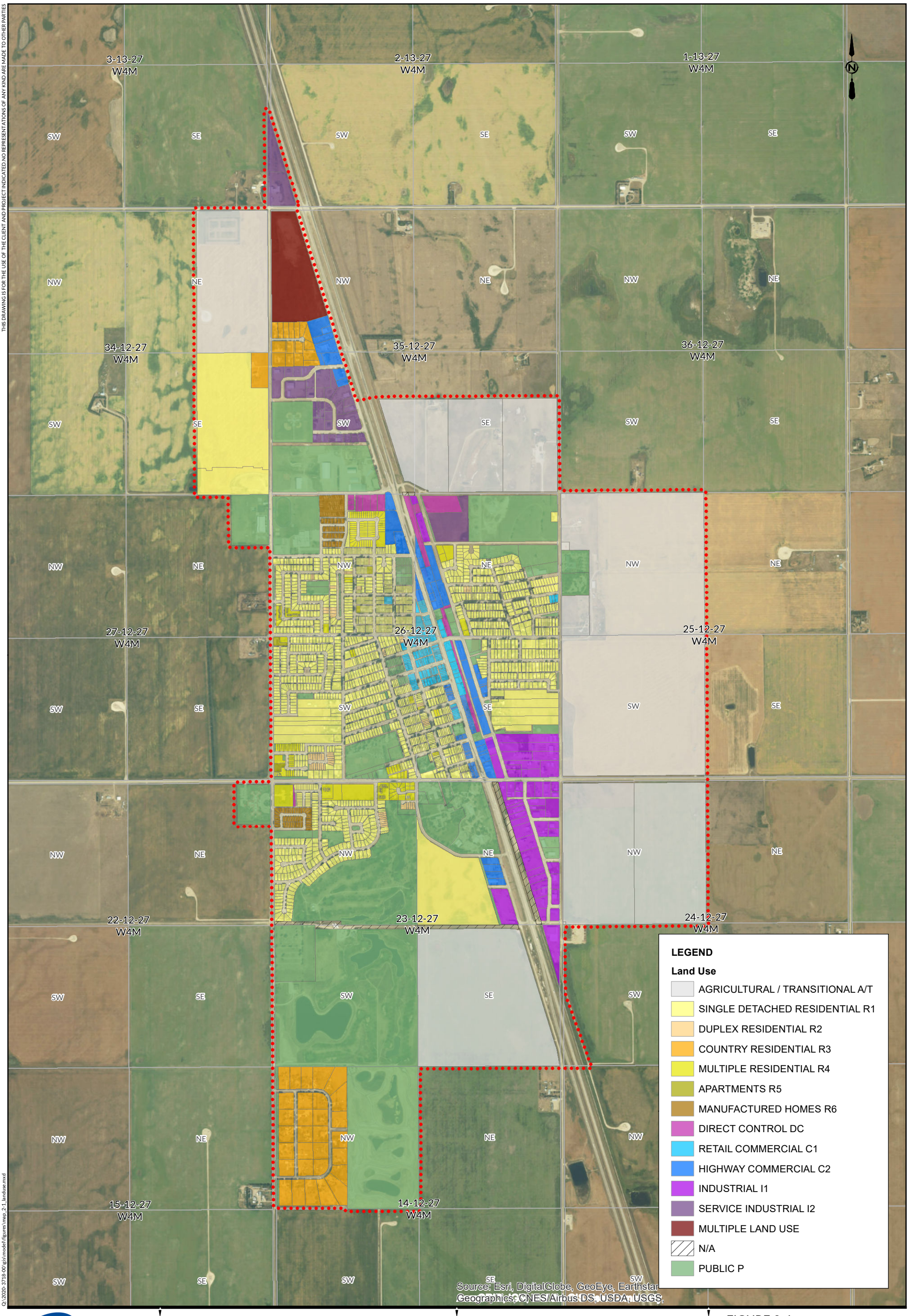
Land Use	Type	Area
Highway Commercial (C2)	Commercial	18.2 ha
Retail Commercial (C1)	Commercial	7.7 ha
Industrial (I1)	Industrial	26.0 ha
Service Industrial (I2)	Industrial	19.9 ha
Agricultural / Transitional (A/T)	Other	324.0 ha
Direct Control (DC)	Other	6.8 ha
Multiple Land Use	Other	16.7 ha
N/A	Other	6.3 ha
Public (P)	Public Lands	219.6 ha
Apartments (R5)	Residential	0.5 ha
Country Residential (R3)	Residential	34.9 ha
Duplex Residential (R2)	Residential	2.8 ha
Manufactured Homes (R6)	Residential	5.3 ha
Multiple Residential (R4)	Residential	14.4 ha
Single Detached Residential (R1)	Residential	161.5 ha
	Total	**864.5 ha**

Projections of future infrastructure and future land uses were generalized and summarized for use in the analysis tools. There are an estimated 400 ha of undeveloped lands (excluding public right of way) included in this analysis. Table 2-3 provides a summary of existing land uses within the boundaries of the Town of Claresholm.

The data presented in Table 2-3 is also shown in Figure 2-2.

Table 2-3
Future Town Land Use

Land Use	Type	Area
Developed Lands	-	416.9 ha
Undeveloped Lands	-	400.2 ha
-	Commercial	79.5 ha
-	Industrial	60.4 ha
-	Industrial/Commercial	33.3 ha
-	Institutional/Parks	3.8 ha
-	Park	29.0 ha
-	Residential	191.6 ha
-	Residential/Commercial	2.5 ha
-	*Future ROW*	*47.5 ha*



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

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COORD. SYSTEM	NAD 1983 3TM 114
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FIGURE 2-1
PLANNING
EXISTING LAND USE

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

3-13-27 W4M
2-13-27 W4M
1-13-27 W4M
34-12-27 W4M
35-12-27 W4M
36-12-27 W4M
27-12-27 W4M
26-12-27 W4M
25-12-27 W4M
22-12-27 W4M
23-12-27 W4M
15-12-27 W4M
14-12-27 W4M

LEGEND

Growth Areas

Land Use

- AGRICULTURAL / TRANSITIONAL A/T
- SINGLE DETACHED RESIDENTIAL R1
- DUPLEX RESIDENTIAL R2
- COUNTRY RESIDENTIAL R3
- MULTIPLE RESIDENTIAL R4
- APARTMENTS R5
- MANUFACTURED HOMES R6
- DIRECT CONTROL DC
- RETAIL COMMERCIAL C1
- HIGHWAY COMMERCIAL C2
- INDUSTRIAL I1
- SERVICE INDUSTRIAL I2
- MULTIPLE LAND USE
- N/A
- PUBLIC P

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

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FIGURE 2-2
PLANNING GROWTH AREAS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

3 DESIGN CRITERIA AND LEVEL OF SERVICE

3.1 Defined Level of Service

Levels of service are indicators that reflect the social and economic goals of the community and may include any of the following parameters:

- Safety
- Citizen satisfaction
- Quality or condition
- Capacity
- Reliability
- Environmental acceptability
- Cost (capital or operating)
- Availability

A Design Criteria and Level of Service Workshop was held on March 31, 2020 with the Project Team and members of the Town of Claresholm staff to review and confirm the proposed design criteria and level of service objectives that would form the foundation of the Infrastructure Master Plan. The sections below outline the design criteria and level of service objectives that were set for the study.

3.2 Transportation

The design criteria for the transportation system was adopted as follows:

3.2.1 Existing/Future Roadway Network

- City of Lethbridge Roadway Classifications were used for comparison for the various roadway types, such as, Arterial, Major Collector, Minor Collector, and Local.
- Future Roadway Network needs were based on the latest Town of Claresholm Municipal Development Plan.

3.2.2 Pavement Conditions

- Pavement conditions were rated on a scale of 1 to5 based on the typical 'industry standard' condition rating, with 1 representing the best condition, and 5 representing the worst condition, based on visual inspections.
- Pavement surface defects were collected scoring on the following defects:
  - Distortion
  - Rutting
  - Rippling
  - Raveling/Aggregate Loss
  - Alligator Cracking
  - Longitudinal/Transverse Cracking
  - Manhole/Valve Displacement
- Where there is no sidewalk, or separate sidewalk, concrete curbs along the road were assessed as part of the roadway on the following defects:
  - Catch Basin Displacement
  - Crumbling
  - Cracking

- Pavement smoothness were collected using a smartphone/tablet-based application, based on ASTM standard E1926 “Standard Practice for Computing International Roughness Index of Roads from Longitudinal Profile Measurements”.
- Roadway segments were broken on a per block basis, separated by roadway intersections.

3.2.3 Sidewalk Conditions

- Sidewalk Conditions were rated on a scale of 1 to5 based on typical ‘industry standard’ condition rating, with 1 representing the best condition, and 5 representing the worst condition, based on visual inspections.
- Sidewalk Surface Defects were collected scoring on the following defects:
  - Distortion
  - Trip Edge
  - Catch Basin Displacement
  - Crumbling
- Where a sidewalk is a monolithic curb/sidewalk, the concrete curbs along the edge of the sidewalk were assessed as part of the sidewalk on the following defects:
  - Catch Basin Displacement
  - Crumbling
  - Cracking
- Sidewalk segments were broken on a per block basis, separated by roadway intersections.
- Wheelchair ramps were considered as part of the sidewalk and not reported separately.

3.3 Water Distribution

Design criteria for the water distribution system was adopted from the Town’s infrastructure design guidelines, with some adjustments to reflect the needs of the study:

3.3.1 Water Demands

Average Daily Demand (ADD):	520 l/c/d
Maximum Daily Demand (MDD):	1,352 l/c/d (2.6 x ADD)
Peak Hourly Demand (PHD):	2,704 l/c/d (5.2 x ADD)
l/c/d:	litres per person per day

3.3.2 Operating Pressures

Minimum:	45 psi (310 kPa)
Maximum:	80 psi (550 kPa)

3.3.3 Available Fire Flow

Single Family Residential:	67 l/s
Multi Family Residential:	151 l/s
Commercial, Institutional and Industrial:	189 l/s
Minimum Residual Pressure:	22 psi (150 kPa)

3.3.4 Hydrant Coverage

Low Density Residential:	180 m
Commercial, Institutional and Industrial:	90 m

3.3.5 Minimum Distribution Main Size

Single Family Residential:	200 mm
Multi Family Residential:	200 mm
Commercial, Industrial and Industrial:	250 mm

3.3.6 Water Storage Requirements

AEP Guidelines:	S = Fire + EQ + EM or CT
S:	Storage (m^3)
Fire:	Required Fire Storage
EQ:	Equalization Storage
Larger of:	
EM:	Emergency Storage
CT:	Storage for Contact Time

3.4 Sanitary Collection

Design criteria for the sanitary sewer collection system was adopted from the Town's infrastructure design guidelines, with some adjustments to reflect the needs of the study:

3.4.1 Collection System Capacity

Pipe Capacity:	Minimum < 86% of pipe full capacity during peak wet weather flow
Pipe Capacity:	No surcharging during peak flows
Pipe Slope:	By AEP Standards and Guidelines
Minimum Pipe Size:	200mm

3.4.2 Treatment

Lagoons to operate within Alberta Environment Code of Practice

3.5 Stormwater Management

Design criteria for the stormwater management system was adopted from the Town's infrastructure design guidelines, with adjustments to reflect those outlined in the Town's Stormwater Management Plan:

3.5.1 Rainfall

Design Rainfall:	Town of Claresholm Design Rainfall Events
Major System Rain Event:	1% AEP (1:100 yr ARI)
Minor System Rain Event:	20% AEP (1:5 yr ARI)

3.5.2 Minor System

Minimum Pipe Size:	250mm
Minimum Pipe Slopes:	By AEP guidelines

3.5.3 System Performance

Overland Flows:	Safely conveyed in roads or ditches
Overland Flooding:	No structures impacted by flooding in the design event
Depth and Velocities:	Within AEP guidelines (Does not include ditches)
Roadway Inundation:	Maintain at least one lane of traffic during flooding events.

3.6 Facilities

Design criteria for the facilities review was adopted as follows:

3.6.1 Facility Reviews/Assessments

A cursory review and assessment of building conditions was completed for the review of the following:

- Site Elements:
  - Walkways
  - General site grading
  - Entry ways
  - Specified Separation from adjacent facilities/structures
- Building Exterior:
  - Roof type/condition
  - Fascia/soffits
  - Wall construction
  - Doors/windows
  - General condition
- Building Interior:
  - Fire egress
  - Finishes
  - Doors/windows
  - Stairs (general safety)
  - Life Safety systems
  - General condition
- Building Code Review:
  - Building Classification
  - Fire Safety
  - Recommended Upgrades

3.6.2 Building Condition Index

After the existing Town facilities were reviewed according to the above list, the condition assessments were tabulated and scored, and a building condition index was prepared. From this, the 10-year Capital Plan with recommended improvements was developed.

4 WATER DISTRIBUTION AND TREATMENT

The Town's water distribution system provides potable water and fire protection services to a population of 3780 (2016) people. The Town of Claresholm also provides water to the Municipal District of Willow Creek through a regional transmission system to the Hamlet of Granum and others. Regional services are provided through connection points located west of the Water Treatment Plant and at the southeast edge of the Town Boundary.

The Town's Water Treatment Plant (WTP) is fed by a raw water pipeline from the Pine Coulee Reservoir.

The WTP's distribution system pumps are supplemented by a storage reservoir and pump station adjacent to Highway 2. A dedicated transmission main is used to fill the Highway Pump Station Reservoir. The components of the water distribution system include a pump station, underground piping, and appurtenances such as valves and hydrants.

4.1 Water Distribution System Characterization

Figure 4-1 presents the general layout of the Town's water distribution system.

4.1.1 Pumping

The Town's water distribution system is fed by two pump stations.

The WTP is the main source of water supply for the Town. The WTP distribution system pumping system consists of five high lift pumps that feed treated water into the distribution system.

The WTP design capacity is 232.4 l/s at 580 kPa, and the WTP's firm capacity (largest unit out of order) is 180.7 l/s

The WTP consists of two dedicated pumps that are used to transfer treated water to the Highway Pump Station and Reservoir. These pumps have an estimated capacity of 118.6 l/s @ 269 kPa, with a firm capacity of 59.3 l/s.
The Highway Pump Station and Reservoir is located east of Highway 2 and pumps to the distribution system through four high lift pumps. The Highway Pump Station and Reservoir design capacity is 213.5 l/s at 488 kPa, and the pump station's firm capacity (largest unit out of order) is 153 l/s.

Table 4-1 on the following page provides a summary of the pump data used in this analysis.

Table 4-1
Distribution and Transmission Pumping

Pump	Design Head (m)	Design Head (kPa)	Design Flow (l/s)	Size (hp)	Drive Speed	Power Source	Notes
Water Treatment Plant							
TP 1601	27.4	269	59.3	30	1765 V	E	Transfer Pump
TP 1602	27.4	269	59.3	30	1765 V	E	Transfer Pump
HLP 1701	58.5	573	25.6	30	1765 V	E	Distribution Pump
HLP 1702	59.4	582	51.7	50	1780 V	E	Distribution Pump
HLP 1703	59.4	582	51.7	50	1780 V	E	Distribution Pump
HLP 1704	59.4	582	51.7	50	1780 V	E	Distribution Pump
HLP 1705	59.4	582	51.7	50	1780 V	E	Distribution Pump
Highway Pump Station							
HLP 1706	48.6	476	32.0	30	1765 V	E	Distribution Pump
HLP 1707	49.8	488	60.5	60	1780 V	E	Distribution Pump
HLP 1708	4.8	488	60.5	60	1780 V	E	Distribution Pump
HLP 1709	49.8	488	60.5	60	1780 V	E	Distribution Pump

Legend: Drive Speed: C – Constant, V – Variable
Power Source: E – Electrical, D – Diesel

4.1.2 Storage

The water distribution system has three separate storage tanks and a raw water reservoir. The raw water pond has a capacity of 223,338 m^3. The treated storage reservoirs have a total capacity of 5644 m^3. Table 4-2 summarizes the existing potable water storage available within the Town's distribution system.

Table 4-2
Water Storage

Storage Cell	Volume (m^3)
Raw Water Reservoir	223,228 m^3
Water Treatment Plant Clearwell	2,269 m^3
Highway Pump Station and Reservoir	625 m^3
East Side Reservoir	2,750 m^3

4.1.3 Valves

The Town's water distribution system consists of over 545 valves used for controlling the operation of the water distribution system. Figure 4-1 shows the location of the valves within the water distribution system; for clarity, not all valves are shown (e.g. hydrant valves).

A pressure reducing station is located on the service main that runs to Mountain View Estates.

4.1.4 Hydrants

The Town's distribution system includes 158 fire hydrants for fire protection coverage. The existing hydrants were surveyed, and the GIS mapping represents the mapped hydrant locations. Figure 4-2 shows the locations of the hydrants and their associated coverage areas using a radius of 90 m and 180 m (the Town's servicing standards require a spacing for hydrants in residential areas of no more than 90 m, hence the coverage radius of 90 m).

The mapping identified some gaps in the fire hydrant coverage. There are no obvious issues with the coverage for residential spacing requirements, however, there are a number of locations where additional fire hydrants would be needed to meet spacing requirements for commercial, industrial and institutional land uses. The identified hydrant coverage gaps are all within commercial and industrial districts in the Town.

4.1.5 Water Demands

Water meter billing volumes were used to complete a review of the historical water use. "Design" demands were calculated based on the projected population increase since the 2016 federal census. However, in each case the water use per hectare or per capita is lower than typical design values.

Within this report, the design rates will continue to be used as they provide an inherent factor-of-safety for planning purposes. It is recommended that the current design demand rates remain in place until further annual data is collected at which point the issue can be re-visited.

The values were calculated using metered records only, so that the actual values would increase to account for losses, unbilled water use, un-metered water use and other water uses that were not accounted for in the utility billing system.

Table 4-3
Water Demand Estimates

	Population (Estimated)	Residential Use (l/c/d)	Commercial Use (l/ha/d)[1]	Institutional Use (l/ha/d)[1]	Industrial Use (l/ha/d)[1]	Total Use (l/c/d)
2010-01-01	3,758	146	5,049	8,253	245	309
2011-01-01	3,758	160	5,612	9,389	579	367
2012-01-01	3,762	173	5,543	9,243	561	383
2013-01-01	3,767	172	6,131	9,145	446	394
2014-01-01	3,771	173	7,619	7,830	360	375
2015-01-01	3,776	193	6,807	10,743	302	428
2016-01-01	3,780	202	6,371	10,853	221	440

	Population (Estimated)	Residential Use (l/c/d)	Commercial Use (l/ha/d)[1]	Institutional Use (l/ha/d)[1]	Industrial Use (l/ha/d)[1]	Total Use (l/c/d)
2017-01-01	3,806	238	6,733	11,979	229	500
2018-01-01	3,832	233	6,386	11,771	330	506
2019-01-01	3,858	199	5,586	9,586	359	421
AVERAGE		**189**	**6,184**	**9,879**	**363**	**412**
DESIGN		**550**	**20,000**	**20,000**	**30,000**	

Note:

1) Commercial, industrial, and institutional water uses are not included in the Town servicing standards. The daily water use values were taken from the Sanitary Sewerage System section.

4.2 Existing System Capacity

A hydraulic model was used to analyze the water distribution system under average day demand, maximum day demand and peak hour demand scenarios. The model was developed using the Town's GIS data for the water system and the water system demand data that was available at the time of the study. No field measurements, or verifications were conducted to validate the ability of the model to simulate the performance of the existing system.

The existing system was analysed for four demand scenarios. For each of the demand scenarios below, the performance measures were applied to give an indication of the overall system capacity:

- Average Day Demand
  - Average Day Demand is used to describe the "normal" operating condition and water use for the water distribution system during an average year. This is the base scenario for defining water demand in the system.
- Maximum Day Demand
  - Maximum Day Demand is generally representative of the highest use day each year and is typically used to assess distribution system operation; often combined with fire flow scenarios. The Town defines maximum day demand as 2.6 times the water use average day demand.
- Peak Hour Demand
  - Peak Hour Demand is generally representative of the highest water use during one hour on the maximum day and is typically used to assess distribution system performance during peak water use. The Town defines maximum day demand as 5.2 times the water use average day demand.
- Maximum Day Demand with Fire Flow'
  - Available fire flow is estimated as the flow available at the Town's water main under maximum day demand condition. Fire flow is calculated as the flow that can be provided by the system while maintaining a minimum operating pressure of 150 kPa in the distribution system.

4.2.1 Average Day Demand

The existing system generally operates within the required level of service during Average Day Demand conditions.

Pressures throughout the system are above 345 kPa (50 psi), with the exception of the reservoir fill main from the WTP to the highway pump station and the raw water pipeline. Figure 4-3 shows the distribution of node pressure in the water distribution system.

Table 4-4 summarizes the distribution pressure in the existing water distribution system. The nodes summarized in the table include the transmission system that generally operates at much lower pressure than the distribution system.

Table 4-4
Average Day Demand Node Pressure

Pressure	Map Colour	Number of Nodes	Percent of Total
< 150 kPa (20 psi)		46	10.2%
150 – 345 kPa (20 – 50 psi)		3	0.7%
345 – 415 kPa (50 – 60 psi)		16	3.6%
451 – 550 kPa (60-80 psi)		384	83.5%
> 550 kPa (> 80 psi)		0	2.0%

During Average Day Demand conditions pipe head loss factors are generally within the upper limit of 2.5 m/km. Some localized pipe sections are experiencing high head losses. Figure 4-3 shows the distribution of pipe head loss factors in the water distribution system.

Table 4-5 summarizes the distribution of head loss factors in the existing water distribution system. The pipe lengths summarized in the table include the transmission system and the raw water supply main.

Table 4-5
Average Day Demand Pipe Head Loss Factor

Pressure	Map Colour	Length of Main	Percent of Total
< 0.25 m/km		43,847.7	63.8%
0.25 – 0.5 m/km		2333.9	3.4%
0.5 – 1.0 m/km		19,960.2	29.0%
1.0 – 2.5 m/km		110.4	0.2%
> 2.5 m/km		2483.5	3.6%

4.2.2 Maximum Day Demand

The existing system generally operates within the required level of service during Maximum Day Demand conditions.

Pressures throughout the system are above 345 kPa (50 psi), with the exception of the reservoir fill main from the WTP to the highway pump station and the raw water pipeline. Figure 4-4 shows the distribution of node pressure in the water distribution system.

Table 4-6 summarizes the distribution pressure in the existing water distribution system. The nodes summarized in the table include the transmission system that generally operates at much lower pressure than the distribution system.

Table 4-6
Maximum Day Demand Node Pressure

Pressure	Map Colour	Number of Nodes	Percent of Total
< 150 kPa (20 psi)		46	10.2%
150 – 345 kPa (20 – 50 psi)		3	0.7%
345 – 415 kPa (50 – 60 psi)		39	8.7%
451 – 550 kPa (60-80 psi)		361	78.4%
> 550 kPa (> 80 psi)		0	2.0%

During Maximum Day Demand conditions pipe head loss factors are generally within the upper limit of 2.5 m/km. Some localized pipe sections are experiencing high head losses. Figure 4-4 shows the distribution of pipe head loss factors in the water distribution system.

Table 4-7 summarizes the distribution of head loss factors in the existing water distribution system. The pipe lengths summarized in the table include the transmission system and the raw water supply main.

Table 4-7
Maximum Day Demand Pipe Head Loss Factor

Pressure	Map Colour	Length of Main	Percent of Total
< 0.25 m/km		39,348.0	57.2%
0.25 – 0.5 m/km		2,629.6	3.8%
0.5 – 1.0 m/km		21,541.9	31.3%
1.0 – 2.5 m/km		2586.2	3.8%
> 2.5 m/km		2630.1	3.8%

4.2.3 Peak Hour Demand

The existing system generally operates within the required level of service during Peak Hour Demand conditions.

Pressures throughout the system are above 345 kPa (50 psi), with the exception of the reservoir fill main from the WTP to the Highway Pump Station and the raw water pipeline. Figure 4-5 shows the distribution of node pressure in the water distribution system.

Table 4-8 summarizes the distribution pressure in the existing water distribution system. The nodes summarized in the table include the transmission system that generally operates at much lower pressure than the distribution system.

Table 4-8
Peak Hour Demand Node Pressure

Pressure	Map Colour	Number of Nodes	Percent of Total
< 150 kPa (20 psi)		46	10.2%
150 – 345 kPa (20 – 50 psi)		4	0.9%
345 – 415 kPa (50 – 60 psi)		62	13.8%
451 – 550 kPa (60-80 psi)		337	73.1%
> 550 kPa (> 80 psi)		0	2.0%

During Peak Hour Demand conditions pipe head loss factors are generally within the upper limit of 2.5 m/km. Some localized pipe sections are experiencing high head losses. Figure 4-5 shows the distribution of pipe head loss factors in the water distribution system. The amount of pipe with head loss factors greater than 2.5 m/km has increased from the Average Day Demand scenario.

Table 4-9 summarizes the distribution of head loss factors in the existing water distribution system. The pipe lengths summarized in the table include the transmission system and the raw water supply main.

Table 4-9
Peak Hour Demand Pipe Head Loss Factor

Pressure	Map Colour	Length of Main	Percent of Total
< 0.25 m/km		33,364.7	48.5%
0.25 – 0.5 m/km		4,853.9	7.1%
0.5 – 1.0 m/km		21,837.1	31.8%
1.0 – 2.5 m/km		4,598.5	6.7%
> 2.5 m/km		4,081.6	5.9%

4.2.4 Maximum Day Demand with Fire Flow

The Maximum Day Demand with Fire Flow model was used to estimate the total fire flow available from the distribution system main at ground level while maintaining a minimum operating pressure of 150 kPa in the system. Under existing system conditions there are 29 nodes that provide less than 60 L/s of available fire flow. There are an additional 12 nodes that provide less than 80 L/s of available fire flow. This level of service is marginal for some land use types.

Fire flow results include results from the complete system and may include small diameter mains that do not have hydrants attached.

Table 4-10 summarizes the distribution of available fire flow within the existing water distribution system. Figure 4-6 shows the spatial distribution of fire flow in the water distribution system.

Figure 4-6 also shows the available fire flow as a proportion of the required fire flow for adjacent land uses. This representation demonstrates the potential risk related to fire flow deficiencies in portions of the Town where mains are undersized for the required level of service.

Table 4-10
Maximum Day Demand Node Available Fire Flow

Pressure	Map Colour	Number of Nodes	Percent of Total
< 60 l/s		29	8.2%
60 – 80 l/s		12	3.4%
80 – 150 l/s		151	42.8%
150 – 180 l/s		68	19.3%
180 – 250 l/s		93	26.3%

4.3 Existing System Condition

No watermains were exposed for inspection to determine condition. The physical condition of the water distribution system has been generalized based on pipe materials, and pipe size. In the absence of detailed pipe burst and repair records, pipe materials are generally good predictors of potential future failures:

The rational for the relative risk of failure for each class of pipe is described below.

4.3.1 Cast Iron and Ductile Iron

Cast iron and ductile iron mains have generally been the subject of most renewal programs in Southern Alberta as they are historically subject to the most failures. The systems were often installed with limited cathodic protection and have been subjected to corrosion processes that lead to pitting and various modes of pipe failure. Cast iron mains present the highest risk of failure in the water distribution system.

4.3.2 Asbestos Cement (AC)

Asbestos Cement (AC) mains were installed extensively in Southern Alberta. AC mains consist of a concrete pipe that incorporate asbestos fibres as reinforcement. The pipe functions well and does not generally fail, unless subjected to external forces that result in cracking. As most of the Town's AC pipe was installed over a relatively small window, the pipe is starting to reach its end of life and it is expected that failures will start to be more common. The pipe replacement itself requires special care in handling and disposal due to the asbestos fibres. AC mains present a moderate risk of failure in the water distribution system.

4.3.3 Polyvinyl Chloride and High-Density Polyethylene

Polyvinyl Chloride and High-Density Polyethylene mains are plastic, flexible wall pipes that have been installed in water systems since the 1980's. Plastic pipes are not subject to corrosion, and the flexible wall design makes them resilient to changes in external forces. Plastic mains also present the lowest risk of failure in the water distribution system.

4.3.4 Pipe Size

The pipe size, while not specially an issue of physical condition, will drive the ongoing replacement of mains in the Town. The minimum pipe size for the Town has been established at 200mm for residential areas, and 250mm for other higher density development. 45% of all water mains in the Town water system do not meet the minimum size requirements established in the Town's Servicing Guidelines and will require to be replaced systematically over time.

Table 4-11
Pipe Materials by Size

Diameter	AC	CI	HDPE	PVC	Unknown
100	1,086.0	12.2	-	846.8	280.7
150	8,880.9	217.7	-	15,028.5	4,969.8
200	2,206.9	-	203.5	4,853.8	1,313.1
250	1,331.0	-	-	4,622.2	-
300	-	-	-	3,686.3	275.7
350	-	-	-	549.3	-
500	-	-	-	19,430.3	210.8
Grand Total	13,504.9	229.9	203.5	49,017.3	7,050.1

4.4 Future Systems Capacity

The Town's water system was analysed to determine the effects of development on the existing system. The future water distribution system capacity was reviewed using the full buildout of the existing Town boundary, including new annexation boundaries. The future system boundary is shown in **Figure 9-1**. This approach looks at a potential worst-case scenario for future demands and allows the Town to plan for resilient infrastructure that can continue to support development into the future.

4.4.1 Storage and Pumping Needs

The current storage requirements for the Town of Claresholm were calculated using the design criteria provided in the preceding section. The future storage requirements are shown in Table 4-12 below.

Table 4-12
Potable Water Storage Requirements

	2021	2041	Ultimate Buildout
Population	3910	4247	6800
Average Day Demand (ADD)	2033 m^3	2208 m^3	3536 m^3
Maximum Day Demand (MDD)	5286 m^3	5742 m^3	9194 m^3
Peaking Storage (25% MDD)	1322 m^3	1435 m^3	2298 m^3
Emergency Storage (15% ADD)	305 m^3	331 m^3	530 m^3
Fire Flow Storage	189 l/s for 2.5 hours	-	-
Two Facilities	3402 m^3	-	-
Three Facilities	-	5103 m^3	5103 m^3
Total Storage Requirement	**5029 m^3**	**6870 m^3**	**7932 m^3**
WTP Storage	2269 m^3	2269 m^3	2269 m^3
Highway Pump Station Storage	3375 m^3	3375 m^3	625 m^3
New Storage Reservoir	-	3200 m^3	3200 m^3
Replace Storage Dome	-	-	3200 m^3
Total Available	**5644 m^3**	**8844 m^3**	**9294 m^3**

In order to meet future potable water storage needs, a new facility will be required with an estimated 3,200 m^3 of storage. The current storage is nearing capacity and a new facility would provide the required storage in the distribution system as well as needed redundancy in the pumping and storage facilities in the Town. The new facility will need to incorporate chlorine injection to meet residual chlorine requirements in the northern parts of the water distribution system.

The current pumping requirements for the Town were calculated using the design criteria provided in the preceding section. The future pumping requirements are shown in Table 4-13 on the following page.

Table 4-13
Potable Water Pumping Requirements

	2021	2041	Ultimate Buildout
Population	3,910	4,247	6,800
Average Day Demand (ADD)	23.5 l/s	25.6 l/s	40.9 l/s
Maximum Day Demand (MDD)	61.2 l/s	66.5 l/s	106.4 l/s
Peak Hour Demand (PHD)	122.4 l/s	132.9 l/s	212.8 l/s
Fire Flow	189 l/s	189 l/s	189 l/s
Pumping Capacities	-	-	-
Water Treatment Plant Total	232.4 l/s	232.4 l/s	232.4 l/s
Water Treatment Plant Firm	**180.7 l/s**	**180.7 l/s**	**180.7 l/s**
Highway Pump Station Total	213.5 l/s	213.5 l/s	213.5 l/s
Highway Pump Station Firm	**153 l/s**	**153 l/s**	**153 l/s**
New Pump Station Total	-	260 l/s	260 l/s
New Pump Station Firm	-	**190 l/s**	**190 l/s**

4.4.2 Water Treatment Needs

The Town's existing WTP has a capacity of 8,840 m^3/day. The plant process includes enhanced coagulation, flocculation, Dissolved Air Floatation (DAF) clarification, membrane filtration and chlorination for disinfection. The WTP relies upon a diffusion header that distributes water through the treated water reservoir to provide the contact time required to meet the disinfection requirements prior to pumping to the distribution system.

The Town's WTP has enough treatment capacity to meet the long-term requirements of the Town. The impacts to chlorine contact time should be reviewed when the new reservoir and pump station are added to the distribution system.

As the Town reaches the full buildout, it is likely that additional treatment capacity may be needed. No specific recommendations or projects have been identified to cover this long-term need.

Table 4-14
Potable Water Treatment Requirements

	2021	2041	Ultimate Buildout
Population	3,910	4,247	6,800
Average Day Demand (ADD)	2,033 m^3	2,208 m^3	3,536 m^3
Maximum Day Demand (MDD)	5,286 m^3	5,742 m^3	9,194 m^3
Treatment Capacity	8,840 m^3	8,840 m^3	8,840 m^3

4.4.3 Distribution System Needs

The existing water distribution system does not have capacity to support the level of development proposed within the 20-year planning horizon of this plan. Comprehensive water main upgrades are required within the existing development to support the proposed development. This plan does not include the water main network that will be built as development progresses.

These projects are provided in more detail in Section 4.5.

4.5 Capital Requirements

4.5.1 Rehabilitation Program

In order to maintain a distribution system in good operating condition, water mains must be replaced as they near their end of life. The Town has had a proactive replacement program that has replaced most of the cast iron water main in the system. Due to corrosion processes, cast iron water mains are typically found to be in poor condition in most water distribution systems.

Wherever possible, water mains that do not meet minimum pipe sizes should be the first mains included in the rehabilitation program. As the remainder of pipes in the system age, it is likely that other pipe materials in the system will be subject to failure as they reach their end of life.

The remaining water mains should be replaced as they begin to fail. Capital plan estimates are based on replacement of the distribution system over a period of 80 years. The estimate presented in Section 9 of this report represents an average investment over the life of the distribution system. Table 4-15 provides a summary of the water mains requiring replacement over the life of the program.

Figure 4-7 shows the rehabilitation program prioritization. Specific rehabilitation projects are recommended in Section 9 of this report.

Table 4-15
Water Main Rehabilitation Program

	For Replacement			No Replacement	
Diameter	CI	Unknown	AC	HDPE[1]	PVC[1]
100[2]	12.2	280.7	1,086.0	-	846.8
150[2]	217.7	4,969.8	8,880.9	-	15,028.5
200	-	1,313.1	2,206.9	203.5	4,853.8
250	-	-	1,331.0	-	4,622.2
300	-	275.7	-	-	3,686.3
350	-	-	-	-	549.3
500	-	210.8	-	-	19,430.3
Total	229.9	7,050.1	13,504.9	203.5	49,017.3
		Replacement Total	20,784.9 m	-	-

Note:

1) HDPE and PVC water mains are not included in the water main rehabilitation program costs.
2) All water mains under 200mm should be upgraded to 200mm during renewal projects.

4.5.2 Existing System Improvements

A number of existing system deficiencies were noted within the water distribution system. Upgrades have been conceptually proposed to address these deficiencies. These upgrades are mainly intended to address a lack of sufficient fire flow under Maximum Day Demand conditions.

The upgrades are presented on **Figure 4-8.** Each upgrade provides additional capacity for fire protection and improves pressures during peak flows.

W1	**520 Looping**	Project W1 includes installation of 320m of 250mm water main that will provide a water main loop along Highway 520 (43 Street West) between 3 St W and Highway 2.
W2	**Hwy Reservoir Distribution**	Project W2 includes installation of 515 m of 300mm water main that will increase the capacity of the distribution system leaving the Highway Pump Station and Reservoir. The installation will upgrade existing water main connecting to the pump station from the east of Highway 2 to 2 St E, then install a new water main east adjacent to the east side reservoir mains and connecting to 5 St E.
W3	**Hwy 2 Looping**	Project W3 includes installation of 470 m of 250mm water main that will increase the distribution system capacity around the Claresholm General Hospital, Alberta Health Services and the Claresholm Aquatic Centre. The installation will install water main along Highway 2 between 43 Ave W and 41 Ave W.
W4	**Hydrant Spacing**	Project W4 includes installation of 15 fire hydrants that will close gaps in the fire hydrant coverage in key points in the water distribution system. These fire hydrants can be installed as part of larger projects, or individually as opportunities and funding becomes available.
W5	**Division Ave to 2 St E Connector**	Project W5 includes installation of 520m of 250mm water main including a crossing of Highway 2. This project will create an additional connection between the west and east sides of the distribution system and will provide improved looping and circulation in the distribution system. The installation will install a water main connecting Division Avenue, Alberta Road, Patterson Heights Blvd, and 2 St E.
W6	**41 Ave E Looping**	Project W6 includes installation of 50m of 250mm water main along 41 Ave E between 3 St E and 5 St E. The project provides additional looping improving flow and circulation in the area. This project is dependent on the completion of project W8.

W7	**42 Ave E Looping**	Project W7 includes installation of 20m of 250mm water main along 42 Ave E between 3 St E and 5 St E. The project provides additional looping, improving flow and circulation in the area. This project is dependent on the completion of project W8.
W8	**5 St E Looping Ph 4**	Project W8 includes installation of 730m of 300mm water main running along 5 St E between 40 Ave E and 43 Ave E. The project provides additional looping improving flow and circulation in the area. It also supports the future development of the Starline development area, providing 90% of its benefit to future development.
W9	**42 Ave E Looping**	Project W9 includes upgrading of 200m of existing water main to 250mm water main running along 42 Ave E between 3 St E and 5 St E. The project provides additional looping improving flow and circulation in the area.
W10	**5 St E Looping Ph 3**	Project W10 includes installation of 800m of 300mm water main running along 5 St E between 43 Ave E and 50 Ave E. The project provides additional looping improving flow and circulation in the area. It also supports the future development of the Starline development area, providing 90% of its benefit to future development.
W11	**1A St W Looping**	Project W11 includes installation of 440m of 250mm water main along 1A St W between 55 Ave W and 52 Ave W, including a connection to the existing main in 1 St W (Hwy 2.) The project provides additional looping improving flow and circulation in the area without the disruption of construction in Highway 2.
W12	**2 St E Looping**	Project W12 includes installation of 480m of 250mm water main along 2 St E between 50 Ave E and 2A St E. The project provides additional looping improving flow and circulation in the area.
W13	**Fairway Drive Looping**	Project W13 includes installation of 200m of 250mm water main along Fairway Dr between 42 Ave W and 1 St W. The project provides additional looping improving flow and circulation in the area. This project may be implemented with the development of lands to the south.
W14	**53 Ave W Looping**	Project W14 includes installation of 60m of 200mm water main along 53 Ave W between 8 St W and 7 St W. The project provides additional looping improving flow and circulation in the area.
W15	**Mountain View Upgrades**	Project W15 includes installation of 2,000 m of 200mm water main to replace existing substandard water main materials and to improve circulation and flow to the area. This project, or series of projects would involve replacement of all water main infrastructure in the area. This project is recommended to be completed in two phases.

4.5.3 Future Growth Improvements

Growth within the existing Town area, particularly to the north west and east areas, is expected to occur in the near-term. The following upgrades are intended primarily to facilitate growth within the existing and future system rather than for correcting existing system deficiencies, however they do provide some benefits to the existing system.

Figure 4-9 presents the proposed improvements.

WG1 Reservoir and Pump Station Option 1

This improvement includes installing a new reservoir and pumphouse in the Town's north end with an approximate storage volume of 3,200 m^3. The reservoir is needed due to increasing water consumption and a need for additional pumping and distribution capacity as well as redundancy in the water distribution system. A reservoir in the north will help to provide redundancy in the system if the Highway Pump Station requires maintenance. The pump station will need to incorporate a re-chlorination system to ensure maintenance of chlorine residual in the north of the Town.

Option 1 is proposed to be located south of 59 Ave W, and east of the existing running track in the existing park. Selection of a site for the new reservoir and pump station should be based on a balance of cost and availability of land. The two options are not presented in order of preference

The project also includes the extension of the reservoir fill main to the reservoir site and the water distribution extension.

The reservoir fill main extension involves 1,860 m of 300mm water main along 8 Street from the existing transmission main. The final reservoir sizing should be reviewed to consider the level of desired facility redundancy in the distribution system.

To lower initial costs, the reservoir and pump station could be constructed as a booster pump station that fills off the distribution system during low flow periods, and pumps during peak times. This reservoir would not provide complete redundancy in the system, but this approach would allow the Town to defer the construction of the reservoir fill main well into the future.

WG2 Reservoir and Pump Station Option 2

A second reservoir location is shown as Option 2 and is proposed to be located east of 8 Street W, south of the existing Town Baseball Diamonds.

WG3 5 St E Looping Ph 1

WG3 includes installing 720 m of new 300 mm mains to increase the capacity of the distribution system. The upgrade will improve distribution system looping and increases the ultimate servicing capacity of the existing system in support of the developable lands on the east side of the Town.

WG4	**Columbia Dr Looping**	WG4 includes installing 1,085 m of new 300 mm mains to increase the capacity of the distribution system connected to the new north reservoir and pump station. The upgrade will improve distribution system looping and increases the ultimate servicing capacity of the existing system in support of the developable lands in Town.
WG5	**New Reservoir Fill**	The new reservoir fill main is required to transfer water from the water treatment plant to the new distribution system reservoir.
WG6	**Reservoir Fill Upgrade**	WG6 includes installing 720 m of new 300 mm mains to increase the capacity of the distribution system. The upgrade will improve distribution system looping and increases the ultimate servicing capacity of the existing system in support of the developable lands on the east side of the Town. This project can be deferred into the future if the new reservoir and pump station is constructed as a booster station.
WG7	**8 St Distribution**	WG7 includes installing 700 m of new 300 m mains to increase the capacity of the distribution system. The upgrade will improve distribution system looping and increases the ultimate servicing capacity of the existing system in support of the developable lands on the north side of the Town.
WG8	**5 St E Looping Ph 2**	WG8 includes installing 550 m of new 300 mm mains to increase the capacity of the distribution system. The upgrade will improve distribution system looping and increases the ultimate servicing capacity of the existing system in support of the developable lands on the east side of the Town.
WG9	**Reservoir Replacement and Upgrades**	WG9 involves replacement of the East Side Reservoir located east of the Highway Pump Station. The existing tank is aging, and a replacement storage reservoir will be required at some point in the future. The replacement facility (3,200 m^3) should be upgraded to provide a measure of redundancy in the system. The final reservoir sizing should be reviewed to consider the level of desired facility redundancy in the distribution system.

HIGHWAY PUMP STATION AND RESERVOIR

EAST SIDE RESERVOIR

TO PINE COULEE RESERVOIR

WATER TREATMENT PLANT

PRV VAULT

RAW WATER RESERVOIR

GRANUM METER VAULT

LEGEND

- FIRE HYDRANT
- ARV
- HYDRANT
- VALVE
- PRESSURE REDUCING VALVE
- REGIONAL METER VAULT
- SERVICE
- WATER FACILITIES
- DISTRIBUTION MAIN
- TRANSMISSION MAIN
- RAW WATER

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MAY
SCALE*	1:16,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	0
DESCRIPTION	ISSUED FOR REPORT
DRAWN BY	BM
CHECKED BY	AM

FIGURE 4-1
PLANNING
WATER DISTRIBUTION SYSTEM

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

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PINE COULEE RESERVOIR

RAW WATER INTAKE

2-14-28 W4M | 1-14-28 W4M | 6-14-27 W4M | 5-14-27 W4M | 4-14-27 W4M | 3-14-27 W4M | 2-14-27 W4M

35-13-28 W4M | 36-13-28 W4M | 31-13-27 W4M | 32-13-27 W4M | 33-13-27 W4M | 34-13-27 W4M | 35-13-27 W4M

26-13-28 W4M | 25-13-28 W4M | 30-13-27 W4M | 29-13-27 W4M | 28-13-27 W4M | 27-13-27 W4M | 26-13-27 W4M

23-13-28 W4M | 24-13-28 W4M | 19-13-27 W4M | 20-13-27 W4M | 21-13-27 W4M | 22-13-27 W4M | 23-13-27 W4M

14-13-28 W4M | 13-13-28 W4M | 18-13-27 W4M | 17-13-27 W4M | 16-13-27 W4M | 15-13-27 W4M | 14-13-27 W4M

11-13-28 W4M | 12-13-28 W4M | 7-13-27 W4M | 8-13-27 W4M | 9-13-27 W4M | 10-13-27 W4M | 11-13-27 W4M

2-13-28 W4M | 1-13-28 W4M | 6-13-27 W4M | 5-13-27 W4M | 4-13-27 W4M | 3-13-27 W4M | 2-13-27 W4M

35-12-28 W4M | 36-12-28 W4M | 31-12-27 W4M | 32-12-27 W4M | 33-12-27 W4M | 34-12-27 W4M | 35-12-27 W4M

26-12-28 W4M | 25-12-28 W4M | 30-12-27 W4M | 29-12-27 W4M | 28-12-27 W4M | 27-12-27 W4M | 26-12-27 W4M

24-12-28 W4M | 19-12-27 W4M | 20-12-27 W4M | 21-12-27 W4M | 22-12-27 W4M | 23-12-27 W4M

13-12-28 W4M | 18-12-27 W4M | 17-12-27 W4M | 16-12-27 W4M | 15-12-27 W4M | 14-12-27 W4M

LEGEND

- FIRE HYDRANT
- RAW WATER HYDRANT
- AIR RELEASE VALVE
- RAW WATER TURNOUT
- VALVE
- WATER FACILITIES
- DISTRIBUTION MAIN
- TRANSMISSION MAIN
- RAW WATER

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

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Associated Engineering

Claresholm

ESRI World Imagery: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

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FIGURE 4-1.1
PLANNING
WATER DISTRIBUTION SYSTEM

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

NE-34-12-27 W4M
NW-35-12-27 W4M
NE-35-12-27 W4M
NW-36-12-27 W4M
SE-34-12-27 W4M
SW-35-12-27 W4M
SE-35-12-27 W4M
SW-36-12-27 W4M
NE-27-12-27 W4M
NW-26-12-27 W4M
NE-26-12-27 W4M
NW-25-12-27 W4M
SE-27-12-27 W4M
SW-26-12-27 W4M
SE-26-12-27 W4M
SW-25-12-27 W4M
NE-22-12-27 W4M
NW-23-12-27 W4M
NE-23-12-27 W4M
NW-24-12-27 W4M
SE-22-12-27 W4M
SW-23-12-27 W4M
SE-23-12-27 W4M
SW-24-12-27 W4M
NE-15-12-27 W4M
NW-14-12-27 W4M
NE-14-12-27 W4M

HIGHWAY RESERVOIR

TO PINE COULEE RESERVOI

WATER TREATMENT PLANT

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

LEGEND

- FIRE HYDRANTS
- WATER POINTS
- WATER FACILITIES
- WATER DISTRUBUTION MAIN

CODE

- HYDRANT GAPS

FIRE HYDRANT COVERAGE SHAPE_LENGTH

- 90M SPACING
- 180M SPACING

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Associated Engineering

Claresholm

0 100 200 300 400 500 m

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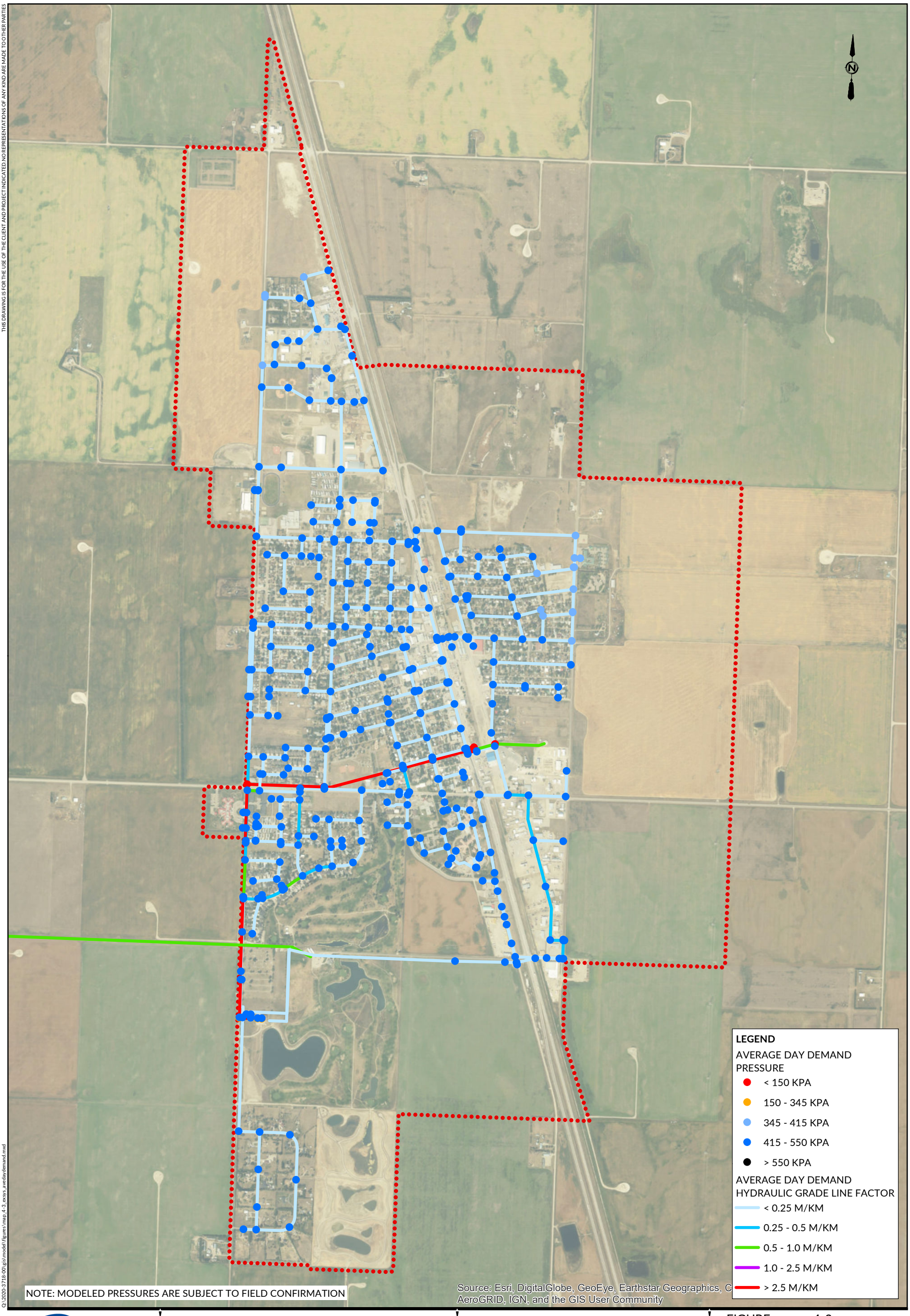
FIGURE 4-2
PLANNING
FIRE HYDRANT COVERAGE

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

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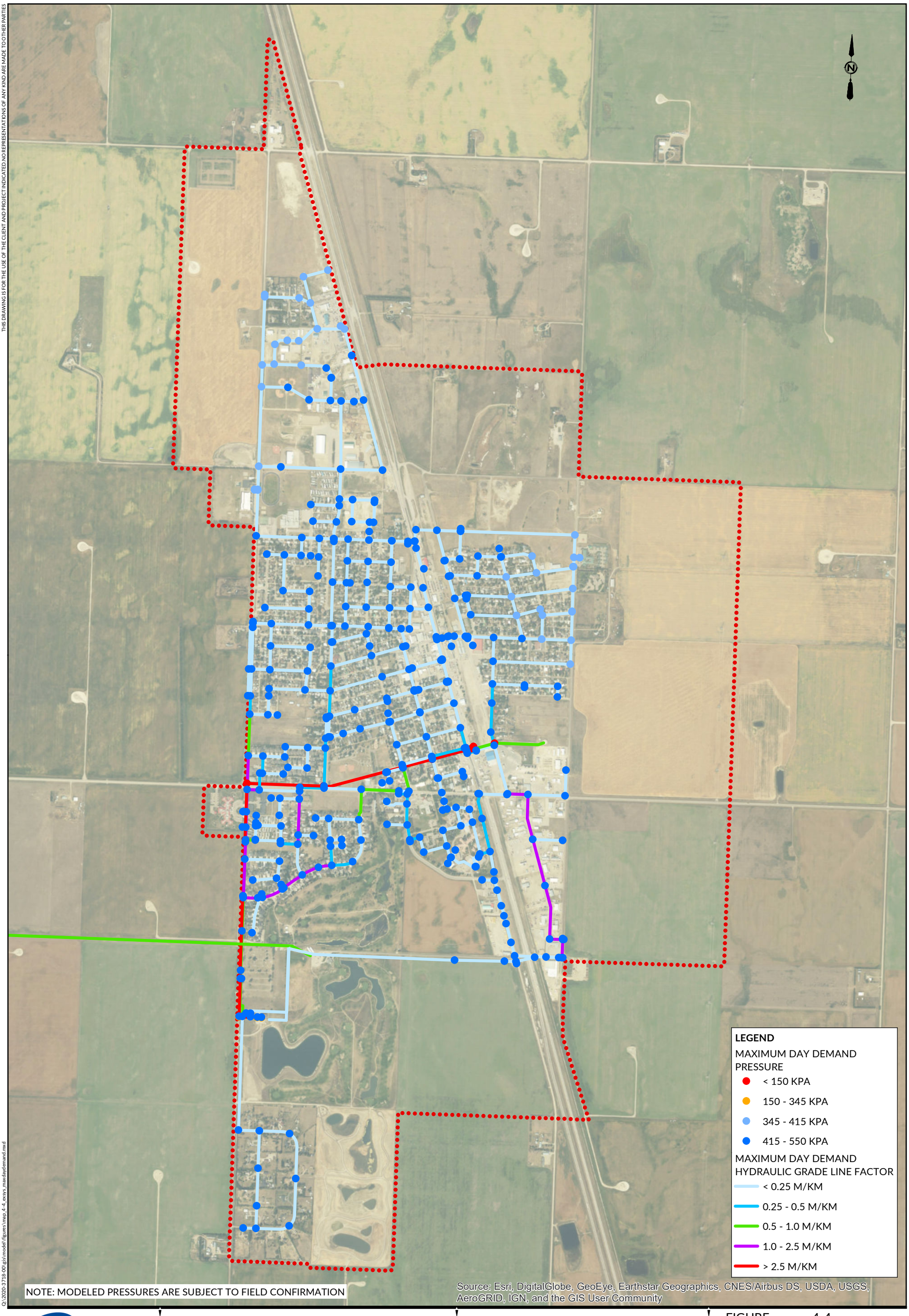
FIGURE 4-3
PLANNING
EXISTING SYSTEM
AVERAGE DAY DEMAND

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

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COORD. SYSTEM	NAD 1983 UTM Zone 12N
REV	03
DESCRIPTION	ISSUED FOR REPORT
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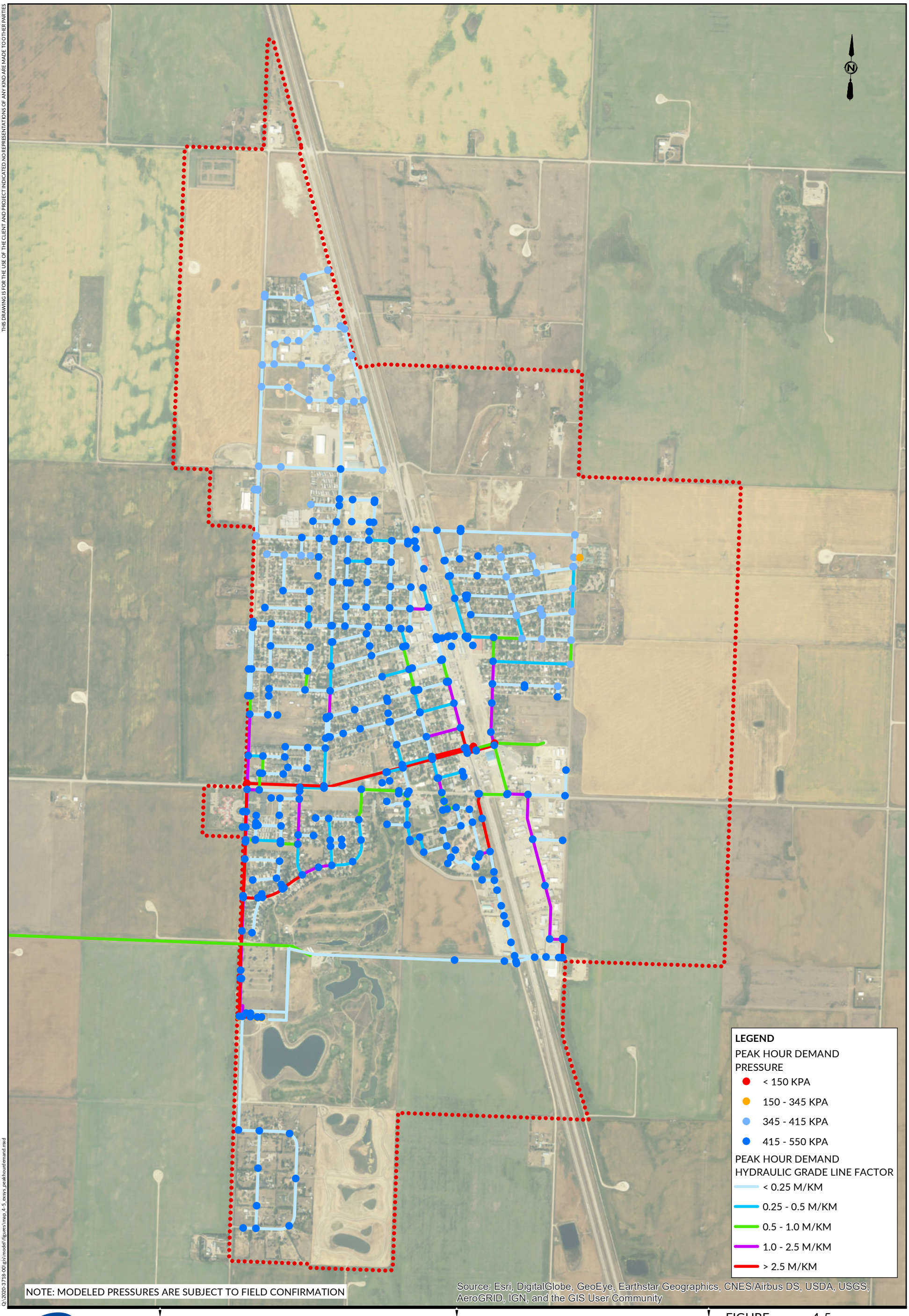
FIGURE 4-4
PLANNING
EXISTING SYSTEM
MAXIMUM DAY DEMAND

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

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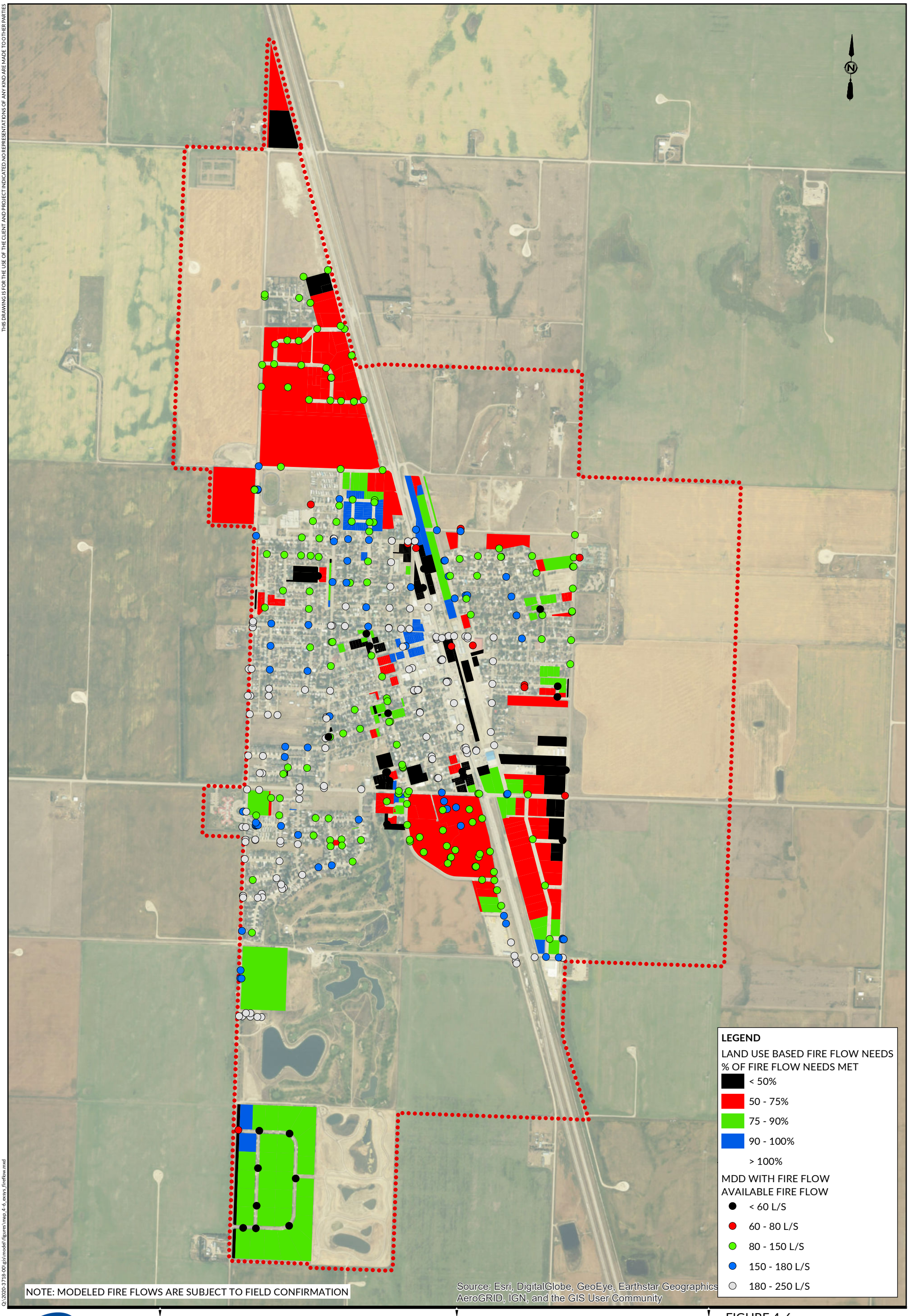
FIGURE 4-5
PLANNING
EXISTING SYSTEM
PEAK HOUR DEMAND

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

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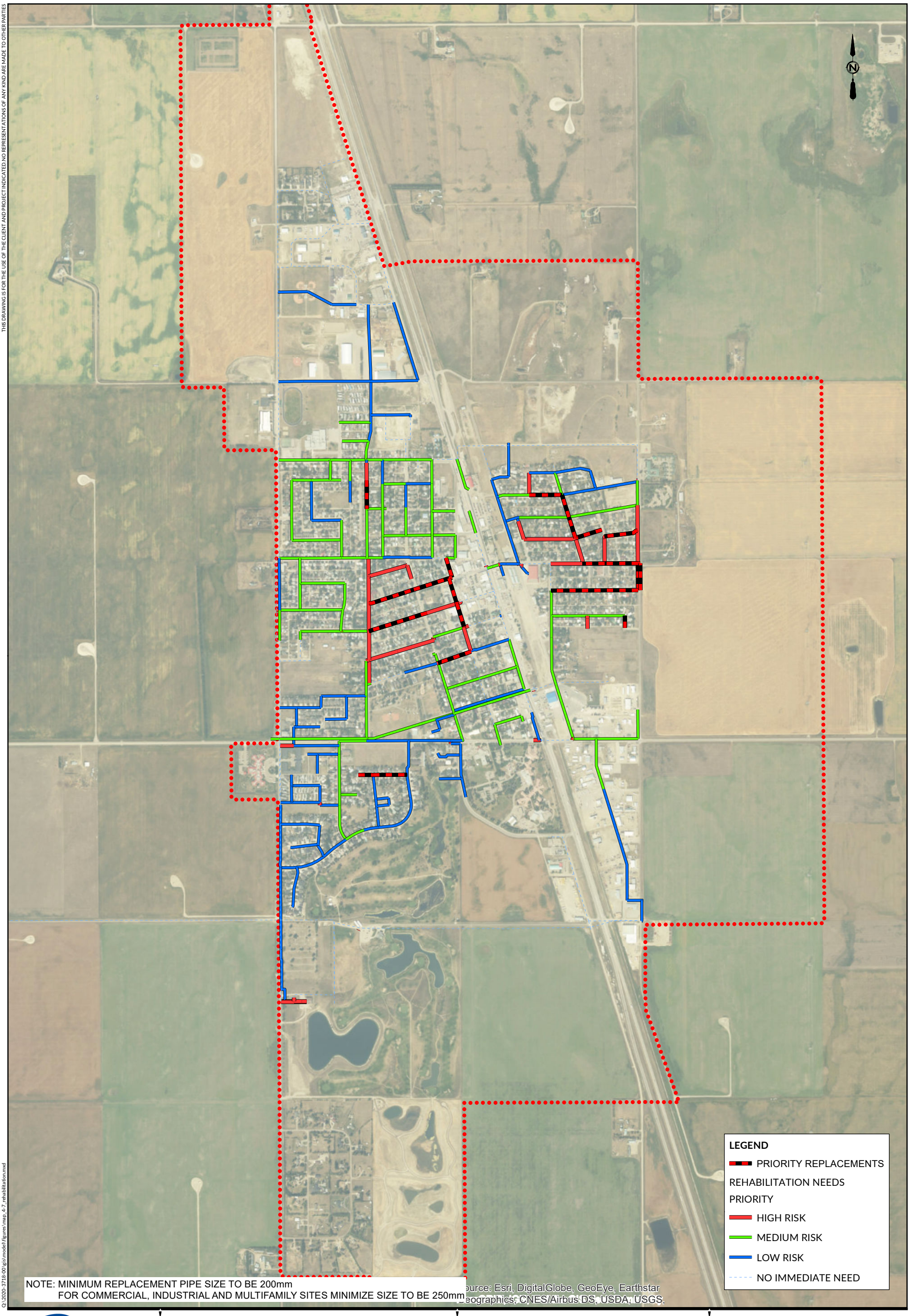
FIGURE 4-6
PLANNING
EXISTING SYSTEM
MDD WITH FIRE FLOW

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

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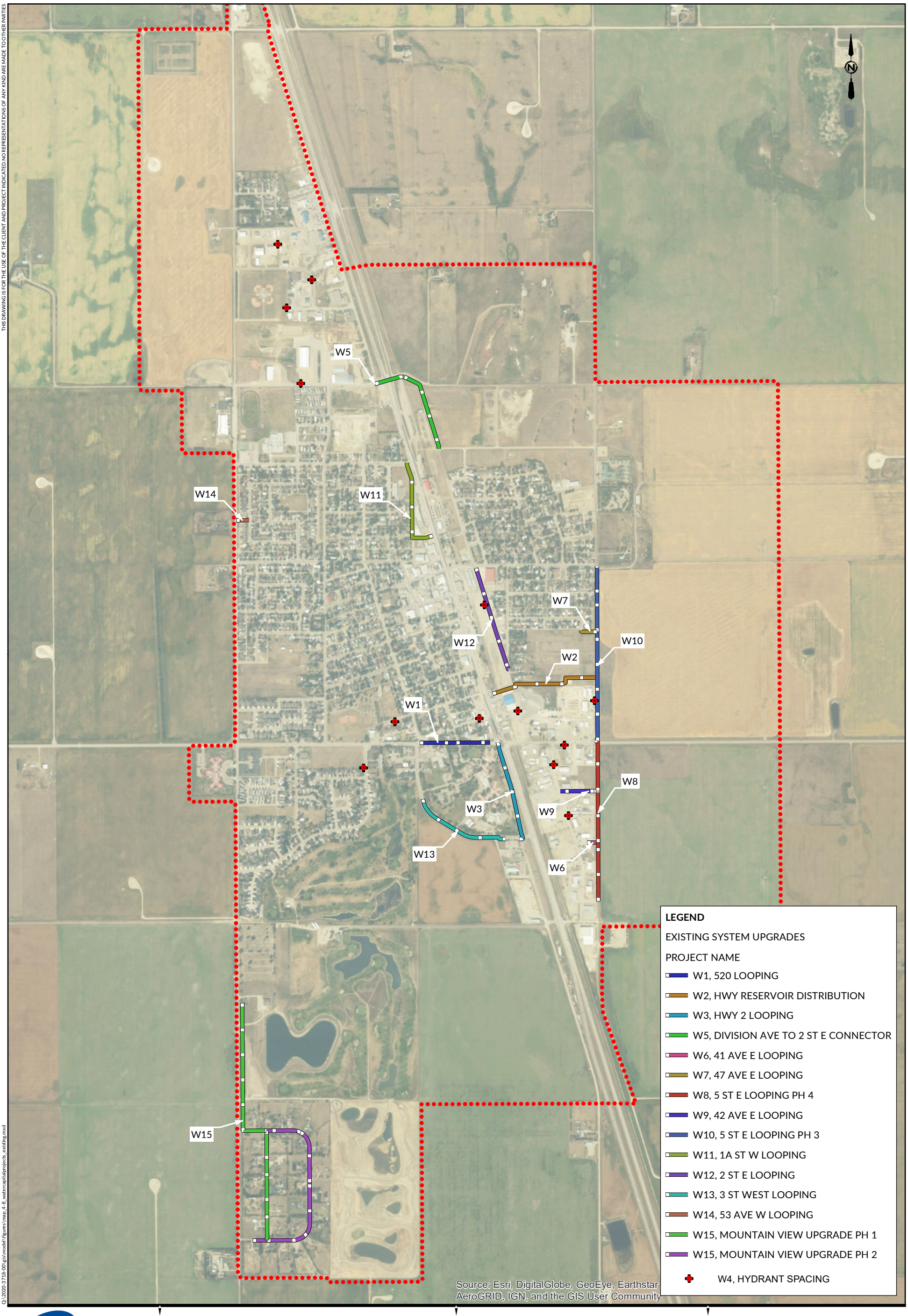
FIGURE 4-7
WATER REHABILITATION PLAN

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

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FIGURE 4-8
WATER
EXISTING SYSTEM UPGRADES

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

WG7
WG4
WG2
PS
WG3
PS
WG1
WG8
WG5
WG9
W10
W8
WG6

LEGEND

GROWTH AREAS

WATER SYSTEM UPGRADES

PROJECT NAME

PS WG1, RESERVOIR OPTION 1

PS WG2, RESERVOIR OPTION 2

WG9, RESERVOIR REPLACEMENT

WATER SYSTEM UPGRADES

PROJECT NAME

WG1, RESERVOIR DISTRIBUTION OPTION 1

WG1, NEW RESERVOIR FILL OPTION 1

WG2, RESERVOIR DISTRIBUTION OPTION 2

WG2, NEW RESERVOIR FILL OPTION 2

WG3, 5 ST E LOOPING PH 1

WG4, COLUMBIA DR LOOPING

WG5, NEW RESERVOIR FILL

WG6, RESERVOIR FILL UPGRADE

WG7, 8 ST DISTRIBUTION

WG8, 5 ST E LOOPING PH 2

W8, 5 ST E LOOPING PH 4

W10, 5 ST E LOOPING PH 3

Source: Esri, DigitalGlobe, GeoEye, Earthstar AeroGRID, IGN, and the GIS User Community

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Associated Engineering

Claresholm

0 100 200 300 400 500 m

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FIGURE 4-9
WATER
FUTURE SYSTEM UPGRADES

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

5 WASTEWATER COLLECTION AND TREATMENT

The Town's sanitary sewer collection system provides wastewater collection and treatment services to a population of 3780 (2016) people. The Town also collects wastewater from the Claresholm Airport.

The Town provides wastewater treatment through a conventional lagoon system located approximately 6km west of the Town boundary. The lagoon system includes a pump station that transfers wastewater from the anaerobic cells to the facultative cells of the lagoons. The receiving body for the Town wastewater system is Willow Creek.

5.1 Wastewater System Characterization

Figure 5-1 shows the general layout of the Town of Claresholm Wastewater System.

5.1.1 Pipe

The wastewater collection system is comprised of more than 47.3 km of sanitary sewer collection system main and approximately 100m of 150mm force main. Table 5-1 summarizes the distribution of sewer main sizes within the Town Collection System.

Table 5-1
Sanitary Collection System Pipe

Diameter (mm)	Collection System Length (m)
200 mm	23,662 m
250 mm	3463 m
300 mm	4183 m
375 mm	2686 m
450 mm	2657 m
525 mm	7740 m
560 mm	461 m
750 mm	2430 m
Total	**47,282 m**

5.1.2 Pumping

The Town's sanitary sewer collection system has two lift stations.

The Harvest Square Lift Station was completed in 2015 and collects sewer from a small area in the north west end of the Town. The station capacity is 7 l/s at 6m of head and discharges through a 150mm force main to sewer mains north of the site.

The Main Lift Station at the Town's lagoons was upgraded in 2013, and transfers flows from the anaerobic cells to the facultative cells. The station capacity is 178 l/s at 15.6m of head and discharges through two force mains, 250mm and 300mm connecting to a vault prior to the first facultative cell.

5.1.3 Sewage Generation

Sewage generation was calculated using a combination of land use based flows, and the measured flows at the lagoons. Application of the design value flows found in the Town's servicing guidelines results in a predicted sewage generation that is significantly higher than the measured flows at the Wastewater Treatment Plant (WWTP). The flows presented in Table 5-2 represent an approximation of the expected sewage generation of the Town based on billed water use and average flows from the Main Lift Station.

There is some uncertainty in the accuracy of the predicted sewage generation from the Town and therefore it is recommended that the Town monitor sewage flows in the collection system during both dry and wet conditions to better characterise the sewage generation. Two sites could be selected on the main sewer trunks leaving Town close to 8 Street West. These two locations would likely be sufficient to provide good data for future planning. This flow monitoring should be conducted before significant investments are put into the main sewer trunks.

Table 5-2
Sewage Generation Existing System

Population: 3910	Flow Rate (l/s)	Flow Rate (m^3/day)	Per Capita Flow Rate (l/c/d)
Average Dry Weather Flow	18.5 l/s	1602 m^3/d	410 l/c/d
Peak Dry Weather Flow	64.8 l/s	5602 m^3/d	1433 l/c/d
Peak Wet Weather Flow	107.0 l/s	9245 m^3/d	2364 l/c/d

Future sewage generation was calculated by scaling the existing system flows to the projected populations based on land use shown in Figure 2-2. Undeveloped areas were added to the sewage generation model to simulate the effect of development on the existing system. These flows are listed in Table 5-3.

Table 5-3
Sewage Generation Future Systems

Population 6,800	Flow Rate (l/s)	Flow Rate (m^3/day)	Per Capita Flow Rate (l/c/d)
Average Dry Weather Flow	57.7 l/s	4987 m^3/d	733 l/c/d
Peak Dry Weather Flow	169.4 l/s	14,636 m^3/d	2152 l/c/d
Peak Wet Weather Flow	284.7 l/s	24,598 m^3/d	3617 l/c/d

5.2 Existing System Condition

Table 5-4
Pipe Materials by Size

Pipe Diameter	Concrete	HDPE	PVC	Clay Tile	Unknown
200 mm	145	-	6,724	8,852	7,957
250 mm	180	-	1,743	296	1,244
300 mm	-	-	2,593	575	1,015
375 mm		-	1,881	777	28
450 mm	1,590	-	1,066	-	-
525 mm	-	-	6,827	-	913
560 mm	-	461		-	-
750 mm	-	-	2,100	-	330
Total	**1,915**	**461**	**22,934**	**10,500**	**11,487**

5.3 Existing System Capacity

The available pipe full capacity for gravity flow conditions was determined based on the Manning equation, using an "n" roughness coefficient of 0.014. This roughness coefficient was used to conservatively reflect pipe characteristics that affect the total pipe capacity such as structural deficiencies (cracks, offset joints, etc.) and service deficiencies (debris, roots, grease buildup, etc.) that exist throughout the system.

Figure 5-2 shows the total pipe full capacity of sewer mains within the Town's collection system. Pipe full capacity is a representation of the physical capacity of the pipe. Design guidelines require that new mains only use 86% of the full capacity for design flows.

A simplified hydraulic model was developed and run to determine the specific impacts of the estimated sewage generation on the collection system. The model was developed to represent the current state of wastewater flows and infrastructure in the Town. The US Environmental Protection Agency Storm Water Management Model (SWMM) was used for the computer model analysis.

The model demonstrates that the existing collection system performs well under existing wet weather flow conditions. The model predicts that only 4% of the total collection system is over capacity. Table 5-5 summarizes the model results.

