Memorandum

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To:	**The Town of Okotoks**	Date:	**May 14, 2026**
Attention:	**Richard Boonstra, P. Eng.**	Project No.:	**29049**
Cc:	**James Cameron, P. Eng., Dan Kutzner, CET**		
Reference:	**South Okotoks Sanitary Master Plan Update – Final**		
From:	**Jeremy Shinbine, P. Eng., Sarah Barbosa, P. Eng., ENV SP**		

1.0 Introduction

1.1 Objective

ISL Engineering and Land Services Ltd. (ISL) was retained by the Town of Okotoks (the Town) to prepare an update to the Sanitary Master Plan (SMP) for the southern half of the Town. The scope of work includes updating the MIKE URBAN model, reviewing and revising servicing concepts based on the latest Growth Strategy and Structure Plans, preparing staging plans for system upgrades and expansions, and updating the required sanitary infrastructure cost estimates.

1.2 Background

In 2016, ISL completed the SMP for the Town. In 2020, ISL was retained to make an amendment/update to the plan based on the Town's updated growth objectives. Staging plans were prepared for existing system upgrades in conjunction with future system expansion, and servicing concepts were provided for the 5-year, 10-year, 25-year, and ultimate servicing horizons. In 2024, ISL provided an update to the SMP for the northern half of Okotoks which included detailed modelling, infrastructure assessments, and recommendations for future development and system optimization.

The list of relevant background documents are summarized below:

- Sanitary Servicing Master Plan Update, ISL Engineering and Land Services Ltd. (July 2016)
- Okotoks Sanitary Servicing Master Plan Update Memorandum, ISL Engineering and Land Services Ltd. (February 2020)
- Tillotson Development – Sanitary System Assessment Technical Memorandum (Draft), ISL Engineering and Land Services Ltd. (July 2022)
- Tillotson Neighbourhood Area Structure Plan (ASP) Servicing Study, Jubilee Engineering (November 2022)
- Okotoks Sanitary Servicing Study Update, ISL Engineering and Land Services Ltd. (April 2024)
- Sanitary Master Plan Amendment (South Railway Street), ISL Engineering and Land Services Ltd. (September 2024)
- Servicing Strategy Brief – 2025 Update, ISL Engineering and Land Services Ltd. (November 2025)

Relevant upgrading recommendations from previous studies that are currently being installed are summarized below:

- The existing 450 mm and 525 mm sewers along North Railway Street from east of the railway to Fisher Gate are to be replaced with a 1,050 mm sewer.
- The existing 450 mm along Fisher Gate south of North Railway Street is to be upsized with a 1,050 mm sewer.
- The existing 900 mm sewer upstream of the wastewater treatment plant (WWTP) is to be twinned with an additional 900 mm sewer in the future but is not currently being installed.

1.3 Study Area

The study area is shown in **Figure 1.1**, and the southern growth area is identified in the red border.

1.4 Topography

Existing topography is shown on **Figure 1.2**. The Town is bisected by the Sheep River, which drains from the northwest to southeast. Land north of the river generally drains south, while land to the south generally drains north. The topography ranges from 1,165 m near the Foothills Country Hospice Society to 1,032 m at the Sheep River on the east boundary of the Town.

2.0 Updated Growth Plan

The updated growth plan for the Town of Okotoks is summarized in **Table 2.1** which shows the incremental increase in populations and employment. Current data shows that the existing population is approximately 30,370 c with an employment population of 12,790 c. **Figure 2.1** shows the prominent land use, noting that some sewersheds consist of both residential and non-residential development. **Figures 2.2** through **2.5** show the total growth (population and employment) for each stage of future development. This growth plan reflects the most up-to-date population and employment forecasts provided by the Town from the Okotoks Growth Strategy (Town of Okotoks, 2025).

Table 2.1 Growth Plan for South Okotoks

Sewershed	Gross Developable Residential Area	Gross Developable Non-Residential Area	Population Increase				Employment Increase			
			5-Year (2031)	10-Year (2036)	25-Year (2051)	Ultimate	5-Year (2031)	10-Year (2036)	25-Year (2051)	Ultimate
	ha	ha	c	c	c	c	c	c	c	c
S-2a	34.40	2.00	-	767	2,371	2,371	-	34	104	104
S-2b	20.60	4.00	-	209	1,387	1,387	-	127	178	178
S-2c	28.50	-	-	-	1,721	1,721	-	-	212	212
S-3	-	52.74	-	-	-	-	-	-	1,392	5,233
S-4	20.25	-	-	-	-	461	-	-	-	20
S-4-1	26.64	-	-	-	-	-	-	-	-	-
S-6	32.20	2.20	-	-	303	2,927	-	-	13	128
S-6F	4.40	-	-	-	-	-	-	-	-	-
S-7		52.20	-	-	-	-	-	-	1,007	6,206
S-8	-	50.31	-	-	-	-	-	-	-	5,986
S-9	-	45.36	-	-	-	-	-	-	-	5,914
S-11	45.45	-	-	-	-	4,302	-	-	-	188
S-11-1	6.12	-	-	-	-	-	-	-	-	-
S-12a	17.60	1.00	-	-	25	1,138	-	-	1	50
S-12b	52.30	3.00	-	-	194	3,554	-	-	8	155
S-13	72.50	3.60	-	-	522	4,979	-	-	23	218
S-14	57.10	3.30	-	-	-	4,189	-	-	-	183
Southbank Business Park	-	65.40	-	-	-	-	2,127	2,958	6,251	7,312
Totals	**418.06**	**285.11**	**-**	**976**	**6,523**	**27,029**	**2,127**	**3,119**	**9,189**	**32,087**

3.0 Existing Sanitary Sewer System

The existing sanitary sewer system is shown on **Figures 3.1**, **3.2**, and **3.3** for the pipe diameter, material, and pipe installation period, respectively. The southern half of the Town is serviced by sewer mains ranging from 150 mm to 525 mm in size. There are two existing syphons that cross Sheep River:

- A 350 mm HDPE syphon at Woodbend Way that was constructed in 2014. This syphon connects to a 525 mm gravity sewer heading eastwards along North Railway Street, to twinned 450 mm and 525 mm sewers heading south along Fisher Gate to the existing WWTP.
- A 375 mm PVC syphon at Cimarron Estates Manor and Cimarron Estates Drive that was constructed in 2005. This syphon connects directly to the WWTP.

There are three lift stations south of Sheep River, whose information is summarized in **Tables 3.1** and **3.2**. Pump curves for the lift stations are summarized in **Figures 3.4** through **3.6**.

Table 3.1 South Okotoks Lift Station and Forcemain Parameters and Capacities

Lift Station	Wet Well Area	Forcemain Type	Forcemain Length	Forcemain Capacity[1]
	m^2		m	L/s
Sheep River	4.68	150 mm PVC	346	53.0
Southbank	7.16	200 mm PVC	968	94.2
Westmount	4.68	150 mm HDPE	483	53.0

[1] Forcemain capacity determined based on a velocity of 3.0 m/s.

Table 3.2 South Okotoks Pump Parameters and Wet Well Level Control Settings

Lift Station	Pump Number	Pump Model	Pump Start Elevation	Pump Stop Elevation
			m	m
Sheep River	1	Flygt CP 3140.180	1056.62	1056.23
	2	Sulzer XFP.100.E	1056.62	1056.23
	3 (Spare)	Flygt CP 3140.180	-	-
Southbank	1	Flygt 3102.180 MT	1037.05	1036.05
	2	Flygt 3102.180 MT	1037.05	1036.05
	3 (Spare)	Sulzer XFP100C	-	-
Westmount	1	Flygt NP.3153.181.HT	1060.55	1059.55
	2	Flygt NP.3153.181.HT	1061.15	1059.55
	3 (Spare)	Unknown	-	-

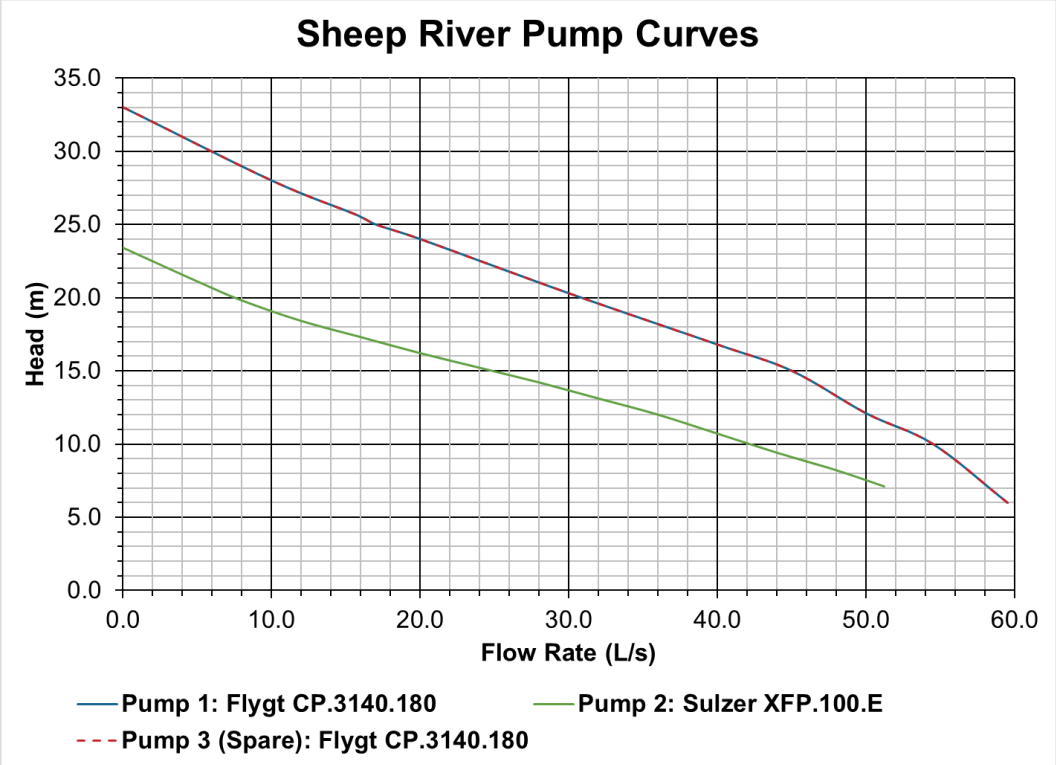

Figure 3.4 Sheep River Pump Curves

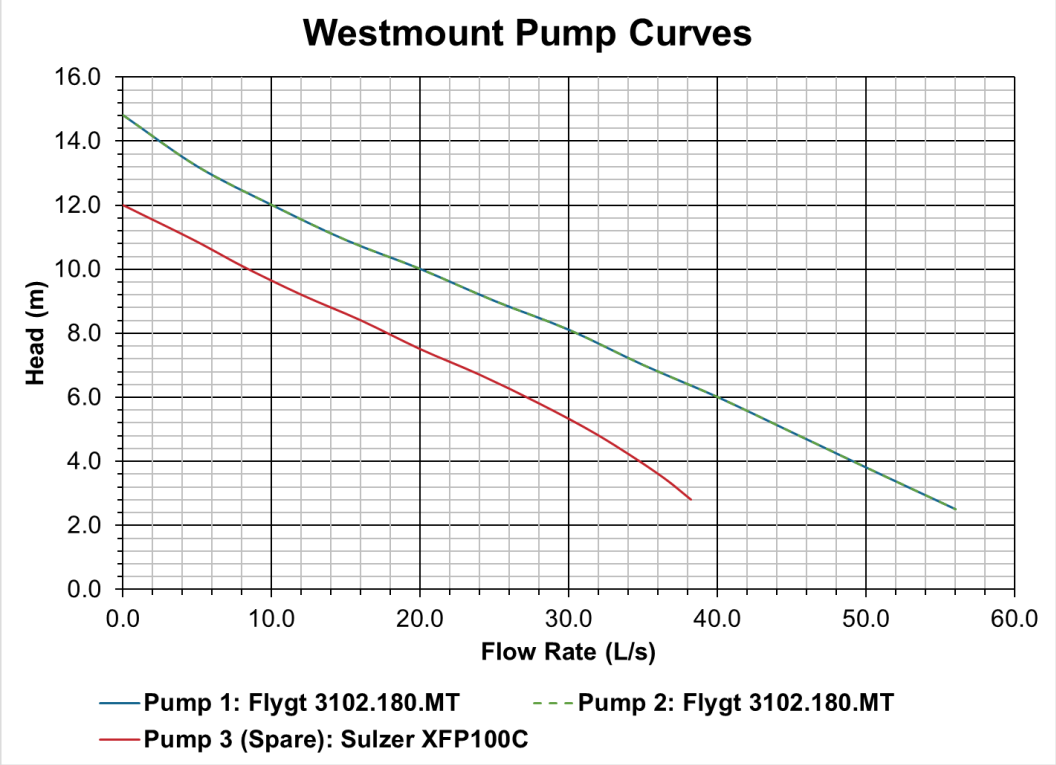

Figure 3.5 Westmount Pump Curves

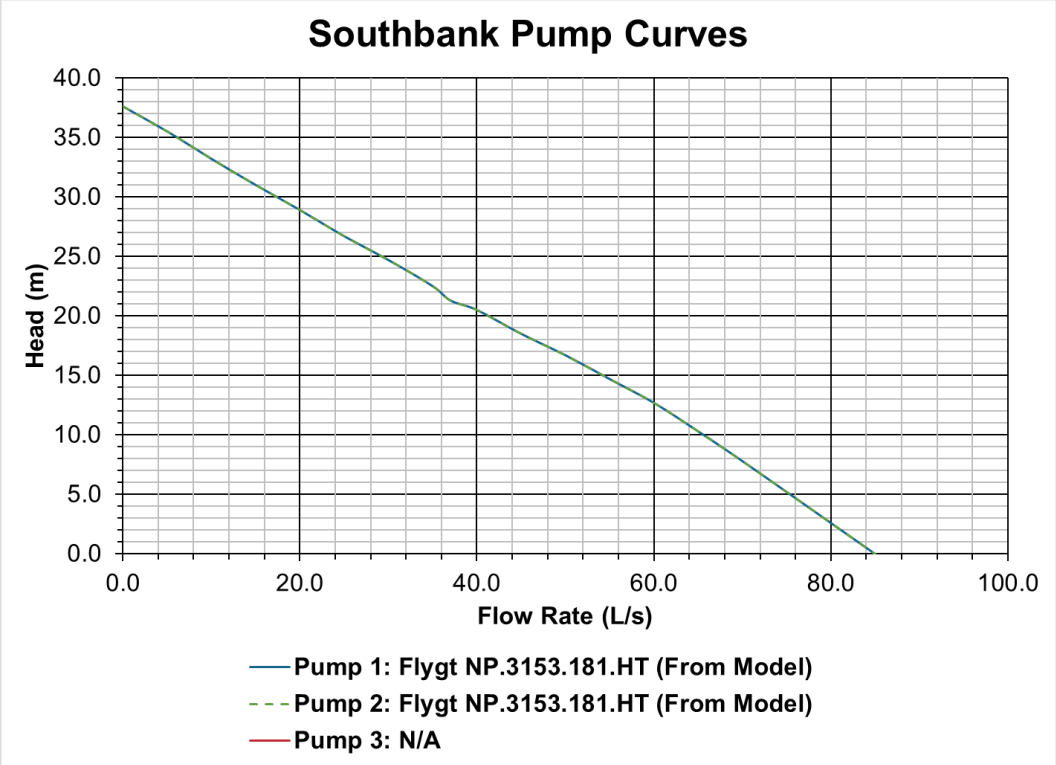

Figure 3.6 Southbank Pump Curves

4.0 Modelling Approach

4.1 Model Updates

The hydrodynamic MIKE URBAN model was constructed and calibrated for the SMP and updated in 2020. It was updated most recently in 2026 to reflect the most recent condition of the sanitary system. The update consisted of incorporating new pipes and manholes that have come online since the previous studies. The sanitary sewer system modelled for this study is illustrated on **Figure 3.1**. The model was updated to include new development in south Okotoks since 2024, including new sewers within the actively developing Tillotson development.

4.2 Level of Service

A single level of service (LOS) was applied for both the existing and future system assessments. The chosen LOS is the 50-year 24-hour Q4 Huff Storm, to be consistent with previous assessments and the criteria selected by The City of Calgary. A Huff rainfall distribution replicates a storm with a moderate peak intensity, which is ideal for wastewater system analysis. The initial Rainfall Dependent Inflow and Infiltration (RDII) boundary condition for the root zone storage (L_{ini}) for each catchment was adjusted such that the L/L_{max} ratio is 50% at the beginning of the design storm simulations. This design storm has been implemented as the Town's LOS for wet weather flow due to its proximity to Calgary and the Town's request. The rainfall hyetograph for this event is shown in **Figure 4.1**.

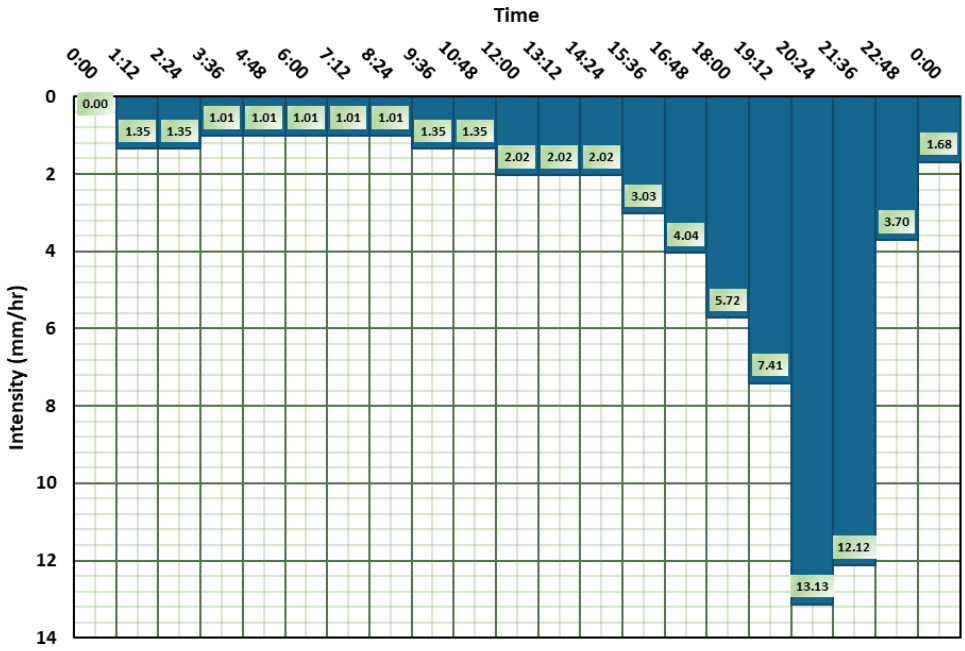

Figure 4.1 50-Year, 24-Hour Q4 Huff Distribution Storm Rainfall Hyetograph

4.3 Assessment Criteria

The performance of the sanitary system is determined based on the available freeboard between the ground elevation and high-water level elevation, represented by the maximum hydraulic grade line (HGL), at each manhole. The maximum allowable surcharge in the gravity portion of the sanitary sewer system must remain at least 2.5 m from the ground surface. A freeboard of 2.5 m adheres to The City of Calgary's allowable surcharge criteria defined in the Design and Asset Performance Objectives for Hydraulic Modelling – Revision 1 Memorandum (City of Calgary, 2012).

The following exceptions to this criterion are as follows:

- Catchment areas that have experienced reoccurring basement flooding following less than a 50-year return period rainfall events in the past. In those instances, upgrades may be triggered even if modelling results indicate that a surcharge level is below 2.5 m from the ground surface.
- In gravity pipe sections where there are no service connections and therefore no basement, the freeboard may be less than 2.5 m. For example:
  - Syphon locations at the creek/water body crossing
  - Sewers running within green spaces

Existing forcemains should be analyzed to maintain a minimum velocity of 1.0 m/s; however, they should not exceed a velocity of 3.0 m/s, with the preferred velocity being 2.5 m/s. Existing syphons should be analyzed to maintain a minimum velocity of 1.0 m/s based on average dry weather flow conditions or reach a velocity of 1.0 m/s at least once a day, with two times being preferred.

4.4 Design Criteria

4.4.1 Population Density

Population density for each sewershed in south Okotoks is based on the population and employment projections provided directly from the Town.

4.4.2 Dry Weather Flow (DWF) Generation Rates

Future catchments were assigned the following DWF generation rates:

- Residential Areas – 255 L/c/d (based on population projections)
- Non-Residential Areas – 255 L/c/d (based on employment projections)

Additionally, a groundwater infiltration (DWF baseflow) rate of 0.033 L/ha/s was incorporated into the model for future infrastructure as per The City of Calgary's modelling guidelines.

4.4.3 Peaking Factors

Servicing Network Design

Peaking factors for the future sanitary system were calculated in accordance with the Alberta Environment and Protected Areas' (AEPA) guidelines. These include the following:

- Peaking factor derived based on Harmon's formula for residential areas:

$$PF = 1 + \left(\frac{14}{4 + p^{\frac{1}{2}}} \right)$$

  - p is the design contributing population in thousands
  - PF must be at least 2.5
- Peaking factor for non-residential areas

$$PF = 6.659 * (Q_{AVE}^{-0.168})$$

  - PF can have a maximum value of 5.0

Assessment of the Impact on the Existing System

The peaking factors derived during the DWF calibration process in the SMP were applied to most build-out growth catchments. As expected, the observed modelled peaking factors tend to be lower than those stipulated in Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems, Government of Alberta (2013) as they fluctuate between 1.66 and 1.80 for residential areas, and 1.49 to 2.19 for non-residential areas.

4.4.4 Inflow and Infiltration

Servicing Network Design

Inflow and infiltration (I-I) for the future sanitary sewer design considered a rate of 0.28 L/s/ha.

Assessment of the Impact on the Existing System

The MIKE URBAN model uses both the Time – Area (A) and RDII runoff models which were calibrated as part of the previous WWF calibration process in the SMP. When assessing the future growth impacts to existing system infrastructure, these runoff models have been used and are considered more accurate than the standard rate of 0.28 L/s/ha.

4.4.5 Minimum Design Slopes for Sewers

The minimum design slopes for the sanitary sewers were based on The City of Calgary's Design Guidelines for Subdivision Servicing 2014. Minimum slope requirements are as follows in **Table 4.1**.

Table 4.1 Minimum Design Slopes for Concrete and PVC Sewers

Nominal Pipe Size	Concrete Sewer Pipe Slope	PVC Sewer Pipe Slope
mm	%	%
200	0.80	0.60
250	0.56	0.40
300	0.44	0.32
375	0.32	0.24
450	0.26	0.18
525	0.22	0.16
600	0.18	0.12
675	0.15	0.11
750	0.13	0.10
≥ 900	0.10	0.10

5.0 Existing System Analysis

The existing capacity utilization and spare capacity during the 50-year return period are shown in **Figures 5.1** and **5.2**, respectively. The following is noted regarding the existing system performance within south Okotoks:

- Existing sewers have capacity for peak dry-weather flow (PDWF) and peak wet-weather flow (PWWF).
- Manholes within south Okotoks generally do not surcharge to within 2.5 m of the ground surface, indicating no existing risk to basement backups during existing conditions.
  - There are a few manholes that have peak HGLs within 2.5 m of the ground surface; however, the flow was not surcharged and was contained within the pipe. These locations indicate where shallow sewers exist.
- Assessment of the Sheep River, Southbank, and Westmount lift stations is shown in **Table 5.1** and the results indicate that there are no capacity constraints.
- Assessment of the existing 350 mm HDPE syphon at Woodbend Way (Woodbend) and the 375 mm PVC syphon at Cimarron Estates Manor and Cimarron Estates Drive (Cimarron) are summarized in **Table 5.2**.
- Results indicate that neither syphon can achieve self-cleansing velocities during dry-weather conditions which will increase the risk of sedimentation and odour. It is recommended that both syphons undergo regular maintenance and flushing to remove any sedimentation.

Table 5.1 Lift Station Assessment – Existing Development Conditions

Parameter	Sheep River	Southbank	Westmount
Forcemain (mm)	150	200	150
Total Pumping Capacity (L/s)	45.0[1]	56.0[3]	61.6[4]
Firm Pumping Capacity (L/s)	15.6[2]	28.0[3]	30.8[4]
Forcemain Capacity (L/s)[5]	53	94	53
Upstream Inflows			
Upstream PDWF (L/s)	2.2	3.4	4.5
Upstream PWWF (L/s)	4.5	7.6	9.6
Forcemain Results			
DWF Flow (L/s)	19	30	29
DWF Velocity (m/s)	1.1	1.0	1.6
WWF Flow (L/s)	19	30	29
WWF Velocity (m/s)	1.1	1.0	1.6
Assessment Result			
Available Capacity?	Yes	Yes	Yes
Acceptable Velocities?	Yes	Yes	Yes

[1] Assumes both the Flygt CP.3140.180 and Sulzer XFP.100.E (assumes 208 V motor) are active.
[2] Assumes only the Flygt CP.3140.180 pump is active.
[3] Capacity is based on Pump Review spreadsheet provided by Town of Okotoks.
[4] Capacity is based on the best operating point.
[5] Forcemain capacity is based on a maximum velocity of 3.0 m/s.

Table 5.2 Syphon Analysis – Existing Development Conditions

Syphon	Type	PDWF		PWWF		Self-Cleansing Velocity Achieved?	Sufficient PWWF Capacity?
		Flow	Velocity	Flow	Velocity		
		L/s	m/s	Flow	m/s		
Woodbend	350 mm HDPE	49	0.51	113	1.17	No	Yes
Cimarron	375 mm PVC	24	0.22	40	0.36	No	Yes

6.0 Future System Analysis

6.1 Future System Concept

A future system concept has been developed for the proposed growth plan as shown on **Figure 6.1**. Conceptual profiles have been prepared to show the proposed sewer alignments and their depths on **Figures 6.2** through **6.7**. The infrastructure has been sized using the criteria from **Section 4.0**. Furthermore, gravity sewer sections were sized based on minimum pipe slopes noting that the alignments shown are conceptual and are subject to change. More information regarding the concept design is included in **Appendix A**.

Catchments S-2a, S-6 and S-6F Sanitary Sewer System

- Catchment S-2a is to be serviced by a proposed lift station with a design flow of 36 L/s and a 667 m long, 150 mm forcemain (1-1).
- Catchment S-6 and S-6F are to be serviced by a proposed lift station with a design flow of 43 L/s and a 1,140 m long, 150 mm forcemain (1-2).
- Gravity sewers connecting to the existing system at Sheep River Cove were considered for catchments S-6 and S-6F; however, the proposed design flow will cause backwater conditions upstream of the Sheep River Lift Station. Discussions with the Town of Okotoks Operations group led to the conclusion that upgrades to the Sheep River Lift Station are not feasible for the following reasons:
  - The available area at the Sheep River Lift Station may be a limiting factor for potential upgrades.
  - Pumping upgrades tend to trigger significant electrical upgrades to bring the facility into compliance with current electrical codes.
- Both forcemains 1-1 and 1-2 are proposed to connect to a proposed 433 m long, 450 mm gravity sewer (1-3) along Big Rock Trail that connects to the existing sewer system at Sheep River Boulevard.
- The existing sewer system at the connection point is a 200 mm PVC gravity sewer at 4.2%, which modelling confirmed has sufficient capacity for the design flow. It is anticipated that as these areas develop, and as the concepts and alignments are refined, the conservative estimate of a 450 mm gravity sewer can potentially be reduced.
- The profile on **Figures 6.2** and **6.3** show that the gravity sewer along its current alignment will maintain 3.0 m of depth at a slope greater than 0.18% (minimum requirement).
- Modelling assessment shows that future upgrades to the existing system are required downstream to ensure there is no risk of basement flooding. Details are discussed in **Section 6.2**.

Catchments S-2b and S-2c (Tillotson) Sanitary Sewer System

- Catchment S-2b is part of the Tillotson development that is ongoing, and conduits have been added to the model that reflects the local gravity sewers.
- Catchment S-2c is proposed to be serviced by the existing 200 mm sanitary sewer at Westridge Road and Westland Street.
- Modelling results show that the existing system can convey the projected flows from S-2b and S-2c without surcharging.

Southbank Business Park

- The Southbank Business Park catchment is to be serviced by the existing Southbank Lift Station and 200 mm forcemain.
- Modelling assessment within this catchment shows that upgrades to the Southbank Lift Station are required to service the projected employment. Details are discussed in **Section 6.2**.

Catchments S-3 Through S-14 Sanitary Sewer System

- Catchments S-13 and S-14 are to be serviced through a 1,178 m long, 375 mm gravity sewer (2-1) and crosses under a low-lying area through a 617 m long, 300 mm syphon (2-2). This alignment maintains a depth of approximately 3.0 m.
- Beyond Syphon 2-2, catchments S-12a and S-12b (and upstream catchments S-13 and S-14) are serviced by a 921 m long, 675 mm gravity sewer (2-3) that conveys wastewater southeast towards Highway 7 and 8 Street E. This is shown by a solid brown line and is referred to as Option 1. Option 1 is shown on **Figure 6.4** and is labelled as 2-3 (1).
- An alternative alignment, referred to herein as Option 2 for gravity sewer 2-3, is shown in a dashed line that follows the parcel property line. The rationale for showing this option is that it is expected that the northern half of catchment S-12b will develop first. This alignment will be slightly longer in length but will otherwise be similar in hydraulic performance and cost to Option 1. Option 2 is shown on **Figure 6.5** and is labelled as 2-3 (2). More detailed analysis at time of upstream subcatchment development (S-13, S-14, S-12a and S-12b) is recommended to optimize the alignment.
- Catchments S-11, S-11-1, S-4, S-4-1, S-3, and S-8 (and upstream catchments S-12a, S-12b, S-13 and S-14) are to be serviced by a 750 mm (836 m long) to 900 mm (1,618 m long) gravity sewer (2-4 to 2-6) along Highway 7 from 8 Street E to 32 Street E.
- **Figures 6.4** and **6.5** shows that pipe sections 2-1, 2-2, 2-3 and 2-4 can maintain depths of approximately 3.0 m. The topography along Highway 7 causes the proposed sewer depth of pipe sections 2-5 and 2-6 to increase between Southridge Drive and 32 Street E to a maximum of approximately 10 – 11 m.
- It is noted that deep gravity sewers can have operation and maintenance issues such as:
  - Deep manholes may have limited access and may require specialized access equipment.
  - Blockages or collapses are difficult to respond to, creating an increased consequence of failure.
  - Future rehabilitation costs will be more expensive compared to shallower sewers.
- There is the potential to reduce the overall sewer depths by approximately 1.0 m by reducing the depth of cover and insulating proposed sewer section 2-4. It is recommended that the Town review the risks associated with frost penetration, structural damage, and potential pipe leaks to determine if this option is appropriate at time of design.
- The potential of a lift station and forcemain to avoid the requirement for deep sanitary sewers was considered and the following has been concluded:
  - A lift station would be located at the low point at Highway 7 and Southridge Drive and would service Catchments S-14, S-13, S-12a, S-12b, S-11, S-11-1, S-4, S-4-1, and S-3 for a total PWWF of approximately 322 L/s.
  - The lift station would pump wastewater from Highway 7 and Southridge Drive through a 1,618 m long, 400 mm diameter forcemain towards 32 Street E. This forcemain could also be tied into an upsized 2-6 to reduce the overall forcemain length.
  - S-8 would remain serviceable by gravity eastwards towards 32 Street East through an 809 m long, 450 mm sanitary sewer (sized for an employment population of 5,986 c and an area of 50.3 ha). If the forcemain ties into this gravity sewer, it would need to be 900 mm in size.
  - A cost comparison between both options in **Section 6.4** shows that the deep gravity sewer option is more cost-effective and is therefore recommended and shown on **Figures 6.4** and **6.5**.
  - At a high-level, the capital cost estimates for different lift station configurations are similar and further evaluation is recommended if the lift station concept is pursued further.

Catchments S-7 and S-9 Sanitary Sewer System

- Catchment S-9 is to be serviced by a proposed lift station with a design flow of 85 L/s located near Highway 7 E and 48 Street E.

- This lift station will pump wastewater through an 896 m long, 250 mm forcemain (2-7) west into a 600 mm gravity sewer (2-8).
- Catchment S-7 will be serviced directly by the 822 m long, 600 mm gravity sewer (2-8) which will convey wastewater towards the proposed 1,050 mm gravity sewer (2-9) heading north along 32 Street E.
- The 600 mm gravity sewer is approximately 6.0 m deep on average (ranging from 3.0 – 8.0 m) as shown on **Figure 6.6**.

32 Street E Sanitary Sewer System and Sheep River Syphon

- Both 2-6 and 2-8 sewers combine and drain northwards along 32 Street E through a 929 m long, 1,050 mm gravity sewer (2-9).
- This gravity sewer starts at a depth of approximately 10 m due to the 2-6 alignment but quickly becomes shallower, reaching approximately 3.0 m in depth due to steep topography as shown on **Figure 6.7**.
- The 2-9 alignment is parallel to the 32 Street E Canadian Pacific Railway (CPR) overpass and the depth increases once again just upstream of the 2-10 syphon. It is recommended that the alignment be refined during design to minimize the depths at this location by shifting west or east into the available green space at lower elevations.
- The gravity sewer then crosses Sheep River through a 732 m long, 675 mm syphon (2-10) and discharges to the Okotoks Wastewater Treatment Plant.

6.2 Future System Performance

The existing sanitary sewer system was assessed to determine if upgrades are needed downstream of existing sewer connections. **Table 6.1** summarizes the modelling assessment result figures for each of the growth horizons.

Table 6.1 Summary of Future System Assessment Figures

Growth Horizon	Max HGL and Capacity Utilization	Spare Capacity
5-Year (2031)	**Figure 6.8**	**Figure 6.9**
10-Year (2036)	**Figure 6.10**	**Figure 6.11**
25-Year (2051)	**Figure 6.12**	**Figure 6.13**
Ultimate	**Figure 6.14**	**Figure 6.15**

The system results suggest that the existing sanitary sewer system generally has capacity for future growth. The following constraints have been identified by timeframe:

- By the 5-year horizon, the Southbank Lift Station will require upgrading as the proposed development will cause backwater conditions within the sewer system upstream of the lift station.
- The surcharging upstream of the Southbank Lift Station will reach the 2.5 m depth from ground surface in between the 5-year and 10-year horizons indicating that lift station upgrades cannot be deferred.
- Surcharging within 2.5 m of the ground surface is observed in the ultimate scenario near Sheep River Crescent and Hunters Crescent and is caused by the following pipe sections:
  - 351 m of 250 mm sewer along Hunters Crescent from just east of Sheep River Crescent to the end of 100 Hunters Place, and
  - 87 m of 300 mm sewer within the green space northwest of Southridge Drive and Hunters Gate.

Figure 6.16 shows the gravity sewer along Sheep River Boulevard, Sheep River Drive, Sheep River Crescent, Hunters Crescent, Woodhaven Drive, and Woodbend Way. The HGL profiles confirm that upgrading is needed by the ultimate development horizon along Hunters Crescent.

Upgrading along Hunters Crescent will be triggered at some point between the 2051 and ultimate growth scenarios. **Table 6.2** summarizes the calculations required to estimate the PWWF required to trigger a surcharge level of 2.5 m from the ground surface. **Table 6.3** summarizes the estimated population trigger point where surcharging is expected to just exceed the 2.5 m depth criterion. The estimated PWWF is based on interpolation of the depth to peak HGL values, and the population projections are re-calculated using the design criteria in **Section 4.0**. Thus, calculations have been iterated in **Table 6.2** until they match the trigger point identified in **Table 6.3**. Due to peaking factors increasing with smaller populations, the population trigger point appears lower than expected compared to the ultimate population of 5,298 c.

Table 6.2 Hunters Crescent Upgrade Design Population Calculation

Trigger Point Population Projection	
Catchments	S-2a, S-6 and S-6F
Residential Area (ha)	71.0
Non-Residential Area (ha)	4.2
Population (c)	3,207
Employment (c)	189
Residential Average DWF (ADWF) (L/s)	9.5
Non-Residential ADWF (L/s)	0.6
Residential Pf	3.42
Non-Residential Pf	5.00
PDWF (L/s)	35.1
I-I (L/s)	21.1
PWWF (L/s)	56.2

Table 6.3 Hunters Crescent Upgrade Trigger Point

Scenario	2031	2036	2051	Trigger	Ultimate
Depth to Peak HGL (m)	3.37	3.31	2.80	2.50	2.33
Peak Flow (L/s)	24.1	38.6	53.0	***56.2***	58.0
Population Growth (c)	0	767	2,674	***3,207***	5,298
Employment Growth (c)	0	34	117	***189***	232

Table 6.4 summarizes the Southbank Lift Station assessment. The modelling results show that the pump station will need to be upgraded by the 5-year horizon to ensure backwater conditions do not exceed the 2.5 m depth criterion.

Table 6.4 Southbank Lift Station Future WWF Results

Lift Station	Growth Horizon	Pump Capacity	Firm Capacity	Forcemain Capacity	Incoming PWWF	Sufficient Capacity?
		L/s	L/s	L/s	L/s	
Southbank	Existing	56	28[1]	94	8	Yes
	5-Yr (2031)				49	No
	10-Yr (2036)				59	No
	25-Yr (2051)				94	No
	Ultimate				104	No

[1] Estimated pump capacity provided by Town of Okotoks.

Table 6.5 summarizes the performance of both syphons east of Woodbend Way and north of Cimarron Estates Drive. Modelling results suggest that:

- The existing syphons have sufficient capacity to convey the ultimate development flow.
- Neither syphon can achieve self-cleansing velocity during DWF which will increase the risk of sedimentation and odour.
- Both syphons should be monitored in the future to ensure that they continue to perform adequately.

Table 6.5 Existing System Syphon Analysis During Ultimate Development Conditions

Syphon	Type	PDWF		PWWF		Self-Cleansing Velocity Achieved?	Sufficient PWWF Capacity?
		Flow	Velocity	Flow	Velocity		
		L/s	m/s	Flow	m/s		
Woodbend	350 mm HDPE	87	0.91	178	1.85	No	Yes
Cimarron	375 mm PVC	49	0.50	64	0.66	No	Yes

6.3 Future System Upgrades

The following upgrades to the existing system to enable future system growth have been identified below:

1. Stage the following upgrades at the Southbank Lift Station assuming in each case, two new pumps are installed, with a third pump being provided as a spare for redundancy.
   a. In 2031, upgrade the pump capacity to a firm capacity of 59 L/s to meet the pumping requirements of both the 5-year and 10-year horizons.
   b. In 2051, upgrade the pump capacity to a firm capacity of 104 L/s to meet the pumping requirements of both the 25-year and ultimate horizons.
   c. By ultimate conditions, replace the existing 200 mm forcemain with a 250 mm forcemain.
2. Prior to ultimate development, replace 351 m of existing 250 mm with 375 mm sewer along Hunters Crescent from just east of Sheep River Crescent the end of 100 Hunters Place. Replace 87 m of existing 300 mm with 375 mm within the green space northwest of Southridge Drive and Hunters Gate.

The proposed upgrades are identified on **Figure 6.17**. The modelling results of the upgrades along Hunters Crescent are shown in **Figure 6.18**. The HGLs shown compare the ultimate development flows before and after the upgrade is implemented.

6.4 Cost Estimates

Cost estimates are summarized in the following three tables:

- **Table 6.6** summarizes cost estimates for future infrastructure required for growth.
- **Table 6.7** summarizes cost estimates for upgrades to the existing system that are triggered by future growth.
- **Table 6.8** summarizes a cost comparison between the deep gravity and lift station options for Catchments S-3 through S-14. The cost table shows that the deep gravity sewer system is more cost-effective.

Cost estimates include 30% contingency and 10% engineering. More detailed information is provided in **Appendix B**.

Table 6.6 Future Infrastructure Required for Growth Cost Summary

Item	Description	Total ($M)
Catchments S-2a, S-6 and S-6F Sanitary Sewer System		
1.1	Construct Lift Station 1-1 (Capacity = 36 L/s)	1.51
1.2	Excavate, Backfill, Supply and Installation of 667 m of 150 mm Forcemain (1-1)	0.28
1.3	Construct Lift Station 1-2 (Capacity = 43 L/s)	1.81
1.4	Excavate, Backfill, Supply and Installation of 1,140 m of 150 mm Forcemain (1-2)	0.48
1.5	1-3: Excavate, Backfill, Supply and Installation of 433 m of 450 mm Sanitary Sewer (3.0 m Deep)	0.47
1.6	1,200 mm Manhole (3.0 m Deep) for 1-3	0.09
1.7	Pavement Rehabilitation for 1-1 and 1-3	0.81
	Sub-Total ($M)	**5.45**
Catchments S-3 Through S-14 Deep Gravity Sanitary Sewer System		
2.1A	2-1: Excavate, Backfill, Supply and Installation of 1,178 m of 375 mm Sanitary Sewer (3.0 m Deep)	1.15
2.2A	1,200 mm Manhole (3.0 m Deep) for 2-1	0.21
2.3A	2-2: Trenchless Installation of 617 m of 300 mm Sanitary Syphon	2.59
2.4A	2-3 (Option 1): Excavate, Backfill, Supply and Installation of 921 m of 675 mm Sanitary Sewer (3.0 m Deep)	1.65
2.5A	2-4: Excavate, Backfill, Supply and Installation of 836 m of 750 mm Sanitary Sewer (3.0 m Deep)	1.77
2.6A	2-5 and 2-6: Excavate, Backfill, Supply and Installation of 1,618 m of 900 mm Sanitary Sewer (10.0 m Deep)	6.40
2.7A	1,800 mm Manhole (3.0 m Deep) for 2-3 and 2-4	0.42
2.8A	1,800 mm Manhole (10.0 m Deep) for 2-5 and 2-6	1.27
	Sub-Total ($M)	**15.46**
Catchments S-7 and S-9 Sanitary Sewer System		
3.1	Construct Lift Station 2-7 (Capacity = 85 L/s)	3.57
3.2	Excavate, Backfill, Supply and Installation of 896 m of 250 mm Forcemain (2-7)	0.59
3.3	2-8: Excavate, Backfill, Supply and Installation of 822 m of 600 mm Sanitary Sewer (6.0 m Deep)	1.88
3.4	1,200 mm Manhole (6.0 m Deep) for 2-8	0.29
	Sub-Total ($M)	**6.33**
32 Street E Sanitary Sewer System and Sheep River Syphon		
4.1	2,400 mm Manhole (10.0 m Deep) at Junction of 2-6, 2-8 and 2-9	0.19
4.2	2-9: Excavate, Backfill, Supply and Installation of 929 m of 1,050 mm Sanitary Sewer (3.0 m Deep)	2.24
4.3	1,800 mm Manhole (3.0 m Deep) for 2-9	0.26
4.4	2-10: Trenchless Installation of 732 m of 675 mm Sanitary Syphon	5.12
4.5	Road Rehabilitation for 2-9	1.30
	Sub-Total ($M)	**9.11**
	Total Assuming Deep Sewer Option ($M)	**36.34**

Table 6.7 Future System Upgrade Cost Summary

Item	Description	Total ($M)
Hunters Crescent Existing System Upgrade		
5.1	Existing Upgrade: Excavate, Backfill, Supply and installation of 438 m of 375 mm Sanitary Sewer (3.0 m Deep)	0.43
5.2	Existing Upgrade: Pavement Rehabilitation along Hunters Crescent	0.56
	Sub-Total ($M)	**0.99**
Southbank Business Park Existing System Upgrade		
6.1	Existing Upgrade: South Bank Lift Station: Increase Firm Pump Capacity from 28 to 59 L/s (2031)	0.35
6.2	Existing Upgrade: South Bank Lift Station: Increase Firm Pump Capacity from 59 to 104 L/s (2051)	0.70
6.3	Replacement: Excavate, Backfill, Supply and Installation of 1,331 m of 250 mm Forcemain at South Bank (Ultimate)	0.87
6.4	Pavement Rehabilitation for South Bank Forcemain Replacement Ultimate)	1.86
	Sub-Total ($M)	**3.78**
	Total ($M)	**4.77**

Table 6.8 Deep Gravity Sewer Versus Lift Station Cost Summary

Item	Description	Total ($M)
Catchments S-3 Through S-14 Sanitary Sewer System – Deep Gravity Sewer Option		
2.1A	2-1: Excavate, Backfill, Supply and Installation of 1,178 m of 375 mm Sanitary Sewer (3.0 m Deep)	1.15
2.2A	1,200 mm Manhole (3.0 m Deep) for 2-1	0.21
2.3A	2-2: Trenchless Installation of 617 m of 300 mm Sanitary Syphon	2.59
2.4A	2-3 (Option 1): Excavate, Backfill, Supply and Installation of 921 m of 675 mm Sanitary Sewer (3.0 m Deep)	1.65
2.5A	2-4: Excavate, Backfill, Supply and Installation of 836 m of 750 mm Sanitary Sewer (3.0 m Deep)	1.77
2.6A	2-5 and 2-6: Excavate, Backfill, Supply and Installation of 1,618 m of 900 mm Sanitary Sewer (10.0 m Deep)	6.40
2.7A	1,800 mm Manhole (3.0 m Deep) for 2-3 and 2-4	0.42
2.8A	1,800 mm Manhole (10.0 m Deep) for 2-5 and 2-6	1.27
	Sub-Total ($M)	**15.46**
Catchments S-3 Through S-14 Sanitary Sewer System – Lift Station Option		
2.1B	2-1: Excavate, Backfill, Supply and Installation of 1,178 m of 375 mm Sanitary Sewer (3.0 m Deep)	1.15
2.2B	2-2: Trenchless Installation of 617 m of 300 mm Sanitary Syphon	2.59
2.3B	2-3 (Option 1): Excavate, Backfill, Supply and Installation of 921 m of 675 mm Sanitary Sewer (3.0 m Deep)	1.65
2.4B	2-4: Excavate, Backfill, Supply and Installation of 836 m of 750 mm Sanitary Sewer (3.0 m Deep)	1.77
2.5B	2-5 (To Lift Station): Excavate, Backfill, Supply and Installation of 809 m of 450 mm Sanitary Sewer (3.0 m Deep)	0.88
2.6B	2-6: Excavate, Backfill, Supply and Installation of 809 m of 450 mm Sanitary Sewer (3.0 m Deep)	0.88
2.7B	1,200 mm Manhole (3.0 m Deep) for 2-1, 2-5 and 2-6	0.47
2.8B	1,800 mm Manhole (3.0 m Deep) for 2-3 and 2-4	0.42
2.9B	Construct Lift Station at D/S End of 2-4 (Capacity = 322 L/s)	13.52
2.10B	Excavate, Backfill, Supply and Installation of 1,618 m of 400 mm Forcemain	1.59
	Sub-Total ($M)	**24.94**

7.0 Staging Plan

The staging plan for upgrades is summarized in **Table 7.1** and on **Figure 7.1**.