Figure 5-3 shows the capacity ratios for the collection system. The breakdown of capacity ratio for the figure breaks the collection system into two categories: surcharged and non-surcharged. It is important to note that a segment of pipe can be over capacity, but surcharging may not occur. In these cases, there is no real risk of backup.

Table 5-5
Existing System Capacity Ratio

	Capacity Ratio < 86%	Capacity Ratio 100%	150%	> 250%
200 mm	23,119 m	94 m	127 m	70 m
250 mm	2,817 m	295 m	286 m	
300 mm	3,191 m	753 m	240 m	
375 mm	2,686 m			
450 mm	2,649 m	7 m		
525 mm	7,740 m			
560 mm	461 m			
750 mm	2,430 m			
Total	**45,093 m**	**1,149 m**	**653 m**	**70 m**

5.4 Future System Capacity

5.4.1 Lift Station Needs

The Harvest Square Lift Station should not require any capacity upgrades to the design horizon of the plan.

The Main Lift Station at the Town's lagoons was upgraded in 2013, and transfers flows from the anaerobic cells to the facultative cells. The station capacity is 178 l/s at 15.6m of head will be sufficient to the 20-year horizon of this study. Beyond that point, the lift station is likely to need both pumps running simultaneously to meet peak flow needs.

As flow is measured at the lift station, it is not known how much of the peak wastewater inflow is attenuated by the anaerobic cells of the lagoon before discharging by the lift station. The Town should consider the merits of permanent flow monitoring in other locations in the collection system to better evaluate future sewage generation and it's impacts on the pump station infrastructure.

5.4.2 Wastewater Treatment Needs

The existing Town of Claresholm wastewater treatment system operates under the Alberta Environment and Parks (AEP) code of practice for Wastewater Systems using a Wastewater Lagoon. The system consists of four anaerobic cells, a transfer pump station, two facultative cells and two storage cells. The 2003 Lagoon Study which was completed by MPE Engineering Ltd. (MPE) concluded that the lagoon capacity was sufficient for the 20-year planning horizon. MPE's study recommended upgrading of the existing transfer piping to deal with pipe and structure conditions.

A desktop review of the lagoon capacity was completed as part of this report. The previous study relied on a net evaporation of 1007mm to reach the design population. Evaporation data has not been published since 2000, and current climate patterns may have changed. Table 5-6 provides a summary of three potential scenarios for lagoon needs:

1) At the current estimated population of the Town, the lagoons meet the AEP requirements under the code of practice and do not require upgrading.

2) The maximum serviceable population of the existing lagoons was calculated using the maximum available storage in the existing cells, and neglects evaporation as an influence on the required storage. Under these conditions the storage lagoons will need upgrading at a design population of 4,312. A new storage cell will be needed to meet the needs of the Town to meet the ultimate servicing capacity.
3) The maximum serviceable population of the existing lagoons was calculated using the maximum available storage in the existing cells and includes evaporation as an influence on the required storage. Under these conditions the storage lagoons will need upgrading at a design population of 6,126. A new storage cell will be needed to meet the needs of the Town to meet the ultimate servicing capacity.

Table 5-6
Wastewater Treatment Needs

	Unit	Existing Condition	Maximum Serviceable Population	Annual Average Evaporation[1]	Alternate Maximum Serviceable Population [2]
Design Basis Average Flow	m^3/day	1,955	2,156	-	3,063
Average Flow per Capita	l/c/day	500	500	-	500
Design Population	ppl	3,910	4,312	-	6,126
ANAEROBIC LAGOON		-	-	-	-
Retention Time	day	2	2	-	2
Volume required	m^3	3,910	4,312		6,126
Volume Available	m^3	41,600	41,600	31,409	73,009
Water Surface Area	m^2	31,200	31,200		31,200
FACULTATIVE LAGOON		-	-	-	-
Retention Time	day	60	60		60
Volume required	m^3	166,600	129,370	-	183,781
Volume Available	m^3	41,600	41,600	225,501	267,101
Water Surface Area	m^2	224,000	224,000	-	224,000
STORAGE LAGOON		LIMITING FACTOR			
Retention Time	day	365	365	-	365
Volume required	m^3	713,575	787,000		1,118,003
Volume Available	m^3	787,000	787,000	331,003	1,118,003
Water Surface Area	m^2	328,800	328,800		328,800

Note:

1) The average annual net evaporation for the Lethbridge Region is measured between 1971 and 2000 is 1006.7 mm.
2) This maximum serviceable population is based on an offset of the expected average annual evaporation in the existing storage lagoons.

5.4.3 Collection System Needs

The existing wastewater collection system does not have capacity to support the level of development proposed within the 20-year planning horizon of this plan. Comprehensive sewage main upgrades are required within the existing development to support the proposed development. This plan does not include the sanitary main network that will be built as development progresses.

These projects are provided in more detail in Section 4.5.

5.5 Capital Requirements

5.5.1 Rehabilitation Program

In order to maintain a collection system in good operating condition, sewer mains must be rehabilitated or replaced as they near their end of life. The Town has had a proactive maintenance program that identities defects and corrects them before more significant failures can occur, however this program could become unsustainable as the system ages and problems with clay tile pipe in particular become more common.

As the pipes in the system age, it can be expected that failures will occur more frequently over time.

Sewer mains should be rehabilitated or replaced as they begin to fail. Rehabilitation of sewers should consider cured in place pipe options for projects where the pipe conditions allow. A cured in place pipe liner is pulled into the existing main and cured in place, providing a "like new" sewer, sacrificing some inside diameter, but providing a piece of infrastructure with a significantly longer life span. The estimate presented in Section 9 of this report represents an average investment over the life of the collection system. Table 5-7 provides a summary of the sanitary mains requiring replacement over the life of the program.

Figure 5-4 shows the rehabilitation program prioritization. Specific rehabilitation projects are recommended in Section 9 of this report.

Table 5-7
Sanitary Sewer Rehabilitation Program

	For Replacement or Rehabilitation			No Replacement	
	Clay Tile	Unknown	Concrete	PVC	HDPE
200	8,758.6	7,245.0	144.6	8,019.4	-
250	208.3	993.9	179.6	419.1	-
300	105.5	680.5	-	2,938.5	-
375	776.9	28.3		1,755.7	-
450	-	-	1,590.2	346.8	-
525	-	125.0	-	3,925.4	-
750	-		-		2,099.9

5.5.2 Existing System Improvements

No significant deficiencies were noted within the sanitary sewer system, where capacity in the existing system is predicted to result in surcharging of the sewer system during rainfall events. Upgrades have been conceptually proposed to address these deficiencies.

The upgrade is presented on **Figure 5-5**. The upgrade provides additional capacity during wet weather flow and provides capacity for additional development upstream of the improvement.

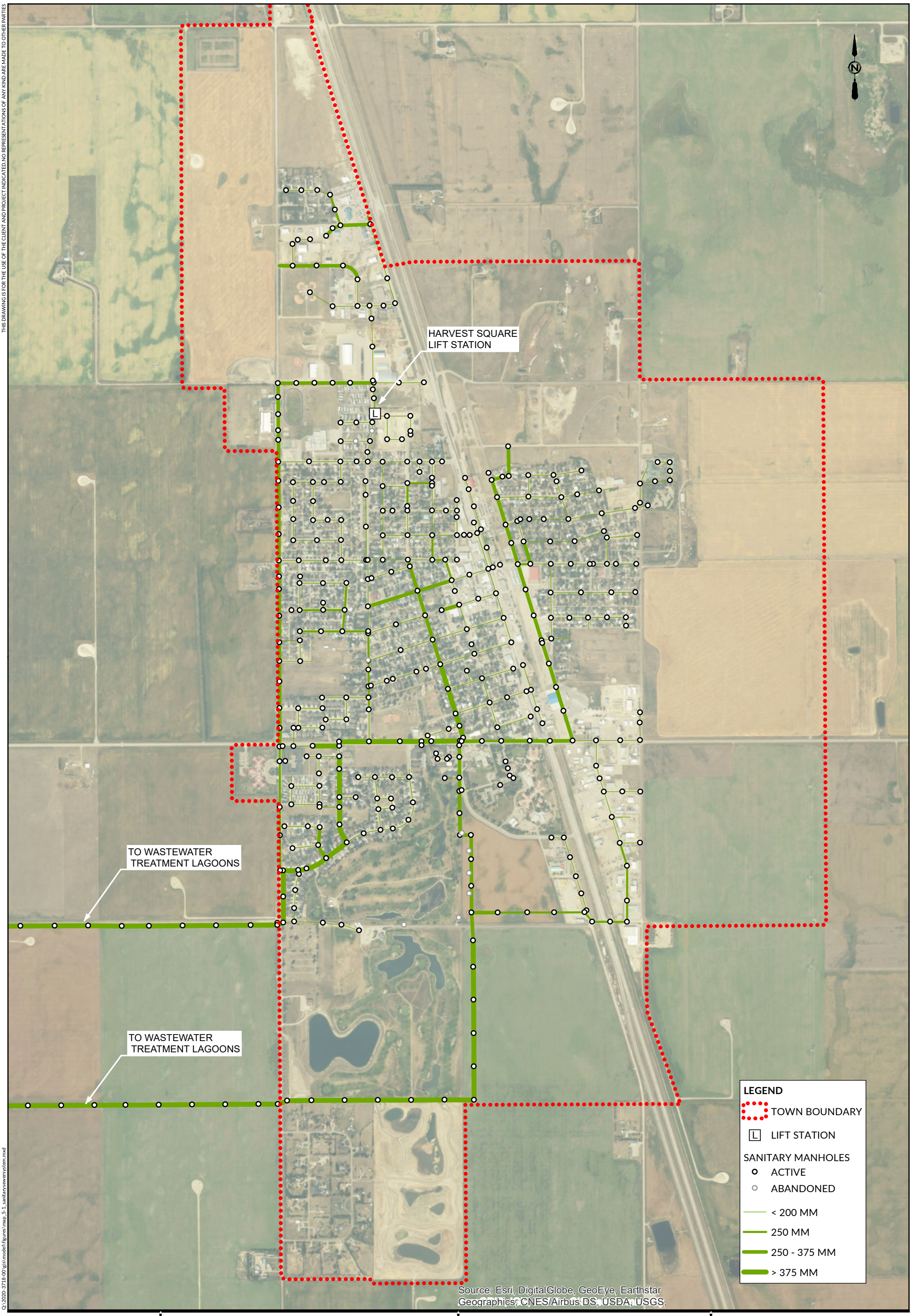
S1	**North Industrial Upgrade**	Project S1 includes installation of 350m of 300 mm sanitary sewer main that will upgrade the existing sanitary sewer that connects to the existing trunk in 59 Ave W. The upgrade runs north along 4 St W to the existing connection at Columbia Drive.
S2	**8 St Upgrade Phase 1**	Project S2 includes construction of 575 m of 450 mm sanitary sewer main that will upgrade the existing 250 mm sanitary sewer along 8 Street West between 43 Avenue West and Westlynn Drive.

5.5.3 Future Growth Improvements

Growth within the existing Town area, particularly to the north west and east areas, is expected to occur in the near-term. These upgrades are intended primarily to facilitate growth within the existing and future system rather than for correcting existing system deficiencies, however they do provide some benefits to the existing system. **Figure 5-6** presents the proposed improvements

SG1	**East Boundary Phase 1**	Project SG1 is the first phase of an extension of a new sanitary sewer trunk along 5 St E. Phase 1 is the first phase of an upgrade to the existing South Sanitary Trunk that services Claresholm east of Highway 2. Phase 1 runs west from 39 Ave E and 5 St E to the existing trunk sewer running south on the east boundary of the Golf Course. The sewer trunk extension involves 800 m of 450 mm sanitary trunk sewer. The project accommodates the proposed growth area on t**he** east side of Town.
SG2	**East Boundary Phase 2**	Project SG2 is the second phase of an extension of a new sanitary sewer trunk along 5 St E. Phase 2 runs from 39 Ave E to Highway 520. The sewer trunk extension involves 800 m of 450mm sanitary trunk sewer. The project accommodates the proposed growth area on the east side of Town.
SG3	**East Boundary Phase 3**	Project SG4 is the third phase of an extension of a new sanitary sewer trunk along 5 St E. Phase 3 runs from Highway 520 to Division Avenue. The sewer trunk extension involves 800 m of 300 mm sanitary trunk sewer. The project accommodates the proposed growth area on the east side of Town.

SG4	**East Boundary Phase 4**	Project SG4 is the fourth phase of an extension of a new sanitary sewer trunk along 5 St E. Phase 4 runs from Division Avenue to Division Avenue. The sewer trunk extension involves 810 m of 300 mm sanitary trunk sewer. The project accommodates the proposed growth area on the east side of Town.
SG5	**8 St Upgrade Phase 2**	Project SG5 includes construction of 840 m of 450 mm sanitary sewer main that will upgrade the existing 300 mm sanitary sewer along 8 Street West between 43 Avenue West and 51 Ave W. Project SG5 is included to account for worst case scenarios for future sewage flows from the north. It is unlikely that actual sewage generation will necessitate these upgrades, however they have been included in the event that industrial development to the north creates a future need.
SG6	**8 St Upgrade Phase 3**	Project SG6 includes construction of 800 m of 450 mm sanitary sewer main that will upgrade the existing 300 mm sanitary sewer along 8 Street West between 51 Ave W and 59 Ave W. Project SG6 is included to account for worst case scenarios for future sewage flows from the north. It is unlikely that actual sewage generation will necessitate these upgrades, however they have been included in the event that industrial development to the north creates a future need.
SG7	**East Boundary Phase 1A**	Project SG7 is the first phase of an upgrade to the existing South Sanitary Trunk that services Claresholm east of Highway 2. Phase 1A runs south on the east boundary of the Golf Course. The sewer trunk extension involves 845 m of 525 mm sanitary trunk sewer. The project accommodates the proposed growth area on east side of Town.
SG8	**53 Ave E Extension**	Project SG8 is the extension of a new sanitary sewer trunk along 53 Ave E from 4 St to 5 St E. The sewer trunk extension involves 180 m of 200 mm sanitary trunk sewer. The project provides servicing capacity to the undeveloped lands adjacent to 53 Ave E.
SG9	**New Storage Lagoon**	Project SG9 involves upgrading of the existing storage lagoons to meet the long-term needs of the Town. Based on the findings of the long-term flow monitoring, and climatic changes over the period of this report, a new storage lagoon will be required to maintain sufficient storage to provide the required 365-day retention time.



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Associated Engineering

Claresholm

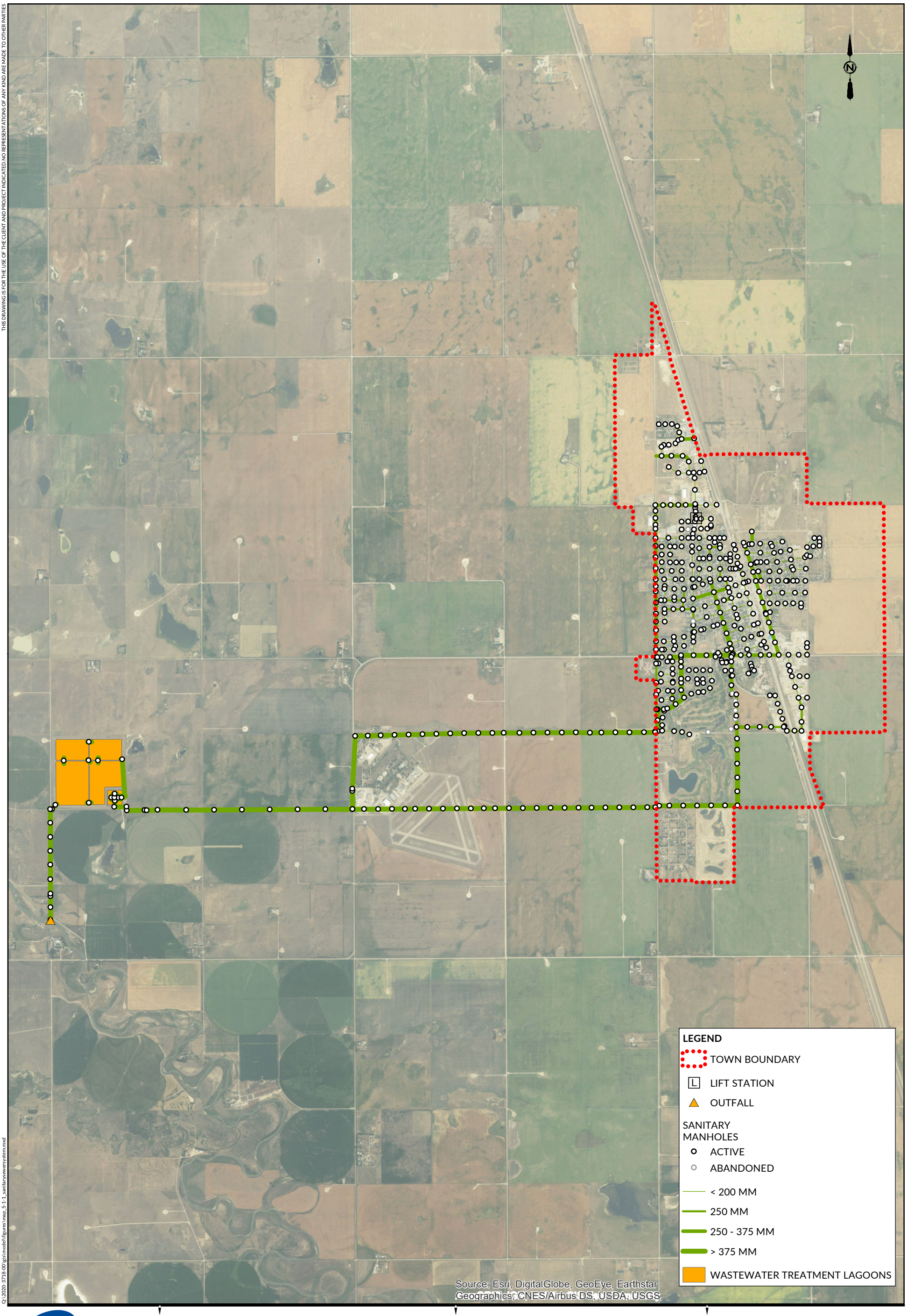
0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 APRIL
SCALE*	1:16,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	05
DESCRIPTION	ISSUED FOR REPORT
DRAWN BY	BM
CHECKED BY	AM

FIGURE 5-1
SANITARY SEWER SYSTEM

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MAY
SCALE*	1:38,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
DRAWN BY	BM
CHECKED BY	AM

FIGURE 5-1.1
SANITARY SEWER SYSTEM

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

TO TREATMENT LAGOONS

TO TREATMENT LAGOONS

LEGEND

SANITARY SEWER MAINS
PIPE FULL CAPACITY
- < 20 L/S
- 20 - 30 L/S
- 30 - 50 L/S
- 50 - 100 L/S
- > 100 L/S
- MANHOLES

DEVELOPED LAND USE
- AGRICULTURAL / TRANSITIONAL A/T
- PARKS / INSTITUTIONAL
- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geogr
AeroGRID, IGN, and the GIS User Community

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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:16,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
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CHECKED BY	AM

FIGURE 5-2
PLANNING
EXISTING SYSTEM CAPACITY

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

LEGEND

- SURCHARGED
- NON SURCHARGED

CONDUIT CAPACITY RATIO
NON SURCHARGED
- < 86%
- 86 - 100%
- 100 - 150%
- 150 - 200%
- >200%

SURCHARGED
- < 86%
- 86 - 100%
- 100 - 150%
- 150 - 200%
- >200%

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Ai
AeroGRID, IGN, and the GIS User Community

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Associated Engineering

Claresholm

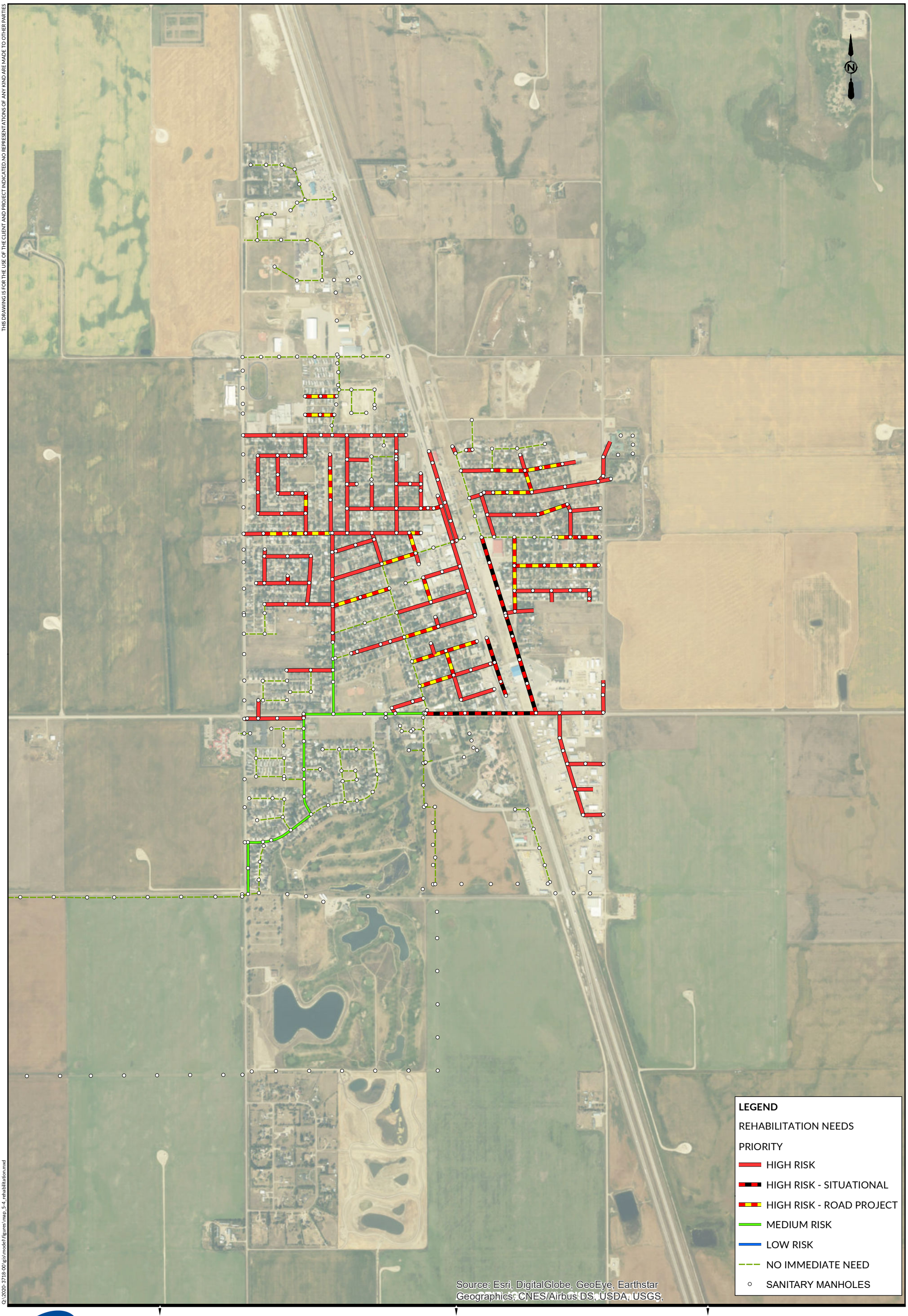
0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:16,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
DRAWN BY	BM
CHECKED BY	AM

FIGURE 5-3
PLANNING
EXISTING SYSTEM PERFORMANCE
(WET WEATHER FLOW)

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

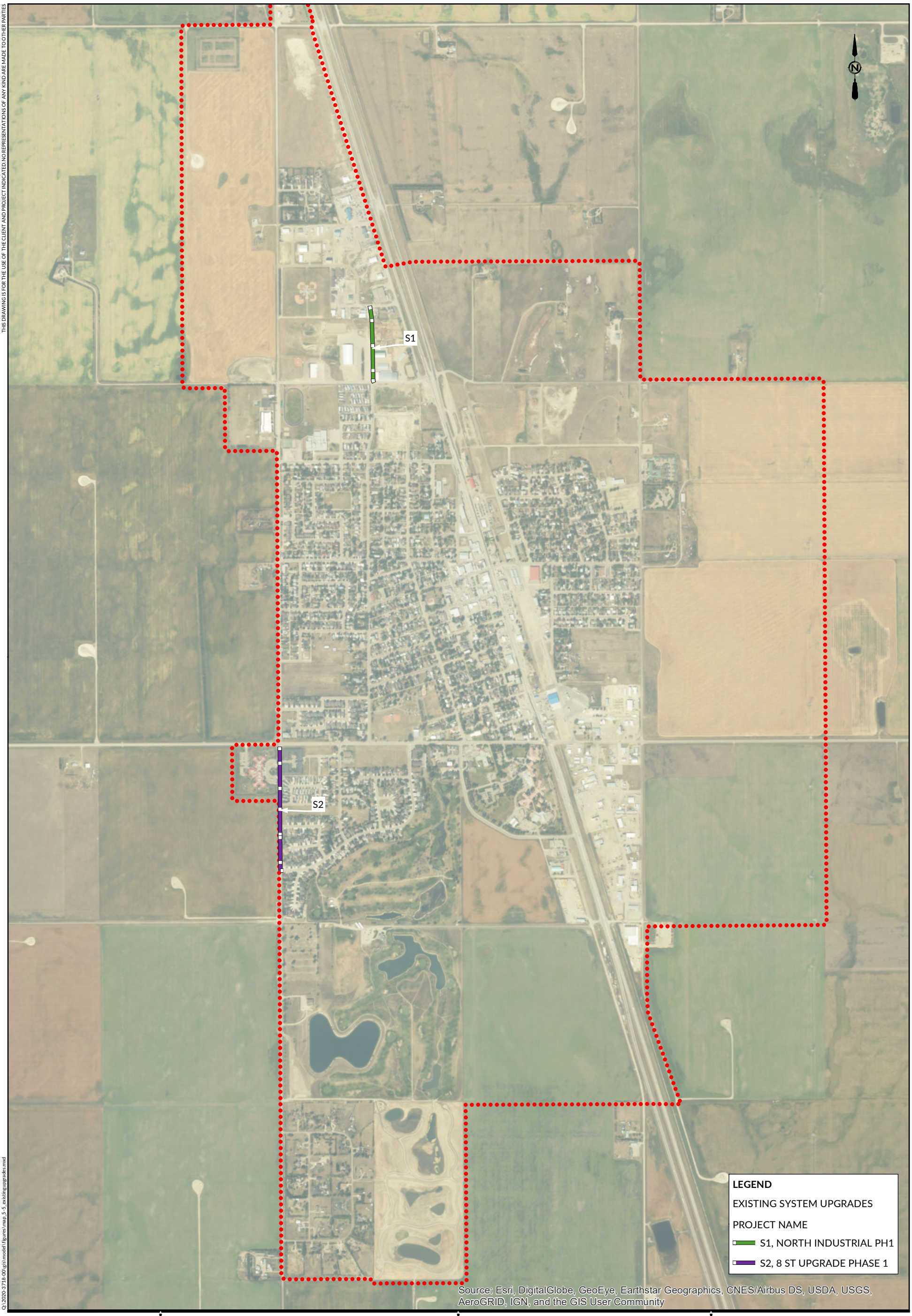
0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MAY
SCALE*	1:16,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
DRAWN BY	BM
CHECKED BY	AM

FIGURE 5-4
SANITARY REHABILITATION PLAN

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:16,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
DRAWN BY	BM
CHECKED BY	AM

FIGURE 5-5
SANITARY
EXISTING SYSTEM UPGRADES

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

NOTE: PROJECTS SG5 AND SG6 ARE INCLUDED TO ACCOUNT FOR WORST CASE SCENARIOS FOR FUTURE SEWAGE FLOWS FROM THE NORTH. IT IS UNLIKELY THAT ACTUAL SEWAGE GENERATION WILL NECESSITATE THESE UPGRADES, HOWEVER THEY HAVE BEEN INCLUDED IN THE EVENT THAT INDUSTRIAL DEVELOPMENT TO THE NORTH CREATES A FUTURE NEED

SG8
SG4
SG6
SG5
SG3
SG2
SG1
SG7

LEGEND

FUTURE SYSTEM UPGRADES

CODE, PROJECT NAME

- SG1, EAST BOUNDARY PHASE 1
- SG2, EAST BOUNDARY PHASE 2
- SG3, EAST BOUNDARY PHASE 3
- SG4, EAST BOUNDARY PHASE 4
- SG5, 8 ST UPGRADE PHASE 2
- SG6, 8 ST UPGRADE PHASE 3
- SG7, EAST BOUNDARY PHASE 1A
- SG8, 53 AVE E EXTENSION

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geograph AeroGRID, IGN, and the GIS User Community

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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:18,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
DRAWN BY	BM
CHECKED BY	AM

FIGURE 5-6
SANITARY
FUTURE SYSTEM UPGRADES

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

6 STORMWATER MANAGEMENT

The Town's stormwater management system consists of a piped sewer system, a number of stormwater detention facilities, ditches, culverts and overland drainage systems. The Town's system discharges through the Golf Course ditches into the newly constructed Claresholm Storm Ponds. The newly constructed ponds limit the peak discharge from the Town into the Frog Creek Drain, before ultimately discharging to Willow Creek.

6.1 Existing System

Figure 6-1 shows the stormwater management system for the Town of Claresholm. The figure shows an overview of the existing storm drainage features in the Town such as storm sewers, ditches and culverts, which include:

- A stormwater outfall that discharges to the Frog Creek Drain.
- Frog Creek Wetlands, protecting downstream watercourses from peak flows.
- 10.2 km of gravity storm sewers ranging in size from 200mm to 1500mm.
- 3.1 km of catch basin leads.
- 22.4 km of significant ditches and swales.
- 1.9 km of culverts of varying sizes.
- 330 manholes.
- 252 catch basins.
- A number of formal and informal stormwater management facilities.
- A lift station that services the low area surrounding to 46 Avenue West and Skyline Crescent.
- A major drainage system consisting of streets, lanes, and other overland flow paths.

6.2 Trapped Low Storage

Potential ponding areas that can indicate flood risk were determined by analysing the Town's elevation model, supplemented with additional mapping data to characterize the behaviour of overland flows in the Town and immediately surrounding areas. Figure 6-2 shows the locations of major trap low areas that can impact the depth and frequency of flooding during rain events.:

Trap lows represent depressions in the major system. They are important for hydraulic modelling because they represent overland storage within parks, ponds and private property. Trap lows are characterized by their relative depth in the mapping.

In general, grades throughout the Town are sufficient to provide overland flow protection for urban development. Trap lows that could contribute to risk of overland flooding in extreme events were identified in the Town. These locations are identified as locations where the depth of water accumulation before an overland spill occurs is greater than 0.3m. Trap lows that were identified with depths of less than 0.3m are also mapped for information.

6.3 Rain Events

Developing an understanding of the design and operation of stormwater management systems typically relies on design rainfall events, rather than historical rainfall. In the case of this report single event computer modelling was conducted to assess system risk. Design storms were used to generate runoff hydrographs and ultimately to determine how drainage areas and systems perform.

Design rainfall events are typically described in terms of their Average Return Interval (ARI). The ARI is the average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration. From this definition it is implied that the periods between exceedances are generally random. On average, a 1 in a 5-year ARI rainfall event will be exceeded once in a 5-year period.

Annual Exceedance Probability (AEP) is a more intuitive way of describing a rainfall event. AEP is the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.

The 1 % AEP flood has a 1 % chance of occurring in any given year; however, over a period of 30 years a 1 % AEP event has a 26 % chance of occurring during those 30 years. The value of 26 % is based on probability theory that accounts for each of the 30 years having a 1 % chance of flooding.

6.3.1 Rainfall Event Selection

Environment and Climate Change Canada (ECCC) operates a weather station (metadata shown in Table 6-1) in the southeast of the Town of Claresholm. Using the computerized tool for the development of Intensity-Duration-Frequency (IDF) curves under a changing Climate — IDF_CC Tool 4.0' https://www.idf-cc-uwo.ca/idfstation , IDFs were derived at a gauged locations.

Table 6-1
Metadata for Regional Weather Stations (ECCC)

Station Name	Calgary	Claresholm
ID	3031094	3031640
Longitude	-114.00	-113.64
Latitude	51.11	50
Starting Year	1947	2006
Ending Year	2017	2007
Number of Years (with data)	62	11

Table 6-2 provides a summary of rainfall volumes for 1:100 year and 1:5 year events for both Calgary and Claresholm.

Based on the IDF relationships defined for each weather station, the Town's new weather station provides a more conservative rainfall event for use in the Town of Claresholm and surrounding areas. There is a longer period of record available for Calgary that would provide more certainty in the statistics that are used to create design rainfall events. Using the Claresholm data will mean that more frequent review of the design rainfall data is needed as more data is collected, climate change and statistical significance changes the design rain events.

Table 6-2
Rainfall Volumes by Location

Location	Return Frequency	Rainfall Volume, 1 hr (mm)	Rainfall Volume24 hr (mm)
Calgary	1:100 Year	46.4 mm	99.0 mm
	1:5 Year	20.9 mm	51.4 mm
Claresholm	1:100 Year	65.4 mm	107.4 mm
	1:5 Year	24.3 mm	54.6 mm
Claresholm Climate Change	1:100 Year	69.4 mm	115.6 mm
	1:5 Year	26.1 mm	58.8 mm

The Town should adopt a policy to require Project Designers to consider future rainfall events in consideration of climate impacts. Project Designers should provide reasonable consideration of the impacts of climate change on infrastructure. Risks identified by the designer should be addressed in the design criteria for projects.

Design rainstorm events should be based on the historical IDF curves presented in **Table 6-3,** below. The projects presented in this report are presented with consideration of the historical and the future IDF curves. The preliminary and detailed design of these projects should include a sensitivity analysis that demonstrates the ability of the proposed stormwater management system to resist the long-term impacts of increased storm event frequency.

Table 6-3
Recommended Design Rainfall Events

Event	a	b	c
5 Year (Historical)	25.2	-0.764	0.094
100 Year (Historical)	80.8	-0.908	0.448
5 Year (Future)	27.2	-0.764	0.091
100 Year (Future)	84.3	-0.898	0.415

The coefficients provided can be used in the following equation:

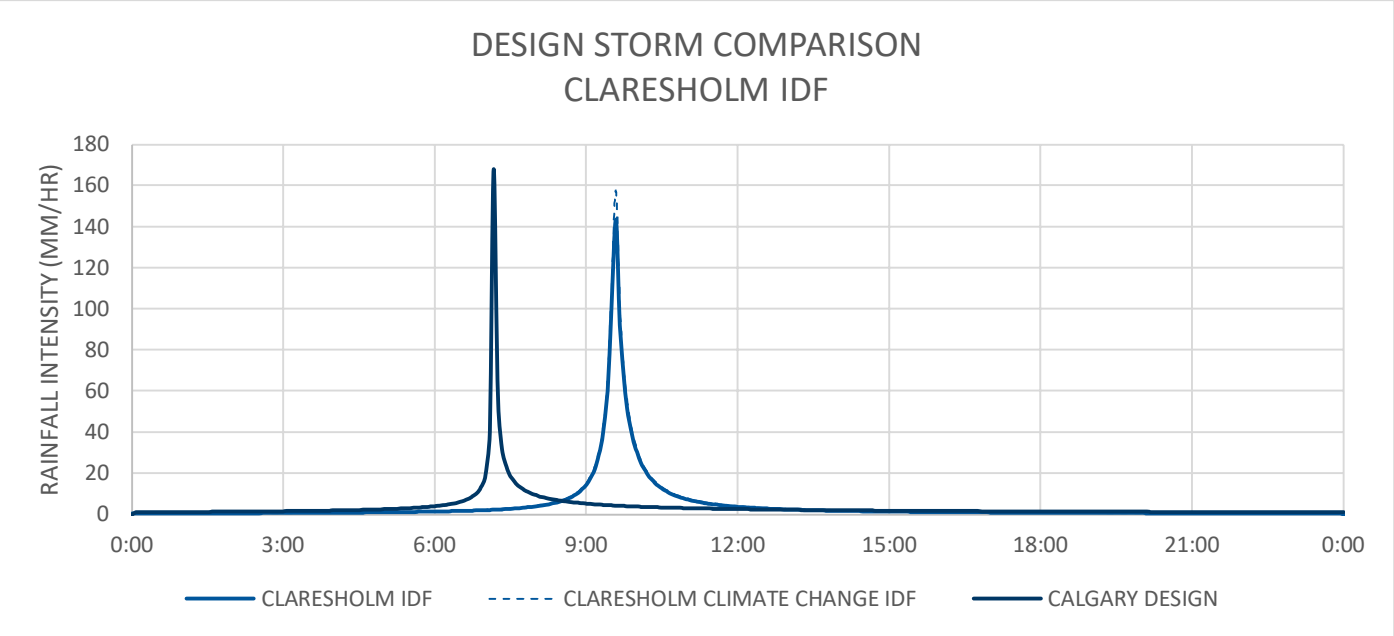
$$i(mm/h) = A(t + t_0)\text{^}B$$

Where:

i is the precipitation intensity rate in mm/hr
A, *B and* t_0, are the coefficients for each return period (T) in years
t, the time (duration) of the precipitation event in hours (hrs)

6.4 Design Event Performance

The proposed rainfall events were used to compare the existing performance of the system using the three rain events. This included a comparison of the characteristics of the representative rain events. The City of Calgary design rainstorm produces a higher peak intensity than the new Claresholm IDF Curves, but with less rainfall volume. This can be seen in the chart below.



This analysis confirmed that the findings of the previous stormwater management plan still represents a conservative analysis of the potential for flood risk in the Town. The peak rain events previously used to analyse system performance resulted in higher peak flows, but smaller rainfall volumes. The new rainfall has a lower peak intensity; however, the volume of water impacts the predicted flooding depths for the 100-year event. Small increases in maximum ponding depths were noticed using the updated IDF Curves.

This will have a positive impact on the design of conveyance upgrades, including pipe upgrades and ditches. The change in rainfall volume will impact the total storage required for new developments in order to meet the allowable release rate goals set in the Stormwater Management Plan (Associated Engineering, 2015).

The additional modeling confirms that the previously defined problem areas have not changed significantly, and the proposed conveyance upgrades have not materially changed since the Stormwater Management Plan was completed.

6.5 Problem Area Definition

Problem areas identified during the design event analysis were defined by comparing the results of the updated stormwater model to those identified in the Town s Stormwater Management Plan.

6.6 Development Servicing Strategy

6.6.1 Performance Standards

Level of service for stormwater management systems has traditionally been defined using the return period of the design storms used to size the system. This is described in terms of the Major and Minor systems. The Minor system handles small frequent runoff events and consists mainly of underground pipes. The Major system handles any runoff, which cannot be taken by the minor system and usually consists of overland flow from large infrequent events. The following are performance standards which should be considered in the design of future stormwater management systems:

1) The Minor (underground) portion of the system shall be designed based on a Unit Area Release Rate (UARR) of 90 l/s/ha. The piped system shall convey flows up to the UARR for the proposed development area. Designers of new developments or infrastructure projects should be aware of the balance of the total inlet capacity (catch basins, etc.) relative to the design flow in the minor system. Ponding and overland flow must be confined to public property and right-of-ways.
2) The Major system, storm ponds and overland flow within new developments, should be designed to safely handle a 1 in 100-year event without causing flooding of private property or significant erosion damage. Ponding and overland flow shall be confined to public property and right-of-ways and be limited to no more than 300 mm deep as measured at the gutter of the streets for the 1 in 100-year event. Once collected, stormwater shall remain on public property.
3) Flow rates will be designed based on a defined allowable release rate of 2.5 l/s/ha. The allowable release rate must be maintained for all design storms up to and including the 1 in 100 year event. This will provide protection to the existing stormwater management system and will increase the level of service for users in the existing portions of Town of Claresholm.
4) At a minimum, design storms should be based on the Claresholm IDF curves presented in this report. The Town should require designers of projects to consider future rainfall events in consideration of climate impacts. Designers of projects should also provide reasonable consideration of the impacts of climate change on infrastructure. Risks identified by the Designer's design criteria should be addressed in the design criteria for projects.
5) New developments must include measures to improve stormwater quality. The AESRD Municipal Policies and Procedures Manual requires "a minimum of 85% removal of sediments of particles size 75 microns or greater." Erosion and sediment control must be in place as permanent features of development. These include grassed swales and runways to trap silt and ponds designed with dimensions and detention times promoting settling.

6.6.2 Proposed Servicing Strategies

There are several areas within the Town that are subject to large scale development, in addition there are significant areas that will be subject to infill and redevelopment conditions. In each of these cases reasonable efforts should be made to manage stormwater on site. Stormwater management plans for site development as well as neighbourhood developments should be completed as the development is in the approval stage that demonstrates that the design of the site will not adversely impact downstream users.

Figure 6-3 shows the location and approximate extents of significant developable lands within the Town. For each area, preliminary (order of magnitude) stormwater management requirements have been defined. In each case a unit release and storage rate is used to calculate the stormwater requirements. The release rate was set to 2.5 l/s/ha for all lands within the Town, with an average unit storage rate of approximately 800 m3/ha for the climate change rainfall

event. These values represent a reasonably conservative approach to design and should be revised with a Stormwater Management Plan that includes detailed hydraulic and hydrologic modeling for each development area as the design of the area is completed.

For the other areas in Town that represent smaller undeveloped parcels, an alternative approach to development should be taken. In these cases, the parcel developer should be managing major (overland) flows on site. This will mean storage of stormwater run off in trap lows, small dry storm ponds or in underground storage. This approach will protect downstream landowners as well as the performance of the other stormwater improvements that will be implemented to protect the Town.

Table 6-4 summarizes the preliminary servicing requirements shown in Figure 6-3.

Table 6-4
Development Area Preliminary Servicing Requirements

IA	Gross Development Area (ha)	Preliminary Release Rate (l/s)[1]	Preliminary Storage Requirement (m^3)[2]	Pond High Water Level (ha)
SW1	1.87	4.7	1,500	0.10
SW2	8.09	20.2	6,500	0.38
SW3	18.98	47.5	15,200	0.85
SW4	32.39	81.0	25,900	1.41
SW5	32.47	81.2	26,000	1.41
SW6	2.81	7.0	2,200	0.14
SW7	8.27	20.7	6,600	0.39
SW8	14.24	35.6	11,400	0.65
SW9	17.09	42.7	13,700	0.77
SW10	1.67	4.2	1,300	0.09
SW11	54.04	135.1	43,200	2.31
SW12	47.6	119.0	38,100	2.04
SW13	30.08	75.2	24,100	1.31
SW14	19.52	48.8	15,600	0.87
SW15	32.75	81.9	26,200	1.42
SW16	36.19	90.5	29,000	1.57
SW17	7.81	19.5	6,200	0.37
SW18	4.66	11.7	3,700	0.23
SW19	12.06	30.2	9,700	0.55

Note:

1) Preliminary site release rates are calculated based on a unit release rate of 2.5 l/s/ha.
2) Preliminary storage requirements are based on a 1% AEP (100 Yr ARI) event, and an approximate unit storage of 800 m^3/ha.
3) Pond HWL Area is based on a 2m active storage depth and 5:1 side slopes.

6.7 Capital Requirements

6.7.1 Rehabilitation Program

In order to maintain a collection system in good operating condition, storm sewer mains must be rehabilitated or replaced as they near their end of life. The Town has had a proactive maintenance program that identities defects and corrects them before more significant failures can occur, however this program could become unsustainable as the system ages and problems with clay tile pipe become more common.

As the pipes in the system age, it can be expected that failures will occur more frequently over time.

Storm Sewer mains should be rehabilitated or replaced as they begin to fail. Rehabilitation of sewers should consider cured in place pipe options for projects where the pipe conditions allow. A cured in place pipe liner is pulled into the existing main and cured in place, providing a "like new" sewer, sacrificing some inside diameter, but providing a piece of infrastructure with a significantly longer life span. The estimate presented in Section 9 of this report represents an average investment over the life of the collection system. Table 6-5 provides a summary of the storm sewer mains requiring replacement over the life of the program.

Figure 6-4 shows the rehabilitation program prioritization.

Table 6-5
Storm Sewer Rehabilitation Program

	For Replacement or Rehabilitation		No Replacement
	Clay Tile	Concrete	PVC
250	452.9	147.2	666.2
300	203.0	688.6	327.2
375	181.5	336.3	400.9
450	-	827.0	94.0
600	-	1,161.7	23.0
750	-	302.1	-
900	-	1,495.3	-
1200	-	104.7	-

6.7.2 Existing System Improvements

A number of existing problem areas that was previously identified in the Town's Stormwater Management Plan were reassessed based on the current state of the Town's infrastructure, including the improvements that have been completed to date. The existing system improvements listed below have been adjusted based on work completed to date, including adjustments to project scope and costs.

The upgrades are presented on Figure 6-5. Each upgrade provides additional protection during peak rain events.

ST1	**Centennial Park Ditch Upgrade**	Project ST1 involves the upgrade of the existing ditch in Centennial Park. The cross section of the existing ditches will need to be expanded, and in some cases the inverts lowered. Safety features should be considered to limit access to the ditch by park users and the general public.
ST2	**Main Outfall Upgrade**	Project ST2 involves upgrades to the main outfall from Centennial Park to the golf course ditches. The 1% AEP upgrade requires replacement of 160m of storm main with a new 1800mm storm trunk.
ST3	**Main Storm Trunk Upgrade**	Project ST3 involves upgrades to the main outfall from 51 Avenue West and 2 Street West to the Centennial Park Outlet. The 1% AEP upgrade requires replacement of 815m of storm main with a new trunk ranging in size from 1500 to 1800mm.
ST4	**1A St W Storm Trunk**	Project ST4 involves upgrades to the existing storm main running along 1A Street West to the intersection of 51 Avenue West and 2 Street West. The 1% AEP upgrade requires replacement of 350m of storm main with a new trunk ranging in size from 750 to 1050mm.
ST5	**51 Ave W Storm Trunk**	Project ST5 involves upgrades to the existing storm main running along 3A Street West and 51 Avenue West to the intersection of 51 Avenue West and 2 Street West. The 1% AEP upgrade requires replacement of 520m of storm main with a new trunk ranging in size from 450 to 1200mm.
ST6	**4 St W Storm Trunk**	Project ST6 involves upgrades to the existing storm main running along 4 Street West and 43 Avenue West to the upgraded main outfall upstream of the golf course. The 1% AEP upgrade requires replacement of 1300m of storm main with a new trunk ranging in size from 900 to 1500mm.
ST7	**46 AVE W Pump Station Review and Upgrades**	Project ST7 includes a study, preliminary design and review of the 46 Ave W PS and pond. There is an existing dry pond and pump station in place at the intersection of 46 Avenue West and Skyline Crescent. The area surrounding the pump station is a significant trap low with a depth in the order of 1m. Failure of the pump station could result in a significant inundation of roads, and potential for water ponding on private property during a severe event in the area. It is not expected that homes would be directly impacted during the design event. Based on the extent of inundation in the area during a flooding event in the area, a review of the pump station capacity and reliability relative to the potential flows that could reach the area is recommended. Upgrades for both reliability and capacity may be needed to provide protection in the area.

ST8	**East Trunk Upgrade Ph. 1**	Project ST8 involves upgrades to the existing storm main that crosses Highway 2 at 43 Ave E, turning north along 2 St E to the first MH north. This project is required to see the benefit of ST12. The 1% AEP upgrade requires replacement of 260m of storm main with a new 1650mm storm trunk.
ST9	**WestLynn Dr Outlet Upgrade**	Project ST9 involves upgrades to the existing overland flow route into the golf course from WestLynn Dr. In order to limit street flooding in Westlynn Drive upgrades are required to the outlet to the golf course. The concept for the upgrade is to remove downstream constraints by upgrading culvert crossings and to ensure that the ditch cross section and grade have sufficient capacity.
ST10	**Westlynn Dr Outlet Upgrades**	Project ST10 involves upgrades to the existing overland flow route into the golf course from WestLynn Dr. In order to limit street flooding in the area of the intersection, re-grading of the existing overland spill and walkway into the golf course is recommended to provide a safe spill route that minimizes the depth of the existing trap low. The upgrade should take into consideration the potential effects of erosion and potentially high flows on the park and walkway.
ST12	**East Trunk Upgrade Ph. 2**	Project ST12 involves upgrades to the existing storm main running along 2 Street East to the East Trunk Upgrade Phase 1. The 1% AEP upgrade requires replacement of 830m of storm main with a new trunk ranging in size from 900 to 1650mm.
ST13	**HWY 2 Storm Trunk Upgrade**	Project ST13 involves upgrades to the existing storm main running along Highway 2 to the East Basin Bypass. The 1% AEP upgrade requires replacement of 465m of storm main with a new trunk ranging in size from 525 to 900mm.

6.7.3 Future Growth Improvements

Growth within the existing Town area (particularly to the north west and east areas) is expected to occur in the near-term. These upgrades are intended primarily to facilitate growth within the existing and future system rather than for correcting existing system deficiencies, however they do provide some benefits to the existing system. **Figure 6-6** presents the proposed improvements.

STG1	**Starline Offsite Ditch**	Project STG1 is an upgrade to the existing ditches that discharge to the Highway 2 Drainage system. The upgrades will provide an outlet from the proposed Stormwater Management System in the Starline development area to an outlet along Highway 2. The upgrade is primarily an overland fix that would require construction of ditch upgrades and related culverts.

STG2	**North East Pond**	Project STG2 involves construction of a new storm pond to address inflow of stormwater flows into the existing system and to facilitate the development of lands in the northeast. In order to improve the level of service along 2 Street East in the area of Patterson Heights Boulevard a new dry pond is needed to meet the described level of service. The 1% AEP upgrade would require an additional 12,000 m^3 of storage to minimize the impact on the downstream minor system, and to mitigate the effects of overland flooding in the area. This upgrade may be incorporated into the planning and design of adjacent developments.
STG3	**East Basin Bypass**	Project STG3 is the east basin bypass and is intended to move the flows from the east basin from the existing minor drainage system and bypass them around to the newly constructed Frog Creek Stormwater Management Facility. The upgrade is primarily an overland fix that would require construction of a ditch and related culverts. A portion of the upgrade may need to be constructed as a piped outlet. The upgrade provides additional capacity through the main outfall and the golf course ditch system.
STG4	**Division Avenue Pond**	Project STG4 involves construction of a new storm pond to address inflow of stormwater flows into the existing system. In order to improve the level of service along 4 Street West in the area of Division Avenue the existing storm ponds located along 4 Street West require upgrading to meet the required level of service. The 1% AEP upgrade would require an additional 15,000 m^3 of storage to minimize the impact on the downstream minor system, and to mitigate the effects of overland flooding in the area.
STG5	**Highway 2 Pond**	The Highway 2 pond should be maintained in its current location as it provides peak flow management of upstream flows and protects the downstream system. Further enhancement and enlargement of the facility is possible if development in the area requires. No costs have been allocated to this facility. This placeholder project is included to remind future readers of this report of the importance of the facility.

STORM PUMP STATION

LEGEND

STORM MANHOLES

TYPE

- MANHOLE
- CATCHBASIN
- STORM PIPE
- OTHER STORM POINTS
- STORM CHANNEL
- STORM CULVERTS
- STORMWATER FACILTIES

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, AeroGRID, IGN, and the GIS User Community

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Associated Engineering

Claresholm

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ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

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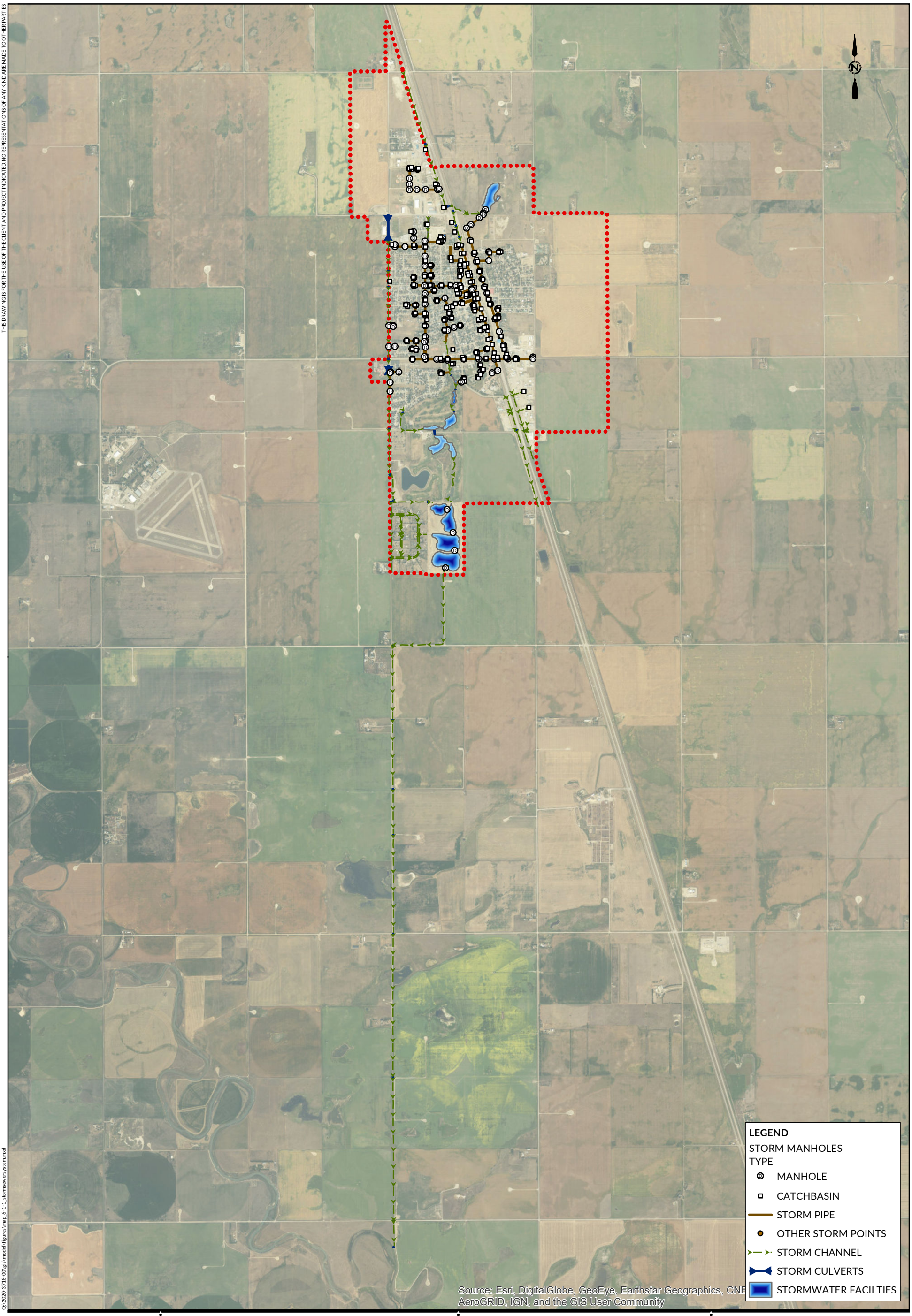
FIGURE 6-1
PLANNING STORMWATER MANAGEMENT SYSTEM

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

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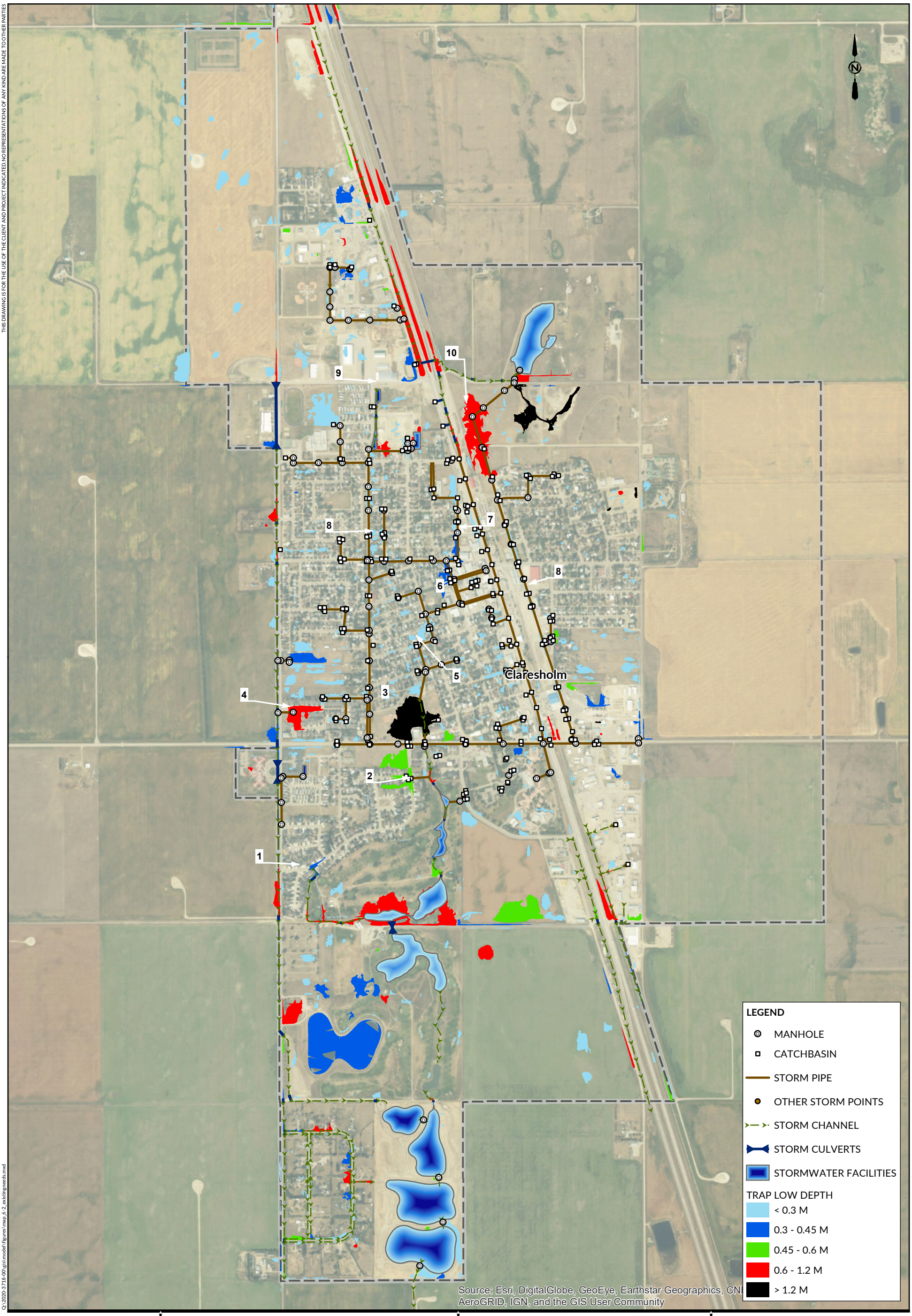
FIGURE 6-1.1
PLANNING
STORMWATER
MANAGEMENT SYSTEM

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

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FIGURE 6-2
STORMWATER MANAGEMENT EXISTING SYSTEM NEEDS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

SW4 SWMF VOLUME 25912 m^3

SW8 SWMF VOLUME 11390 m^3

SW5 SWMF VOLUME 25977 m^3

SW12 SWMF VOLUME 38078 m^3

SW1 SWMF VOLUME 1495 m^3

SW6 SWMF VOLUME 2248 m^3

SW3 SWMF VOLUME 15185 m^3

SW13 SWMF VOLUME 24064 m^3

SW14 SWMF VOLUME 15618 m^3

SW17 SWMF VOLUME 6246 m^3

SW15 SWMF VOLUME 26203 m^3

SW2 SWMF VOLUME 6472 m^3

SW18 SWMF VOLUME 3726 m^3

SW7 SWMF VOLUME 6616 m^3

SW10 SWMF VOLUME 1335 m^3

SW16 SWMF VOLUME 28956 m^3

SW19 SWMF VOLUME 9652 m^3

SW9 SWMF VOLUME 13674 m^3

SW11 SWMF VOLUME 43230 m^3

LEGEND

GROWTHPONDS

DEVELOPMENT SWM REQUIREMENTS

- SWMF REQUIRED
- ONSITE CONTROLS REQUIRED

DEVELOPED LAND USE

LAND USE

- AGRICULTURAL / TRANSITIONAL A/T
- PARKS / INSTITUTIONAL
- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- TOWN BOUNDARY

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geogr
AeroGRID, IGN, and the GIS User Community

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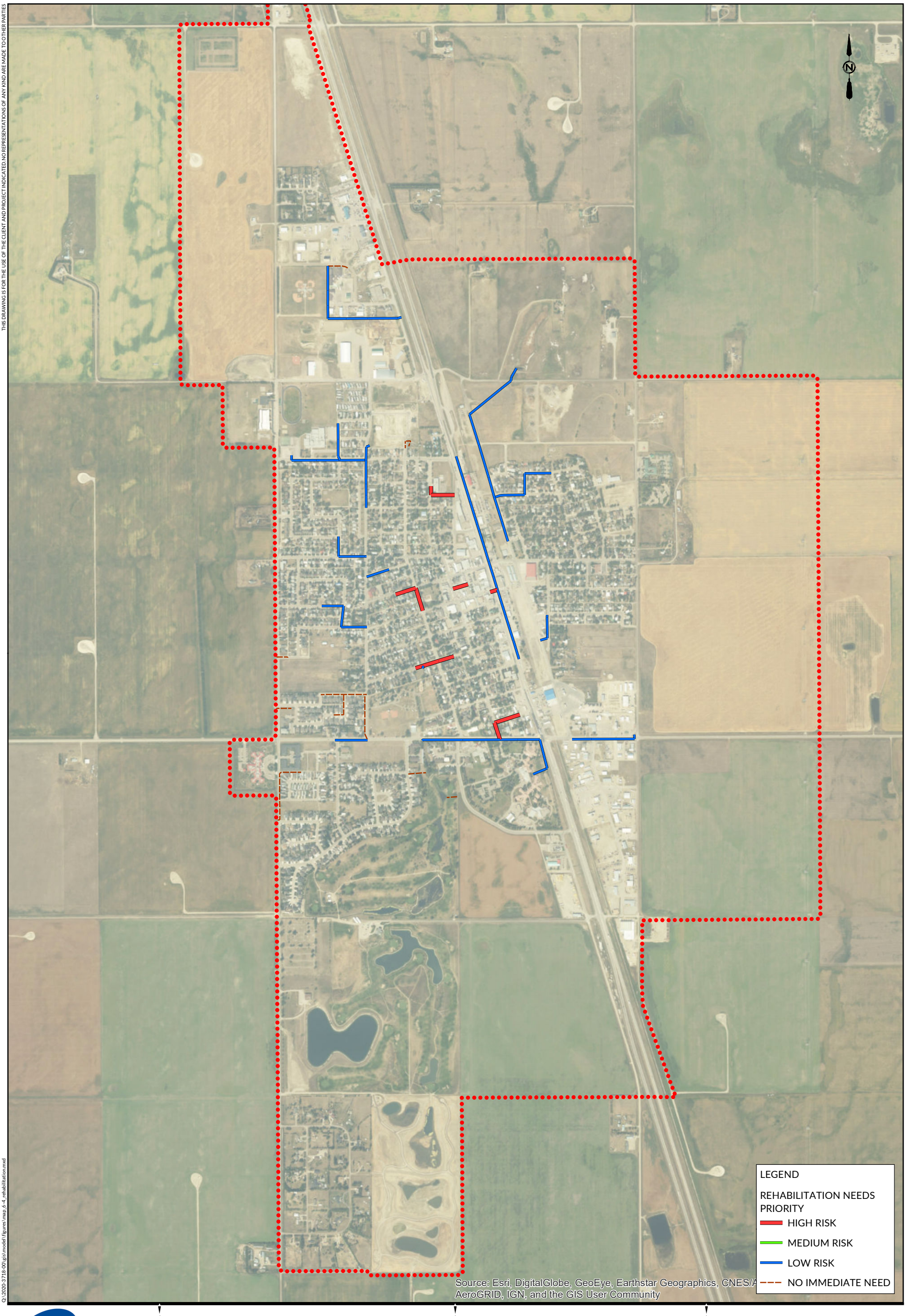
FIGURE 6-3
STORMWATER MANAGEMENT FUTURE SYSTEM NEEDS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

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FIGURE 6-4
STORMWATER MANAGEMENT REHABILITATION PLAN

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

ST5
ST4
ST6
ST3
ST12
ST7
ST13
ST1
ST8
ST2
ST9
ST10

LEGEND

EXISTING SYSTEM UPGRADES
PROJECT NAME
- ST1, CENTENNIAL PARK DITCH UPGRADE
- ST2, MAIN OUTFALL UPGRADE
- ST3, MAIN STORM TRUNK UPGRADE
- ST4, 1A ST W STORM TRUNK
- ST5, 51 AVE W STORM TRUNK
- ST6, 4 ST W STORM TRUNK
- ST8, EAST TRUNK UPGRADE PH. 1
- ST10, WESTLYNN DR OUTLET UPGRADES
- ST12, EAST TRUNK UPGRADE PH. 2
- ST13, HWY 2 STORM TRUNK UPGRADE

EXISTING SYSTEM UPGRADES
PROJECT NAME
- ST7, 46 AVE W PS REVIEW AND UPGRADES
- ST9, WESTLYNN DR OUTLET UPGRADE

Source: Esri, DigitalGlobe, GeoEye, Earthstar AeroGRID, IGN, and the GIS User Community

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Associated Engineering

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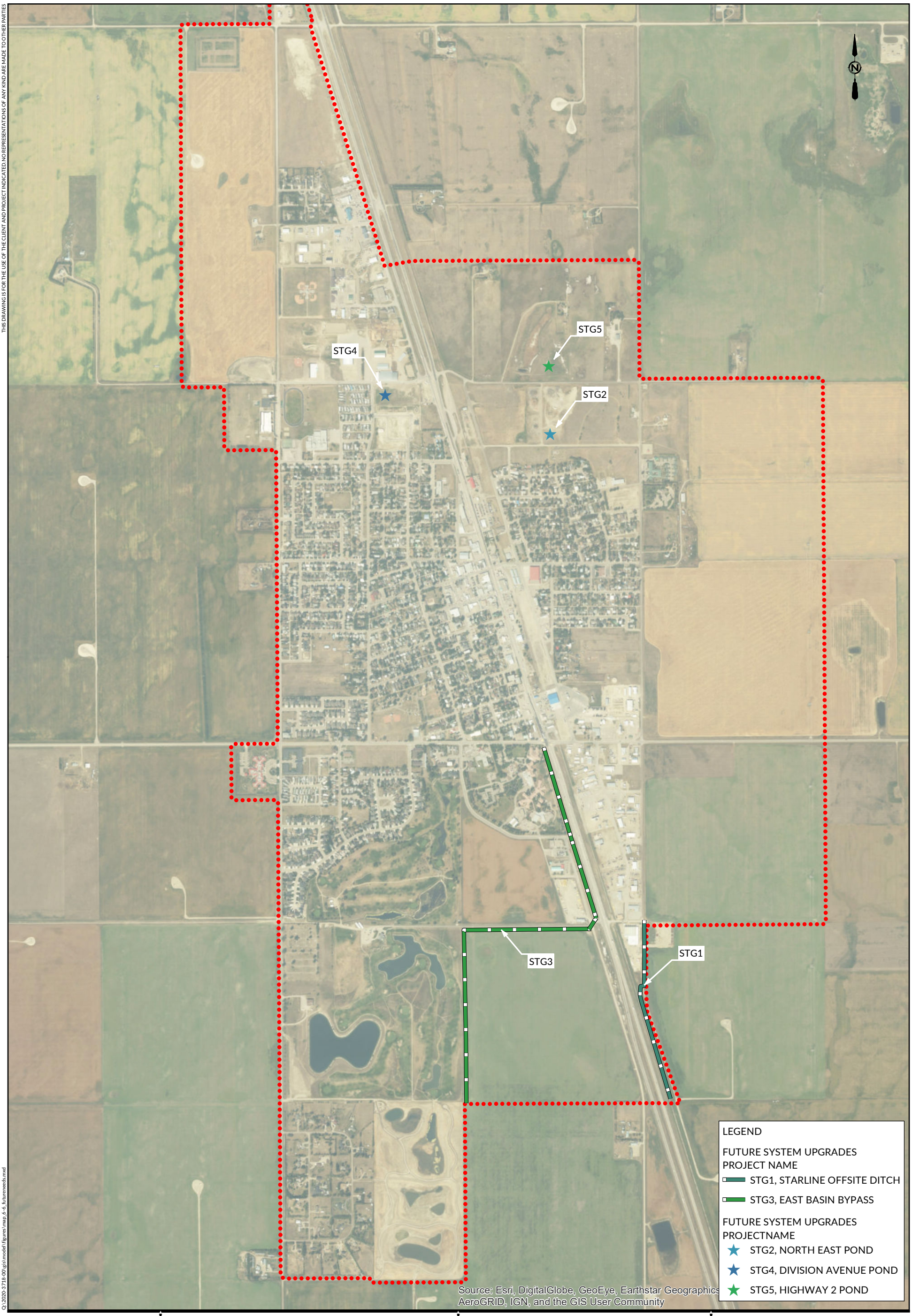
FIGURE 6-5
STORMWATER MANAGEMENT EXISTING SYSTEM UPGRADES

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

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FIGURE 6-6
STORMWATER MANAGEMENT FUTURE SYSTEM UPGRADES

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

7 TRANSPORTATION INFRASTRUCTURE

The transportation network forms an integral part of the Town's infrastructure, providing access and connectivity to provincial highways; Highway 2 running north-south through the centre of Town, and Highway 520 running east-west in the southern part of Town. The transportation network provides access to residents, businesses and employment, schools, emergency care facilities, parks, and recreation facilities. As such, the Town invests significant funds each year to maintain, enhance, and improve the transportation network for the benefit of its residents and visitors.

The key elements of the Transportation Infrastructure reviewed as part of this IMP include the existing roadway network, looking at both the pavement conditions and ride quality (smoothness) as well as the sidewalk conditions.

7.1 Road Network

Without having a pre-existing GIS database of existing roads within the Town of Claresholm, publicly available Canadian roadway network GIS files were utilized to create the GIS framework for the Town's road network. The roadway network was then adjusted to suit known roadway locations and types throughout the Town.

7.1.1 Existing Roadway Conditions

In order to evaluate the roadway network, a Condition Assessment Manual was developed by AE, utilizing standardized inspection criteria to evaluate the pavement surface defects. This inspection report along with the inspection forms was then 'digitized' to be able to be used in ArcGIS to collect all of the field data and assessment reports digitally, and to automatically upload them to the GIS database. Upon completion of this project, the GIS database will be able to be used by Town staff to continually update the GIS system as work is undertaken and the existing defects are remedied, or roadway segments are improved.

7.1.1.1 Pavement Condition Assessment

Field condition assessments of existing pavement conditions were collected in May 2020. This information was collected using tablets pre-loaded with the GIS roadway network and digitized inspection forms, so that all of the pavement defects could be collected along with site photos for future references. This inspection data, being linked with each segment of the roadway network will be fully accessible through the Town's GIS system following completion of the IMP.

All roadways within the Town were assessed by evaluating the severity of defects including:

- Distortion
- Rutting or Shoving
- Rippling
- Raveling/Aggregate Loss
- Alligatoring
- Cracking (both transverse and longitudinal)
- Manhole and Valve Displacement

Each defect was ranked on a scale of 1 (best condition) to 5 (worst condition) and factored over the length of each roadway segment to determine an overall grade or condition of each roadway segment.

7.1.1.2 Roadway Smoothness Testing

In addition to the pavement conditions, the ride quality (smoothness) was also assessed as part of the condition assessment. Ride quality measured following the International Roughness Index (IRI), is a standardized measurement of the dips, bumps and deflections in the pavement surface affecting the overall smoothness of the roadway. Pavement smoothness is generally measured in each lane of a roadway and excludes intersections.

A smart phone-based application called TotalPave was used to measure the smoothness of all of the roads within the Town's roadway network. TotalPave uses the standardized ASTM E1926 procedure to measure and calculate the IRI values. The system also links with the Town's roadway GIS network to collect data unique to each roadway segment and then attributes this data to each section of the road.

The pavement condition assessment and scoring results, were combined with the roadway smoothness testing, and factored with a weighted average scale to determine the overall condition score for each roadway segment. The detailed summary of the roadway condition survey and defect ranking is presented in **Appendix A**. A map of the roadway condition assessment is presented on **Figure 7-1**.

7.1.1.3 Proposed Existing Improvements

Based upon review of the roadway conditions assessment described above, we have presented the priority roadways that should be considered for improvement as part of the capital plan, based on their degraded existing condition.

For the purpose of this IMP, existing roadway upgrades have been assumed to include full replacement of existing pavement structures, including both asphalt and granular materials. The roadway improvements have been prioritized based on rehabilitating the roads with the worst overall conditions first. The prioritization of projects as part of the 10-year capital plan are presented in Section 10.

The Town is encouraged to continue to employ pavement preservation and maintenance strategies such as patching, crack-filling, and asphalt milling/inlays as the need arises to preserve the existing roadway integrity so as to avoid having to plan for more costly replacement of full roadway structures, as is typically required once roadways have degraded to the point of poor or failed conditions.

7.1.2 Future Roadway Network

We have conducted a review of the planned roadway network as presented in the Town's 2018 Municipal Development Plan.

7.1.2.1 Existing Roadway Upgrades

We have completed a comparative analysis of the existing roads within the Town's roadway network and evaluated them against standard roadway and right-of-way widths for the various roadway classifications identified in the future roadway network map. **Table 7-1** below presents the list of roads that should be considered for future upgrades to meet the roadway classifications identified for each and includes existing gravel roads that should be considered for upgrade to a paved road classification. Most of these road upgrades will be driven by adjacent growth and development, as such costs for these upgrades can be included in or shared with the adjacent development.

Table 7-1
Existing Roadway Upgrades

Roadway Name	Classification
5 Street E	Major Collector
8 Street W	Major Collector
39 Avenue E	Major Collector
59 Avenue W	Major Collector
59 Avenue E	Major Collector
50 Avenue E	Major Collector
Alberta Road	Minor Collector
2 Street East	Minor Collector
2 Street East	Major Collector

Other roadways identified for upgrade in the future to meet the desired roadway classification include 43 Avenue, as well as both roadways east and west of Highway 2. In addition, these roadways are also intended to function as arterial roads in the future. These roadways have not been included in the above list for future upgrades, because they are part of Highway 520 which is part of the Alberta Transportation highway network. The Town should consider working with Alberta Transportation to upgrade these roads to an arterial roadway classification to meet the needs of the Town's potential roadway network as upgrades to Highway 520 are planned.

7.1.2.2 Future Roadway Extensions

Future roadway segments that were identified on the future roadway network map were also reviewed to confirm if any of these roads should be considered in the Town's 10-year Capital Plan. Applicable roadway upgrades were included.

Future roadway segments are identified as either Arterial Roads, Major Collectors, or Minor Collectors. The future arterial roads fall on existing provincial highways, therefore, depending on the extent of upgrades considered at that time, these future upgrades will need to be undertaken by Alberta Transportation requiring only partial funding contribution by the Town.

The future Major and Minor Collectors, as well as Industrial Collectors are all within future development areas. As a result, these roads will need to be built as part of the respective development, or constructed by the Town, with payment covered by the adjacent developments through an off-site levy funding program. These roads do not need to be considered as part of this IMP and the Town's 10-year Capital Plan as outlined in **Section 10.**

7.2 Sidewalk Network

As additional features to the roadway GIS network were developed at the start of the project, sidewalk segments were added to the GIS framework to enable a similar app-based field assessment of sidewalk conditions and reporting, directly linked with the GIS database.

7.2.1 Sidewalk Condition Assessment

Field condition assessments of existing sidewalk conditions were collected in May 2020. This information was collected using tablets, pre-loaded with the GIS sidewalk network and digitized inspection forms, so that all of the sidewalk defects could be collected along with site photos for future reference. This inspection data, being linked with each segment of the roadway and sidewalk network will be fully accessible through the Town's GIS system following completion of the IMP.

All sidewalks within the Town were assessed by evaluating the severity of defects including:

- Distortion
- Trip edge
- CB Displacement
- Cracking
- Crumbling

Each defect was ranked on a scale of 1 (best condition) to 5 (worst condition) and factored over the length of each sidewalk segment to determine an overall grade or condition of each sidewalk segment.

The overall condition of each sidewalk section was assessed using a weighted average scale based on the sidewalk condition evaluation, which included all defects. The detailed summary of the sidewalk condition survey and defect ranking is presented in **Appendix B.** A map of all the sidewalk defects collected is presented on **Figure 7-2** and **Figure 7-3**.

7.2.2 Proposed Existing Sidewalk Improvements

Based upon review of the sidewalk condition assessment described above, this IMP presents the priority sidewalks that should be considered for improvement as part of the capital plan, based on their degraded existing condition.