Table 7.1 Infrastructure Staging Summary

Upgrade ID	Description	Total ($M)
5-Year (2031)		
7.1	Existing Upgrade: Southbank Lift Station: Increase Firm Pump Capacity from 28 to 59 L/s (2031)	0.35
	5-Year (2031) Sub-Total ($M)	**0.35**
10-Year (2036)		
1.1	Construct Lift Station 1-1 (Capacity = 36 L/s)	1.51
1.2	Excavate, Backfill, Supply and Installation of 667 m of 150 mm Forcemain (1-1)	0.28
1.5	1-3: Excavate, Backfill, Supply and Installation of 433 m of 450 mm Sanitary Sewer (3.0 m Deep)	0.47
1.6	1,200 mm Manhole (3.0 m Deep) for 1-3	0.09
1.7	Pavement Rehabilitation for 1-1 and 1-3	0.81
	10-Year (2036) Sub-Total ($M)	**3.16**
25-Year (2051)		
1.3	Construct Lift Station 1-2 (Capacity = 43 L/s)	1.81
1.4	Excavate, Backfill, Supply and Installation of 1,140 m of 150 mm Forcemain (1-2)	0.48
2.3	2-2: Trenchless Installation of 617 m of 300 mm Sanitary Syphon	2.59
2.4	2-3 (Option 1): Excavate, Backfill, Supply and Installation of 921 m of 675 mm Sanitary Sewer (3.0 m Deep)	1.65
2.5	2-4: Excavate, Backfill, Supply and Installation of 836 m of 750 mm Sanitary Sewer (3.0 m Deep)	1.77
2.6	2-5 and 2-6: Excavate, Backfill, Supply and Installation of 1,618 m of 900 mm Sanitary Sewer (10.0 m Deep)	6.40
2.7	1,800 mm Manhole (3.0 m Deep) for 2-3 and 2-4	0.42
2.8	1,800 mm Manhole (10.0 m Deep) for 2-5 and 2-6	1.27
4.3	2-8: Excavate, Backfill, Supply and Installation of 822 m of 600 mm Sanitary Sewer (6.0 m Deep)	1.88
4.4	1,200 mm Manhole (6.0 m Deep) for 2-8	0.29
5.1	2,400 mm Manhole (10.0 m Deep) at Junction of 2-6, 2-8 and 2-9	0.19
5.2	2-9: Excavate, Backfill, Supply and Installation of 929 m of 1,050 mm Sanitary Sewer (3.0 m Deep)	2.24
5.3	1,800 mm Manhole (3.0 m Deep) for 2-9	0.26
5.4	2-10: Trenchless Installation of 732 m of 675 mm Sanitary Syphon	5.12
5.5	Road Rehabilitation for 2-9	1.30
7.2	Existing Upgrade: Southbank Lift Station: Increase Firm Pump Capacity from 59 to 104 L/s (2051)	0.70
	25-Year (2051) Sub-Total ($M)	**28.37**
Ultimate		
2.1	2-1: Excavate, Backfill, Supply and Installation of 1,178 m of 375 mm Sanitary Sewer (3.0 m Deep)	1.15
2.2	1,200 mm Manhole (3.0 m Deep) for 2-1	0.21
4.1	Construct Lift Station 2-7 (Capacity = 85 L/s)	3.57
4.2	Excavate, Backfill, Supply and Installation of 896 m of 250 mm Forcemain (2-7)	0.59
6.1	Existing Upgrade: Excavate, Backfill, Supply and installation of 438 m of 375 mm Sanitary Sewer (3.0 m Deep)	0.43
6.2	Existing Upgrade: Pavement Rehabilitation along Hunters Crescent	0.56
7.3	Replacement: Excavate, Backfill, Supply and Installation of 1,331 m of 250 mm Forcemain at Southbank (Ultimate)	0.87
7.4	Pavement Rehabilitation for Southbank Forcemain Replacement Ultimate)	1.86
	Ultimate Sub-Total ($M)	**9.23**
	Total ($M)	**41.11**

8.0 Conclusions and Recommendations

8.1 Conclusions

Conclusions from this study include:

- The scope of this study was to update the Sanitary Master Plan for south Okotoks, including model updates, revised servicing plans, staged upgrades, and updated cost estimates.
- The proposed growth plan has been updated to reflect the most up-to-date population and employment forecasts provided by the Town from the Okotoks Growth Strategy.
- Within south Okotoks, the wastewater system includes the Sheep River, Southbank, and Westmount lift stations.
- Sanitary sewage from within south Okotoks crosses the Sheep River through one of the following syphons:
  - A 350 mm HDPE syphon at Woodbend Way.
  - A 375 mm PVC syphon at Cimarron Estates Manor and Cimarron Estates Drive.
- The hydrodynamic MIKE URBAN model was constructed and calibrated for the SMP and updated in 2020. It was updated most recently in 2026 to reflect the most recent condition of the sanitary system.
- Results of the existing system analysis are summarized below:
  - Existing sewers have sufficient capacity to convey the PWWF from the 50-year, 24-hour Q4 Huff distribution design storm.
  - Assessment of the Sheep River, Southbank, and Westmount lift stations indicate that there are no capacity constraints.
  - Results indicate that neither syphon can achieve self-cleansing velocities during dry-weather conditions which will increase the risk of sedimentation and odour.
- The future sanitary servicing concept is shown on **Figure 6.1** and is described below:
  - S-2a, S-6 and S-6F are to be serviced by new lift stations that pump wastewater through 150 mm forcemains to a 450 mm gravity sewer along Big Rock Trail that connects to the existing system along Sheep River Boulevard. Modelling assessment shows that future upgrades to the existing system by the ultimate horizon to ensure there is no risk of basement flooding downstream.
  - Catchments S-2b and S-2c are to be serviced by the existing system and modelling results indicate that there are no surcharging concerns.
  - The Southbank Business Park catchment is to be serviced by the existing Southbank Lift Station which will require future upgrades to service the projected employment.
  - Catchments S-3 through S-14 are to be serviced through a gravity sewer system ranging from 375 mm to 900 mm in size with a proposed 300 mm syphon.
    - The cost comparison of deep gravity sewers versus lift stations showed that deep gravity sewers along alignments 2-5 and 2-6 are preferred to a lift station at the low point near 2-4.
    - The overall depths of gravity sewer could be reduced by using shallower upstream sewers with insulation; however, a more detailed risk assessment should be undertaken.
    - Two alignments are shown for gravity sewer section 2-3. Option 1 is based on maintaining the shortest length and minimum depth, whereas Option 2 will be slightly longer and is based on the northern parcel of sewershed S-12b developing first. Both options are similar in hydraulic performance and cost. More detailed analysis at time of upstream subcatchment development (S-13, S-14, S-12a and S-12b) is recommended to optimize the alignment.
  - Catchment S-9 is to be serviced by a lift station and 250 mm forcemain that connects into a 600 mm gravity sewer along Highway 7 that connects to the proposed system along 32 Street E. Catchment S-7 will be serviced directly through the proposed 600 mm gravity sewer.
  - Both proposed gravity sewers along Highway 7 are to combine into a 1,050 mm gravity sewer draining northwards along 32 Street E, which will cross Sheep River through a 675 mm syphon crossing leading to the WWTP.

8.2 Recommendations

Recommendations from this study include:

- Due to existing syphons being unable to achieve self-cleansing velocities during dry-weather conditions, it is recommended that both syphons undergo regular maintenance and flushing to remove any sedimentation.
- Stage the following upgrades at the Southbank Lift Station assuming in each case, two new pumps are installed, with a third pump being provided as a spare for redundancy.
  - In 2031, upgrade the pump capacity to a firm capacity of 59 L/s.
  - In 2051, upgrade the pump capacity to a firm capacity of 104 L/s.
  - By ultimate conditions, replace the existing 200 mm forcemain with a 250 mm forcemain.
- Prior to ultimate development, replace 351 m of existing 250 mm with 375 mm sewer along Hunters Crescent from just east of Sheep River Crescent the end of 100 Hunters Place. Replace 87 m of existing 300 mm with 375 mm within the green space northwest of Southridge Drive and Hunters Gate.
- Stage future infrastructure as recommended in **Section 7.0**.
- Consider downsizing the proposed 450 mm sewer along Big Rock Trail (1-3) in the future once alignments and slopes are confirmed since the 450 mm size is based on minimum slopes (0.18%) and the existing sewer it ties into is at 4.2%.
- There is the potential to reduce the overall sewer depths by approximately 1.0 m by reducing the depth of cover and insulating proposed sewer section 2-4. It is recommended that the Town review the risks associated with frost penetration, structural damage, and potential pipe leaks to determine if this option is appropriate at time of design.

9.0 References

1. Sanitary Servicing Master Plan Update, ISL Engineering and Land Services Ltd. (July 2016)
2. Okotoks Sanitary Servicing Master Plan Update Memorandum, ISL Engineering and Land Services Ltd. (February 2020)
3. Tillotson Development – Sanitary System Assessment Technical Memorandum Draft, ISL Engineering and Land Services Ltd. (July 2022)
4. Tillotson Neighbourhood Area Structure Plan (ASP) Servicing Study, Jubilee Engineering (November 2022)
5. Okotoks Sanitary Servicing Study Update, ISL Engineering and Land Services Ltd. (April 2024)
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7. Servicing Strategy Brief – 2025 Update, ISL Engineering and Land Services Ltd. (November 2025)
8. Okotoks Growth Strategy, The Town of Okotoks (2025)
9. Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems, Government of Alberta (2013)
10. Infrastructure Design & Construction Specifications, The Town of Okotoks (2024)
11. Design and Asset Performance Objectives for Hydraulic Modelling – Revision 1 Memorandum, The City of Calgary (2012)
12. The City of Calgary's Design Guidelines for Subdivision Servicing 2014, The City of Calgary (2014)

10.0 Authorization

This document entitled “South Okotoks Sanitary Master Plan Update” has been prepared by ISL Engineering and Land Services Ltd. (ISL) for the use of The Town of Okotoks. The information and data provided herein represent ISL’s professional judgment at the time of preparation. ISL denies any liability whatsoever to any other parties who may obtain this report and use it, or any of its contents, without prior written consent from ISL.

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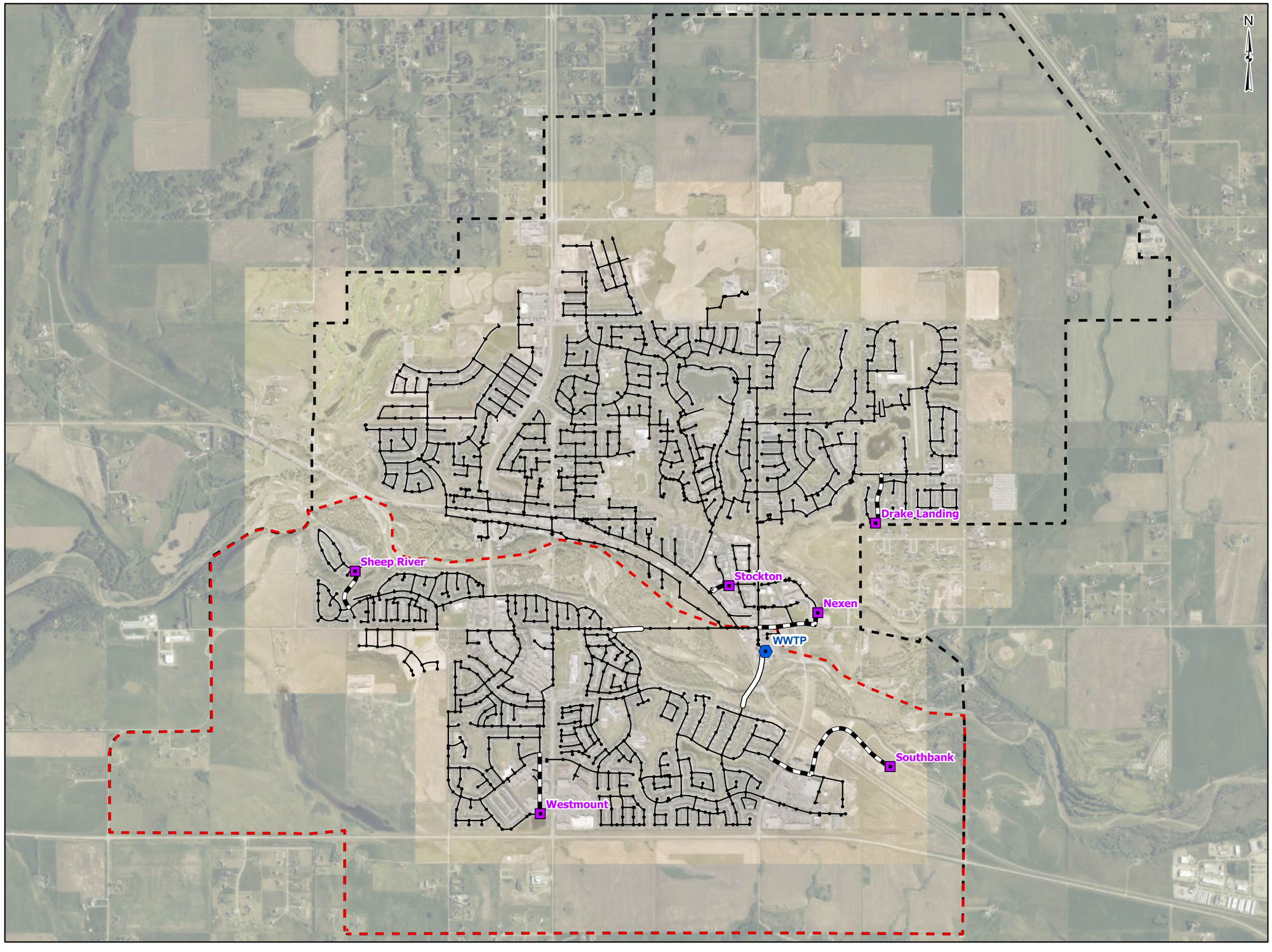
Modelling Support

Permit to Practice
ISL Engineering and Land Services Ltd.

RM Signature: Sarah Barbosa
RM APEGA ID: 187386
Date: May 14 2026

Permit Number P4741
The Association of Professional Engineers and Geoscientists of Alberta

Sarah Barbosa, P. Eng., ENV SP
Project Manager / Technical Review



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Forcemain
- Syphon
- Sanitary Sewer

TITLE

STUDY AREA

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

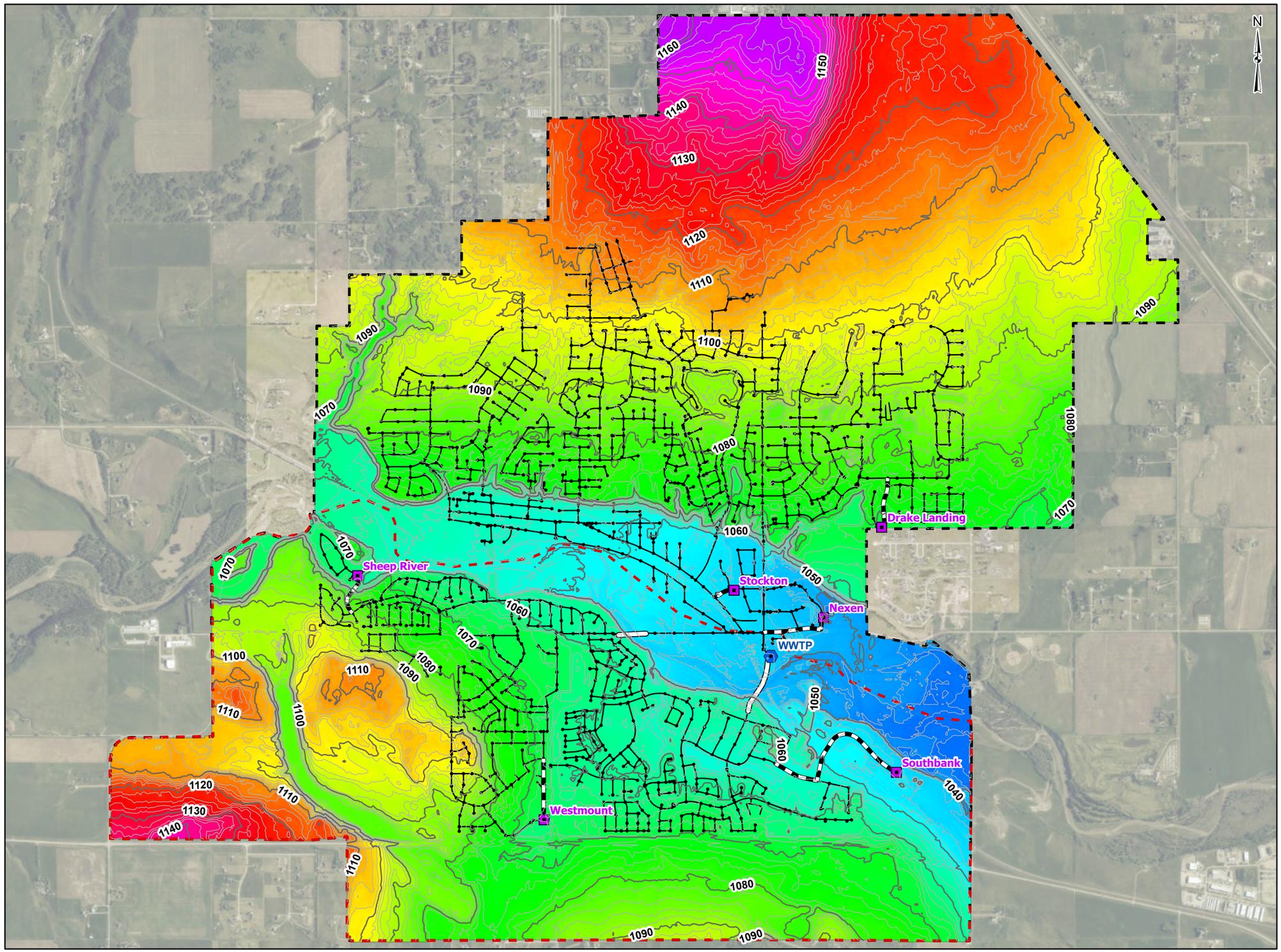
NAD 1983 3TM 114

0 370 740

1:30,000 Meters

FIGURE	1.1
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 1.1 - Study Area



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Forcemain
- Syphon
- Sanitary Sewer
- Major Contour (10 m)
- Minor Contour (2 m)

Elevation (m)

1165.89

1031.5

TITLE

TOPOGRAPHY

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

NAD 1983 3TM 114

0 370 740

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FIGURE	1.2
DATE	5/12/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

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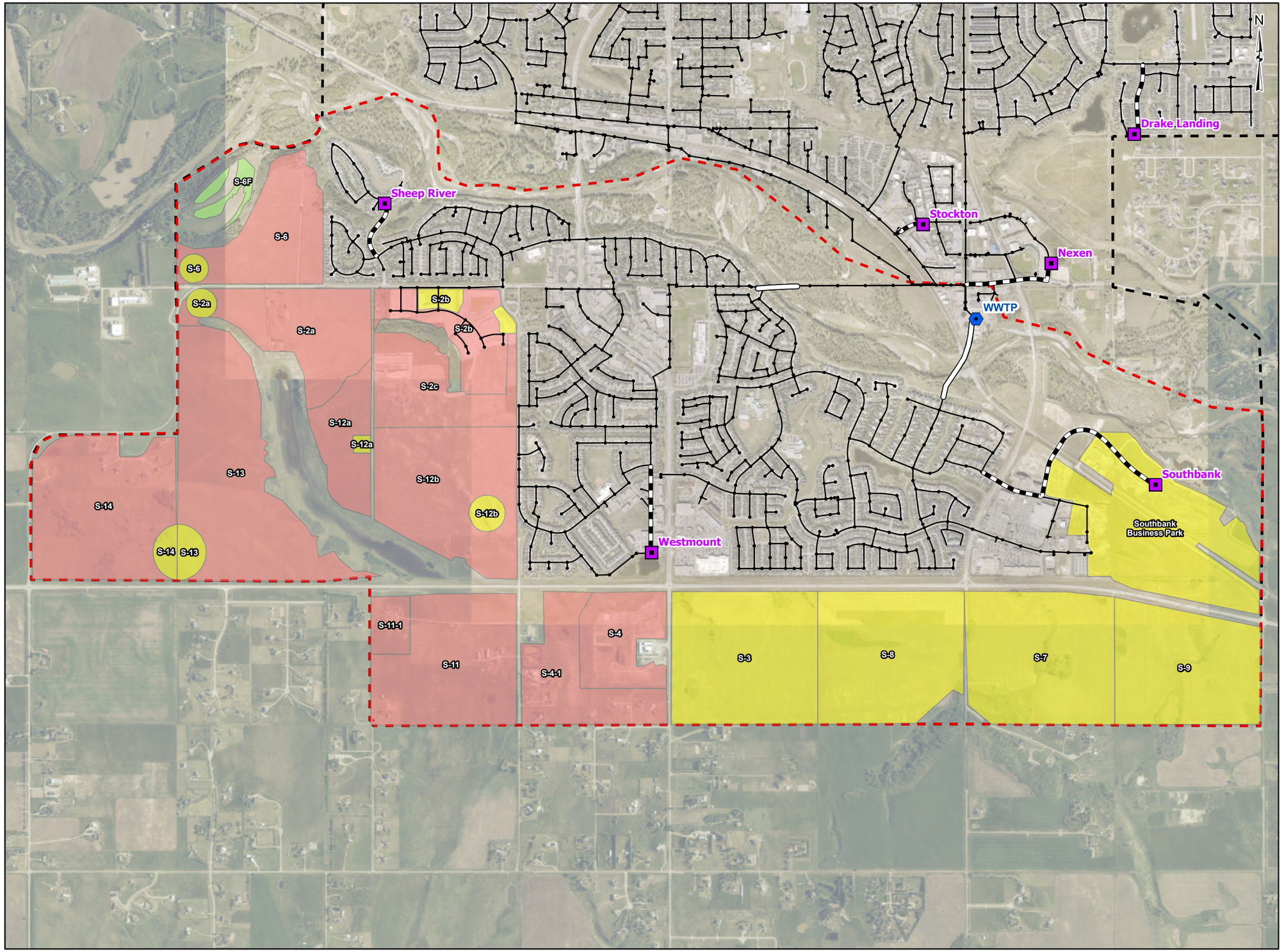

LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Sanitary Sewer
- Syphon
- Forcemain

Land Use Type

- Residential
- Non-Residential
- Future Study Area

TITLE

GROWTH PLAN

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

NAD 1983 3TM 114

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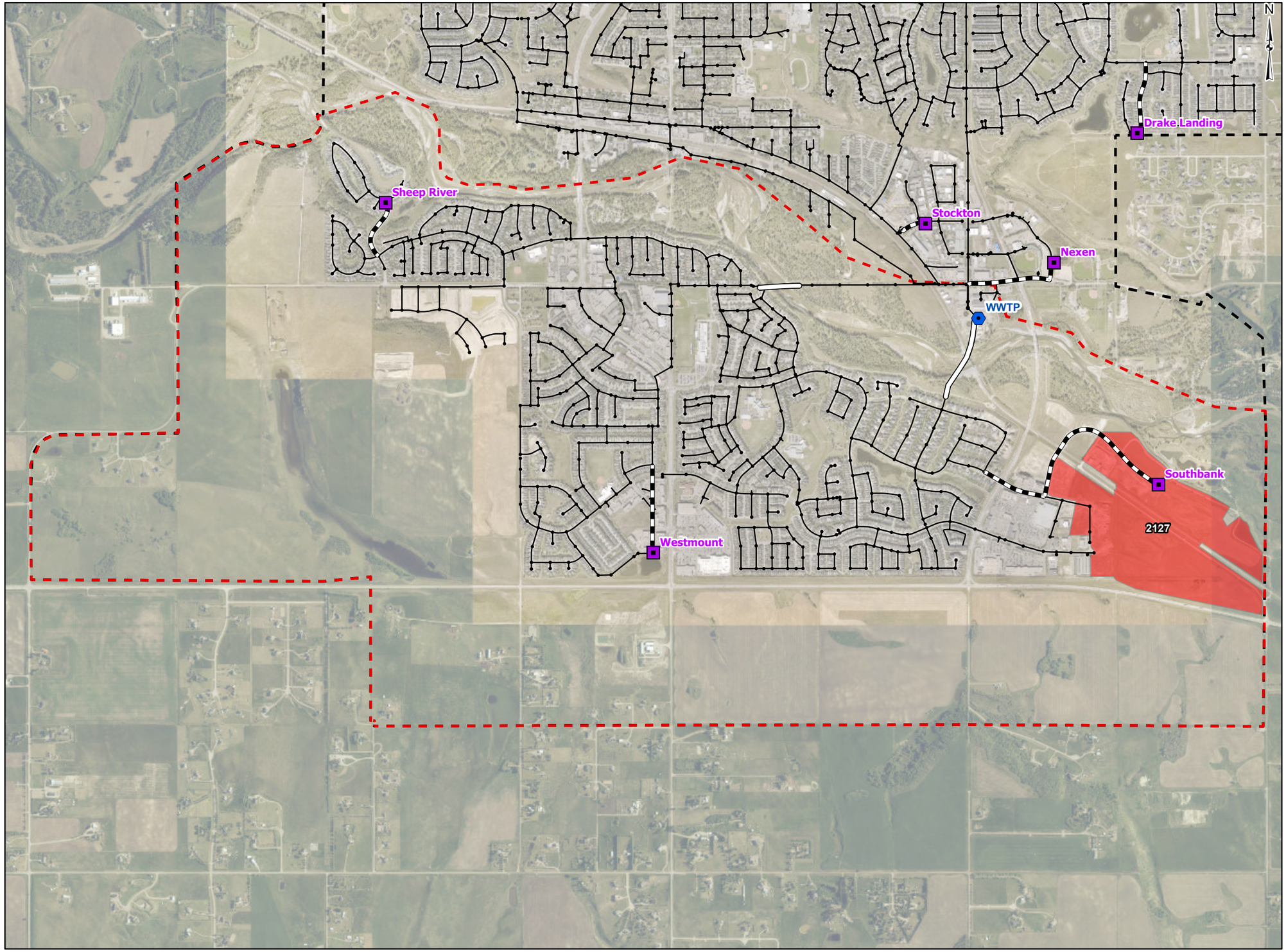
FIGURE	2.1
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 2.1 - Growth Plan



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

TITLE

TOTAL POPULATION AND EMPLOYMENT - 2031

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

NAD 1983 3TM 114

0 260 520

1:21,000 Meters

FIGURE	2.2
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

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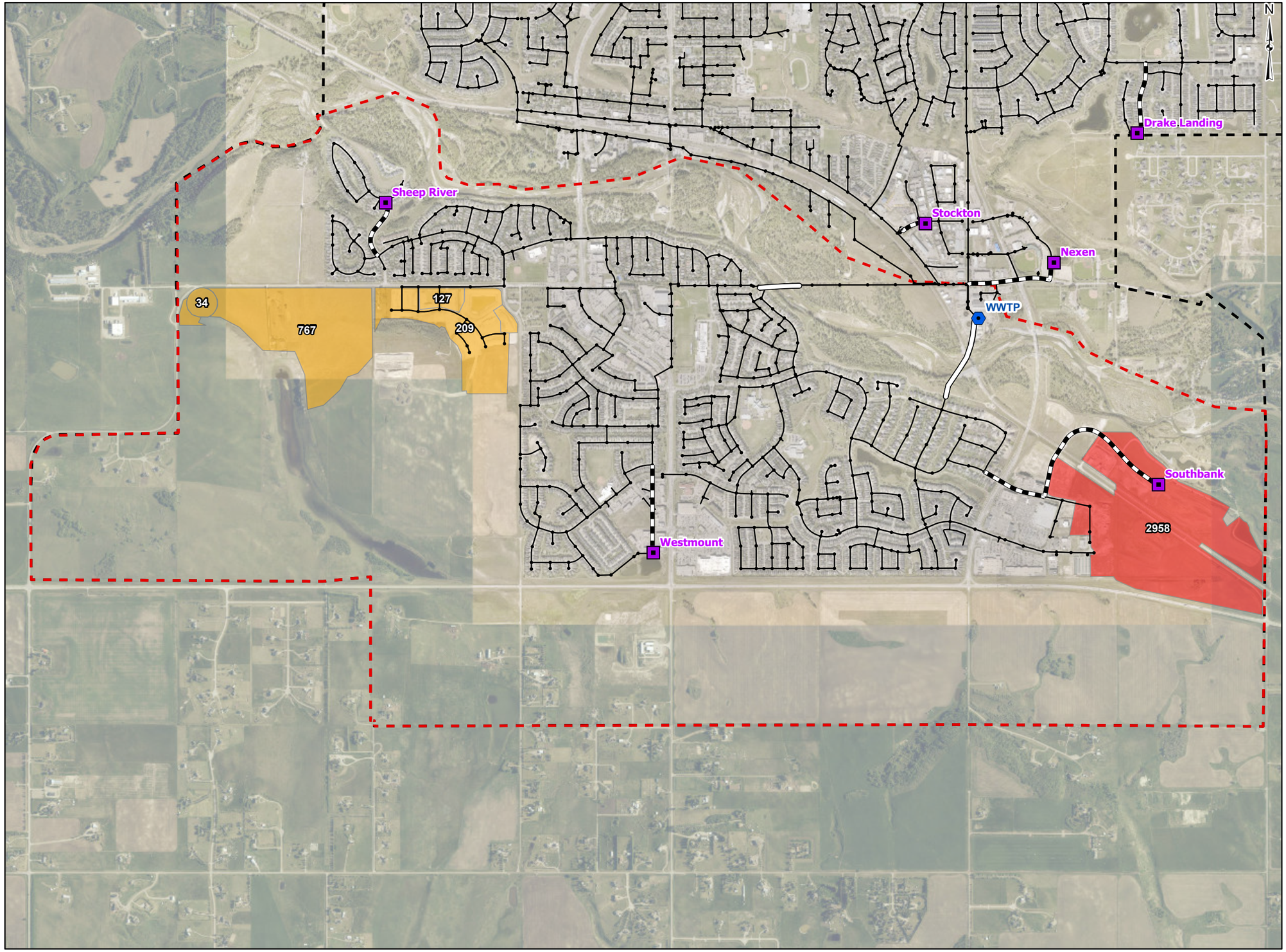


LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

TITLE

TOTAL POPULATION AND EMPLOYMENT - 2036

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

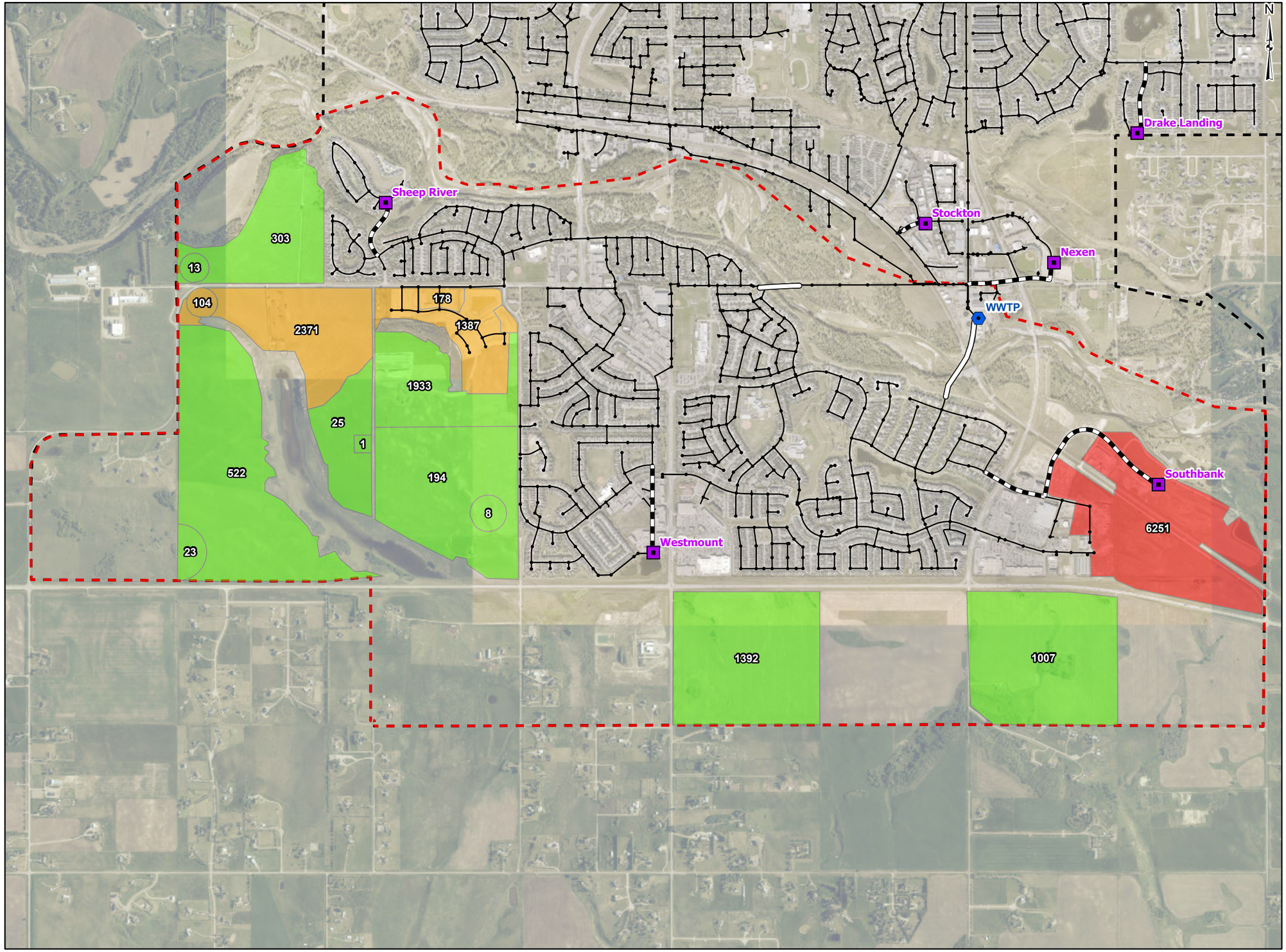
NAD 1983 3TM 114

0 260 520

1:21,000 Meters

FIGURE	2.3
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 2.3 - 2036.pop



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

TITLE

TOTAL POPULATION AND EMPLOYMENT - 2051

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

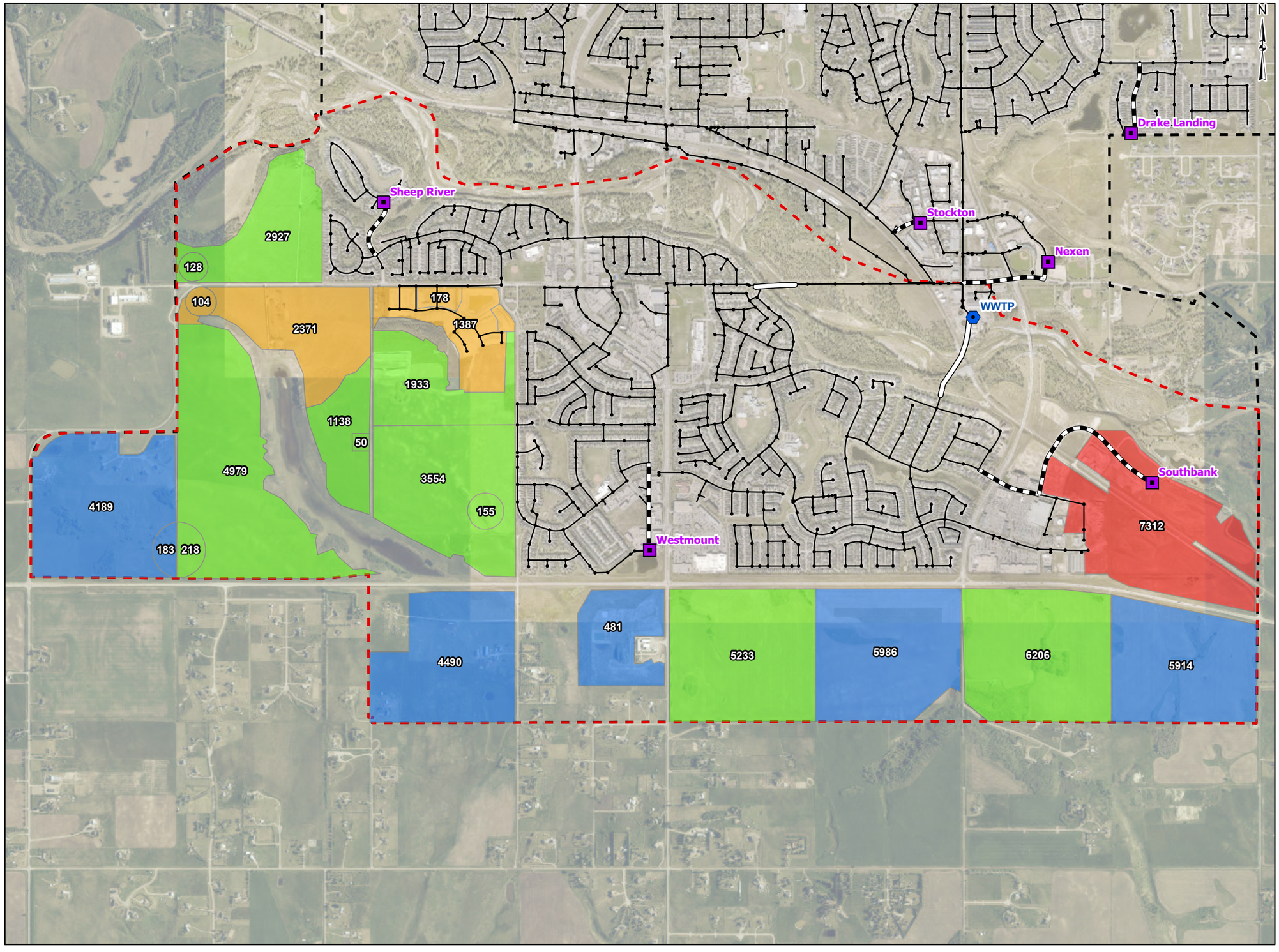
NAD 1983 3TM 114

0 260 520

1:21,000 Meters

FIGURE	2.4
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 2.4 2051 pop



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

TITLE

TOTAL POPULATION AND EMPLOYMENT - ULTIMATE

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

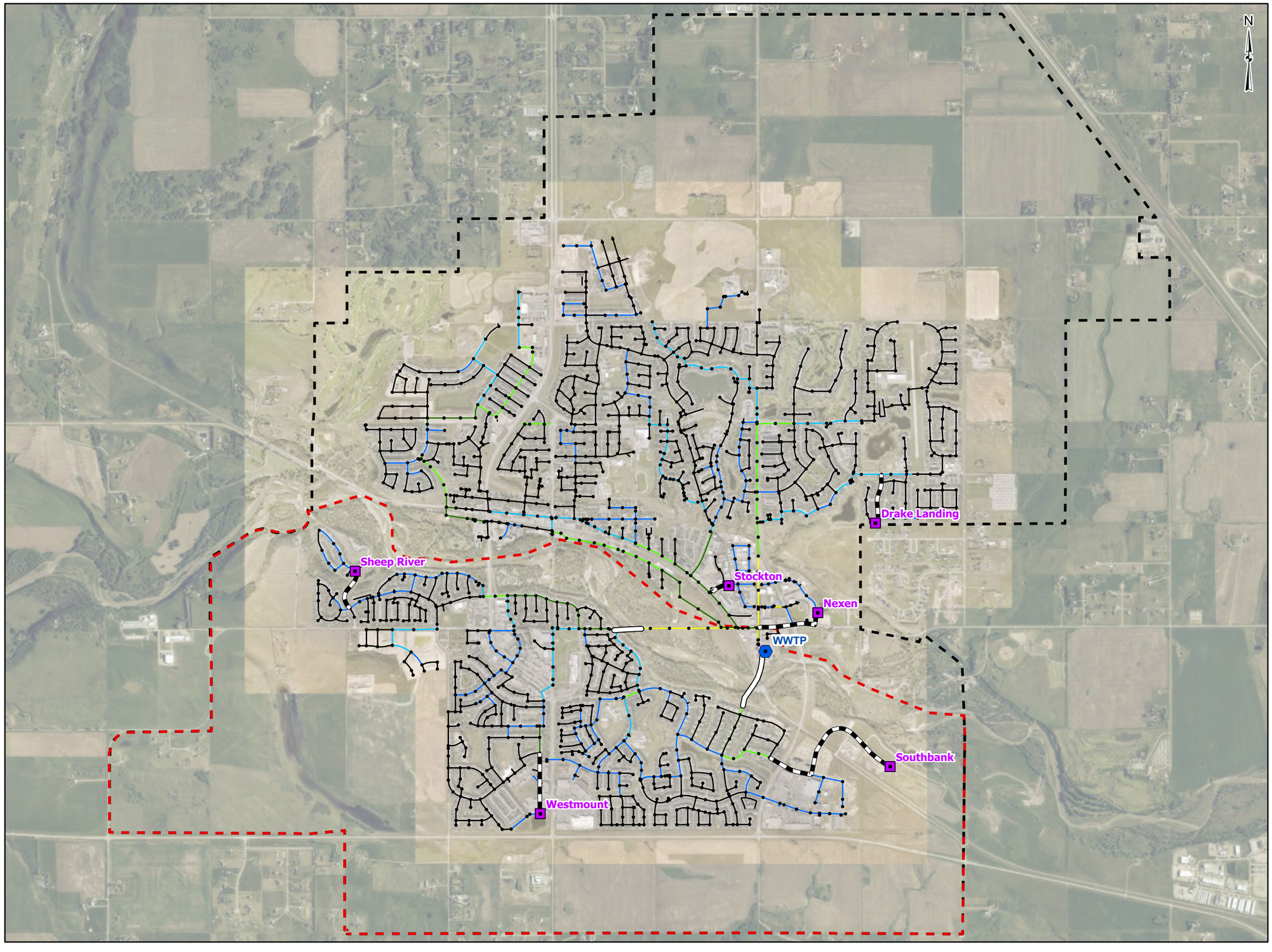
NAD 1983 3TM 114

0 260 520

1:21,000 Meters

FIGURE	2.5
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures aprx - Figure 2.5 Ultimate Pop



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Forcemain
- Syphon

Sanitary Sewer Diameter

- <= 200 mm
- 250 mm
- 300 mm
- 375 mm
- 450 mm
- 525 mm
- 600 mm
- 675 mm
- 750 mm
- 900 mm

TITLE

EXISTING SANITARY SEWER DIAMETER

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

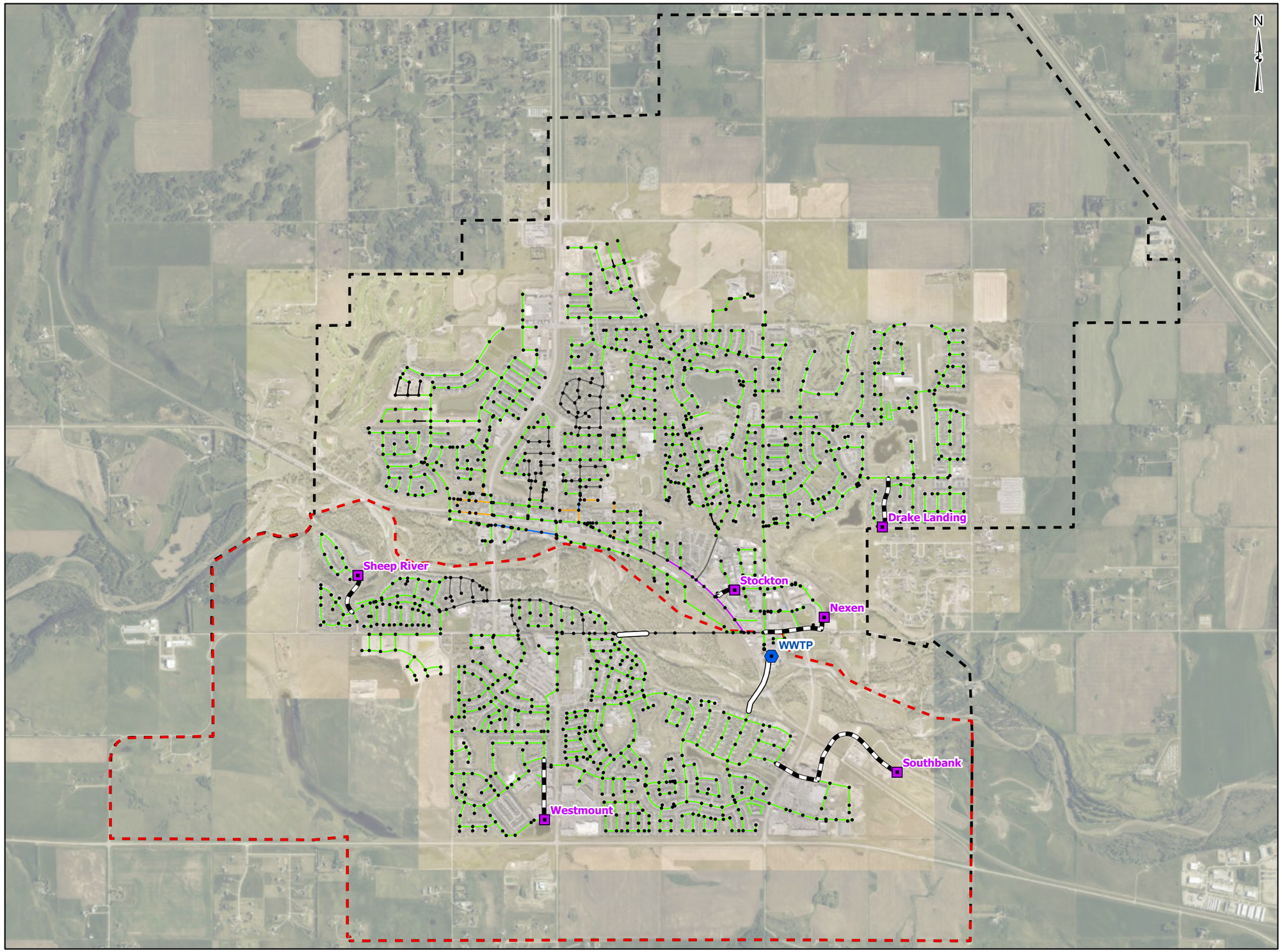
NAD 1983 3TM 114

0 370 740

1:30,000 Meters

FIGURE	3.1
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 3.1 - Sanitary Sewer Diameter



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Forcemain
- Syphon

Sanitary Sewer Material

- Unknown
- Asbestos Cement
- Concrete
- High Density Polyethylene
- Iron
- Polyvinyl Chloride
- Vitrified Clay Tile