It is preferable to complete sidewalk repairs on entire segments or block lengths of sidewalks to provide a better economy of scale, and to maximize the number of sidewalks that can be replaced each year. However, this is not always possible, as the Town may need to address more localized sidewalk repairs or replacements to address sidewalk issues that pose a safety risk to the public.

The Town is encouraged to continue to employ sidewalk preservation and maintenance strategies such as grinding of trip hazards, mudjacking to correct settlement issues, and/or replace segments as the need arises to address safety issues such as public trip hazards, as these can pose a high-level of risk and liability for the Town if not addressed.

7.2.3 Future Sidewalk Upgrades

During the sidewalk assessment, it was observed that many of the Town's sidewalks are narrower than the desired sidewalk widths. According to the Transportation Association of Canada, sidewalks should be a minimum of 1.2m in width, measured from the back of the curb to the edge of the sidewalk to provide a comfortable width for two people to walk side-by-side. Many municipalities, however, have been moving towards adopting wider minimum sidewalk widths of 1.5 m to 1.8 m as this provides more comfortable widths for pedestrians, especially for those in wheelchairs, and those pushing strollers, wagons, or other such devices.

Wherever possible, the Town should consider installing wider sidewalks as part of the sidewalk replacement program to meet the current design guidelines and construction trends.

7.3 Other Transportation Considerations

Most municipalities in North America have already, or are beginning to, shift some of their transportation priorities away from vehicular considerations, and instead are promoting and investing in other modes of transportation such as walking, cycling, transit ridership, e-bikes, ride-sharing, and even focusing on future considerations such as autonomous vehicles. While a smaller community such as the Town of Claresholm is still very much dependent on vehicular travel, as the community looks ahead to its infrastructure needs in the future, there should be some consideration of investing in alternative modes of transportation. Some of these considerations are presented below.

7.3.1 Accessibility Improvements

During the assessment of existing sidewalk conditions, it was observed at several locations there were not accessibility ramps to sidewalks at intersections. In addition to the above section regarding sidewalk widths and increasing width to provide better accessibility, the Town's sidewalk replacement program should continue to include some funding for installation of accessibility ramps at all intersections. To assist the Town in planning and budgeting, the 10-year Capital Plan presented in **Section 9** of this IMP includes costs for accessibility ramps within the adjacent sidewalk segments.

Accessibility ramps should also include guidance for visually impaired persons, where feasible. Design features that provide guidance for the visually impaired include tooling of grooves in the ramp to provide directional guidance for the direction of the crossing. Detectable warning surfaces should also be considered in high pedestrian traffic areas to provide warning to the visually impaired that they are about to enter an intersection.

Another feature gaining much popularity in many municipalities is the implementation of pedestrian crossing flashers, or Rectangular Rapid Flashing Beacons (RRFBs) to improve accessibility at pedestrian crossings and to improve the safety for pedestrians crossing at higher volume crossing locations. RRFBs can be either hard-wired into an electrical power supply, or can be stand-alone, solar powered making them capable of being installed virtually anywhere throughout the Town's roadway network. RRFBs should be considered in the Town Centre, near schools, and at other locations where pedestrian crossing volumes are likely to be higher.

7.3.2 Pathways/Trails

Most of the recently developed trails and pathways throughout the Town, are located on or near the outskirts of Town or are adjacent to existing parks and recreation areas. Some recent examples are the Kin Trail west of 8 Street West, the access roads and trails around the new Stormwater Management Facility and Wetlands, and the paved trails along 8th Street West and near Centennial Park.

As the Town continues to grow, and develops and considers investment in alternative transportation modes, there should be increased focus on further development of a recreational trail network throughout the Town to provide non-vehicular links to popular destinations such as schools, sports fields, recreation facilities, and parks and to promote more active modes of transportation to encourage the health and wellness of residents and visitors.

7.3.3 Cycling Facilities

In addition to the pathway and trail network, and to encourage more active transportation through cycling, many municipalities are looking at implementing cycling facilities into their roadway network. Where there is not sufficient space to construct multi-use trails, the implementation of cycling lanes or other cycling infrastructure, can work well by separating cyclists from pedestrians and providing safer on-road facilities to protect them from adjacent vehicular traffic. Some examples of cycling facilities could include those described below:

7.3.3.1 Bicycle Facilities

These facilities are limited to bicycle use only.

- Shared roadway with limited, or no shoulder.
- Shared roadway with paved shoulder.
- Bike Lane: Delineated bicycle lane on or off the roadway, often protected with curbs, barriers, delineators or other means to separate the Bike lane from the adjacent travel lane. Bike Lanes can be one-way or two-way lanes if designed and protected appropriately.
- Supplemental Striping and Signage Treatments: In addition to the shared roadway and bike lane facilities, supplemental signage, and roadway treatments (striping, coloration, or texture) can be added to these facilities when warranted.

7.3.3.2 Share the Road

- Sharrow (i.e., a pavement marking that increases driver awareness of shared roadway arrangements)
- Signed Bicycle Route
- Bicycle Boulevard – Shared roadway, usually lower speed (30 km/h) with bicycles and vehicles sharing the same lanes
- Cycle Track – painted or delineated one-way bike lanes on the roadway

7.3.3.3 Shared Use Facilities

These facilities accommodate users of different modes on the same facility.

- Shared Use/Multi-Use Trail
- Mid-Block Crossing

7.3.4 Other Transportation Considerations

Other transportation considerations that may be important to consider as part of the future roadway network development are:

- Transit facilities
- E-bikes and scooters
- Ride Sharing and other on-demand transportation services
- Autonomous vehicles

At this time, these impacts are not considered as part of this IMP but should be considered as part of a future Transportation Master Plan.

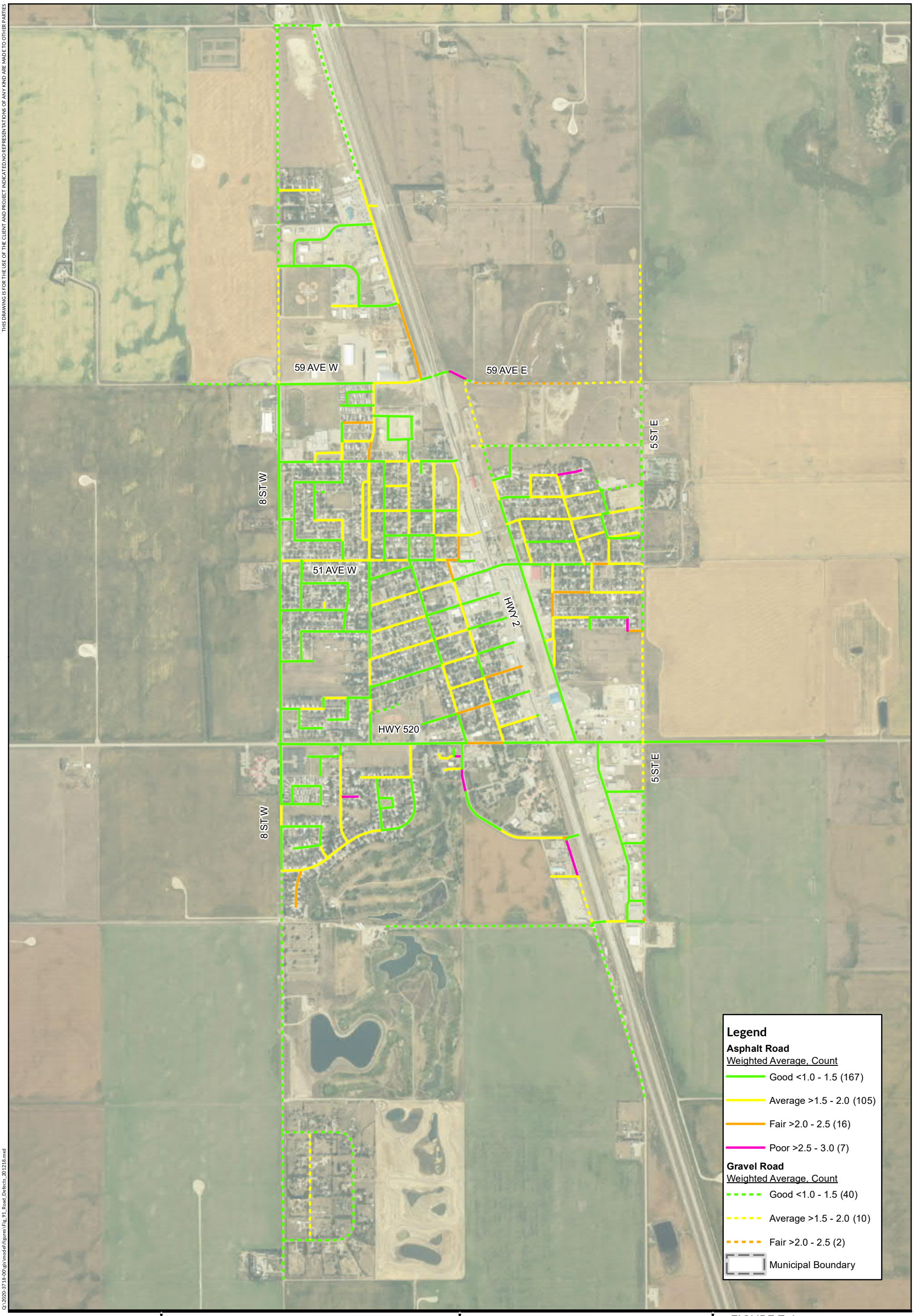
7.3.5 Intersection Improvements

Most of the Town's roadway network has intersections with low levels of traffic control, with only a few enhanced traffic control treatments at select locations. Examples of traffic controls and intersection treatments throughout the Town, are listed in the order from highest control to lowest below:

- Traffic Signals (e.g. at Hwy 2 and 50 Ave)
- 4-way stop control (e.g. at 49 Ave and 2 Street W)
- 2-way stop control (there are many of these intersection controls throughout Town as they are quite common)
- Yield control (e.g. at many of the residential and minor intersections found throughout Town)
- Uncontrolled (e.g. 48 Ave and 3 Street E)

As the Town continues to grow and develop, there may be intersections that need to be considered for enhanced intersection treatments. As volumes increase and intersections reach their design capacity they can be upgraded from their current treatment to the next higher control treatment, such as 2-way stop control to a 4-way stop control; or 4-way stop control to traffic signals or roundabout.

At this time, intersection improvements are not considered as part of this IMP but should be considered as part of a future Transportation Master Plan.



Associated Engineering

Claresholm

0 100 200 300 400 500 m

N

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:16,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	04
DESCRIPTION	ISSUED FOR INFORMATION
DRAWN BY	WL
CHECKED BY	EC

FIGURE 7-1
TRANSPORTATION
ROAD DEFECTS
(AVERAGE WEIGHTED SCALE)

Town of Claresholm
Infrastructure Master Plan

59 AVE W

59 AVE E

8 ST W

5 ST E

51 AVE W

HWY 2

HWY 520

Legend

Sidewalk Defects

Weighted Average, Count

- Good <1.0 – 1.5 (929)
- Average >1.5 – 2.0 (302)
- Fair >2.0 – 2.5 (69)
- Poor >2.5 – 3.0 (24)
- Failure >3.0 (2)
- Road
- Sidewalk

Associated Engineering

Claresholm

0 50 100 150 200 250 m

N

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:8,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR INFORMATION
DRAWN BY	WL
CHECKED BY	EC

FIGURE 7-2
TRANSPORTATION
SIDEWALK DEFECTS
(AVERAGE WEIGHTED SCALE)

Town of Claresholm
Infrastructure Master Plan

Q:\2020-3718-00\gis\mxd\figures\Fig_91_Sidewalk_Defects_201218.mxd

59 AVE W

59 AVE E

8 ST W

5 ST E

51 AVE W

HWY 2

HWY 520

Legend

MEAN_AVGSCALE

- Good <1.0 – 1.5 (236)
- Average >1.5 – 2.0 (79)
- Fair >2.0 – 2.5 (9)
- Poor >2.5 – 3.0 (1)
- Road

Associated Engineering

Claresholm

0 50 100 150 200 250 m

N

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:8,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR INFORMATION
DRAWN BY	WL
CHECKED BY	EC

FIGURE 7-3
TRANSPORTATION
SIDEWALK DEFECTS
(AVERAGE WEIGHTED SCALE)

Town of Claresholm
Infrastructure Master Plan

Q:\2020-3718-00\gis\mxd\figures\Fig_91_Sidewalk_Defects_Avg_201210.mxd

8 FACILITIES

The Town provided the following list of existing structures that were to be reviewed as part of the IMP. These facilities included:

- Amundsen Park Washrooms
- Animal Services Building
- Arena
- Centennial Park Washrooms
- Curling Rink
- Cold Storage Building
- Community Centre
- East Treated Water Reservoir
- Fire Hall
- Lagoon Lift Station
- Library
- Mackin Hall
- Museum Station Building
- Museum School House
- Museum Log Cabin
- Museum Exhibit Hall
- Seniors Drop-In Centre
- Town Shop
- Highway Pump Station
- Water Treatment Plant

The facility assessments were completed by Douglas Bergen & Associates Ltd. as a subconsultant to AE. Facility assessments were completed in May 2020, with a report submission summarizing the condition assessments submitted in August 2020. Table 8-1 summarizes the key issues and recommended improvements.

Table 8-1
General Condition Summary (by building)

Building	General Issues
Amundsen Park Washrooms	• H/C washroom stalls and sidewalks are not fully accessible
Animal Services Building	• H/C washroom stalls and entrance door are not fully accessible
Arena	• Exterior concrete block condition (breakage and moisture penetration) • Structural steel fire protection detachment • Structural steel connection above upper floor storage to be evaluated by Structural Engineer • High site grading at building exterior to top of floor slab • Mechanical equipment damage and corrosion (sump corrosion, mop sink corrosion, pipe insulation damage, radiant fin damage, duct tape failing, etc.) • Washroom deficiencies – shower fixtures and floor drains due for replacement, continuously running toilets, dated urinal flushing system, low mirror heights • Rubber base detaching or missing in multiple locations throughout building
Centennial Park Washrooms	• No significant issues
Curling Rink	• Water penetration at interior of roof truss to wall connections • Poor exterior soffit and flashings condition • Primary stair low headroom
Cold Storage Building	• No significant issues
Community Centre	• Gun range ceiling construction and cardboard wall cladding is a significant fire hazard and poorly constructed • Exterior metal cladding damage

Building	General Issues
	• Exterior door paint is in poor condition • West door thresholds daylight to exterior & exterior concrete landings in poor condition • Extensive cosmetic damage to floor and ceiling tiles • High site grading to top of floor slab
East Treated Water Reservoir	• Treated water leaking to sump (undetermined leak source) • Sealant failing at tank wall to tank roof connection • Superficial hairline cracking in concrete
Fire Hall	• High site grading at building perimeter (potential for ice damming & moisture penetration) • Paving imperfections • Mezzanine storage around furnace exhaust • Mezzanine stair & rail condition • Water damage at exhaust fans
Lagoon Lift Station	• Water penetration at north block wall
Library	• Cosmetic finishes on exterior wood brackets is wearing • Damaged fireplace vent on exterior • Interior vestibule door is binding • Minor drywall cracking on main floor • Sump cover corrosion • Damaged pipe elbows in storage room • Unsafe attic access hatch (no latch for open condition)
Mackin Hall	• Exterior finishes, interior drywall, overall electrical & lighting are all in generally poor condition
Museum Station Building	• Exterior sandstone cracking • West roof gable wall finishes in critical condition • Exterior paint finishes generally require attention • Significant bird dropping issues at wood brackets
Museum School House	• Exterior paint and skirting in poor condition / uneven paving stones in sidewalk
Museum Log Cabin	• Exterior finishes and roofing are worn, but are acceptably intact considering historical building purpose
Museum Exhibit Hall	• Overhead door floor seal incomplete • Cosmetic drywall, caulking and paint items
Seniors Drop-In Centre	• Crawlspace water damage at wood columns • Exterior doors in poor condition • Exterior stucco(localized), corner trims, vent covers, & rainwater leaders in poor condition • Exterior wood benches in unsafe condition • Operable window frames require refinishing • Minor electrical items (kitchen receptacles not GFI / light covers / replacement bulbs required) • Washroom accessibility • Fire rated doors required at storage room

Building	General Issues
Town Shop	• Exterior paint flaking from concrete block • Negative site grading towards building • Mezzanine rail and stair insecure and improper height • Overhead door seal damage • 2-ton chain hoist attachment to bottom chord of truss to be reviewed by structural engineer • Perimeter insulation at roof trusses missing at several locations
Highway Pump Station	• No significant issues

Costs for each of these items is provided within **Section 9**. It is our understanding that the Town has already corrected many of these issues at the inspected facilities. In order to provide consistency with the rest of the plan, we have included this complete list as part of the Capital Plan.

9 CAPITAL PLAN

9.1 Opinion of Probable Cost

This section presents "conceptual" opinion of probable cost estimates (-15% to +30%) for capital costs associated with the construction of the infrastructure required to meet the Town's level of service objectives as described in the previous sections. The opinion of probable costs are presented in 2021 dollars and include an allowance for contingency and engineering costs associated with the construction of the proposed capital improvements.

These factored levels of capital cost estimates can be considered realistic but conceptual. The costs presented in the following sections are intended to provide the Town with an order of magnitude opinion of probable cost for planning and budgeting purposes. No detailed specifications, geotechnical requirements, detailed site assessment, or construction drawings have been developed to obtain "preliminary design level" cost estimates.

9.1.1 Unit Cost Assumptions

The following unit costs were used as the basis to estimate the approximate capital costs (in 2021 dollars) for each of the servicing concepts. 30% is added to the overall costs to account for both engineering and contingency.

9.1.1.1 Transportation System

Table 9-1
Transportation System Costs

Description	Scope	Width	Cost
Local	Full	9	$2,389.50
Collector	Full	11	$3,987.50
Arterial	Full	13	$4,946.50
Local	Curb Only	9	$1,777.50
Local	No Concrete	9	$571.50
Collector	Curb Only	11	$2,227.50
Collector	No Concrete	11	$753.50
Arterial	Curb Only	13	$2,866.50
Arterial	No Concrete	13	$1,124.50
Typical Road	Full	9	$3,217.50
Typical Road	Curb Only	9	$1,777.50
Typical Road	No Concrete	9	$571.50
Square Meter Pavement	Trench Replacement	1	$56.65

Note:

1) The unit prices are intended to represent the overall per meter cost of a complete project including excavation and replacement of the full road structure, with and without concrete as described, coordination with other projects, and restoration of other impacts to private and public property. Land costs are not included in the price.

9.1.1.2 Water Distribution System

Table 9-2
Water Distribution System Costs

Pipe Size	Total Unit Cost (w/ Road Restoration)	Total Unit Cost (No Road Restoration)
200	$787.50	$525.00
250	$829.50	$567.00
300	$871.50	$609.00
350	$955.50	$693.00
400	$997.50	$735.00
450	$1,102.50	$840.00
500	$1,207.50	$945.00

Note:

1) The unit prices are intended to represent the overall per meter cost of a complete project including installation and removal of existing mains, relocation of existing utilities or other infrastructure, coordination with other projects, and restoration of other impacts to private and public property. Land costs are not included in the price.

9.1.1.3 Other Items

Table 9-3
Costs for Other Items

Description	Cost	Note
Fire Hydrants	$15,000/ea	The unit price for fire hydrants is intended to represent the overall unit cost of a complete installation including: hydrant lead, isolation valve, mainline connection, excavation, grading, erosion and sediment control, relocation of existing utilities or other infrastructure, restoration of surface works, coordination with other projects, and restoration of other impacts to private and public property. Land costs are not included in the price.

9.1.1.4 Sanitary Sewer System

Table 9-4
Gravity Sewers

Pipe Size	Total Unit Cost (w/ Road Restoration)	Total Unit Cost (No Road Restoration)	Total Unit Cost (Relining)
200	$1,017.50	$597.50	$220.00
250	$1,063.50	$643.50	$300.00
300	$1,109.50	$689.50	$350.00
375	$1,178.50	$758.50	$425.00
450	$1,247.50	$827.50	$500.00
525	$1,362.50	$942.50	$575.00
600	$1,487.50	$1,067.50	$650.00
675	$1,602.50	$1,182.50	$725.00
750	$1,717.50	$1,297.50	$800.00
900	$1,947.50	$1,527.50	$950.00

Note:

1) The unit prices are intended to represent the overall per meter cost of a complete project including installation and removal of existing mains, relocation of existing utilities or other infrastructure, coordination with other projects, and restoration of other impacts to private and public property. Land costs are not included in the price.

9.1.1.5 Stormwater Management

Table 9-5
Gravity Sewers

Pipe Size	Total Unit Cost (w/ Road Restoration)	Total Unit Cost (No Road Restoration)	Total Unit Cost (Relining)
250	$864.00	$444.00	$250.00
300	$956.00	$536.00	$300.00
375	$1,163.00	$743.00	$375.00
450	$1,347.00	$927.00	$450.00
525	$1,439.00	$1,019.00	$525.00
600	$1,614.83	$1,194.83	$600.00
675	$1,761.83	$1,341.83	$675.00
750	$1,859.83	$1,439.83	$750.00
900	$2,031.33	$1,611.33	$900.00
1050	$2,178.33	$1,758.33	$1,050.00
1200	$2,913.33	$2,493.33	$1,200.00
1350	$3,648.33	$3,228.33	$1,350.00
1500	$4,138.33	$3,718.33	$1,500.00
1650	$4,628.33	$4,208.33	$1,650.00
1800	$5,363.33	$4,943.33	$1,800.00
2100	$6,098.33	$5,678.33	$2,100.00

Note:

1) The unit prices are intended to represent the overall per meter cost of a complete project including installation and removal of existing mains, relocation of existing utilities or other infrastructure, coordination with other projects, and restoration of other impacts to private and public property. Land costs are not included in the price.

9.1.1.6 Other Items

Description	Cost	Note
Ditches	$70 / metre	The unit price for ditches is intended to represent the overall per meter cost of a complete project including excavation, grading, erosion and sediment control, bank protection, relocation of existing utilities or other infrastructure, restoration of surface works, coordination with other projects, and restoration of other impacts to private and public property. Land costs are not included in the price.
Dry Storm Ponds	$50 /$m^3$	The unit price for dry ponds is intended to represent the overall per cubic meter cost of a complete project including: excavation, grading, inlet and outlet structures, storm mains, erosion and sediment control, bank protection, relocation of existing utilities or other infrastructure, coordination with other projects, and restoration of other impacts to private and public property. Land costs are not included in the price.
Wet Storm Ponds	$25 /$m^3$	The unit price for wet ponds is intended to represent the overall per cubic meter cost of a complete project including: excavation, grading, inlet and outlet structures, storm mains, erosion and sediment control, bank protection, relocation of existing utilities or other infrastructure, coordination with other projects, and restoration of other impacts to private and public property. Land costs are not included in the price.

9.2 Project Prioritization

High Priority (1 to 5 Years)

High priority projects address an immediate need, or, mitigate significant risks in the existing system. These risks may be flooding, water in basement, fire protection problems, or infrastructure including roads that may fail and require full replacement. In cases where growth and development are the driving force, priority projects are driven by the timeline of development. Priorities for growth projects are fluid and can change quickly.

Medium Priority (6 to 10 Years)

Medium priority projects address a longer-term need, or, mitigate moderate risks in the existing system. These risks may be infrequent flooding, sewers over the rated capacity, water mains experiencing high head loss during peak times or during a fire event, or infrastructure including roads where pavement conditions have deteriorated to a point where work is required. In cases where growth and development are the driving force, priority projects are driven by the timeline of development. Priorities for growth projects are fluid and can change quickly.

Low Priority (> 10 Years)

Low priority projects address a need that require additional observation or study to determine the level of risk that warrants implementation. These risks may be predicted flooding, sewers predicted to be over the rated capacity, water mains experiencing high head loss during peak times or during a fire event, or infrastructure including roads where pavement conditions are predicted to deteriorate. In cases where growth and development are the driving force, priority projects are driven by the timeline of development. Priorities for growth projects are fluid and can change quickly.

No Immediate Need

This priority is for rehabilitation projects that are not expected to be required in the next 80 years.

Growth Only

These projects are required to support new development in the Town. In cases where growth and development are the driving force, priority projects are driven by the timeline of development. Priorities for growth projects are fluid and can change quickly. Project timelines are defined by the proposed development triggers shown on Figure 9-1.

9.2.1 Water Distribution

The recommended improvements were prioritized based on the assessment of the existing and future systems as represented in Section 4. Projects are sorted by relative priority and proposed timeframe of implementation. Figure 9-2 shows the water distribution system priorities.

9.2.1.1 Rehabilitation Projects

Rehabilitation projects are shown for consideration when developing annual road rehabilitation programs. The projects listed below represent "high risk" water main that falls within the scope of road projects that may be implemented over the course of this plan.

Table 9-6
Rehabilitation Projects

Location	Road Segment	Existing Size	New Size	Completed with Road Project[1]
Westrose Drive (Westlynn Dr to Wildrose Dr)	RDWD195931	150 mm	200 mm	$81,000
Westrose Drive (Cul-De Sac)	RDWD396514	150 mm	200 mm	$35,000
Willow Place	RD4S396528	150	200	$29,000
4 Street East	RD50A153585	150	200	$5,000
6 Street West	RD4S65032	150	200	$67,000
4 Street West	RD53A281150	150	200	$77,000
56 Avenue West	RD52A118665	150	200	$50,000
54 Avenue East	RD50A310028	200	200	$79,000
Westlynn Drive	RD50A91832	150	200	$87,000
50 Avenue East	RD2S342387	150	200	$2,000
53 Avenue East	RD3S25033	200	200	$52,000
46 Avenue West	RD51A135768	150	200	$66,000
2A Street East	RD47A406509	150	200	$83,000
Columbia Drive	RD49A109962	150	200	$144,000

Note:

1) This cost reflects the project costs for pipe installation only, road replacement and other costs would be accounted for in the overall cost of the project.
2) This cost reflects the project costs for pipe installation and includes road restoration for the anticipated excavation.

9.2.1.2 Capacity Upgrades

Table 9-7
High Priority (0 to 5 Years)

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
W5	Division Ave to 2 St E Connector	$295,000	$431,000	-
W2	Hwy Reservoir Distribution	$342,000	$491,000	50%
W3	Hwy 2 Looping	$266,000	$388,000	-
W6	41 Ave E Looping	$29,000	$42,000	50%
W7	42 Ave E Looping	$9,000	$13,000	50%
W8	5 St E Looping Ph 4	$443,000	$634,000	90%
W10	5 St E Looping Ph 3	$538,000	$772,000	90%
W1	520 Looping	$182,000	$266,000	-
W9	3st to 5st Looping	$115,000	$169,000	50%
W4	Hydrant Spacing	$195,000	$260,000	-

Table 9-8
Medium Priority (5 to 10 Years)

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
W11	1 St W Looping	$250,000	$365,000	-
W13	3 St West Looping	$235,000	$353,000	50%
W12	2 St E Looping	$274,000	$400,000	50%
W14	53 Ave W Looping	$31,000	$46,000	-
WG1	Reservoir Option 1	$8,216,000		80%
	Reservoir and Pump Station Only	$8,000,000		
	Reservoir Fill Main 1	$29,000	$41,000	
	Reservoir Distribution Upgrades	$187,000	$268,000	
WG2	Reservoir Option 2	$8,468,000		80%
	Reservoir and Pump Station Only	$8,000,000		
	Reservoir Fill Main 1	$314,000	$432,000	
	Reservoir Distribution Upgrades	$154,000	$220,000	
WG5	New Reservoir Fill	$979,000	$1,401,000	100%

Note:

1) Add Project WG5 for Estimated Full Project Cost

Table 9-9
Low Priority (10 to 20 Years)

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
W15A	Mountain View Upgrades Ph 1	$621,000	$932,000	-
W15B	Mountain View Upgrades Ph 2	$465,000	$697,000	-

Growth projects or projects whose priority falls outside of the planning horizon are shown on **Table 9-10.** These projects are *not* shown on **Figure 9-2**.

Table 9-10
Growth Projects

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
WG3	5 St E Looping Ph 1	$438,000	$627,000	100%
WG4	Columbia Dr Looping	$661,000	$946,000	100%
WG6	Reservoir Fill Upgrade	$798,000	$1,142,000	100%
WG7	8 St Distribution	$422,000	$603,000	100%
WG8	5 St E Looping Ph 2	$334,000	$478,000	100%
WG9	Reservoir Replacement and Upgrades	$4,000,000		100%

Note:

1) This cost reflects the project costs for pipe installation only, road replacement and other costs would be accounted for in the overall cost of the project.
2) This cost reflects the project costs for pipe installation and includes road restoration for the anticipated excavation.

9.2.2 Sanitary Collection

The recommended improvements were prioritized based on the assessment of the existing and future systems as presented in **Section 5**. Projects are sorted by relative priority and proposed year of implementation. **Figure 9-3** shows the sanitary sewer collection system priorities.

9.2.2.1 Rehabilitation Projects

Rehabilitation projects are shown for consideration when developing annual road rehabilitation programs. The projects listed below represent “high risk” sanitary main that falls within the scope of road projects that may be implemented over the course of this plan. Additional locations have been identified that should be considered critical infrastructure as they either have significant service area (i.e. 2 St E) or they are located under significant roadways where the consequence of failure is significant (i.e. Hwy 2.)

Table 9-11
Rehabilitation Projects

Location	Rational	Road Segment	Trenchless Rehabilitation	Completed with Road Project[1]	Completed Alone[2]
2 St E, 43 Ave E to 50 Ave E	Critical	RD2S179399 RD2S330268 RD2S88879	$319,000	$600,000	$950,000
43 Ave W, 3 St W to 2 St E	Critical	RD43A99144	$213,000	$380,000	$590,000
Hwy 2, 50 Ave W to 55 Ave W	Critical		$94,000	$253,000	$431,000
Willow Place	Road Project	RD4S396528	$23,000	$9,000	$40,000
Chinook Crescent	Road Project	RD2S26082	$59,000	$22,000	$100,000
4 Street East	Road Project	RD50A153585	$38,000	$14,000	$65,000
2 Street West	Road Project	RD51A269014	$32,000	$12,000	$54,000
50 Avenue East	Road Project	RD45A241361	$97,000	$36,000	$165,000
1a Street West	Road Project	RD2AS66465	$69,000	$26,000	$116,000
Link Spur	Road Project	RD4S308167	$26,000	$10,000	$45,000
1a Street West	Road Project	RD43A307509	$55,000	$21,000	$94,000
3 Street West	Road Project	RD49A93815	$82,000	$31,000	$139,000
43 Avenue West	Road Project	RD46A136089	$89,000	$33,000	$150,000
49 Avenue East	Road Project	RD57A92161	$44,000	$16,000	$74,000
Alberta Road	Road Project	RD48A149128	$50,000	$19,000	$85,000
47 Avenue East	Road Project	RD2AS298689	$78,000	$29,000	$132,000
48 Avenue East	Road Project	RD6S257368	$21,000	$10,000	$35,000
6 Street West	Road Project	RD4S65032	$86,000	$32,000	$147,000
4 Street West	Road Project	RD53A281150	$89,000	$33,000	$152,000
4 Street West	Road Project	RD51A389321	$42,000	$16,000	$71,000
51 Avenue West	Road Project	RD56A123923	$80,000	$30,000	$135,000
56 Avenue West	Road Project	RD52A118665	$20,000	$8,000	$33,000
54 Avenue East	Road Project	RD50A310028	$25,000	$9,000	$42,000
Westlynn Drive	Road Project	RD50A91832	$97,000	$36,000	$165,000
50 Avenue East	Road Project	RD2S342387	$70,000	$26,000	$118,000
2 Street West	Road Project	RD49A173047	$82,000	$31,000	$140,000

Location	Rational	Road Segment	Trenchless Rehabilitation	Completed with Road Project[1]	Completed Alone[2]
49 Avenue East	Road Project	RD53A261181	$44,000	$16,000	$74,000
1A Street West	Road Project	RD51A154089	$68,000	$25,000	$115,000
51 Avenue West	Road Project	RD55A381910	$34,000	$13,000	$57,000
3 Street East	Road Project	RD46A115466	$96,000	$36,000	$164,000
55 Avenue West	Road Project	RD2S289166	$70,000	$26,000	$118,000
46 Avenue West	Road Project	RD51A135768	$84,000	$31,000	$143,000
2 Street West	Road Project	RD2AS231218	$57,000	$21,000	$96,000
2A Street East	Road Project	RD47A406509	$97,000	$36,000	$164,000
4 Street West	Road Project	RD52A61046	$10,000	$4,000	$17,000
52 Avenue East	Road Project	RD5S250897	$54,000	$20,000	$92,000

9.2.2.2 Capacity Upgrades

Table 9-12
High Priority (0 to 5 Years)

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
S1	North Industrial	$243,000	$389,000	50%

Table 9-13
Medium Priority (5 to 10 Years)

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
S2	8 St Upgrade Phase 1	$474,000	$714,000	80%

Growth projects or projects whose priority falls outside of the planning horizon are shown on Table 9-14. Not all are shown on Figure 9-3.

Table 9-14
Growth Projects

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
SG1	East Boundary Phase 1	$662,000	$998,000	100%
SG2	East Boundary Phase 2	$671,000	$1,011,000	100%
SG3	East Boundary Phase 3	$608,000	$944,000	100%
SG4	East Boundary Phase 4	$559,000	$899,000	100%

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
SG5	8 St Upgrade Phase 2	$695,000	$1,047,000	100%
SG6	8 St Upgrade Phase 3	$1,460,000	$2,151,000	100%
SG6	East Boundary Phase 1a	$1,460,000	$2,151,000	100%
SG7	53 Ave E Extension	$108,000	$183,000	100%

Note:

1) This cost reflects the project costs for pipe installation only, road replacement and other costs would be accounted for in the overall cost of the project.
2) This cost reflects the project costs for pipe installation and includes road restoration for the anticipated excavation.

9.2.3 Stormwater Management

The recommended improvements were prioritized based on the assessment of the existing and future systems as presented in Section 6. Projects are sorted by relative priority and proposed year of implementation. Figure 9-4 shows the stormwater management system priorities.

9.2.3.1 Capacity Upgrades

Table 9-15
High Priority (0 to 5 Years)

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
ST1	Centennial Park Ditch Upgrade	$72,000	$72,000	-
ST2	Main Outfall Upgrade	$1,004,000	$1,090,000	-
ST3	Main Storm Trunk Upgrade	$3,195,000	$3,537,000	-

Table 9-16
Medium Priority (5 to 10 Years)

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
ST4	1A St W Storm Trunk	$497,000	$638,000	-
ST5	51 Ave W Storm Trunk	$992,000	$1,207,000	-
ST6	4 St W Storm Trunk	$2,633,000	$3,183,000	-
ST7	46 AVE W PS Review and Upgrades	$130,000	$130,000	-
ST8	East Trunk Upgrade Ph. 1	$1,113,000	$1,224,000	-

Table 9-17
Low Priority (10 to 20 Years)

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
ST9	WestLynn Dr Outlet Upgrade	$100,000	$100,000	-
ST10	Westlynn Dr Outlet Upgrades	$258,000	$258,000	-
ST12	East Trunk Upgrade Ph. 2	$2,811,000	$3,159,000	-

Growth projects or projects whose priority falls outside of the planning horizon are shown on **Table 9-18**. These projects are *not* shown on **Figure 9-2**.

Table 9-18
Growth Projects

ID	Name	Completed with Road Project[1]	Completed Alone[2]	Development Share
STG1	Starline Offsite Ditch	$295,000	$295,000	100%
STG2	North East Pond	$390,000	$390,000	100%
STG3	East Basin Bypass	$934,000	$966,000	100%
STG4	Division Avenue Pond	$490,000	$490,000	100%

Note:

1) This cost reflects the project costs for pipe installation only, road replacement and other costs would be accounted for in the overall cost of the project.
2) This cost reflects the project costs for pipe installation and includes road restoration for the anticipated excavation.

9.2.4 Transportation

The recommended improvements within the transportation network were prioritized based on the assessment of existing conditions, presented in **Section 7**. Projects have been divided into their relative composition in the same way their existing conditions were assessed, as follows.

9.2.4.1 Paved Roads

Existing paved roads require ongoing maintenance to preserve pavement life and to provide reasonable level of service. As such, we have prioritized maintenance of existing paved roads, based on the condition assessments that were completed, and ranked those road segments with the most degradation, or poorest condition as those to be rehabilitated first. The goal we set with the 10-year Capital Improvement Program for Paved Roads, is to address and rehabilitate all roads that have a total condition score higher than 1.80, or those currently ranked as Poor, Fair and most of the Average roads over the next 10 years. This works out to an average of 6 roadway segments to be rehabilitated each year.

The proposed 10-year Capital Program is summarized in **Table 9-19** and shown graphically on **Figure 9-5A**.

Table 9-19
Paved Roads Capital Plan

Year	Name	Road Segment	Asset ID	Capital Cost	Annual Capital Cost
2022	PR 1	54 Avenue East	RD54A246070	$94,186.94	**$607,499.81**
	PR 2	1 Street West	RD1S9758	$173,225.69	
	PR 3	3 Street West	RD3S258713	$97,385.17	
	PR 4	Willow Place	RDWP344648	$57,017.19	
	PR 5	Chinook Crescent	RDCC52593	$30,406.18	
	PR 6	4 Street East	RD4S396528	$59,798.98	
	PR 7	2 Street West	RD2S26082	$95,479.67	
2023	PR 8	50 Avenue East	RD50A153585	$64,265.89	**$701,426.23**
	PR 9	51 Avenue West	RD51A269014	$43,986.27	
	PR 10	45 Avenue West	RD45A241361	$132,946.51	
	PR 11	1a Street West	RD1AS318807	$119,581.75	
	PR 12	Link Spur	RDLS358643	$152,505.93	
	PR 13	2A Street East	RD2AS66465	$104,529.77	
	PR 14	4 Street West	RD4S308167	$83,610.12	
2024	PR 15	1a Street West	RD1AS334064	$10,632.95	**$609,414.47**
	PR 16	3 Street West	RD3S280719	$19,049.61	
	PR 17	43 Avenue West	RD43A307509	$152,879.83	
	PR 18	49 Avenue East	RD49A93815	$174,404.58	
	PR 19	46 Avenue West	RD46A136089	$133,177.54	
	PR 20	57 Avenue West	RD57A92161	$119,269.97	
2025	PR 21	Alberta Road	RDAR130377	$272,335.99	**$766,753.06**
	PR 22	Alberta Road	RDAR272049	$281,002.21	
	PR 23	Alberta Road	RDAR35643	$125,311.82	

Year	Name	Road Segment	Asset ID	Capital Cost	Annual Capital Cost
	PR 24	Alberta Road	RDAR400983	$88,103.04	
2026	PR 25	47 Avenue East	RD47A326243	$44,510.95	**$563,995.29**
	PR 26	48 Avenue East	RD48A149128	$137,868.27	
	PR 27	2A Street East	RD2AS298689	$104,103.08	
	PR 28	6 Street West	RD6S257368	$22,543.66	
	PR 29	Chinook Crescent	RDCC228150	$76,506.54	
	PR 30	4 Street West	RD4S65032	$121,229.62	
	PR 31	4 Street West	RD4S188400	$57,233.17	
2027	PR 32	53 Avenue East	RD53A281150	$122,002.88	**$661,852.04**
	PR 33	51 Avenue West	RD51A389321	$153,927.76	
	PR 34	3 Street East	RD3S308642	$106,038.03	
	PR 35	56 Avenue West	RD56A123923	$120,356.85	
	PR 36	2 Street West	RD2S64873	$71,840.15	
	PR 37	52 Avenue West	RD52A118665	$87,686.37	
2028	PR 38	Westlynn Drive	RDWD401058	$71,646.75	**$664,109.16**
	PR 39	54 Avenue East	RD54A165479	$97,130.64	
	PR 40	Westlynn Drive	RDWD215951	$123,302.14	
	PR 41	50 Avenue East	RD50A310028	$124,033.34	
	PR 42	50 Avenue West	RD50A91832	$134,174.20	
	PR 43	2 Street West	RD2S342387	$113,822.08	
2029	PR 44	Unnamed Road	RDXX241008	$152,032.75	**$777,661.60**
	PR 45	49 Avenue East	RD49A173047	$191,173.36	
	PR 46	1A Street West	RD1AS367995	$108,962.92	
	PR 47	53 Avenue East	RD53A261181	$143,303.84	

Year	Name	Road Segment	Asset ID	Capital Cost	Annual Capital Cost
	PR 48	51 Avenue West	RD51A154089	$99,147.36	
	PR 49	3 Street East	RD3S25033	$83,041.36	
2030	PR 50	55 Avenue West	RD55A381910	$54,918.97	**$476,871.47**
	PR 51	46 Avenue West	RD46A115466	$133,707.96	
	PR 52	2 Street West	RD2S289166	$106,124.61	
	PR 53	51 Avenue East	RD51A135768	$72,053.85	
	PR 54	2A Street East	RD2AS231218	$79,020.74	
	PR 55	4 Street West	RD4S365647	$31,045.34	
2031	PR 56	47 Avenue West	RD47A406509	$133,940.81	**$789,229.75**
	PR 57	52 Avenue East	RD52A61046	$172,151.34	
	PR 58	Columbia Drive	RDCD63484	$111,408.54	
	PR 59	5 Street West	RD5S250897	$81,710.35	
	PR 60	49 Avenue West	RD49A109962	$202,459.14	
	PR 61	3 Street East	RD3S173921	$87,559.57	
2032	PR 62	46 Avenue West	RD46A253174	$117,363.65	**$821,759.13**
	PR 63	51 Avenue East	RD51A3979	$74,177.53	
	PR 64	4 Street West	RD4S93516	$107,582.34	
	PR 65	4 Street West	RD4S391419	$235,537.88	
	PR 66	2 Street West	RD2S330815	$92,608.13	
	PR 67	3 Street West	RD3S311246	$92,598.86	
	PR 68	3 Street West	RD3S35636	$101,890.74	

9.2.4.2 Gravel Roads

Existing gravel roads require ongoing maintenance to provide reasonable level of service, particularly in spring and early summer each year when frost comes out of the ground from the winter. The Town of Claresholm has oiled and compacted many of the gravel roads providing better dust control, and much more durability and longevity for these gravel roads. We have included all of the existing gravel roads within the maintenance plan over a 6 year cycle, so that these maintenance costs are carried forward in the 10-year Capital Improvement Plan. At year 7, the cycle would repeat and carry on until year 12, and so on. The intent with this plan, is that all existing gravel roads will require maintenance until they are upgraded, at which point those roads would transition from the gravel road maintenance list to the paved roads list.

As part of the 10-year Capital Improvement Plan, we have identified separately the gravel roads that are planned to be upgraded in the future as paved Collector Roads. The roads identified as Municipal upgrades have also been identified separately from those driven by growth and development. The intent with the growth-related upgrades, is that the road upgrade costs can included in or shared with the costs of the adjacent development. Often these types of road upgrades can be included in off-site levies collected as adjacent parcels of land are developed, to help pay for municipal infrastructure upgrades to service the development lands. Due to the uncertain nature of how quickly development will take place within Claresholm, we have not attributed years for the growth and development-driven gravel road upgrades. These have been listed as individual road segments (corresponding to GIS attributes) with calculated values for the upgrades so that they can be factored in or included in the adjacent development costs.

The existing gravel roads maintenance plan is summarized in **Table 9-20** and presented graphically in **Figure 9-5B**. The proposed 10-year Capital Program for gravel road upgrades is summarized in **Table 9-21 and 9-22** and presented graphically in **Figure 9-5C**.

Table 9-20
Gravel Road Maintenance Capital Plan

Year	Name	Road Segment	Asset ID	Capital Cost	Annual Capital Cost
2022/2028	GR 1	5 Street East	RD5S136468	$2,000.00	**$210,000.00**
	GR 2	5 Street East	RD5S130488	$41,000.00	
	GR 3	5 Street East	RD5S101042	$11,000.00	
	GR 4	5 Street East	RD5S333229	$21,000.00	
	GR 5	5 Street East	RD5S233850	$21,000.00	
	GR 6	5 Street East	RD5S109032	$15,000.00	
	GR 7	5 Street East	RD5S177808	$23,000.00	
	GR 8	5 Street East	RD5S345917	$9,000.00	
	GR 9	5 Street East	RD5S411461	$14,000.00	
	GR 10	5 Street East	RD5S22415	$22,000.00	
	GR 11	5 Street East	RD5S313092	$24,000.00	

Year	Name		Road Segment	Asset ID	Capital Cost	Annual Capital Cost
	GR	12	5 Street East	RD5S271551	$7,000.00	
2023/2029	GR	13	1 Street West	RD1S262763	$30,000.00	**$306,000.00**
	GR	14	2 Street East	RD2S80216	$39,000.00	
	GR	15	Mountain View Crescent	RDMVC148167	$66,000.00	
	GR	16	2 Street East	RD2S116103	$2,000.00	
	GR	17	Mountain View Crescent	RDMVC250430	$62,000.00	
	GR	18	Mountain View Crescent	RDMVC393568	$62,000.00	
	GR	19	Saddle Mountain Road	RDSMR334374	$45,000.00	
2024/2030	GR	20	8 Street West	RD8S322479	$56,000.00	**$267,000.00**
	GR	21	8 Street West	RD8S337388	$17,000.00	
	GR	22	8 Street West	RD8S157130	$123,000.00	
	GR	23	8 Street West	RD8S172620	$24,000.00	
	GR	24	8 Street West	RD8S256733	$24,000.00	
	GR	25	8 Street West	RD8S371274	$23,000.00	
2025/2031	GR	26	8 Street West	RD8S21104	$20,000.00	**$268,000.00**
	GR	27	8 Street West	RD8S304930	$78,000.00	
	GR	28	8 Street West	RD8S51007	$27,000.00	
	GR	29	8 Street West	RD8S256812	$19,000.00	
	GR	30	8 Street West	RD8S120156	$51,000.00	
	GR	31	8 Street West	RD8S251730	$37,000.00	
	GR	32	8 Street West	RD8S93997	$36,000.00	
2026/2032	GR	33	Division Avenue	RDDA408475	$44,000.00	**$323,000.00**
	GR	34	Division Avenue	RDDA234793	$27,000.00	
	GR	35	Range Road 271	RD271RR74965	$43,000.00	

Year	Name		Road Segment	Asset ID	Capital Cost	Annual Capital Cost
	GR	36	Golf Course Road	RDGCD237910	$77,000.00	
	GR	37	59 Avenue West	RD59A345044	$34,000.00	
	GR	38	Range Road 271	RD271RR112973	$95,000.00	
	GR	39	Division Avenue	RDDA185183	$3,000.00	
2027/2033	GR	40	Unnamed Road	RDXX189007	$10,000.00	**$263,000.00**
	GR	41	Unnamed Road	RDXX123473	$37,000.00	
	GR	42	Township Road 130	RD130TR250467	$5,000.00	
	GR	43	Patterson Heights Boulevard	RDPHB248141	$12,000.00	
	GR	44	Patterson Heights Boulevard	RDPHB391007	$9,000.00	
	GR	45	Patterson Heights Boulevard	RDPHB65551	$9,000.00	
	GR	46	Patterson Heights Boulevard	RDPHB307037	$19,000.00	
	GR	47	Alberta Road	RDAR35643	$109,000.00	
	GR	48	Patterson Heights Boulevard	RDPHB195897	$9,000.00	
	GR	49	Township Road 130	RD130TR312003	$17,000.00	
	GR	50	Patterson Heights Boulevard	RDPHB45914	$10,000.00	
	GR	51	4 Street East	RD4S70873	$15,000.00	
	GR	52	Unnamed Road	RDXX122147	$2,000.00	

Table 9-21
Gravel Road Municipal Upgrades Capital Plan

Year	Name		Road Segment	Asset ID	Capital Cost	Annual Capital Cost
2028	GRUP	1	2 Street East	RD2S80216	$450,000.00	**$450,000.00**
2030	GRUP	2	Mountain View Crescent	RDMVC148167	$1,210,021.21	**$2,059,602.51**
2030	GRUP	3	Mountain View Crescent	RDMVC250430	$61,438.01	
2030	GRUP	4	Mountain View Crescent	RDMVC393568	$61,143.29	
2030	GRUP	5	Saddle Mountain Road	RDSMR334374	$727,000.00	

Table 9-22
Gravel Road Growth/Development Driven Upgrades

Name		Road Segment	Asset ID	Capital Cost
GRUP-G	1	1 Street West	RD1S262763	$324,000.00
GRUP-G	2	5 Street East	RD5S27203	$13,000.00
GRUP-G	3	Division Avenue	RDDA17423	$6,000.00
GRUP-G	4	Patterson Heights Boulevard	RDPHB121645	$27,000.00
GRUP-G	5	Unnamed Road	RDXX189007	$206,000.00
GRUP-G	6	Patterson Heights Boulevard	RDPHB307037	$307,000.00
GRUP-G	7	Patterson Heights Boulevard	RDPHB45914	$159,000.00
GRUP-G	8	5 Street East	RD5S136468	$29,000.00
GRUP-G	9	5 Street East	RD5S333229	$334,000.00
GRUP-G	10	5 Street East	RD5S271551	$111,000.00
GRUP-G	11	5 Street East	RD5S130488	$748,000.00
GRUP-G	12	5 Street East	RD5S101042	$195,000.00
GRUP-G	13	8 Street West	RD8S172620	$334,000.00
GRUP-G	14	Alberta Road	RDAR35643	$1,080,000.00
GRUP-G	15	5 Street East	RD5S233850	$380,000.00
GRUP-G	16	5 Street East	RD5S109032	$262,000.00
GRUP-G	17	5 Street East	RD5S177808	$424,000.00
GRUP-G	18	8 Street West	RD8S322479	$795,000.00
GRUP-G	19	8 Street West	RD8S304930	$1,110,000.00
GRUP-G	20	Division Avenue	RDDA234793	$436,000.00
GRUP-G	21	8 Street West	RD8S51007	$386,000.00
GRUP-G	22	8 Street West	RD8S251730	$524,000.00
GRUP-G	23	8 Street West	RD8S157130	$1,759,000.00
GRUP-G	24	8 Street West	RD8S337388	$237,000.00
GRUP-G	25	8 Street West	RD8S120156	$726,000.00
GRUP-G	26	8 Street West	RD8S256733	$344,000.00

Name		Road Segment	Asset ID	Capital Cost
GRUP-G	27	8 Street West	RD8S21104	$279,000.00
GRUP-G	28	8 Street West	RD8S256812	$273,000.00
GRUP-G	29	Range Road 271	RD271RR74965	$784,000.00
GRUP-G	30	Township Road 130	RD130TR250467	$85,000.00
GRUP-G	31	Township Road 130	RD130TR312003	$234,000.00

9.2.4.3 Sidewalks

Existing sidewalks through the Town of Claresholm require ongoing maintenance to replace cracked or broken segments of sidewalks or to address differential settlement or other conditions that could cause trip hazards and other safety concerns for residents. As such, we have prioritized maintenance of existing sidewalks, based on the condition assessments that were completed, and ranked those sidewalk segments with the most degradation, or poorest condition as those to be rehabilitated first. We have also included costs for Accessibility Ramps to be replaced or installed within the sidewalk segment costs. The goal we set with the 10-year Capital Improvement Program for Sidewalks, is to address and replace all sidewalks that have a total condition score higher than 1.40, or all those currently ranked as Poor, Fair or Average condition over the next 10 years. This works out to an average of 8-10 sidewalk segments to be replaced each year. The proposed 10-year Capital Program is summarized in **Table 9-23** below and shown graphically in **Figure 9-6**.

Table 9-23
Sidewalks Capital Plan

Year	Name		Road Segment	Asset ID	Capital Cost	Annual Capital Cost
2022	SW	1	4 Street West	SW5S26333	$11,400.00	$148,900.00
	SW	2	5 Street West	SW1AS373636	$11,900.00	
	SW	3	1 Street SW/Highway 2	SWS1A5620	$7,200.00	
	SW	4	55 Avenue West	SW53A236478	$9,000.00	
	SW	5	48 Avenue East	SW8S256733	$12,300.00	
	SW	6	2A Street East	SW5S169402	$20,700.00	
	SW	7	2A Street East	SW53A145741	$14,100.00	
	SW	8	Skyline Mews	SW3S318216	$28,200.00	
	SW	9	4 Street West	SWS2S78306	$13,900.00	
	SW	10	Westrose Avenue	SW4S308167	$11,600.00	
	SW	11	Westlynn Spur	SW55A310002	$8,600.00	

Year	Name		Road Segment	Asset ID	Capital Cost	Annual Capital Cost
2023	SW	12	48 Avenue West	SW7S203631	$8,300.00	$156,400.00
	SW	13	46 Avenue West	SW8S326743	$23,500.00	
	SW	14	1 Street SW/Highway 2	SWWD224910	$25,100.00	
	SW	15	2 Street East	SW51A154089	$16,300.00	
	SW	16	3 Street West	SW7S195983	$15,300.00	
	SW	17	2 Street West	SW2S64873	$8,700.00	
	SW	18	8 Street West	SW52A332624	$14,100.00	
	SW	19	43 Avenue West	SW1S318812	$6,400.00	
	SW	20	3 Street West	SW3S389492	$17,200.00	
	SW	21	Harvest Square	SWWD344654	$21,500.00	
2024	SW	22	44 Avenue West	SW49A93816	$49,500.00	$162,900.00
	SW	23	2 Street West	SWWC149354	$19,000.00	
	SW	24	43 Avenue West	SW2SE	$14,400.00	
	SW	25	8 Street West	SW52A118665	$11,300.00	
	SW	26	51 Avenue West	SW4S391419	$10,200.00	
	SW	27	48 Avenue West	SW6S18236	$15,400.00	
	SW	28	48 Avenue West	SW5S389669	$12,100.00	
	SW	29	48 Avenue East	SW5S383616	$10,300.00	
	SW	30	1 Street SW/Highway 2	SW4S16835	$11,700.00	
	SW	31	1 Street SW/Highway 2	SW50AA322843	$9,000.00	
2025	SW	32	55 Avenue West	SWCC228150	$13,700.00	$178,000.00
	SW	33	50 Avenue West	SW51A110101	$13,800.00	
	SW	34	46 Avenue West	SWWR119138	$7,800.00	
	SW	35	3 Street West	SW8S337388	$18,600.00	
	SW	36	4 Street West	SW2S141054	$18,600.00	
	SW	37	48 Avenue West	SW44A236954	$16,300.00	
	SW	38	3 Street West	SWWD250389	$27,800.00	

Year	Name	Road Segment	Asset ID	Capital Cost	Annual Capital Cost
	SW 39	2A Street West	SW2S330815	$14,200.00	
	SW 40	4 Street West	SW44A236953	$19,400.00	
	SW 41	2 Street West	SW49A173047	$27,800.00	
2026	SW 42	53 Avenue East	SW1S318811	$7,600.00	$207,100.00
	SW 43	46 Avenue West	SWWR272044	$22,900.00	
	SW 44	51 Avenue West	SW45A369363	$20,400.00	
	SW 45	45 Avenue West	SW50A29969	$36,000.00	
	SW 46	52 Avenue West	SW2S9235	$12,400.00	
	SW 47	51 Avenue West	SW5S409803	$25,900.00	
	SW 48	2 Street East	SW4S371256	$12,100.00	
	SW 49	3 Street East	SW3S19566	$27,900.00	
	SW 50	Westover Avenue	SW55A30015	$14,500.00	
	SW 51	55 Avenue West	SW8S172620	$27,400.00	
2027	SW 52	2 Street West	SW50A261269	$16,000.00	$192,100.00
	SW 53	57 Avenue West	SW43A307509	$22,800.00	
	SW 54	4 Street West	SW3S258713	$13,400.00	
	SW 55	2 Street West	SW5S154481	$16,600.00	
	SW 56	49 Avenue West	SWWD195931	$14,000.00	
	SW 57	45 Avenue West	SW48A261343	$20,100.00	
	SW 58	Westlynn Drive	SW3S210295	$14,500.00	
	SW 59	53 Avenue West	SW47A276245	$21,500.00	
	SW 60	8 Street West	SW46A115466	$19,700.00	
	SW 61	55 Avenue West	SW55A13722	$33,500.00	
2028	SW 62	53 Avenue West	SW4S370930	$36,600.00	$175,300.00
	SW 63	52 Avenue West	SW7S322333	$4,700.00	
	SW 64	50A Avenue West	SW50AA260192	$23,200.00	
	SW 65	50 Avenue West	SW56A123923	$16,100.00	

Year	Name		Road Segment	Asset ID	Capital Cost	Annual Capital Cost
	SW	66	47 Avenue West	SW51A7225	$13,000.00	
	SW	67	47 Avenue West	SWSM382476	$12,700.00	
	SW	68	45 Avenue West	SW5S169401	$11,600.00	
	SW	69	3 Street East	SWSM382476	$13,000.00	
	SW	70	2 Street West	SW7S203630	$13,000.00	
	SW	71	Westover Avenue	SWWS334845	$31,400.00	
2029	SW	72	49 Avenue West	SW45A173943	$9,600.00	$198,700.00
	SW	73	3 Street West	SW52A74928	$23,100.00	
	SW	74	52 Avenue West	SW1S318807	$20,900.00	
	SW	75	1 Street SW/Highway 2	SW51A389321	$36,800.00	
	SW	76	50 Avenue West	SW2S400348	$14,500.00	
	SW	77	2 Street West	SW43A28179	$23,900.00	
	SW	78	5 Street West	SW2S406803	$8,700.00	
	SW	79	4 Street West	SW55A369769	$8,600.00	
	SW	80	2 Street West	SW48A341933	$36,700.00	
	SW	81	2 Street East	SW49A265521	$15,900.00	
2030	SW	82	1a Street West	SW53A281151	$17,300.00	$218,300.00
	SW	83	5 Street West	SW2S330816	$14,500.00	
	SW	84	3 Street West	SW50AA322842	$25,100.00	
	SW	85	49 Avenue East	SW48A341934	$37,500.00	
	SW	86	7 Street West	SW46A136089	$21,300.00	
	SW	87	Fairway Vista	SWWC21581	$19,800.00	
	SW	88	2 Street West	SW4S391420	$29,200.00	
	SW	89	45 Avenue West	SW48A149128	$24,400.00	
	SW	90	51 Avenue East	SW52A366553	$14,000.00	
	SW	91	49 Avenue West	SW53A236477	$15,200.00	
2031	SW	92	47 Avenue West	SW48A261344	$20,400.00	$175,200.00

Year	Name		Road Segment	Asset ID	Capital Cost	Annual Capital Cost
	SW	93	4 Street West	SW3AS336644	$27,700.00	
	SW	94	4 Street West	SWWA72158	$8,500.00	
	SW	95	2 Street West	SW2S26082	$11,800.00	
	SW	96	3 Street West	SW4S330491	$13,800.00	
	SW	97	Sundance Street	SW45A173945	$19,100.00	
	SW	98	4 Street East	SW2S126499	$13,600.00	
	SW	99	Wildrose Drive	SW47A404609	$40,800.00	
	SW	100	48 Avenue West	SW55A65884	$15,400.00	
	SW	101	Westlynn Spur	SW3S7477	$4,100.00	
2032	SW	102	52 Avenue East	SW2S342388	$15,200.00	$211,100.00
	SW	103	50 Avenue East	SW2S342387	$14,900.00	
	SW	104	43 Avenue West	SW3S373994	$14,300.00	
	SW	105	43 Avenue West	SW45A241361	$19,500.00	
	SW	106	3 Street West	SW51A126126	$8,200.00	
	SW	107	50 Avenue East	SWS1A569	$15,400.00	
	SW	108	4 Street West	SW51A244600	$21,000.00	
	SW	109	3 Street West	SW55A30016	$22,200.00	
	SW	110	46 Avenue West	SW54A200080	$24,900.00	
	SW	111	1 Street SW/Highway 2	SW48A396624	$55,500.00	
2033	SW	112	2 Street West	SW51A3980	$18,200.00	$157,900.00
	SW	113	8 Street West	SW50A153585	$14,000.00	
	SW	114	7 Street West	SW46A115467	$20,200.00	
	SW	115	50 Avenue East	SW3S131432	$14,900.00	
	SW	116	3 Street West	SW4S64997	$10,700.00	
	SW	117	44 Avenue West	SW2AS298689	$16,100.00	
	SW	118	50 Avenue East	SW3S210294	$13,800.00	
	SW	119	Westrose Avenue	SW51A342117	$29,100.00	

Year	Name		Road Segment	Asset ID	Capital Cost	Annual Capital Cost
	SW	120	Westover Crescent	SW2S26084	$12,800.00	
	SW	121	Westover Avenue	SW3S7478	$8,100.00	

9.2.5 Facilities

Douglas Bergen & Associates Ltd. provided prioritization and estimated budget amounts for each of repairs noted in Section 8. With some of the repairs already completed by Town staff in advance of the IMP report finalization, or we are unable to assign recommended or anticipated completion years for the improvements.

Table 9-24 provides a breakdown of maintenance and repair items only, with Level 1 noting the most important priority level items and Level 10 noting the least important items that require the Town's attention. Table 9-25 provides the Town with a breakdown of building code compliance items only. Both tables list facilities in alphabetical order by facility name, with prioritization and budget estimates assigned to each issue/deficiency.

Table 9-24
Maintenance and Repair Items

Building	General Issues	Priority (1-10)	Estimated Budget	Building Total
Amundsen Park Washroom	(See separate code compliance cost summary)	-		
Animal Services Building	(See separate code compliance cost summary)	-		
Arena	Exterior concrete block condition (breakage and moisture penetration)	2	$100,000	
	Structural steel fire protection detachment	5	$15,000	
	Structural steel connection above upper floor storage to be evaluated by structural engineer	4	$2,500	
	High site grading at building exterior to top of floor slab	3	$120,000	
	Mechanical equipment damage and corrosion (sump corrosion, ice plant structure corrosion, mop sink corrosion, pipe insulation damage, radiant fin damage, duct tape failing etc.)	4	$50,000	
	Washroom and change room deficiencies – shower fixtures and floor drains due for replacement, continuously running toilets, dated urinal flushing system, low mirror heights, dated tile	7	$10,000	
	Rubber base detaching or missing in multiple locations throughout building	9	$1,000	

Building	General Issues	Priority (1-10)	Estimated Budget	Building Total
	Roof leak above upper floor at two locations – related wood floor water damage	3	$5,000	$303,500
Centennial Park Washrooms	No significant issues	-	$0	$0
Curling Rink	Water penetration at interior of roof truss to wall connections	2	$20,000	
	Poor exterior soffit and flashing condition	3	$7,500	
	High site grading and negative slope toward building	3	$7,500	
	Primary stair low headroom	5	$15,000	
	Kitchen improvements	5	$10,000	
	Mechanical room step at entry is an unsafe condition	4	$3,000	$63,000
Cold Storage Building	No significant issues	-	$0	$0
Community Centre	Gun range – generally poor conditions – ceiling construction and cardboard wall cladding is a significant fire hazard and poorly constructed, mezzanine access is non-compliant, makeshift lighting, washroom sink/vanity	1	$50,000	
	Exterior metal cladding damage, damaged vent covers (local replacement only)	6	$5,000	
	Exterior door paint is in poor condition	4	$4,000	
	West door threshold daylight to exterior and exterior concrete landings in poor condition	3	$7,500	
	Cosmetic damage to drywall, floor and ceiling tiles and light covers	8	$2,500	
	High site grading to top of floor slab	4	$25,000	
	Primary kitchen corroded dishwasher frame, non-functional roll shutter secondary kitchen – poor floor condition	6	$7,500	$101,500
East Reservoir	Treated water leaking to sump (undetermined leak source) – further investigation required	4	$5,000	
	Sealant failing at tank wall to tank roof connection	7	$1,500	
	Superficial hairline cracking in concrete	9	$0	$6,500
Fire Hall	High site grading at building perimeter (potential for ice damming and moisture penetration)	2	$20,000	

Building	General Issues	Priority (1-10)	Estimated Budget	Building Total
	Paving imperfections	7	$5,000	
	Mezzanine storage around furnace exhaust	3	$0	
	Water damage at exhaust fans	7	$2,500	$27,500
Lagoon Lift Station	Water penetration at north block wall	5	$1,000	$1,000
Library	Cosmetic finishes on exterior wood brackets is wearing	8	$15,000	
	Damaged fireplace vent on exterior	9	$500	
	Interior vestibule door is binding	5	$500	
	Minor drywall cracking on main floor	9	$1,000	
	Sump cover corrosion	7	$500	
	Damaged pipe elbows in storage room	9	$500	
	Unsafe attic access hatch (heavy an no latches for open condition)	6	$2,000	$20,000
Mackin Hall	Exterior finishes, interior drywall, overall electrical and lighting are all in generally poor condition	3	$10,000	$10,000
Museum Station Building	Exterior sandstone cracking	6	$2,500	
	West roof gable wall finishes in critical condition	2	$5,000	
	Exterior paint finishes generally require attention	6	$10,000	
	Significant bird dropping issues at wood brackets	8	$2,500	$20,000
Museum School House	Exterior paint and skirting in poor condition/uneven paving stones in sidewalk	3	$10,000	$10,000
Museum Log Cabin	Exterior finishes and roofing are worn, but are acceptably intact considering historical building purpose	7	$0	$0
Museum Exhibit Hall	Overhead door floor seal incomplete	9	$500	
	Cosmetic drywall, caulking and paint items	9	$2,500	$3,000
Seniors Drop-In Centre	Crawlspace water damage at wood columns	4	$10,000	
	Exterior doors in poor condition	4	$6,000	

Building	General Issues	Priority (1-10)	Estimated Budget	Building Total
	Exterior stucco (localized), corner trims, vent covers, and rainwater leaders in poor condition	3	$5,000	
	Exterior wood benches in unsafe condition	2	$1,000	
	Operable window frames require finishing	7	$4,000	
	Minor electrical items (kitchen receptables not GFI/light covers/replacement blubs required)	8	$1,000	$27,000
Town Shop	Exterior paint flaking from concrete block	7	$25,000	
	Negative site grading towards building	5	$5,000	
	Mezzanine rail and stair insecure and improper height	2	$3,000	
	Overhead door seal damage	9	$1,000	
	2-ton chain hoist attachment to bottom chord of truss to be reviewed by structural engineer	2	$2,500	
	Perimeter insulation at roof trusses missing at several locations	8	$1,000	$37,500
Highway Pump Station	No significant issues	-	$0	$0
			Total Budget	**$630,000**

Note:

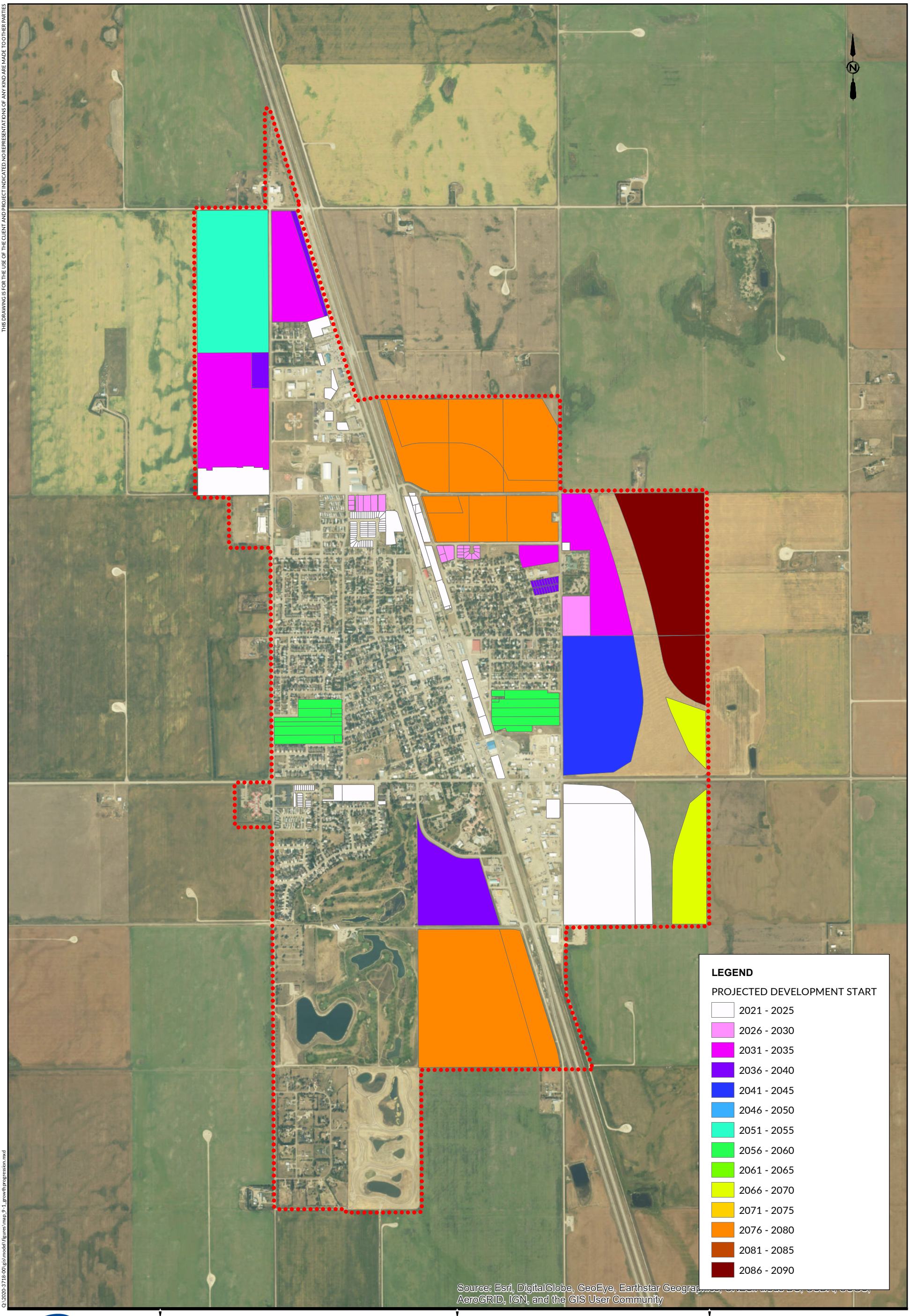
1) Priority Level 1 = Most Important
2) Priority Level 10 – Least Important

Table 9-25
Building Code Compliance Items Only

Building	General Issues	Priority (1-10)	Estimated Budget	Building Total
Amundsen Park Washrooms	H/C washroom stalls and sidewalks are not fully accessible	9	$5,000	$5,000
Animal Services Building	H/C washroom stalls and entrance door (H/C operator) are not fully accessible	9	$5,000	$5,000
Arena	(See separate maintenance cost summary)			
Centennial Park Washrooms	No significant issues	-		
Curling Rink	Upper floor secondary exit cannot pass thru a storage room	3	$7,500	$7,500
Cold Storage Building	No significant issues			
Community Centre	(See separate maintenance cost summary)			
East Reservoir	(See separate maintenance cost summary)			
Fire Hall	Mezzanine stair and rail condition	4	$3,000	$3,000
Lagoon Lift Station	(See separate maintenance cost summary)			
Library	(See separate maintenance cost summary)			
Mackin Hall	(See separate maintenance cost summary)			
Museum Station Building	(See separate maintenance cost summary)			
Museum School House	(See separate maintenance cost summary)			
Museum Log Cabin	(See separate maintenance cost summary)			
Museum Exhibit Hall	(See separate maintenance cost summary)			
Senior Drop-In Centre	Washroom accessibility	8	$5,000	
	Fire rated doors required at storage room	8	$1,000	$6,000
Town Shop	(See separate maintenance cost summary)			
Highway Pump Station	(See separate maintenance cost summary)			
			Total Budget	**$26,500**

Note:

1) Priority Level 1 = Most Important
2) Priority Level 10 – Least Important



Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:20,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
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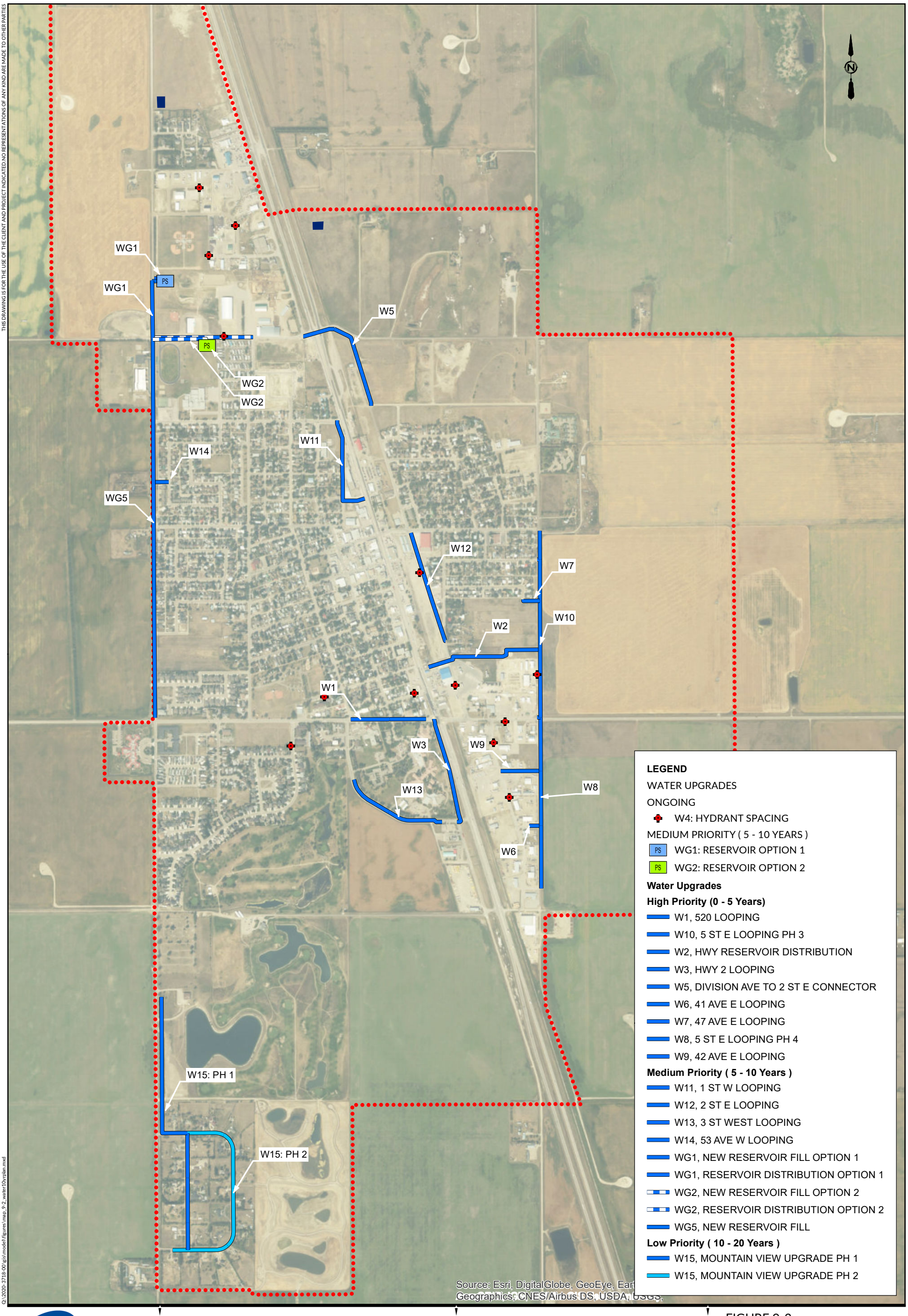
FIGURE 9-1
PLANNING DEVELOPMENT HORIZONS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
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COORD. SYSTEM	NAD 1983 3TM 114
REV	04
DESCRIPTION	ISSUED FOR REPORT
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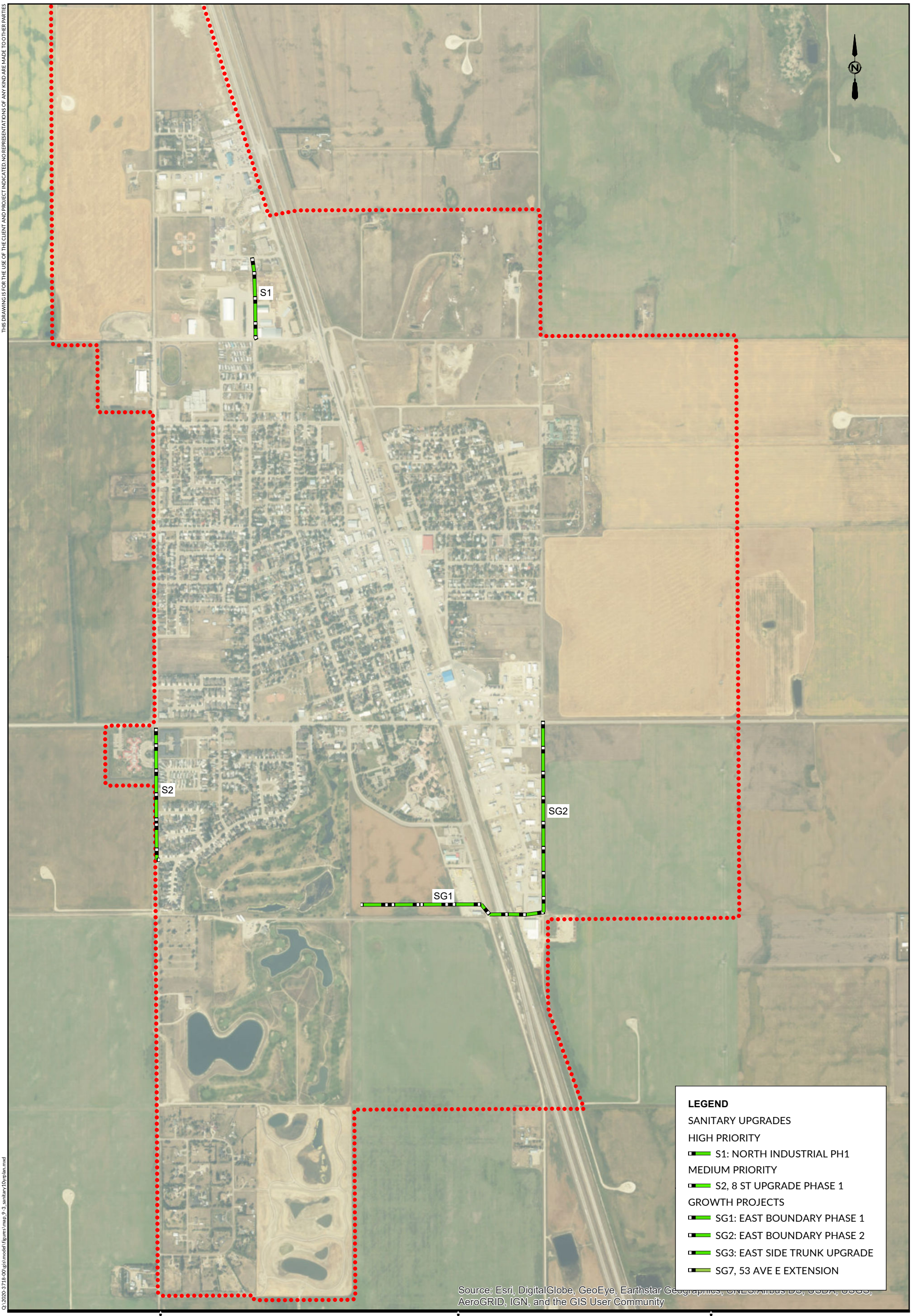
FIGURE 9-2
WATER
10 YR CAPITAL PROJECTS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:15,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	03
DESCRIPTION	ISSUED FOR REPORT
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FIGURE 9-3
SANITARY COLLECTION
10 YEAR CAPITAL PROJECTS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

STG4
STG2
ST5
ST4
ST6
ST3
ST12
ST8
ST7
ST1
ST2
ST9
ST10
STG1

LEGEND

STORM UPGRADES

HIGH PRIORITY (0 - 5 YEARS)

- ST1: CENTENNIAL PARK DITCH UPGRADE
- ST2: MAIN OUTFALL UPGRADE
- STG1: STARLINE OFFSITE DITCH
- ST3: MAIN STORM TRUNK UPGRADE

MEDIUM PRIORITY (5 - 10 YEARS)

- ST4: 1A ST W STORM TRUNK
- ST5: 51 AVE W STORM TRUNK
- ST6: 4 ST W STORM TRUNK
- ST8: EAST TRUNK UPGRADE PH. 1
- ST10: WESTLYNN DR OUTLET UPGRADES
- ST12: EAST TRUNK UPGRADE PH. 2

OTHER STORM IMPROVEMENTS

MEDIUM PRIORITY (5 - 10 YEARS)

- ★ ST7: 46 AVE W PS REVIEW AND UPGRADES
- ★ ST9: WESTLYNN DR OUTLET UPGRADE
- ★ STG2: NORTH EAST POND
- ★ STG4, DIVISION AVENUE POND

Source: Esri, DigitalGlobe, GeoEye, Earth
Geographics, CNES/Airbus DS, USDA, USGS,

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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagery: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MAY
SCALE*	1:15,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	01
DESCRIPTION	ISSUED FOR INFORMATION
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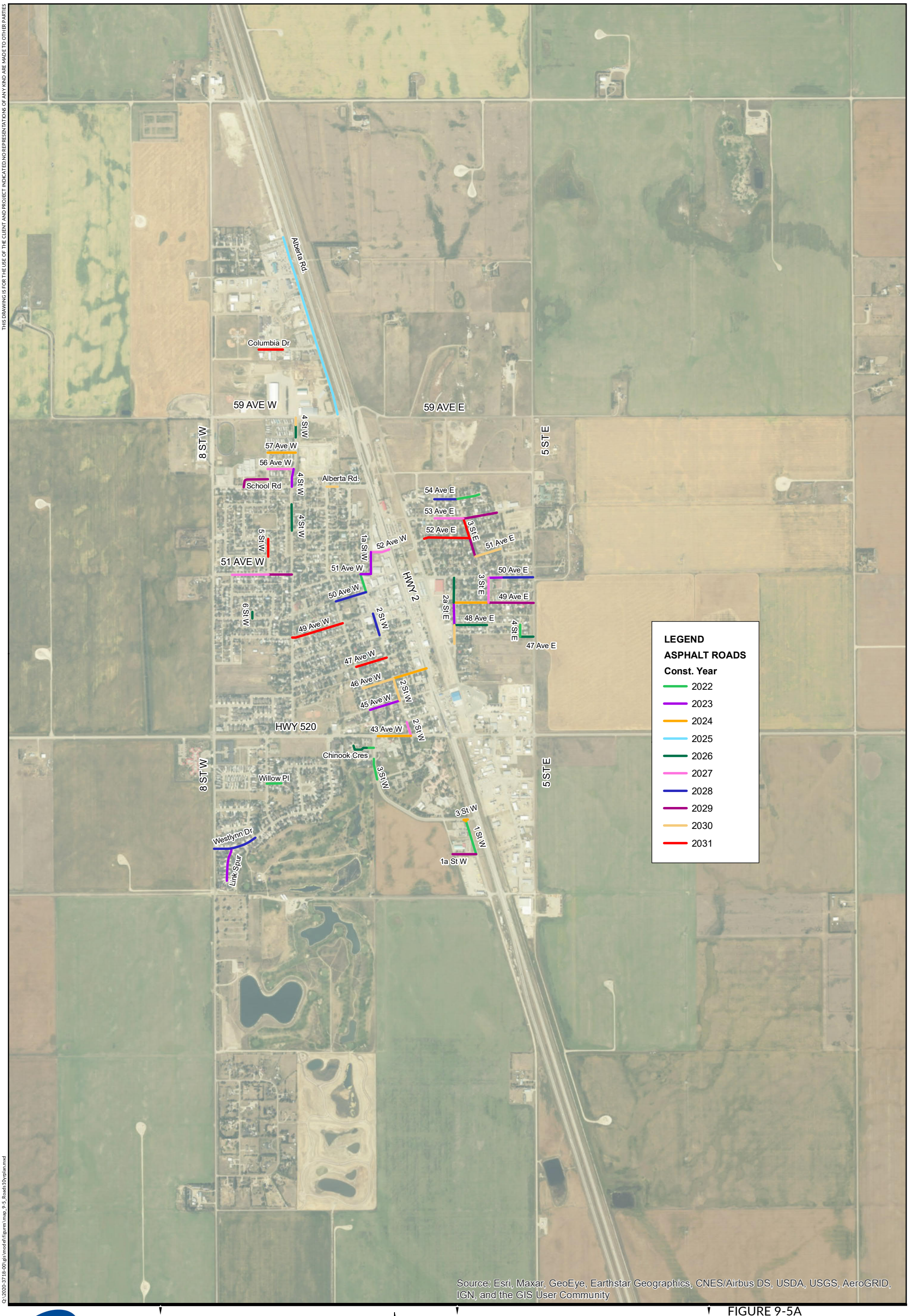
FIGURE 9-4
STORMWATER MANAGEMENT
10 YEAR CAPITAL PROJECTS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN



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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 APRIL
SCALE*	1:18,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	01
DESCRIPTION	ISSUED FOR INFORMATION
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FIGURE 9-5A
PAVED ROADS
10 YEAR
CAPITAL PROJECTS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

Township Rd 130
Alberta Rd
8 ST W
59 AVE W
59 AVE E
2 St E
5 ST E
Patterson Heights Blvd
53 AVE W
4 St E
51 AVE W
HWY 2
Campground Rd
HWY 520
8 ST W
5 ST E
1 St W
Golf Course Rd
8 ST W
Saddle Mountain Rd
Mountain View Cres

LEGEND
GRAVEL ROADS
Year
- 2022
- 2023
- 2024
- 2026
- 2027

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Associated Engineering
Claresholm

0 100 200 300 400 500 m

N

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 APRIL
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COORD. SYSTEM	NAD 1983 3TM 114
REV	01
DESCRIPTION	ISSUED FOR INFORMATION
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FIGURE 9-5B
GRAVEL ROADS MAINTENANCE

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

Township Rd 130
Growth Project
Projects 30-31

Alberta Rd.
Growth Project
Project 14

59 Ave East
Developer Cost
Project 20

8 St West
Growth Project
Projects 15, 18,
19, 21-24

59 AVE W

59 AVE E

8 ST W

2 St East
Municipal Project
Project 1

5 ST E

5 St East
Developer Cost
Projects 3, 16-17

Patterson Heights Blvd
Developer Cost
Project 4, 6-7

51 AVE W

HWY 2

5 St East
Developer Cost
Projects 10-13

HWY 520

8 ST W

5 ST E

1 St West
Municipal Project
Project 1

LEGEND

GRAVEL ROADS

Municipal Budget Year

2028

2030

Development Growth Projects

5 St East
Developer Cost
Projects 2, 8-9

1 St West
Growth Project
Project 1

8 St West
Growth Project
Project 26-28

Mountain View Cres.
Municipal Projects
2-4

Saddle Mountain Rd.
Municipal Project
5

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Associated Engineering

Claresholm

0 100 200 300 400 500 m

N

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MAY
SCALE*	1:18,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	01
DESCRIPTION	ISSUED FOR INFORMATION
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CHECKED BY	DS

FIGURE 9-5C
GRAVEL ROADS
UPGRADES

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

59 AVE W
59 AVE E
55 AVE W
8 ST W
HWY 2
5 ST E
51 AVE W
50 AVE E
HWY 520

Legend

CONSTRUCTION YEAR

- 2022
- 2023
- 2024
- 2025
- 2026
- 2027
- 2028
- 2029
- 2030
- 2031

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Associated Engineering

Claresholm

0 100 200 300 400 500 m

ESRI World Imagary: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Town: Altalis Ltd., 2019; ATS Grid: Altalis Ltd., 2005.