TITLE

EXISTING SANITARY SEWER MATERIAL

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

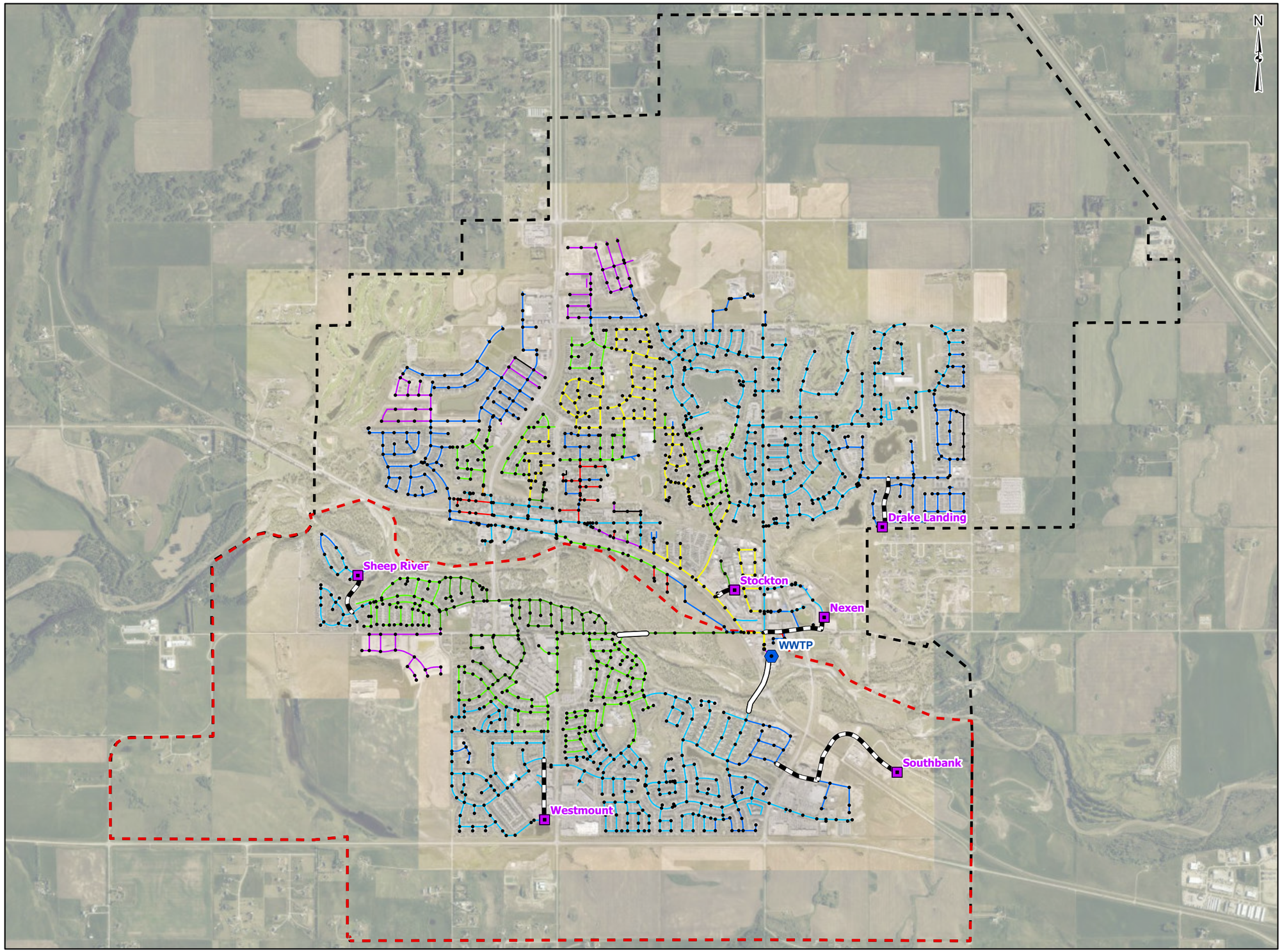
NAD 1983 3TM 114

0 370 740

1:30,000 Meters

FIGURE	3.2
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures.aprx - Figure 3.2 - Sanitary Sewer Material



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Sanitary Manhole
- Forcemain
- Syphon

Sanitary Sewer Installation Period

- Unknown
- 1950 - 1959
- 1960 - 1969
- 1970 - 1979
- 1980 - 1989
- 1990 - 1999
- 2000 - 2009
- 2010 - 2019
- 2020 - 2026

TITLE

EXISTING SANITARY SEWER INSTALLATION PERIOD

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

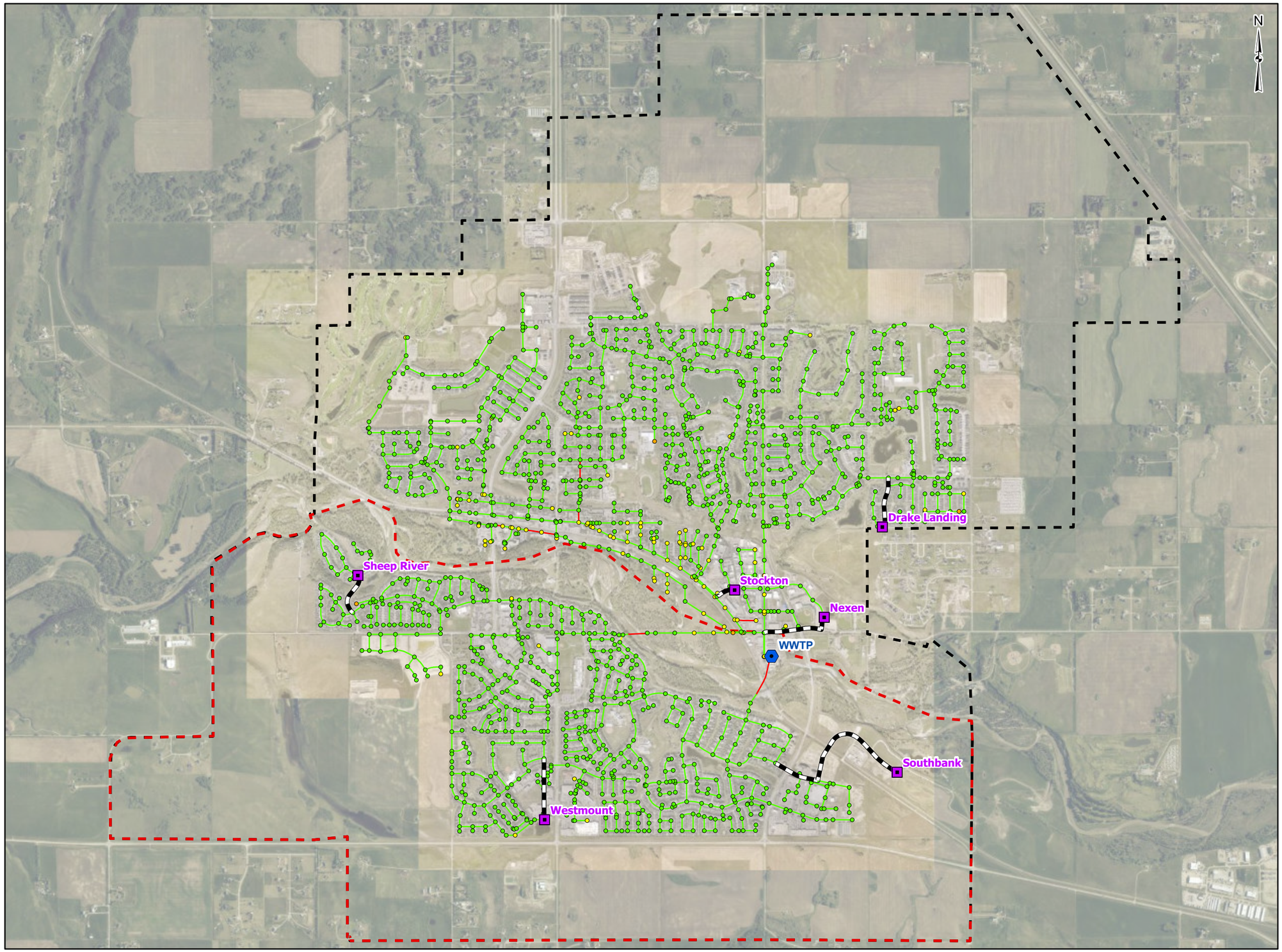
NAD 1983 3TM 114

0 370 740

1:30,000 Meters

FIGURE	3.3
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures.aprx - Figure 3.3 - Sanitary Sewer Installation Date



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Forcemain

Maximum HGL Relative to Ground (m)

- Less than -2.5 m
- -2.5 m to -1.5 m
- -1.5 m to 0.0 m
- Greater than 0.0 m

Peak Discharge Relative to Pipe Capacity

- Less than 86%
- Between 86% and 100%
- Greater than 100%

TITLE

EXISTING SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
CAPACITY UTILIZATION AND MAX HGL

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

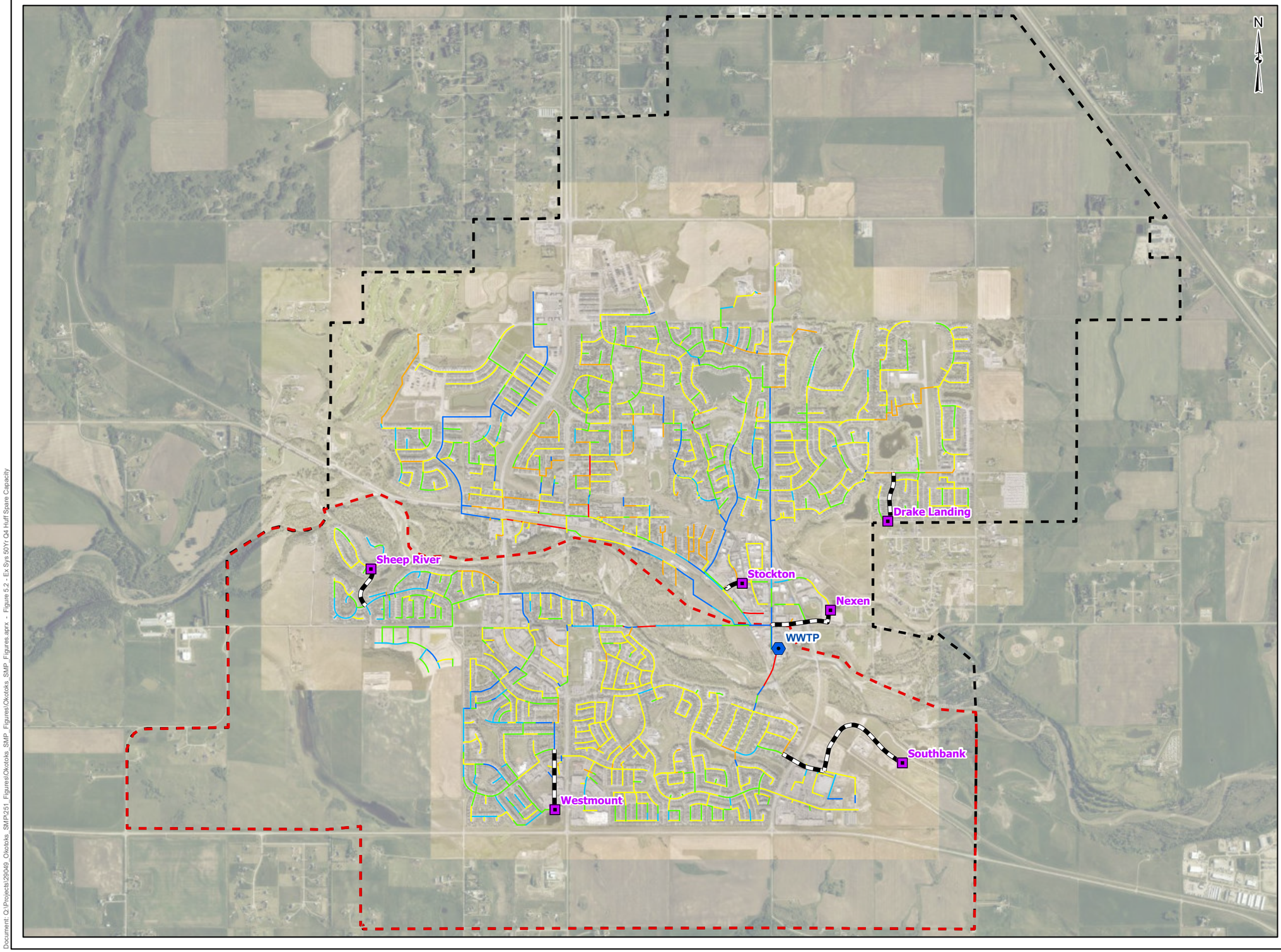
NAD 1983 3TM 114

0 370 740

1:30,000 Meters

FIGURE	5.1
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 5.1 - Ex Sys 50Yr Q4 Huff Cap Utilization and Max HGL



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Forcemain

Spare Capacity (L/s)

- Less than 0 L/s
- 0 - 25 L/s
- 25 - 50 L/s
- 50 - 75 L/s
- 75 - 100 L/s
- Greater than 100 L/s

TITLE

EXISTING SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
SPARE CAPACITY

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

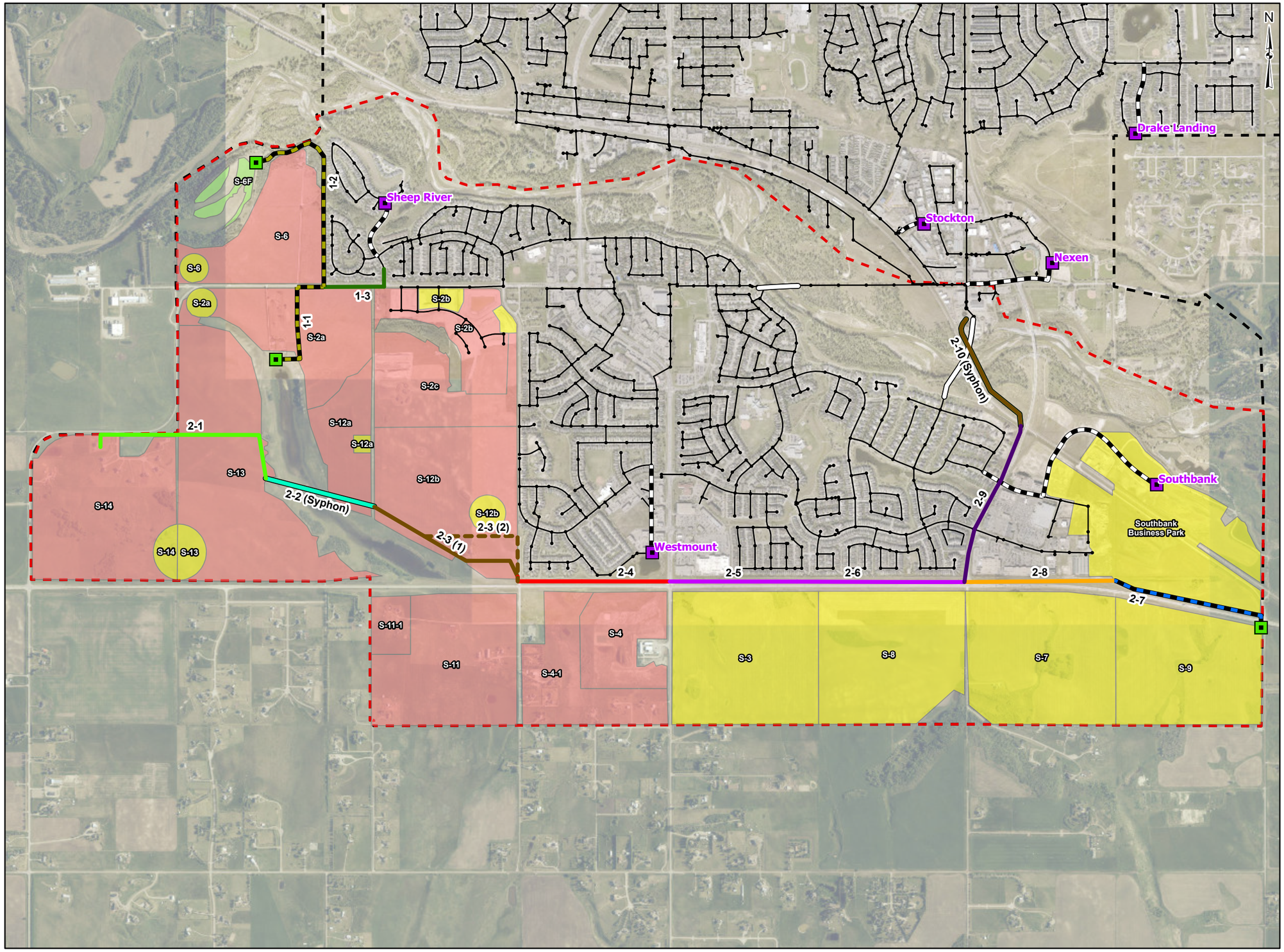
NAD 1983 3TM 114

0 370 740

1:30,000 Meters

FIGURE	5.2
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 5.2 - Ex Sys 50Yr Q4 Huff Spare Capacity



LEGEND

- Town Boundary
- Study Area
- Lift Station
- Proposed Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Land Use Type

- Residential Growth
- Non-Residential Growth
- Future Study Area

Proposed Syphon

- 300 mm
- 675 mm

Proposed Forcemains

- 150 mm
- 250 mm

Proposed Sewer Size

- 250 mm
- 300 mm
- 375 mm
- 450 mm
- 600 mm
- 675 mm
- 750 mm
- 900 mm
- 1050 mm

Note: The dashed line 2-3 (2) denotes the alternative alignment for sewer 2-3.

TITLE

FUTURE SYSTEM CONCEPT

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

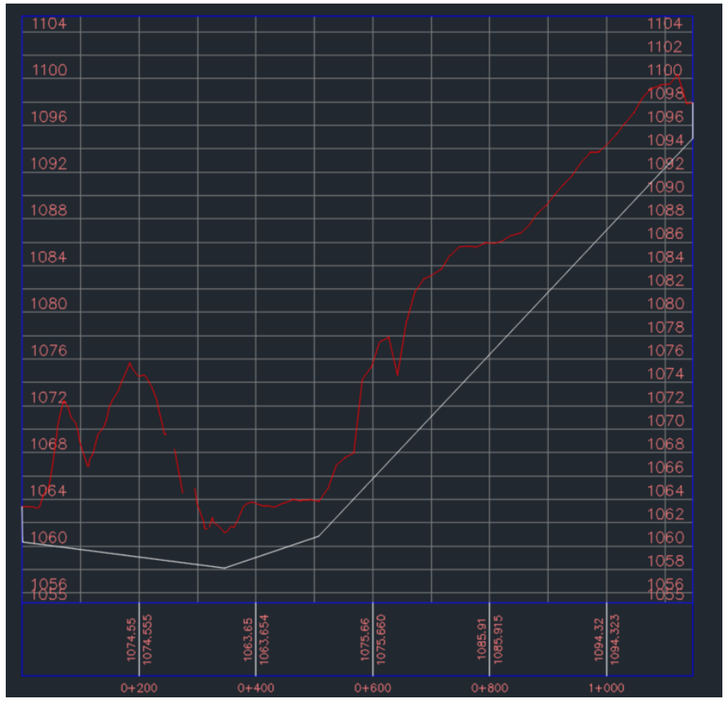
NAD 1983 3TM 114

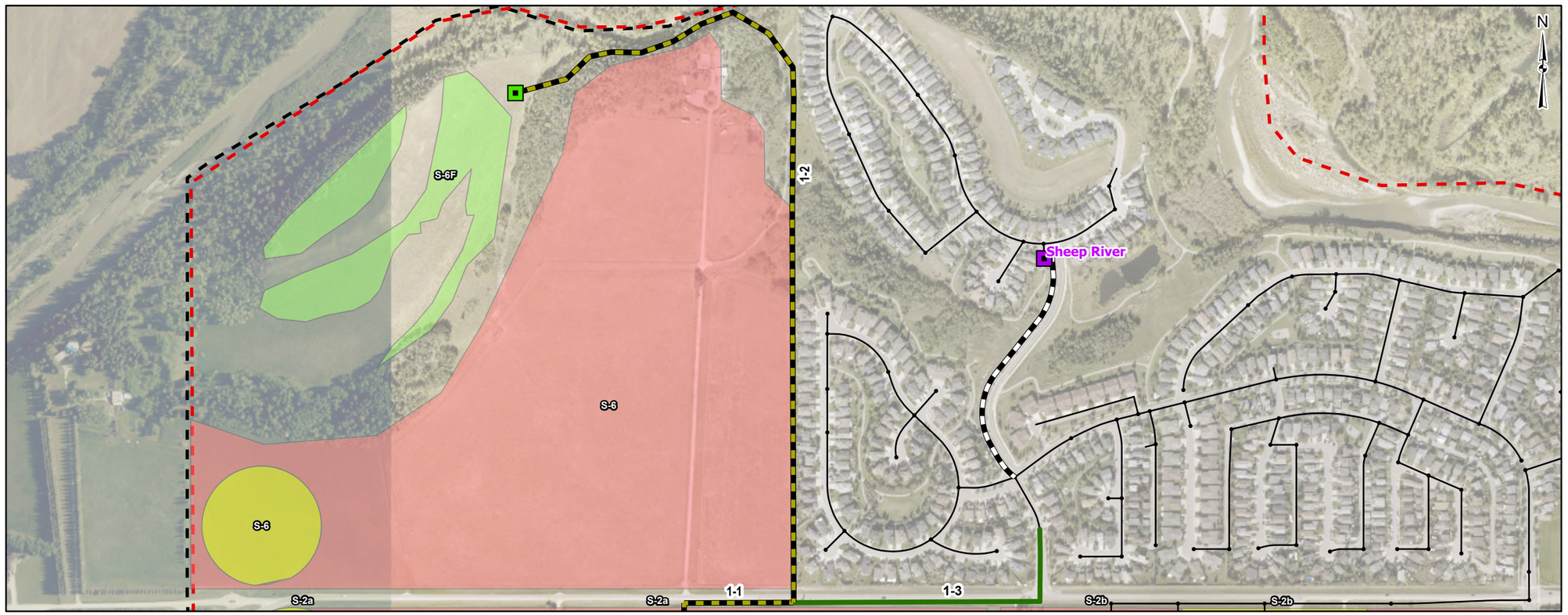
0 260 520

1:21,000 Meters

FIGURE	6.1
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.1 - Future Sanitary Sewer Concept





LEGEND

- Town Boundary
- Study Area
- Lift Station
- Proposed Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Land Use Type

- Residential Growth
- Non-Residential Growth
- Future Study Area

Proposed Syphon

- 300 mm
- 675 mm

Proposed Forcemains

- 150 mm
- 250 mm

Proposed Sewer Size

- 250 mm
- 300 mm
- 375 mm
- 450 mm
- 600 mm
- 675 mm
- 750 mm
- 900 mm
- 1050 mm

TITLE
FUTURE SYSTEM CONCEPT PROFILE A

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

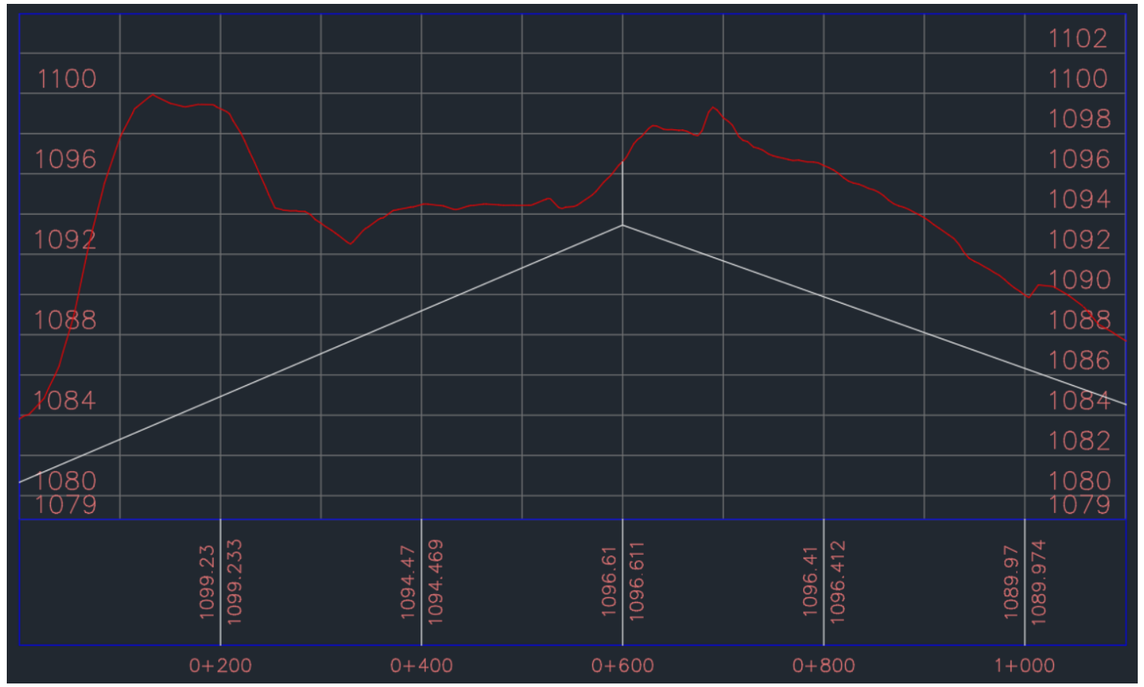
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

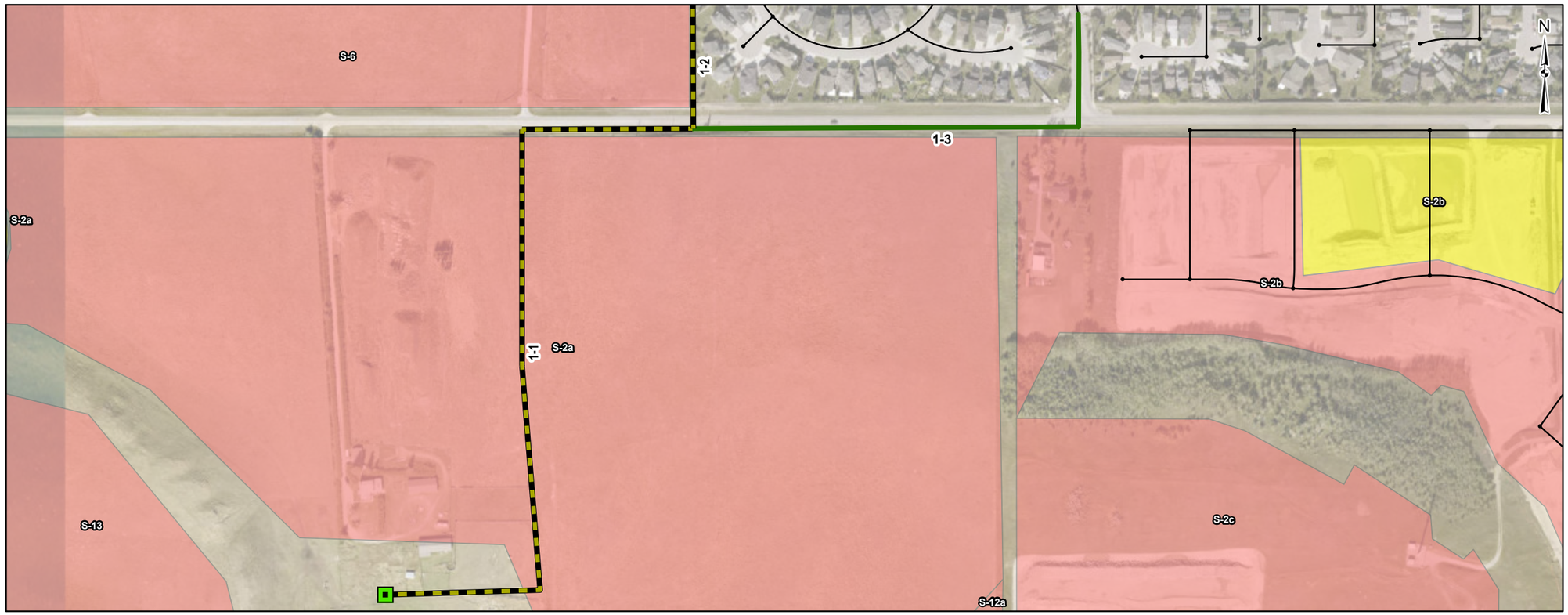
PROJECTION
NAD 1983 3TM 114

0 75 150
1:6,250 Meters

FIGURE	6.2
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.2 - Future Sanitary Sewer Concept





LEGEND

- Town Boundary
- Study Area
- Lift Station
- Proposed Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Land Use Type

- Residential Growth
- Non-Residential Growth
- Future Study Area

Proposed Syphon

- 300 mm
- 675 mm

Proposed Forcemains

- 150 mm
- 250 mm

Proposed Sewer Size

- 250 mm
- 300 mm
- 375 mm
- 450 mm
- 600 mm
- 675 mm
- 750 mm
- 900 mm
- 1050 mm

TITLE
FUTURE SYSTEM CONCEPT
PROFILE B

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

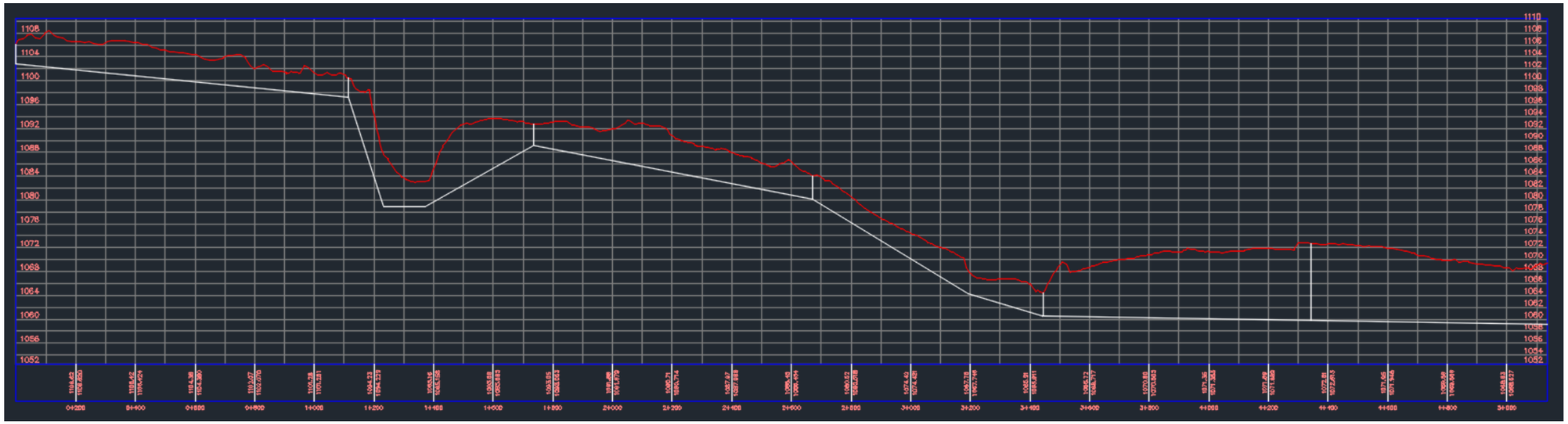
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks

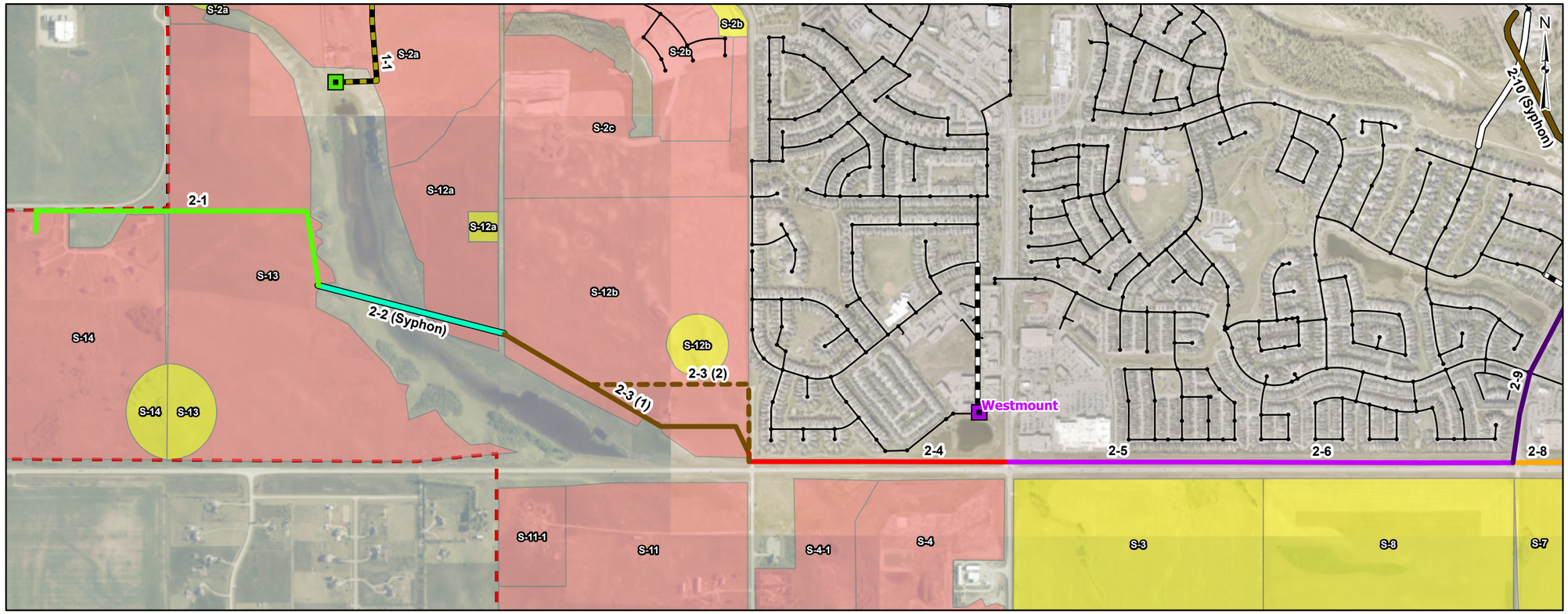
PROJECTION
NAD 1983 3TM 114

0 40 80
1:4,000 Meters

FIGURE	6.3
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.3 - Future Sanitary Sewer Concept





LEGEND

- Town Boundary
- Study Area
- Lift Station
- Proposed Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Land Use Type

- Residential Growth
- Non-Residential Growth
- Future Study Area

Proposed Syphon

- 300 mm
- 675 mm

Proposed Forcemains

- 150 mm
- 250 mm

Proposed Sewer Size

- 250 mm
- 300 mm
- 375 mm
- 450 mm
- 600 mm
- 675 mm
- 750 mm
- 900 mm
- 1050 mm

Note: The dashed line 2-3 (2) denotes the alternative alignment for sewer 2-3.

TITLE
FUTURE SYSTEM CONCEPT
PROFILE C OPTION 1

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

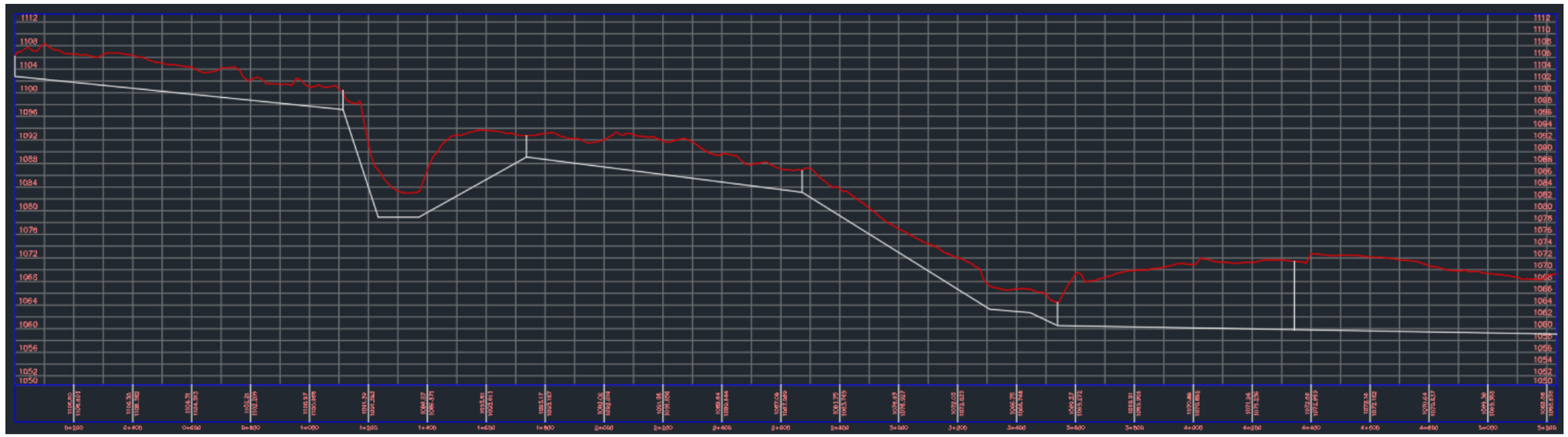
CLIENT
THE TOWN OF OKOTOKS

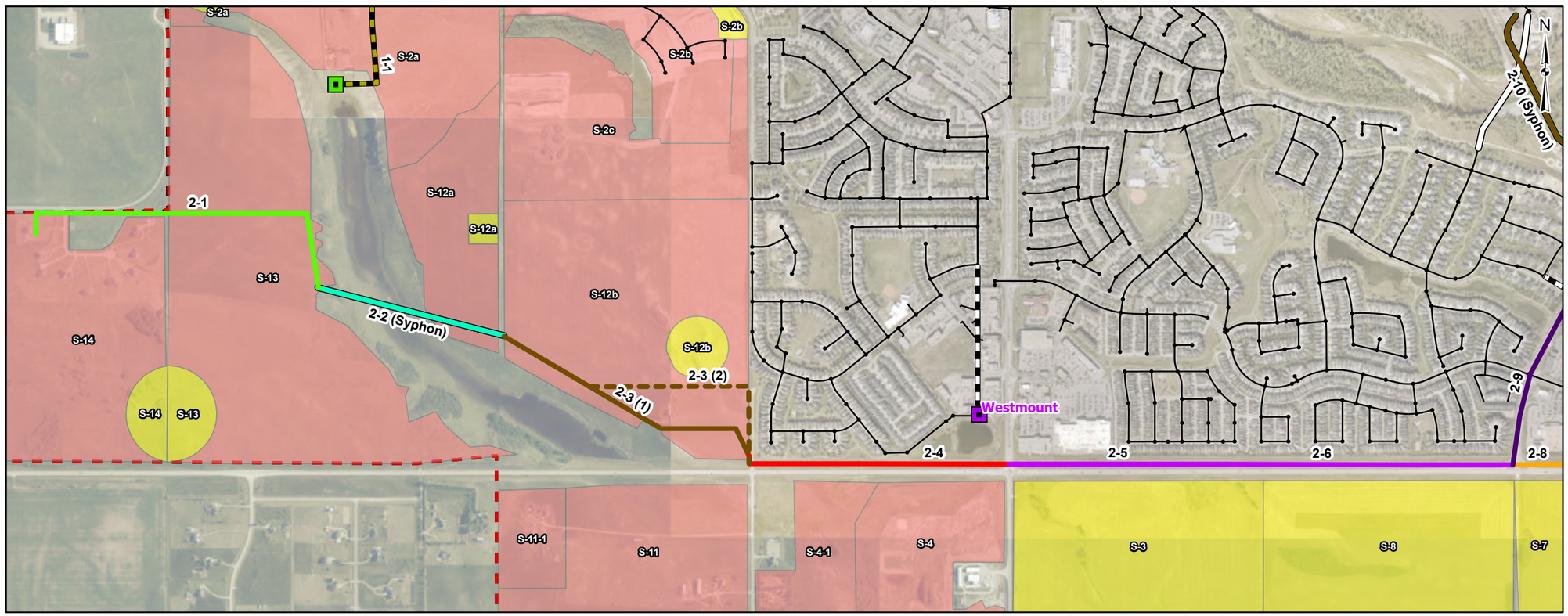
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION
NAD 1983 3TM 114

0 180 360
1:15,000 Meters

FIGURE	6.4
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin





LEGEND

- Town Boundary
- Study Area
- Lift Station
- Proposed Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Land Use Type

- Residential Growth
- Non-Residential Growth
- Future Study Area

Proposed Syphon

- 300 mm
- 675 mm

Proposed Forcemains

- 150 mm
- 250 mm

Proposed Sewer Size

- 250 mm
- 300 mm
- 375 mm
- 450 mm
- 600 mm
- 675 mm
- 750 mm
- 900 mm
- 1050 mm

Note: The dashed line 2-3 (2) denotes the alternative alignment for sewer 2-3.

TITLE
FUTURE SYSTEM CONCEPT
PROFILE C OPTION 2

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

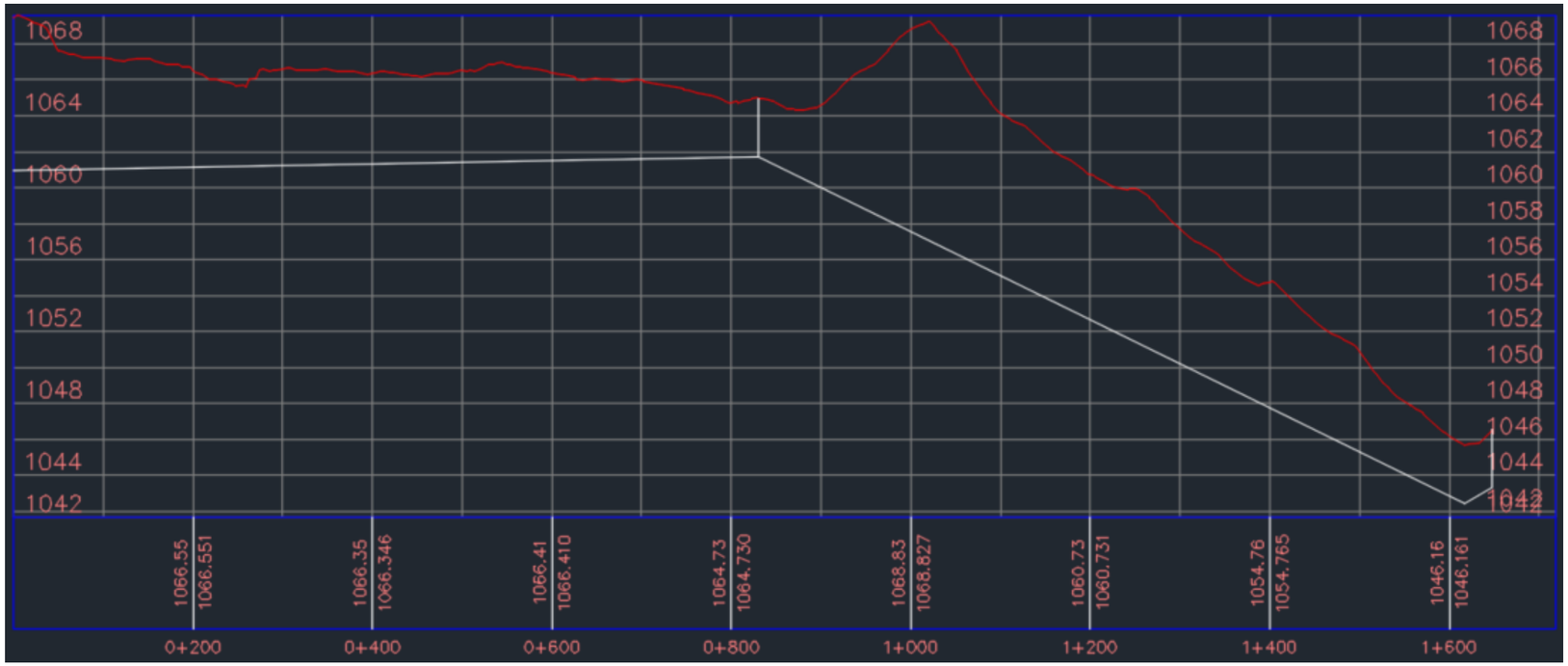
PROJECTION
NAD 1983 3TM 114

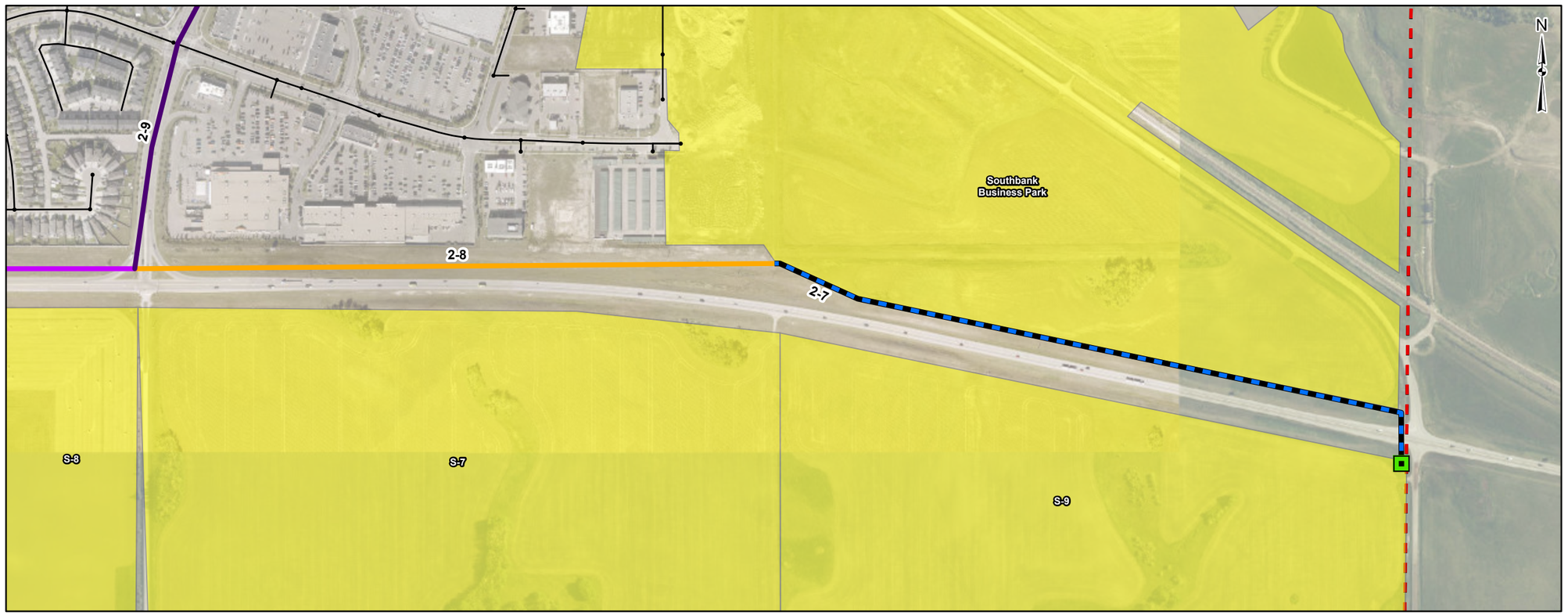
0 180 360
1:15,000 Meters

FIGURE	6.5
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

ISL

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.5 - Future Sanitary Sewer Concept