AE PROJECT No.	2020-3718
DATE	2021 MARCH
SCALE*	1:10,000
COORD. SYSTEM	NAD 1983 3TM 114
REV	01
DESCRIPTION	ISSUED FOR INFORMATION
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CHECKED BY	DS

FIGURE 9-6
SIDEWALKS
10 YEAR
CAPITAL PROJECTS

TOWN OF CLARESHOLM
INFRASTRUCTURE MASTER PLAN

10 CAPITAL PLAN IMPLEMENTATION

The capital projects listed in this report are intended to address level of service requirements for the Town of Claresholm. This report is intended to provide the roadmap for infrastructure needs in the Town. The IMP identifies existing system improvement requirements, rehabilitation and servicing recommendations for the infrastructure systems owned and operated by the Town.

The existing system improvements and future growth area servicing requirements were established based on analyses of the transportation, water distribution, wastewater collection, and stormwater management systems. Improvement projects and servicing strategies will be subject to further refinement at the respective preliminary and detailed design phases.

- **Rehabilitation Projects**: The capital projects listed are proposed to address infrastructure that requires refurbishment due to their condition. The rehabilitation projects address the most significant needs based on condition, criticality or materials.
- **Capacity Projects**: The capital projects listed are proposed to address existing issues that were identified during the analysis of each infrastructure system. In each case the project is intended to improve the existing level of service to meet the Town's expectations. In some cases, these capacity improvements will also provide capacity for development in the Town.
- **Development Projects**: The capital projects listed are proposed to provide servicing capacity for development within the Town boundary. These projects provide capacity to facilitate growth and development in the Town.

The capital recommendations in this report represent an aggressive capital program that aims to mitigate the effects of existing capacity and condition constraints in the Town's infrastructure systems. The three distinct streams of funding allow some flexibility in funding sources. It is recognized that developing sufficient financial capacity to meet all of the capital objectives laid out in the plan will be a challenge.

As a result, the programs are laid out in order of priority, with the most urgent projects listed first, allowing the Town to address the highest priority projects as funding is available. As the program is implemented and capital improvements are constructed within the Town, this study should be reviewed to ensure that the assumptions made remain valid in the context of a changing financial, societal and environmental conditions.

As the demand for infrastructure services change within the Town over time, and as land develops and infill development occurs within the town, the recommendations of this report may need to be adjusted.

The projects presented in this report are conceptual and are based on a high-level analysis of the capacities of each individual infrastructure system. Each project definition is based on the data available at the time of this study and is limited to the accuracy and completeness of the data. The following considerations should be applied during the preliminary and detailed design of each capital project in the improvement program.

Designs should be based on the Town of Claresholm servicing standards.

Each project should include a value engineering component that reviews, in more detail:

- Problem areas, cause and consequence
- Alternative solutions to the problem
- Opportunities to improve the overall value provided by looking at opportunities to solve more than one problem with a single capital project.

Once the initial improvement program is complete it is recommended that this plan is revisited in detail to reconfirm and validate the capital program. Renewal of the infrastructure master plan should include:

- Review of the level of service standards defined for the Town's infrastructure, including regulatory changes that may affect the capital requirements for the Town,
- Updates to the existing GIS data bases that inform the condition, location and size of infrastructure
- Updates to the existing population projections, water use and sewage generation statistics.
- Update condition assessments for all infrastructure systems,
- Update capacity assessments based on changes to each capacity system and updated populations and flows,
- Update capital improvement plan.

The below Table summarizes the Capital Plan Implementation between 2022 and 2031.

Table 10-1
Capital Plan Implementation Summary

Year	Water	Sanitary	Storm	ACP Roads	Gravel Roads	Sidewalks	Facilities	Total
2022	$182,000	*$121,500	$72,000	$607,500	$210,000	$148,900	$50,000	$1,391,900
2023	*$437,000		$1,004,000	$701,400	$306,000	$156,400	$151,500	$2,756,300
2024	*$309,500		$	$609,400	$267,000	$162,900	$180,000	$1,528,800
2025	*$62,000		$3,195,000	$766,800	$268,000	$178,000	$108,500	$4,578,300
2026	*$44,300		$	$564,000	$323,000	$207,100	$46,500	$1,184,900
2027	*$332,000	*$237,000	$1,489,000	$669,900	$263,000	$192,100	$27,000	$3,201,900
2028	*$148,500		$2,633,000	$664,100	$210,000	$175,300	$48,500	$3,879,400
2029	$621,000		$1,243,000	$777,700	$306,000	$198,700	$28,000	$3,174,400
2030	$465,000		$358,000	$476,900	$267,000	$218,300	$17,000	$1,802,200
2031	*$1,643,200		$2,811,000	$789,200	$268,000	$175,200		$5,686,600

* Totals include a developer contribution

11 CLOSURE

This report was prepared for the Town of Claresholm to conduct an Infrastructure Master Plan (IMP) for the municipality. The results of the IMP will be incorporated into the Town's long-term development planning model and long-term capital planning to determine the improvement areas and future developments.

The services provided by Associated Engineering Alberta Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,
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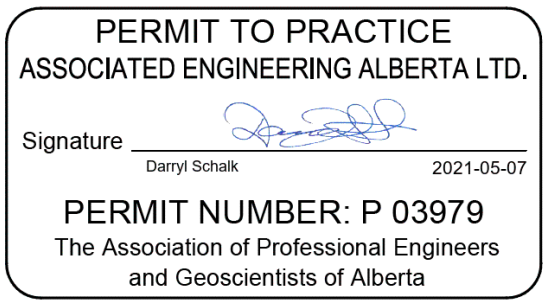

APPENDIX A - ROADWAY CONDITION SURVEY

Road AssetID	Road Defect SurveyID	Distortion Present	Wheel Track Rutting or Shoving Present	Rippling Present	Raveling/Aggregate Loss Present	Alligatoring Present	Cracks Present	Manhole and Valve Displacement Present	Distortion Present	Tripping Edge Present	Catch Basin Displacement Present	Cracking Present	Crumbling Present	Sheet Asphalt Overlay Present	Average Scale	Average Scale Revised (0.9 Weight)	IRI Scale (0.1 Weight)	Combined Average
RD45A241361	Rd45AD851	1	4	1	5	5	3	1	1	1	1	1	1	1	2.8	2.62	0.6758	3.2958
RD54A246070	Rd54AD1151	3	1	1	3	2	3	2	1	1	1	1	1	1	1.95	1.79	1.35738	3.14738
RDCC52593	Rd3SD1121	4	1	1	1	3	5	1	1	1	1	1	1	1	2.4	2.3	0.81957	3.11957
RDAR130377	RdAbD110	4	3	1	1	5	2	1	1	1	1	1	1	1	2.9	2.8	0.31526	3.11526
RD54A246070	Rd54AD1150	1	4	1	3	1	2	1	1	1	1	1	1	1	1.8	1.66	1.35738	3.01738
RD3S258713	Rd3SD1111	3	3	1	1	4	3	1	1	1	1	1	1	1	2.6	2.5	0.437425	2.937425
RDDA408475	Rd49AD1132	5	2	1	1	5	1	1	1	1	1	1	1	1	2.8	2.7	0.23437	2.93437
RDWP344648	RdWPD992	1	3	1	1	2	4	1	1	1	1	1	1	1	1.9	1.8	1.12714	2.92714
RDDA408475	Rd49AD1131	5	2	1	4	4	1	1	1	1	1	1	1	1	2.75	2.59	0.23437	2.82437
RD1AS318807	Rd1AAD169	3	4	1	3	1	3	1	1	1	1	1	1	1	2.3	2.16	0.65693	2.81693
RDLS358643	RdLSD941	4	1	1	2	2	3	1	1	1	1	1	1	1	2.05	1.93	0.86385	2.79385
RD51A269014	Rd51AD167	3	1	1	1	5	1	4	1	1	1	1	1	1	2.35	2.19	0.60333	2.79333
RD54A246070	Rd54AD1149	2	1	1	2	1	4	1	1	1	1	1	1	1	1.55	1.43	1.35738	2.78738
RDDA125743	Rd49AD1134	5	1	1	1	5	1	1	1	1	1	1	1	1	2.6	2.5	0.27041	2.77041
RDDA125743	Rd49AD1135	5	1	1	1	5	1	1	1	1	1	1	1	1	2.6	2.5	0.27041	2.77041
RDDA316282	Rd4SD23	1	5	1	1	5	1	1	1	1	1	1	1	1	2.6	2.5	0.265485	2.765485
RDDA408475	Rd49AD1130	5	2	1	5	3	2	1	1	1	1	1	1	1	2.7	2.52	0.23437	2.75437
RD1S9758	Rd1SD1051	4	5	1	1	4	1	1	1	1	1	1	1	1	2.4	2.3	0.444245	2.744245
RDWD22491	RdWDD1007	1	1	1	1	4	3	1	1	1	1	1	1	1	2.6	2.5	0.24351	2.74351
RD4S188400	Rd4SD28	5	1	1	2	4	1	1	1	1	1	1	1	1	2.45	2.33	0.397346667	2.727346667
RD2S26082	Rd2SD797	5	1	1	1	1	5	1	1	1	4	1	1	1	2.35	2.16	0.53118	2.69118
RD49A173047	Rd49AD1510	5	1	1	1	3	3	1	1	1	1	1	1	1	2.4	2.3	0.38861	2.68861
RD1AS318807	Rd1AAD171	4	2	1	2	1	4	1	1	1	1	1	1	1	2.15	2.03	0.65693	2.68693
RD3S258713	Rd3SD1112	4	1	1	1	3	4	1	1	1	1	1	1	1	2.3	2.2	0.437425	2.637425
RD45A241361	Rd45AD852	3	3	1	3	2	1	1	1	1	1	1	1	1	2.1	1.96	0.6758	2.6358
RD51A389321	Rd51AD73	3	2	1	3	3	2	1	1	1	1	1	1	1	2.2	2.06	0.57165	2.63165
RDWP344648	RdWPD993	1	2	1	1	3	1	1	1	1	1	1	1	1	1.6	1.5	1.12714	2.62714
RD4S396528	Rd47AD1550	3	1	1	5	3	3	1	1	1	1	1	1	1	2.2	2.02	0.59954	2.61954
RDXX241008	Rd5SD344	5	1	1	1	2	1	1	1	1	1	1	1	1	2	1.9	0.69143	2.59143
RD3S173921	Rd3SD1183	1	5	1	1	3	3	1	1	1	1	1	1	1	2.4	2.3	0.284245	2.584245
RDWP344648	RdWPD991	1	1	1	2	2	4	1	1	1	1	1	1	1	1.55	1.43	1.12714	2.55714
RD3S258713	Rd3SD1113	1	1	1	1	5	5	1	1	1	1	1	1	1	2.2	2.1	0.437425	2.537425
RD49A93815	Rd49AD1519	5	1	1	1	2	3	1	1	1	1	1	1	1	2.2	2.1	0.434975	2.534975
RDWP344648	RdWPD979	1	2	1	1	2	2	1	1	1	1	1	1	1	1.5	1.4	1.12714	2.52714
RDWP344648	RdWPD980	2	1	1	1	2	2	1	1	1	1	1	1	1	1.5	1.4	1.12714	2.52714
RDGCD237910	RdgCD1046	1	5	1	3	4	1	1	1	1	1	1	1	1	2.5	2.36	0.16525	2.52525
RDDA234793	Rd49AD1126	2	4	1	5	3	2	1	1	1	1	1	1	1	2.5	2.32	0.15233	2.47233
RD50A153585	Rd50AD1500	2	3	1	1	3	4	1	1	1	1	1	1	1	2.3	2.2	0.263535	2.463535
RD4S391419	Rd4SSD212	5	1	1	4	2	1	1	1	1	1	1	1	1	2.15	1.99	0.47022	2.46022
RD50A109898	Rd50AD784	1	4	1	1	3	3	1	1	1	1	1	1	1	2.2	2.1	0.34762	2.44762
RD49A93815	Rd49AD1521	1	3	1	1	3	4	1	1	1	1	1	1	1	2.1	2	0.434975	2.434975
RD46A136089	Rd46AD886	4	3	1	1	1	3	1	1	1	1	1	1	1	2.2	2.1	0.33486	2.43486
RD4S396528	Rd48AD1545	3	1	1	1	1	5	5	1	1	1	1	1	1	2	1.82	0.59954	2.41954
RDAR130377	RdAbD114	1	3	1	1	5	1	1	1	1	1	1	1	1	2.2	2.1	0.31526	2.41526
RDAR130377	RdAbD115	1	4	1	1	3	3	1	1	1	1	1	1	1	2.2	2.1	0.31526	2.41526
RD48A261343	Rd48AD532	1	3	1	1	4	2	1	1	1	1	1	1	1	2.1	2	0.41292	2.41292
RD52A61046	Rd52AD1188	1	4	1	1	3	3	1	1	1	1	1	1	1	2.2	2.1	0.3024	2.4024
RD48A149128	Rd48AD1532	1	4	1	2	3	1	1	1	1	1	1	1	1	2.05	1.93	0.45401	2.38401
RD57A92161	Rd57AD33	1	3	1	1	4	1	1	1	1	1	1	1	1	2	1.9	0.46491	2.36491
RD50A153585	Rd50AD1501	4	3	1	1	1	3	1	1	1	1	1	1	1	2.2	2.1	0.263535	2.363535
RD53A281150	Rd53AD1156	1	5	1	3	1	2	1	1	1	1	1	1	1	2	1.86	0.495975	2.355975
RD56A123923	Rd56AD41	1	1	1	5	5	1	1	1	1	1	1	1	1	2	1.82	0.48315	2.30315
RD4S308167	Rd4SD51	1	1	1	1	4	3	1	1	1	1	1	1	1	2	1.9	0.395073333	2.295073333
RD45A241361	Rd45AD850	2	1	1	4	3	1	1	1	1	1	1	1	1	1.75	1.59	0.6758	2.2658
RD2S26082	Rd2SD796	4	1	1	2	1	3	1	1	1	1	1	1	1	1.85	1.73	0.53118	2.26118
RDWS229336	RdWSD948	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.69	0.56942	2.25942
RD1AS318807	Rd1AAD170	3	1	1	4	1	3	1	1	1	1	1	1	1	1.75	1.59	0.65693	2.24693
RD2AS66465	Rd2AAD1526	4	3	1	2	1	1	1	1	1	1	1	1	1	2.05	1.93	0.31545	2.24545
RD50A310028	Rd50AD1508	2	3	1	1	2	3	1	1	1	1	1	1	1	2	1.9	0.343435	2.243435
RD49A109962	Rd49AD771	4	1	1	1	1	5	1	1	1	1	1	1	1	2	1.9	0.33399	2.23399
RDAR130377	RdAbD109	1	3	1	1	4	1	1	1	1	1	1	1	1	2	1.9	0.31526	2.21526
RD47A406509	Rd47AD513	5	1	1	1	1	1	1	1	1	1	1	1	1	1.8	1.7	0.5014	2.2014
RD50A109898	Rd50AD785	1	4	1	2	2	2	1	1	1	2	1	1	1	2	1.85	0.34762	2.19762
RD49A93815	Rd2AAD1560	4	1	1	3	1	3	1	1	1	1	1	1	1	1.9	1.76	0.434975	2.194975
RD46A136089	Rd46AD887	1	1	1	1	5	2	3	1	1	1	1	1	1	2	1.86	0.33486	2.19486
RD56A123923	Rd56AD42	1	1	1	1	5	1	1	1	1	1	1	1	1	1.8	1.7	0.48315	2.18315
RD53A261181	Rd53AD1161	3	1	1	2	1	4	1	1	1	1	1	1	1	1.75	1.63	0.54118	2.17118
RD4S391419	Rd4SSD220	1	1	1	1	5	1	1	1	1	1	1	1	1	1.8	1.7	0.47022	2.17022
RD50A91832	Rd50AD795	2	1	1	1	3	3	1	1	1	1	1	1	1	1.8	1.7	0.46983	2.16983
RD1AS334064	Rd3SD1101	1	1	1	1	4	4	1	1	1	1	1	1	1	1.9	1.8	0.36615	2.16615
RD57A92161	Rd57AD32	1	3	1	1	3	1	1	1	1	1	1	1	1	1.8	1.7	0.46491	2.16491
RD3S280719	Rd41AD1100	1	1	1	5	3	1	1	1	1	1	1	1	1	1.6	1.42	0.7382	2.1582
RD48A149128	Rd3SD1540	1	3	1	5	1	3	3	1	1	1	1	1	1	1.9	1.68	0.45401	2.13401
RD49A109962	Rd49AD775	4	1	1	1	1	4	1	1	1	1	1	1	1	1.9	1.8	0.33399	2.13399
RD50A310028	Rd50AD1505	2	2	1	4	2	3	1	1	1	1	1	1	1	1.95	1.79	0.343435	2.133435
RD51A154089	Rd51AD68	1	3	1	1	3	1	1	1	1	1	1	1	1	1.8	1.7	0.417665	2.117665
RDAR130377	RdAbD112	2	1	1	1	4	2	1	1	1	1	1	1	1	1.9	1.8	0.31526	2.11526
RD48A261343	Rd2SD741	4	1	1	1	1	3	1	1	1	1	1	1	1	1.8	1.7	0.41292	2.11292
RD5S26333	Rd5SD47	5	1	1	1	1	3	1	1	1	1	1	1	1	2	1.9	0.20634	2.10634
RD48A341933	Rd4SD561	4	1	1	1	1	3	1	1	1	1	1	1	1	1.8	1.7	0.4043	2.1043
RD46A115466	Rd46AD862	3	2	1	3	1	2	1	1	1	1	1	1	1	1.8	1.66	0.44412	2.10412
RDFV212845	Rd3SD1117	1	1	1	1	3	4	1	1	1	1	1	1	1	1.7	1.6	0.5031	2.1031
RD4S93516	Rd4SD60	4	1	1	1	1	4	1	1	1	1	1	1	1	1.9	1.8	0.30078	2.10078
RD46A136089	Rd46AD889	1	2	1	3	3	3	1	1	1	1	1	1	1	1.9	1.76	0.33486	2.09486
RD2AS298689	Rd2AAD1561	1	1	1	1	4	3	1	1	1	1	1	1	1	1.8	1.7	0.39428	2.09428
RD2AS298689	Rd2AAD1564	3	1	1	1	1	5	1	1	1	1	1	1	1	1.8	1.7	0.39428	2.09428
RD43A307509	Rd2SD832	4	1	1	3	2	3	1	1	1	1	1	1	1	2.1	1.96	0.13123	2.09123
RD2S26082	Rd2SD798	3	1	1	3	1	3	1	1	1	1	1	1	1	1.7	1.56	0.53118	2.09118
RD2S289166	Rd2SD882	5	1	1	1	2	1	1	1	1	1	1	1	1	2	1.9	0.190845	2.090845
RD3S308642	Rd3SD1517	1	3	1	1	2	4	1	1	1	1	1	1	1	1.9	1.8	0.28473	2.08473
RDWD379503	RdWDD997	1	2	1	1	3	3	3	1	1	1	1	1	1	1.9	1.76	0.31568	2.07568
RD51A97352	Rd51AD154	1	1	1	1	4	4	1	1	1	1	1	1	1	1.9	1.8	0.2734725	2.0734725
RD2S342387	Rd2SD742	4	1	1	1	2	2	1	1	1	1	1	1	1	1.9	1.8	0.27049	2.07049
RD50A91832	Rd50AD794	3	1	1	1	1	4	1	1	1	1	1	1	1	1.7	1.6	0.46983	2.06983
RD50A91832	Rd50AD789	3	1	1	1	2	2	1	1	1	1	1	1	1	1.7	1.6	0.46983	2.06983
RDWD215951	RdWDD946	1	4	1	1	1	1	1	1	1	1	1	1	1	1.6	1.5	0.56942	2.06942
RD2S126498	Rd2SD766	1	1	1	3	3	4	1	1	1	1	1	1	1	1.8	1.66	0.4079	2.0679
RDWD238711	RdWDD964	1	5	1	1	1	1	1	1	1	1	1	1	1	1.8	1.7	0.36229	2.06229
RD1AS318807	Rd1AAD168	2	1	1	1	1	4	1	1	1	1	1	1	1	1.5	1.4	0.65693	2.05693
RDGCD237910	RdgCD1043	1	2	1	4	4	2	1	1	1	1	1	1	1	2.05	1.89	0.16525	2.05525
RD55A381910	Rd55AD211	3	1	1	1	1	2	1	1	1	1	1	1	1	1.5	1.4	0.654816667	2.054816667
RD5S136468	Rd5SD1243	3	1	1	1	2	1	1	1	1	1	1	1	1	1.6	1.5	0.54807	2.04807
RD3S25033	Rd3SD1479	3	1	1	2	1	4	2	1	1	1	1	1	1	1.8	1.66	0.384715	2.044715
RD51A3979	Rd51AD1491	1	3	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.542545	2.042545
RD2S345720	Rd2SD188	4	1	1	1	1	2	1	1	1	1	1	1	1	1.7	1.6	0.43498	2.03498
RD51A126126	Rd51AD152	1	3	1	1	1	4	1	1	1	1	1	1	1	1.7	1.6	0.432286667	2.032286667
RD51A110101	Rd51AD165	1	1	1	4	3	3	1	1	1	1	1	1	1	1.75	1.59	0.441145	2.031145
RD2AS231218	Rd2AAD1528	1	1	1	1	1	3	2	1	1	1	1	1	1	1.25	1.6	0.427343333	2.027343333
RD53A281150	Rd53AD1158	3	1	1	1	1	3	2	1	1	1	1	1	1	1.65	1.53	0.495975	2.025975
RD50A300712	Rd5SD149	5	1	1	1	1	2	1	1	1	1	1	1	1	1.9	1.8	0.222395	2.022395
RD47A326243	Rd48AD1551	1	1	1	2	3	3	1	1	1	1	1	1	1	1.65	1.53	0.48746	2.01746
RDAR130377	RdAbD107	1	2	1	1	3	3	1	1	1	1	1	1	1	1.8	1.7	0.31526	2.01526
RD3S25033	Rd3SD1478	3	1	1	2	1	4	1	1	1	1	1	1	1	1.75	1.63	0.384715	2.014715
RDWR366240	RdWRD970	2	1	1	1	3	3	1	1	1	1	1	1	1	1.8	1.7	0.31457	2.01457

RD4S31559	Rd4SD1495	2	1	1	1	3	2	1	1	1	1	1	1	1	1.7	1.6	0.41074	2.01074
RD1AS373635	Rd1AAD176	4	1	1	1	1	3	1	1	1	1	1	1	1	1.8	1.7	0.30933	2.00933
RD8S157130	Rd8SD1318	2	2	1	2	3	2	1	1	1	1	1	1	1	1.95	1.83	0.17756	2.00756
RDCC228150	RdCCD1120	1	1	1	1	1	3	1	1	1	3	1	1	1	1.3	1.14	0.86741	2.00741
RD6S257368	Rd6SD393	1	1	1	4	1	1	2	1	1	1	1	1	1	1.2	1.02	0.98528	2.00528
RD52A61046	Rd52AD1190	3	2	1	1	1	3	1	1	1	1	1	1	1	1.8	1.7	0.3024	2.0024
RD52A61046	Rd52AD1193	1	4	1	1	1	3	1	1	1	1	1	1	1	1.8	1.7	0.3024	2.0024
RD47A406509	Rd47AD511	1	1	1	1	3	3	1	1	1	1	1	1	1	1.6	1.5	0.5014	2.0014
RD4S93516	Rd4SD62	3	1	1	1	1	5	1	1	1	1	1	1	1	1.8	1.7	0.30078	2.00078
RD2S342387	Rd2SD745	3	1	1	2	1	5	1	1	1	1	1	1	1	1.85	1.73	0.27049	2.00049
RD46A253174	Rd46AD455	1	2	1	1	1	4	1	1	1	1	1	1	1	1.5	1.4	0.59968	1.99968
RD54A165479	Rd54AD1148	2	1	1	4	1	3	1	1	1	1	1	1	1	1.55	1.39	0.60227	1.99227
RD4S65032	Rd4SD57	2	2	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.48172	1.98172
RD5S233850	Rd5SD1220	1	5	1	1	1	1	1	1	1	1	1	1	1	1.8	1.7	0.277356667	1.977356667
RD6S257368	Rd6SD364	1	1	1	4	1	1	1	1	1	1	1	1	1	1.15	0.99	0.98528	1.97528
RD46A115466	Rd2SD880	3	1	1	2	1	3	1	1	1	1	1	1	1	1.65	1.53	0.44412	1.97412
RD51A389321	Rd51AD74	3	1	1	1	1	2	1	1	1	1	1	1	1	1.5	1.4	0.57165	1.97165
RD2S342387	Rd2SD746	4	1	1	1	1	3	1	1	1	1	1	1	1	1.8	1.7	0.27049	1.97049
RDCC228150	RdCCD1119	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.86741	1.96741
RD49A93815	Rd49AD1522	1	1	1	2	2	5	1	1	1	1	1	1	1	1.65	1.53	0.434975	1.964975
RD49A109962	Rd49AD773	4	1	1	2	1	2	1	1	1	1	1	1	1	1.75	1.63	0.33399	1.96399
RD51A269014	Rd51AD166	3	1	1	3	1	1	1	1	1	1	1	1	1	1.5	1.36	0.60333	1.96333
RDWD401058	RdWDD940	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.9508	1.9508
RD44A236953	Rd44AD836	2	2	1	1	1	4	1	1	1	1	1	1	1	1.7	1.6	0.35021	1.95021
RD50A109898	Rd50AD711	3	1	1	1	1	4	1	1	1	1	1	1	1	1.7	1.6	0.34762	1.94762
RD50A109898	Rd50AD704	1	1	1	3	1	3	1	1	1	1	1	1	1	1.3	1.6	0.34762	1.94762
RD50A109898	Rd50AD708	1	3	1	1	2	2	1	1	1	1	1	1	1	1.7	1.6	0.34762	1.94762
RDWD396514	RdWDD1023	4	1	1	1	1	3	1	1	1	1	1	1	1	1.8	1.7	0.24703	1.94703
RD8S322479	Rd8SD94	5	1	1	2	1	1	1	1	1	1	1	1	1	1.85	1.73	0.21693	1.94693
RD46A115466	Rd46AD863	1	1	1	1	2	5	1	1	1	1	1	1	1	1.6	1.5	0.44412	1.94412
RDSMR334374	RdSMRD1371	1	5	1	1	1	1	1	1	1	1	1	1	1	1.8	1.7	0.243735	1.943735
RD44A236953	Rd44AD838	1	1	1	1	2	5	4	1	1	1	1	1	1	1.75	1.59	0.35021	1.94021
RD54A165479	Rd54AD1147	3	1	1	2	1	1	1	1	1	1	1	1	1	1.45	1.33	0.60227	1.93227
RD2S64873	Rd2SD833	3	1	1	2	1	3	1	1	1	1	1	1	1	1.65	1.53	0.392125	1.922125
RDCC52593	RdCCD1118	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.81957	1.91957
RD3S19566	Rd3SD820	3	1	1	1	1	2	1	1	1	1	1	1	1	1.5	1.4	0.517065	1.917065
RD8S322479	Rd8SD101	5	1	1	1	1	1	1	1	1	1	1	1	1	1.8	1.7	0.21693	1.91693
RDAR130377	RdAbD108	1	2	1	1	3	2	1	1	1	1	1	1	1	1.7	1.6	0.31526	1.91526
RD1AS373635	Rd1AAD180	1	3	1	1	1	4	1	1	1	1	1	1	1	1.7	1.6	0.30933	1.90933
RD52A118665	Rd52AD175	1	1	1	3	1	1	1	1	1	1	1	1	1	1.1	0.96	0.94611	1.90611
RD2S400347	Rd2SD848	1	1	1	3	4	2	1	1	1	1	1	1	1	1.8	1.66	0.24539	1.90539
RD48A341933	Rd48AD559	3	1	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.4043	1.9043
RD55A65884	Rd4SD54	4	1	1	3	1	1	1	1	1	1	1	1	1	1.7	1.56	0.34086375	1.90086375
RD51A135768	RD51AD1475	1	1	1	3	1	3	1	1	1	1	1	1	1	1.3	1.16	0.740435	1.900435
RDWD195931	RdWDD1021	3	1	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.398505	1.898505
RD4S308167	Rd4SD52	1	1	1	1	3	3	1	1	1	1	1	1	1	1.6	1.5	0.395073333	1.895073333
RD4S308167	Rd4SD53	3	1	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.395073333	1.895073333
RDXX241008	RdXXD342	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.69143	1.89143
RD49A173047	Rd49AD1513	3	1	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.38861	1.88861
RD49A173047	Rd49AD1515	1	2	1	1	2	3	1	1	1	1	1	1	1	1.6	1.5	0.38861	1.88861
RD50A109898	Rd50AD705	3	1	1	1	1	3	1	1	1	3	1	1	1	1.7	1.54	0.34762	1.88762
RD2S330815	Rd2SD196	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	1.16	0.72555	1.88555
RD48A149128	Rd48AD1533	1	3	1	2	1	2	1	1	1	1	1	1	1	1.55	1.43	0.45401	1.88401
RD56A123923	Rd56AD44	1	1	1	1	1	2	1	1	1	1	1	1	1	1.5	1.4	0.48315	1.88315
RD52A159197	Rd52AD1195	1	1	1	1	4	1	1	1	1	1	1	1	1	1.6	1.5	0.38216	1.88216
RD52A74928	Rd52AD1166	2	1	1	4	1	3	1	1	1	1	1	1	1	1.55	1.39	0.48877	1.87877
RD51A154089	Rd51AD67	2	1	1	2	1	4	2	1	1	1	1	1	1	1.6	1.46	0.417665	1.877665
RD50A109898	Rd50AD709	3	1	1	2	1	3	1	1	1	1	1	1	1	1.65	1.53	0.34762	1.87762
RD45A241361	Rd45AD854	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.6758	1.8758
RD50AA322842	Rd50AAD166	1	4	1	1	1	3	1	1	1	1	1	1	1	1.8	1.7	0.17544	1.87544
RD51A389321	Rd51AD75	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.57165	1.87165
RD51A389321	Rd51AD78	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.57165	1.87165
RDWD344654	RdWDD1026	4	1	1	1	1	2	1	1	1	1	1	1	1	1.7	1.6	0.27011	1.87011
RD50A91832	Rd50AD790	1	2	1	1	1	4	1	1	1	1	1	1	1	1.5	1.4	0.46983	1.86983
RD54A263143	Rd3ASD247	1	3	1	1	1	1	1	1	1	1	1	1	1	1.4	1.3	0.56285	1.86285
RD8S203101	Rd8SD928	1	2	1	1	3	2	1	1	1	1	1	1	1	1.7	1.6	0.2619	1.8619
RD51A389321	Rd51AD71	1	1	1	4	2	2	1	1	1	1	1	1	1	1.45	1.29	0.57165	1.86165
RD4S391419	Rd4SD57	1	1	1	4	1	5	1	1	1	1	1	1	1	1.55	1.39	0.47022	1.86022
RD5S130488	Rd5SD1235	1	1	1	2	5	1	1	1	1	1	1	1	1	1.85	1.73	0.126125	1.856125
RD5S250897	Rd53AD365	3	1	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.35513	1.85513
RD5S250897	Rd53AD366	1	4	1	1	1	1	1	1	1	1	1	1	1	1.6	1.5	0.35513	1.85513
RDWD401058	RdWDD936	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.9508	1.8508
RD3S400375	Rd3SD1470	2	1	1	1	1	4	1	1	1	1	1	1	1	1.5	1.4	0.44956	1.84956
RD3S171915	Rd3SD1102	2	1	1	1	2	4	1	1	1	1	1	1	1	1.7	1.6	0.24875	1.84875
RD46A404752	Rd4SD463	1	3	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.34768	1.84768
RD50A109898	Rd50AD781	2	1	1	1	1	5	1	1	1	1	1	1	1	1.6	1.5	0.34762	1.84762
RD8S231589	Rd8SD935	1	2	1	1	3	2	1	1	1	1	1	1	1	1.7	1.6	0.24553	1.84553
RD2AS66465	Rd2AAD1525	2	3	1	2	1	1	1	1	1	1	1	1	1	1.65	1.53	0.31545	1.84545
RD53A261181	Rd53AD1164	2	1	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.54118	1.84118
RD2S141054	Rd2SD1453	1	1	1	1	3	3	1	1	1	1	1	1	1	1.6	1.5	0.338695	1.838695
RD4S242068	Rd4SD64	2	1	1	2	1	5	1	1	1	1	1	1	1	1.65	1.53	0.30747	1.83747
RD45A241361	Rd45AD853	1	1	1	3	2	1	1	1	1	1	1	1	1	1.3	1.16	0.6758	1.8358
RD3S318216	Rd3SD211	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.634045	1.834045
RD49A109962	Rd49AD774	1	1	1	1	3	3	1	1	1	1	1	1	1	1.6	1.5	0.33399	1.83399
RD1AS367995	Rd1AAD1049	1	1	1	3	3	1	1	1	1	1	1	1	1	1.5	1.36	0.46856	1.82856
RD1AS367995	Rd1AAD1050	1	1	1	3	3	1	1	1	1	1	1	1	1	1.5	1.36	0.46856	1.82856
RDWD195931	RdWDD1020	1	2	1	1	1	4	2	1	1	1	1	1	1	1.55	1.43	0.398505	1.828505
RDCD63484	RdCOLD102	1	1	1	1	4	1	1	1	1	1	1	1	1	1.6	1.5	0.32711	1.82711
RDCD63484	RdcolD104	1	1	1	1	4	1	1	1	1	1	1	1	1	1.6	1.5	0.32711	1.82711
RD5S130488	Rd5SD1234	1	1	1	1	5	1	1	1	1	1	1	1	1	1.8	1.7	0.126125	1.826125
RDDA408475	Rd49AD1129	1	1	1	4	4	1	1	1	1	1	1	1	1	1.75	1.59	0.23437	1.82437
RDLS358643	RdLSD943	1	1	1	1	1	1	3	1	1	1	1	1	1	1.1	0.96	0.86385	1.82385
RD49A173047	Rd3SD1516	1	1	1	2	3	2	1	1	1	1	1	1	1	1.55	1.43	0.38861	1.81861
RD8S322479	Rd8SD96	4	1	1	1	1	2	1	1	1	1	1	1	1	1.7	1.6	0.21693	1.81693
RD4S93516	Rd4SD58	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.33	0.48467	1.81467
RDWR366240	RdWRD972	1	1	1	1	3	3	1	1	1	1	1	1	1	1.6	1.5	0.31457	1.81457
RD49A265521	Rd49AD750	3	1	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.30922	1.80922
RD8S322479	Rd8SD100	4	1	1	4	1	1	1	1	1	1	1	1	1	1.75	1.59	0.21693	1.80693
RD8S322479	Rd8SD99	4	1	1	4	1	1	1	1	1	1	1	1	1	1.75	1.59	0.21693	1.80693
RD52A61046	Rd52AD1186	3	1	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.3024	1.8024
RD47A406509	Rd47AD512	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.5014	1.8014
RDWD195931	RdWDD1019	1	2	1	1	1	4	1	1	1	1	1	1	1	1.5	1.4	0.398505	1.798505
RD4S188400	Rd4SD27	1	1	1	1	2	4	1	1	1	1	1	1	1	1.5	1.4	0.397346667	1.797346667
RD57A92161	Rd57AD36	1	1	1	1	1	5	2	1	1	1	1	1	1	1.45	1.33	0.46491	1.79491
RDXX241008	RdXXD337	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.69143	1.79143
RD5S101042	Rd5SD1224	1	3	2	1	2	1	1	1	1	1	1	1	1	1.7	1.6	0.186655	1.786655
RD3S308642	Rd3SD1518	1	2	1	1	2	3	1	1	1	1	1	1	1	1.6	1.5	0.28473	1.78473
RD2AS298689	Rd2AAD1562	1	1	1	4	1	5	1	1	1	1	1	1	1	1.55	1.39	0.39428	1.78428
RD2AS252812	Rd2AAD1530	1	1	1	1	3	3	1	1	1	1	1	1	1	1.6	1.5	0.283215	1.783215
RD4S365647	Rd4SD22	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.682185	1.782185
RD4S365647	Rd4SD24	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.682185	1.782185
RD4S365647	Rd4SD24	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.682185	1.782185
RD8S322479	Rd8SD95	4	1	1	3	1	1	1	1	1	1	1	1	1	1.7	1.56	0.21693	1.77693
RD2S180113	Rd2SD890	3	1	1	3	1	3	1	1	1	1	1	1	1	1.7	1.56	0.216095	1.776095
RDDA263144	Rd59AD120	3	1	1	1	1	3	1	1	1	1	1	1	1	1.6	1.5	0.275025	1.775025

RDDD330168	RdderoochieD1	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.57359	1.77359
RD51A97352	Rd51AD155	1	1	1	1	2	5	1	1	1	1	1	1	1	1.6	1.5	0.2734725	1.7734725
RDDA234793	Rd49AD1125	3	1	5	2	1	1	1	1	1	1	1	1	1	1.8	1.62	0.15233	1.77233
RD51A389321	Rd51AD76	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.57165	1.77165
RD50A91832	Rd50AD792	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.46983	1.76983
RD57A92161	Rd59AD35	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.46491	1.76491
RD3S272286	Rd3SD1154	2	1	1	2	1	3	1	1	1	1	1	1	1	1.45	1.33	0.43451	1.76451
RDLS358643	RdLSD942	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.86385	1.76385
RD4S93516	Rd4SD59	2	1	1	3	1	4	1	1	1	1	1	1	1	1.6	1.46	0.30078	1.76078
RD3S356896	Rd3SD817	3	1	1	1	1	1	1	1	1	1	1	1	1	1.4	1.3	0.45917	1.75917
RD39A379243	Rd3SD1274	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.65876	1.75876
RD1AS318807	Rd1AAD172	2	1	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.65693	1.75693
RD55A381910	Rd2ASD212	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.654816667	1.754816667
RD2S406803	Rd2SD1450	1	2	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.45479	1.75479
RD2S406803	Rd2SD1451	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.45479	1.75479
RD3S311246	Rd3SD204	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.75391	1.75391
RD3S311246	Rd3SD205	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.75391	1.75391
RDWC2158	RdWCD913	1	1	1	1	3	3	1	1	1	1	1	1	1	1.6	1.5	0.25266	1.75266
RD3S171915	Rd3SD1104	1	1	1	1	2	5	1	1	1	1	1	1	1	1.6	1.5	0.24875	1.74875
RD53A236477	Rd53AD360	1	3	1	1	1	2	1	1	1	1	1	1	1	1.5	1.4	0.34177	1.74177
RD53A261181	Rd53AD1159	1	2	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.54118	1.74118
RD53A261181	Rd53AD1162	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.54118	1.74118
RD2S141054	Rd2SD1454	1	1	1	1	2	4	1	1	1	1	1	1	1	1.5	1.4	0.338695	1.738695
RD8S157130	Rd8SD1310	3	1	1	3	2	1	1	1	1	1	1	1	1	1.7	1.56	0.17756	1.73756
RD45A241361	Rd45AD855	1	1	1	3	1	2	1	1	1	1	1	1	1	1.2	1.06	0.6758	1.7358
RD2S345720	Rd2SD189	2	1	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.43498	1.73498
RD49A93815	Rd49AD1523	1	1	1	1	2	3	1	1	1	1	1	1	1	1.4	1.3	0.434975	1.734975
RD46A115466	Rd46AD860	2	1	1	4	1	2	1	1	1	1	1	1	1	1.45	1.29	0.44412	1.73412
RD4S371256	Rd4SD40	2	1	1	1	1	5	1	1	1	1	1	1	1	1.6	1.5	0.23342	1.73342
RD54A165479	Rd54AD1145	1	1	1	2	2	1	1	1	1	1	1	1	1	1.25	1.13	0.60227	1.73227
RD46A187004	Rd46AD451	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.42862	1.72862
RD2S330815	Rd2SD198	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.72555	1.72555
RD51A154089	Rd51AD69	2	1	1	1	2	1	1	1	1	1	1	1	1	1.4	1.3	0.417665	1.717665
RD3S35636	Rd3SD207	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.81732	1.71732
RD3S35636	Rd3SD208	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.81732	1.71732
RD48A396624	Rd48AD1542	2	1	1	1	2	1	1	1	1	1	1	1	1	1.4	1.3	0.41588	1.71588
RDAR130377	RdAbD111	1	1	1	1	3	2	1	1	1	1	1	1	1	1.5	1.4	0.31526	1.71526
RD53A23078	Rd53AD250	1	1	1	2	1	4	1	1	1	1	1	1	1	1.35	1.23	0.48467	1.71467
RDWR366240	RdWRD977	1	1	1	1	3	2	1	1	1	1	1	1	1	1.5	1.4	0.31457	1.71457
RD48A261343	Rd48AD538	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.41292	1.71292
RD48A381715	Rd48AD522	1	1	1	1	3	2	1	1	1	1	1	1	1	1.5	1.4	0.30953	1.70953
RD48A381715	Rd48AD528	1	1	1	1	3	2	1	1	1	1	1	1	1	1.5	1.4	0.30953	1.70953
RD50A109898	Rd50AD710	1	1	1	1	1	5	3	1	1	1	1	1	1	1.5	1.36	0.34762	1.70762
RD8S157130	Rd8SD1313	4	1	1	2	1	1	1	1	1	1	1	1	1	1.65	1.53	0.17756	1.70756
RD1S262763	Rd1SD1048	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.4058	1.7058
RD48A341933	Rd48AD560	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.4043	1.7043
RD46A115466	Rd46AD864	1	1	1	3	1	4	1	1	1	1	1	1	1	1.4	1.26	0.44412	1.70412
RD47A406509	Rd47AD509	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.5014	1.7014
RD51A135768	RD51AD1472	1	1	1	3	1	1	1	1	1	1	1	1	1	1.1	0.96	0.740435	1.700435
RD1AS5616	Rd1AAD184	2	1	2	1	1	1	1	1	1	1	1	1	1	1.3	1.2	0.49961	1.69961
RDWD215951	RdWDD945	1	1	1	1	1	3	2	1	1	1	1	1	1	1.25	1.13	0.56942	1.69942
RD53A379930	Rd53AD253	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.39804	1.69804
RD53A379930	Rd53AD254	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.39804	1.69804
RD4S188400	Rd4SD25	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.397346667	1.697346667
RD4S188400	Rd4SD26	3	1	1	1	1	1	1	1	1	1	1	1	1	1.4	1.3	0.397346667	1.697346667
RD271RR74965	Rd5SD1205	1	2	3	3	1	1	1	1	1	1	1	1	1	1.6	1.46	0.23487	1.69487
RDXX241008	RdXXD338	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.69143	1.69143
RDXX241008	RdXXD340	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.69143	1.69143
RDXX241008	RdXXD341	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.69143	1.69143
RD50A315265	Rd50AD396	3	1	1	1	1	1	1	1	1	1	1	1	1	1.4	1.3	0.386515	1.686515
RD56A123923	Rd56AD46	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.48315	1.68315
RD50A109898	780	2	1	1	2	1	3	1	1	1	1	1	1	1	1.45	1.33	0.34762	1.67762
RD50A109898	Rd50AD782	1	2	1	2	1	3	1	1	1	1	1	1	1	1.45	1.33	0.34762	1.67762
RD4S303140	Rd4SD465	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.57736	1.67736
RD4S377966	Rd4SD29	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.376725	1.676725
RD4S377966	Rd4SD32	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.376725	1.676725
RD53A236477	Rd53AD362	1	1	1	1	1	5	2	1	1	1	1	1	1	1.45	1.33	0.34177	1.67177
RD51A389321	Rd51AD77	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.57165	1.67165
RD4S391419	Rd4SSD219	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.47022	1.67022
RD8S157130	Rd8SD1308	3	1	1	4	1	2	1	1	1	1	1	1	1	1.65	1.49	0.17756	1.66756
RD4S242068	Rd4SD65	3	1	1	3	1	1	1	1	1	1	1	1	1	1.5	1.36	0.30747	1.66747
RD51A7225	Rd51AD80	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.46488	1.66488
RD54A263143	Rd54AD238	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.56285	1.66285
RD53A33653	Rd53AD807	1	1	1	1	2	3	1	1	1	1	1	1	1	1.4	1.3	0.36242	1.66242
RD47A406509	Rd47AD508	1	1	1	3	1	3	1	1	1	1	1	1	1	1.3	1.16	0.5014	1.6614
RD7S322332	Rd7SD303	1	1	1	1	2	4	1	1	1	1	1	1	1	1.5	1.4	0.26039	1.66039
RD5S130488	Rd5SD1233	1	1	1	2	4	1	1	1	1	1	1	1	1	1.65	1.53	0.126125	1.656125
RD5S130488	Rd5SD1237	1	1	1	2	4	1	1	1	1	1	1	1	1	1.65	1.53	0.126125	1.656125
RD5S130488	Rd5SD1232	3	1	1	2	2	1	1	1	1	1	1	1	1	1.65	1.53	0.126125	1.656125
RD2S330815	Rd2SD196	1	2	1	3	1	1	1	1	1	1	1	1	1	1.3	0.93	0.72555	1.65555
RDWC149354	RdWCD949	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.52545	1.65545
RD55A381910	Rd55AD210	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.654816667	1.654816667
RDDA408475	Rd49AD1128	1	1	1	5	3	1	1	1	1	1	1	1	1	1.6	1.42	0.23437	1.65437
RD3S311246	Rd3SD203	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.75391	1.65391
RD51A342116	Rd51AD1449	1	2	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.3533	1.6533
RD2S400347	Rd2SD846	1	1	1	1	2	4	1	1	1	1	1	1	1	1.5	1.4	0.24539	1.64539
RD53A145741	Rd53AD257	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.34343	1.64343
RD53A145741	Rd53AD801	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.34343	1.64343
RD51A3979	Rd51AD1492	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.542545	1.642545
RDDA234793	Rd49AD1127	1	1	4	3	2	1	1	1	1	1	1	1	1	1.65	1.49	0.15233	1.64233
RD3S373994	Rd3SD731	3	1	1	1	2	1	1	1	1	2	1	1	1	1.55	1.42	0.22205	1.64205
RD53A236477	Rd5SD364	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.34177	1.64177
RD53A261181	Rd53AD1163	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.54118	1.64118
RDWR272044	RdWRD1035	1	1	1	1	2	3	1	1	1	1	1	1	1	1.4	1.3	0.33829	1.63829
RDWR272044	RdWRD1038	1	1	1	1	2	3	1	1	1	1	1	1	1	1.4	1.3	0.33829	1.63829
RD5S233850	Rd5SD1222	1	3	1	3	1	1	1	1	1	1	1	1	1	1.5	1.36	0.277356667	1.637356667
RD55A30015	Rd55AD215	2	1	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.53515	1.63515
RD49A109962	Rd49AD772	3	1	1	1	1	1	1	1	1	1	1	1	1	1.4	1.3	0.33399	1.63399
RD4S391419	Rd4SSD221	1	1	1	3	2	1	1	1	1	1	1	1	1	1.3	1.16	0.47022	1.63022
RDCD63484	RdcolD103	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.32711	1.62711
RD4S370930	Rd4SD565	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.326736667	1.626736667
RD5S130488	Rd5SD1241	1	2	1	1	3	1	1	1	1	1	1	1	1	1.6	1.5	0.126125	1.626125
RD5S409803	Rd5SD148	3	1	1	1	1	2	1	1	1	1	1	1	1	1.5	1.4	0.22563	1.62563
RD2S330815	Rd2SD197	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.72555	1.62555
RD271RR74965	Rd5SD1202	1	3	4	2	1	1	1	1	1	1	1	1	1	1.55	1.39	0.23487	1.62487
RD271RR74965	Rd5SD1203	1	3	4	2	1	1	1	1	1	1	1	1	1	1.55	1.39	0.23487	1.62487
RD2S187540	Rd2SD1140	1	1	1	1	5	1	1	1	1	1	1	1	1	1.4	1.3	0.31642	1.61642
RD2S255654	Rd2SD739	1	1	2	2	3	1	1	1	1	1	1	1	1	1.45	1.33	0.28614	1.61614
RD2S255654	Rd2SD738	3	1	1	2	1	1	1	1	1	1	1	1	1	1.45	1.33	0.28614	1.61614
RDWD379503	RdWDD1001	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.31568	1.61568
RD3S25033	Rd3SD1477	2	1	1	2	1	2	1	1	1	1	1	1	1	1.35	1.23	0.384715	1.614715
RDWR366240	RdWRD976	1	1	1	1	2	3	1	1	1	1	1	1	1	1.4	1.3	0.31457	1.61457
RDWR366240	RdWRD978	1	1	1	1	2	3	1	1	1	1	1	1	1	1.4	1.3	0.31457	1.61457
RD3S266011	Rd3SD1110	1	1	1	1	2	5	1	1	1	1	1	1	1	1.6	1.5	0.11355	1.61355
RD2AS252812	Rd2AAD1529	1	1	1	2	2	3	1	1	1	1	1	1	1	1.45	1.33	0.283215	1.613215

RD48A261343	Rd48AD536	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.41292	1.61292
RD52A366552	Rd52AD277	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.3111	1.6111
RD44A236953	Rd44AD837	1	1	1	1	1	4	3	1	1	1	1	1	1	1.4	1.26	0.35021	1.61021
RD48A381715	Rd48AD520	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.30953	1.60953
RD52A337373	Rd52AD1177	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.409293333	1.609293333
RD8S157130	Rd8SD1311	2	1	1	2	2	2	1	1	1	1	1	1	1	1.55	1.43	0.17756	1.60756
RD8S157130	Rd8SD1321	2	1	1	2	2	2	1	1	1	1	1	1	1	1.55	1.43	0.17756	1.60756
RD4S242068	Rd4SD63	2	1	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.30747	1.60747
RD5S26333	Rd5SD346	3	1	1	1	1	2	1	1	1	1	1	1	1	1.5	1.4	0.20634	1.60634
RD48A341933	Rd48AD555	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.4043	1.6043
RD51A97352	Rd51AD153	2	1	1	2	1	3	1	1	1	1	1	1	1	1.45	1.33	0.2734725	1.6034725
RD50A310028	Rd50AD1506	1	1	1	3	1	4	1	1	1	1	1	1	1	1.4	1.26	0.343435	1.603435
RD52A61046	Rd52AD1187	1	1	1	1	2	3	1	1	1	1	1	1	1	1.4	1.3	0.3024	1.6024
RD7S195983	Rd7SD402	1	2	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.30137	1.60137
RD7S203630	Rd7SD300	1	2	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.301135	1.601135
RD1AS373635	Rd1AAD179	1	2	1	4	1	2	1	1	1	1	1	1	1	1.45	1.29	0.30933	1.59933
RDCD331347	RdcolD106	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.398126667	1.598126667
RD53A379930	Rd53AD256	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.39804	1.59804
RD47A264927	Rd47AD1531	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.395975	1.595975
RD271RR74965	Rd5SD1200	1	3	1	3	1	1	1	1	1	1	1	1	1	1.5	1.36	0.23487	1.59487
RD271RR74965	Rd5SD1204	1	1	3	3	2	1	1	1	1	1	1	1	1	1.5	1.36	0.23487	1.59487
RD2AS112064	Rd2AAD1144	1	3	1	1	1	1	1	1	1	1	1	1	1	1.4	1.3	0.29452	1.59452
RD49A109962	Rd49AD779	1	1	1	2	1	4	2	1	1	1	1	1	1	1.4	1.26	0.33399	1.59399
RDXX241008	RdXXD339	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.69143	1.59143
RD4S391419	Rd4SSD218	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1.12	0.47022	1.59022
RD52A74928	Rd52AD1167	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.48877	1.58877
RD52A74928	Rd52AD1168	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.48877	1.58877
RD52A74928	Rd52AD1169	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.48877	1.58877
RD52A74928	Rd52AD1170	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.48877	1.58877
RD52A74928	Rd52AD1171	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.48877	1.58877
RD5S109032	Rd5SD1214	1	1	1	2	3	1	1	1	1	1	1	1	1	1.45	1.33	0.25759	1.58759
RDGCD237910	RdgCD1041	1	1	1	5	3	1	1	1	1	1	1	1	1	1.6	1.42	0.16525	1.58525
RDWR119138	RdWRD1031	1	1	1	2	1	4	1	1	1	1	1	1	1	1.35	1.23	0.35407	1.58407
RD48A149128	Rd48AD1534	1	2	1	2	1	1	1	1	1	1	1	1	1	1.25	1.13	0.45401	1.58401
RD56A123923	Rd56AD45	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.48315	1.58315
RD3S400375	Rd2SD1468	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.44956	1.57956
RD3S400375	Rd3SD1469	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.44956	1.57956
RD50A109898	Rd50AD788	1	2	1	2	1	2	1	1	1	1	1	1	1	1.35	1.23	0.34762	1.57762
RD4S303140	Rd4SD464	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.57736	1.57736
RD6S18236	Rd6SD352	2	1	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.27707	1.57707
RD4S377966	Rd4SD31	2	1	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.376725	1.576725
RD50AA322842	Rd50AAD167	1	1	1	1	2	4	1	1	1	1	1	1	1	1.5	1.4	0.17544	1.57544
RDDA263144	Rd59AD118	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.275025	1.575025
RD51A3980	Rd51AD1485	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.474865	1.574865
RD3S25033	RD51AD1471	2	1	1	4	1	1	1	1	1	1	1	1	1	1.35	1.19	0.384715	1.574715
RD2S80216	Rd2SD1137	3	1	2	1	1	1	1	1	1	1	1	1	1	1.5	1.4	0.1741	1.5741
RDDD330168	RdderoochieD3	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.57359	1.57359
RDDD330168	RdderoochieD4	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.57359	1.57359
RDDD330168	RdderoochieD5	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.57359	1.57359
RD48A261343	Rd48AD530	1	1	3	1	1	3	1	1	1	1	1	1	1	1.3	1.16	0.41292	1.57292
RD51A126126	Rd3ASD225	1	1	1	1	1	3	1	1	1	3	1	1	1	1.3	1.14	0.432286667	1.572286667
RD50A91832	Rd50AD793	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.46983	1.56983
RD48A381715	Rd48AD526	1	1	3	2	1	2	1	1	1	1	1	1	1	1.4	1.26	0.30953	1.56953
RD2S126498	Rd2SD765	1	1	3	1	1	3	1	1	1	1	1	1	1	1.3	1.16	0.4079	1.5679
RDWD215951	RdWSD948	4	1	1	4	1	2	1	1	1	1	1	1	1	1.85	1.1	0.46681	1.56681
RDDA316282	Rd59AD12	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.265485	1.565485
RDDA316282	Rd59AD18	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.265485	1.565485
RDDA316282	Rd59AD19	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.265485	1.565485
RD2S345720	Rd2SD191	1	1	1	1	1	3	2	1	1	1	1	1	1	1.25	1.13	0.43498	1.56498
RD51A7225	Rd51AD81	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.46488	1.56488
RDWS334845	RdWSD955	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.36379	1.56379
RD54A263143	Rd54AD237	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.56285	1.56285
RD54A263143	Rd54AD239	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.56285	1.56285
RD53A33653	Rd53AD267	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.36242	1.56242
RD53A33653	Rd53AD266	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.36242	1.56242
RD47A406509	Rd47AD510	1	1	1	3	1	2	1	1	1	1	1	1	1	1.2	1.06	0.5014	1.5614
RD3S356896	Rd3SD815	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.45917	1.55917
RD39A379243	Rd3SD1272	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.65876	1.55876
RD39A379243	Rd3SD1273	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.65876	1.55876
RD2AS231218	Rd2AAD1528	1	3	1	1	1	4	1	1	1	1	1	1	1	1.7	1.13	0.427343333	1.557343333
RD1AS318807	Rd52AD174	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.65693	1.55693
RD52A72450	Rd52AD270	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.656005	1.556005
RD5S250897	Rd53AD367	1	2	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.35513	1.55513
RD2S406803	Rd2SD1452	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.45479	1.55479
RD51A342116	Rd51AD1441	1	2	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.3533	1.5533
RD51A342116	Rd51AD1448	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.3533	1.5533
RD44A236953	Rd44AD834	2	1	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.35021	1.55021
RD45A369363	Rd45AD840	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.45013	1.55013
RD45A369363	Rd45AD842	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.45013	1.55013
RD51A154089	Rd51AD70	1	2	1	1	1	1	2	1	1	1	1	1	1	1.25	1.13	0.417665	1.547665
RD50A330881	Rd2SD1459	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.34742	1.54742
RD54A200080	Rd54AD315	2	1	1	1	1	3	1	1	1	1	1	1	1	1.4	1.3	0.245765	1.545765
RD53A145741	Rd53AD800	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.34343	1.54343
RD53A145741	Rd53AD803	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.34343	1.54343
RDWC2158	RdWCD921	1	1	1	1	2	2	4	1	1	1	1	1	1	1.45	1.29	0.25266	1.54266
RD51A3979	Rd51AD1490	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.542545	1.542545
RD5S333229	Rd5SD1242	3	1	1	1	1	1	1	1	1	1	1	1	1	1.4	1.3	0.24028	1.54028
RD52A337373	Rd4SD1480	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.409293333	1.539293333
RD52A337373	Rd52AD1175	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.409293333	1.539293333
RD52A337373	Rd52AD1176	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.409293333	1.539293333
RD2S141054	Rd2SD1455	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.338695	1.538695
RD50A109898	Rd50AD701	1	1	1	4	1	3	1	1	1	1	1	1	1	1.35	1.19	0.34762	1.53762
RD55A30015	Rd55AD214	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.53515	1.53515
RD49A93815	Rd49AD1520	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.434975	1.534975
RD46A136089	Rd46AD885	1	2	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.33486	1.53486
RD3S318216	Rd3SD209	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.634045	1.534045
RD3S318216	Rd3SD210	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.634045	1.534045
RD49A109962	Rd49AD776	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.33399	1.53399
RD51A126126	Rd51AD150	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.432286667	1.532286667
RD8S337388	Rd8SD433	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.43087	1.53087
RD55A65884	Rd55AD348	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1.03	0.500826667	1.530826667
RD1AS373635	Rd1AAD182	1	1	1	5	1	3	1	1	1	1	1	1	1	1.4	1.22	0.30933	1.52933
RD53A379930	Rd3SD206	1	1	1	1	1	3	2	1	1	1	1	1	1	1.25	1.13	0.39804	1.52804
RD4S370930	Rd4SD563	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.326736667	1.526736667
RD4S370930	Rd4SD562	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.326736667	1.526736667
RD2S289166	Rd2SD881	3	1	2	1	1	1	1	1	1	1	1	1	1	1.45	1.33	0.190845	1.520845
RD49A173047	Rd49AD1511	1	1	2	1	1	3	1	1	1	1	1	1	1	1.25	1.13	0.38861	1.51861
RD49A173047	Rd49AD1512	1	1	2	1	1	3	1	1	1	1	1	1	1	1.25	1.13	0.38861	1.51861
RD3S19566	Rd3SD819	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.517065	1.517065
RD50A261267	Rd50AD756	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.31588	1.51588
RDWD379503	RdWDD999	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.31568	1.51568
RD48A261343	Rd48AD529	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.41292	1.51292
RD48A261343	Rd48AD540	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.41292	1.51292
RD52A366552	Rd52AD279	2	1	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.3111	1.5111
RD4S31559	Rd4SD1493	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.41074	1.51074

RD1AS373635	Rd1AAD177	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.30933	1.50933
RD52A337373	Rd52AD1174	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.409293333	1.509293333
RD52A337373	Rd52AD1179	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.409293333	1.509293333
RD49A265521	Rd49AD749	2	1	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.30922	1.50922
RD49A265521	Rd49AD752	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.30922	1.50922
RD4S16835	Rd4SD56	2	1	1	2	1	1	1	1	1	1	1	1	1	1.25	1.13	0.37766	1.50766
RD50A109898	Rd50AD704	4	1	1	1	1	2	1	1	1	1	1	1	1	1.7	1.16	0.34762	1.50762
RD8S157130	Rd8SD1319	1	1	1	2	3	1	1	1	1	1	1	1	1	1.45	1.33	0.17756	1.50756
RD4S101857	Rd4SD502	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.40715	1.50715
RD3S409524	Rd3SD1263	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.20655	1.50655
RD51A3980	Rd51AD1489	1	1	1	1	1	2	2	1	1	1	1	1	1	1.15	1.03	0.474865	1.504865
RD3S300539	Rd3SD1246	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.204395	1.504395
RD48A341933	Rd48AD550	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.4043	1.5043
RD48A341933	Rd48AD552	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.4043	1.5043
RD48A341933	Rd48AD556	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.4043	1.5043
RDFV212845	RdFVD1115	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.5031	1.5031
RD52A61046	Rd52AD1191	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.3024	1.5024
RD7S195983	Rd7SD401	1	2	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.30137	1.50137
RD3S354252	Rd3SD1254	2	1	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.30128	1.50128
RD3S354252	Rd3SD1255	1	2	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.30128	1.50128
RD46A253174	Rd46AD454	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.59968	1.49968
RD1AS5616	Rd55AD185	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.49961	1.49961
RDWD195931	RdWDD1022	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.398505	1.498505
RD53A379930	Rd53AD252	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.39804	1.49804
RD53A379930	Rd53AD255	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.39804	1.49804
RD5S383616	Rd5SD50	1	1	1	1	1	5	1	1	1	1	1	1	1	1.4	1.3	0.19779	1.49779
RD5S177808	Rd5SD1207	2	1	1	3	2	1	1	1	1	1	1	1	1	1.5	1.36	0.137425667	1.497425667
RD53A281150	Rd53AD1157	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.495975	1.495975
RD271RR74965	Rd5SD1201	1	1	4	3	1	1	1	1	1	1	1	1	1	1.4	1.26	0.23487	1.49487
RD54A263143	Rd54AD240	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.56285	1.49285
RD53A33653	Rd53AD808	1	2	1	2	1	1	1	1	1	1	1	1	1	1.25	1.13	0.36242	1.49242
RD4S34717	Rd4SD468	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.2916	1.4916
RD49A173047	Rd49AD1514	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.38861	1.48861
RD5S130488	Rd5SD1231	1	1	1	3	3	1	1	1	1	1	1	1	1	1.5	1.36	0.126125	1.486125
RD2S108414	Rd2SD1197	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.5859	1.4859
RD2S108414	Rd2SD1199	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.5859	1.4859
RD50A261267	Rd50AD759	1	1	2	1	3	1	1	1	3	1	1	1	1	1.35	1.17	0.31588	1.48588
RDWC2158	RdWCD911	1	1	2	2	2	1	1	1	1	1	1	1	1	1.35	1.23	0.25266	1.48266
RD52A159197	Rd2SD1196	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.38216	1.48216
RDSC25688	RdSCD442	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.48176	1.48176
RD5S411461	Rd5SD1226	1	1	1	3	1	1	1	1	1	1	1	1	1	1.4	1.3	0.18005	1.48005
RD4S184564	Rd4SD137	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.2779	1.4779
RD50A109898	Rd50AD700	1	1	1	1	3	2	1	1	1	1	1	1	1	1.25	1.13	0.34762	1.47762
RD8S157130	Rd8SD1306	3	1	1	1	1	1	1	1	1	1	1	1	1	1.4	1.3	0.17756	1.47756
RD5S233850	Rd5SD1223	1	2	2	1	1	1	1	1	1	1	1	1	1	1.3	1.2	0.277356667	1.477356667
RD6S18236	Rd6SD353	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.27707	1.47707
RD6S18236	Rd6SD357	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.27707	1.47707
RD46A341577	Rd46AD437	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.37667	1.47667
RDDA263144	Rd59AD117	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.275025	1.475025
RDDA263144	Rd59AD119	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.275025	1.475025
RD51A3980	Rd51AD1486	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.474865	1.474865
RD51A3980	Rd51AD1486	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.474865	1.474865
RD51A3980	Rd51AD1487	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.474865	1.474865
RD51A3980	Rd51AD1488	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.474865	1.474865
RDSC25688	RdSKD440	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.48176	1.47176
RDSC25688	RdSCD441	1	1	2	1	1	3	1	1	1	1	1	1	1	1.15	0.99	0.48176	1.47176
RD4S391419	Rd4SSD218	1	1	2	1	2	4	1	1	1	1	1	1	1	1.3	1	0.47022	1.47022
RD50A91832	Rd50AD791	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.46983	1.46983
RD50AA260192	Rd50AAD718	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.26979	1.46979
RD50AA260192	Rd50AAD720	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.26979	1.46979
RDWD215951	RdWDD947	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.56942	1.46942
RD4S330491	Rd4SD1481	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.268665	1.468665
RD1S262763	Rd1SD1047	1	2	1	1	1	1	3	1	1	1	1	1	1	1.2	1.06	0.4058	1.4658
RDDA316282	Rd59AD21	1	1	1	1	1	1	2	1	1	1	1	1	1	1.05	1.2	0.265485	1.465485
RDDA316282	Rd59AD10	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.265485	1.465485
RDDA316282	Rd59AD15	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.265485	1.465485
RDGCD237910	RdgCD1034	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.16525	1.46525
RD51A7225	Rd51AD79	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.46488	1.46488
RD51A7225	Rd51AD83	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.46488	1.46488
RDFV212845	RdFVD1116	1	1	3	1	1	1	1	1	1	1	1	1	1	1.1	0.96	0.5031	1.4631
RD53A33653	Rd53AD805	1	1	1	1	2	2	1	1	1	1	1	1	1	1.15	1.1	0.36242	1.46242
RD53A33653	Rd53AD263	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.36242	1.46242
RD53A33653	Rd53AD804	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.36242	1.46242
RDWD238711	RdWDD961	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.36229	1.46229
RDWD238711	RdWDD963	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.36229	1.46229
RD51A126126	Rd51AD151	1	1	2	1	2	1	1	1	1	1	1	1	1	1.15	1.03	0.432286667	1.462286667
RD3S356896	Rd3SD816	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.45917	1.45917
RD3S131432	Rd3SD733	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.3578	1.4578
RD3S131432	Rd3SD735	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.3578	1.4578
RDWS229336	RdWSD960	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.46681	1.45681
RDWC149354	RdWCD952	1	1	2	1	1	1	1	1	1	1	1	1	1	1.05	0.93	0.52545	1.45545
RD4S134056	Rd4SD142	2	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.15487	1.45487
RD51A342116	Rd51AD1440	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.3533	1.4533
RD51A342116	Rd51AD1444	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.3533	1.4533
RD51A342116	Rd51AD1446	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.3533	1.4533
RD51A342116	Rd51AD1447	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.3533	1.4533
RDWC2158	RdWCD920	1	1	1	2	2	1	1	1	1	1	1	1	1	1.3	1.2	0.25266	1.45266
RD5S169401	Rd5SD291	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.45197	1.45197
RD45A369363	Rd45AD839	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.45013	1.45013
RD3S171915	Rd3SD1106	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.24875	1.44875
RD50A109898	Rd50AD702	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34762	1.44762
RD50A109898	Rd50AD786	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34762	1.44762
RD51A244599	Rd51AD157	2	1	1	1	2	1	1	1	1	1	1	1	1	1.3	1.2	0.247206667	1.447206667
RDTR286696	RdTRD1143	1	1	4	1	2	1	1	1	1	1	1	1	1	1.25	1.09	0.3562	1.4462
RD48A396624	Rd48AD1544	1	1	2	1	2	1	1	1	1	1	1	1	1	1.15	1.03	0.41588	1.44588
RD2S400347	Rd2SD845	2	1	1	1	2	1	1	1	1	1	1	1	1	1.3	1.2	0.24539	1.44539
RDWD22491	RdWDD1011	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.24351	1.44351
RD50A310028	Rd50AD1504	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.343435	1.443435
RD53A145741	Rd53AD258	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34343	1.44343
RD53A145741	Rd53AD259	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34343	1.44343
RD53A145741	Rd53AD261	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34343	1.44343
RD53A145741	Rd53AD262	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34343	1.44343
RD53A145741	Rd53AD802	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34343	1.44343
RD53A236477	Rd53AD359	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34177	1.44177
RD53A236477	Rd53AD361	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.34177	1.44177
RD6S25996	Rd6SD350	1	1	1	1	4	1	1	1	1	1	1	1	1	1.3	1.2	0.24165	1.44165
RD51A110101	Rd51AD162	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.441145	1.441145
RD51A110101	Rd51AD164	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.441145	1.441145
RD3AS340149	Rd3ASD232	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.340545	1.440545
RD3AS340149	Rd3ASD234	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.340545	1.440545
RDWR272044	RdWRD1037	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.33829	1.43829
RD49A256822	Rd49AD770	1	1	1	1	3	1	1	1	1	1	1	1	1	1.2	1.1	0.33702	1.43702
RD2S345720	Rd2SD190	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.43498	1.43498
RD2S345720	Rd2SD192	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.43498	1.43498
RD2S345720	Rd2SD193	1	1	1	1	2	1	1	1	1	1	1	1	1	1.1	1	0.43498	1.43498

RD2S345720	Rd2SD195	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.43498	1.43498
RD3S272286	Rd3SD1155	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.43451	1.43451
RD49A109962	Rd49AD777	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.33399	1.43399
RD49A109962	Rd49AD778	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.33399	1.43399
RD4S371256	Rd4SD39	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.23342	1.43342
RD47A406509	Rd2SD737	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.5014	1.4314
RD8S337388	Rd8SD432	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.43087	1.43087
RD8S337388	Rd8SD434	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.43087	1.43087
RD4S93516	Rd4SD61	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.30078	1.43078
RD41A65824	Rd41AD1248	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.52792	1.42792
RD55A310002	Rd55AD217	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.327395	1.427395
RD4S370930	Rd4SD566	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.326736667	1.426736667
RD5S130488	Rd5SD1240	1	1	1	1	3	1	1	1	1	1	1	1	1	1.4	1.3	0.126125	1.426125
RD50A273439	Rd2SD1467	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.325455	1.425455
RDWC149354	RdWCD950	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.52545	1.42545
RDWC149354	RdWCD951	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.52545	1.42545
RDWC149354	RdWCD954	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.52545	1.42545
RD48A341933	Rd48AD544	1	1	1	1	1	2	1	1	1	2	1	1	1	1.15	1.02	0.4043	1.4243
RD55A13722	Rd55AD323	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.2241425	1.4241425
RD2S179399	Rd2SD1408	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.22136	1.42136
RD2S179399	Rd2SD1409	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.22136	1.42136
RD3S210294	Rd3SD726	1	2	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.31849	1.41849
RD3S19566	Rd3SD818	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.517065	1.417065
RD2S187540	Rd2SD1141	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.31642	1.41642
RD2S255654	Rd2SD740	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.28614	1.41614
RD50A261267	Rd50AD758	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.31588	1.41588
RDWD379503	RdWDD1000	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.31568	1.41568
RDWD379503	RdWDD995	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.31568	1.41568
RDWD379503	RdWDD996	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.31568	1.41568
RD53A23078	Rd53AD251	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.48467	1.41467
RDWR366240	RdWRD971	1	1	1	1	2	1	1	1	1	1	1	1	1	1.2	1.1	0.31457	1.41457
RDWR366240	RdWRD973	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.31457	1.41457
RD48A261343	Rd48AD531	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.41292	1.41292
RD48A261343	Rd48AD537	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.41292	1.41292
RD48A261343	Rd48AD541	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.41292	1.41292
RDSC25688	RdSCD443	1	1	1	1	1	1	2	1	1	1	1	1	1	1.05	0.93	0.48176	1.41176
RD52A366552	Rd52AD275	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.3111	1.4111
RDWA2157	RdWAD922	2	1	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.31089	1.41089
RD4S31559	Rd4SD1494	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.41074	1.41074
RD8S315919	Rd8SD900	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.40998	1.40998
RD8S315919	Rd8SD901	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.40998	1.40998
RD8S315919	Rd8SD902	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.40998	1.40998
RD48A381715	Rd48AD526	1	1	1	1	2	1	1	1	1	1	1	1	1	1.2	1.1	0.30953	1.40953
RD49A265521	Rd49AD747	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.30922	1.40922
RD4S184564	Rd4SD138	1	1	1	1	1	3	2	1	1	1	1	1	1	1.25	1.13	0.2779	1.4079
RDXX189007	RdXXD500	1	1	1	5	1	1	1	1	1	1	1	1	1	1.2	1.02	0.38769	1.40769
RD2S9234	Rd2SD1402	1	2	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.30768	1.40768
RD2S9234	Rd2SD1404	1	2	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.30768	1.40768
RD3S7476	Rd3SD830	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.40743	1.40743
RD8S322479	Rd8SD97	2	1	1	4	1	1	1	1	1	1	1	1	1	1.35	1.19	0.21693	1.40693
RD3S409524	Rd3SD1261	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.20655	1.40655
RD3AS179148	Rd3ASD242	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.3057	1.4057
RD4S80437	Rd4SD1483	1	1	1	1	1	3	2	1	1	1	1	1	1	1.25	1.13	0.275055	1.405055
RD48A341933	Rd48AD542	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.4043	1.4043
RD48A341933	Rd48AD545	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.4043	1.4043
RD48A341933	Rd48AD546	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.4043	1.4043
RD48A341933	Rd48AD547	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.4043	1.4043
RD48A341933	Rd48AD549	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.4043	1.4043
RD48A341933	Rd48AD554	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.4043	1.4043
RD48A341933	Rd4SD570	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.4043	1.4043
RD46A115466	Rd46AD861	1	1	1	3	1	1	1	1	1	1	1	1	1	1.1	0.96	0.44412	1.40412
RD52A61046	Rd52AD1185	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.3024	1.4024
RD52A61046	Rd52AD1189	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.3024	1.4024
RD8S203101	Rd8SD929	1	1	1	1	1	3	1	1	1	3	1	1	1	1.3	1.14	0.2619	1.4019
RD3S354252	Rd3SD1259	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.30128	1.40128
RD53A23078	Rd4SD58	1	1	1	2	1	5	1	1	1	1	1	1	1	1.45	1.1	0.30078	1.40078
RDCD331347	RdcolD105	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.398126667	1.398126667
RD2S126498	Rd2SD763	1	1	1	4	1	1	1	1	1	1	1	1	1	1.15	0.99	0.4079	1.3979
RD5S177808	Rd5SD1208	1	1	1	3	2	2	1	1	1	1	1	1	1	1.4	1.26	0.137425667	1.397425667
RD5S177808	Rd5SD1209	1	1	1	3	2	2	1	1	1	1	1	1	1	1.4	1.26	0.137425667	1.397425667
RD53A393100	Rd53AD301	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.29557	1.39557
RD3AS336644	Rd3ASD228	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.29287	1.39287
RDSA106761	RdSA1033	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.49249	1.39249
RD53A33653	Rd53AD805	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.03	0.36242	1.39242
RD4S34717	Rd4SD467	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.2916	1.3916
RD4S34717	Rd4SD469	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.2916	1.3916
RD40A120070	Rd40AD1247	1	2	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.28656	1.38656
RDTR286696	RdTRD1142	1	1	1	1	1	2	2	1	1	1	1	1	1	1.15	1.03	0.3562	1.3862
RD53A23078	Rd53AD249	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.48467	1.38467
RD3S173921	Rd3SD1182	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.284245	1.384245
RD5S169401	Rd5SD290	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.45197	1.38197
RD5S345917	Rd5SD1215	1	1	1	2	2	1	1	1	1	1	1	1	1	1.25	1.13	0.249705	1.379705
RD2S330268	Rd2SD1413	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.17892	1.37892
RD2S88879	Rd2SD1420	1	1	1	1	1	3	4	1	1	1	1	1	1	1.35	1.19	0.18861	1.37861
RD8S157130	Rd8SD1317	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.17756	1.37756
RD8S157130	Rd8SD1340	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.17756	1.37756
RD51A244599	Rd51AD161	1	1	1	1	1	3	2	1	1	1	1	1	1	1.25	1.13	0.247206667	1.377206667
RD6S18236	Rd53AD358	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.27707	1.37707
RD4S377966	Rd4SD30	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.376725	1.376725
RD50A261267	Rd2SD760	1	1	1	3	1	2	1	1	1	1	1	1	1	1.2	1.06	0.31588	1.37588
RD50AA322842	Rd50AAD406	1	1	1	1	2	2	1	1	1	1	1	1	1	1.3	1.2	0.17544	1.37544
RD50AA322842	Rd50AAD409	1	2	1	1	1	2	1	1	1	1	1	1	1	1.3	1.2	0.17544	1.37544
RD51A97352	Rd51AD156	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.2734725	1.3734725
RD2S342387	Rd2SD744	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.27049	1.37049
RD4S391419	Rd4SSD215	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.47022	1.37022
RD4S391419	Rd4SSD216	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.47022	1.37022
RDWD344654	RdWDD1025	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.27011	1.37011
RDWD344654	RdWDD1027	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.27011	1.37011
RD50AA260192	Rd50AAD712	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26979	1.36979
RD50AA260192	Rd50AAD713	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26979	1.36979
RD50AA260192	Rd50AAD716	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26979	1.36979
RD50AA260192	Rd50AAD716	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26979	1.36979
RD50AA260192	Rd50AAD717	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26979	1.36979
RD50AA260192	Rd50AAD719	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26979	1.36979
RD4S330491	Rd4SD1482	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.268665	1.368665
RD2S126498	Rd2SD761	1	1	1	3	1	1	1	1	1	1	1	1	1	1.1	0.96	0.4079	1.3679
RDWD38625	RdWDD1006	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26622	1.36622
RDDA316282	Rd59AD13	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.265485	1.365485
RDDA316282	Rd59AD14	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.265485	1.365485
RDDA316282	Rd59AD15	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.265485	1.365485
RDDA316282	Rd59AD16	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.265485	1.365485
RDDA316282	Rd59AD9	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.265485	1.365485
RD51A7225	Rd8SD414	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.46488	1.36488
RD55A149862	Rd55AD329	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.263536667	1.363536667
RD55A149862	Rd55AD331	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.263536667	1.363536667

RD55A149862	Rd55AD332	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.263536667	1.363536667
RD8S172620	Rd8SD416	2	1	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.2625	1.3625
RD53A33653	Rd53AD264	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.36242	1.36242
RD53A33653	Rd53AD265	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.36242	1.36242
RD49A387212	Rd4SD144	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.2621	1.3621
RD7S322332	Rd7SD304	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26039	1.36039
RD7S322332	Rd7SD307	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26039	1.36039
RD7S322332	Rd7SD308	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.26039	1.36039
RD46A187004	Rd46AD450	1	1	1	1	1	1	2	1	1	1	1	1	1	1.05	0.93	0.42862	1.35862
RD3S131432	Rd3SD734	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3578	1.3578
RD3S131432	Rd3SD736	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3578	1.3578
RD5S109032	Rd5SD1212	1	2	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.25759	1.35759
RDTR286696	RdTRD1141	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3562	1.3562
RD50A273439	Rd2SD1466	1	1	1	2	1	2	1	1	1	1	1	1	1	1.15	1.03	0.325455	1.355455
RD4S134056	Rd4SD142	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	1.2	0.15487	1.35487
RD50A155485	Rd50AD1503	1	1	1	1	1	3	3	1	1	1	1	1	1	1.3	1.16	0.19471	1.35471
RD55A13722	Rd55AD325	1	1	1	1	1	3	2	1	1	1	1	1	1	1.25	1.13	0.2241425	1.3541425
RD51A342116	Rd51AD1442	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3533	1.3533
RD51A342116	Rd51AD1445	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3533	1.3533
RD52A332623	Rd52AD271	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4506	1.3506
RD52A332623	Rd52AD272	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4506	1.3506
RD52A332623	Rd52AD273	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4506	1.3506
RD52A332623	Rd52AD274	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4506	1.3506
RD52A332623	Rd52AD809	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4506	1.3506
RD52A332623	Rd52AD810	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4506	1.3506
RD52A332623	Rd52AD811	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4506	1.3506
RD52A332623	Rd52AD812	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4506	1.3506
RDWA72158	RdWAD910	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.2506	1.3506
RD44A236953	Rd44AD835	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.35021	1.35021
RD45A369363	Rd45AD841	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.45013	1.35013
RD45A369363	Rd45AD843	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.45013	1.35013
RD5S345917	Rd5SD1216	1	1	1	1	2	1	1	1	1	1	1	1	1	1.2	1.1	0.249705	1.349705
RD3S210294	Rd3SD728	1	1	1	1	1	2	2	1	1	1	1	1	1	1.15	1.03	0.31849	1.34849
RD46A404752	Rd46AD461	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.34768	1.34768
RD50A109898	Rd4SD139	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.34762	1.34762
RD50A109898	Rd50AD706	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.34762	1.34762
RD50A109898	Rd50AD787	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.34762	1.34762
RD50A330881	Rd2SD1458	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.34742	1.34742
RD51A244599	Rd51AD160	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.247206667	1.347206667
RD53A45860	Rd53AD1142	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.44704	1.34704
RD53A45860	Rd53AD1143	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.44704	1.34704
RDWD396514	RdWDD1024	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.24703	1.34703
RD55A369769	Rd55AD213	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.346095	1.346095
RD54A200080	Rd54AD311	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.245765	1.345765
RD54A200080	Rd54AD312	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.245765	1.345765
RD8S231589	Rd8SD931	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.24553	1.34553
RD2S400347	Rd2SD847	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.24539	1.34539
RDWD22491	RdWDD1008	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.24351	1.34351
RDWD22491	RdWDD1010	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.24351	1.34351
RDWD22491	RdWDD1015	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.24351	1.34351
RD53A145741	Rd53AD260	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.34343	1.34343
RD5S138661	Rd55AD348	1	1	1	1	1	2	2	1	1	1	1	1	1	1.15	1	0.34086375	1.34086375
RD3AS340149	Rd3ASD233	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.340545	1.340545
RD3AS340149	Rd3ASD235	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.340545	1.340545
RD52A110832	Rd52AD1173	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.24017	1.34017
RD52A110832	Rd52AD1173	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.24017	1.34017
RDXX229504	RdXXD37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.43911	1.33911
RDWR272044	RdWRD1036	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.33829	1.33829
RD4S101857	Rd4SD503	1	1	1	1	1	1	2	1	1	1	1	1	1	1.05	0.93	0.40715	1.33715
RD3AS230643	Rd3ASD230	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.236685	1.336685
RD45A173941	Rd45AD825	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.205785	1.335785
RD2S345720	Rd2SD194	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.43498	1.33498
RD4S371256	Rd4D38	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.23342	1.33342
RD54A286619	Rd54AD309	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3324	1.3324
RD54A286619	Rd54AD310	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3324	1.3324
RD8S337388	Rd8SD430	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.43087	1.33087
RD8S337388	Rd8SD431	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.43087	1.33087
RD55A310002	Rd55AD216	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.327395	1.327395
RD50A273439	Rd2SD1464	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.325455	1.325455
RD55A13722	Rd55AD324	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.2241425	1.3241425
RD2S179399	Rd2SD1405	2	1	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.22136	1.32136
RD2S179399	Rd2SD1406	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.22136	1.32136
RD50A29969	Rd50AD398	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31888	1.31888
RD3S210294	Rd3SD727	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31849	1.31849
RD5S101042	Rd5SD1225	1	2	1	2	1	1	1	1	1	1	1	1	1	1.25	1.13	0.186655	1.316655
RD48A396624	Rd48AD1541	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.41588	1.31588
RD50A261267	Rd50AD754	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31588	1.31588
RD50A261267	Rd50AD755	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31588	1.31588
RD50A261267	Rd50AD757	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31588	1.31588
RDWD379503	RdWDD998	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31568	1.31568
RDWR366240	RdWRD975	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31457	1.31457
RD3S206553	Rd3SD201	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.21346	1.31346
RDWA2157	RdWAD923	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31089	1.31089
RDWA2157	RdWAD924	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31089	1.31089
RDWA2157	RdWAD925	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.31089	1.31089
RD48A381715	Rd48AD523	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30953	1.30953
RD49A265521	Rd49AD748	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30922	1.30922
RD49A265521	Rd49AD751	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30922	1.30922
RD2S9234	Rd2SD1400	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30768	1.30768
RD8S157130	Rd8SD1320	1	1	1	2	2	1	1	1	1	1	1	1	1	1.25	1.13	0.17756	1.30756
RD8S157130	Rd8SD1341	1	1	1	2	1	3	1	1	1	1	1	1	1	1.25	1.13	0.17756	1.30756
RD3S7476	Rd3SD828	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.40743	1.30743
RD46A341577	Rd46AD439	1	1	1	1	1	1	2	1	1	1	1	1	1	1.05	0.93	0.37667	1.30667
RDSM382476	RdSMD444	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4066	1.3066
RDSM382476	RdSMD445	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4066	1.3066
RDSM382476	RdSMD446	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4066	1.3066
RDSM382476	RdSMD447	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4066	1.3066
RDSM382476	RdSMD448	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4066	1.3066
RDSM382476	RdSMD449	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4066	1.3066
RD3S409524	Rd3SD1266	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.20655	1.30655
RD3S409524	Rd3SD1267	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.20655	1.30655
RD50A44673	Rd2SD1456	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30596	1.30596
RD3AS179148	Rd3ASD244	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3057	1.3057
RD3AS179148	Rd3ASD246	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.3057	1.3057
RD48A341933	Rd48AD543	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4043	1.3043
RD48A341933	Rd48AD551	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.4043	1.3043
RD4S178668	Rd4SD573	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.203065	1.303065
RD4S178668	Rd4SD575	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.203065	1.303065
RD4S178668	Rd4SD576	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.203065	1.303065
RD7S195983	Rd7SD400	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30137	1.30137
RD7S195983	Rd7SD404	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30137	1.30137
RD3S354252	Rd3SD1256	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30128	1.30128
RD3S354252	Rd3SD1260	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.30128	1.30128
RDWD195931	RdWDD1018	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.398505	1.298505
RDSA142598	RdWRD1039	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2972	1.2972

RD7S412981	Rd7SD411	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.19608	1.29608
RD8S21104	Rd51AD84	1	2	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.19517	1.29517
RD3AS336644	Rd3ASD227	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.29287	1.29287
RD53A33653	Rd53AD268	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.36242	1.29242
RD4S34717	Rd4SD466	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2916	1.2916
RD50A315265	Rd50AD395	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.386515	1.286515
RDTR286696	RdTRD1139	1	1	1	1	1	1	2	1	1	1	1	1	1	1.05	0.93	0.3562	1.2862
RD3S24950	Rd3SD724	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2847	1.2847
RD3S24950	Rd3SD724	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2847	1.2847
RD3S24950	Rd3SD728	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2847	1.2847
RD3S173921	Rd3SD1181	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.284245	1.284245
RD47A404608	Rd47AD507	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.28294	1.28294
RD52A153570	Rd52AD292	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.181725	1.281725
RD52A153570	Rd52AD293	1	1	1	1	2	1	1	1	1	1	1	1	1	1.2	1.1	0.181725	1.281725
RD8S157130	Rd8SD136	2	1	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.17756	1.27756
RD8S157130	Rd8SD1323	1	1	1	1	2	1	1	1	1	1	1	1	1	1.2	1.1	0.17756	1.27756
RD8S157130	Rd8SD1325	1	1	1	1	2	1	1	1	1	1	1	1	1	1.2	1.1	0.17756	1.27756
RD8S157130	Rd8SD1332	1	1	1	1	2	1	1	1	1	1	1	1	1	1.2	1.1	0.17756	1.27756
RD8S157130	Rd8SD1336	1	1	1	1	2	1	1	1	1	1	1	1	1	1.2	1.1	0.17756	1.27756
RD6S18236	Rd6SD355	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.27707	1.27707
RD6S18236	Rd6SD356	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.27707	1.27707
RD46A341577	Rd46AD438	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.37667	1.27667
RD50AA322842	Rd50AAD165	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.17544	1.27544
RD50AA322842	Rd50AAD407	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.17544	1.27544
RD50AA322842	Rd50AAD408	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.17544	1.27544
RD50AA260192	Rd3SD723	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.26979	1.26979
RD50AA260192	Rd50AAD715	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.26979	1.26979
RD1AS373635	Rd1AAD181	1	1	1	1	1	1	1	1	1	1	1	4	1	1.15	0.96	0.30933	1.26933
RD49A265521	Rd49AD746	1	1	2	1	1	1	2	1	1	1	1	1	1	1.1	0.96	0.30922	1.26922
RD5S177808	Rd5SD1210	1	1	2	2	1	1	1	1	1	1	1	1	1	1.25	1.13	0.137425667	1.267425667
RD5S177808	Rd5SD1211	1	1	2	2	1	1	1	1	1	1	1	1	1	1.25	1.13	0.137425667	1.267425667
RDDA316282	Rd59AD11	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.265485	1.265485
RDDA316282	Rd59AD17	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.265485	1.265485
RDDA316282	Rd59AD7	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.265485	1.265485
RDDA316282	Rd59AD8	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.265485	1.265485
RDWS334845	RdWSD956	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.36379	1.26379
RDWS334845	RdWSD957	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.36379	1.26379
RDWS334845	RdWSD958	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.36379	1.26379
RDWS334845	RdWSD959	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.36379	1.26379
RD55A149862	Rd55AD326	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.263536667	1.263536667
RD55A149862	Rd55AD328	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.263536667	1.263536667
RD55A149862	Rd55AD330	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.263536667	1.263536667
RD8S172620	Rd8SD418	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2625	1.2625
RDWD238711	RdWDD962	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.36229	1.26229
RD8S203101	Rd8SD926	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2619	1.2619
RD3S54162	Rd3SD1268	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.16104	1.26104
RD7S322332	Rd7SD305	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.26039	1.26039
RD7S322332	Rd7SD306	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.26039	1.26039
RDTR286696	RdTRD1140	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.3562	1.2562
RD50A273439	Rd2SD1465	1	1	2	1	1	1	1	1	1	1	1	1	1	1.05	0.93	0.325455	1.255455
RD4S134056	Rd4SD140	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.15487	1.25487
RD4S134056	Rd4SD141	1	1	1	1	1	3	1	1	1	1	1	1	1	1.2	1.1	0.15487	1.25487
RDWR119138	RdWRD1030	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.35407	1.25407
RD3S171915	Rd3SD1105	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.24875	1.24875
RD46A404752	Rd46AD460	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.34768	1.24768
RD46A404752	Rd46AD462	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.34768	1.24768
RD8S256733	Rd8SD418	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.24755	1.24755
RD8S256733	Rd8SD419	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.24755	1.24755
RDMVC148167	RdMVCD1370	1	1	1	5	1	1	1	1	1	1	1	1	1	1.2	1.02	0.22741	1.24741
RD51A244599	Rd51AD158	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.247206667	1.247206667
RD51A244599	Rd51AD159	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.247206667	1.247206667
RD51A244599	Rd51AD159	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.247206667	1.247206667
RD51A244599	Rd51AD159	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.247206667	1.247206667
RD54A200080	Rd54AD314	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.245765	1.245765
RD8S231589	Rd8SD930	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.24553	1.24553
RD8S231589	Rd8SD932	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.24553	1.24553
RD8S231589	Rd8SD933	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.24553	1.24553
RD2S400347	Rd2SD844	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.24539	1.24539
RDWD22491	RdWDD1014	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.24351	1.24351
RD2S179399	Rd2SD1407	1	1	1	1	1	2	1	1	1	2	1	1	1	1.15	1.02	0.22136	1.24136
RD50A142971	Rd2SD1460	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.241323333	1.241323333
RD50A142971	Rd2SD1462	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.241323333	1.241323333
RD50A142971	Rd2SD1462	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.241323333	1.241323333
RD55A65884	Rd55AD349	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.34086375	1.24086375
RDWD80169	RdWDD1004	1	1	1	1	1	1	5	1	1	1	1	1	1	1.2	1.02	0.21983	1.23983
RD49A256822	Rd49AD768	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.33702	1.23702
RD49A256822	Rd49AD769	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.33702	1.23702
RD3AS230643	Rd3ASD229	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.236685	1.236685
RD3AS230643	Rd3ASD231	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.236685	1.236685
RD8S20093	Rd8SD904	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.226965	1.226965
RDGCD237910	RdgCD1037	1	2	3	1	1	1	1	1	1	1	1	1	1	1.2	1.06	0.16525	1.22525
RD55A13722	Rd55AD320	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2241425	1.2241425
RD55A13722	Rd55AD321	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.2241425	1.2241425
RD4S64997	Rd4SD136	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.222885	1.222885
RD4S64997	Rd4SD137	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.222885	1.222885
RD50A300712	Rd50AD390	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.222395	1.222395
RD50A300712	Rd50AD391	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.222395	1.222395
RD5S154481	Rd5SD150	1	1	2	1	1	2	1	1	1	1	1	1	1	1.15	1.03	0.19209	1.22209
RDWD80169	RdWDD1003	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.21983	1.21983
RDWD80169	RdWDD1005	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.21983	1.21983
RD50A29969	Rd50AD397	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.31888	1.21888
RD50A29969	Rd50AD399	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.31888	1.21888
RD3S210294	Rd3SD725	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.31849	1.21849
RD2S180113	Rd2SD891	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.216095	1.216095
RD3S266011	Rd3SD1108	2	1	1	1	1	1	1	1	1	1	1	1	1	1.2	1.1	0.11355	1.21355
RD50A300712	Rd6SD392	1	1	1	4	1	1	1	1	1	1	1	1	1	1.15	0.99	0.222395	1.212395
RD52A366552	Rd52AD276	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.3111	1.2111
RD52A366552	Rd52AD278	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.3111	1.2111
RD48A381715	Rd48AD521	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.30953	1.20953
RD48A381715	Rd48AD525	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.30953	1.20953
RD2S9234	Rd2SD1401	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.30768	1.20768
RD8S157130	Rd8SD1301	1	1	2	1	1	2	1	1	1	1	1	1	1	1.15	1.03	0.17756	1.20756
RD8S157130	Rd8SD1312	1	1	2	1	1	2	1	1	1	1	1	1	1	1.15	1.03	0.17756	1.20756
RD8S157130	Rd8SD1331	1	1	2	1	1	2	1	1	1	1	1	1	1	1.15	1.03	0.17756	1.20756
RD8S322479	Rd8SD98	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.21693	1.20693
RD5S26333	Rd5SD345	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.20634	1.20634
RD45A173941	Rd3SD827	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.205785	1.205785
RD45A173941	Rd45AD821	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.205785	1.205785
RD3S300539	Rd3SD1245	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.204395	1.204395
RD2S78305	Rd2SD199	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.30416	1.20416
RD2S78305	Rd2SD200	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.30416	1.20416
RD49A280882	Rd49AD577	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.303255	1.203255
RD4S178668	Rd4SD571	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.203065	1.203065
RD3S354252	Rd3SD1253	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.30128	1.20128
RD7S203630	Rd7SD298	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.301135	1.201135
RD7S203630	Rd7SD299	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.301135	1.201135

RD5S383616	Rd5SD48	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.19779	1.19779
RDSA142598	RdSAD1032	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2972	1.1972
RD7S412981	Rd7SD412	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.19608	1.19608
RD7S412981	Rd7SD413	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.19608	1.19608
RD53A393100	Rd53AD302	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.29557	1.19557
RDDA316282	Rd59AD20	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.265485	1.195485
RDDA316282	Rd59AD21	1	1	1	1	1	4	1	1	1	1	1	1	1	1.3	0.93	0.265485	1.195485
RD3AS336644	Rd3ASD226	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.29287	1.19287
RD4S34717	Rd4SD499	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2916	1.1916
RD2S88879	Rd2SD1417	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.18861	1.18861
RD2S88879	Rd2SD1424	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.18861	1.18861
RD5S389669	Rd54AD318	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.285845	1.185845
RD5S389669	Rd5SD316	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.285845	1.185845
RD5S389669	Rd5SD319	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.285845	1.185845
RD8S304930	Rd8SD130	1	2	1	1	1	1	1	1	1	1	1	1	1	1.1	1	0.18571	1.18571
RD3S24950	Rd3SD726	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2847	1.1847
RD3S24950	Rd3SD727	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2847	1.1847
RD47A404608	Rd47AD504	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.28294	1.18294
RD47A404608	Rd47AD505	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.28294	1.18294
RD47A404608	Rd47AD506	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.28294	1.18294
RD47A404608	Rd47AD507	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	0.9	0.28294	1.18294
RD52A153570	Rd52AD294	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.181725	1.181725
RD52A153570	Rd52AD295	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.181725	1.181725
RD52A153570	Rd52AD295	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.181725	1.181725
RD2S330268	Rd2SD1415	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17892	1.17892
RD8S157130	Rd8SD1300	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17756	1.17756
RD8S157130	Rd8SD1314	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17756	1.17756
RD59A345044	Rd8SD95	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.177445	1.177445
RD5S233850	Rd5SD1217	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.277356667	1.177356667
RD5S233850	Rd5SD1219	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.277356667	1.177356667
RD50AA322842	Rd50AAD163	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17544	1.17544
RD50AA322842	Rd50AAD164	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17544	1.17544
RD50AA322842	Rd50AAD410	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17544	1.17544
RD50AA322842	Rd50AAD410	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17544	1.17544
RD8S371274	Rd8SD422	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17485	1.17485
RD8S371274	Rd8SD423	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17485	1.17485
RD8S371274	Rd8SD424	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17485	1.17485
RD8S371274	Rd8SD425	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17485	1.17485
RD8S371274	Rd8SD427	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.17485	1.17485
RD8S157130	Rd8SD1307	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.17756	1.16756
RD8S157130	Rd8SD1334	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.17756	1.16756
RDDA316282	Rd59AD6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.265485	1.165485
RD55A149862	Rd55AD336	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.263536667	1.163536667
RD55A149862	Rd8SD90	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.263536667	1.163536667
RD8S172620	Rd8SD415	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2625	1.1625
RD8S172620	Rd8SD417	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2625	1.1625
RD42A84101	Rd42AD1251	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.15787	1.15787
RD42A84101	Rd42AD1252	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.15787	1.15787
RD5S109032	Rd5SD1213	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.25759	1.15759
RD8S326743	Rd8SD905	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.15531	1.15531
RD8S326743	Rd8SD906	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.15531	1.15531
RD8S326743	Rd8SD907	1	1	1	1	1	2	1	1	1	1	1	1	1	1.1	1	0.15531	1.15531
RDGCD237910	RdgCD1030	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.16525	1.15525
RDGCD237910	RdgCD1031	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.16525	1.15525
RDGCD237910	RdgCD1033	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.16525	1.15525
RDGCD237910	RdgCD1040	1	1	4	1	1	1	1	1	1	1	1	1	1	1.15	0.99	0.16525	1.15525
RDWC2158	RdWCD915	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.25266	1.15266
RDWC2158	RdWCD916	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.25266	1.15266
RDWC2158	RdWCD917	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.25266	1.15266
RDWC2158	RdWCD918	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.25266	1.15266
RDWA72158	RdWAD909	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2506	1.1506
RD6S223145	Rd6SD453	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2484	1.1484
RD8S256733	Rd8SD420	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.24755	1.14755
RD8S256733	Rd8SD421	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.24755	1.14755
RDWD22491	RdWDD1009	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.24351	1.14351
RDWD22491	RdWDD1012	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.24351	1.14351
RDWD22491	RdWDD1017	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.24351	1.14351
RD48A183038	Rd48AD578	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.24312	1.14312
RD50A142971	Rd2SD1461	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.241323333	1.141323333
RD55A280166	Rd55AD187	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2267	1.1267
RD55A280166	Rd55AD188	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.2267	1.1267
RD47A276245	Rd47AD515	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.22626	1.12626
RD47A276245	Rd47AD516	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.22626	1.12626
RD47A276245	Rd47AD517	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.22626	1.12626
RD47A276245	Rd47AD518	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.22626	1.12626
RD5S409803	Rd5SD147	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.22563	1.12563
RDGCD237910	RdgCD1038	1	1	1	3	1	1	1	1	1	1	1	1	1	1.1	0.96	0.16525	1.12525
RDGCD237910	RdgCD1039	1	1	1	3	1	1	1	1	1	1	1	1	1	1.1	0.96	0.16525	1.12525
RDGCD237910	RdgCD1042	1	1	1	3	1	1	1	1	1	1	1	1	1	1.1	0.96	0.16525	1.12525
RD4S64997	Rd4SD135	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.222885	1.122885
RD3S373994	Rd3SD729	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.22205	1.12205
RD3S373994	Rd3SD732	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.22205	1.12205
RD2S179399	Rd2SD1410	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.22136	1.12136
RDWD80169	RdWDD1002	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.21983	1.11983
RD3S206553	Rd3SD202	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.21346	1.11346
RD3S206553	Rd3SD203	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.21346	1.11346
RD5S411461	Rd5SD1227	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.18005	1.11005
RD5S411461	Rd5SD1229	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.18005	1.11005
RD8S157130	Rd8SD1337	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.17756	1.10756
RD8S157130	Rd8SD1338	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.17756	1.10756
RD45A173941	Rd45AD822	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.205785	1.105785
RD45A173941	Rd45AD824	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.205785	1.105785
RD8S51007	Rd8SD87	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.205455	1.105455
RD8S51007	Rd8SD89	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.205455	1.105455
RDGCD237910	RdgCD1036	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.16525	1.09525
RD8S21104	Rd8SD85	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.19517	1.09517
RD8S21104	Rd8SD86	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.19517	1.09517
RD5S154481	Rd5SD151	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.19209	1.09209
RD2S88879	Rd2SD1416	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18861	1.08861
RD2S88879	Rd2SD1421	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18861	1.08861
RD2S88879	Rd2SD1422	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18861	1.08861
RD2S88879	Rd2SD1422	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18861	1.08861
RD2S88879	Rd2SD1423	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18861	1.08861
RD2S88879	Rd2SD1424	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18861	1.08861
RD2S88879	Rd2SD1425	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18861	1.08861
RD2S88879	Rd2SD1426	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18861	1.08861
RD5S130488	Rd5SD1230	1	1	1	3	1	1	1	1	1	1	1	1	1	1.1	0.96	0.126125	1.086125
RD8S304930	Rd8SD131	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.18571	1.08571
RD8S256812	Rd8SD1376	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.15303	1.08303
RD52A153570	Rd52AD296	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.181725	1.081725
RD52A153570	Rd52AD297	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.181725	1.081725
RD2S330268	Rd2SD1411	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17892	1.07892
RD2S330268	Rd2SD1412	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17892	1.07892
RD8S157130	Rd8SD1302	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD8S157130	Rd8SD1303	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756

RD8S157130	Rd8SD1304	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD8S157130	Rd8SD1305	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD8S157130	Rd8SD1315	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD8S157130	Rd8SD1326	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD8S157130	Rd8SD1328	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD8S157130	Rd8SD1329	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD8S157130	Rd8SD1330	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD8S157130	Rd8SD1335	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17756	1.07756
RD50AA322842	Rd50AAD152	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.17544	1.07544
RD8S120156	Rd8SD1373	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.14351	1.07351
RD8S120156	Rd8SD1374	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.14351	1.07351
RD8S120156	Rd8SD1375	1	1	1	2	1	1	1	1	1	1	1	1	1	1.05	0.93	0.14351	1.07351
RD8S251730	Rd8SD91	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.16568	1.06568
RD8S251730	Rd8SD92	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.16568	1.06568
RD8S251730	Rd8SD94	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.16568	1.06568
RD3S54162	Rd3SD1269	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.16104	1.06104
RD3S54162	Rd3SD1270	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.16104	1.06104
RD3S54162	Rd3SD1271	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.16104	1.06104
RD42A84101	Rd42AD1249	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.15787	1.05787
RD42A84101	Rd42AD1250	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.15787	1.05787
RD3S266011	Rd3SD1107	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.11355	1.01355
RD3S266011	Rd3SD1109	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	0.11355	1.01355

APPENDIX B - SIDEWALK CONDITION SURVEY

Sidewalk AssetID	Sidewalk SurveyID	Longitudinal Cracking Present	Transverse Cracking Present	Heaving Present	Dip Present	Trip Hazard Present	Spalling Present	Ashphalt Cap Present	Missing Structure Present	Other Defect Present	Average Scale
SW5S169402	Sw5SD564	5	5	1	1	5	1	1	1	1	3.2
SWS2S78306	Rd2SWD121	5	5	1	3	3	1	1	1	1	3.1
SW50AA260192	SW50AA260192d103	5	5	1	5	1	1	1	1	1	3
SW49A173047	Sw49AD687	5	5	3	3	1	1	1	1	1	3
SW3S318216	Rd3SED77	5	5	1	3	1	3	1	1	1	2.9
SW5S26333	Rd5SED31	5	5	1	1	3	1	1	1	1	2.9
SW3S131432	SW3S131432d106	5	5	1	1	1	1	1	3	1	2.8
SW43A28179	SW43A28179d107	1	5	1	1	5	1	1	5	1	2.8
SW48A149128	SW48A149128d104	5	5	1	1	1	5	1	1	1	2.8
SW2S64873	SW2S64873d101	1	5	5	1	5	1	1	1	1	2.8
SW44A236954	SW44A236954d101	5	5	3	1	1	1	1	1	1	2.8
SWS1A5620	SWS1A5620d100	5	5	3	1	1	1	1	1	1	2.8
SW48A341934	SW48A341934d100	5	5	1	1	1	3	1	1	1	2.7
SW49A93816	Sw49AD670	3	5	1	1	1	3	1	5	1	2.7
SW51A3980	SW51A3980d110	5	5	1	1	1	3	1	1	1	2.7
SW4S308167	Rd4SWD25	5	1	1	1	5	1	1	1	5	2.6
SW1S318814	SW1S318814d100	5	5	1	1	1	1	1	1	1	2.6
SW2S26082	SW2S26082d101	5	5	1	1	1	1	1	1	1	2.6
SW2S26084	SW2S26084d102	5	5	1	1	1	1	1	1	1	2.6
SW2S64873	SW2S64873d102	5	5	1	1	1	1	1	1	1	2.6
SW2SE	Sw2sed105	5	5	1	1	1	1	1	1	1	2.6
SW43A307509	SW43A307509d107	5	5	1	1	1	1	1	1	1	2.6
SW43A307509	SW43A307509d101	5	5	1	1	1	1	1	1	1	2.6
SW44A236953	SW44A236953d105	5	5	1	1	1	1	1	1	1	2.6
SW44A236953	SW44A236953d100	5	5	1	1	1	1	1	1	1	2.6
SW48A261343	SW48A261343d102	5	5	1	1	1	1	1	1	1	2.6
SW55A13722	Rd55AND34	5	5	1	1	1	1	1	1	1	2.6
SW2S330815	Sw2SD623	3	3	3	1	1	3	1	5	1	2.5
SW3S210295	SW3S210295d108	1	5	1	1	3	1	1	5	1	2.5
SW45A369363	SW45A369363d107	5	1	1	1	5	3	1	1	1	2.5
SW8S172620	Sw8SD538	5	3	1	1	3	1	1	1	1	2.5
SWWD224910	SwWDD283	3	5	1	1	3	1	1	1	1	2.5
SW1S318812	SW1S318812d100	5	1	1	1	5	1	1	1	1	2.4
SW49A93816	Sw49AD671	1	5	1	1	1	5	1	5	1	2.4
SW4S371256	Rd4SWD14	1	5	1	1	5	1	1	1	1	2.4
SWWD250389	SwWDD292	1	5	1	1	5	1	1	1	1	2.4
SW2S9235	SW2S9235d100	3	5	1	1	1	1	1	3	1	2.4
SW3S318216	Rd3SED79	3	5	1	3	1	1	1	1	1	2.4
SW46A115466	SW46A115466d107	5	3	3	1	1	1	1	1	1	2.4
SW46A136089	SW46A136089d111	3	5	1	3	1	1	1	1	1	2.4
SW48A341933	SW48A341933d102	5	3	1	3	1	1	1	1	1	2.4
SW52A61047	SW52A61047d107	3	5	3	1	1	1	1	1	1	2.4
SW52A61047	SW52A61047d103	3	5	3	1	1	1	1	1	1	2.4
SW1AS373636	Sw1ASD620	5	1	1	1	1	3	1	5	1	2.3
SW2SE	Sw2sed107	1	5	1	1	3	1	1	3	1	2.3
SW53A145741	Sw53AD628	3	5	1	1	1	3	1	1	1	2.3
SW47A276245	SW47A276245d102	1	5	1	3	3	1	1	1	1	2.3
SW3S210295	SW3S210295d105	1	5	1	1	1	5	1	3	1	2.2
SW45A369364	SW45A369364d109	1	5	1	1	1	1	1	5	1	2.2
SW48A341933	SW48A341933d108	1	5	1	1	1	1	1	5	1	2.2
SW5S409803	Sw5SD507	3	3	1	3	1	1	1	3	1	2.2
SW8S256733	Sw8SD461	1	5	1	3	1	1	1	3	1	2.2
SW1S318807	SW1S318807d103	5	3	1	1	1	1	1	1	1	2.2
SW1S318811	SW1S318811d103	5	3	1	1	1	1	1	1	1	2.2
SW2AS298689	SW2AS298689d102	3	5	1	1	1	1	1	1	1	2.2
SW2AS66465	Sw2ASD679	5	3	1	1	1	1	1	1	1	2.2
SW2S126499	SW2S126499d102	5	3	1	1	1	1	1	1	1	2.2
SW2S141054	SW2S141054d102	5	3	1	1	1	1	1	1	1	2.2
SW2S255655	SW2S255655d100	5	3	1	1	1	1	1	1	1	2.2
SW3AS340149	Rd3SWD91	1	3	3	1	5	1	1	1	1	2.2
SW3S19566	SW3S19566d110	3	5	1	1	1	1	1	1	1	2.2
SW3S19566	SW3S19566d101	3	5	1	1	1	1	1	1	1	2.2
SW44A236953	SW44A236953d104	5	3	1	1	1	1	1	1	1	2.2
SW45A369363	SW45A369363d111	5	3	1	1	1	1	1	1	1	2.2
SW47A404608	SW47A404608d100	5	3	1	1	1	1	1	1	1	2.2

SW48A149128	SW48A149128d103	5	3	1	1	1	1	1	1	1	2.2
SW48A149128	SW48A149128d101	5	3	1	1	1	1	1	1	1	2.2
SW48A149128	SW48A149128d100	5	3	1	1	1	1	1	1	1	2.2
SW48A341934	SW48A341934d111	5	3	1	1	1	1	1	1	1	2.2
SW48A341934	SW48A341934d106	5	3	1	1	1	1	1	1	1	2.2
SW48A396625	SW48A396625d108	3	5	1	1	1	1	1	1	1	2.2
SW48A396625	SW48A396625d104	5	3	1	1	1	1	1	1	1	2.2
SW49A265521	SW49A265521d103	3	5	1	1	1	1	1	1	1	2.2
SW4S330491	SW4S330491d104	5	3	1	1	1	1	1	1	1	2.2
SW4S64997	SW4S64997d103	3	5	1	1	1	1	1	1	1	2.2
SW50A29969	Sw50AD466	5	3	1	1	1	1	1	1	1	2.2
SW52A153570	Sw52AD556	5	3	1	1	1	1	1	1	1	2.2
SW52A74928	SW52A74928d106	3	5	1	1	1	1	1	1	1	2.2
SW53A236478	Sw5SD570	3	5	1	1	1	1	1	1	1	2.2
SW54A200080	Sw54AD601	5	3	1	1	1	1	1	1	1	2.2
SW5S26333	Rd5SED30	5	3	1	1	1	1	1	1	1	2.2
SW7S195983	Sw7SD493	3	5	1	1	1	1	1	1	1	2.2
SW7S203631	Sw7SD553	5	3	1	1	1	1	1	1	1	2.2
SWS3S24950	SWS3S24950d106	5	3	1	1	1	1	1	1	1	2.2
SWWD344654	SwWDD246	3	3	1	3	1	5	1	1	1	2.2
SW3S19566	SW3S19566d106	1	5	1	1	3	1	1	1	1	2.1
SW45A241361	SW45A241361d102	5	1	1	1	3	1	1	1	1	2.1
SW51A154089	Sw51AD520	3	3	1	1	3	1	1	1	1	2.1
SW52A337373	SW52A237373d105	1	5	1	1	3	1	1	1	1	2.1
SW52A74928	SW52A74928d110	1	5	1	1	3	1	1	1	1	2.1
SW55A13722	Rd55AND37	1	5	1	1	3	1	1	1	1	2.1
SW55A30015	Rd55ASD81	5	1	1	1	3	1	1	1	1	2.1
SWWD224910	SwWDD285	1	5	1	3	1	1	1	1	3	2.1
SW2S330815	Sw2SD622	1	3	1	3	1	3	1	5	1	2.1
SW49A173047	Sw49AD686	1	5	1	3	1	3	1	1	1	2.1
SW45A369363	SW45A369363d100	3	3	1	1	1	5	1	1	1	2
SW49A173047	Sw49AD685	3	3	1	3	1	1	1	1	1	2
SW49A93816	Sw49AD675	3	3	1	1	1	5	1	1	1	2
SW4S370930	Sw4SD449	3	3	1	3	1	1	1	1	1	2
SW50AA322842	Sw50AAD500	3	3	1	1	1	1	1	3	1	2
SW55A310002	Rd55ASD94	3	3	1	1	1	1	1	1	5	2
SW5S409803	Sw5SD506	3	3	1	3	1	1	1	1	1	2
SW7S195983	Sw7SD495	3	3	1	1	1	1	1	3	1	2
SW2S400348	SW2S400348d104	5	1	1	1	1	5	1	1	1	2
SW3S373994	SW3S373994d111	1	5	1	1	1	5	1	1	1	2
SW3S389492	Sw3SD407	1	3	1	5	1	1	1	1	5	2
SW43A28179	SW43A28179d103	1	5	1	1	1	5	1	1	1	2
SW43A28179	SW43A28179d102	1	5	1	1	1	5	1	1	1	2
SW45A173943	SW45A173943d104	1	5	3	1	1	1	1	1	1	2
SW47A404609	SW47A404609d111	1	5	1	1	1	5	1	1	1	2
SW47A404609	SW47A404609d107	1	1	5	1	5	1	1	1	1	2
SW48A149128	Sw48AD660	5	1	1	1	1	1	1	1	5	2
SW48A261344	SW48A261344d103	5	1	1	1	1	5	1	1	1	2
SW48A341934	SW48A341934d101	1	5	3	1	1	1	1	1	1	2
SW48A381715	SW48A381715d102	1	5	1	3	1	1	1	1	1	2
SW4S184564	SW4S184564d114	1	5	1	1	1	5	1	1	1	2
SW4S31559	SW4S31559d104	1	1	1	1	5	1	1	5	1	2
SW52A337373	SW52A237373d113	1	5	1	1	1	5	1	1	1	2
SW52A61046	SW52A61046d106	1	5	1	1	1	1	1	3	1	2
SW54A200080	Sw54AD604	5	1	1	1	1	1	1	3	1	2
SW55A30015	Rd55ASD85	1	5	1	1	1	5	1	1	1	2
SW5S169401	Sw5SD561	3	1	1	1	5	1	1	1	1	2
SW8S326743	Sw8SD420	5	1	1	3	1	1	1	1	1	2
SWS1A569	SWS1A569d104	1	1	1	1	5	1	1	5	1	2
SWWR272044	SwWRD229	1	5	1	3	1	1	1	1	1	2
SW2S406803	SW2S406803d100	1	5	1	1	1	3	1	1	1	1.9
SW3S210295	SW3S210295d104	1	5	1	1	1	3	1	1	1	1.9
SW3S258713	Sw3SD404	5	1	1	1	1	1	1	1	3	1.9
SW3S373994	SW3S373994d109	1	5	1	1	1	3	1	1	1	1.9
SW3S373994	SW3S373994d107	1	5	1	1	1	3	1	1	1	1.9
SW3S7477	SW3S7477d100	1	5	1	1	1	3	1	1	1	1.9

SW43A28179	SW43A28179d104	1	5	1	1	1	3	1	1	1	1.9
SW44A236954	SW44A236954d102	1	5	1	1	1	3	1	1	1	1.9
SW45A369363	SW45A369363d101	1	5	1	1	1	3	1	1	1	1.9
SW47A404608	SW47A404608d110	1	5	1	1	1	3	1	1	1	1.9
SW47A404609	SW47A404609d110	5	1	1	1	1	3	1	1	1	1.9
SW48A261344	SW48A261344d101	5	1	1	1	1	3	1	1	1	1.9
SW48A341933	SW48A341933d117	5	1	1	1	1	3	1	1	1	1.9
SW48A341933	SW48A341933d115	1	5	1	1	1	3	1	1	1	1.9
SW48A341933	SW48A341933d106	1	5	1	1	1	3	1	1	1	1.9
SW48A341934	SW48A341934d102	1	3	1	3	3	1	1	1	1	1.9
SW49A109962	SW49A109962d106	1	3	3	1	3	1	1	1	1	1.9
SW49A93816	Sw49AD672	3	3	1	1	1	3	1	1	1	1.9
SW4S370930	Sw4SD452	1	5	1	1	1	3	1	1	1	1.9
SW50A153586	SW50A153586d102	1	5	1	1	1	3	1	1	1	1.9
SW50A29969	Sw50AD471	3	3	1	1	1	1	1	1	3	1.9
SW51A389321	Sw51AD513	3	3	1	1	1	3	1	1	1	1.9
SW52A332624	Rd52AND136	1	3	3	1	3	1	1	1	1	1.9
SW52A366552	Rd52ASD130	1	3	3	3	1	3	1	1	1	1.9
SW53A145741	Sw53AD629	5	1	1	1	1	3	1	1	1	1.9
SWWC149354	SwWCD206	1	5	1	1	1	1	1	1	3	1.9
SWWD224910	SwWDD284	1	5	1	1	1	1	1	1	3	1.9
SWWD250389	SwWDD311	1	5	1	1	1	1	1	1	3	1.9
SWWD379503	SwWDD288	1	5	1	1	1	1	1	1	3	1.9
SW51A126126	Rd51AND113	1	3	1	1	3	1	1	1	5	1.9
SW51A389321	Sw51AD516	1	3	1	1	3	1	1	3	1	1.9
SWS7S412981	Sw7SD496	1	3	1	1	3	1	1	1	5	1.9
SW2AS66465	SW2AS66465d104	3	3	1	1	1	1	1	1	1	1.8
SW2S342388	SW2S342388d103	3	3	1	1	1	1	1	1	1	1.8
SW2S345721	Rd2SWD69	3	3	1	1	1	1	1	1	1	1.8
SW2S64873	SW2S64873d103	3	3	1	1	1	1	1	1	1	1.8
SW3S318216	Rd3SED78	3	3	1	1	1	1	1	1	1	1.8
SW3S389492	Sw3SD406	3	3	1	1	1	1	1	1	1	1.8
SW45A241361	SW45A241361d104	3	3	1	1	1	1	1	1	1	1.8
SW45A369363	SW45A369363d108	3	3	1	1	1	1	1	1	1	1.8
SW46A115466	SW46A115466d101	3	3	1	1	1	1	1	1	1	1.8
SW46A136089	SW46A136089d102	3	3	1	1	1	1	1	1	1	1.8
SW46A136090	SW46A136090d105	3	3	1	1	1	1	1	1	1	1.8
SW48A261343	SW48A261343d104	3	3	1	1	1	1	1	1	1	1.8
SW48A341933	SW48A341933d116	3	3	1	1	1	1	1	1	1	1.8
SW48A381715	SW48A381715d104	3	3	1	1	1	1	1	1	1	1.8
SW48A396624	Sw48AD650	3	3	1	1	1	1	1	1	1	1.8
SW48A396624	SW48A396624d123	3	3	1	1	1	1	1	1	1	1.8
SW48A396624	SW48A396624d121	3	3	1	1	1	1	1	1	1	1.8
SW48A396624	SW48A396624d119	3	3	1	1	1	1	1	1	1	1.8
SW48A396624	SW48A396624d108	3	3	1	1	1	1	1	1	1	1.8
SW48A396624	SW48A396624d102	3	3	1	1	1	1	1	1	1	1.8
SW48A396625	Sw48AD664	3	3	1	1	1	1	1	1	1	1.8
SW48A396625	SW48A396625d101	3	3	1	1	1	1	1	1	1	1.8
SW4S16835	Sw4SD618	3	3	1	1	1	1	1	1	1	1.8
SW4S391419	Sw4SD620	3	3	1	1	1	1	1	1	1	1.8
SW50A153585	SW50A153585d102	3	3	1	1	1	1	1	1	1	1.8
SW50A29969	Sw50AD470	3	3	1	1	1	1	1	1	1	1.8
SW51A342117	SW51A342117d110	3	3	1	1	1	1	1	1	1	1.8
SW51A342117	SW51A342117d105	3	3	1	1	1	1	1	1	1	1.8
SW51A389321	Sw51AD517	3	3	1	1	1	1	1	1	1	1.8
SW52A61047	SW52A61047d100	3	3	1	1	1	1	1	1	1	1.8
SW53A281151	Sw53a281151d107	3	3	1	1	1	1	1	1	1	1.8
SW55A65884	Rd55AND29	3	3	1	1	1	1	1	1	1	1.8
SW5S154481	Sw5SD489	3	3	1	1	1	1	1	1	1	1.8
SW5S383616	Rd5SED21	3	3	1	1	1	1	1	1	1	1.8
SW5S389669	Sw5SD600	3	3	1	1	1	1	1	1	1	1.8
SWWC21581	SwWCD416	3	3	1	1	1	1	1	1	1	1.8
SWWC21581	SwWCD418	3	3	1	1	1	1	1	1	1	1.8
SWWD195931	SwWDD254	3	3	1	1	1	1	1	1	1	1.8
SWWD195931	SwWDD255	3	3	1	1	1	1	1	1	1	1.8
SWWD1959310	SwWDD251	3	3	1	1	1	1	1	1	1	1.8

SWWD250389	SwWDD312	3	3	1	1	1	1	1	1	1	1.8
SWWR119138	SwWRD240	3	3	1	1	1	1	1	1	1	1.8
SWWR272044	SwWRD232	3	3	1	1	1	1	1	1	1	1.8
SW1S318807	SW1S318807d106	5	1	1	1	1	1	1	1	1	1.8
SW1S318807	SW1S318807d105	5	1	1	1	1	1	1	1	1	1.8
SW1S318808	SW1S318808d109	5	1	1	1	1	1	1	1	1	1.8
SW1S318808	SW1S318808d108	1	5	1	1	1	1	1	1	1	1.8
SW1S318808	SW1S318808d106	5	1	1	1	1	1	1	1	1	1.8
SW1S318811	SW1S318811d105	1	5	1	1	1	1	1	1	1	1.8
SW1S318811	SW1S318811d101	5	1	1	1	1	1	1	1	1	1.8
SW1S318811	SW1S318811d100	5	1	1	1	1	1	1	1	1	1.8
SW1S318813	SW1S318813d104	5	1	1	1	1	1	1	1	1	1.8
SW1S318813	SW1S318813d103	5	1	1	1	1	1	1	1	1	1.8
SW2AS128137	Rd2AAWD74	1	1	1	1	5	1	1	1	5	1.8
SW2AS298689	SW2AS298689d103	1	5	1	1	1	1	1	1	1	1.8
SW2AS66465	SW2AS66465d106	5	1	1	1	1	1	1	1	1	1.8
SW2S141054	SW2S141054d101	5	1	1	1	1	1	1	1	1	1.8
SW2S180114	SW2S180114d104	1	5	1	1	1	1	1	1	1	1.8
SW2S180114	SW2S180114d103	1	5	1	1	1	1	1	1	1	1.8
SW2S289167	SW2S289167d103	5	1	1	1	1	1	1	1	1	1.8
SW2S330816	Sw2SD625	3	1	1	3	1	5	1	1	1	1.8
SW2S330816	Sw2SD627	1	3	1	1	3	3	1	1	1	1.8
SW2S342387	SW2S342387d100	5	1	1	1	1	1	1	1	1	1.8
SW2S400347	SW2S400347d105	5	1	1	1	1	1	1	1	1	1.8
SW2S400347	SW2S400347d100	5	1	1	1	1	1	1	1	1	1.8
SW2S400348	SW2S400348d106	5	1	1	1	1	1	1	1	1	1.8
SW2S400348	SW2S400348d103	5	1	1	1	1	1	1	1	1	1.8
SW2S400348	SW2S400348d102	1	5	1	1	1	1	1	1	1	1.8
SW2SE	Sw2sed106	5	1	1	1	1	1	1	1	1	1.8
SW2SE	Sw2sed103	5	1	1	1	1	1	1	1	1	1.8
SW2SE	Sw2sed102	5	1	1	1	1	1	1	1	1	1.8
SW2SE	Sw2sed101	1	5	1	1	1	1	1	1	1	1.8
SW3S19566	SW3S19566d112	1	5	1	1	1	1	1	1	1	1.8
SW3S19566	SW3S19566d108	1	5	1	1	1	1	1	1	1	1.8
SW3S19566	SW3S19566d107	5	1	1	1	1	1	1	1	1	1.8
SW3S19566	SW3S19566d105	5	1	1	1	1	1	1	1	1	1.8
SW3S19566	SW3S19566d102	1	5	1	1	1	1	1	1	1	1.8
SW3S210294	SW3S210294d103	1	5	1	1	1	1	1	1	1	1.8
SW3S210295	SW3S210295d107	1	5	1	1	1	1	1	1	1	1.8
SW3S25033	SW3S25033d101	1	5	1	1	1	1	1	1	1	1.8
SW3S266011	Sw3SD402	1	3	1	1	3	3	1	1	1	1.8
SW3S318216	Rd3SED80	1	5	1	1	1	1	1	1	1	1.8
SW43A307509	SW43A307509d104	5	1	1	1	1	1	1	1	1	1.8
SW43A307509	SW43A307509d103	1	5	1	1	1	1	1	1	1	1.8
SW44A236954	SW44A236954d103	5	1	1	1	1	1	1	1	1	1.8
SW44A236954	SW44A236954d100	5	1	1	1	1	1	1	1	1	1.8
SW45A173943	SW45A173943d100	5	1	1	1	1	1	1	1	1	1.8
SW45A173945	SW45A173945d105	5	1	1	1	1	1	1	1	1	1.8
SW45A173945	SW45A173945d104	1	5	1	1	1	1	1	1	1	1.8
SW45A173945	SW45A173945d102	5	1	1	1	1	1	1	1	1	1.8
SW45A241361	SW45A241361d110	5	1	1	1	1	1	1	1	1	1.8
SW45A241362	SW45A241362d104	5	1	1	1	1	1	1	1	1	1.8
SW45A369363	SW45A369363d112	1	5	1	1	1	1	1	1	1	1.8
SW45A369363	SW45A369363d110	1	5	1	1	1	1	1	1	1	1.8
SW45A369363	SW45A369363d106	1	5	1	1	1	1	1	1	1	1.8
SW45A369364	SW45A369364d112	1	5	1	1	1	1	1	1	1	1.8
SW45A369364	SW45A369364d100	5	1	1	1	1	1	1	1	1	1.8
SW46A115466	SW46A115466d108	5	1	1	1	1	1	1	1	1	1.8
SW46A115466	SW46A115466d102	5	1	1	1	1	1	1	1	1	1.8
SW46A115466	SW46A115466d100	5	1	1	1	1	1	1	1	1	1.8
SW46A115467	SW46A115467d107	5	1	1	1	1	1	1	1	1	1.8
SW46A115467	SW46A115467d103	5	1	1	1	1	1	1	1	1	1.8
SW46A136089	SW46A136089d109	5	1	1	1	1	1	1	1	1	1.8
SW46A136089	SW46A136089d107	1	5	1	1	1	1	1	1	1	1.8
SW46A136089	SW46A136089d101	1	5	1	1	1	1	1	1	1	1.8
SW47A276246	SW47A276246d103	5	1	1	1	1	1	1	1	1	1.8

SW47A404608	SW47A404608d122	1	5	1	1	1	1	1	1	1	1.8
SW47A404609	SW47A404609d106	1	5	1	1	1	1	1	1	1	1.8
SW47A404609	SW47A404609d103	1	5	1	1	1	1	1	1	1	1.8
SW47A406510	SW47A406510d102	1	5	1	1	1	1	1	1	1	1.8
SW48A149128	SW48A149128d102	5	1	1	1	1	1	1	1	1	1.8
SW48A261343	SW48A261343d105	5	1	1	1	1	1	1	1	1	1.8
SW48A261343	SW48A261343d101	5	1	1	1	1	1	1	1	1	1.8
SW48A341933	SW48A341933d120	1	5	1	1	1	1	1	1	1	1.8
SW48A341933	SW48A341933d118	5	1	1	1	1	1	1	1	1	1.8
SW48A341933	SW48A341933d104	1	5	1	1	1	1	1	1	1	1.8
SW48A341934	SW48A341934d115	1	5	1	1	1	1	1	1	1	1.8
SW48A381715	SW48A381715d105	1	5	1	1	1	1	1	1	1	1.8
SW48A396624	SW48A396624d127	5	1	1	1	1	1	1	1	1	1.8
SW48A396624	SW48A396624d106	5	1	1	1	1	1	1	1	1	1.8
SW48A396625	SW48A396625d110	5	1	1	1	1	1	1	1	1	1.8
SW48A396625	SW48A396625d109	5	1	1	1	1	1	1	1	1	1.8
SW48A396625	SW48A396625d107	1	5	1	1	1	1	1	1	1	1.8
SW48A396625	SW48A396625d106	5	1	1	1	1	1	1	1	1	1.8
SW48A396625	SW48A396625d105	1	5	1	1	1	1	1	1	1	1.8
SW49A109962	SW49A109962d112	1	5	1	1	1	1	1	1	1	1.8
SW49A109962	SW49A109962d104	1	5	1	1	1	1	1	1	1	1.8
SW49A109963	SW49A109963d113	1	5	1	1	1	1	1	1	1	1.8
SW49A109963	SW49A109963d111	1	5	1	1	1	1	1	1	1	1.8
SW49A265521	SW49A265521d104	5	1	1	1	1	1	1	1	1	1.8
SW49A265521	SW49A265521d100	1	5	1	1	1	1	1	1	1	1.8
SW49A93815	SW49A93815d100	5	1	1	1	1	1	1	1	1	1.8
SW4S184564	SW4S184564d116	1	5	1	1	1	1	1	1	1	1.8
SW4S184564	SW4S184564d102	5	1	1	1	1	1	1	1	1	1.8
SW4S330491	SW4S330491d106	5	1	1	1	1	1	1	1	1	1.8
SW4S330491	SW4S330491d102	1	5	1	1	1	1	1	1	1	1.8
SW4S391419	Sw4SD619	5	1	1	1	1	1	1	1	1	1.8
SW4S391420	Sw4SD621	1	5	1	1	1	1	1	1	1	1.8
SW4S391420	Sw4SD622	5	1	1	1	1	1	1	1	1	1.8
SW50A109899	SW50A109899d103	1	5	1	1	1	1	1	1	1	1.8
SW50A109899	SW50A109899d101	1	5	1	1	1	1	1	1	1	1.8
SW50A142971	SW50A142971d107	1	5	1	1	1	1	1	1	1	1.8
SW50A142971	SW50A142971d103	1	5	1	1	1	1	1	1	1	1.8
SW50A261267	SW50A261267d107	1	5	1	1	1	1	1	1	1	1.8
SW50A261267	SW50A261267d105	5	1	1	1	1	1	1	1	1	1.8
SW50A261267	SW50A261267d104	1	5	1	1	1	1	1	1	1	1.8
SW50A261268	SW50A261268d101	5	1	1	1	1	1	1	1	1	1.8
SW50A261269	SW50A261269d102	5	1	1	1	1	1	1	1	1	1.8
SW50A261269	SW50A261269d101	1	5	1	1	1	1	1	1	1	1.8
SW50A273439	SW50A273439d104	1	5	1	1	1	1	1	1	1	1.8
SW50A29969	Sw50AD465	5	1	1	1	1	1	1	1	1	1.8
SW50A310028	SW50A310028d104	1	5	1	1	1	1	1	1	1	1.8
SW50A33088103	SW50A33088103d101	1	5	1	1	1	1	1	1	1	1.8
SW50AA260192	SW50AA260192d105	5	1	1	1	1	1	1	1	1	1.8
SW50AA260192	SW50AA260192d100	1	5	1	1	1	1	1	1	1	1.8
SW51A110101	Rd51AND102	1	1	1	5	3	3	1	1	1	1.8
SW51A154089	Sw51AD522	5	1	1	1	1	1	1	1	1	1.8
SW51A244599	Rd51AND118	1	5	1	1	1	1	1	1	1	1.8
SW51A342116	SW51A342116d108	1	5	1	1	1	1	1	1	1	1.8
SW51A342117	SW51A342117d109	1	5	1	1	1	1	1	1	1	1.8
SW51A3980	SW51A3980d106	1	5	1	1	1	1	1	1	1	1.8
SW51A3980	SW51A3980d104	1	5	1	1	1	1	1	1	1	1.8
SW52A118665	Sw52AD628	5	1	1	1	1	1	1	1	1	1.8
SW52A337374	SW52A337374d100	1	5	1	1	1	1	1	1	1	1.8
SW52A366553	Rd52AND134	1	5	1	1	1	1	1	1	1	1.8
SW52A61046	SW52A61046d107	1	5	1	1	1	1	1	1	1	1.8
SW52A74928	SW52A74928d109	1	5	1	1	1	1	1	1	1	1.8
SW52A74928	SW52A74928d108	1	5	1	1	1	1	1	1	1	1.8
SW52A74928	SW52A74928d104	1	5	1	1	1	1	1	1	1	1.8
SW53A261181	Sw53a261181d111	1	5	1	1	1	1	1	1	1	1.8
SW53A261181	Sw53a261181d107	1	1	1	1	5	5	1	1	1	1.8
SW53A281151	Sw53a281151d109	5	1	1	1	1	1	1	1	1	1.8

SW53A281151	Sw53a281151d108	5	1	1	1	1	1	1	1	1	1.8
SW53A281151	Sw53a281151d106	5	1	1	1	1	1	1	1	1	1.8
SW53A281151	Sw53a281151d101	1	5	1	1	1	1	1	1	1	1.8
SW55A13723	Rd55ASD42	1	5	1	1	1	1	1	1	1	1.8
SW55A369769	Rd55ASD73	1	5	1	1	1	1	1	1	1	1.8
SW56A123923	Rd56ASD24	1	5	1	1	1	1	1	1	1	1.8
SW5S250897	Sw5SD568	5	1	1	1	1	1	1	1	1	1.8
SW6S18236	Sw6SD578	1	1	1	1	5	1	1	3	1	1.8
SW7S203630	Sw7SD551	5	1	1	1	1	1	1	1	1	1.8
SW7S203631	Sw7SD552	5	1	1	1	1	1	1	1	1	1.8
SW8S172620	Sw8SD536	3	1	1	1	3	1	1	1	3	1.8
SW8S315919	Sw8SD421	1	5	1	1	1	1	1	1	1	1.8
SW8S337388	Sw8SD430	5	1	1	1	1	1	1	1	1	1.8
SWCC228150	SwCCD408	1	3	1	1	3	3	1	1	1	1.8
SWLS358643	SwLSD201	1	5	1	1	1	1	1	1	1	1.8
SWS1A5601	SWS1A5601d106	5	1	1	1	1	1	1	1	1	1.8
SWS1A5601	SWS1A5601d105	1	5	1	1	1	1	1	1	1	1.8
SWS1A5618	SWS1A5618d101	5	1	1	1	1	1	1	1	1	1.8
SWS1A5620	SWS1A5620d101	5	1	1	1	1	1	1	1	1	1.8
SWS1A569	SWS1A569d103	5	1	1	1	1	1	1	1	1	1.8
SWS3S24950	SWS3S24950d104	5	1	1	1	1	1	1	1	1	1.8
SWS3S24950	SWS3S24950d103	1	5	1	1	1	1	1	1	1	1.8
SWSM382476	SwSMD437	1	5	1	1	1	1	1	1	1	1.8
SWWC149354	SwWCD205	1	5	1	1	1	1	1	1	1	1.8
SWWC149354	SwWCD207	1	5	1	1	1	1	1	1	1	1.8
SWWD195931	SwWDD253	5	1	1	1	1	1	1	1	1	1.8
SWWD1959310	SwWDD250	5	1	1	1	1	1	1	1	1	1.8
SWWD1959310	SwWDD252	5	1	1	1	1	1	1	1	1	1.8
SWWD224910	SwWDD280	1	5	1	1	1	1	1	1	1	1.8
SWWD224910	SwWDD281	1	5	1	1	1	1	1	1	1	1.8
SWWD224910	SwWDD282	1	5	1	1	1	1	1	1	1	1.8
SWWD250389	SwWDD310	1	5	1	1	1	1	1	1	1	1.8
SWWR272044	SwWRD230	1	5	1	1	1	1	1	1	1	1.8
SWWS334845	SwWSD210	1	5	1	1	1	1	1	1	1	1.8
SWWS334845	SwWSD211	1	5	1	1	1	1	1	1	1	1.8
SwWW20050205	SwWWD301	1	5	1	1	1	1	1	1	1	1.8
SW4S370930	Sw4SD450	1	3	1	1	1	1	1	5	1	1.8
SW50AA322843	Sw50AAD503	3	1	1	1	1	1	1	5	1	1.8
SW51A244600	Rd51AS103	1	3	1	5	1	1	1	1	1	1.8
SW8S51007	Sw8SD543	3	1	1	1	1	1	1	5	1	1.8
SWWD1959310	SwWAD247	1	3	1	5	1	1	1	1	1	1.8
SW2AS298689	SW2AS298689d100	1	3	1	1	3	1	1	1	1	1.7
SW4S184564	SW4S184564d101	1	1	1	5	3	1	1	1	1	1.7
SW51A389322	Sw51AD525	1	3	1	1	3	1	1	1	1	1.7
SW55A30016	Rd55AND50	1	3	3	1	1	1	1	1	3	1.7
SW56A123923	Rd56ASD23	1	3	1	1	3	1	1	1	1	1.7
SW43A307509	SW43A307509d100	1	1	1	1	3	1	1	5	1	1.7
SW4S31559	SW4S31559d102	1	1	1	1	3	1	1	5	1	1.7
SW50A29969	Sw50AD467	1	3	1	1	1	3	1	3	1	1.7
SW3AS336644	Sw3ASD637	1	3	3	1	1	1	1	1	1	1.6
SW3S210295	SW3S210295d109	1	1	1	1	5	1	1	1	1	1.6
SW46A115467	SW46A115467d102	1	3	1	3	1	1	1	1	1	1.6
SW46A115467	SW46A115467d101	1	3	3	1	1	1	1	1	1	1.6
SW46A136089	SW46A136089d114	1	3	3	1	1	1	1	1	1	1.6
SW48A149128	Sw48AD659	1	1	1	1	5	1	1	1	1	1.6
SW48A149128	SW48A149128d105	1	1	1	1	5	1	1	1	1	1.6
SW4S371256	Rd4SWD15	1	1	1	1	5	1	1	1	1	1.6
SW50A109898	SW50A109898d107	3	1	1	3	1	1	1	1	1	1.6
SW55A30016	Rd55AND52	1	3	3	1	1	1	1	1	1	1.6
SW2S126498	SW2S126498d101	1	1	1	1	1	5	1	5	1	1.6
SW2S345721	Rd2SWD68	3	1	1	1	1	5	1	1	1	1.6
SW3S19566	SW3S19566d104	1	1	1	1	1	5	1	5	1	1.6
SW3S311246	Rd52AND135	1	1	3	1	3	1	1	1	3	1.6
SW3S373994	SW3S373994d105	1	3	1	1	1	5	1	1	1	1.6
SW3S400375	SW3S400375d106	1	3	1	1	1	5	1	1	1	1.6
SW43A134237	Sw4SD241	1	3	1	1	1	1	1	1	5	1.6

SW47A404608	SW47A404608d111	1	3	1	1	1	5	1	1	1	1.6
SW48A396624	SW48A396624d107	1	3	1	1	1	1	1	3	1	1.6
SW4S184564	SW4S184564d113	1	3	1	1	1	5	1	1	1	1.6
SW4S391420	Sw4SD623	3	1	1	1	1	1	1	3	1	1.6
SW50A310028	SW50A310028d103	1	1	1	1	1	5	1	5	1	1.6
SW50AA322842	Sw50AAD501	1	3	1	1	1	1	1	3	1	1.6
SW51A342116	SW51A342116d101	1	3	1	1	1	1	1	3	1	1.6
SW51A389321	Sw51AD514	3	1	1	1	1	1	1	3	1	1.6
SW51A7225	Sw51AD532	3	1	1	1	1	1	1	3	1	1.6
SW53A236477	Sw5SD571	1	3	1	1	1	1	1	3	1	1.6
SW55A13722	Rd55AND39	1	3	1	1	1	1	1	1	5	1.6
SW55A30015	Rd55ASD84	1	3	1	1	1	5	1	1	1	1.6
SW7S195983	Sw7SD494	3	1	1	1	1	1	1	3	1	1.6
SW7S322333	Sw7SD612	1	3	1	1	1	1	1	3	1	1.6
SWS3S24950	SWS3S24950d108	1	1	1	1	1	5	1	5	1	1.6
SWS3S24951	SWS3S24951d103	1	3	1	1	1	5	1	1	1	1.6
SW53A261181	Sw53a261181d102	1	1	1	1	3	3	1	3	1	1.6
SWWD215951	SwWDD203	1	1	1	1	3	3	1	1	5	1.6
SW3AS340149	Rd3SWD92	1	1	3	1	3	1	1	1	1	1.5
SW51A389322	Sw51AD530	1	1	1	3	3	1	1	1	1	1.5
SW1S318808	SW1S318808d102	1	1	1	1	3	1	1	3	1	1.5
SW2S180114	SW2S180114d105	1	3	1	1	1	3	1	1	1	1.5
SW2S345721	Rd2SWD70	1	3	1	1	1	1	1	1	3	1.5
SW2S406803	SW2S406803d104	1	3	1	1	1	3	1	1	1	1.5
SW3AS340149	Rd3SWD93	1	3	1	1	1	3	1	1	1	1.5
SW3S210294	SW3S210294d101	1	3	1	1	1	3	1	1	1	1.5
SW3S210295	SW3S210295d103	1	3	1	1	1	3	1	1	1	1.5
SW3S210295	SW3S210295d102	1	3	1	1	1	3	1	1	1	1.5
SW3S373994	SW3S373994d101	1	3	1	1	1	3	1	1	1	1.5
SW43A308557	Sw43AD427	1	3	1	1	1	3	1	1	1	1.5
SW44A236953	SW44A236953d102	1	3	1	1	1	3	1	1	1	1.5
SW45A173941	SW45A173941d103	1	3	1	1	1	3	1	1	1	1.5
SW45A173943	SW45A173943d102	3	1	1	1	1	3	1	1	1	1.5
SW45A369363	SW45A369363d109	3	1	1	1	1	3	1	1	1	1.5
SW46A136089	SW46A136089d110	1	3	1	1	1	3	1	1	1	1.5
SW47A404609	SW47A404609d108	1	3	1	1	1	3	1	1	1	1.5
SW48A261344	SW48A261344d100	1	3	1	1	1	3	1	1	1	1.5
SW48A341933	SW48A341933d107	1	3	1	1	1	3	1	1	1	1.5
SW48A341934	SW48A341934d104	1	3	1	1	1	3	1	1	1	1.5
SW49A93816	Sw49AD676	1	3	1	1	1	3	1	1	1	1.5
SW50A109899	SW50A109899d112	3	1	1	1	1	3	1	1	1	1.5
SW50A153585	SW50A153585d101	1	3	1	1	1	3	1	1	1	1.5
SW50A330881	SW50A330881d103	1	3	1	1	1	3	1	1	1	1.5
SW51A244600	Rd51AS105	1	3	1	1	1	1	1	1	3	1.5
SW51A244600	Rd51AS107	1	3	1	1	1	3	1	1	1	1.5
SW52A337373	SW52A237373d115	1	3	1	1	1	3	1	1	1	1.5
SW5S154481	Sw5SD488	1	3	1	1	1	3	1	1	1	1.5
SWWA72158	SwWAD411	3	1	1	1	1	1	1	1	3	1.5
SWWC21580	SwWCD413	3	1	1	1	1	1	1	1	3	1.5
SWWC21580	SwWCD415	3	1	1	1	1	1	1	1	3	1.5
SWWD344654	SwWDD245	3	1	1	1	1	3	1	1	1	1.5
SW1S318807	SW1S318807d104	1	3	1	1	1	1	1	1	1	1.4
SW1S318807	SW1S318807d102	3	1	1	1	1	1	1	1	1	1.4
SW1S318807	SW1S318807d101	1	3	1	1	1	1	1	1	1	1.4
SW1S318808	SW1S318808d107	1	3	1	1	1	1	1	1	1	1.4
SW1S318808	SW1S318808d105	1	3	1	1	1	1	1	1	1	1.4
SW1S318810	SW1S318810d104	1	3	1	1	1	1	1	1	1	1.4
SW1S318810	SW1S318810d102	1	3	1	1	1	1	1	1	1	1.4
SW1S318810	SW1S318810d101	1	3	1	1	1	1	1	1	1	1.4
SW1S318810	SW1S318810d100	1	3	1	1	1	1	1	1	1	1.4
SW1S318812	SW1S318812d101	3	1	1	1	1	1	1	1	1	1.4
SW1S318814	SW1S318814d105	1	3	1	1	1	1	1	1	1	1.4
SW2AS231218	SW2AS231218d100	1	3	1	1	1	1	1	1	1	1.4
SW2AS298689	SW2AS298689d106	1	3	1	1	1	1	1	1	1	1.4
SW2AS298689	SW2AS298689d105	1	1	5	1	1	1	1	1	1	1.4
SW2AS298689	SW2AS298689d104	1	3	1	1	1	1	1	1	1	1.4