LEGEND

- Town Boundary
- Study Area
- Lift Station
- Proposed Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Land Use Type

- Residential Growth
- Non-Residential Growth
- Future Study Area

Proposed Syphon

- 300 mm
- 675 mm

Proposed Forcemains

- 150 mm
- 250 mm

Proposed Sewer Size

- 250 mm
- 300 mm
- 375 mm
- 450 mm
- 600 mm
- 675 mm
- 750 mm
- 900 mm
- 1050 mm

TITLE
FUTURE SYSTEM CONCEPT
PROFILE D

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

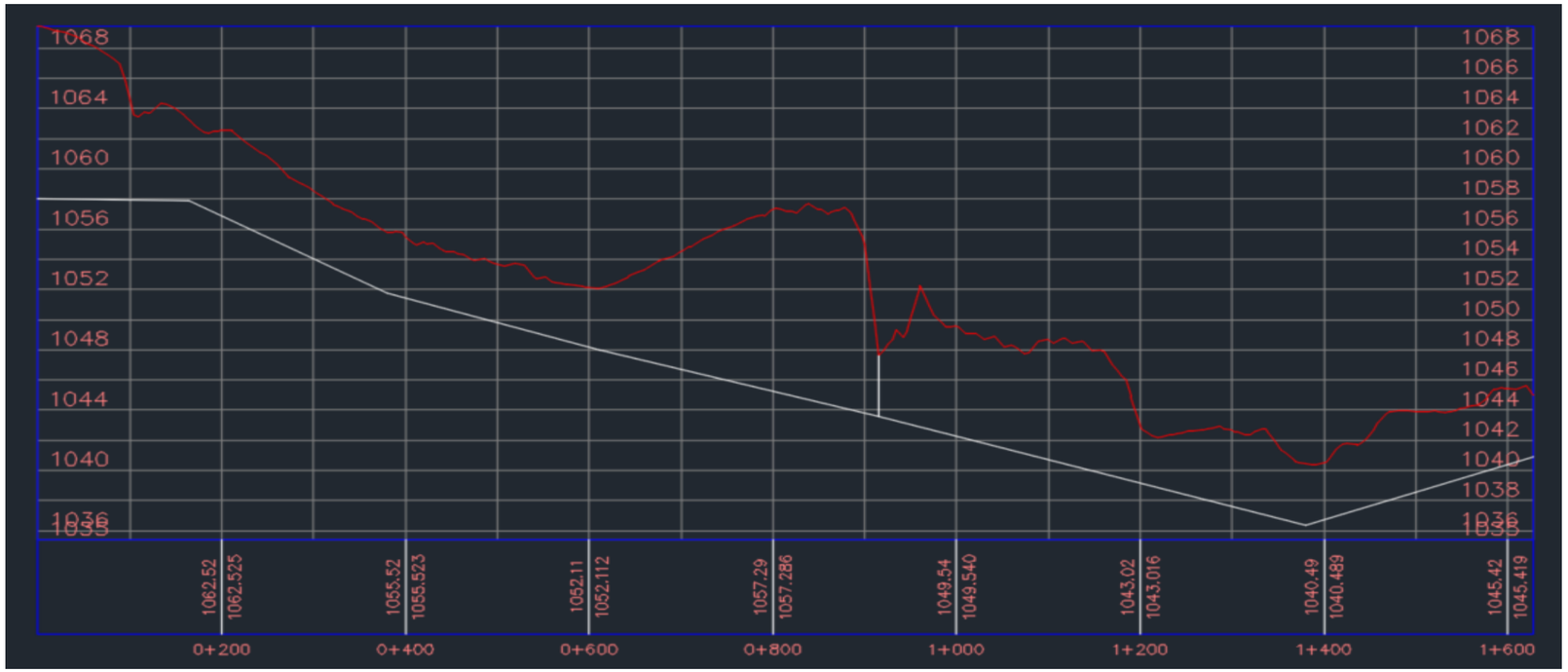
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

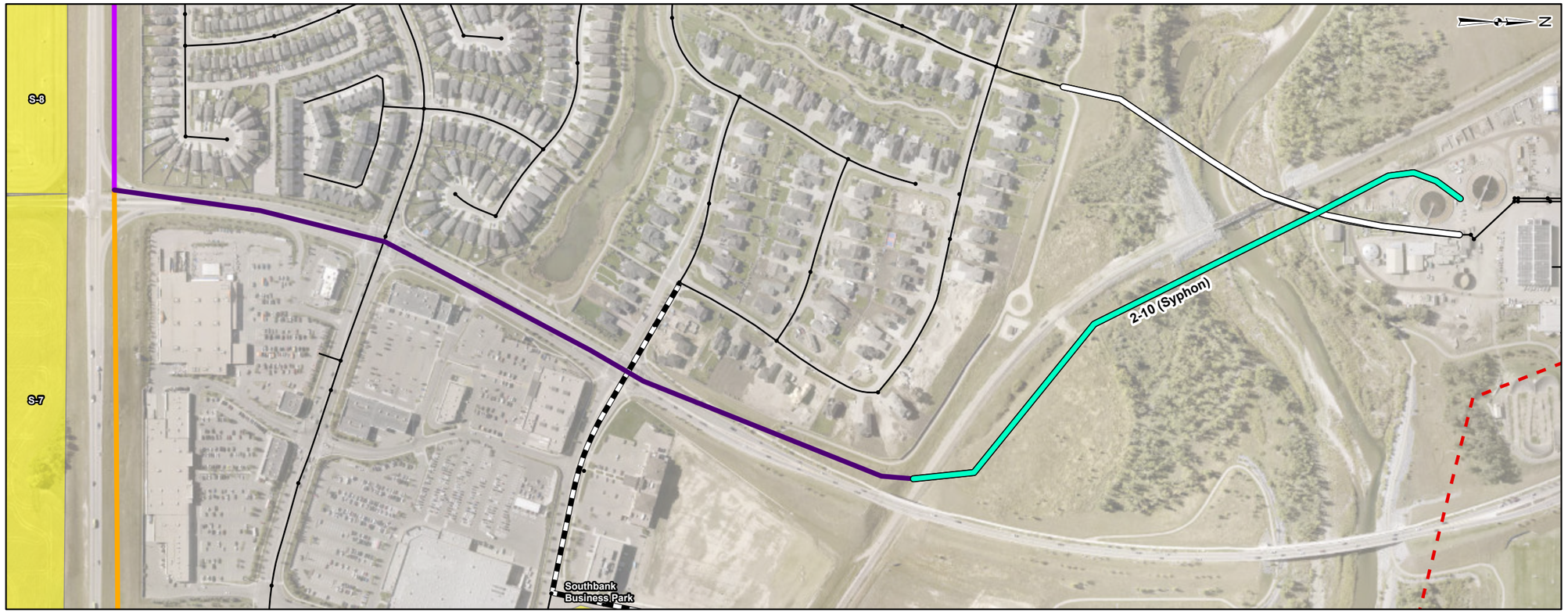
PROJECTION
NAD 1983 3TM 114

0 70 140
1:6,000 Meters

FIGURE	6.6
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.6 - Future Sanitary Sewer Concept





LEGEND

- Town Boundary
- Study Area
- Lift Station
- Proposed Lift Station
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Land Use Type

- Residential Growth
- Non-Residential Growth
- Future Study Area

Proposed Syphon

- 300 mm
- 675 mm

Proposed Forcemains

- 150 mm
- 250 mm

Proposed Sewer Size

- 250 mm
- 300 mm
- 375 mm
- 450 mm
- 600 mm
- 675 mm
- 750 mm
- 900 mm
- 1050 mm

TITLE
FUTURE SYSTEM CONCEPT PROFILE E

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

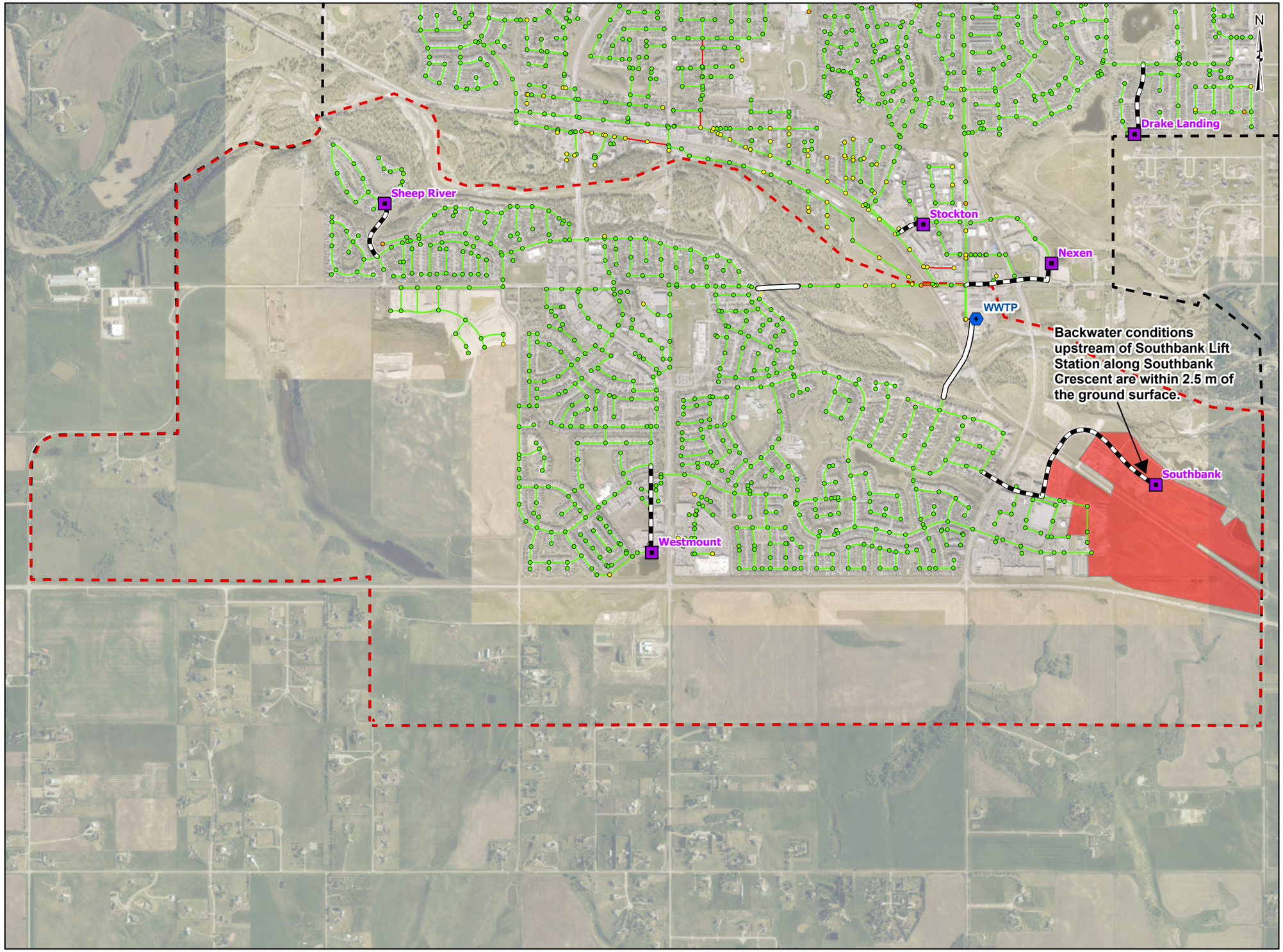
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION
NAD 1983 3TM 114

0 60 120
1:5,000 Meters

FIGURE	6.7
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.7 - Future Sanitary Sewer Concept



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Proposed Lift Station
- Syphon
- Forcemain
- Proposed Sanitary Sewer
- Proposed Syphon
- Proposed Forcemain

Maximum HGL Relative to Ground (m)

- Less than -2.5 m
- -2.5 m to -1.5 m
- -1.5 m to 0.0 m
- Greater than 0.0 m

Peak Discharge Relative to Pipe Capacity

- Less than 86%
- Between 86% and 100%
- Greater than 100%

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

TITLE

2031 SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
CAPACITY UTILIZATION AND MAX HGL

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

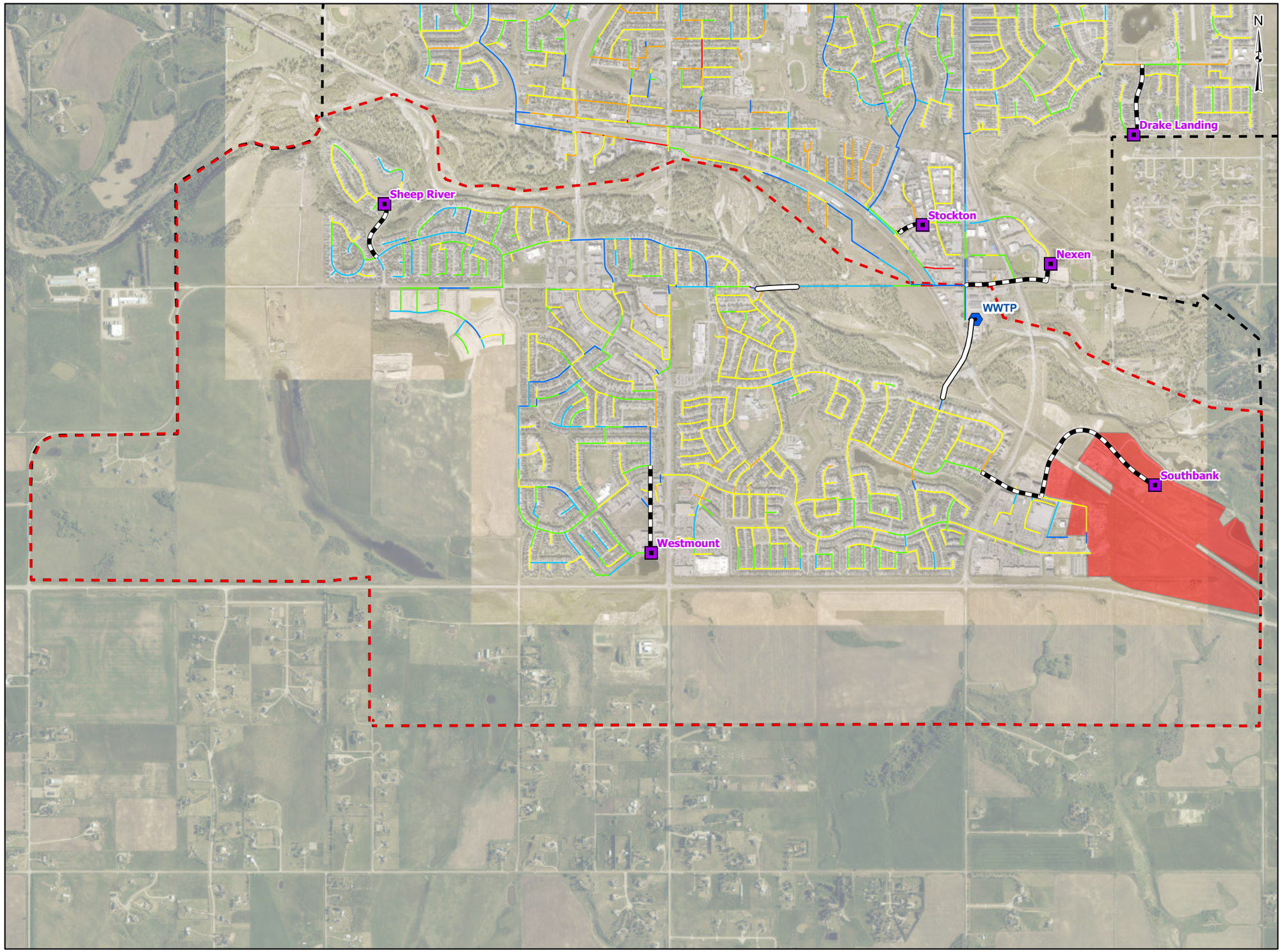
NAD 1983 3TM 114

0 260 520

1:21,000 Meters

FIGURE	6.8
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures.aprx - Figure 6.8 - 2031 Sys 50Yr Q4 Huff Cap Utilization and Max HGL



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Proposed Lift Station
- Syphon
- Forcemain
- Proposed Sanitary Sewer
- Proposed Syphon
- Proposed Forcemain

Spare Capacity (L/s)

- Less than 0 L/s
- 0 - 25 L/s
- 25 - 50 L/s
- 50 - 75 L/s
- 75 - 100 L/s
- Greater than 100 L/s

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

TITLE

2031 SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
SPARE CAPACITY

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

NAD 1983 3TM 114

0 260 520

1:21,000 Meters

FIGURE	6.9
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.9 - 2031 Sys 50Yr Q4 Huff Spare Cap1

Sheep River
Stockton
Nexen
Drake Landing
WWTP
Backwater conditions upstream of Southbank Lift Station along Southbank Crescent are within 2.5 m of the ground surface.
Southbank
Westmount
N

LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Proposed Lift Station
- Syphon
- Forcemain
- Proposed Sanitary Sewer
- Proposed Syphon
- Proposed Forcemain

Maximum HGL Relative to Ground (m)

- Less than -2.5 m
- -2.5 m to -1.5 m
- -1.5 m to 0.0 m
- Greater than 0.0 m

Peak Discharge Relative to Pipe Capacity

- Less than 86%
- Between 86% and 100%
- Greater than 100%

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

TITLE
2036 SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
CAPACITY UTILIZATION AND MAX HGL

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

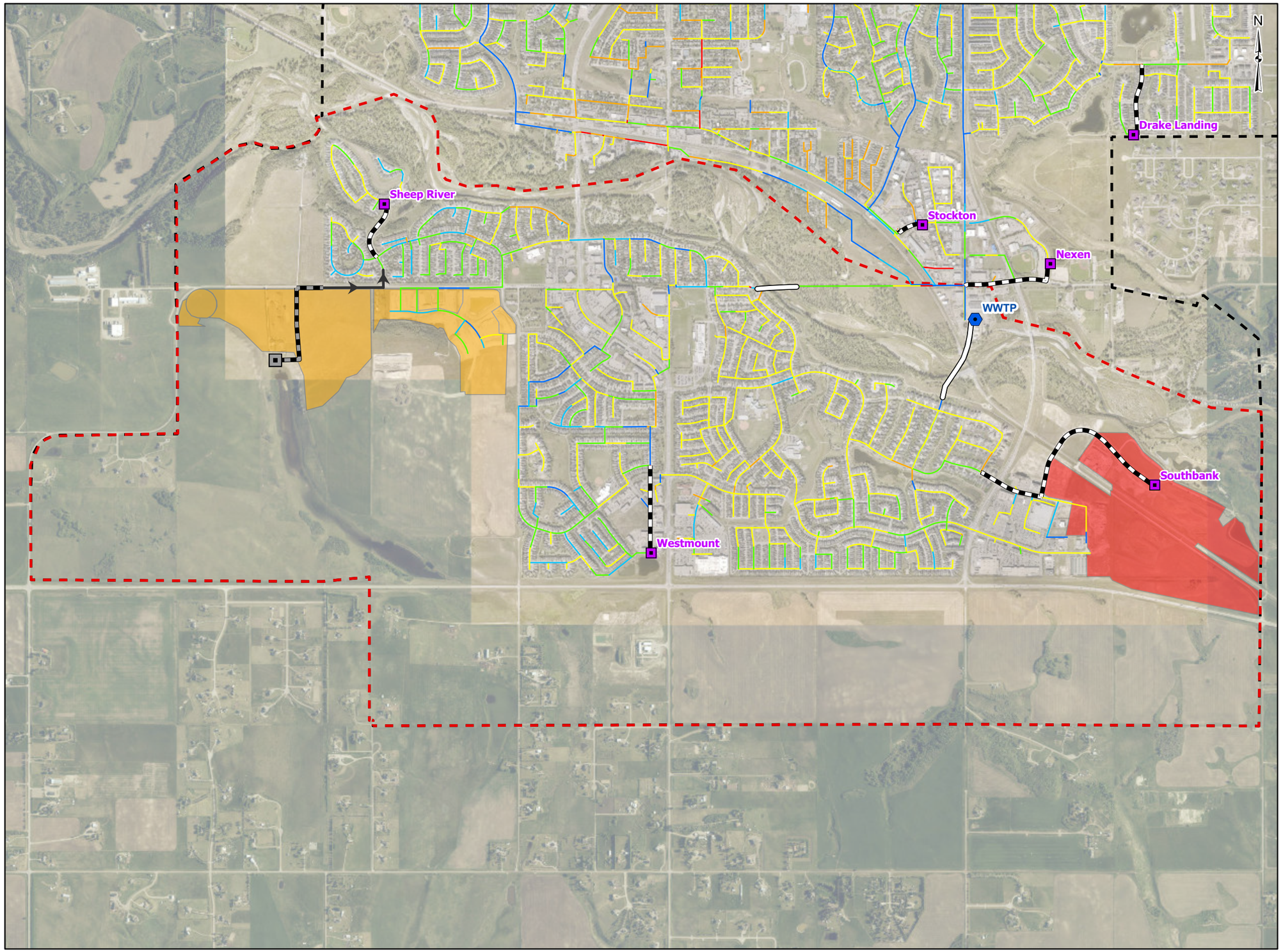
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION
NAD 1983 3TM 114

0 260 520
1:21,000 Meters

FIGURE	6.10
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.10 - 2036 Sys 50Yr Q4 Huff Cap Utilization and Max HGL



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Proposed Lift Station
- Syphon
- Forcemain
- Proposed Sanitary Sewer
- Proposed Syphon
- Proposed Forcemain

Spare Capacity (L/s)

- Less than 0 L/s
- 0 - 25 L/s
- 25 - 50 L/s
- 50 - 75 L/s
- 75 - 100 L/s
- Greater than 100 L/s

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

TITLE
2036 SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
SPARE CAPACITY

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

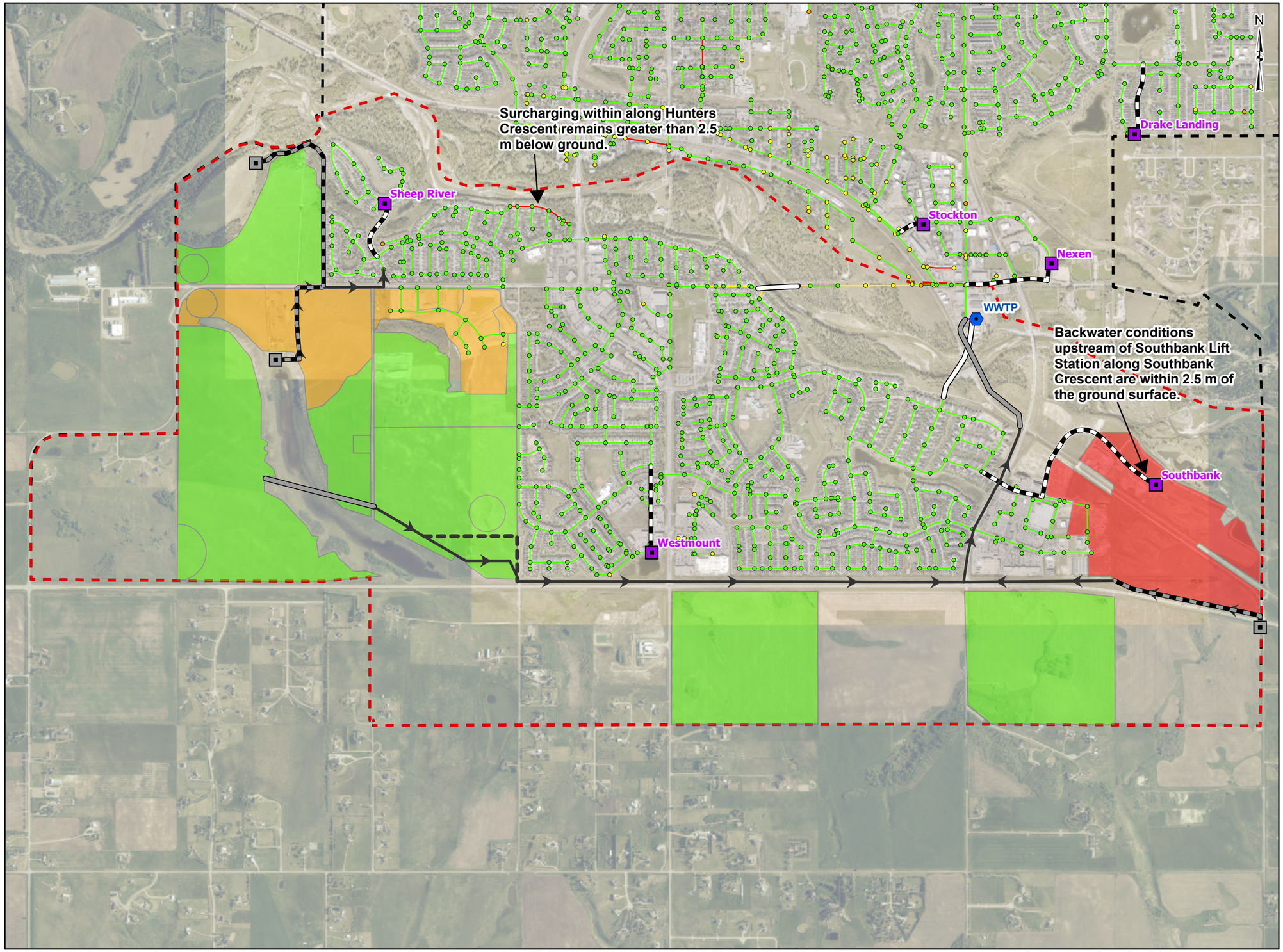
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION
NAD 1983 3TM 114

0 260 520
1:21,000 Meters

FIGURE	6.11
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.11 - 2036 Sys 50Yr Q4 Huff Spare Cap



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Proposed Lift Station
- Syphon
- Forcemain
- Proposed Sanitary Sewer
- Proposed Syphon
- Proposed Forcemain

Maximum HGL Relative to Ground (m)

- Less than -2.5 m
- -2.5 m to -1.5 m
- -1.5 m to 0.0 m
- Greater than 0.0 m

Peak Discharge Relative to Pipe Capacity

- Less than 86%
- Between 86% and 100%
- Greater than 100%

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

Note: The dashed line denotes the alternative alignment for sewer 2-3.