SW2AS298689	SW2AS298689d101	1	3	1	1	1	1	1	1	1	1.4
SW2AS66465	SW2AS66465d107	1	3	1	1	1	1	1	1	1	1.4
SW2AS66465	SW2AS66465d105	1	3	1	1	1	1	1	1	1	1.4
SW2AS66465	SW2AS66465d105	1	1	1	5	1	1	1	1	1	1.4
SW2AS66465	SW2AS66465d103	1	3	1	1	1	1	1	1	1	1.4
SW2AS66465	SW2AS66465d102	3	1	1	1	1	1	1	1	1	1.4
SW2AS66465	SW2AS66465d101	3	1	1	1	1	1	1	1	1	1.4
SW2S126499	SW2S126499d104	3	1	1	1	1	1	1	1	1	1.4
SW2S126499	SW2S126499d103	3	1	1	1	1	1	1	1	1	1.4
SW2S126499	SW2S126499d101	3	1	1	1	1	1	1	1	1	1.4
SW2S141054	SW2S141054d104	1	3	1	1	1	1	1	1	1	1.4
SW2S141054	SW2S141054d103	1	3	1	1	1	1	1	1	1	1.4
SW2S141054	SW2S141054d100	3	1	1	1	1	1	1	1	1	1.4
SW2S141055	SW2S141055d102	1	3	1	1	1	1	1	1	1	1.4
SW2S141055	SW2S141055d101	1	3	1	1	1	1	1	1	1	1.4
SW2S141055	SW2S141055d100	1	3	1	1	1	1	1	1	1	1.4
SW2S180113	SW2S180113d100	1	3	1	1	1	1	1	1	1	1.4
SW2S180114	SW2S180114d100	1	3	1	1	1	1	1	1	1	1.4
SW2S255654	SW2S255654d101	3	1	1	1	1	1	1	1	1	1.4
SW2S255655	SW2S255655d104	1	3	1	1	1	1	1	1	1	1.4
SW2S26082	SW2S26082d100	1	3	1	1	1	1	1	1	1	1.4
SW2S26084	SW2S26084d100	3	1	1	1	1	1	1	1	1	1.4
SW2S330815	Rd52AND137	3	1	1	1	1	1	1	1	1	1.4
SW2S342388	SW2S342388d101	1	1	5	1	1	1	1	1	1	1.4
SW2S342388	SW2S342388d100	1	3	1	1	1	1	1	1	1	1.4
SW2S400347	SW2S400347d106	1	3	1	1	1	1	1	1	1	1.4
SW2S400347	SW2S400347d104	3	1	1	1	1	1	1	1	1	1.4
SW2S400347	SW2S400347d103	3	1	1	1	1	1	1	1	1	1.4
SW2S400347	SW2S400347d102	1	3	1	1	1	1	1	1	1	1.4
SW2S400347	SW2S400347d101	3	1	1	1	1	1	1	1	1	1.4
SW2S400348	SW2S400348d105	1	3	1	1	1	1	1	1	1	1.4
SW2S406803	SW2S406803d102	1	3	1	1	1	1	1	1	1	1.4
SW2S406803	SW2S406803d101	1	3	1	1	1	1	1	1	1	1.4
SW2S64873	SW2S64873d100	3	1	1	1	1	1	1	1	1	1.4
SW2S9234	SW2S9234d103	1	3	1	1	1	1	1	1	1	1.4
SW2S9234	SW2S9234d102	3	1	1	1	1	1	1	1	1	1.4
SW2S9234	SW2S9234d101	1	3	1	1	1	1	1	1	1	1.4
SW2S9235	SW2S9235d102	1	3	1	1	1	1	1	1	1	1.4
SW2S9235	SW2S9235d101	1	3	1	1	1	1	1	1	1	1.4
SW2SE	Sw2sed104	1	3	1	1	1	1	1	1	1	1.4
SW3AS336644	Sw3ASD636	1	1	5	1	1	1	1	1	1	1.4
SW3S131432	SW3S131432d107	1	3	1	1	1	1	1	1	1	1.4
SW3S131432	SW3S131432d104	1	3	1	1	1	1	1	1	1	1.4
SW3S171915	Sw3SD400	3	1	1	1	1	1	1	1	1	1.4
SW3S173921	SW3S173921d102	1	3	1	1	1	1	1	1	1	1.4
SW3S19566	SW3S19566d111	1	3	1	1	1	1	1	1	1	1.4
SW3S210294	SW3S210294d103	1	3	1	1	1	1	1	1	1	1.4
SW3S210294	SW3S210294d102	1	3	1	1	1	1	1	1	1	1.4
SW3S25033	SW3S25033d104	1	3	1	1	1	1	1	1	1	1.4
SW3S25033	SW3S25033d103	1	3	1	1	1	1	1	1	1	1.4
SW3S258713	Sw3SD403	1	3	1	1	1	1	1	1	1	1.4
SW3S272286	Sw3s272286d100	1	3	1	1	1	1	1	1	1	1.4
SW3S318216	Rd3SED76	1	3	1	1	1	1	1	1	1	1.4
SW3S373994	SW3S373994d106	1	3	1	1	1	1	1	1	1	1.4
SW3S373994	SW3S373994d104	1	3	1	1	1	1	1	1	1	1.4
SW3S373994	SW3S373994d100	1	3	1	1	1	1	1	1	1	1.4
SW3S400375	SW3S400375d104	1	3	1	1	1	1	1	1	1	1.4
SW3S400375	SW3S400375d103	1	3	1	1	1	1	1	1	1	1.4
SW3S7476	SW3S7476d100	1	3	1	1	1	1	1	1	1	1.4
SW3S7478	SW3S7478d100	3	1	1	1	1	1	1	1	1	1.4
SW43A28179	SW43A28179d106	1	3	1	1	1	1	1	1	1	1.4
SW43A28179	SW43A28179d101	1	3	1	1	1	1	1	1	1	1.4
SW43A28179	SW43A28179d100	1	3	1	1	1	1	1	1	1	1.4
SW43A307509	SW43A307509d109	1	3	1	1	1	1	1	1	1	1.4
SW43A307509	SW43A307509d105	1	3	1	1	1	1	1	1	1	1.4
SW43A308557	Sw43AD425	1	3	1	1	1	1	1	1	1	1.4

SW44A236953	SW44A236953d103	1	3	1	1	1	1	1	1	1	1.4
SW44A236954	SW44A236954d105	3	1	1	1	1	1	1	1	1	1.4
SW45A173945	SW45A173945d101	1	3	1	1	1	1	1	1	1	1.4
SW45A173946	SW45A173946d104	1	3	1	1	1	1	1	1	1	1.4
SW45A173946	SW45A173946d102	3	1	1	1	1	1	1	1	1	1.4
SW45A173946	SW45A173946d101	1	3	1	1	1	1	1	1	1	1.4
SW45A173946	SW45A173946d100	3	1	1	1	1	1	1	1	1	1.4
SW45A241362	SW45A241362d101	3	1	1	1	1	1	1	1	1	1.4
SW45A369363	SW45A369363d113	1	3	1	1	1	1	1	1	1	1.4
SW45A369363	SW45A369363d105	1	3	1	1	1	1	1	1	1	1.4
SW45A369363	SW45A369363d104	1	3	1	1	1	1	1	1	1	1.4
SW45A369363	SW45A369363d103	1	3	1	1	1	1	1	1	1	1.4
SW45A369363	SW45A369363d102	1	1	1	1	1	1	1	5	1	1.4
SW45A369364	SW45A369364d110	3	1	1	1	1	1	1	1	1	1.4
SW45A369364	SW45A369364d108	1	3	1	1	1	1	1	1	1	1.4
SW45A369364	SW45A369364d104	3	1	1	1	1	1	1	1	1	1.4
SW45A369364	SW45A369364d102	1	3	1	1	1	1	1	1	1	1.4
SW46A115466	SW46A115466d106	1	3	1	1	1	1	1	1	1	1.4
SW46A115466	SW46A115466d103	1	1	1	1	1	1	1	5	1	1.4
SW46A115467	SW46A115467d106	1	3	1	1	1	1	1	1	1	1.4
SW46A136089	SW46A136089d113	1	3	1	1	1	1	1	1	1	1.4
SW46A136089	SW46A136089d112	1	3	1	1	1	1	1	1	1	1.4
SW46A136089	SW46A136089d105	1	3	1	1	1	1	1	1	1	1.4
SW46A136089	SW46A136089d100	1	3	1	1	1	1	1	1	1	1.4
SW46A136090	SW46A136090d107	3	1	1	1	1	1	1	1	1	1.4
SW46A136090	SW46A136090d102	1	3	1	1	1	1	1	1	1	1.4
SW46A136090	SW46A136090d101	3	1	1	1	1	1	1	1	1	1.4
SW46A136090	SW46A136090d100	1	3	1	1	1	1	1	1	1	1.4
SW46A187004	Sw46AD436	1	3	1	1	1	1	1	1	1	1.4
SW47A276245	SW47A276245d103	1	3	1	1	1	1	1	1	1	1.4
SW47A276245	SW47A276245d101	1	3	1	1	1	1	1	1	1	1.4
SW47A276245	SW47A276245d100	3	1	1	1	1	1	1	1	1	1.4
SW47A276246	SW47A276246d105	1	3	1	1	1	1	1	1	1	1.4
SW47A404608	SW47A404608d123	1	3	1	1	1	1	1	1	1	1.4
SW47A404608	SW47A404608d112	1	3	1	1	1	1	1	1	1	1.4
SW47A404609	SW47A404609d105	1	3	1	1	1	1	1	1	1	1.4
SW47A404609	SW47A404609d104	1	3	1	1	1	1	1	1	1	1.4
SW47A406509	SW47A406509d104	1	3	1	1	1	1	1	1	1	1.4
SW47A406509	SW47A406509d102	1	3	1	1	1	1	1	1	1	1.4
SW47A406510	SW47A406510d104	1	3	1	1	1	1	1	1	1	1.4
SW48A149128	SW48A149128d109	3	1	1	1	1	1	1	1	1	1.4
SW48A149128	SW48A149128d108	1	3	1	1	1	1	1	1	1	1.4
SW48A149128	SW48A149128d107	1	3	1	1	1	1	1	1	1	1.4
SW48A261343	SW48A261343d106	1	3	1	1	1	1	1	1	1	1.4
SW48A261343	SW48A261343d100	3	1	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d123	1	3	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d122	1	3	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d119	3	1	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d113	3	1	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d112	1	3	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d111	1	3	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d109	3	1	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d101	1	3	1	1	1	1	1	1	1	1.4
SW48A341933	SW48A341933d100	1	3	1	1	1	1	1	1	1	1.4
SW48A341934	SW48A341934d116	1	3	1	1	1	1	1	1	1	1.4
SW48A341934	SW48A341934d114	1	3	1	1	1	1	1	1	1	1.4
SW48A341934	SW48A341934d112	1	3	1	1	1	1	1	1	1	1.4
SW48A341934	SW48A341934d110	1	3	1	1	1	1	1	1	1	1.4
SW48A341934	SW48A341934d109	3	1	1	1	1	1	1	1	1	1.4
SW48A341934	SW48A341934d108	1	3	1	1	1	1	1	1	1	1.4
SW48A341934	SW48A341934d103	1	3	1	1	1	1	1	1	1	1.4
SW48A381715	SW48A381715d108	1	3	1	1	1	1	1	1	1	1.4
SW48A381715	SW48A381715d107	1	3	1	1	1	1	1	1	1	1.4
SW48A381716	SW48A381716d101	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	Sw48AD651	3	1	1	1	1	1	1	1	1	1.4
SW48A396624	Sw48AD653	3	1	1	1	1	1	1	1	1	1.4

SW48A396624	Sw48AD655	3	1	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d125	3	1	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d124	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d122	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d120	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d117	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d116	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d115	3	1	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d114	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d113	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d113	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d111	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d110	3	1	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d109	3	1	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d105	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d104	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d103	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d101	1	3	1	1	1	1	1	1	1	1.4
SW48A396624	SW48A396624d100	3	1	1	1	1	1	1	1	1	1.4
SW48A396625	SW48A396625d103	1	3	1	1	1	1	1	1	1	1.4
SW48A396625	SW48A396625d102	1	3	1	1	1	1	1	1	1	1.4
SW48A396625	SW48A396625d102	1	3	1	1	1	1	1	1	1	1.4
SW48A396625	SW48A396625d102	1	3	1	1	1	1	1	1	1	1.4
SW48A396625	SW48A396625d100	1	3	1	1	1	1	1	1	1	1.4
SW49A109962	SW49A109962d113	1	3	1	1	1	1	1	1	1	1.4
SW49A109962	SW49A109962d111	1	3	1	1	1	1	1	1	1	1.4
SW49A109962	SW49A109962d105	3	1	1	1	1	1	1	1	1	1.4
SW49A109962	SW49A109962d103	3	1	1	1	1	1	1	1	1	1.4
SW49A109962	SW49A109962d102	1	3	1	1	1	1	1	1	1	1.4
SW49A109963	SW49A109963d104	1	3	1	1	1	1	1	1	1	1.4
SW49A109963	SW49A109963d101	1	3	1	1	1	1	1	1	1	1.4
SW49A109963	SW49A109963d100	1	3	1	1	1	1	1	1	1	1.4
SW49A173047	Sw49AD688	1	3	1	1	1	1	1	1	1	1.4
Sw49A20050412	Sw49AD456	3	1	1	1	1	1	1	1	1	1.4
SW49A265521	SW49A265521d101	1	3	1	1	1	1	1	1	1	1.4
SW49A93816	Sw49AD673	1	3	1	1	1	1	1	1	1	1.4
SW4S134056	SW4S134056d106	1	3	1	1	1	1	1	1	1	1.4
SW4S134056	SW4S134056d104	1	3	1	1	1	1	1	1	1	1.4
SW4S184564	SW4S184564d112	1	3	1	1	1	1	1	1	1	1.4
SW4S184564	SW4S184564d111	3	1	1	1	1	1	1	1	1	1.4
SW4S184564	SW4S184564d106	1	3	1	1	1	1	1	1	1	1.4
SW4S184564	SW4S184564d100	1	3	1	1	1	1	1	1	1	1.4
SW4S308167	Rd4SWD26	3	1	1	1	1	1	1	1	1	1.4
SW4S31559	SW4S31559d103	1	3	1	1	1	1	1	1	1	1.4
SW4S330491	SW4S330491d105	3	1	1	1	1	1	1	1	1	1.4
SW4S377966	Rd4SD3	1	3	1	1	1	1	1	1	1	1.4
SW4S391420	Sw4SD624	3	1	1	1	1	1	1	1	1	1.4
SW4S391421	Sw4SD626	3	1	1	1	1	1	1	1	1	1.4
SW4S64997	SW4S64997d102	1	3	1	1	1	1	1	1	1	1.4
SW50A109898	SW50A109898d109	1	3	1	1	1	1	1	1	1	1.4
SW50A109898	SW50A109898d108	1	3	1	1	1	1	1	1	1	1.4
SW50A109898	SW50A109898d106	3	1	1	1	1	1	1	1	1	1.4
SW50A109899	SW50A109899d110	1	3	1	1	1	1	1	1	1	1.4
SW50A109899	SW50A109899d108	3	1	1	1	1	1	1	1	1	1.4
SW50A109899	SW50A109899d107	1	3	1	1	1	1	1	1	1	1.4
SW50A109899	SW50A109899d102	1	3	1	1	1	1	1	1	1	1.4
SW50A109899	SW50A109899d100	1	3	1	1	1	1	1	1	1	1.4
SW50A142971	SW50A142971d101	1	3	1	1	1	1	1	1	1	1.4
SW50A142971	SW50A142971d104	1	3	1	1	1	1	1	1	1	1.4
SW50A142971	SW50A142971d101	1	3	1	1	1	1	1	1	1	1.4
SW50A153585	SW50A153585d100	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d113	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d112	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d111	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d110	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d108	1	3	1	1	1	1	1	1	1	1.4

SW50A153586	SW50A153586d106	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d105	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d104	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d103	3	1	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d101	1	3	1	1	1	1	1	1	1	1.4
SW50A153586	SW50A153586d100	1	3	1	1	1	1	1	1	1	1.4
SW50A261267	SW50A261267d108	3	1	1	1	1	1	1	1	1	1.4
SW50A261267	SW50A261267d100	3	1	1	1	1	1	1	1	1	1.4
SW50A261269	SW50A261269d100	3	1	1	1	1	1	1	1	1	1.4
SW50A273439	SW50A273439d109	3	1	1	1	1	1	1	1	1	1.4
SW50A273439	SW50A273439d108	1	3	1	1	1	1	1	1	1	1.4
SW50A273439	SW50A273439d107	1	3	1	1	1	1	1	1	1	1.4
SW50A273439	SW50A273439d106	1	3	1	1	1	1	1	1	1	1.4
SW50A273439	SW50A273439d100	1	3	1	1	1	1	1	1	1	1.4
SW50A310028	SW50A310028d105	1	3	1	1	1	1	1	1	1	1.4
SW50A310028	SW50A310028d102	3	1	1	1	1	1	1	1	1	1.4
SW50A330881	SW50A330881d102	1	3	1	1	1	1	1	1	1	1.4
SW50A33088103	SW50A33088103d103	3	1	1	1	1	1	1	1	1	1.4
SW50A33088103	SW50A33088103d100	3	1	1	1	1	1	1	1	1	1.4
SW50A44673	SW50A44673d102	3	1	1	1	1	1	1	1	1	1.4
SW50A44673	SW50A44673d101	3	1	1	1	1	1	1	1	1	1.4
SW50A91832	SW50A91832d102	3	1	1	1	1	1	1	1	1	1.4
SW50A91833	SW50A91833d102	1	3	1	1	1	1	1	1	1	1.4
SW50A91833	SW50A91833d100	1	3	1	1	1	1	1	1	1	1.4
SW50AA260192	SW50AA260192d106	1	3	1	1	1	1	1	1	1	1.4
SW50AA260192	SW50AA260192d102	1	3	1	1	1	1	1	1	1	1.4
SW50AA260192	SW50AA260192d101	1	3	1	1	1	1	1	1	1	1.4
SW50AA322844	Sw50AAD490	3	1	1	1	1	1	1	1	1	1.4
SW50AA322844	Sw50AAD491	1	1	1	1	1	1	1	5	1	1.4
SW51A244599	Rd51AND117	1	3	1	1	1	1	1	1	1	1.4
SW51A244600	Rd51AS106	1	3	1	1	1	1	1	1	1	1.4
SW51A342116	SW51A342116d109	1	3	1	1	1	1	1	1	1	1.4
SW51A342116	SW51A342116d107	1	3	1	1	1	1	1	1	1	1.4
SW51A342116	SW51A342116d106	1	1	1	1	1	1	1	5	1	1.4
SW51A342116	SW51A342116d102	1	1	1	1	1	1	1	5	1	1.4
SW51A342116	SW51A342116d100	1	3	1	1	1	1	1	1	1	1.4
SW51A342117	SW51A342117d112	1	3	1	1	1	1	1	1	1	1.4
SW51A342117	SW51A342117d111	1	3	1	1	1	1	1	1	1	1.4
SW51A342117	SW51A342117d109	1	3	1	1	1	1	1	1	1	1.4
SW51A342117	SW51A342117d107	1	3	1	1	1	1	1	1	1	1.4
SW51A342117	SW51A342117d106	1	3	1	1	1	1	1	1	1	1.4
SW51A342117	SW51A342117d102	1	3	1	1	1	1	1	1	1	1.4
SW51A342117	SW51A342117d101	1	3	1	1	1	1	1	1	1	1.4
SW51A342117	SW51A342117d100	1	3	1	1	1	1	1	1	1	1.4
SW51A389321	Sw51AD515	1	1	1	3	1	1	1	3	1	1.4
SW51A389321	Sw51AD518	1	3	1	1	1	1	1	1	1	1.4
SW51A389322	Sw51AD523	3	1	1	1	1	1	1	1	1	1.4
SW51A389322	Sw51AD527	3	1	1	1	1	1	1	1	1	1.4
SW51A3980	SW51A3980d108	1	3	1	1	1	1	1	1	1	1.4
SW51A3980	SW51A3980d107	3	1	1	1	1	1	1	1	1	1.4
SW51A3980	SW51A3980d103	1	3	1	1	1	1	1	1	1	1.4
SW51A3981	SW51A3981d100	1	3	1	1	1	1	1	1	1	1.4
SW51A97352	Rd51AND115	1	3	1	1	1	1	1	1	1	1.4
SW51A97352	Rd51AND116	3	1	1	1	1	1	1	1	1	1.4
SW52A153570	Sw52AD555	3	1	1	1	1	1	1	1	1	1.4
SW52A153570	Sw52AD558	1	3	1	1	1	1	1	1	1	1.4
SW52A337373	SW52A237373d112	1	3	1	1	1	1	1	1	1	1.4
SW52A337373	SW52A237373d110	1	3	1	1	1	1	1	1	1	1.4
SW52A337373	SW52A237373d109	1	3	1	1	1	1	1	1	1	1.4
SW52A337373	SW52A237373d108	1	3	1	1	1	1	1	1	1	1.4
SW52A337373	SW52A237373d104	1	3	1	1	1	1	1	1	1	1.4
SW52A337373	SW52A237373d103	1	3	1	1	1	1	1	1	1	1.4
SW52A366553	Rd52AND133	1	1	1	1	3	1	3	1	1	1.4
SW52A61046	SW52A61046d114	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d113	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d112	1	3	1	1	1	1	1	1	1	1.4

SW52A61046	SW52A61046d111	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d110	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d109	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d108	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d105	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d104	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d102	1	3	1	1	1	1	1	1	1	1.4
SW52A61046	SW52A61046d100	1	3	1	1	1	1	1	1	1	1.4
SW52A61047	SW52A61047d110	1	3	1	1	1	1	1	1	1	1.4
SW52A61047	SW52A61047d108	1	3	1	1	1	1	1	1	1	1.4
SW52A61047	SW52A61047d104	1	3	1	1	1	1	1	1	1	1.4
SW52A72451	Rd52AND138	1	3	1	1	1	1	1	1	1	1.4
SW52A74928	SW52A74928d107	1	3	1	1	1	1	1	1	1	1.4
SW52A74928	SW52A74928d103	1	3	1	1	1	1	1	1	1	1.4
SW52A74928	SW52A74928d100	1	3	1	1	1	1	1	1	1	1.4
SW53A236477	Sw5SD572	1	3	1	1	1	1	1	1	1	1.4
SW53A261181	Sw53a261181d108	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d119	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d118	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d115	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d113	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d111	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d110	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d106	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d104	1	3	1	1	1	1	1	1	1	1.4
SW53A281150	Sw53a281150d108	1	3	1	1	1	1	1	1	1	1.4
SW53A281150	Sw53a281150d108	1	3	1	1	1	1	1	1	1	1.4
SW53A281150	Sw53a281150d107	1	3	1	1	1	1	1	1	1	1.4
SW53A281150	Sw53a281150d106	1	3	1	1	1	1	1	1	1	1.4
SW53A281150	Sw53a281150d105	1	3	1	1	1	1	1	1	1	1.4
SW53A281150	Sw53a281150d103	1	3	1	1	1	1	1	1	1	1.4
SW53A281151	Sw53a281151d105	1	3	1	1	1	1	1	1	1	1.4
SW53A281151	Sw53a281151d104	1	3	1	1	1	1	1	1	1	1.4
SW53A281151	Sw53a281151d102	1	3	1	1	1	1	1	1	1	1.4
SW53A379930	Sw53AD635	1	3	1	1	1	1	1	1	1	1.4
SW54A200080	Sw54AD602	1	3	1	1	1	1	1	1	1	1.4
SW55A13722	Rd55AND35	3	1	1	1	1	1	1	1	1	1.4
SW55A13723	Rd55ASD43	1	3	1	1	1	1	1	1	1	1.4
SW55A65884	Rd55AND28	1	3	1	1	1	1	1	1	1	1.4
SW56A123924	Rd56AND16	3	1	1	1	1	1	1	1	1	1.4
SW57A92161	Rd57ASD10	1	3	1	1	1	1	1	1	1	1.4
SW57A92161	Rd57ASD11	1	3	1	1	1	1	1	1	1	1.4
SW5S138661	Rd5SWD32	3	1	1	1	1	1	1	1	1	1.4
SW5S169401	Sw5SD560	3	1	1	1	1	1	1	1	1	1.4
SW5S169401	Sw5SD563	3	1	1	1	1	1	1	1	1	1.4
SW5S389671	Sw5SD613	1	3	1	1	1	1	1	1	1	1.4
SW5S409803	Sw5SD509	3	1	1	1	1	1	1	1	1	1.4
SW6S257368	Sw6SD473	1	3	1	1	1	1	1	1	1	1.4
SW6S257368	Sw50AD475	3	1	1	1	1	1	1	1	1	1.4
SW7S203630	Sw7SD550	1	1	1	1	1	1	1	5	1	1.4
SW8S172620	Sw8SD537	1	3	1	1	1	1	1	1	1	1.4
Sw8S20050412	Sw8SD540	1	3	1	1	1	1	1	1	1	1.4
SW8S21104	Sw8SD547	3	1	1	1	1	1	1	1	1	1.4
SW8S231589	Sw8SD213	1	3	1	1	1	1	1	1	1	1.4
SW8S251730	Sw8SD542	3	1	1	1	1	1	1	1	1	1.4
SW8S256734	Sw8SD462	3	1	1	1	1	1	1	1	1	1.4
SW8S256734	Sw8SD463	3	1	1	1	1	1	1	1	1	1.4
SWHS20042902	RdHSED54	1	1	1	5	1	1	1	1	1	1.4
SWS1A5600	SWS1A5600d100	1	3	1	1	1	1	1	1	1	1.4
SWS1A5618	SWS1A5618d100	1	3	1	1	1	1	1	1	1	1.4
SWS3S24951	SWS3S24951d101	1	3	1	1	1	1	1	1	1	1.4
SWS50A3308810	SWS50A3308810d100	1	3	1	1	1	1	1	1	1	1.4
SWS50A3308812	SWS50A3308812d100	1	3	1	1	1	1	1	1	1	1.4
SWSA106761	SwSA235	3	1	1	1	1	1	1	1	1	1.4
SWSM382476	SwSMD438	1	3	1	1	1	1	1	1	1	1.4
SWWC21581	SwWCD415	3	1	1	1	1	1	1	1	1	1.4

SWWC21582	SwWCD419	3	1	1	1	1	1	1	1	1	1.4
SWWD195931	SwWDD256	3	1	1	1	1	1	1	1	1	1.4
SWWD195931	SwWDD257	3	1	1	1	1	1	1	1	1	1.4
SWWD1959310	SwWDD249	3	1	1	1	1	1	1	1	1	1.4
SWWD224911	SwWDD320	1	3	1	1	1	1	1	1	1	1.4
SWWD379503	SwWDD286	1	3	1	1	1	1	1	1	1	1.4
SWWP344648	SwWPD223	1	3	1	1	1	1	1	1	1	1.4
SWWP344648	SwWPD228	3	1	1	1	1	1	1	1	1	1.4
SWWR272044	SwWRD233	3	1	1	1	1	1	1	1	1	1.4
SWWR366240	SwWRD220	1	3	1	1	1	1	1	1	1	1.4
SWWR366240	SwWRD222	1	3	1	1	1	1	1	1	1	1.4
SWWS334845	SwWSD209	1	3	1	1	1	1	1	1	1	1.4
SWWS334845	SwWSD212	1	3	1	1	1	1	1	1	1	1.4
SW53A261182	Sw53a261182d112	1	1	1	1	3	3	1	1	1	1.4
SW1S318808	SW1S318808d110	1	1	1	1	3	1	1	1	1	1.3
SW1S318813	SW1S318813d101	1	1	1	1	3	1	1	1	1	1.3
SW2S289166	SW2S289166d100	1	1	1	1	3	1	1	1	1	1.3
SW2S345720	Rd2SED65	1	1	1	1	3	1	1	1	1	1.3
SW3S131432	SW3S131432d100	1	1	1	1	3	1	1	1	1	1.3
SW45A241362	SW45A241362d103	1	1	1	1	3	1	1	1	1	1.3
SW4S370930	Sw4SD448	1	1	1	1	3	1	1	1	1	1.3
SW50A142971	SW50A142971d103	1	1	1	1	3	1	1	1	1	1.3
SW52A153570	Sw52AD557	1	1	1	1	3	1	1	1	1	1.3
SW52A366553	Rd52AND132	1	1	1	1	3	1	1	1	1	1.3
SW52A72450	Rd52ASD1127	1	1	1	1	3	1	1	1	1	1.3
SW53A261182	Sw53a261182d116	1	1	1	1	3	1	1	1	1	1.3
SW53A261182	Sw53a261182d114	1	1	1	1	3	1	1	1	1	1.3
SW53A33653	Sw53AD621	1	1	1	1	3	1	1	1	1	1.3
SW55A369769	Rd2SWD71	1	1	1	1	3	1	1	1	1	1.3
SW56A123923	Rd56ASD22	1	1	1	1	3	1	1	1	1	1.3
SW56A123924	Rd56AND17	1	1	1	1	3	1	1	1	1	1.3
SW7S322332	Sw7SD610	1	1	1	1	3	1	1	1	1	1.3
SW8S251730	Sw8SD541	1	1	1	1	3	1	1	1	1	1.3
SWSA106761	SwSA237	1	1	1	1	3	1	1	1	1	1.3
SW1S318808	SW1S318808d111	1	1	1	1	1	1	1	3	1	1.2
SW1S318810	SW1S318810d105	1	1	1	1	1	5	1	1	1	1.2
SW1S318811	SW1S318811d104	1	1	1	1	1	5	1	1	1	1.2
SW2S141055	SW2S141055d103	1	1	1	1	1	5	1	1	1	1.2
SW2S180114	SW2S180114d106	1	1	3	1	1	1	1	1	1	1.2
SW2S255655	SW2S255655d103	1	1	1	1	1	5	1	1	1	1.2
SW2S255655	SW2S255655d102	1	1	1	1	1	5	1	1	1	1.2
SW2S342388	SW2S342388d102	1	1	1	1	1	5	1	1	1	1.2
SW2S400348	SW2S400348d100	1	1	1	1	1	5	1	1	1	1.2
SW3AS340149	Rd3SWD89	1	1	1	1	1	1	1	1	5	1.2
SW3S131432	SW3S131432d102	1	1	1	1	1	5	1	1	1	1.2
SW3S173921	SW3S173921d100	1	1	1	1	1	1	1	3	1	1.2
SW3S19566	SW3S19566d100	1	1	1	1	1	5	1	1	1	1.2
SW3S210294	SW3S210294d104	1	1	1	1	1	5	1	1	1	1.2
SW3S210294	SW3S210294d100	1	1	1	1	1	5	1	1	1	1.2
SW3S210295	SW3S210295d106	1	1	1	1	1	5	1	1	1	1.2
SW3S373994	SW3S373994d103	1	1	1	1	1	5	1	1	1	1.2
SW43A307509	SW43A307509d106	1	1	1	1	1	5	1	1	1	1.2
SW43A308557	Sw43AD426	1	1	1	1	1	1	1	3	1	1.2
SW43A56876	SW43A56876d102	1	1	1	1	1	5	1	1	1	1.2
SW45A173941	SW45A173941d102	1	1	1	1	1	5	1	1	1	1.2
SW45A173944	SW45A173944d100	1	1	1	1	1	5	1	1	1	1.2
SW45A173946	SW45A173946d103	1	1	1	1	1	5	1	1	1	1.2
SW45A241362	SW45A241362d102	1	1	1	3	1	1	1	1	1	1.2
SW45A369364	SW45A369364d107	1	1	3	1	1	1	1	1	1	1.2
SW46A115466	SW46A115466d105	1	1	3	1	1	1	1	1	1	1.2
SW46A115467	SW46A115467d104	1	1	3	1	1	1	1	1	1	1.2
SW46A136090	SW46A136090d106	1	1	1	3	1	1	1	1	1	1.2
SW46A136090	SW46A136090d104	1	1	1	3	1	1	1	1	1	1.2
SW47A276246	SW47A276246d104	1	1	1	1	1	5	1	1	1	1.2
SW47A404608	SW47A404608d118	1	1	1	1	1	5	1	1	1	1.2
SW47A404608	SW47A404608d113	1	1	1	1	1	5	1	1	1	1.2

SW47A404608	SW47A404608d102	1	1	1	1	1	5	1	1	1	1.2
SW47A404609	SW47A404609d109	1	1	1	1	1	5	1	1	1	1.2
SW47A404609	SW47A404609d107	1	1	1	1	1	5	1	1	1	1.2
SW47A406509	SW47A406509d101	1	1	3	1	1	1	1	1	1	1.2
SW47A406510	SW47A406510d104	1	1	3	1	1	1	1	1	1	1.2
SW48A261343	SW48A261343d103	1	1	3	1	1	1	1	1	1	1.2
SW48A341933	SW48A341933d114	1	1	1	1	1	5	1	1	1	1.2
SW48A341933	SW48A341933d105	1	1	1	1	1	5	1	1	1	1.2
SW48A341934	SW48A341934d119	1	1	1	1	1	5	1	1	1	1.2
SW48A341934	SW48A341934d117	1	1	1	1	1	5	1	1	1	1.2
SW48A381715	SW48A381715d106	1	1	1	1	1	5	1	1	1	1.2
SW49A109963	SW49A109963d110	1	1	1	1	1	1	1	3	1	1.2
SW49A93815	Sw49AD682	1	1	1	1	1	1	1	3	1	1.2
SW4S134056	SW4S134056d101	1	1	1	1	1	1	1	3	1	1.2
SW4S184564	SW4S184564d115	1	1	1	1	1	5	1	1	1	1.2
SW4S184564	SW4S184564d108	1	1	1	1	1	1	1	3	1	1.2
SW4S330491	SW4S330491d101	1	1	1	3	1	1	1	1	1	1.2
SW50A109898	SW50A109898d105	1	1	1	1	1	5	1	1	1	1.2
SW50A142971	SW50A142971d105	1	1	1	1	1	1	1	3	1	1.2
SW50A142971	SW50A142971d102	1	1	1	1	1	1	1	3	1	1.2
SW50A273439	SW50A273439d110	1	1	3	1	1	1	1	1	1	1.2
SW50A273439	SW50A273439d105	1	1	1	1	1	1	1	3	1	1.2
SW50A273439	SW50A273439d103	1	1	3	1	1	1	1	1	1	1.2
SW50A310028	SW50A310028d106	1	1	3	1	1	1	1	1	1	1.2
SW50A91832	SW50A91832d100	1	1	1	1	1	1	1	3	1	1.2
SW50A91833	SW50A91833d101	1	1	1	1	1	5	1	1	1	1.2
SW50AA322844	Sw50AAD492	1	1	1	1	1	1	1	3	1	1.2
SW51A126127	Rd51ASD111	1	1	1	1	1	3	1	1	3	1.2
SW51A3980	SW51A3980d105	1	1	1	3	1	1	1	1	1	1.2
SW51A3981	SW51A3981d101	1	1	1	1	1	5	1	1	1	1.2
SW52A332623	Rd52ASD128	1	1	1	3	1	1	1	1	1	1.2
SW52A337373	SW52A237373d114	1	1	1	1	1	5	1	1	1	1.2
SW52A337373	SW52A237373d111	1	1	1	1	1	5	1	1	1	1.2
SW52A337373	SW52A237373d101	1	1	1	1	1	5	1	1	1	1.2
SW52A366552	Rd52ASD129	1	1	1	1	1	5	1	1	1	1.2
SW52A61047	SW52A61047d113	1	1	1	1	1	5	1	1	1	1.2
SW53A261181	Sw53a261181d100	1	1	3	1	1	1	1	1	1	1.2
SW53A261182	Sw53a261182d117	1	1	3	1	1	1	1	1	1	1.2
SW53A281151	Sw53a281151d100	1	1	1	1	1	5	1	1	1	1.2
SW53A379930	Sw53AD634	1	1	1	1	1	1	1	3	1	1.2
SW54A286619	Sw54AD608	1	1	1	1	1	1	1	3	1	1.2
SW55A369770	Rd55AND57	1	1	1	3	1	1	1	1	1	1.2
SW55A65884	Rd55AND27	1	1	1	1	1	1	1	1	5	1.2
SW5S409803	Sw5SD508	1	1	1	1	1	1	1	3	1	1.2
SW7S322332	Sw7SD611	1	1	1	1	1	1	1	3	1	1.2
SWS1A5601	SWS1A5601d102	1	1	1	1	1	5	1	1	1	1.2
SWS1A569	SWS1A569d101	1	1	1	1	1	1	1	3	1	1.2
SWS1A569	SWS1A569d100	1	1	1	1	1	1	1	3	1	1.2
SWS3S24951	SWS3S24951d100	1	1	1	1	1	5	1	1	1	1.2
SWS50A3308812	SWS50A3308812d101	1	1	1	1	1	5	1	1	1	1.2
SWWD215951	SwWDD202	1	1	1	1	1	1	1	1	5	1.2
SWWD396514	SwWDD260	1	1	3	1	1	1	1	1	1	1.2
RDWD379503	RdWDD302	1	1	1	1	1	1	1	1	3	1.1
RDWD379503	RdWDD304	1	1	1	1	1	1	1	1	3	1.1
RDWD379503	RdWDD305	1	1	1	1	1	1	1	1	3	1.1
SW1S318810	SW1S318810d103	1	1	1	1	1	3	1	1	1	1.1
SW1S318814	SW1S318814d101	1	1	1	1	1	3	1	1	1	1.1
SW2AS298689	SW2AS298689d107	1	1	1	1	1	3	1	1	1	1.1
SW2AS66465	SW2AS66465d100	1	1	1	1	1	3	1	1	1	1.1
SW2S255655	SW2S255655d105	1	1	1	1	1	3	1	1	1	1.1
SW2S255655	SW2S255655d101	1	1	1	1	1	3	1	1	1	1.1
SW2S330815	Sw2SD624	1	1	1	1	1	3	1	1	1	1.1
SW2S342387	SW2S342387d101	1	1	1	1	1	3	1	1	1	1.1
SW2S400347	SW2S400347d109	1	1	1	1	1	3	1	1	1	1.1
SW3S131432	SW3S131432d105	1	1	1	1	1	3	1	1	1	1.1
SW3S131432	SW3S131432d103	1	1	1	1	1	3	1	1	1	1.1

SW3S131432	SW3S131432d101	1	1	1	1	1	3	1	1	1	1.1
SW3S19566	SW3S19566d109	1	1	1	1	1	3	1	1	1	1.1
SW3S19566	SW3S19566d103	1	1	1	1	1	3	1	1	1	1.1
SW3S210295	SW3S210295d100	1	1	1	1	1	3	1	1	1	1.1
SW3S25033	SW3S25033d102	1	1	1	1	1	3	1	1	1	1.1
SW3S373994	SW3S373994d108	1	1	1	1	1	3	1	1	1	1.1
SW43A28179	SW43A28179d105	1	1	1	1	1	3	1	1	1	1.1
SW43A28179	SW43A28179d103	1	1	1	1	1	3	1	1	1	1.1
SW43A28179	SW43A28179d102	1	1	1	1	1	3	1	1	1	1.1
SW43A307509	SW43A307509d108	1	1	1	1	1	3	1	1	1	1.1
SW43A308557	Sw43AD423	1	1	1	1	1	1	1	1	3	1.1
SW43A56876	SW43A56876d101	1	1	1	1	1	3	1	1	1	1.1
SW44A236953	SW44A236953d106	1	1	1	1	1	3	1	1	1	1.1
SW45A173943	SW45A173943d101	1	1	1	1	1	3	1	1	1	1.1
SW45A173945	SW45A173945d103	1	1	1	1	1	3	1	1	1	1.1
SW45A369364	SW45A369364d103	1	1	1	1	1	3	1	1	1	1.1
SW46A136089	SW46A136089d108	1	1	1	1	1	3	1	1	1	1.1
SW47A404608	SW47A404608d119	1	1	1	1	1	3	1	1	1	1.1
SW47A404608	SW47A404608d103	1	1	1	1	1	3	1	1	1	1.1
SW47A404608	SW47A404608d101	1	1	1	1	1	3	1	1	1	1.1
SW48A149128	SW48A149128d106	1	1	1	1	1	3	1	1	1	1.1
SW48A149128	SW48A149128d104	1	1	1	1	1	3	1	1	1	1.1
SW48A261343	SW48A261343d101	1	1	1	1	1	3	1	1	1	1.1
SW48A261344	SW48A261344d102	1	1	1	1	1	3	1	1	1	1.1
SW48A341933	SW48A341933d110	1	1	1	1	1	3	1	1	1	1.1
SW48A341933	SW48A341933d103	1	1	1	1	1	3	1	1	1	1.1
SW48A341934	SW48A341934d113	1	1	1	1	1	3	1	1	1	1.1
SW49A109962	SW49A109962d107	1	1	1	1	1	3	1	1	1	1.1
SW49A173047	Sw49AD683	1	1	1	1	1	3	1	1	1	1.1
SW49A256822	SW49A256822d100	1	1	1	1	1	3	1	1	1	1.1
SW49A256823	SW49A256823d100	1	1	1	1	1	3	1	1	1	1.1
SW49A265521	SW49A265521d102	1	1	1	1	1	3	1	1	1	1.1
SW4S134056	SW4S134056d105	1	1	1	1	1	3	1	1	1	1.1
SW4S184564	SW4S184564d104	1	1	1	1	1	3	1	1	1	1.1
SW4S31559	SW4S31559d100	1	1	1	1	1	3	1	1	1	1.1
SW4S64997	SW4S64997d101	1	1	1	1	1	3	1	1	1	1.1
SW50A109898	SW50A109898d104	1	1	1	1	1	3	1	1	1	1.1
SW50A109899	SW50A109899d105	1	1	1	1	1	3	1	1	1	1.1
SW50A109899	SW50A109899d104	1	1	1	1	1	3	1	1	1	1.1
SW50A142972	SW50A142972d101	1	1	1	1	1	3	1	1	1	1.1
SW50A153586	SW50A153586d109	1	1	1	1	1	3	1	1	1	1.1
SW50A153586	SW50A153586d107	1	1	1	1	1	3	1	1	1	1.1
SW50A261267	SW50A261267d103	1	1	1	1	1	3	1	1	1	1.1
SW50A330881	SW50A330881d101	1	1	1	1	1	3	1	1	1	1.1
SW51A342117	SW51A342117d103	1	1	1	1	1	3	1	1	1	1.1
SW51A3981	SW51A3981d102	1	1	1	1	1	3	1	1	1	1.1
SW52A159197	SW52A159197d102	1	1	1	1	1	3	1	1	1	1.1
SW52A337373	SW52A237373d106	1	1	1	1	1	3	1	1	1	1.1
SW52A337373	SW52A237373d102	1	1	1	1	1	3	1	1	1	1.1
SW53A261181	Sw53a261181d101	1	1	1	1	1	3	1	1	1	1.1
SW53A261182	Sw53a261182d100	1	1	1	1	1	3	1	1	1	1.1
SW53A379930	Sw53AD633	1	1	1	1	1	3	1	1	1	1.1
SW57A92161	Rd57ASD12	1	1	1	1	1	1	1	1	3	1.1
SW8S203101	Sw8SD410	1	1	1	1	1	1	1	1	3	1.1
SWS1S318810	SWS1S318810d101	1	1	1	1	1	3	1	1	1	1.1
SWS3S24950	SWS3S24950d107	1	1	1	1	1	3	1	1	1	1.1
SWS3S24951	SWS3S24951d102	1	1	1	1	1	3	1	1	1	1.1
SWSS390572	SwSSD238	1	1	1	1	1	1	1	1	3	1.1
SWWC21580	SwWCD412	1	1	1	1	1	1	1	1	3	1.1
SWWC21581	SwWCD417	1	1	1	1	1	3	1	1	1	1.1
SWWS229336	SwWSD204	1	1	1	1	1	1	1	1	3	1.1
SW1AS373635	1AAWD100	1	1	1	1	1	1	1	1	1	1
SW1AS373635	1AAWD101	1	1	1	1	1	1	1	1	1	1
SW1S318807	SW1S318807d100	1	1	1	1	1	1	1	1	1	1
SW1S318808	SW1S318808d104	1	1	1	1	1	1	1	1	1	1
SW1S318808	SW1S318808d103	1	1	1	1	1	1	1	1	1	1

SW1S318808	SW1S318808d101	1	1	1	1	1	1	1	1	1	1
SW1S318808	SW1S318808d100	1	1	1	1	1	1	1	1	1	1
SW1S318813	SW1S318813d105	1	1	1	1	1	1	1	1	1	1
SW1S318813	SW1S318813d102	1	1	1	1	1	1	1	1	1	1
SW1S318813	SW1S318813d100	1	1	1	1	1	1	1	1	1	1
SW1S318814	SW1S318814d104	1	1	1	1	1	1	1	1	1	1
SW1S318814	SW1S318814d103	1	1	1	1	1	1	1	1	1	1
SW1S318814	SW1S318814d102	1	1	1	1	1	1	1	1	1	1
SW2AS128137	Rd55ASD75	1	1	1	1	1	1	1	1	1	1
SW2AS66465	Sw2ASD678	1	1	1	1	1	1	1	1	1	1
SW2S126498	SW2S126498d100	1	1	1	1	1	1	1	1	1	1
SW2S126499	SW2S126499d100	1	1	1	1	1	1	1	1	1	1
SW2S180114	SW2S180114d107	1	1	1	1	1	1	1	1	1	1
SW2S180114	SW2S180114d102	1	1	1	1	1	1	1	1	1	1
SW2S180114	SW2S180114d101	1	1	1	1	1	1	1	1	1	1
SW2S255654	SW2S255654d102	1	1	1	1	1	1	1	1	1	1
SW2S255654	SW2S255654d100	1	1	1	1	1	1	1	1	1	1
SW2S26082	SW2S26082d103	1	1	1	1	1	1	1	1	1	1
SW2S26082	SW2S26082d102	1	1	1	1	1	1	1	1	1	1
SW2S26084	SW2S26084d105	1	1	1	1	1	1	1	1	1	1
SW2S26084	SW2S26084d103	1	1	1	1	1	1	1	1	1	1
SW2S26084	SW2S26084d101	1	1	1	1	1	1	1	1	1	1
SW2S289166	SW2S289166d101	1	1	1	1	1	1	1	1	1	1
SW2S289167	SW2S289167d106	1	1	1	1	1	1	1	1	1	1
SW2S289167	SW2S289167d105	1	1	1	1	1	1	1	1	1	1
SW2S289167	SW2S289167d104	1	1	1	1	1	1	1	1	1	1
SW2S289167	SW2S289167d102	1	1	1	1	1	1	1	1	1	1
SW2S289167	SW2S289167d101	1	1	1	1	1	1	1	1	1	1
SW2S289167	SW2S289167d100	1	1	1	1	1	1	1	1	1	1
SW2S330816	Sw2SD626	1	1	1	1	1	1	1	1	1	1
SW2S345720	Rd2SED63	1	1	1	1	1	1	1	1	1	1
SW2S345720	Rd2SED64	1	1	1	1	1	1	1	1	1	1
SW2S345720	Rd2SED66	1	1	1	1	1	1	1	1	1	1
SW2S345721	Rd2SWD67	1	1	1	1	1	1	1	1	1	1
SW2S345721	Rd2SWD70	1	1	1	1	1	1	1	1	1	1
SW2S400347	SW2S400347d108	1	1	1	1	1	1	1	1	1	1
SW2S400347	SW2S400347d107	1	1	1	1	1	1	1	1	1	1
SW2S400348	SW2S400348d101	1	1	1	1	1	1	1	1	1	1
SW2S64873	SW2S64873d104	1	1	1	1	1	1	1	1	1	1
SW2S9234	SW2S9234d100	1	1	1	1	1	1	1	1	1	1
SW2SE	Sw2sed100	1	1	1	1	1	1	1	1	1	1
SW3AS340149	Rd3SWD90	1	1	1	1	1	1	1	1	1	1
SW3AS340149	Rd3SWD93	1	1	1	1	1	1	1	1	1	1
SW3S173921	SW3S173921d103	1	1	1	1	1	1	1	1	1	1
SW3S173921	SW3S173921d101	1	1	1	1	1	1	1	1	1	1
SW3S20041901	RdHSED57	1	1	1	1	1	1	1	1	1	1
SW3S210295	SW3S210295d101	1	1	1	1	1	1	1	1	1	1
SW3S25033	SW3S25033d100	1	1	1	1	1	1	1	1	1	1
SW3S266011	Sw3SD401	1	1	1	1	1	1	1	1	1	1
SW3S311246	Sw3SD630	1	1	1	1	1	1	1	1	1	1
SW3S311246	Sw3SD631	1	1	1	1	1	1	1	1	1	1
SW3S311247	Sw3SD632	1	1	1	1	1	1	1	1	1	1
SW3S373994	SW3S373994d110	1	1	1	1	1	1	1	1	1	1
SW3S373994	SW3S373994d102	1	1	1	1	1	1	1	1	1	1
SW3S400375	SW3S400375d105	1	1	1	1	1	1	1	1	1	1
SW3S400375	SW3S400375d102	1	1	1	1	1	1	1	1	1	1
SW3S400375	SW3S400375d101	1	1	1	1	1	1	1	1	1	1
SW3S400375	SW3S400375d100	1	1	1	1	1	1	1	1	1	1
SW3S7476	SW3S7476d101	1	1	1	1	1	1	1	1	1	1
SW3S7477	SW3S7477d101	1	1	1	1	1	1	1	1	1	1
SW43A134237	Sw4SD243	1	1	1	1	1	1	1	1	1	1
SW43A28179	SW43A28179d108	1	1	1	1	1	1	1	1	1	1
SW43A307509	SW43A307509d102	1	1	1	1	1	1	1	1	1	1
SW43A308557	Sw43AD424	1	1	1	1	1	1	1	1	1	1
SW43A56876	SW43A56876d100	1	1	1	1	1	1	1	1	1	1
SW44A236953	SW44A236953d101	1	1	1	1	1	1	1	1	1	1

SW44A236954	SW44A236954d104	1	1	1	1	1	1	1	1	1	1
SW45A173941	SW45A173941d101	1	1	1	1	1	1	1	1	1	1
SW45A173941	SW45A173941d100	1	1	1	1	1	1	1	1	1	1
SW45A173945	SW45A173945d100	1	1	1	1	1	1	1	1	1	1
SW45A241361	SW45A241361d103	1	1	1	1	1	1	1	1	1	1
SW45A241361	SW45A241361d101	1	1	1	1	1	1	1	1	1	1
SW45A241361	SW45A241361d100	1	1	1	1	1	1	1	1	1	1
SW45A241362	SW45A241362d106	1	1	1	1	1	1	1	1	1	1
SW45A241362	SW45A241362d105	1	1	1	1	1	1	1	1	1	1
SW45A241362	SW45A241362d100	1	1	1	1	1	1	1	1	1	1
SW45A369364	SW45A369364d114	1	1	1	1	1	1	1	1	1	1
SW45A369364	SW45A369364d113	1	1	1	1	1	1	1	1	1	1
SW45A369364	SW45A369364d111	1	1	1	1	1	1	1	1	1	1
SW45A369364	SW45A369364d106	1	1	1	1	1	1	1	1	1	1
SW45A369364	SW45A369364d105	1	1	1	1	1	1	1	1	1	1
SW45A369364	SW45A369364d101	1	1	1	1	1	1	1	1	1	1
SW46A115466	SW46A115466d104	1	1	1	1	1	1	1	1	1	1
SW46A115467	SW46A115467d105	1	1	1	1	1	1	1	1	1	1
SW46A115467	SW46A115467d100	1	1	1	1	1	1	1	1	1	1
SW46A136089	SW46A136089d112	1	1	1	1	1	1	1	1	1	1
SW46A136089	SW46A136089d106	1	1	1	1	1	1	1	1	1	1
SW46A136090	SW46A136090d103	1	1	1	1	1	1	1	1	1	1
SW46A253174	Sw46AD433	1	1	1	1	1	1	1	1	1	1
SW46A253174	Sw46AD434	1	1	1	1	1	1	1	1	1	1
SW46A341577	Sw46AD431	1	1	1	1	1	1	1	1	1	1
SW46A404752	Sw46AD439	1	1	1	1	1	1	1	1	1	1
SW47A276246	SW47A276246d102	1	1	1	1	1	1	1	1	1	1
SW47A276246	SW47A276246d101	1	1	1	1	1	1	1	1	1	1
SW47A276246	SW47A276246d100	1	1	1	1	1	1	1	1	1	1
SW47A404608	SW47A404608d121	1	1	1	1	1	1	1	1	1	1
SW47A404608	SW47A404608d120	1	1	1	1	1	1	1	1	1	1
SW47A404608	SW47A404608d117	1	1	1	1	1	1	1	1	1	1
SW47A404608	SW47A404608d116	1	1	1	1	1	1	1	1	1	1
SW47A404608	SW47A404608d115	1	1	1	1	1	1	1	1	1	1
SW47A404608	SW47A404608d114	1	1	1	1	1	1	1	1	1	1
SW47A404609	SW47A404609d102	1	1	1	1	1	1	1	1	1	1
SW47A404609	SW47A404609d101	1	1	1	1	1	1	1	1	1	1
SW47A404609	SW47A404609d100	1	1	1	1	1	1	1	1	1	1
SW47A406509	SW47A406509d105	1	1	1	1	1	1	1	1	1	1
SW47A406509	SW47A406509d103	1	1	1	1	1	1	1	1	1	1
SW47A406509	SW47A406509d100	1	1	1	1	1	1	1	1	1	1
SW47A406510	SW47A406510d103	1	1	1	1	1	1	1	1	1	1
SW47A406510	SW47A406510d101	1	1	1	1	1	1	1	1	1	1
SW47A406510	SW47A406510d100	1	1	1	1	1	1	1	1	1	1
SW48A149128	Sw48AD658	1	1	1	1	1	1	1	1	1	1
SW48A149128	Sw48AD662	1	1	1	1	1	1	1	1	1	1
SW48A261344	SW48A261344d104	1	1	1	1	1	1	1	1	1	1
SW48A341933	SW48A341933d121	1	1	1	1	1	1	1	1	1	1
SW48A341934	SW48A341934d118	1	1	1	1	1	1	1	1	1	1
SW48A341934	SW48A341934d107	1	1	1	1	1	1	1	1	1	1
SW48A341934	SW48A341934d105	1	1	1	1	1	1	1	1	1	1
SW48A381715	SW48A381715d103	1	1	1	1	1	1	1	1	1	1
SW48A381715	SW48A381715d101	1	1	1	1	1	1	1	1	1	1
SW48A381715	SW48A381715d100	1	1	1	1	1	1	1	1	1	1
SW48A381716	SW48A381716d100	1	1	1	1	1	1	1	1	1	1
SW48A381717	SW48A381717d101	1	1	1	1	1	1	1	1	1	1
SW48A381717	SW48A381717d100	1	1	1	1	1	1	1	1	1	1
SW48A396624	Sw48AD652	1	1	1	1	1	1	1	1	1	1
SW48A396624	Sw48AD654	1	1	1	1	1	1	1	1	1	1
SW48A396624	Sw48AD657	1	1	1	1	1	1	1	1	1	1
SW48A396624	SW48A396624d126	1	1	1	1	1	1	1	1	1	1
SW48A396624	SW48A396624d118	1	1	1	1	1	1	1	1	1	1
SW48A396624	SW48A396624d112	1	1	1	1	1	1	1	1	1	1
SW48A396625	Sw48AD663	1	1	1	1	1	1	1	1	1	1
SW48A396625	Sw48AD665	1	1	1	1	1	1	1	1	1	1
SW48A396625	SW48A396625d111	1	1	1	1	1	1	1	1	1	1

SW48A396625	SW48A396625d109	1	1	1	1	1	1	1	1	1	1
SW49A109962	SW49A109962d110	1	1	1	1	1	1	1	1	1	1
SW49A109962	SW49A109962d109	1	1	1	1	1	1	1	1	1	1
SW49A109962	SW49A109962d108	1	1	1	1	1	1	1	1	1	1
SW49A109962	SW49A109962d101	1	1	1	1	1	1	1	1	1	1
SW49A109962	SW49A109962d100	1	1	1	1	1	1	1	1	1	1
SW49A109963	SW49A109963d115	1	1	1	1	1	1	1	1	1	1
SW49A109963	SW49A109963d114	1	1	1	1	1	1	1	1	1	1
SW49A109963	SW49A109963d112	1	1	1	1	1	1	1	1	1	1
SW49A109963	SW49A109963d103	1	1	1	1	1	1	1	1	1	1
SW49A109963	SW49A109963d102	1	1	1	1	1	1	1	1	1	1
SW49A173047	Sw49AD684	1	1	1	1	1	1	1	1	1	1
SW49A256822	SW49A256822d102	1	1	1	1	1	1	1	1	1	1
SW49A256822	SW49A256822d101	1	1	1	1	1	1	1	1	1	1
SW49A256823	SW49A256823d102	1	1	1	1	1	1	1	1	1	1
SW49A256823	SW49A256823d101	1	1	1	1	1	1	1	1	1	1
SW49A265521	SW49A265521d102	1	1	1	1	1	1	1	1	1	1
SW49A265523	SW49A265523d100	1	1	1	1	1	1	1	1	1	1
SW49A280882	Sw49AD460	1	1	1	1	1	1	1	1	1	1
SW49A280883	Sw49AD457	1	1	1	1	1	1	1	1	1	1
SW49A280883	Sw49AD458	1	1	1	1	1	1	1	1	1	1
SW49A387212	Sw49AD454	1	1	1	1	1	1	1	1	1	1
SW49A387212	Sw49AD455	1	1	1	1	1	1	1	1	1	1
SW49A93815	Sw49AD680	1	1	1	1	1	1	1	1	1	1
SW49A93815	Sw49AD681	1	1	1	1	1	1	1	1	1	1
SW49A93816	Sw49AD677	1	1	1	1	1	1	1	1	1	1
SW4S134056	SW4S134056d100	1	1	1	1	1	1	1	1	1	1
SW4S134056	SW4S134056d104	1	1	1	1	1	1	1	1	1	1
SW4S134056	SW4S134056d103	1	1	1	1	1	1	1	1	1	1
SW4S134056	SW4S134056d102	1	1	1	1	1	1	1	1	1	1
SW4S184564	SW4S184564d110	1	1	1	1	1	1	1	1	1	1
SW4S184564	SW4S184564d109	1	1	1	1	1	1	1	1	1	1
SW4S184564	SW4S184564d107	1	1	1	1	1	1	1	1	1	1
SW4S184564	SW4S184564d105	1	1	1	1	1	1	1	1	1	1
SW4S184564	SW4S184564d103	1	1	1	1	1	1	1	1	1	1
SW4S188400	Rd4SD1	1	1	1	1	1	1	1	1	1	1
SW4S188400	Rd4SD2	1	1	1	1	1	1	1	1	1	1
SW4S242068	Sw4SD627	1	1	1	1	1	1	1	1	1	1
SW4S31559	SW4S31559d105	1	1	1	1	1	1	1	1	1	1
SW4S31559	SW4S31559d102	1	1	1	1	1	1	1	1	1	1
SW4S31559	SW4S31559d101	1	1	1	1	1	1	1	1	1	1
SW4S330491	SW4S330491d103	1	1	1	1	1	1	1	1	1	1
SW4S330491	SW4S330491d100	1	1	1	1	1	1	1	1	1	1
SW4S34717	Sw4SD440	1	1	1	1	1	1	1	1	1	1
SW4S34717	Sw4SD441	1	1	1	1	1	1	1	1	1	1
SW4S34717	Sw4SD442	1	1	1	1	1	1	1	1	1	1
SW4S34717	Sw4SD443	1	1	1	1	1	1	1	1	1	1
SW4S34717	Sw4SD444	1	1	1	1	1	1	1	1	1	1
SW4S34717	Sw4SD445	1	1	1	1	1	1	1	1	1	1
SW4S34717	Sw4SD447	1	1	1	1	1	1	1	1	1	1
SW4S370930	Sw4SD451	1	1	1	1	1	1	1	1	1	1
SW4S371256	Rd4SWD13	1	1	1	1	1	1	1	1	1	1
SW4S377966	Rd4SD3	1	1	1	1	1	1	1	1	1	1
SW4S391420	Sw4SD625	1	1	1	1	1	1	1	1	1	1
SW4S64997	SW4S64997d100	1	1	1	1	1	1	1	1	1	1
SW50A109898	SW50A109898d103	1	1	1	1	1	1	1	1	1	1
SW50A109898	SW50A109898d102	1	1	1	1	1	1	1	1	1	1
SW50A109898	SW50A109898d101	1	1	1	1	1	1	1	1	1	1
SW50A109898	SW50A109898d100	1	1	1	1	1	1	1	1	1	1
SW50A109899	SW50A109899d111	1	1	1	1	1	1	1	1	1	1
SW50A109899	SW50A109899d109	1	1	1	1	1	1	1	1	1	1
SW50A109899	SW50A109899d106	1	1	1	1	1	1	1	1	1	1
SW50A142971	SW50A142971d106	1	1	1	1	1	1	1	1	1	1
SW50A142971	SW50A142971d104	1	1	1	1	1	1	1	1	1	1
SW50A142971	SW50A142971d102	1	1	1	1	1	1	1	1	1	1
SW50A142971	SW50A142971d100	1	1	1	1	1	1	1	1	1	1

SW50A142971	SW50A142971d105	1	1	1	1	1	1	1	1	1	1
SW50A142971	SW50A142971d100	1	1	1	1	1	1	1	1	1	1
SW50A142972	SW50A142972d100	1	1	1	1	1	1	1	1	1	1
SW50A153585	SW50A153585d103	1	1	1	1	1	1	1	1	1	1
SW50A261267	SW50A261267d106	1	1	1	1	1	1	1	1	1	1
SW50A261267	SW50A261267d102	1	1	1	1	1	1	1	1	1	1
SW50A261267	SW50A261267d101	1	1	1	1	1	1	1	1	1	1
SW50A261268	SW50A261268d100	1	1	1	1	1	1	1	1	1	1
SW50A273439	SW50A273439d111	1	1	1	1	1	1	1	1	1	1
SW50A273439	SW50A273439d102	1	1	1	1	1	1	1	1	1	1
SW50A273439	SW50A273439d101	1	1	1	1	1	1	1	1	1	1
SW50A29969	Sw50AD472	1	1	1	1	1	1	1	1	1	1
SW50A310028	SW50A310028d101	1	1	1	1	1	1	1	1	1	1
SW50A310028	SW50A310028d100	1	1	1	1	1	1	1	1	1	1
SW50A330881	SW50A330881d100	1	1	1	1	1	1	1	1	1	1
SW50A33088103	SW50A33088103d102	1	1	1	1	1	1	1	1	1	1
SW50A44673	SW50A44673d100	1	1	1	1	1	1	1	1	1	1
SW50A91832	SW50A91832d101	1	1	1	1	1	1	1	1	1	1
SW50A91833	SW50A91833d104	1	1	1	1	1	1	1	1	1	1
SW50A91833	SW50A91833d103	1	1	1	1	1	1	1	1	1	1
SW50AA260192	SW50AA260192d107	1	1	1	1	1	1	1	1	1	1
SW50AA260192	SW50AA260192d104	1	1	1	1	1	1	1	1	1	1
SW50AA322842	Sw50AAD502	1	1	1	1	1	1	1	1	1	1
SW51A126126	Rd51AND112	1	1	1	1	1	1	1	1	1	1
SW51A244599	Rd51AND1119	1	1	1	1	1	1	1	1	1	1
SW51A244600	Rd51AS104	1	1	1	1	1	1	1	1	1	1
SW51A342116	SW51A342116d105	1	1	1	1	1	1	1	1	1	1
SW51A342116	SW51A342116d104	1	1	1	1	1	1	1	1	1	1
SW51A342116	SW51A342116d103	1	1	1	1	1	1	1	1	1	1
SW51A342117	SW51A342117d108	1	1	1	1	1	1	1	1	1	1
SW51A342117	SW51A342117d104	1	1	1	1	1	1	1	1	1	1
SW51A389321	Sw51AD512	1	1	1	1	1	1	1	1	1	1
SW51A389322	Sw51AD531	1	1	1	1	1	1	1	1	1	1
SW51A3980	SW51A3980d109	1	1	1	1	1	1	1	1	1	1
SW51A3980	SW51A3980d102	1	1	1	1	1	1	1	1	1	1
SW51A3980	SW51A3980d101	1	1	1	1	1	1	1	1	1	1
SW51A3980	SW51A3980d100	1	1	1	1	1	1	1	1	1	1
SW51A97353	Rd51ASD108	1	1	1	1	1	1	1	1	1	1
SW51A97353	Rd51ASD109	1	1	1	1	1	1	1	1	1	1
SW51A97353	Rd51ASD110	1	1	1	1	1	1	1	1	1	1
SW52A153570	Sw52AD554	1	1	1	1	1	1	1	1	1	1
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SW52A159197	SW52A159197d104	1	1	1	1	1	1	1	1	1	1
SW52A159197	SW52A159197d103	1	1	1	1	1	1	1	1	1	1
SW52A159197	SW52A159197d101	1	1	1	1	1	1	1	1	1	1
SW52A159197	SW52A159197d100	1	1	1	1	1	1	1	1	1	1
SW52A337373	SW52A237373d107	1	1	1	1	1	1	1	1	1	1
SW52A337373	SW52A237373d100	1	1	1	1	1	1	1	1	1	1
SW52A337374	SW52A337374d102	1	1	1	1	1	1	1	1	1	1
SW52A337374	SW52A337374d101	1	1	1	1	1	1	1	1	1	1
SW52A366552	Rd52ASD131	1	1	1	1	1	1	1	1	1	1
SW52A61046	SW52A61046d114	1	1	1	1	1	1	1	1	1	1
SW52A61046	SW52A61046d103	1	1	1	1	1	1	1	1	1	1
SW52A61046	SW52A61046d101	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d115	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d114	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d112	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d111	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d109	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d106	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d105	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d103	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d102	1	1	1	1	1	1	1	1	1	1
SW52A61047	SW52A61047d101	1	1	1	1	1	1	1	1	1	1
SW52A72450	Rd52ASD125	1	1	1	1	1	1	1	1	1	1
SW52A72450	Rd52ASD126	1	1	1	1	1	1	1	1	1	1

SW52A74928	SW52A74928d102	1	1	1	1	1	1	1	1	1	1
SW52A74928	SW52A74928d101	1	1	1	1	1	1	1	1	1	1
SW53A261181	Sw53a261181d112	1	1	1	1	1	1	1	1	1	1
SW53A261181	Sw53a261181d112	1	1	1	1	1	1	1	1	1	1
SW53A261181	Sw53a261181d110	1	1	1	1	1	1	1	1	1	1
SW53A261181	Sw53a261181d109	1	1	1	1	1	1	1	1	1	1
SW53A261181	Sw53a261181d106	1	1	1	1	1	1	1	1	1	1
SW53A261181	Sw53a261181d105	1	1	1	1	1	1	1	1	1	1
SW53A261181	Sw53a261181d104	1	1	1	1	1	1	1	1	1	1
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SW53A261182	Sw53a261182d116	1	1	1	1	1	1	1	1	1	1
SW53A261182	Sw53a261182d109	1	1	1	1	1	1	1	1	1	1
SW53A261182	Sw53a261182d108	1	1	1	1	1	1	1	1	1	1
SW53A261182	Sw53a261182d107	1	1	1	1	1	1	1	1	1	1
SW53A261182	Sw53a261182d105	1	1	1	1	1	1	1	1	1	1
SW53A261182	Sw53a261182d103	1	1	1	1	1	1	1	1	1	1
SW53A261182	Sw53a261182d102	1	1	1	1	1	1	1	1	1	1
SW53A261182	Sw53a261182d101	1	1	1	1	1	1	1	1	1	1
SW53A281150	Sw53a281150d107	1	1	1	1	1	1	1	1	1	1
SW53A281150	Sw53a281150d102	1	1	1	1	1	1	1	1	1	1
SW53A281150	Sw53a281150d101	1	1	1	1	1	1	1	1	1	1
SW53A281150	Sw53a281150d100	1	1	1	1	1	1	1	1	1	1
SW53A281151	Sw53a281151d103	1	1	1	1	1	1	1	1	1	1
SW54A200080	Sw54AD605	1	1	1	1	1	1	1	1	1	1
SW54A200080	Sw54AD606	1	1	1	1	1	1	1	1	1	1
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SW54A263143	Rd54AND87	1	1	1	1	1	1	1	1	1	1
SW54A263143	Rd54AND88	1	1	1	1	1	1	1	1	1	1
SW55A13722	Rd55AND33	1	1	1	1	1	1	1	1	1	1
SW55A13722	Rd55AND36	1	1	1	1	1	1	1	1	1	1
SW55A13723	Rd55ASD41	1	1	1	1	1	1	1	1	1	1
SW55A13723	Rd55ASD41	1	1	1	1	1	1	1	1	1	1
SW55A280166	Rd55ASD60	1	1	1	1	1	1	1	1	1	1
SW55A280166	Rd55ASD61	1	1	1	1	1	1	1	1	1	1
SW55A280166	Rd55ASD62	1	1	1	1	1	1	1	1	1	1
SW55A280167	Rd55AND59	1	1	1	1	1	1	1	1	1	1
SW55A30015	Rd55ASD82	1	1	1	1	1	1	1	1	1	1
SW55A30016	Rd55AND51	1	1	1	1	1	1	1	1	1	1
SW55A369770	Rd55AND58	1	1	1	1	1	1	1	1	1	1
SW55A65885	Rd55ASD44	1	1	1	1	1	1	1	1	1	1
SW55A65885	Rd55ASD45	1	1	1	1	1	1	1	1	1	1
SW55A65885	Rd55ASD46	1	1	1	1	1	1	1	1	1	1
SW56A123924	Rd56AND19	1	1	1	1	1	1	1	1	1	1
SW56A123924	Rd56AND20	1	1	1	1	1	1	1	1	1	1
SW57A92162	Rd57AD4	1	1	1	1	1	1	1	1	1	1
SW57A92162	Rd57ASD5	1	1	1	1	1	1	1	1	1	1
SW57A92162	Rd57ASD6	1	1	1	1	1	1	1	1	1	1
SW57A92162	Rd57AND7	1	1	1	1	1	1	1	1	1	1
SW57A92162	Rd57AND8	1	1	1	1	1	1	1	1	1	1
SW57A92162	Rd57AND9	1	1	1	1	1	1	1	1	1	1
SW5S169402	Sw5SD566	1	1	1	1	1	1	1	1	1	1
SW5S250897	Sw5SD569	1	1	1	1	1	1	1	1	1	1
SW5S389670	Sw5SD614	1	1	1	1	1	1	1	1	1	1
SW5S389670	Sw5SD615	1	1	1	1	1	1	1	1	1	1
SW6S223145	Sw6SD435	1	1	1	1	1	1	1	1	1	1
SW7S322332	Sw7SD609	1	1	1	1	1	1	1	1	1	1
SW8S172620	Sw8SD535	1	1	1	1	1	1	1	1	1	1
SW8S203101	Sw8SD409	1	1	1	1	1	1	1	1	1	1
SW8S21104	Sw8SD546	1	1	1	1	1	1	1	1	1	1
SW8S231589	Sw8SD214	1	1	1	1	1	1	1	1	1	1
SW8S256734	Sw8SD464	1	1	1	1	1	1	1	1	1	1
SW8S315919	Sw8SD422	1	1	1	1	1	1	1	1	1	1
SW8S51007	Sw8SD544	1	1	1	1	1	1	1	1	1	1
SW8S51007	Sw8SD545	1	1	1	1	1	1	1	1	1	1
SWFV212845	SwFVD405	1	1	1	1	1	1	1	1	1	1

SWHS20042901	RdHSED55	1	1	1	1	1	1	1	1	1	1
SWHS20042901	RdHSED57	1	1	1	1	1	1	1	1	1	1
SWHS20042901	RdHSED57	1	1	1	1	1	1	1	1	1	1
SWHS20042902	RdHSND53	1	1	1	1	1	1	1	1	1	1
SWHS20042903	RdHSSD52	1	1	1	1	1	1	1	1	1	1
SWLS358643	SwLSD200	1	1	1	1	1	1	1	1	1	1
SWS1A5601	SWS1A5601d107	1	1	1	1	1	1	1	1	1	1
SWS1A5601	SWS1A5601d104	1	1	1	1	1	1	1	1	1	1
SWS1A5601	SWS1A5601d103	1	1	1	1	1	1	1	1	1	1
SWS1A5601	SWS1A5601d101	1	1	1	1	1	1	1	1	1	1
SWS1A5601	SWS1A5601d100	1	1	1	1	1	1	1	1	1	1
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SWS1A5617	SWS1A5617d100	1	1	1	1	1	1	1	1	1	1
SWS1A5618	SWS1A5618d102	1	1	1	1	1	1	1	1	1	1
SWS1A569	SWS1A569d102	1	1	1	1	1	1	1	1	1	1
SWS1S318810	SWS1S318810d100	1	1	1	1	1	1	1	1	1	1
SWS2S78306	Rd2SWD120	1	1	1	1	1	1	1	1	1	1
SWS3S24950	SWS3S24950d105	1	1	1	1	1	1	1	1	1	1
SWS3S24950	SWS3S24950d102	1	1	1	1	1	1	1	1	1	1
SWS3S24950	SWS3S24950d101	1	1	1	1	1	1	1	1	1	1
SWS3S24950	SWS3S24950d100	1	1	1	1	1	1	1	1	1	1
SWS7S412981	Sw7SD497	1	1	1	1	1	1	1	1	1	1
SWS7S412981	Sw7SD510	1	1	1	1	1	1	1	1	1	1
SWS7S412981	Sw7SD511	1	1	1	1	1	1	1	1	1	1
SWSA106761	SwSA236	1	1	1	1	1	1	1	1	1	1
SWSC25688	SwSCD432	1	1	1	1	1	1	1	1	1	1
SWSS390572	SwSSD229	1	1	1	1	1	1	1	1	1	1
SWWD250389	SwWDD313	1	1	1	1	1	1	1	1	1	1
SWWD379503	SwWDD289	1	1	1	1	1	1	1	1	1	1
SWWD379503	SwWDD290	1	1	1	1	1	1	1	1	1	1
SWWD396514	SwWDD261	1	1	1	1	1	1	1	1	1	1
SWWP344648	SwWPD224	1	1	1	1	1	1	1	1	1	1
SWWP344648	SwWPD227	1	1	1	1	1	1	1	1	1	1
SWWR366240	SwWRD221	1	1	1	1	1	1	1	1	1	1
SwWW20050205	SwWWD300	1	1	1	1	1	1	1	1	1	1

APPENDIX C - CLARESHOLM MUNICIPAL BUILDING ASSESSMENT 2020

MUNICIPAL BUILDING ASSESSMENT REPORT

PREPARED FOR THE

TOWN OF CLARESHOLM

Claresholm

AUGUST 2020

by

ASSOCIATED ENGINEERING LTD.
&
DOUGLAS J. BERGEN & ASSOCIATES LTD.
ARCHITECTURAL TECHNOLOGY

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

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MUNICIPAL BUILDING ASSESSMENT REPORT

TOWN OF CLARESHOLM – AUGUST 2020

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS		OCCUPIED
4900 - 3rd Street East		YES
OVERALL STATE:	**AGE**	**BUILDING DESCRIPTION**
GOOD	-	AMUNDSEN PARK WASHROOMS

OVERALL ISSUES:

H/C STALLS & WALKWAYS ARE NOT FULLY ACCESSIBLE

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X			
Walkways			X		EXTERIOR LANDING IS NOT H/C ACCESSIBILE	
Site Grading			X			
Doorways			X			
Wiindows			X			
Exterior Finishes			X		8" CONCRETE BLOCK EXTERIOR WALL IN GOOD CONDITION	
Building Envelope			X			
Roof			X		SHINGLE ROOF IN GOOD CONDITION	
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous				X		
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X	NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Exit Stairs				X		
Number of Exits			X			
Miscellaneous				X		

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X		
Washrooms		X			H/C STALLS ARE NOT FULLY ACCESSIBLE & INSWING DOORS INHIBIT ACCESSIBILITY	
Doorways		X			EXTERIOR LANDING IS NOT H/C ACCESSIBILE	
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations			X			
Structural Fire Protection			X			
Secondary Exit				X		
Electrical			X			
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			

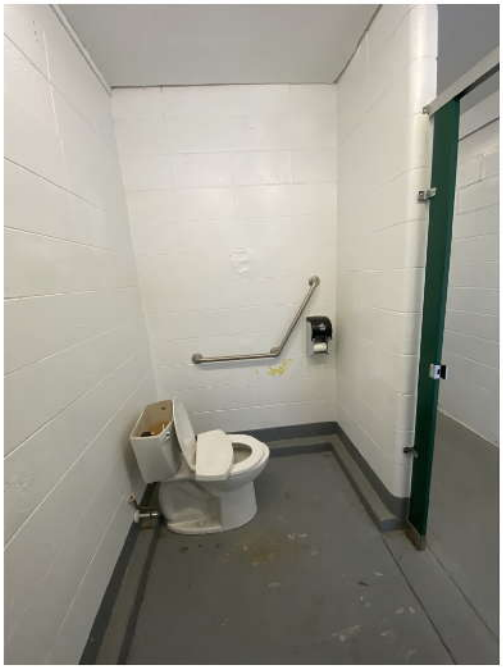
CODE REVIEW – AMUNDSEN PARK WASHROOMS

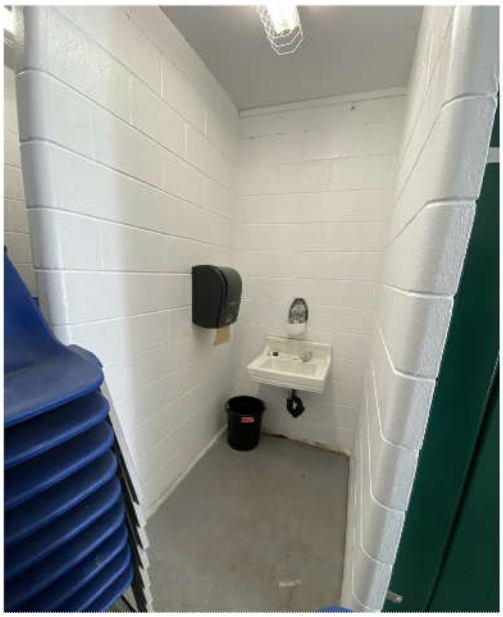
BUILDING SUMMARY						
CLASSIFICATION:	GROUP A2					
STREETS:	2 STREETS					
BUILDING HEIGHT:	1 STOREY					
BUILDING AREA:	FOOTPRINT	1100 SQ.FT.	102.5 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.17.1	Occupant Load		102.5 SQ.M.	9.3 sq.m /person	11 persons maximum	
3.2.2.28	Group A2 – 1 storey, facing 2 streets					
	Maximum Building Area	600 sq.m.	1 storey			
3.2.4.1.	A fire alarm is not required.					
3.2.4.10	Fire detectors are not required.					
3.2.4.11	Smoke detectors are not required.					
3.2.4.20	Smoke alarms are not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in public washrooms equipped to serve more than one person at a time.					
3.3.1.5	A single exit is permitted from all floors areas less than 150 sq.m. and having less than a maximum travel distance of 15m.					
3.3.1.21	A room used for the storage of janitorial supplies requires a fire separation from the remainder of the building with a 45 minute fire resistance rating.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.5.1	Exit signs are not required.					
3.4.6.12	Exit doors shall open in the direction of exit travel.					
3.4.6.16	Panic hardware shall be installed on all exit doors if they include locking or latching devices.					
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.					
3.6.4.4	An attic more than 600mm high shall be provided with access from the floor immediately below by a hatchway not less than 550mm X 900mm.					
3.7.2.4 (1)	A service building shall be provided for public use in parks or other developments that provide sites for parking or installation of recreational vehicles, camper trailers, or similar vehicles, and in campgrounds.					
3.7.2.4 (2)	The service building shall contain at least one water closet for sex per 10 unserviced sites.					
3.7.2.4 (3)	The service building shall contain at least one lavatory per 2 waterclosets, and one additional lavatory for each additional 2 waterclosets.					
	The service building shall contain at least one laundry tray or similar facility, and at least one shower for each sex.					
3.7.2.4 (4)	The number of water closets required for a campground is permitted to be provided by self-contained recreational vehicles, or sites served by water and sewer connections, provided the number of camping sites used to calculate the service building water closet requirements is not reduced to less than one third of the total number of camping sites.					
3.7.2.6	Wall and floor surfaces below the uppermost surface of a urinal shall be protected by impervious and durable materials.					

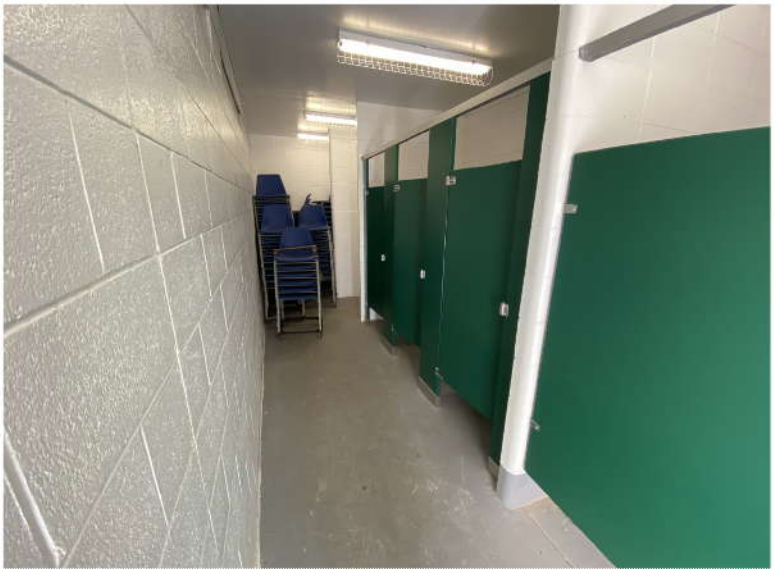
CODE REVIEW – CONTINUED	
3.7.2.7	A floor drain shall be installed in a washroom containing an a urinal equipped with an automatic flushing device.
3.8.1.1	Building is required to be barrier free design.
3.8.1.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.
3.8.2.3	At least one barrier free water closet shall be provided.
3.8.2.8	A barrier free washroom shall be provided with a lavatory and mirrors that are barrier free, and where showers are provided at least one shower stall shall be barrier free.
3.8.3.1	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.
3.8.3.2	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.

Amundsen Park Washrooms

Amundsen Park Washrooms







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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
410 - 3rd Street East	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	2011	ANIMAL SERVICES

OVERALL ISSUES:

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X			
Walkways				X		
Site Grading			X			
Doorways			X			
Wiindows			X			
Exterior Finishes			X			
Building Envelope			X			
Roof			X			
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous				X		
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Exit Stairs				X		
Number of Exits			X		ALL LEVELS HAVE 2 OR MORE EXITS	
Miscellaneous				X		

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators	X				NO H/C OPERATOR AT PRIMARY ENTRANCE	
Washrooms	X				WASHROOM NOT WHEELCHAIR ACCESSIBLE / REQUIRED NUMBER OF WATERCLOSETS NOT PROVIDED	
Doorways			X			
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations		X			LAUNDRY AREA TO BE WITHIN A ROOM WITH A FIRE SEPARATION HAVING A 45 MINUTE FIRE RESISTANCE RATING.	
Structural Fire Protection				X		
Secondary Exit			X			
Electrical			X			
Storage			X			
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			
Miscellaneous				X		
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Washrooms					Number of water closets insufficient unless occupant load posted at maximum 10 persons	

CODE REVIEW – ANIMAL SERVICES BUILDING

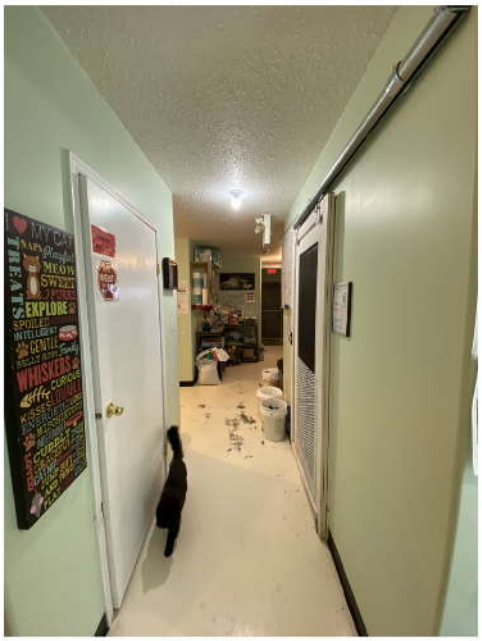
BUILDING SUMMARY									
CLASSIFICATION:	GROUP D								
STREETS:	2 STREETS								
BUILDING HEIGHT:	1 STOREY								
BUILDING AREA:	FOOTPRINT	1764 SQ.FT.	163.8 SQ.M.						
CONSTRUCTION									
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION								
	UNSPRINKLERED								
CODE SECTION									
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating								
3.1.17.1	Occupant Load		163.8 SQ.M.	4.6 sq.m /person	35 persons maximum				
3.2.2.62	Group D – up to 2 storeys, facing 2 streets								
	Maximum Building Area	1250 sq.m.							
	Floor Assemblies to be fire separation, and if combustible construction shall have a 45 minute fire resistance rating								
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be non-combustible								
3.2.3.1.-B	Spatial separations	East Elevation		Limiting Distance	3m				
				Wall Area	43 sq.m.	Approx.			
				Allowable % Unprotected Openings	20.00%				
				Actual % Unprotected Openings	6.50%	Approx.			
		North Elevation		Limiting Distance	6m				
				Wall Area	31 sq.m.	Approx.			
				Allowable % Unprotected Openings	88.00%				
				Actual % Unprotected Openings	15.50%	Approx.			
		South Elevation		Limiting Distance	5.2m				
				Wall Area	31 sq.m.	Approx.			
				Allowable % Unprotected Openings	61.00%				
				Actual % Unprotected Openings	29.80%	Approx.			
		West Elevation		Limiting Distance	11.5m				
				Wall Area	43 sq.m.	Approx.			
				Allowable % Unprotected Openings	100.00%				
				Actual % Unprotected Openings	8.60%	Approx.			
3.2.3.7	Non-combustible cladding is required on exterior building faces where allowable unprotected opening percentage is greater than 50%.								
3.2.4.1.	A fire alarm is not required.								
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).								
3.2.7.3	Emergency lighting is required in exits, access to exits in open floor areas and service rooms.								
3.3.1.5	A single exit is permitted from all floors areas less than 200 sq.m. or less than a maximum travel distance of 25m.								
3.3.1.21	A room or space within a floor area used the storage of janitorial supplies shall be separated from the remainder of the building by a fire separation with a 45 minute fire resistance rating.								
3.3.1.22	A laundry room in a floor area shall be separated from the remainder of the building by a fire separation with a 45 minute fire resistance rating.								
3.4.2.5	Maximum travel distance to an exit is 40m.								
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating.								
3.4.5.1	Exit signs are not required.								

CODE REVIEW – CONTINUED

3.4.6.12	Exit doors shall open in the direction of exit travel.				
3.4.6.16	Panic hardware shall be installed on all exit doors.				
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.				
3.6.4.4	An attic more than 600mm high shall be provided with access from the floor immediately below by a hatchway not less than 550mm X 900mm.				
3.7.2.2 B	Water closets required	35 persons / 2 = 17 persons per sex			
		1 water closets – males		1 water closets – females	
		2 water closets total required			
		1 water closets provided		Posted occupancy of 10 person maximum permits single watercloset.	
3.8.1.1	Building is required to be barrier free design.				
3.8.1.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.				
3.8.2.3	At least one barrier free water closet shall be provided in the entrance storey.				
3.8.3.1	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.				
3.8.3.2	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.				

Animal Services (C.A.R.e.s) Building

Animal Services (C.A.R.e.s) Building



Animal Services (C.A.R.e.s) Building

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
4918 2nd St. East	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
FAIR	1981	ICE ARENA / CHANGE ROOMS

OVERALL ISSUES:

EXTERIOR BLOCK CONDITION / MOISTURE PENETRATION

STRUCTURAL STEEL FIRE PROTECTION

SITE GRADING

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking	X				WEST LOT SURFACE - GOOD / SOUTH LOT SURFACE & PARKING BUMPERS – POOR / NORTH DRIVEWAY – POOR, SUBSTANTIAL MINERAL STAINING	
Primary Entry		X			EXTERIOR SLAB SEPARATION FROM ENTRY DOORS	
Walkways				X		
Site Grading	X				HIGH PAVEMENT ELEVATION TO BASE OF EXTERIOR WALL, LANE CONDITION – POOR, TRANSFORMER (PAD) NOT ELEVATED ABOVE GRADE / EXPOSED DRAIN TILE	X
Doorways		X			DOOR SWEEP DAMAGE & GAPS / MAKESHIFT DOOR SWEEPS / OVERHEAD DOOR SEALS DAMAGED / EXTERIOR DOOR PAINT PEELING / SHOP DOOR FRAME DAMAGE	
Wiindows				X		
Exterior Finishes	X				MOISTURE DAMAGE TO BOTTOM BLOCK COURSES / SIGNIFICANT ICE PLANT STRUCTURE CORROSION / ENTRY CANOPY PERIMETER CORROSION	
Building Envelope	X				EXTERIOR BLOCK FACES SEPARATING TO EXPOSE CORES / MORTAR JOINT FAILURES & PATCHING / SIGNIFICANT MOISTURE PENETRATION & STAINING TO INTERIOR OF BLOCK WALLS	X
Roof			X		GENERALLY GOOD CONDITION - 2 SIGNIFICANT LEAK LOCATIONS NOTED INSIDE ABOVE UPPER FLOOR	
Lighting / Electrical					MAKESHIFT EXTERIOR FLOODLIGHT MOUNTING BLOCK / SEPARATED CONDUIT EXPOSING INSULATED WIRE / ICE PLANT JUNCTION BOX MAKESHIFT WATERPROOFING (UNSAFE)	
Mechanical		X			DAMAGED WALL VENT COVERS / DAMAGED VENT STACK / COMBUSTIBLE WOOD SCREEN ON ICE PLANT STRUCTURE	
Miscellaneous	X				DIRECT RAINWATER LEADERS AWAY FROM BASE OF WALL OR EMPLOY SPLASHPADS / ICE PLANT STRUCTURE BASE PLATES NOT SECURELY BOLTED TO FOUNDATION	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X		NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Exit Stairs			X			
Number of Exits			X		ALL LEVELS HAVE 2 OR MORE EXITS	
Miscellaneous				X		

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators	X				NO H/C OPERATOR AT PRIMARY ENTRANCE	
Washrooms			X		MAIN FLOOR WASHROOMS FULLY ACCESSIBLE	
Doorways			X			
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations		X			INTERIOR BLOCK WALL AT MECHANICAL ROOM COMPROMISED TO ACCOMODATE EQUIPMENT / CHANGE ROOM #5 MECHANICAL ROOM WOOD DOOR THRESHOLD (NOT RATED) / ROOF DECK FLUTES ABOVE FIRE SEPARATION WALL BETWEEN UPPER FLOOR & FOYER NOT FILLED WITH FIRESTOP MATERIAL	
Structural Fire Protection		X			FIRE RETARDANT BROKEN / MISSING NEAR BASE OF STEEL STRUCTURES IN MULTIPLE LOCATIONS / FIRE RETARDANT MISSIING FROM ROOF JOISTS & STEEL DECK AT ROOF LEAK LOCATION (FIRE RETARDANT REPLACED ORIGINAL DESIGN SPEC OF 2 LAYERS OF 5/8" TYPE 'X' RATED GYPSUM BOARD) ON UNDERSIDE OF ROOF STRUCTURE)	
Secondary Exit			X		ALL LEVELS HAVE 2 OR MORE EXITS	
Electrical		X			OVERCROWDED STORAGE IN ELECTRICAL ROOM ADJACENT TO SHOP / OVERHEAD HEATER QUESTIONABLE ELECTRICAL CONNECTION	
Storage		X			STORAGE ABOVE CEILINGS OF USER GROUP / REFEREE ROOMS	
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure		X			STRUCTURAL STEEL CONNECTION ABOVE UPPER FLOOR STORAGE ROOM TO BE REVIEWED BY STRUCTURAL ENGINEER	
Upper Floor Structural Slab		X			SURFACE CRACKING IN UPPER FLOOR STRUCTURAL SLAB	
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room		X			SIGNIFICANT CORROSION OF EQUIPMENT NEAR SUMP PIT / EXTERIOR WALL PENETRATIONS ARE UNSEALED / PIPE INSULATION IN POOR CONDITION	
Radiant Heat		X			RADIANT HEAT FINS DAMAGED IN DRESSING ROOM CORRIDOR	
Showers	X				SHOWER FIXTURES & FLOOR DRAINS DUE FOR REPLACEMENT	
Miscellaneous		X			TAPED DUCT CONNECTION FAILING IN DRESSING ROOM CORRIDOR / PLYWOOD CEILING ACCESS PANEL NOT FULLY SECURE / UPPER FLOOR MOP SINK CORRODED & MAKESHIFT WATER HOOKUP	
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Washrooms		X			LOW MIRROR HEIGHTS / CONTINUOUSLY RUNNING TOILET / DATED URINAL FLUSHING SYSTEM	
Referee Room	X				RADIANT HEAT CABINET, ELECTRICAL OUTLETS, BENCH FINISHES, MODULAR SHOWER INSTALLATION, & LINOLEUM FLOOR AT SHOWER IN POOR CONDITION	
Ice Rink			X		FOIL INSULATION DAYLIGHT PENETRATION OVER BLEACHERS BETWEEN NORTHMOST STEEL ROOF BEAMS / FOIL INSULATION HAS SIGNIFICANT DAMAGE AT NORTH END OF RINK / SCOREBOARD SUPPORT CABLE STRUCTURE QUESTIONABLE / PLYWOOD RAMP TRIPPING HAZARD AT EAST SIDE OF RINK	
Dressing Rooms		X			RUBBER BASE MISSING SPORADICALLY / WALL HOOKS IN POOR CONDITION / PAINT CONDITION AROUND DOOR KNOBS	
Change Room #5	X				PAINT STALLS / WASHROOM STALL UNDERSIZED / POOR MIRROR CONDITION / MECHANICAL DUCT CAULKING FAILING / MAKESHIFT FAUCET AT ICE BATH	
Upper Floor	X				WARPING FIBREGLASS WALL PANEL / WATER DAMAGED WOOD DANCE FLOOR / DAMAGED CEILING TILES / RUBBER BASE IN POOR CONDITION	
General Conditions		X			LIGHT COVERS MISSING / CONCESSION MILLWORK IN POOR CONDITION / POOR UNDER STAIR ACCESS / OFFICE WINDOW PAINT / HANDRAIL PAINT / ROOF VENTS OVER RINK APPEAR QUESTIONABLY WEATHERPROOF / SHOP ROLLSHUTTER HOUSING DAMAGED	

CODE REVIEW – ARENA

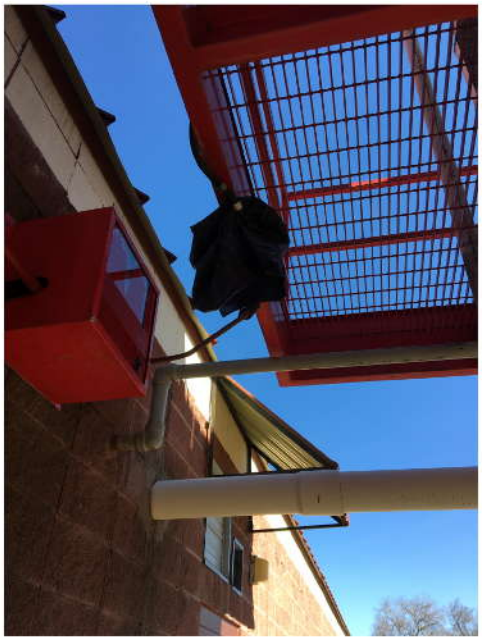
BUILDING SUMMARY					
CLASSIFICATION:	GROUP A3 – ASSEMBLY		GROUP F3 – WORKSHOPS		
STREETS:	3 STREETS				
BUILDING HEIGHT:	2 STOREYS				
FLOOR AREAS:	MAIN FLOOR (APPROX.)	37245 SQ.FT.	3460 SQ.M.		
	UPPER FLOOR	7250 SQ.FT.	673 SQ.M.		
	TOTAL FLOOR AREA	44495 SQ.FT.	4133 SQ.M.		
BUILDING AREA:	MAIN FLOOR (APPROX.)	37245 SQ.FT.	3460 SQ.M.		
CONSTRUCTION					
CONSTRUCTION TYPE:	NON-COMBUSTIBLE CONSTRUCTION				
	UNSPRINKLERED				
CODE SECTION					
3.1.3.1	1 hour fire separation required between Group A3 & Group F3 Occupancies				
3.1.5.14 (2)	Combustible insulation with a flame spread rating not more than 25 is permitted on any exposed surface in a building of non-combustible construction.				
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside				
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating				
3.1.17.1	Occupant Load	Design Occupancy	640	persons maximum	
3.2.2.17	The requirements for a roof assembly to have a fire resistance rating are permitted to be waived if no part of the roof assembly is less than 6m above the main floor, and the roof carries only normal loads.				
3.2.2.30	Group A3 – up to 2 storeys, facing 3 streets				
	Maximum Building Area	3000 sq.m.			
	Non Combustible Construction				
	Floor Assemblies to be fire separation with a 1 hour fire resistance rating				
	Roof Assemblies require a 45 min fire resistance rating				
	Loadbearing walls & columns shall have a fire resistance rating equal to supported assembly				
3.2.4.1.	A fire alarm system is required.				
3.2.4.10	Fire detectors are required in unsprinklered buildings protected by a fire alarm system in storage rooms over 1 sq.m., service rooms, janitor rooms, and laundry rooms				
3.2.4.11	Smoke detectors are required in exit stair shafts.				
3.2.4.19	Fire alarm visual signals are required in assembly occupancy floor areas where the public may congregate, and public corridors, and washrooms.				
3.2.5.2	Direct access from the outdoors to above grade storeys is required in an unsprinklered building by at least one unobstructed access panel or window for each 15m of wall required to face a street.				
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).				
3.2.7.3	Emergency lighting is required in public corridors, exits, access to exits in open floor areas and service rooms, and public washrooms.				
3.3.1.5	A minimum of 2 exits is required from all floors areas greater than 150 sq.m. or exceeding the maximum travel distance of 15m.				
3.3.1.21	Janitor rooms require a fire separation with a 1 hour fire resistance rating.				
3.3.1.22	Common laundry rooms require a fire separation with a 1 hour fire resistance rating.				
3.3.2.2 (3)	If usable space exists under tiers of seats in arena type buildings, a fire separation with a 45 minute fire resistance rating is required between the space and the seats, or the space shall be sprinklered.				

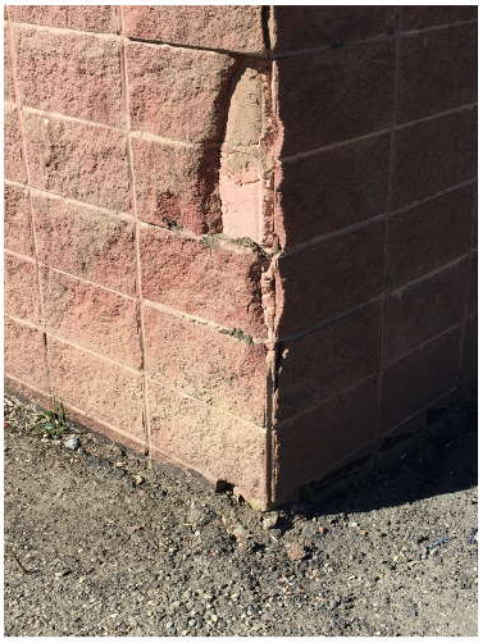
CODE REVIEW – CONTINUED

3.3.2.5	The maximum travel distance to an exit door from any seating aisle shall be not more than 45m.			
3.3.2.16	Storage rooms containing flammable or combustible liquids in assembly occupancies shall not be located above or below the first storey.			
3.3.5.6.	Storage garages shall be separated from the remainder of the storey by a fire separation with a 1.5 hour fire resistance rating.			
3.4.2.5	Maximum travel distance to an exit is 30m (except 45m from bleacher areas)			
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 1 hour fire resistance rating			
3.4.4.2 (2)	Not more than 1 exit from a floor area is permitted to lead through a lobby, provided the path of travel through the lobby is not more than 15m, and provided the lobby is not in an interconnected floor space.			
3.4.5.1	Exit signs are required.			
3.4.6.5 (1)	Handrails are required on both sides of stairs more than 1100mm wide.			
3.4.6.5 (12)	At least one handrail shall extend 300mm horizontally beyond the top & bottom of a stairway			
3.4.6.12	Exit doors shall open in the direction of exit travel.			
3.4.6.16	Panic hardware shall be installed on all exit doors.			
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.			
3.7.2.2 B	Water closets required	640 persons / 2 = 320 persons per gender		
		6 water closets – males	11 water closets – females	
		17 water closets total required		
		19 water closets total provided		
3.8.2.1	Building is required to be barrier free design.			
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.			
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.			
3.8.2.7	Power door operators are required at the entrance and interior doors of a vestibule of a Group A – assembly occupancy building.			
3.8.2.8 (3)	At least one barrier free water closet shall be provided in the entrance storey.			
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.			
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.			

Claresholm Arena

Claresholm Arena

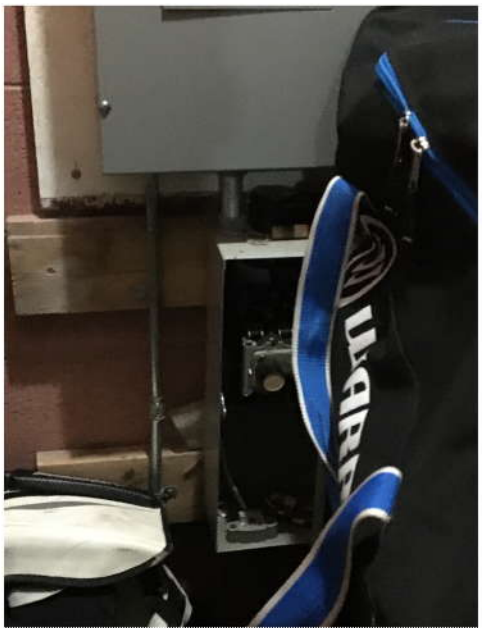




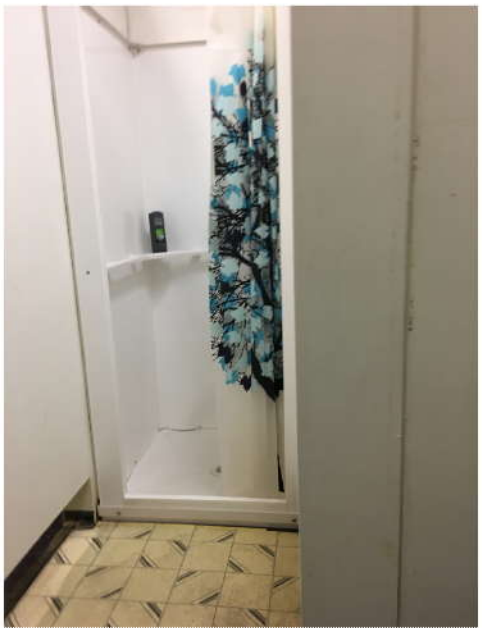
Claresholm Arena

Claresholm Arena

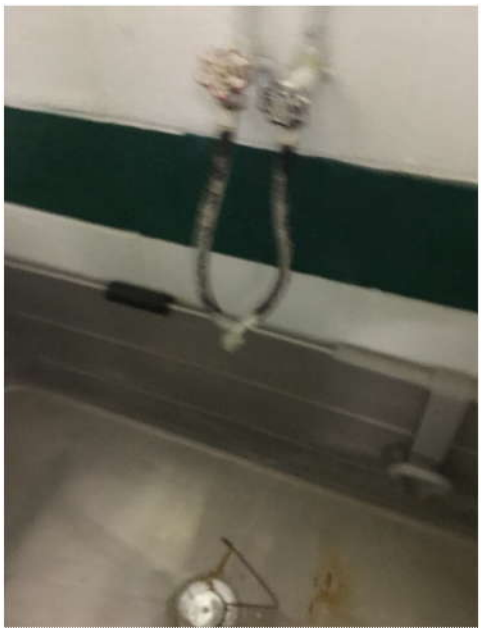
Claresholm Arena



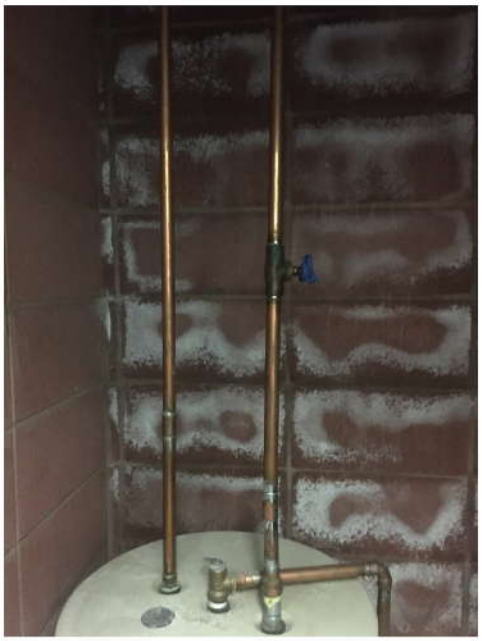
Claresholm Arena



Claresholm Arena



Claresholm Arena



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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
4604 – 4th Street East	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	1998	CENTENNIAL PARK WASHROOMS

OVERALL ISSUES:

NO SIGNIFICANT ISSUES.

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X		SILL IS NOT SLOPED TO EXTERIOR.	
Walkways				X		
Site Grading			X			
Doorways			X			
Wiindows			X			
Exterior Finishes			X		8" CONCRETE BLOCK EXTERIOR WALL IN GOOD CONDITION	
Building Envelope			X			
Roof			X		SHINGLE ROOF IN GOOD CONDITION	
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous				X		
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X	NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Exit Stairs				X		
Number of Exits			X			
Miscellaneous				X		

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X		
Washrooms			X		H/C STALL IS ACCESSIBLE.	
Doorways			X			
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors				X		
Fire Separations			X			
Structural Fire Protection				X		
Secondary Exit				X		
Electrical			X			
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			
Miscellaneous				X		

CODE REVIEW – CENTENNIAL PARK WASHROOMS

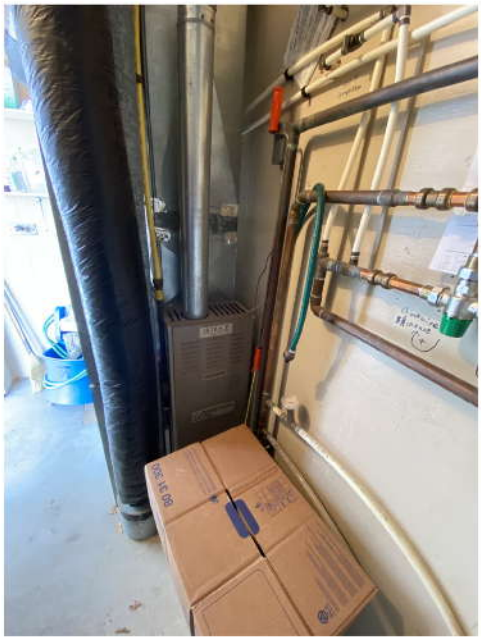
BUILDING SUMMARY						
CLASSIFICATION:	GROUP A2					
STREETS:	3 STREETS					
BUILDING HEIGHT:	1 STOREY					
FLOOR AREAS:	MAIN FLOOR	1152 SQ.FT.	107 SQ.M.			
BUILDING AREA:	FOOTPRINT	1152 SQ.FT.	107 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.17.1	Occupant Load		107 SQ.M.	9.3 sq.m /person	11 persons maximum	
3.2.2.28	Group A2 – 1 storey, facing 3 streets					
	Maximum Building Area	600 sq.m.	1 storey			
3.2.4.1.	A fire alarm is not required.					
3.2.4.10	Fire detectors are not required.					
3.2.4.11	Smoke detectors are not required.					
3.2.4.20	Smoke alarms are not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in public washrooms equipped to serve more than one person at a time.					
3.3.1.5	A single exit is permitted from all floors areas less than 150 sq.m. and having less than a maximum travel distance of 15m.					
3.3.1.21	A room used for the storage of janitorial supplies requires a fire separation from the remainder of the building with a 45 minute fire resistance rating.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.5.1	Exit signs are not required.					
3.4.6.12	Exit doors shall open in the direction of exit travel.					
3.4.6.16	Panic hardware shall be installed on all exit doors if they include locking or latching devices.					
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.					
3.6.4.4	An attic more than 600mm high shall be provided with access from the floor immediately below by a hatchway not less than 550mm X 900mm.					
3.7.2.4 (1)	A service building shall be provided for public use in parks or other developments that provide sites for parking or installation of recreational vehicles, camper trailers, or similar vehicles, and in campgrounds.					
3.7.2.4 (2)	The service building shall contain at least one water closet for sex per 10 unserviced sites.					
3.7.2.4 (3)	The service building shall contain at least one lavatory per 2 waterclosets, and one additional lavatory for each additional 2 waterclosets.					
	The service building shall contain at least one laundry tray or similar facility, and at least one shower for each sex.					
3.7.2.4 (4)	The number of water closets required for a campground is permitted to be provided by self-contained recreational vehicles, or sites served by water and sewer connections, provided the number of camping sites used to calculate the service building water closet requirements is not reduced to less than one third of the total number of camping sites.					

CODE REVIEW – CONTINUED

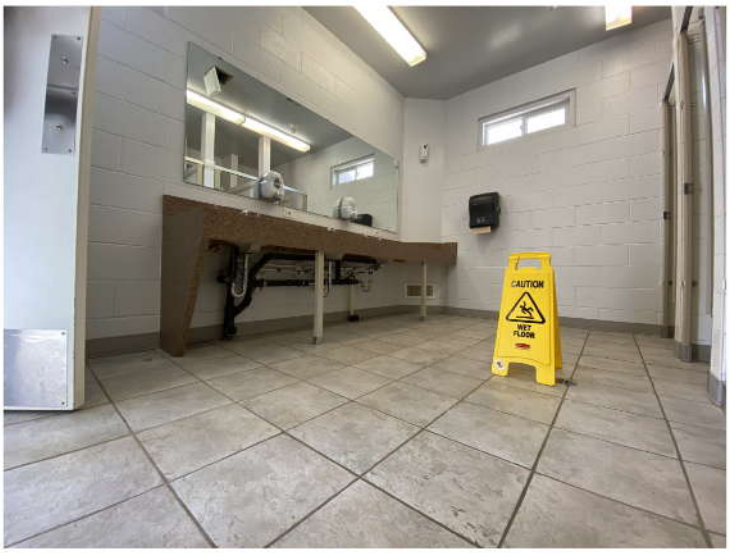
3.7.2.6	Wall and floor surfaces below the uppermost surface of a urinal shall be protected by impervious and durable materials.
3.7.2.7	A floor drain shall be installed in a washroom containing an a urinal equipped with an automatic flushing device.
3.8.1.1	Building is required to be barrier free design.
3.8.1.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.
3.8.2.3	At least one barrier free water closet shall be provided.
3.8.2.8	A barrier free washroom shall be provided with a lavatory and mirrors that are barrier free, and where showers are provided at least one shower stall shall be barrier free.
3.8.3.1	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.
3.8.3.2	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.

Centennial Park Campground Washrooms

Centennial Park Campground Washrooms



Centennial Park Campground Washrooms



Centennial Park Campground Washrooms

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
4122 – 3rd Street East	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	1998	COLD STORAGE BUILDING

OVERALL ISSUES:

NO SIGNIFICANT ISSUES.

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X			
Walkways				X		
Site Grading			X			
Doorways			X			
Wiindows			X			
Exterior Finishes			X			
Building Envelope			X		2 PLY 2x10 WALL FRAMING WITH 4x6 POSTS AT 8'-0" O/C & METAL SHEATHING – GOOD CONDITION	
Roof			X		48" O/C WOOD TRUSSES WITH 24" PURLINS W/ SHEET METAL ROOF – GOOD CONDITION	
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous				X		
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X	NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X	ACCESSIBILITY IS NOT REQUIRED FOR THIS BUILDING.	
Washrooms		X			REQUIRED NUMBER OF WATER CLOSETS NOT PROVIDED.	
Doorways				X		
Path of Travel				X		
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations		X			Firewall separation – 5/8" gypsum board is not taped.	X
Structural Fire Protection			X			
Secondary Exit			X			
Electrical			X			
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			
Miscellaneous				X		
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Cold Storage		X			GRAVEL INTERIOR FLOOR	
Museum Storage		X			STAIR NOSING	

CODE REVIEW – COLD STORAGE BUILDING

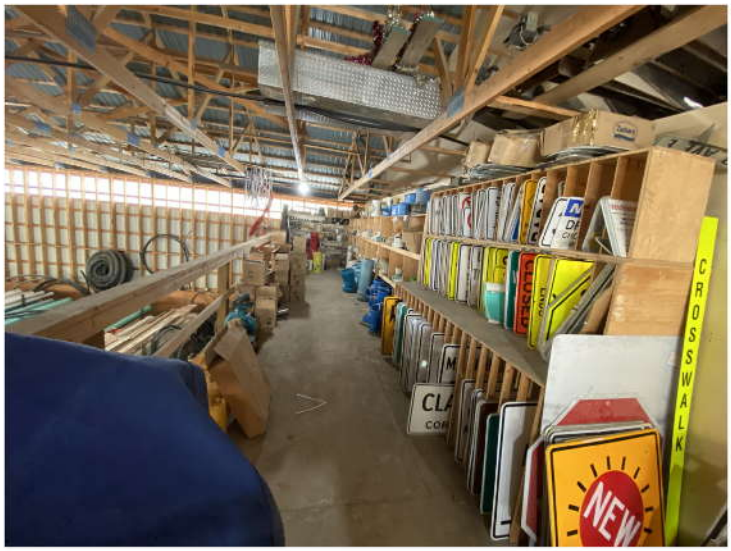
BUILDING SUMMARY							
CLASSIFICATION:	GROUP F3 – LOW HAZARD INDUSTRIAL						
STREETS:	3 STREETS						
BUILDING HEIGHT:	1 STOREY						
FLOOR AREAS:	MAIN FLOOR (APPROX.)	7800 SQ.FT.	724 SQ.M.				
	MEZZANINE	760 SQ.FT.	70 SQ.M.				
BUILDING AREA:	FOOTPRINT	7800 SQ.FT.	724 SQ.M.				
CONSTRUCTION							
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION						
	UNSPRINKLERED						
CODE SECTION							
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside						
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating						
3.1.17.1	Occupant Load	Main Floor	724 SQ.M.	46 sq.m /person		15 persons maximum	
		Mezzanine	70 SQ.M.	46 sq.m./person		1 persons	
						16 persons maximum	
3.2.1.2 (3)	A mezzanine need not be considered a storey provided it does not exceed 40% of the open area of the room in which it is located, and has no partitions or dividing walls higher than 1070mm.						
3.2.2.85	Group F3 – 1 storey, facing 3 streets						
	Maximum Building Area	2400 sq.m.	1 storey				
	Combustible or Non Combustible Construction						
	Floor Assemblies to be fire separation with a 45 minute fire resistance rating, or be of non-combustible construction						
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be of non-combustible construction						
3.2.4.1.	A fire alarm system is not required.						
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).						
3.2.7.3	Emergency lighting is required in exits, access to exits in open floor areas and service rooms.						
3.2.8.2 (1)(c)	A mezzanine need not terminate at a vertical fire separation if it is less 500 sq.m. and meets 3.2.1.1 (3).						
3.3.1.5	A minimum of 2 exits is required from all floors areas greater than 200 sq.m. or exceeding the maximum travel distance of 15m.						
3.3.1.21	Janitor rooms require a fire separation with a 45 minute fire resistance rating.						
3.3.2.3	Non-fixed seating shall conform to the National Fire Code (Alberta Edition 2019)						
3.3.2.6	A public corridor serving as an access to exit in an assembly occupancy requires a fire separation with a 45 minute fire resistance rating.						
3.3.2.13	An unsprinklered library book storage room that is not normally accessible to the public shall be separated from the remainder of the building by a fire separation not less than 2 hours if it is greater than 250 sq.m.						
3.3.6.4.	Fire separations for rooms where flammable and combustible liquids are stored are required to be constructed with a fire resistance rating in conformance with the National Fire Code (Alberta Edition)						
3.4.2.1	A minimum of 2 exits is required from all floors areas greater than 200 sq.m. or exceeding the maximum travel distance of 15m.						
3.4.2.5	Maximum travel distance to an exit is 30m.						
3.4.5.1	Exit signs are not required.						

CODE REVIEW – CONTINUED

3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.			
3.4.6.5 (1)	Handrails are required on both sides of a stair more than 1100mm wide.			
3.4.6.12	Exit doors shall open in the direction of exit travel.			
3.4.6.16	Panic hardware shall be installed on all exit doors.			
3.6.2.1 (2)	A fuel-fired appliance that serves only one room or suite is not required to be separated from the remainder of the building.			
3.7.2.2 B	Water closets required	Calculated occupant load – 16 persons / 2 = 8 persons per sex		
		1 water closet required – males	1 water closet required – females	
		2 water closets total required		
		1 water closet provided		
3.8.2.1	Building is not required to be barrier free design.			

Cold Storage / Museum Storage Building

Cold Storage / Museum Storage Building



Cold Storage / Museum Storage Building

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
5920 – 8TH STREET WEST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
FAIR	1979	COMMUNITY CENTER / INDOOR GUN RANGE

OVERALL ISSUES:

GUN RANGE IS MAJOR FIRE HAZARD, GENERALLY UNSAFE CONDITIONS, EXCEPTIONALLY POOR CONSTRUCTION

MAIN HALL - EXTENSIVE COSMETIC DAMAGE TO CEILING TILES, FLOOR TILES, LIGHT FIXTURE COVERS

EXTERIOR METAL DAMAGE

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X		PARKING BUMPERS OUT OF PLACE	
Primary Entry			X			
Walkways		X			WEST ELEVATION CONCRETE LANDINGS IN POOR CONDITION	
Site Grading		X			EXISTING PAVING & WALKWAYS UP TO TOP OF SLAB / UNDERSIDE OF FINISHES	X
Doorways		X			EXTERIOR DOOR THRESHOLDS AND SWEEPS DAMAGED & DAYLIGHT TO EXTERIOR ON WEST ELEVATION / MAKESHIFT TRANSITION FROM FLOOR FINISH TO THRESHOLDS BELOW FLOOR ELEVATION	
Wiindows				X		
Exterior Finishes		X			SIGNIFICANT DAMAGE TO METAL CLADDING / PAINT FADED & PEELING ON EXTERIOR DOORS	
Building Envelope			X			
Roof			X			
Lighting / Electrical					WIRE RUN THRU RAINWATER LEADER AT NE CORNER	
Mechanical		X			DAMAGED VENT COVERS	
Miscellaneous		X			DAMAGED METAL CORNER FLASHING /	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X		NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators	X				NO H/C OPERATOR AT PRIMARY ENTRANCE	
Washrooms		X			MAIN FLOOR WASHROOMS ARE FULLY ACCESSIBLE / REQUIRED NUMBER OF WATER CLOSETS NOT PROVIDED	
Doorways			X			
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X		NW CORNER STORAGE ROOM DOORS TO MAIN HALL UNLABELLED REQUIRE 20 MINUTE RATING	
Fire Separations			X		NW CORNER STORAGE ROOM DRYWALL UNTAPED – REQUIRES FIRE TAPE IN RATED ROOM	
Structural Fire Protection	X				GUN RANGE MAKESHIFT WALL & CEILING MATERIALS (OLD CARPET & CARDBOARD EGG CRATE) REPRESENT MAJOR FIRE HAZARD	X
Exit Stairs				X	GUN RANGE FOLD-DOWN STAIR IS NOT ACCESSIBLE	
Number of Exits			X		GUN RANGE MEZZANINE ACCESS IS NON-COMPLIANT TO BUILDING CODE	
Electrical	X				GUN RANGE MAKESHIFT LIGHTING ASSEMBLIES	
Storage				X		
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure				X	ROOF STRUCTURE NOT ACCESSED DURING SITE VISIT	
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X		CORRODED FLOOR SLAB / MOLD BEHIND FURNACE	
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Entry		X			COSMETIC DRYWALL DAMAGE / DAMAGED CEILING TILES & LIGHT COVERS / DAMAGED VINYL FLOOR TILE	
Main Hall Kitchen		X			CORRODED STEEL FRAME UNDER COMMERCIAL DISHWASHER / NON-FUNCTIONAL ROLL SHUTTER TO MAIN HALL	
Small Hall Kitchen		X			DAMAGED & UNSANITARY VINYL FLOOR TILE AT SINK	
Main Hall		X			UNEQUAL RISER HEIGHTS ON STAGE RIGHT STAIRS / MAKESHIFT FLOOR DROP AT WES T EXTERIOR DOORS	
Gun Range	X				DISINTEGRATING RIGID INSLULATION AT CHIMNEY / UNCIRCULATED INDOOR WATER POOL – POTENTIAL MOLD HAZARD / MAKESHIFT WOOD CEILING FRAMING & MATERIALS REPRESENT MAJOR FIRE & SAFETY HAZARD / INACCESSIBLE FOLD-DOWN STAIR TO MEZZANINE REPRESENTS ACCESS & EXITING BUILDING CODE NON-COMPLIANCE / MAKESHIFT OVERHEAD MOTOR & PULLEY SYSTEM IS SAFETY CONCERN / MAKESHIFT LIGHTING & METAL SHIELDING / SINK & VANITY IN POOR CONDITION / UNSECURE VENT COVERS / SIDE EXIT DOOR IS BINDING	X

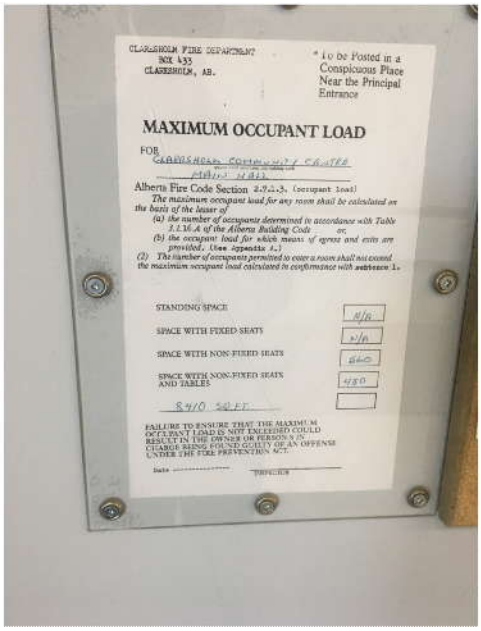
CODE REVIEW – COMMUNITY CENTER

BUILDING SUMMARY							
CLASSIFICATION:	GROUP A2 – ASSEMBLY						
STREETS:	3 STREETS						
BUILDING HEIGHT:	1 STOREY						
FLOOR AREAS:	MAIN FLOOR (APPROX.)	18000 SQ.FT.	1672 SQ.M.				
BUILDING AREA:	FOOTPRINT	18000 SQ.FT.	1672 SQ.M.				
CONSTRUCTION							
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION						
	UNSPRINKLERED						
CODE SECTION							
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside						
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating						
3.1.11.5	Horizontal concealed spaces within a roof assembly of combustible construction shall be compartmentalized into areas no greater than 600 sq.m. and no dimension greater than 60m.						
3.1.17.1	Occupant Load	Community Hall		Posted Occupant Load		660 persons maximum	
		Gun Range	167 sq.m.	9.3 sq.m./person		17 persons maximum	
						677 persons maximum	
3.2.1.1 (3)	The space above a mezzanine (stage) need not be considered a storey if its area does not exceed 40% of the room in which it is located.						
3.2.1.1 (7)	The space above a mezzanine (stage) conforming to sentence 3 is permitted to include an enclosed area that does not exceed 10% of the open area of the room in which it is located.						
3.2.2.25	Group A2 – up to 2 storeys, facing 3 streets						
	Maximum Building Area	2400 sq.m.					
	Combustible or Non Combustible Construction						
	Floor Assemblies to be fire separation with a 45 minute fire resistance rating						
	Mezzanines require a 45 minute fire resistance rating.						
	Roof Assemblies require a 45 min fire resistance rating.						
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be of non-combustible construction						
3.2.4.1.	A fire alarm system is required.						
3.2.4.10	Fire detectors are required in unsprinklered buildings protected by a fire alarm system in storage rooms over 1 sq.m., service rooms, janitor rooms, and laundry rooms						
3.2.4.16	Fire alarm manual pull stations are required at every principal entrance and exit.						
3.2.4.19	Fire alarm visual signals are required in assembly occupancy floor areas where the public may congregate, and public corridors, and washrooms.						
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).						
3.2.7.3	Emergency lighting is required in public corridors, exits, access to exits in open floor areas and service rooms, and public washrooms.						
3.2.8.2 (1)(c)	A mezzanine need not terminate at a vertical fire separation if it is less 500 sq.m. and meets 3.2.1.1 (3).						
3.3.1.2 (2)	Systems for the ventilation of cooking equipment producing grease vapours shall be designed in conformance with article 3.6.3.5 (NFPA 96 'Ventilation Control and Fire Protection of Commercial Cooking Operations', and the fire resistance of rating of grease duct enclosure assemblies shall conform to CAN/ULC-S144.)						
3.3.1.5	A minimum of 2 exits is required from all floors areas greater than 150 sq.m. or exceeding the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.						
3.3.1.21	Janitor rooms require a fire separation with a 45 minute fire resistance rating.						

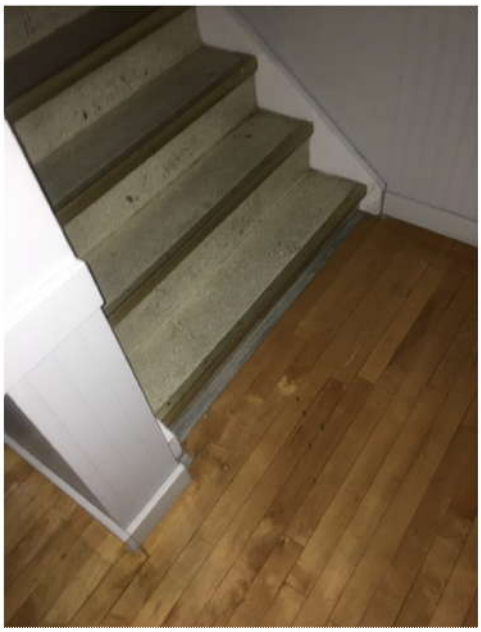
CODE REVIEW – CONTINUED

3.3.2.3	Non-fixed seating shall conform to the National Fire Code (Alberta Edition 2019)					
3.3.2.6	A public corridor serving as an access to exit in an assembly occupancy requires a fire separation with a 45 minute fire resistance rating.					
3.3.2.16	Where storage rooms are required for the storage of flammable or combustible liquids in assembly occupancies, such rooms shall not be located above or below the first storey.					
3.3.6.2	The design of buildings or parts thereof used for the storage of dangerous goods classified as explosives shall conform to the Explosives Act and its Regulations, published by Natural Resources Canada.					
3.4.1.6	Horizontal exits shall not comprise more than 50% of the required number of exits from any floor area.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating					
3.4.5.1	Exit signs are required.					
3.4.6.12	Exit doors shall open in the direction of exit travel.					
3.4.6.16	Panic hardware shall be installed on all exit doors.					
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.					
3.6.4.7	A building shall be provided with direct access to an interior stairway if HVAC equipment is installed on a roof more than 4m above grade					
3.6.4.7	Fixed access shall be provided to rooftop HVAC equipment that is installed on a sloped roof.					
3.7.2.2 B	Water closets – Community Center		660 persons / 2 = 330 persons of each sex			
		Required	6 watercloset – male		11 watercloset – female	
		Required	17 watercloset required			
		Provided	14 water closet total provided			
	Water closets – Gun Range		17 persons / 2 = 9 persons of each sex			
		Required	1 watercloset – male		1 watercloset – female	
		Provided	1 watercloset provided			
3.8.2.1	Building is required to be barrier free design.					
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.					
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.					
3.8.2.7	Power door operators are required at the entrance and interior doors of a vestibule of a Group A – assembly occupancy building.					
3.8.2.8 (3)	At least one barrier free water closet shall be provided in the entrance storey.					
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.					
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.					

Community Center / Indoor Gun Range

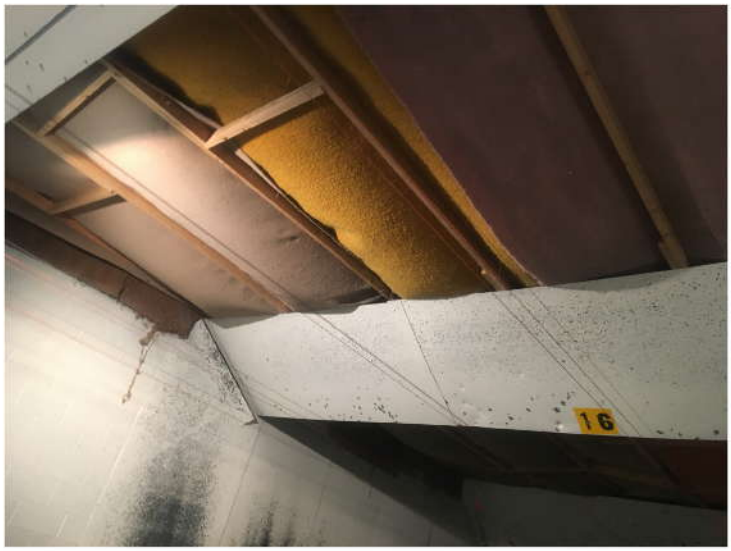


Community Center / Indoor Gun Range



Community Center / Indoor Gun Range

Community Center / Indoor Gun Range



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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
430 – 53rd AVENUE EAST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
POOR – FAIR	1991 ADDITION	CURLING RINK / MEETING ROOMS

OVERALL ISSUES:

WATER PENETRATION AT INTERIOR OF ROOF TRUSS/WALL CONNECTIONS / POOR EXTERIOR SOFFIT CONDITION

UPPER FLOOR EXITING

SITE GRADING

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X		UNMARKED GRAVEL LOT IN GOOD CONDITION	
Primary Entry		X			EXTERIOR SLAB SEPARATION FROM ENTRY DOORS	
Walkways		X			WEST WALKWAY SLAB – NEGATIVE SLOPE TO BUILDING	X
Site Grading		X			GRADING TO BUILDING HIGHER THAN DESIRABLE TO TOP OF SLAB & UNDERSIDE OF BLOCK WALL	X
Doorways		X			EXTERIOR DOOR SEALS / SWEEPS DAYLIGHT OPENINGS / OVERHEAD DOOR SEAL TAPED & FAILING, WOOD THRESHOLD	
Wiindows				X		
Exterior Finishes		X			PAINT SEPARATING AT MORTAR JOINTS / NORTH WALL METAL CLADDING (IS THIS OVER BLOCK WALL? FURTHER INVESTIGATION WOULD BE REQUIRED TO DETERMINE BUILDING ENVELOPE INTEGRITY)	
Building Envelope	X				WATER DAMAGE ON INTERIOR WOOD CEILING OVER RINK AT EXTERIOR WALL, ESPECIALLY AT ROOF TRUSS TO WALL CONNECTION / DAMAGE BLOCK AT MECH. ROOM	X
Roof	X				SOFFIT IN POOR CONDITION / SEPARATED ROOF FLASHING AT SOFFIT	X
Lighting / Electrical					EXTERIOR LIGHT FIXTURES NOT WEATHERPROOF	
Mechanical		X			DAMAGED VENT COVERS	
Miscellaneous		X			DAMAGED METAL CORNER FLASHING /	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X		NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators	X				NO H/C OPERATOR AT PRIMARY ENTRANCE OR INTERIOR VESTIBULE DOORS	
Washrooms			X		MAIN FLOOR WASHROOMS ACCESSIBLE STALL IS UNDERSIZED	
Doorways			X			
Path of Travel		X			SECOND EXIT IS AT END OF NARROW CORRIDOR	
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors		X			MECHANICAL ROOM DOORS & FRAME REQUIRE 45 MINUTE RATING RATHER THAN EXISTING 20 MINUTE RATING	
Fire Separations		X			MECHANICAL ROOM ELECTRICAL CEILING PENETRATION REQUIRES SEALANT	
Structural Fire Protection				X		
Exit Stairs	X				UPPER FLOOR STAIR THRU STORAGE ROOM DOES NOT QUALIFY AS AN EXIT / UTILITY ROOM NON-CONFORMING TO BUILDING CODE / MAIN STAIR NON-CONFORMING HEADROOM / MAIN STAIR – SINGLE UPPER FLOOR EXIT STAIR INCLUDES INTERCONNECTED FLOOR SPACE WITH NO VESTIBULE AT TOP OR BOTTOM, AND NO CONSIDERATION FOR SMOKE STOP OR PROTECTED FLOOR SPACE	X
Number of Exits		X			MAIN FLOOR ACCEPTABLE THOUGH SECOND EXIT IS THRU NARROW CORRIDOR / UPPER FLOOR SINGLE EXIT PERMISSIBLE WITH MAX. POSTED OCCUPANCY BUT STAIR HEADROOM NON-CONFORMING	
Electrical		X			LOOSE HANGING LIGHT FIXTURES NOT MOUNTED TO JUNCTION BOX / EXPOSED WIRES AT MECH. ROOM CEILING	
Storage		X			DOOR CLOSERS ON STORAGE ROOM DOORS UNATTACHED.	
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure		X			WATER DAMAGE TO UPPER CHORD OF ROOF TRUSSES OVER RINK AREA	X
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room		X			UNSAFE FLOOR DROP & STEP AT ENTRY DOOR / CONDENSATION DAMAGE ON CEILING	
Change Rooms		X			MENS RM – DRAIN CONNECTION STUBS PROTRUDING FROM FLOOR / LADIES ROOM – WATER DAMAGE TO MILLWORK AT LEFT SINK / MAKESHIFT WATER LINE THRU ROUGH CUT CEILING OPENING	
Bleachers		X			UNSECURED VENT COVERS OVER BLEACHERS	
Upper Floor		X			VENT COVERS MISSING / VENTS GENERALLY REQUIRE CLEANING	
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Entry	X				MISSING FLUORESCENT LIGHT COVER	
Main Floor Kitchen		X			GENERALLY DATED & SANITATION CONERNS AT MILLWORK & BACKSPLASH / MAKESHIFT OVERHEAD ELECTRICAL CONNECTION	
Upper Floor Kitchen		X			WALLS SEPARATED FROM CEILING / DAMAGED CEILING TILES	
Washroom Distribution					WATERCLOSET FACILITIES MALE/FEMALE DISTRIBUTION IS SKEWED OPPOSITE TO CODE REQUIREMENTS	

CODE REVIEW – CURLING RINK

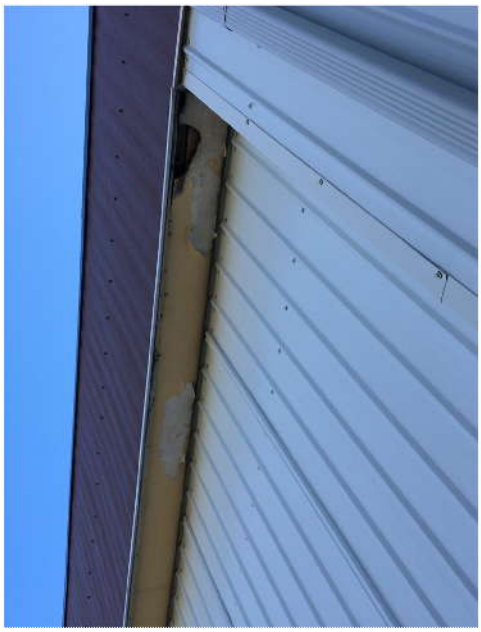
BUILDING SUMMARY						
CLASSIFICATION:	GROUP A2 – ASSEMBLY					
STREETS:	3 STREETS					
BUILDING HEIGHT:	2 STOREYS					
FLOOR AREAS:	MAIN FLOOR (APPROX.)	12900 SQ.FT.	1198 SQ.M.			
	UPPER FLOOR (APPROX.)	3850 SQ FT	358 SQ.M.			
	TOTAL FLOOR AREA	16750 SQ.FT.	1556 SQ.M.			
BUILDING AREA:	FOOTPRINT	12900 SQ.FT.	1198 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside					
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating					
3.1.17.1	Occupant Load	Rink Area	802 sq.m.	0.75 sq.m /person	1069 persons maximum	
		Lounge	754 sq.m.	1.2 sq.m./person	628 persons maximum	
					1697 persons maximum	
3.2.2.25	Group A2 – up to 2 storeys, facing 3 streets					
	Maximum Building Area	1200 sq.m.				
	Combustible or Non Combustible Construction					
	Floor Assemblies to be fire separation with a 45 minute fire resistance rating					
	Roof Assemblies require a 45 min fire resistance rating.					
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be of non-combustible construction					
3.2.4.1.	A fire alarm system is required.					
3.2.4.10	Fire detectors are required in unsprinklered buildings protected by a fire alarm system in storage rooms over 1 sq.m., service rooms, janitor rooms, and laundry rooms					
3.2.4.11	Smoke detectors are required in exit stair shafts.					
3.2.4.16	Fire alarm manual pull stations are required at every principal entrance and exit.					
3.2.4.19	Fire alarm visual signals are required in assembly occupancy floor areas where the public may congregate, and public corridors, and washrooms.					
3.2.5.2	Direct access from the outdoors to above grade storeys is required in an unsprinklered building by at least one unobstructed access panel or window for each 15m of wall required to face a street.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in public corridors, exits, access to exits in open floor areas and service rooms, and public washrooms.					
3.2.8.4	An exit opening into an interconnected floor space shall be protected at each opening into the interconnected floor space with a vestibule.					
3.3.1.3	No access to exit for patrons in an assembly occupancy shall pass through a storage room or service space.					
3.3.1.5	A minimum of 2 exits is required from all floors areas greater than 150 sq.m. or exceeding the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.					
3.3.1.21	Janitor rooms require a fire separation with a 45 minute fire resistance rating.					
3.3.2.3	Non-fixed seating shall conform to the National Fire Code (Alberta Edition 2019)					

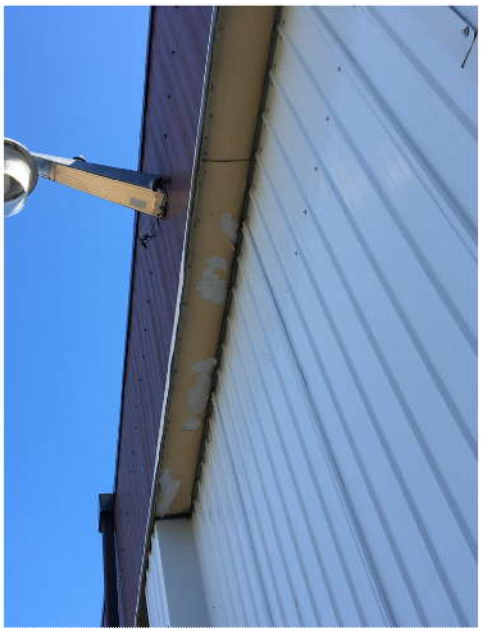
CODE REVIEW – CONTINUED

3.3.2.6	A public corridor serving as an access to exit in an assembly occupancy requires a fire separation with a 45 minute fire resistance rating.			
3.4.2.1	A floor area is permitted to be served by not more than one exit provided the occupant load is not more than 60 persons, and the travel distance is not more than 15m, and the floor area is not more than 150 sq.m.			
3.4.2.5	Maximum travel distance to an exit is 30m.			
3.4.3.4	Every exit shall have a clear height of 2050mm, including exit stairways. (Measured vertically from a line tangent to the tread nosings.)			
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating			
3.4.4.2 (2)	Not more than 1 exit from a floor area is permitted to lead through a lobby, provided the path of travel through the lobby is not more than 15m, and provided the lobby is not in an interconnected floor space.			
3.4.5.1	Exit signs are required.			
3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.			
3.4.6.5 (1)	Handrails are required on one side of a stair less than 1100mm wide.			
3.4.6.5 (12)	At least one handrail shall extend 300mm horizontally beyond the top & bottom of a stairway			
3.4.6.13	An exit door normally required to be kept closed shall be provided with a self closing mechanism.			
3.4.6.16	Panic hardware shall be installed on all exit doors.			
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.			
3.7.2.2 B	Water closets	13 water closets total provided		
		Max. Allowable occupancy	200 persons of each sex	
		4 waterclosets – male	8 waterclosets – female	
3.8.2.1	Building is required to be barrier free design.			
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.			
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.			
3.8.2.7	Power door operators are required at the entrance and interior doors of a vestibule of a Group A – assembly occupancy building.			
3.8.2.8 (3)	At least one barrier free water closet shall be provided in the entrance storey.			
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.			
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.			

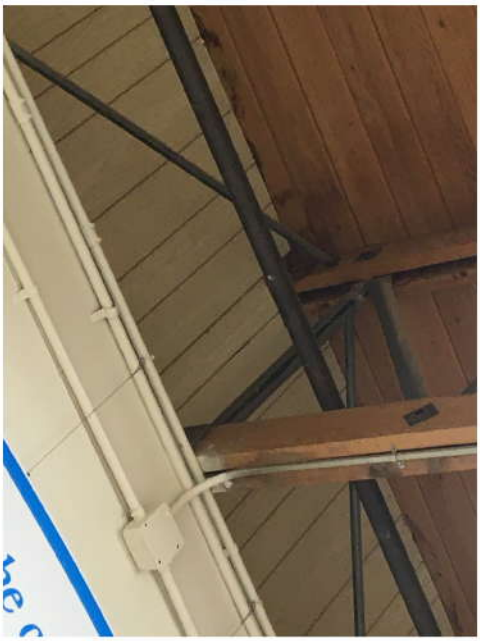
Curling Rink

Curling Rink





Curling Rink



Curling Rink

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
4505 – 5TH STREET EAST	IN USE

OVERALL STATE:	AGE	BUILDING DESCRIPTION
FAIR	UNKNOWN	EAST SIDE RESERVOIR

OVERALL ISSUES:

TREATED WATER LEAKING TO SUMP & PUMPED TO DRAINAGE

TANK WALL TO ROOF SEALANT FAILING

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking				X		
Primary Entry			X		SECURE SITE ENTRY AND SECURE LADDER TO TANK ROOF & ACCESS HATCH	
Walkways				X		
Site Grading			X			
Doorways				X		
Wiindows				X		
Exterior Finishes		X			CONSISTENT HAIRLINE CRACKS IN TANK WALL STUCCO FINISH / SEALANT AT JOINT BETWEEN WALL AND DOME IN POOR CONDITION	
Building Envelope				X		
Roof			X		SUPERFICIAL HAIRLINE CRACKS IN CONCRETE ROOF DOME	
Lighting / Electrical				X		
Mechanical		X			NOTE FROM TOWN PERSONNEL: TANK INTERIOR HAS BEEN RESEALED BUT CLORINATED WATER CONSISTENTLY LEAKING TO SUMP AND BEING PUMPED TO DRAINAGE DITCH	
Miscellaneous				X		
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X	NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X		
Washrooms				X		
Doorways				X		
Path of Travel				X		
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors				X		
Fire Separations				X		
Structural Fire Protection				X		
Exit Stairs			X		NEWER, SECURE ACCESS LADDER TO TANK ROOF & ACCESS HATCH	
Number of Exits				X		
Electrical				X		
Storage				X		
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X		SUPERFICIAL HAIRLINE CRACKING IN CONCRETE	
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room				X		

CODE REVIEW – EAST SIDE RESERVOIR

BUILDING SUMMARY			
CLASSIFICATION:	GROUP F3 – LOW HAZARD INDUSTRIAL		
STREETS:	3 STREETS		
BUILDING HEIGHT:	1 STOREY		
BUILDING AREA:	FOOTPRINT	4778 SQ.FT.	444 SQ.M.
CONSTRUCTION			
CONSTRUCTION TYPE:	NON-COMBUSTIBLE CONSTRUCTION		
	UNSPRINKLERED		
CODE SECTION			
3.2.2.89	Group F3 – 1 storey, facing 1 streets		
	Maximum Building Area	Unlimited	1 storey
	Non Combustible Construction		
3.4.6.6 (2)	The height of guards for exit stairs and their landings shall be not less than 1070mm.		
3.8.2.1	Building is not required to be barrier free design.		

East Reservoir

East Reservoir

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
350 – 43RD AVENUE WEST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	1979	FIRE HALL

OVERALL ISSUES:

SITE GRADING

EXHUAST FAN LEAKS

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X		PAVING IMPERFECTIONS	
Primary Entry			X			
Walkways			X			
Site Grading	X				EXISTING PAVING & WALKWAYS BUILT UP HIGHER THAN FLOOR SLAB / ICE BUILT-UP ALL AROUND BUILDING	X
Doorways			X			
Windows			X			
Exterior Finishes		X			FRONT DISPLAY CAUSING RUST ON EXTERIOR SHEET METAL FINISH	
Building Envelope			X		METAL FINISHES ON STEEL STRUCTURE – GENERALLY GOOD CONDITION	
Roof			X			
Lighting / Electrical			X			
Mechanical		X			LEAKS AROUND EXHAUST FANS / EMERGENCY GENERATOR ON SITE	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X		NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators	X				NO H/C OPERATOR AT PRIMARY ENTRANCE	
Washrooms		X			REQUIRED NUMBER OF WATER CLOSETS NOT PROVIDED / MILLWORK IS DATED / LOOSE CEILING TILES / LEAKS AROUND EXHAUST FANS	
Doorways			X			
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations			X			
Structural Fire Protection			X			
Exit Stairs		X			MEZZANINE STAIR IS OLD / HANDRAIL DOES NOT MEET MINIMUM SPACING REQUIREMENTS	
Number of Exits			X			
Electrical			X		WASHROOM FLUORESCENT LIGHT FIXTURE MISSING COVER / CO2 SENSORS INSTALLED THROUGHOUT	
Storage				X	LOW HEADROOM THROUGHOUT MEZZANINE STORAGE AREA / STORAGE AROUND EXPOSED METAL FURNACE EXHAUST PIPE	X
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			

CODE REVIEW – FIRE HALL

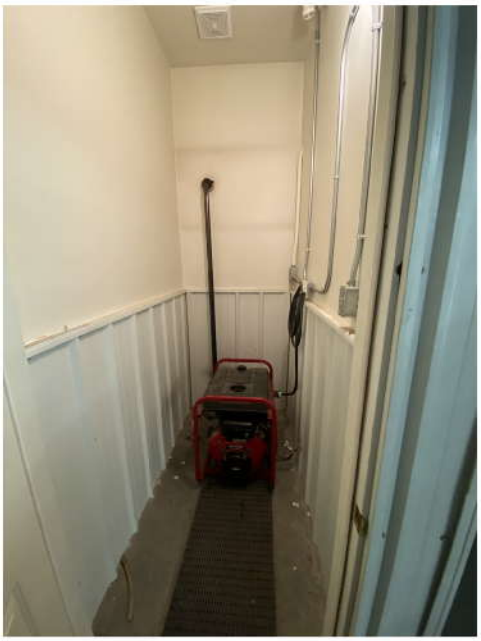
BUILDING SUMMARY						
CLASSIFICATION:	GROUP F3					
STREETS:	3 STREETS					
BUILDING HEIGHT:	1 STOREY					
FLOOR AREAS:	MAIN FLOOR (APPROX.)	8000 SQ.FT.	765 SQ.M.			
	MEZZANINE	1375 SQ.FT.	127.7 SQ.M.			
	TOTAL FLOOR AREA	9375 SQ.FT.	892.7 SQ.M.			
BUILDING AREA:	FOOTPRINT	8000 SQ.FT.	765 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.5.14 (2)	Combustible insulation with a flame spread rating not more than 25 is permitted on any exposed surface in a building of non-combustible construction.					
3.1.7.3	Floor assemblies shall be rated for exposure to fire on the underside					
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating					
3.1.17.1	Occupant Load	Truck Bays	637.3 SQ.M.	46 sq.m /person	13 persons	
		Offices	127.7 SQ.M.	9.3 sq.m./person	13 persons	
					26 persons maximum	
3.2.1.1 (3)	A mezzanine need not be considered a storey provided it does not exceed 40% of the open area of the room in which it is located, and has no partitions or dividing walls higher than 1070mm.					
3.2.2.86	Group F3 – up to 2 storeys, facing 3 streets					
	Maximum Building Area	7200 sq.m.				
	Floor Assemblies to be fire separation, and if combustible construction shall have a 45 minute fire resistance rating					
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be non-combustible					
3.2.4.1.	A fire alarm is not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in exits, access to exits in open floor areas and service rooms, and public washrooms equipped to serve more than one person at a time.					
3.2.7.5	An emergency electrical power supply system shall be installed in conformance with CSA C282 'Emergency Electrical Power Supply for Buildings.'					
3.2.8.2 (1)(c)	A mezzanine need not terminate at a vertical fire separation if it is less 500 sq.m. and meets 3.2.1.1 (3).					
3.3.1.2	The storage, handling and use of hazardous substances shall be in conformance with the National Fire Code (Alberta Edition 2019)					
3.3.1.5	A minimum of 2 exits is required from all floors areas greater than 200 sq.m. or exceeding the maximum travel distance of 15m. Floor areas less than the maximum are permitted to be served by a single exit.					
3.3.1.21	A room or space within a floor area used the storage of janitorial supplies shall be separated from the remainder of the building by a fire separation with a 45 minute fire resistance rating.					
3.3.1.22	A laundry room in a floor area shall be separated from the remainder of the building by a fire separation with a 45 minute fire resistance rating.					
3.3.5.4	A garage shall be provided with natural or mechanical ventilation to prevent excessive accumulation of carbon monoxide, exhaust fumes, or flammable and toxic vapours.					
3.3.5.10	Guards in industrial occupancies are permitted to consist of a top rail and one or more intermediate rails spaced no more than 535mm apart.					

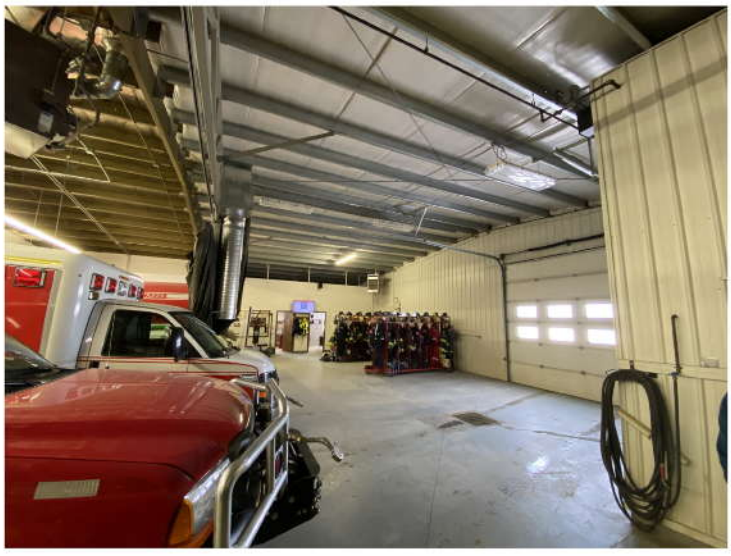
CODE REVIEW – CONTINUED

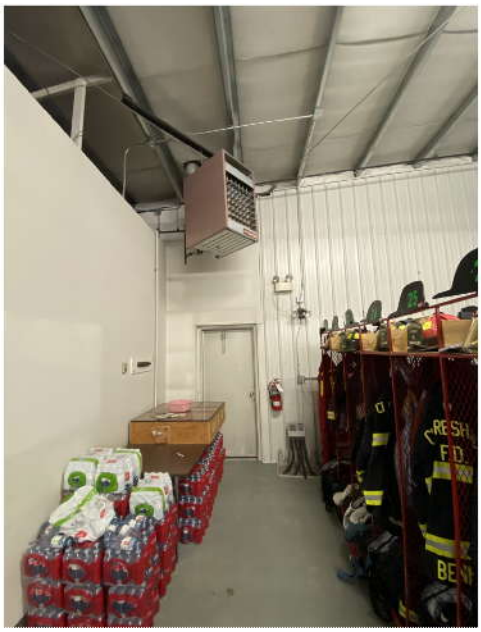
3.3.6.7	Floors in areas where dangerous goods are stored shall be constructed of impermeable materials to prevent absorption of chemicals.				
3.4.2.5	Maximum travel distance to an exit is 30m.				
3.4.5.1	Exit signs are not required.				
3.4.6.6 (2)	The height of guards for exit stairs and their landings shall be not less than 1070mm.				
3.4.6.12	Exit doors shall open in the direction of exit travel.				
3.4.6.16	Panic hardware shall be installed on all exit doors.				
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.				
3.7.2.2 B	Water closets required	26 persons / 2 = 13 persons per sex			
		2 water closets – males		2 water closets – females	
		4 water closets total required			
		2 water closets provided			
3.8.1.1	Building is required to be barrier free design.				
3.8.1.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.				
3.8.2.3	At least one barrier free water closet shall be provided in the entrance storey.				
3.8.3.1	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.				
3.8.3.2	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.				

Fire Hall

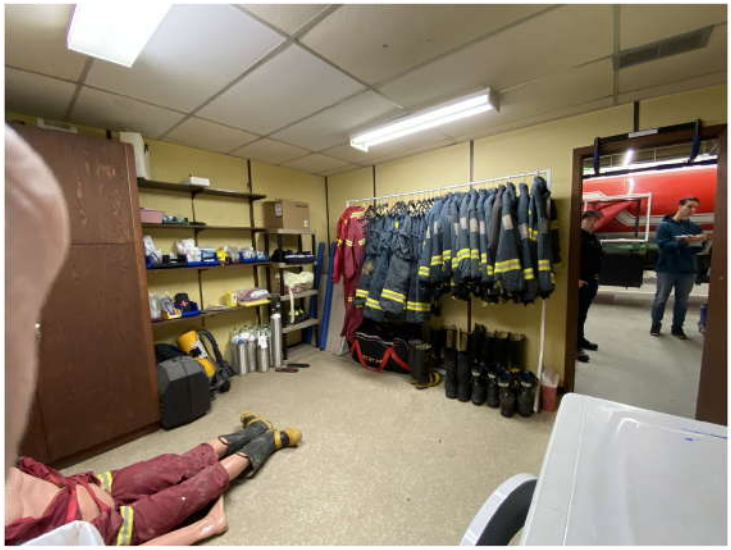
Fire Hall

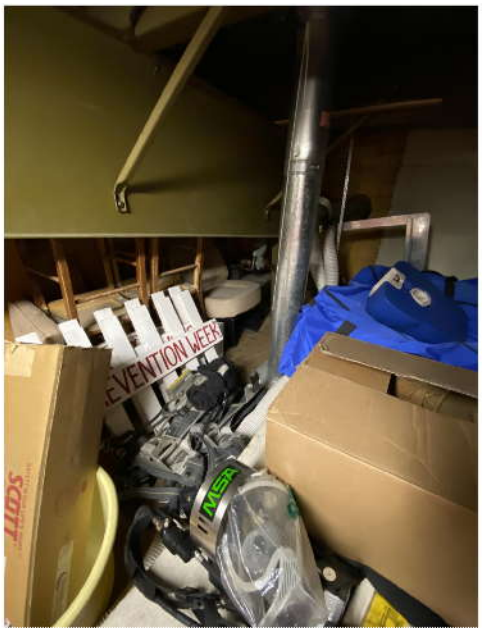




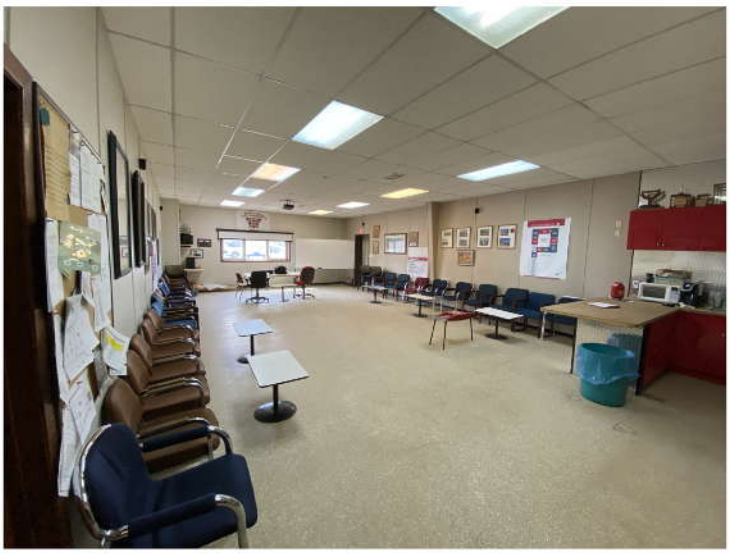


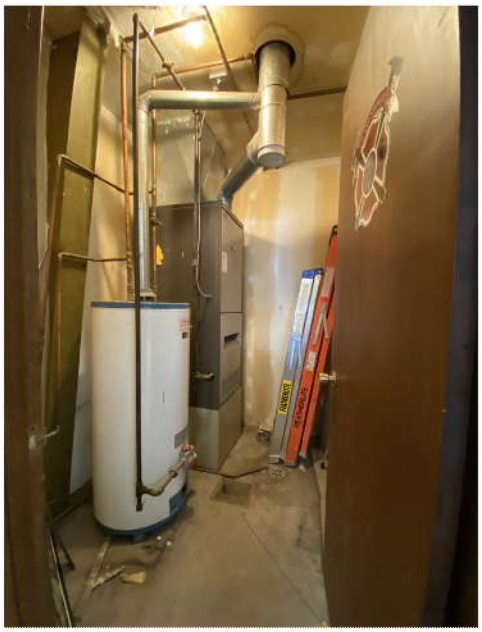
Fire Hall





Fire Hall





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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
4502 1st STREET WEST	IN USE

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	1969	HIGHWAY PUMP STATION

OVERALL ISSUES:

GOOD CONDITION – NO SIGNIFICANT ISSUES

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking				X		
Primary Entry			X			
Walkways			X			
Site Grading			X			
Doorways			X			
Windows				X		
Exterior Finishes			X			
Building Envelope			X			
Roof			X			
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous				X		
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X	NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X	NOT REQUIRED	
Washrooms				X	NOT REQUIRED	
Doorways				X		
Path of Travel				X	NOT REQUIRED	
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations				X		
Structural Fire Protection				X		
Exit Stairs				X		
Number of Exits			X			
Electrical			X			
Storage				X		
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Miscellaneous				X		

CODE REVIEW – HIGHWAY PUMP STATION

BUILDING SUMMARY						
CLASSIFICATION:	GROUP F3 – LOW HAZARD INDUSTRIAL					
STREETS:	3 STREETS					
BUILDING HEIGHT:	1 STOREY					
FLOOR AREAS:	MAIN FLOOR (APPROX.)	600 SQ.FT.	56 SQ.M.			
BUILDING AREA:	FOOTPRINT	600 SQ.FT.	56 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.17.1	Occupant Load	Main Floor	56 SQ.M.	28 sq.m /person	2 persons maximum	
3.2.2.85	Group F3 – up to 2 storeys, facing 3 streets					
	Maximum Building Area	2400 sq.m.	1 storey			
	Floor Assemblies to be fire separation, and if combustible construction have a 45 minute fire resistance rating					
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be of non-combustible construction					
3.2.4.1.	A fire alarm system is not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in access to exits in open floor areas.					
3.3.1.5	A single exit is permitted from all floors areas less than 200 sq.m. and having less than a maximum travel distance of 15m.					
3.3.5.10	Guards in industrial occupancies are permitted to consist of a top rail and one or more intermediate rails spaced no more than 535mm apart.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.5.1	Exit signs are not required.					
3.4.6.6 (2)	The height of guards for exit stairs and their landings shall be not less than 1070mm.					
3.4.6.12	Exit doors shall open in the direction of exit travel.					
3.4.6.16	Panic hardware shall be installed on all exit doors.					
3.6.2.1 (2)	A fuel-fired appliance that serves only one room or suite is not required to be separated from the remainder of the building.					
3.7.2.1 (4)	Plumbing fixtures are not required for a building of low human occupancy.					
3.8.2.1	Building is not required to be barrier free design.					

Highway Pump Station

Highway Pump Station

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
SW19-12-27-W4	IN USE

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	2015	LAGOON LIFT STATION

OVERALL ISSUES:

WATER PENETRATION THROUGH NORTH BLOCK WALL

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking				X		
Primary Entry			X			
Walkways			X			
Site Grading			X			
Doorways			X			
Windows				X		
Exterior Finishes			X			
Building Envelope		X			WATER PENETRATION THROUGH NORTH BLOCK WALL, HAS BEEN RESEALED PREVIOUSLY	
Roof			X			
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous				X		
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X	NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

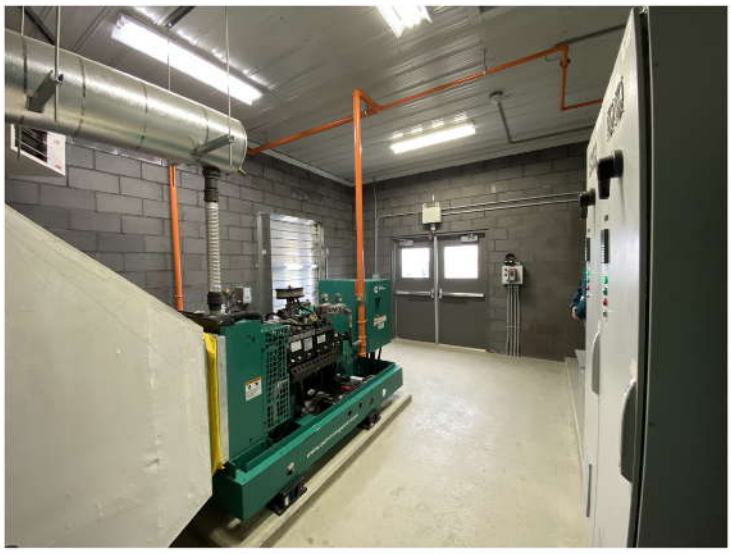
ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X	NOT REQUIRED	
Washrooms				X	NOT REQUIRED	
Doorways				X		
Path of Travel				X	NOT REQUIRED	
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations				X		
Structural Fire Protection				X		
Exit Stairs			X			
Number of Exits			X			
Electrical			X			
Storage				X		
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Miscellaneous				X		

CODE REVIEW – LAGOON LIFT STATION

BUILDING SUMMARY						
CLASSIFICATION:	GROUP F3 – LOW HAZARD INDUSTRIAL					
STREETS:	3 STREETS					
BUILDING HEIGHT:	1 STOREY					
FLOOR AREAS:	MAIN FLOOR (APPROX.)	703 SQ.FT.	65.3 SQ.M.			
BUILDING AREA:	FOOTPRINT	703 SQ.FT.	65.3 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.17.1	Occupant Load	Main Floor	65.3 SQ.M.	28 sq.m /person	2 persons maximum	
3.2.2.85	Group F3 – up to 2 storeys, facing 3 streets					
	Maximum Building Area	2400 sq.m.	1 storey			
	Floor Assemblies to be fire separation, and if combustible construction have a 45 minute fire resistance rating					
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be of non-combustible construction					
3.2.4.1.	A fire alarm system is not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in access to exits in open floor areas.					
3.3.1.5	A single exit is permitted from all floors areas less than 200 sq.m. or less than a maximum travel distance of 15m.					
3.3.5.10	Guards in industrial occupancies are permitted to consist of a top rail and one or more intermediate rails spaced no more than 535mm apart.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.5.1	Exit signs are not required.					
3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.					
3.4.6.6 (2)	The height of guards for exit stairs and their landings shall be not less than 1070mm.					
3.4.6.12	Exit doors shall open in the direction of exit travel.					
3.4.6.16	Panic hardware shall be installed on all exit doors.					
3.6.2.1 (2)	A fuel-fired appliance that serves only one room or suite is not required to be separated from the remainder of the building.					
3.7.2.1 (4)	Plumbing fixtures are not required for a building of low human occupancy.					
3.8.2.1	Building is not required to be barrier free design.					

Lagoon Lift Station

Lagoon Lift Station



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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
211 – 49TH AVENUE WEST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	2004	CLARESHOLM PUBLIC LIBRARY

OVERALL ISSUES:

MINOR EXTERIOR & INTERIOR COSMETIC ITEMS

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X			
Walkways			X			
Site Grading			X			
Doorways			X			
Wiindows			X			
Exterior Finishes			X		MINOR WATER DAMAGE ON BRICK / WOOD BRACKETS STAIN FINISH WEARING / BIRD SPIKES RECOMMENDED AT WOOD BRACKETS & LIGHT FIXTURES / WEST DOOR PAINT FLAKING	
Building Envelope			X			
Roof			X			
Lighting / Electrical			X		ELECTRICAL OUTLET MISSING COVER & WEATHERPROOFING AT REAR(WEST) DOOR	
Mechanical		X			FIREPLACE VENT DAMAGED	
Miscellaneous		X			RAINWATER LEADER PIPED INTO WEEPING TILE	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X			

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators			X		EXTERIOR DOOR H/C OPERATOR INSTALLED	
Washrooms			X		ACCESSIBLE STALLS DO NOT HAVE FULL WHEELCHAIR TURN RADIUS	
Doorways			X		INTERIOR VESTIBULE DOOR AT MAIN ENTRY IS BINDING	
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X		BASEMENT MECHANICAL ROOM DOOR IS BINDING	
Fire Separations			X		DRYWALL MUD AROUND PENETRATIONS IN MECHANICAL ROOM ARE FUNCTIONAL BUT WORKMANSHIP IS POOR	
Structural Fire Protection			X			
Exit Stairs			X			
Number of Exits			X			
Electrical			X		JUNCTION BOX MISSING COVER IN MECHANICAL ROOM CEILING	
Storage			X			
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Main Library Area			X		WEST WALL DRYWALL CRACKING BELOW WINDOW FRAMES AND RIGHT OF FIREPLACE / FAILING CARPET SEAM AT NORTH WALL	
Bill Simpson Room			X		DAMAGED PIPE ELBOWS IN STORAGE ROOM / DAMAGED CEILING TILE	
Basement			X		SUMP PUMP LID & FRAME RUSTY – RECOMMEND REFINISHING / MOISTURE DAMAGE ON PIPE CAP UNDER STAIRS	
Office Area			X		ATTIC ACCESS HATCH IS VERY DIFFICULT TO OPEN WITH NO HOLD-OPEN SYSTEM OTHER THAN MAKESHIFT WIRE	

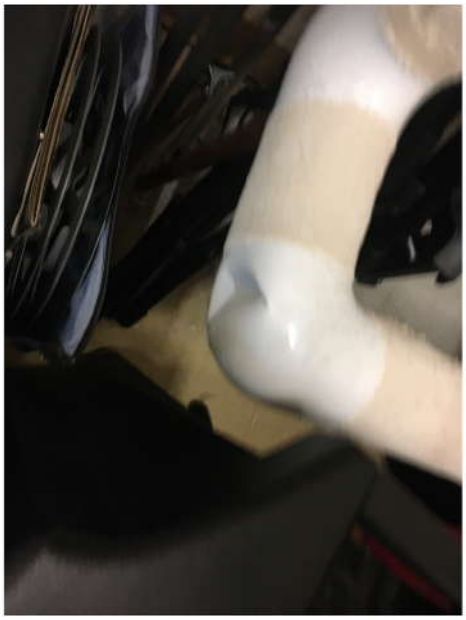
CODE REVIEW – PUBLIC LIBRARY

BUILDING SUMMARY							
CLASSIFICATION:	GROUP A2 – ASSEMBLY						
STREETS:	2 STREETS						
BUILDING HEIGHT:	1 STOREY						
FLOOR AREAS:	MAIN FLOOR (APPROX.)	9700 SQ.FT.	901 SQ.M.				
	BASEMENT (APPROX.)	4000 SQ FT	371 SQ.M.				
	TOTAL FLOOR AREA	13700 SQ.FT.	1272 SQ.M.				
BUILDING AREA:	FOOTPRINT	9700 SQ.FT.	901 SQ.M.				
CONSTRUCTION							
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION						
	UNSPRINKLERED						
CODE SECTION							
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside						
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating						
3.1.17.1	Occupant Load	Main Floor	901 SQ.M.	1.85 sq.m /person		487 persons maximum	
		Basement	371 SQ.M.	28 sq.m./person		13 persons maximum	
						500 persons maximum	
3.2.1.4	A floor assembly over a basement shall be constructed as a fire separation having a fire resistance rating not less than 45 minutes.						
3.2.1.5	A basement in an unsprinklered building shall be subdivided into fire compartments not greater than 600 sq.m. with a fire separation having a 45 minute fire resistance rating.						
3.2.2.25	Group A2 – up to 2 storeys, facing 2 streets						
	Maximum Building Area	2000 sq.m.	1 storey				
	Combustible or Non Combustible Construction						
	Floor Assemblies to be fire separation with a 45 minute fire resistance rating						
	Roof Assemblies require a 45 min fire resistance rating						
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be of non-combustible construction						
3.2.3.1.-B	Spatial separations	West Elevation		Limiting Distance	14m	Approx.	
				Allowable % Unprotected Openings	100.00%		
		South Elevation		Limiting Distance	1.5m	Approx.	
				Wall Area	70 sq.m.	Approx.	
				Allowable % Unprotected Openings	8.00%		
				Actual % Unprotected Openings	0.00%		
3.2.4.1.	A fire alarm system is required.						
3.2.4.10	Fire detectors are required in unsprinklered buildings protected by a fire alarm system in storage rooms over 1 sq.m., service rooms, and janitor rooms.						
3.2.4.11	Smoke detectors are required in exit stair shafts.						
3.2.4.16	Fire alarm manual pull stations are required at every principal entrance and exit.						
3.2.4.19	Fire alarm visual signals are required in assembly occupancy floor areas where the public may congregate, and public corridors, and washrooms (except single stall washrooms).						
3.2.5.2	Direct access from a street to the basement is required only if the basement is greater than 25m in length.						
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).						
3.2.7.3	Emergency lighting is required in public corridors, exits, access to exits in open floor areas and service rooms, and public washrooms.						

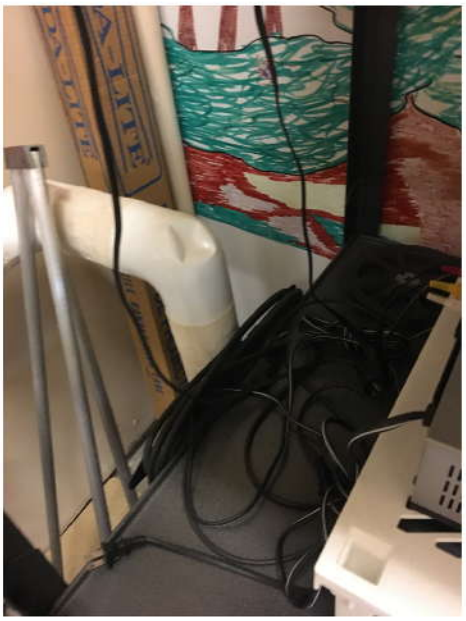
CODE REVIEW – CONTINUED

3.3.1.5	A minimum of 2 exits is required from all floors areas greater than 150 sq.m. or exceeding the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.				
3.3.1.21	Janitor rooms require a fire separation with a 45 minute fire resistance rating.				
3.3.2.3	Non-fixed seating shall conform to the National Fire Code (Alberta Edition 2019)				
3.3.2.6	A public corridor serving as an access to exit in an assembly occupancy requires a fire separation with a 45 minute fire resistance rating.				
3.3.2.13	An unsprinklered library book storage room that is not normally accessible to the public shall be separated from the remainder of the building by a fire separation not less than 2 hours if it is greater than 250 sq.m.				
3.4.2.1	Every floor area intended for occupancy shall be served by at least 2 exits.				
3.4.2.5	Maximum travel distance to an exit is 30m.				
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating				
3.4.5.1	Exit signs are required.				
3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.				
3.4.6.5 (1)	Handrails are required on one side of a stair less than 1100mm wide.				
3.4.6.5 (12)	At least one handrail shall extend 300mm horizontally beyond the top & bottom of a stairway				
3.4.6.12	Exit doors shall open in the direction of exit travel.				
3.4.6.16	Panic hardware shall be installed on all exit doors.				
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.				
3.6.4.4	An attic more than 600mm high shall be provided with access from the floor immediately below by a hatchway not less than 550mm X 900mm.				
3.7.2.2 B	Water closets required	Calculated occupant load – 500 persons / 2 = 250 persons per sex			
		5 water closets – males	9 water closets – females		
		14 water closets total required			
		Posted occupanct load recommended	100 people max / 2 = 50 persons per sex		
		1 water closet – males	2 water closets – females		
		4 water closets provided			
3.8.2.1	Building is required to be barrier free design.				
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.				
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.				
3.8.2.7	Power door operators are required at the entrance and interior doors of a vestibule of a Group A – assembly occupancy building.				
3.8.2.8 (3)	At least one barrier free water closet shall be provided in the entrance storey.				
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.				
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.				

Claresholm Public Library



Claresholm Public Library



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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
316 – 47 AVENUE WEST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
POOR	UNKNOWN	MACKIN HALL

OVERALL ISSUES:

POOR CONDITION EXTERIOR FINISHES

POOR CONDITION DRYWALL

POOR CONDITION ELECTRICAL & LIGHTING

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking				X	STREET PARKING	
Primary Entry		X			RUSTY METAL STAIR PANS	
Walkways		X			REAR STAIR LANDING HAS NEGATIVE GRADE TO FOUNDATION	
Site Grading		X			GRADING AT EAST SIDEYARD IS FUNCTIONAL BUT SIGNIFICANT GRADE CHANGE MAKES FOR POOR TRANSITION FOR NEIGHBOURING YARD	
Doorways	X				REAR EXTERIOR DOOR & HARDWARE IN POOR CONDITION	
Wiindows				X		
Exterior Finishes	X				POOR PAINT CONDITION, ESPECIALLY ON NORTH EXTERIOR WALL	
Building Envelope		X			DAYLIGHT AT GAS METER PENETRATION / WATER STAINING AT OLD BASEMENT SLAB AT NORTH END OF BUILDING (SOURCE UNKNOWN)	
Roof		X			UNVENTED SOFFITS	
Lighting / Electrical	X				LIGHT BULBS MISSING FROM EXTERIOR FIXTURES	
Mechanical		X			UNINSULATED SUMP DRAIN HOSE ON EXTERIOR	
Miscellaneous		X			REAR EXTERIOR STARS NOT SECURED	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X		NO UNPROTECTED OPENINGS NEAR TO ADJACENT PROPERTY LINES	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators	X				NO H/C DOOR OPERATORS	
Washrooms	X				WASHROOM IS NOT H/C ACCESSIBLE	
Doorways		X			ENTRANCE LEVEL IS NOT H/C ACCESSIBLE	
Path of Travel	X				BUILDING IS NOT H/C ACCESSIBLE	
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations		X			MECHANICAL ROOM DRYWALL MUDDING HAS POOR WORKMANSHIP – QUESTIONABLE WHETHER RATING IS ACHIEVED	
Structural Fire Protection				X		
Exit Stairs	X				BASEMENT STAIR IN GENERALLY POOR CONDITION	
Number of Exits			X		2 EXITS FROM BASMENT AND MAIN FLOOR	
Electrical	X				MAKESHIFT CONDUIT & SUBSTANDARD LIGHTING THROUGHOUT	
Storage		X			BASEMENT CEILING DRYWALL IN GENERALLY POOR CONDITION	
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure		X			OLD BUT APPEARS STABLE & FUNCTIONAL	
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room		X			POOR WORKMANSHIP ON DRYWALL / HOT WATER TANK ON MAKESHIFT HOUSEKEEPING PAD	
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Main Hall		X			SIGNIFICANT FLOOR DEFLECTION (SOFT AREAS) / DRYWALL AT JUNCTION BOX ON SOUTH WALL IN POOR CONDITION	
Kitchen / Washroom Area	X				INSECURE SINGLE LAYER PLYWOOD PARTITION WALL / MILLWORK IN POOR CONDITION	
Basement		X			NEW CONCRETE FLOOR SLAB PLACED PARITALLY OVER OLDER SLAB / MOISTURE DAMAGE ON OLDER SLAB	

CODE REVIEW – MACKIN HALL

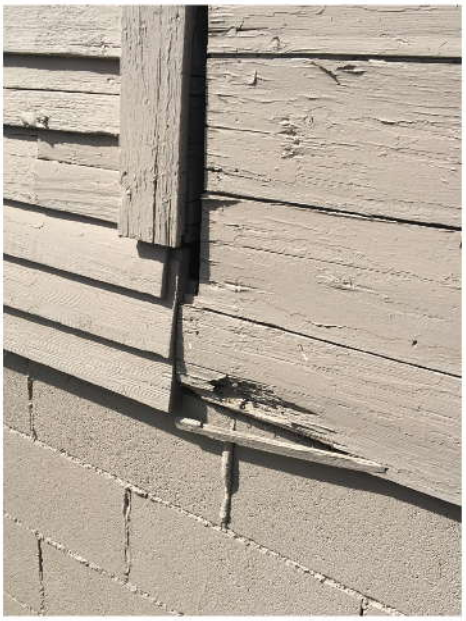
BUILDING SUMMARY										
CLASSIFICATION:	GROUP A2 – ASSEMBLY									
STREETS:	2 STREETS									
BUILDING HEIGHT:	1 STOREY									
FLOOR AREAS:	MAIN FLOOR (APPROX.)	800 SQ.FT.	74.3 SQ.M.							
	BASEMENT (APPROX.)	824 SQ FT	76.6 SQ.M.							
	TOTAL FLOOR AREA	1624 SQ.FT.	151 SQ.M.							
BUILDING AREA:	FOOTPRINT	800 SQ.FT.	76.6 SQ.M.							
CONSTRUCTION										
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION									
	UNSPRINKLERED									
CODE SECTION										
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside									
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating									
3.1.17.1	Occupant Load	Main Floor	74 SQ.M.	0.75 sq.m /person		100 persons maximum				
		Basement	76.6 SQ.M.	0.75 sq.m./person		102 persons maximum				
						202 persons maximum				
3.2.1.4	A floor assembly over a basement shall be constructed as a fire separation having a fire resistance rating not less than 45 minutes.									
3.2.1.5	A basement in an unsprinklered building shall be subdivided into fire compartments not greater than 600 sq.m. with a fire separation having a 45 minute fire resistance rating.									
3.2.2.28	Group A2 – 1 storey, facing 2 streets									
	Maximum Building Area	500 sq.m.	1 storey							
3.2.3.1.-B	Spatial separations	West Elevation		Limiting Distance	16.5m	Approx.				
				Allowable % Unprotected Openings	100.00%					
		East Elevation		Limiting Distance	3m	Approx.				
				Wall Area	45 sq.m.	Approx.				
				Allowable % Unprotected Openings	19.00%					
				Actual % Unprotected Openings	0.00%					
3.2.4.1.	A fire alarm system is not required.									
3.2.5.2	Direct access from a street to the basement is required only if the basement is greater than 25m in length.									
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).									
3.2.7.3	Emergency lighting is required in public corridors, exits, access to exits in open floor areas and service rooms, and public washrooms serving more than one person at a time.									
3.3.1.3 (10)	No access to exit for patrons in an assembly occupancy shall pass through a kitchen, service space, or storage room.									
3.3.1.5	A single exit is permitted from all floors areas less than 150 sq.m. or less than the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.									
3.3.1.21	Janitor rooms require a fire separation with a 45 minute fire resistance rating.									
3.3.2.3	Non-fixed seating shall conform to the National Fire Code (Alberta Edition 2019)									
3.3.2.6	A public corridor serving as an access to exit in an assembly occupancy requires a fire separation with a 45 minute fire resistance rating.									
3.3.2.13	An unsprinklered library book storage room that is not normally accessible to the public shall be separated from the remainder of the building by a fire separation not less than 2 hours if it is greater than 250 sq.m.									

CODE REVIEW – CONTINUED

3.4.2.1	A single exit is permitted from all floors areas less than 150 sq.m. or less than the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.				
3.4.2.5	Maximum travel distance to an exit is 30m.				
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating				
3.4.5.1	Exit signs are required.				
3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.				
3.4.6.5 (1)	Handrails are required on both sides of a stair more than 1100mm wide.				
3.4.6.5 (12)	At least one handrail shall extend 300mm horizontally beyond the top & bottom of a stairway				
3.4.6.12	Exit doors shall open in the direction of exit travel.				
3.4.6.16	Panic hardware shall be installed on all exit doors.				
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.				
3.7.2.2 B	Water closets required	Calculated occupant load – 202 persons / 2 = 101 persons per sex			
		3 water closets – males	5 water closets – females		
		8 water closets total required			
		1 water closet provided			
		Posted occupanct load recommended	50 people max / 2 = 25 persons per sex		
		1 water closet – males	1 water closets – females		
		1 water closet provided			
3.8.2.1	Building is required to be barrier free design.				
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.				
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.				
3.8.2.7	Power door operators are required at the entrance and interior doors of a vestibule of a Group A – assembly occupancy building.				
3.8.2.8 (3)	At least one barrier free water closet shall be provided in the entrance storey.				
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.				
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.				

Mackin Hall

Mackin Hall



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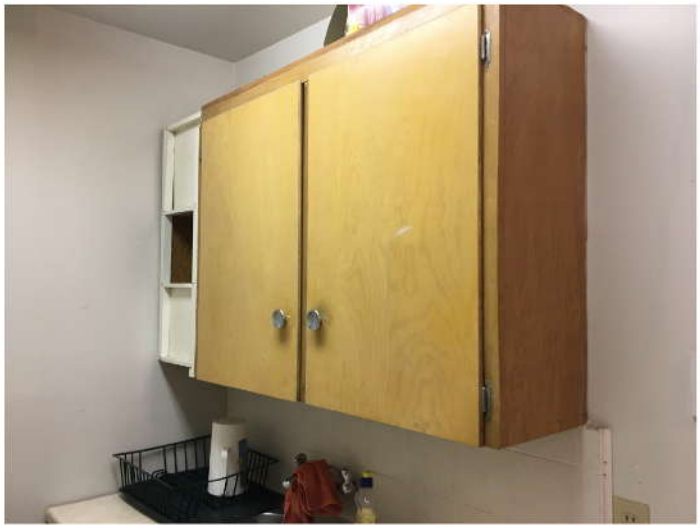

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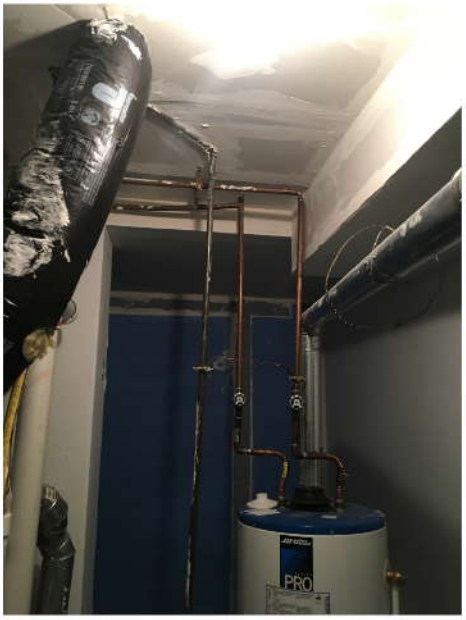

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
5115 2 STREET EAST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	2007	MUSEUM EXHIBIT HALL

OVERALL ISSUES:

PARK BENCH FINISHES

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X			
Walkways			X			
Site Grading			X			
Doorways			X		MINOR PAINT PEELING ON WOOD DOOR TRIM / OVERHEAD DOOR FLOOR SEAL INCOMPLETE LENGTH	
Wiindows				X		
Exterior Finishes			X			
Building Envelope			X			
Roof			X			
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous		X			PARK BENCHES – PAINT PEELING GENERALLY	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X		NO UNPROTECTED EXTERIOR OPENINGS / NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators	X				NO H/C OPERATORS	
Washrooms		X			ACCESSIBLE STALLS UNDERSIZED FOR 5' WHEELCHAIR TURNING RADIUS / MISSING GRAB BARS AT URINAL & ABOVE BACK OF TOILET	
Doorways			X			
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations			X			
Structural Fire Protection			X			
Exit Stairs			X			
Number of Exits			X			
Electrical			X			
Storage			X			
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room		X			UNSANITARY FLOOR DRAIN	
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Drywall			X		SOME MINOR DRYWALL CRACKING AT WALL TO CEILING SEAMS	
Miscellaneous					RUBBER BASE AT NORTH STORAGE ROOM SEPARATING FROM WALL / CAULKING JOINTS AT STAIR COMING UNDONE / WASHROOM SOAP DISPENSERS OPEN & LEAKING	

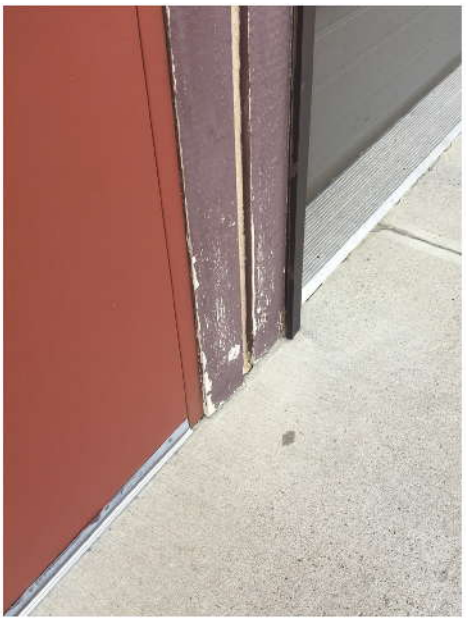
CODE REVIEW – MUSUEM EXHIBIT HALL

BUILDING SUMMARY					
CLASSIFICATION:	GROUP A2 – ASSEMBLY				
STREETS:	1 STREET				
BUILDING HEIGHT:	2 STOREYS				
FLOOR AREAS:	MAIN FLOOR	8000 SQ.FT.	743.2 SQ.M.		
	UPPER FLOOR	800 SQ.FT.	74.3 SQ.M.		
	MEZZANINE	553 SQ FT	51.4 SQ.M.		
	TOTAL FLOOR AREA	8553 SQ.FT.	868.9 SQ.M.		
BUILDING AREA:	FOOTPRINT	8000 SQ.FT.	743.2 SQ.M.		
CONSTRUCTION					
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION				
	UNSPRINKLERED				
CODE SECTION					
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside				
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating				
3.1.11.5	Horizontal concealed spaces within a roof assembly of combustible construction shall be compartmentalized into areas no greater than 600 sq.m. and no dimension greater than 60m.				
3.1.17.1	Occupant Load	Design Drawings (2007)	Posted Maximum Occupancy of 50 persons		
3.2.1.1 (3)	A mezzanine need not be considered a storey provided it does not exceed 40% of the open area of the room in which it is located, and has no partitions or dividing walls higher than 1070mm.				
3.2.2.25	Group A2 – 2 storey, facing 1 streets				
	Maximum Building Area	1000 sq.m.	1 storey		
	Combustible or Non Combustible Construction				
	Floor Assemblies to be fire separation with a 45 minute fire resistance rating				
	Mezzanines require a 45 minute fire resistance rating.				
	Roof Assemblies require a 45 min fire resistance rating.				
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be of non-combustible construction				
3.2.4.1.	A fire alarm system is not required.				
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).				
3.2.7.3	Emergency lighting is required in public corridors, exits, access to exits in open floor areas and service rooms, and public washrooms serving more than one person at a time.				
3.2.8.2 (1)(c)	A mezzanine need not terminate at a vertical fire separation if it is less 500 sq.m. and meets 3.2.1.1 (3).				
3.3.1.5	A single exit is permitted from all floors areas less than 150 sq.m. or less than the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.				
3.3.1.18	A guard not less than 1070mm high shall be provided at mezzanines where the difference in floor elevation is greater than 600mm.				
3.3.1.21	Janitor rooms require a fire separation with a 45 minute fire resistance rating.				
3.4.2.1	A single exit is permitted from all floors areas less than 150 sq.m. or less than the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.				
3.4.2.5	Maximum travel distance to an exit is 30m.				
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating				
3.4.5.1	Exit signs are not required.				

CODE REVIEW – CONTINUED

3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.			
3.4.6.5 (1)	Handrails are required on both sides of a stair more than 1100mm wide.			
3.4.6.5 (12)	At least one handrail shall extend 300mm horizontally beyond the top & bottom of a stairway			
3.4.6.12	Exit doors shall open in the direction of exit travel.			
3.4.6.16	Panic hardware shall be installed on all exit doors.			
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.			
3.6.4.4	An attic more than 600mm high shall be provided with access from the floor immediately below by a hatchway not less than 550mm X 900mm.			
3.7.2.2 B	Water closets required	Posted occupant load – 50 persons / 2 = 25 persons per sex		
		1 water closet – males	1 water closet – females	
		2 water closets total required		
		2 water closets provided		
3.8.2.1	Building is required to be barrier free design.			
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.			
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.			
3.8.2.7	Power door operators are required at the entrance and interior doors of a vestibule of a Group A – assembly occupancy building.			
3.8.2.8 (3)	At least one barrier free water closet shall be provided in the entrance storey.			
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.			
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.			

Museum Exhibit Hall



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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
5126 1st STREET WEST	NO

OVERALL STATE:	AGE	BUILDING DESCRIPTION
FAIR	UNKNOWN	MUSEUM LOG CABIN (HISTORICAL BUILDING)

OVERALL ISSUES:

EXTERIOR PAINT & WOOD SKIRT BOARD IN POOR CONDITION

UNEVEN PAVING STONES

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking				X		
Primary Entry		X				
Walkways		X				
Site Grading	X					
Doorways		X				
Wiindows		X				
Exterior Finishes	X				EXTERIOR WOOD IS SHOWING ITS AGE, BUT APPEARS TO BE FUNCTIONAL & ACCEPTABLY INTACT CONSIDERING IT PURPOSE	
Building Envelope		X				
Roof	X				ROOF IS SHOWING ITS AGE, BUT APPEARS TO BE FUNCTIONAL & ACCEPTABLY INTACT CONSIDERING IT PURPOSE	
Lighting / Electrical				X		
Mechanical				X		
Miscellaneous		X				
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X		

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X		
Washrooms				X		
Doorways		X				
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors				X		
Fire Separations				X		
Structural Fire Protection				X		
Exit Stairs				X		
Number of Exits				X		
Electrical				X		
Storage				X		
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure		X				
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room				X		
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Miscellaneous		X			HISTORICAL BUILDING IS GENERALLY IN ACCEPTABLE CONDITON CONSDERING ITS PURPOSE	

CODE REVIEW – MUSUEM LOG CABIN (HISTORICAL BUILDING)

BUILDING SUMMARY						
CLASSIFICATION:	GROUP A2					
STREETS:	1 STREETS					
BUILDING HEIGHT:	1 STOREY					
BUILDING AREA:	FOOTPRINT (APPROX.)	350 SQ.FT.	32.5 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.17.1	Occupant Load		32.5 SQ.M.	1.85 sq.m /person	17.5 persons maximum	
3.2.2.28	Group A2 – 1 storey, facing 1 street					
	Maximum Building Area	400 sq.m.	1 storey			
3.2.4.1.	A fire alarm system is not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in exits and access to exits in open floor areas.					
3.3.1.5	A single exit is permitted from all floors areas less than 150 sq.m. and less than the maximum travel distance of 15m.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.3.4	Every exit shall have a clear height of 2050mm.					
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating					
3.4.5.1	Exit signs are not required.					
3.8.2.1	Building is required to be barrier free design.					
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.					
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.					
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.					
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.					

Museum Log Cabin

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
5126 1st STREET WEST	NO

OVERALL STATE:	AGE	BUILDING DESCRIPTION
FAIR	1903	MUSEUM SCHOOLHOUSE (HISTORICAL BUILDING)

OVERALL ISSUES:

EXTERIOR PAINT & WOOD SKIRT BOARD IN POOR CONDITION

UNEVEN PAVING STONES

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking				X		
Primary Entry		X				
Walkways		X			UNEVEN PAVING STONES	
Site Grading	X				WOOD SKIRTING TO GRADE IS SUBJECT TO HEAVY MOISTURE DAMAGE (RECOMMEND GRAVEL MOW STRIP AROUND BUILDING)	X
Doorways		X				
Wiindows		X				
Exterior Finishes	X				EXTERIOR PAINT FINISHES GENERALLY PEELING	X
Building Envelope		X				
Roof	X					
Lighting / Electrical				X		
Mechanical				X		
Miscellaneous		X				
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X		

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X		
Washrooms				X		
Doorways		X				
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors				X		
Fire Separations				X		
Structural Fire Protection				X		
Exit Stairs				X		
Number of Exits				X		
Electrical				X		
Storage				X		
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure		X				
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room				X		
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Miscellaneous		X			HISTORICAL BUILDING IS GENERALLY IN ACCEPTABLE CONDITON CONSDERING ITS PURPOSE	

CODE REVIEW – MUSUEM SCHOOL HOUSE (HISTORICAL BUILDING)

BUILDING SUMMARY						
CLASSIFICATION:	GROUP A2 – ASSEMBLY					
STREETS:	1 STREETS					
BUILDING HEIGHT:	1 STOREY					
BUILDING AREA:	FOOTPRINT (APPROX.)	600 SQ.FT.	55.7 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.17.1	Occupant Load		55.7 SQ.M.	1.85 sq.m /person	30 persons maximum	
3.2.2.28	Group A2 – 1 storey, facing 1 street					
	Maximum Building Area	400 sq.m.	1 storey			
3.2.4.1.	A fire alarm system is not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in exits, access to exits in open floor areas.					
3.3.1.5	A single exit is permitted from all floors areas less than 150 sq.m. and less than the maximum travel distance of 15m.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.3.4	Every exit shall have a clear height of 2050mm.					
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating					
3.4.5.1	Exit signs are not required.					
3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.					
3.4.6.7	The maximum slope of a ramp shall be 1 in 10.					
3.4.6.12	Exit doors shall open in the direction of exit travel.					
3.4.6.16	Panic hardware shall be installed on all exit doors.					
3.6.2.1 (2)	A fuel-fired appliance that serves only one room is not required be separated from the remainder of the building.					
3.8.2.1	Building is required to be barrier free design.					
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.					
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.					
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.					
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.					

Museum School House

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
5126 1st STREET WEST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	1912	MUSEUM STATION BUILDING

OVERALL ISSUES:

EXTERIOR SANDSTONE CRACKING

WEST ROOF GABLE WOOD SHAKES IN POOR CONDITION (CRITICAL)

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X			
Walkways			X		UNEVEN PAVING STONES	
Site Grading			X			
Doorways			X			
Wiindows				X	EXTERIOR PAINT FINISHES GENERALLY PEELING	
Exterior Finishes			X		SANDSTONE CRACKING & SEPARATION AT SEVERAL LOCATIONS / WOOD SHAKES ON FRONT ROOF GABLE IN POOR CONDITION	X
Building Envelope			X		UNSEALED HOLES AT REAR (WEST) WALL IN STONE (POSSIBLE PREVIOUS SIGNAGE FASTENER LOCATIONS)	
Roof			X			
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous		X			SIGINIFICANT BIRD DROPPING ISSUES BELOW WOOD BRACKETS AT EAVES / RUSTY RAMP AT EXIT	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X			

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X	NO H/C OPERATORS	
Washrooms				X		
Doorways		X			STEP UP TO ENTRY DOORS TYPICAL OF HISTORICAL BUILDINGS	
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors				X		
Fire Separations				X		
Structural Fire Protection				X		
Exit Stairs		X			LOW HEADROOM ON BASEMENT STAIR	
Number of Exits			X			
Electrical			X		EXPOSED PHONE PANEL REQUIRES COVER	
Storage			X			
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Miscellaneous			X		MINOR PLASTER CRACKS ON UPPER FLOOR CEILING / ATTIC HATCH DOES NOT FIT OPENING	

CODE REVIEW – MUSUEM STATION BUILDING

BUILDING SUMMARY						
CLASSIFICATION:	GROUP A2 – ASSEMBLY					
STREETS:	2 STREETS					
BUILDING HEIGHT:	2 STOREYS					
FLOOR AREAS:	MAIN FLOOR (APPROX.)	3600 SQ.FT.	334.5 SQ.M.			
	UPPER FLOOR (APPROX.)	800 SQ.FT.	74.3 SQ.M.			
	BASEMENT	800 SQ FT	74.3 SQ.M.			
	TOTAL FLOOR AREA	5200 SQ.FT.	483 SQ.M.			
BUILDING AREA:	FOOTPRINT	3600 SQ.FT.	334.5 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside					
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating					
3.1.11.5	Horizontal concealed spaces within a roof assembly of combustible construction shall be compartmentalized into areas no greater than 600 sq.m. and no dimension greater than 60m.					
3.1.17.1	Occupant Load		483 SQ.M.	1.85 sq.m /person	261 persons maximum	
3.2.1.4	A floor assembly over a basement shall be constructed as a fire separation having a fire resistance rating not less than 45 minutes.					
3.2.2.28	Group A2 – 2 storey, facing 2 streets					
	Maximum Building Area	1000 sq.m.	2 storeys			
	Combustible or Non Combustible Construction					
	Floor Assemblies to be fire separation with a 45 minute fire resistance rating					
	Roof Assemblies require a 45 min fire resistance rating.					
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be of non-combustible construction					
3.2.4.1.	A fire alarm system is not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in public corridors, exits, access to exits in open floor areas and service rooms, and public washrooms serving more than one person at a time.					
3.3.1.5	A single exit is permitted from all floors areas less than 150 sq.m. or less than the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.					
3.3.1.18	A guard not less than 1070mm high shall be provided at raised floors where the difference in floor elevation is greater than 600mm.					
3.3.1.21	Rooms storing janitorial supplies require a fire separation with a 45 minute fire resistance rating.					
3.4.2.1	A single exit is permitted from all floors areas less than 150 sq.m. or less than the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.3.4	Every exit shall have a clear height of 2050mm, including exit stairways. (Measured vertically from a line tangent to the tread nosings.)					
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating					
3.4.4.2	No exit from a floor area above or below the first storey shall lead through a lobby.					
3.4.5.1	Exit signs are required.					

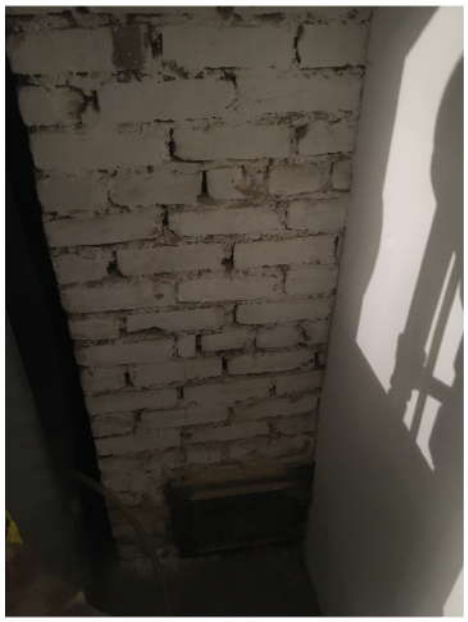
CODE REVIEW – CONTINUED

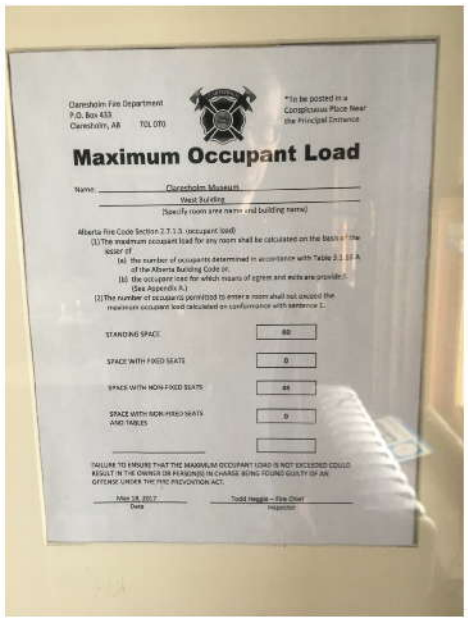
3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.			
3.4.6.5 (12)	At least one handrail shall extend 300mm horizontally beyond the top & bottom of a stairway			
3.4.6.7	The maximum slope of a ramp shall be 1 in 10.			
3.4.6.8	Maximum stair riser height of 180mm.			
3.4.6.12	Exit doors shall open in the direction of exit travel.			
3.4.6.16	Panic hardware shall be installed on all exit doors.			
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.			
3.6.4.4	An attic more than 600mm high shall be provided with access from the floor immediately below by a hatchway not less than 550mm X 900mm.			
3.7.2.2 B	Water closets required	Posted occupant load	105 people max / 2 = 52 persons per sex	
		2 water closets required – males	3 water closets required– females	
		5 water closets required total		
		2 water closets provided		
3.8.2.1	Building is required to be barrier free design.			
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.			
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.			
3.8.2.7	Power door operators are required at the entrance and interior doors of a vestibule of a Group A – assembly occupancy building.			
3.8.2.8 (3)	At least one barrier free water closet shall be provided in the entrance storey.			
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.			
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.			

Museum Station Building

Museum Station Building

Museum Station Building





Clarenholm Fire Department
P.O. Box 433
Clarenholm, AB T0L 0T0

*To be posted in a Conspicuous Place Near the Principal Entrance

Maximum Occupant Load

Name: Clarenholm Museum
West Building
(Specify room area name and building name)

Alberta Fire Code Section 2.7.1.3. Occupant load
(1) The maximum occupant load for any room shall be calculated on the basis of the lesser of
(a) the number of occupants determined in accordance with Table 3.1.17.A of the Alberta Building Code or,
(b) the occupant load for which means of egress and exits are provided.
(See Appendix A.)
(2) The number of occupants permitted to enter a room shall not exceed the maximum occupant load calculated in conformance with sentence 1.

STANDING SPACE	60
SPACE WITH FIXED SEATS	0
SPACE WITH NON-FIXED SEATS	44
SPACE WITH NON-FIXED SEATS AND TABLES	0

FAILURE TO ENSURE THAT THE MAXIMUM OCCUPANT LOAD IS NOT EXCEEDED COULD RESULT IN THE OWNER OR PERSON(S) IN CHARGE BEING FOUND GUILTY OF AN OFFENCE UNDER THE FIRE PREVENTION ACT.

Mar 18, 2017 — Date
Todd Heggie – Fire Chief — Inspector

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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
5009 2nd STREET EAST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
FAIR	1989	SENIORS DROP-IN CENTER

OVERALL ISSUES:

CRAWLSPACE WOOD COLUMN WATER DAMAGE

DOORS IN GENERALLY POOR CONDITION

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry	X				ENTRY DOOR FINISHES IN POOR CONDITION / EXTERIOR STUCCO BROKEN AROUND PRIMARY ENTRY EXPOSING WOOD FRAMING BEHIND	
Walkways			X			
Site Grading			X			
Doorways	X				ENTRY DOOR FINISHES IN POOR CONDITION / EXIT DOOR FACE DELAMINATING / POOL HALL NORTHEAST EXTERIOR DOOR HAS MAKESHIFT MODIFICATIONS & NON-CONTINOUS WEATHERSTRIPPING – RECOMMEND FULL DOOR REPLACEMENT	
Windows		X			SOME OPENERS IN LOUNGE LEFT OF MAIN ENTRY ARE NOT OPERABLE / WINDOW COVERING CHAIN BROKEN ON WEST WINDOWS / SOME OPERABLE WINDOW FRAMES REQUIRE REFINISHING ON INTERIOR OF OPENING FRAME	
Exterior Finishes		X			WOOD CORNER TRIM SEPARATING / WOOD VENT COVERS IN POOR CONDITION & DIRTY GENERALLY / RAINWATER LEADERS IN POOR CONDITION & SHOULD BE DIRECTED AWAY FROM BUILDING / STUCCO CRACKING NEAR FOUNDATION	
Building Envelope				X	STUCCO BROKEN NEAR ENTRY DOORS EXPOSING WOOD FRAMING BEHIND	X
Roof			X			
Lighting / Electrical				X	EXTERIOR LIGHT FIXTURE IN POOR CONDITION	
Mechanical			X			
Miscellaneous				X	EXTERIOR WOOD BENCHES NEAR PRIMARY ENTRY ARE UNSTABLE & IN AN UNSAFE CONDITION – RECOMMEND REPLACEMENT	
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X		NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators	X				NO H/C OPERATORS	
Washrooms		X			ACCESSIBLE STALL DOORS ARE IN-SWING RATHER THAN PREFERRED OUTSWING / URINAL ONLY HAS SINGLE GRAB (CODE IS ONE EACH SIDE) / LOW TOP OF MIRROR HEIGHT / MISSING GRAB BAR ABOVE BACK OF TOILETS	
Doorways			X			
Path of Travel			X			
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors		X			STORAGE ROOMS DOORS NOT FIRE RATED	
Fire Separations			X			
Structural Fire Protection			X			
Exit Stairs				X		
Number of Exits			X			
Electrical			X		KITCHEN OUTLETS NOT GFI / WASHROOM LIGHT COVER MISSING & SOME REPLACEMENT BULBS REQUIRED	
Storage		X			STORAGE ROOMS DOORS NOT FIRE RATED	
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Foundation		X			APPROXIMATELY 40-50% OF WOOD COLUMNS IN CRAWLSPACE HAVE WATER DAMAGE NEAR BASE / COLUMN NEAREST ACCESS HATCH HAS SIGNIFICANT DAMAGE & MAKESHIFT REPAIR	X
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room		X			DOOR DOES NOT LATCH	
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Doorways					MECHANICAL ROOM DOOR DOES NOT LATCH / KITCHEN DOOR JAMB INSECURE	
Miscellaneous					FLOOR MAT DUCT TAPED TO FLOOR AT PERIMETER	

CODE REVIEW – SENIOR'S DROP IN CENTER

BUILDING SUMMARY						
CLASSIFICATION:	GROUP A2 – ASSEMBLY					
STREETS:	3 STREETS					
BUILDING HEIGHT:	1 STOREY					
FLOOR AREAS:	MAIN FLOOR (APPROX.)	5504 SQ.FT.	511.3 SQ.M.			
BUILDING AREA:	FOOTPRINT	5504 SQ.FT.	511.3 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside					
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating					
3.1.11.5	Horizontal concealed spaces within a roof assembly of combustible construction shall be compartmentalized into areas no greater than 600 sq.m. and no dimension greater than 60m.					
3.1.17.1	Occupant Load	Main Floor	511 SQ.M.	0.95 sq.m /person	537 persons maximum	
3.2.2.9 (2)	A floor assembly immediately above a crawlspace is not required to be constructed as a fire separation, nor have a fire resistance rating.					
3.2.2.28	Group A2 – 1 storey, facing 3 streets					
	Maximum Building Area	600 sq.m.	1 storey			
3.2.4.1.	A fire alarm system is required.					
3.2.4.10	Fire detectors are required in unsprinklered buildings protected by a fire alarm system in storage rooms over 1 sq.m., service rooms, and janitor rooms.					
3.2.4.16	Fire alarm manual pull stations are required at every principal entrance and exit.					
3.2.4.19	Fire alarm visual signals are required in assembly occupancy floor areas where the public may congregate, and public corridors, and washrooms.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in public corridors, exits, access to exits in open floor areas and service rooms, and public washrooms serving more than one person at a time.					
3.3.1.5	A minimum of 2 exits is required from all floor areas greater than 150 sq.m. or exceeding the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.					
3.3.1.21	Janitor rooms require a fire separation with a 45 minute fire resistance rating.					
3.3.2.3	Non-fixed seating shall conform to the National Fire Code (Alberta Edition 2019)					
3.3.2.6	A public corridor serving as an access to exit in an assembly occupancy requires a fire separation with a 45 minute fire resistance rating.					
3.4.1.6	Horizontal exits shall not comprise more than 50% of the required number of exits from any floor area.					
3.4.2.1	A minimum of 2 exits is required from all floor areas greater than 150 sq.m. or exceeding the maximum travel distance of 15m. If a single exit is provided, the maximum occupant load is 60 persons.					
3.4.2.5	Maximum travel distance to an exit is 30m.					
3.4.4.1	Exits shall be separated from the remainder of the building by a fire separation having a 45 minute fire resistance rating					
3.4.5.1	Exit signs are required.					

CODE REVIEW – CONTINUED

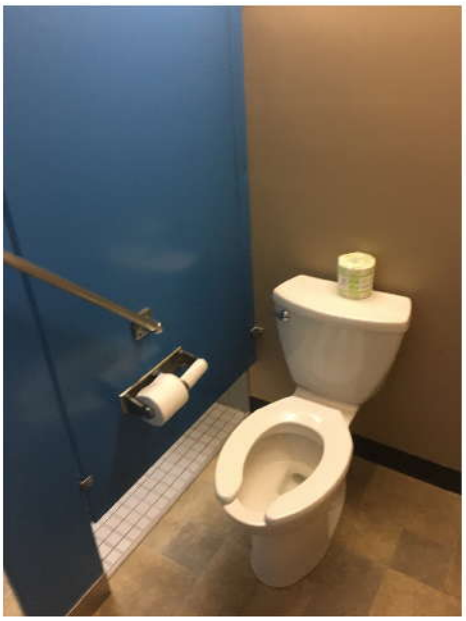
3.4.6.12	Exit doors shall open in the direction of exit travel.			
3.4.6.16	Panic hardware shall be installed on all exit doors.			
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.			
3.6.4.4	An attic more than 600mm high shall be provided with access from the floor immediately below by a hatchway not less than 550mm X 900mm.			
3.6.4.6	A crawlspace shall be provided with access from the floor immediately below by a hatchway not less than 550mm X 900mm.			
3.7.2.2 B	Water closets required	Calculated occupant load – 537 persons / 2 = 268 persons per sex		
		5 water closets required – males	10 water closets required– females	
		15 water closets total required		
		6 water closet provided		
		Posted occupant load recommended	200 people max / 2 = 100 persons per sex	
		2 water closets required – males	4 water closets required– females	
		6 water closets provided		
3.8.2.1	Building is required to be barrier free design.			
3.8.2.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.			
3.8.2.4 (5)	Barrier free access is required only to the entrance storey of the building.			
3.8.2.7	Power door operators are required at the entrance and interior doors of a vestibule of a Group A – assembly occupancy building.			
3.8.2.8 (3)	At least one barrier free water closet shall be provided in the entrance storey.			
3.8.3.3	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.			
3.8.3.9	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.			

Seniors Drop-In Center

Seniors Drop-In Center

Seniors Drop-In Center

Seniors Drop-In Center



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SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
424 – 41 Avenue East	

OVERALL STATE:	AGE	BUILDING DESCRIPTION
FAIR	1979	TOWN SHOP

OVERALL ISSUES:

EXTERIOR PAINT FLAKING FROM CONCRETE BLOCK & FASCIAS

SITE GRADING

EXTERIOR METAL DAMAGE

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X			
Walkways				X		
Site Grading	X				NEGATIVE SITE GRADING TO TOP OF FOUNDATION / INSUFFICIENT CLEARANCE TO SUPERSTRUCTURE	X
Doorways		X			OVERHEAD DOOR SEALS DAMAGE / OVERHEAD DOOR FLASHING DAMAGE	
Wiindows			X			
Exterior Finishes		X			EXTERIOR PAINT FLAKING FROM CONCRETE BLOCK & FASCIAS	
Building Envelope			X			
Roof				X	ROOF WAS NOT ACCESSED DURING SITE VISIT	
Lighting / Electrical					OVERHEAD ELECTRICAL CONNECTION IN FAIR CONDITION – RECOMMEND PROFESSIONAL EVALUATION / ELECTRICAL OUTLETS MISSING WEATHER PROOFING	
Mechanical		X				
Miscellaneous		X				
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings			X			
Miscellaneous				X		

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X		
Washrooms				X	GENERALLY IN ACCEPTABLE CONDITION BUT DATED	
Doorways				X		
Path of Travel				X		
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors		X			MAN DOOR TO LOADING DOCK/CHEMICAL STORAGE ROOM REQUIRES 45 MINUTE FIRE RATING / OPENING BLOCKED BY SHELVING	
Fire Separations		X			MECHANICAL ROOM DRYWALL PAPER EXPOSED	
Structural Fire Protection				X		
Exit Stairs	X				MEZZANINE STAIR NOT SECURELY FASTENED IN PLACE / MEZZANINE HANDRAIL NOT SECURE & IMPROPER HEIGHT	X
Number of Exits			X			
Electrical	X					
Storage				X		
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure	X				2 TON CAPACITY CHAIN HOIST SECURED ON BOTTOM CHORD OF WOOD/METAL WEB ROOF TRUSSES / OTHERWISE IN GOOD CONDITION	X
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X		AIR GRILLES ARE UNSANITARY – RECOMMEND REPLACEMENT	
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Shop			X		PERIMETER INSULATION AT ROOF TRUSSES MISSING IN SEVERAL LOCATIONS	
Washroom	X				WOOD MILLWORK INSTALLED IN WET SHOWER SPACE	

CODE REVIEW – TOWN SHOP

BUILDING SUMMARY						
CLASSIFICATION:	GROUP F2 – WORKSHOPS					
STREETS:	3 STREETS					
BUILDING HEIGHT:	1 STOREY					
FLOOR AREAS:	MAIN FLOOR	8240 SQ.FT.	765 SQ.M.			
	MEZZANINE	475 SQ.FT.	44 SQ.M.			
	TOTAL FLOOR AREA	8715 SQ.FT.	809 SQ.M.			
BUILDING AREA:	FOOTPRINT	8240 SQ.FT.	765 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	COMBUSTIBLE & NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside					
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating					
3.1.17.1	Occupant Load		765 SQ.M.	46 sq.m /person	16 persons maximum	
3.2.1.1 (3)	A mezzanine need not be considered a storey provided it does not exceed 40% of the open area of the room in which it is located, and has no partitions or dividing walls higher than 1070mm.					
3.2.2.78	Group F2 – up to 2 storeys, facing 3 streets					
	Maximum Building Area	1500 sq.m.				
	Floor Assemblies to be fire separation, and if combustible construction shall have a 45 minute fire resistance rating					
	Loadbearing walls & columns shall have a 45 minute fire resistance rating, or be non-combustible					
3.2.4.1.	A fire alarm is not required.					
3.2.4.10	Fire detectors are not required.					
3.2.4.11	Smoke detectors are not required.					
3.2.4.20	Smoke alarms are not required.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in exits, access to exits in open floor areas and service rooms.					
3.2.8.2 (1)(c)	A mezzanine need not terminate at a vertical fire separation if it is less 500 sq.m. and meets 3.2.1.1 (3).					
3.3.1.2	The storage, handling and use of hazardous substances shall be in conformance with the National Fire Code (Alberta Edition 2019)					
3.3.1.5	A minimum of 2 exits is required from all floors areas greater than 150 sq.m. or exceeding the maximum travel distance of 15m.					
3.3.1.21	A room or space within a floor area used the storage of janitorial supplies shall be separated from the remainder of the building by a fire separation with a 45 minute fire resistance rating.					
3.3.5.4	A garage shall be provided with natural or mechanical ventilation to prevent excessive accumulation of carbon monoxide, exhaust fumes, or flammable and toxic vapours.					
3.3.6.2 (1) (2)	Solid and liquid dangerous goods classified as oxidizers or organic peroxides, and reactive materials, shall be separated from the remainder of the building by a fire separation having a fire resistance rating of 2 hours.					
3.3.6.2 (4)	Where wiring or electrical equipment is located in areas in which flammable gases or vapours are present in quanitities sufficient to create a hazard, such wiring and electrical equipment shall conform to the Electrical Code Regulation made pursuant to the Safety Codes Act.					
3.3.6.7	Floors in areas where dangerous goods are stored shall be constructed of impermeable materials to prevent absorption of chemicals.					

CODE REVIEW – CONTINUED

3.4.2.5	Maximum travel distance to an exit is 30m.				
3.4.5.1	Exit signs are not required.				
3.4.6.12	Exit doors shall open in the direction of exit travel.				
3.4.6.16	Panic hardware shall be installed on all exit doors.				
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.				
3.7.2.2 B	Water closets required	16 persons / 2 = 8 persons per sex			
		1 water closets – males		1 water closets – females	
		2 water closets total required			
		2 water closets provided			
3.8.1.1	Building is required to be barrier free design.				
3.8.1.2	Not less than 50% of pedestrian entrances including the primary entrance, walkways leading to entrances from on-site parking areas, shall be barrier free.				
3.8.2.3	At least one barrier free water closet shall be provided in the entrance storey.				
3.8.3.1	Signs indicating the international symbol of accessibility shall installed at barrier free entrances, washrooms, and parking spaces.				
3.8.3.2	Exterior walks shall be not less than 1100mm wide, have a cross slope not more than 1:50, and have a curb height not more than 75mm.				

Town Shop

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

SUMMARY OF THE RESULTS AND RECOMMENDATIONS FROM THE BUILDING CODE REVIEW FOR TOWN OF CLARESHOLM, ALBERTA – MAY 2020

ADDRESS	OCCUPIED
3700 – 8TH STREET WEST	YES

OVERALL STATE:	AGE	BUILDING DESCRIPTION
GOOD	2010	WATER TREATMENT PLANT

OVERALL ISSUES:

WATER PENETRATION THROUGH CONCRETE FLOOR SLAB

GENERALLY GOOD CONDITION

EXTERIOR

GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Parking			X			
Primary Entry			X			
Walkways			X			
Site Grading			X			
Doorways			X			
Windows			X			
Exterior Finishes			X			
Building Envelope			X		WATER PENETRATION THROUGH CONCRETE FLOOR SLAB	
Roof			X			
Lighting / Electrical			X			
Mechanical			X			
Miscellaneous				X		
SPATIAL SEPARATION	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Unprotected Openings				X	NO NEARBY BUILDINGS TO RESTRICT BUILDING ENVELOPE	

INTERIOR

ACCESSIBILITY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
H/C Operators				X	NOT REQUIRED	
Washrooms		X			REQUIRED NUMBER OF WATERCLOSETS NOT PROVIDED.	
Doorways				X		
Path of Travel				X		
FIRE SAFETY	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Rated Doors			X			
Fire Separations			X			
Structural Fire Protection			X			
Exit Stairs			X			
Number of Exits			X			
Electrical			X			
Storage				X		
STRUCTURES	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Roof Structure			X			
MECHANICAL	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Mechanical Room			X			
GENERAL CONDITIONS	POOR	FAIR	GOOD	N/A	DESCRIPTION / CONCERNS	CRITICAL
Floor Slab			X		WATER PENETRATION THROUGH CONCRETE FLOOR SLAB	

CODE REVIEW – WATER TREATMENT PLANT

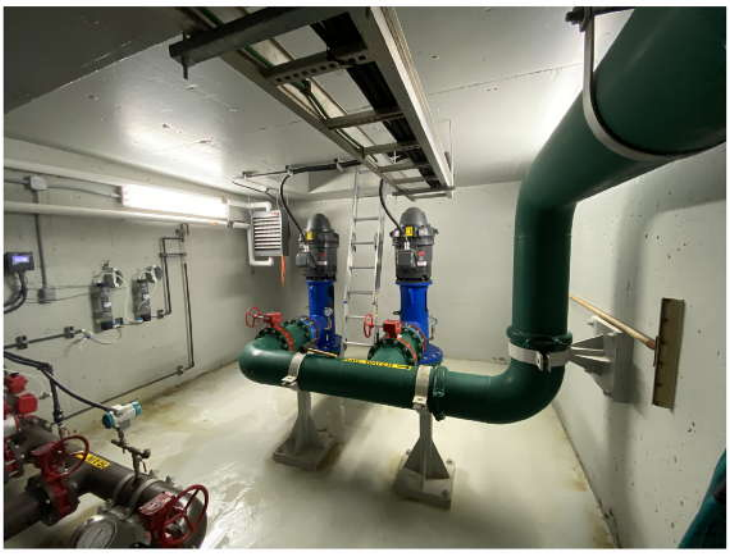
BUILDING SUMMARY						
CLASSIFICATION:	GROUP F3 – LOW HAZARD INDUSTRIAL					
STREETS:	2 STREETS					
BUILDING HEIGHT:	2 STOREYS					
FLOOR AREAS:	MAIN FLOOR (APPROX.)	7200 SQ.FT.	668.9 SQ.M.			
BUILDING AREA:	FOOTPRINT	7200 SQ.FT.	668.9 SQ.M.			
CONSTRUCTION						
CONSTRUCTION TYPE:	NON-COMBUSTIBLE CONSTRUCTION					
	UNSPRINKLERED					
CODE SECTION						
3.1.7.3	Floor, roof, & ceiling assemblies shall be rated for exposure to fire on the underside					
3.1.8.12	A 20 minute closure is permitted in a fire separation with a 45 minute fire resistance rating					
3.1.9.5	Combustible water distribution piping is permitted to penetrate a fire separation that is required to have a fire resistance rating provided the piping is protected at the penetration with a fire stop that has an F rating, and is not in a vertical service space.					
3.1.17.1	Occupant Load	Main Floor	668.9 SQ.M.	46 sq.m /person	14 persons maximum	
3.2.1.1 (3)	A mezzanine need not be considered a storey provided it does not exceed 40% of the open area of the room in which it is located, and has no partitions or dividing walls higher than 1070mm.					
3.2.1.1 (6)	Platforms intended solely for periodic inspection and elevated maintenance catwalks need not be considered as floor assemblies or mezzanines for the purpose of calculating building height, provided they are constructed of non combustible materials and are not used for storage.					
3.2.1.1.(8)	A service space in which facilities are included to permit a person to enter and undertake maintenance and other operations pertaining to building services from within the service space need not be considered a storey if its flooring is catwalk flooring, has emergency lighting, includes signage indicating directions to egress points, has 2 points of egress if it is over 200 sq.m. in area, the maximum travel distance is 50m, and it does not open directly onto an exit.					
3.2.1.4	A floor assembly immediately over a basement shall be constructed as a fire separation with a minimum 45 minute fire resistance rating.					
3.2.2.85	Group F3 – 2 storeys, facing 2 streets					
	Maximum Building Area	1000 SQ.M.	2 storey			
	Non Combustible Construction					
3.2.4.1.	A fire alarm system is not required.					
3.2.5.1	Direct access from the outdoors to above grade storeys is required in an unsprinklered building by at least one unobstructed access panel or window for each 15m of wall required to face a street.					
3.2.5.16	Fire extinguishers to be provided & installed in conformance with National Fire Code (Alberta Edition 2019).					
3.2.7.3	Emergency lighting is required in exits, access to exits in open floor areas and service rooms.					
3.2.7.5	An emergency electrical power supply system shall be installed in conformance with CSA C282 'Emergency Electrical Power Supply for Buildings.'					
3.2.8.2 (1)(c)	A mezzanine need not terminate at a vertical fire separation if it is less 500 sq.m. and meets 3.2.1.1 (3).					
3.3.1.5	A minimum of 2 exits is required from all floors areas greater than 200 sq.m. or exceeding the maximum travel distance of 15m.					
3.3.1.21	Janitor rooms require a fire separation with a 45 minute fire resistance rating.					
3.3.6.4.	Fire separations for rooms where flammable and combustible liquids are stored are required to be constructed with a fire resistance rating in conformance with the National Fire Code (Alberta Edition)					
3.4.1.6	Horizontal exits shall not comprise more than 50% of the required number of exits from any floor area.					

CODE REVIEW – CONTINUED

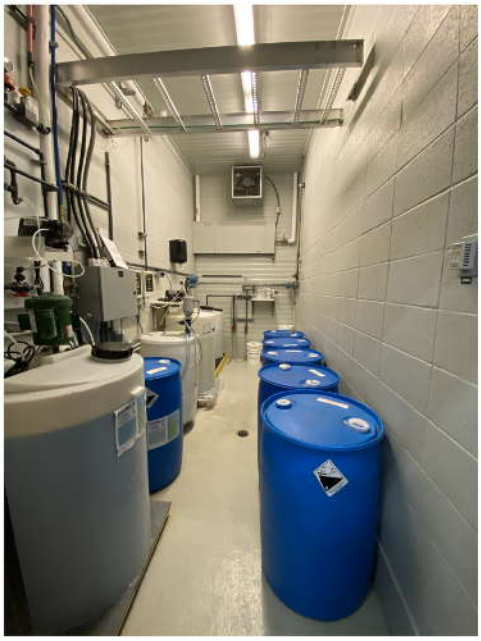
3.4.2.1	A minimum of 2 exits is required from all floors areas greater than 200 sq.m. or exceeding the maximum travel distance of 15m.			
3.4.2.2	A mezzanine shall be served by means of egress leading to exits at the mezzanine level on the same basis as floor areas.			
3.4.2.5	Maximum travel distance to an exit is 30m.			
3.4.5.1	Exit signs are not required.			
3.4.6.4	Stair landings shall be as wide and as long as the width of the stairway in which it occurs.			
3.4.6.5 (1)	Handrails are required on both sides of a stair more than 1100mm wide.			
3.4.6.12	Exit doors shall open in the direction of exit travel.			
3.4.6.16	Panic hardware shall be installed on all exit doors.			
3.6.2.1	Service rooms containing fuel-fired appliances shall be separated from the remainder of the building by a fire separation with a 1 hour fire resistance rating.			
3.6.2.8	Where a generator intended to supply emergency power for lighting, fire safety, and life safety systems is located in a building, it shall be located in a room that is separated from the remainder of the building by a fire separation having a fire resistance rating not less than 2 hours, and contains only the generating set, and equipment related to the emergency power supply system.			
3.7.2.2 B	Water closets required	Calculated occupant load – 14 persons / 2 = 7 persons per sex		
		1 water closet required – males	1 water closet required – females	
		2 water closets total required		
		1 water closet provided		
3.8.2.1	Building is not required to be barrier free design.			

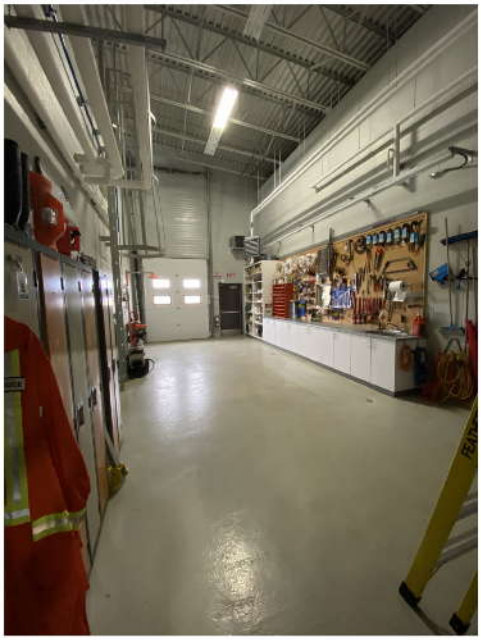
Water Treatment Plant

Water Treatment Plant



Water Treatment Plant





Water Treatment Plant