TITLE
2051 SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
CAPACITY UTILIZATION AND MAX HGL

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

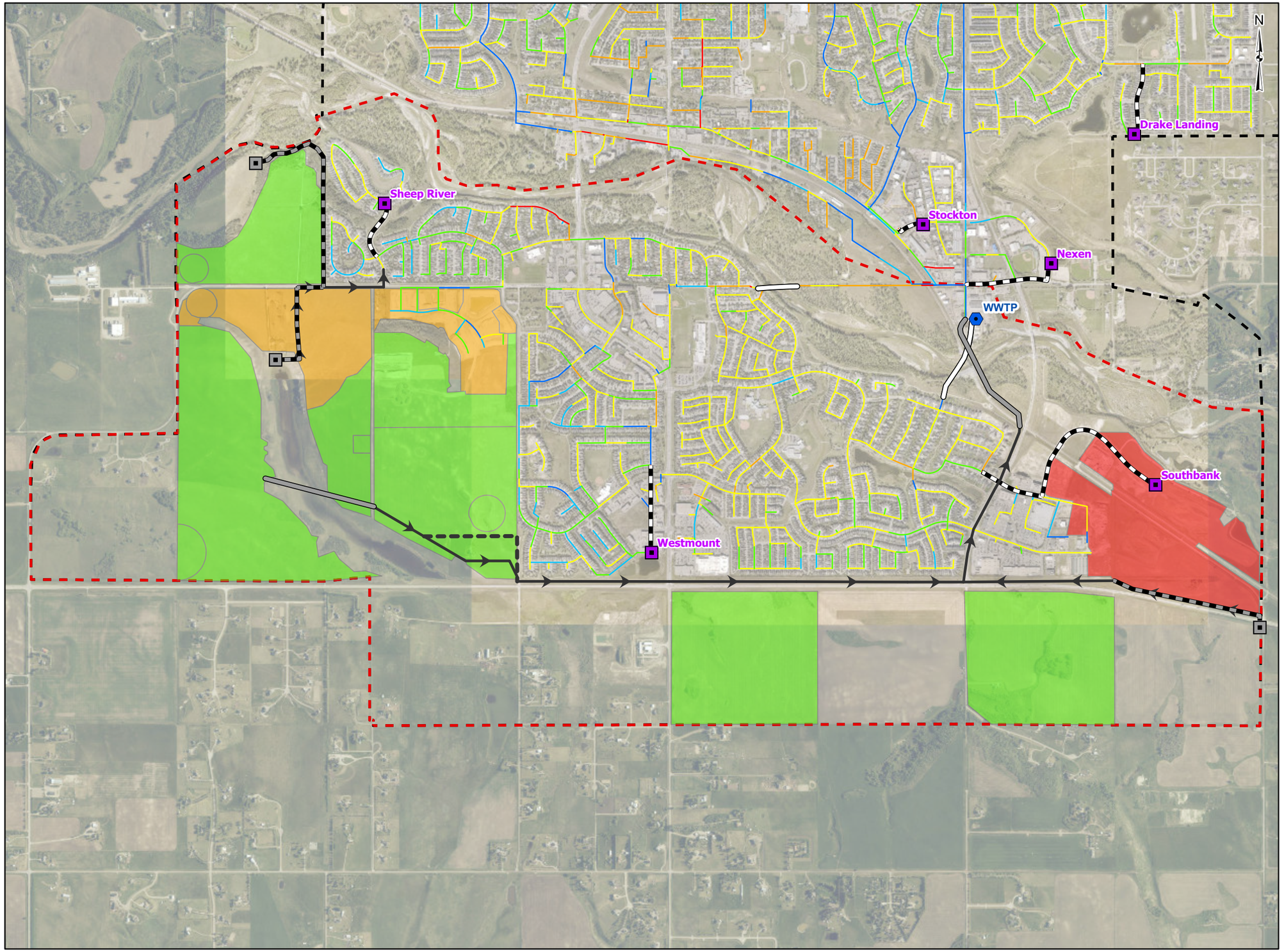
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION
NAD 1983 3TM 114

0 260 520
1:21,000 Meters

FIGURE	6.12
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.12 - 2051 Sys 50Yr Q4 Huff Cap Utilization and Max HGL



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Proposed Lift Station
- Syphon
- Forcemain
- Proposed Sanitary Sewer
- Proposed Syphon
- Proposed Forcemain

Spare Capacity (L/s)

- Less than 0 L/s
- 0 - 25 L/s
- 25 - 50 L/s
- 50 - 75 L/s
- 75 - 100 L/s
- Greater than 100 L/s

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

Note: The dashed line denotes the alternative alignment for sewer 2-3.

TITLE
2051 SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
SPARE CAPACITY

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

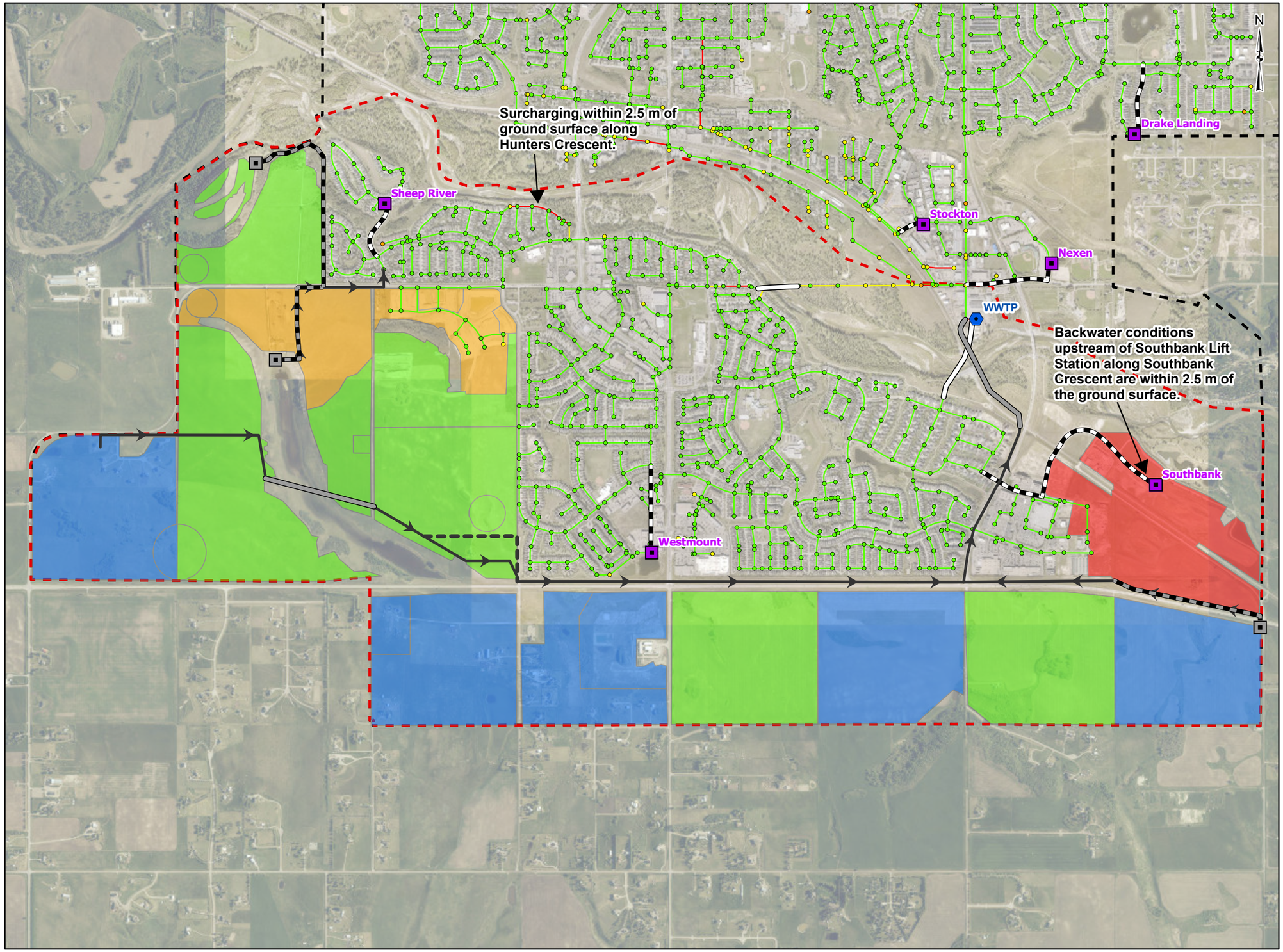
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION
NAD 1983 3TM 114

0 260 520
1:21,000 Meters

FIGURE	6.13
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.13 - 2051 Sys 50Yr Q4 Huff Spare Cap



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Proposed Lift Station
- Syphon
- Forcemain
- Proposed Sanitary Sewer
- Proposed Syphon
- Proposed Forcemain

Maximum HGL Relative to Ground (m)

- Less than -2.5 m
- -2.5 m to -1.5 m
- -1.5 m to 0.0 m
- Greater than 0.0 m

Peak Discharge Relative to Pipe Capacity

- Less than 86%
- Between 86% and 100%
- Greater than 100%

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

Note: The dashed line denotes the alternative alignment for sewer 2-3.

TITLE
ULTIMATE SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
CAPACITY UTILIZATION AND MAX HGL

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

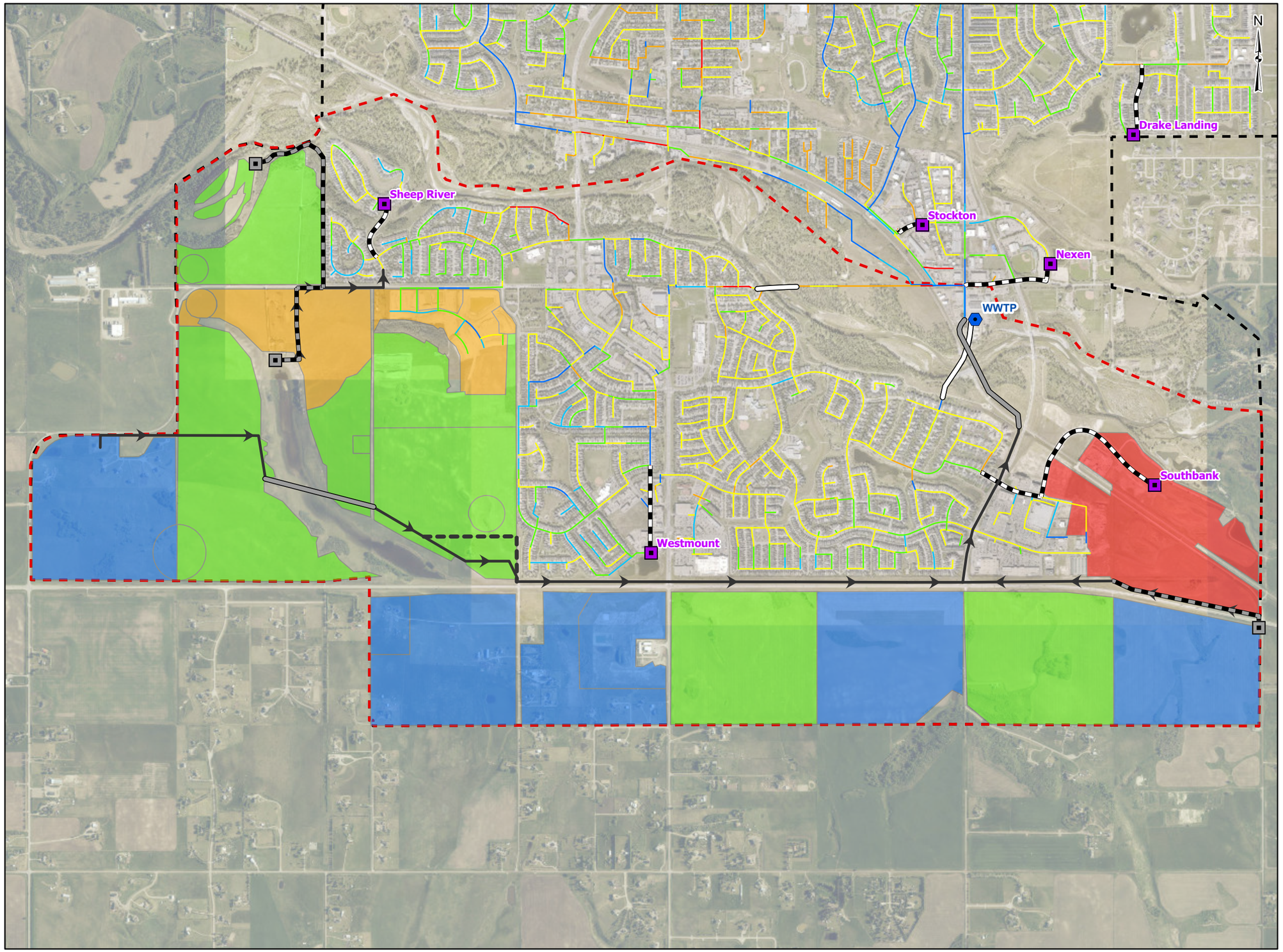
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION
NAD 1983 3TM 114

0 260 520
1:21,000 Meters

FIGURE	6.14
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.14 - Ult Sys 50Yr Q4 Huff Cap Utilization and Max HGL



LEGEND

- Town Boundary
- Study Area
- Wastewater Treatment Plant
- Lift Station
- Proposed Lift Station
- Syphon
- Forcemain
- Proposed Sanitary Sewer
- Proposed Syphon
- Proposed Forcemain

Spare Capacity (L/s)

- Less than 0 L/s
- 0 - 25 L/s
- 25 - 50 L/s
- 50 - 75 L/s
- 75 - 100 L/s
- Greater than 100 L/s

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

Note: The dashed line denotes the alternative alignment for sewer 2-3.

TITLE
ULTIMATE SYSTEM ASSESSMENT
50-YR Q4 HUFF EVENT
SPARE CAPACITY

PROJECT
SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT
THE TOWN OF OKOTOKS

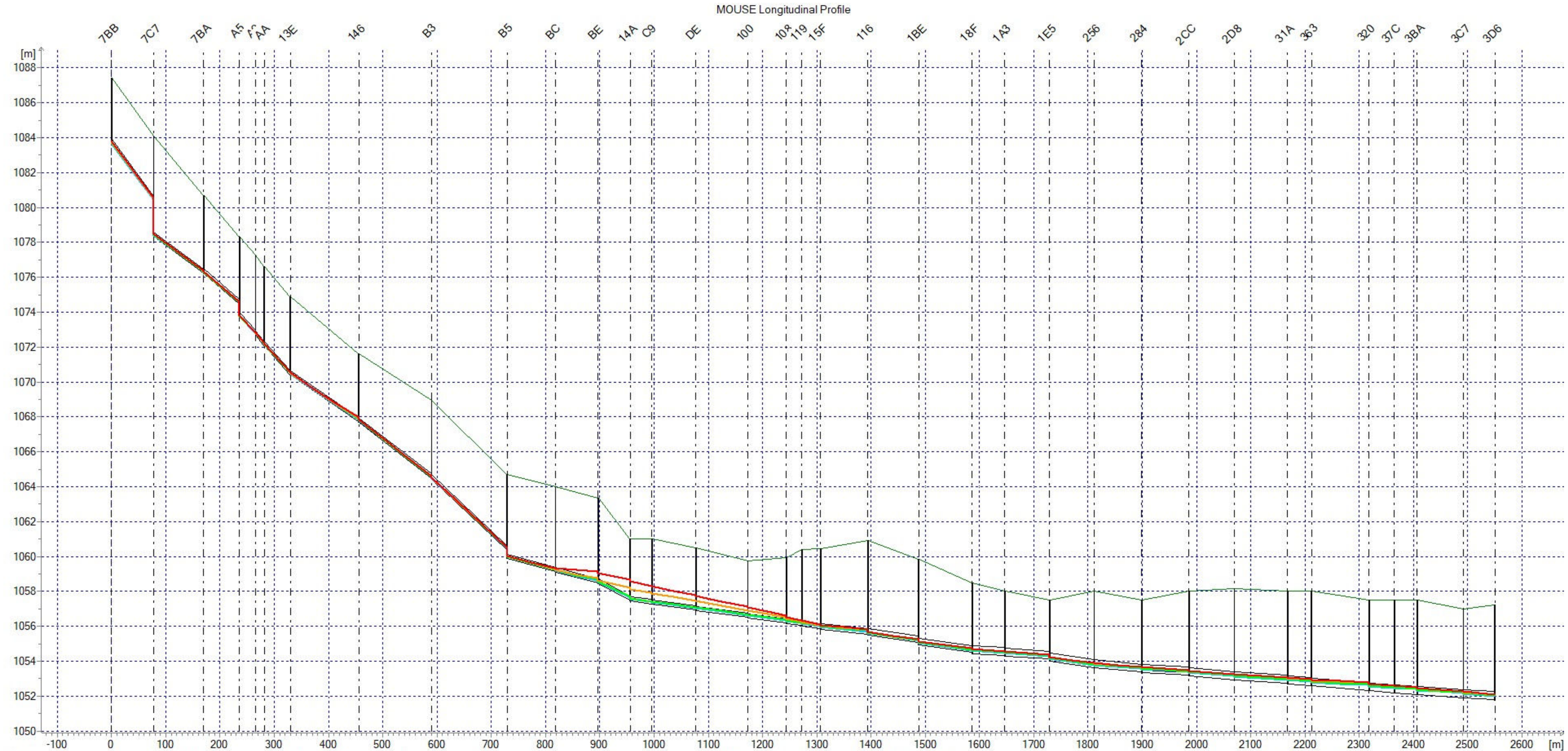
DATA SOURCES
- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION
NAD 1983 3TM 114

0 260 520
1:21,000 Meters

FIGURE	6.15
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.15 - Ult Sys 50Yr Q4 Huff Spare Cap

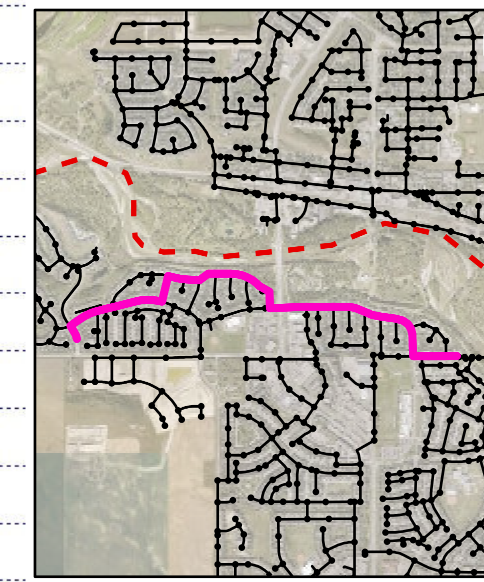


Link ID	....	Pipe 1825	....	.....	.....	....	Pipe 1505	Pipe 1506	Pipe 150A	....	....	....	.....	....	Pipe 150K	....	.....	.....	....	Pipe 1280	Pipe 12D6	....	....	....	....	....	....	Pipe 151K	....	Pipe 152B	....	....	....	....	
Link Diameter	0.2000	0.2500	0.3000	0.3750	0.4500																														
Shaft ID	7BB	7C7	7BA	A5	.....	AA	13E	146	B3	B5	BC	BE	14A	C9	DE	100	108	.....	15F	116	1BE	18F	1A3	1E5	256	284	2CC	2D8	31A	363	320	37C	3BA	3C7	.....
Shaft Diameter	1.2000																																		
Ground Level	....	1084.12	1080.67	....	.....	.....	1074.90	1071.61	1068.96	1064.69	1064.00	1063.35	1061.00	1060.50	1059.73	....	.....	....	1060.90	1059.86	1058.50	1058.00	1057.50	1058.00	1057.50	1058.00	1058.17	1058.00	1057.50	1057.00	.....				
Invert Level	....	1078.33	1076.22	....	.....	.....	1070.39	1067.69	1064.43	1059.88	1059.10	1058.45	....	....	1056.89	1056.48	....	.....	....	1055.48	1054.93	1054.44	1054.29	1054.02	1053.62	1053.36	1053.17	1052.93	1052.71	1052.58	1052.30	....	....	1051.91	.....
Link Slope	4.19	2.27	2.63	.....	.....	3.43	2.11	2.39	2.89	0.83	0.82	1.60	0.41	0.40	0.41	.....	.....	0.32	0.46	0.44	0.18	0.19	0.46	0.29	0.19	0.29	0.19	0.22	0.26	0.23	0.20	0.19			

8/11/2011

LEGEND

- Town Boundary
- Study Area
- Sanitary Manhole
- Existing Sanitary Sewer
- Hunters Crescent Profile Alignment
- 2031 Hydraulic Grade Line
- 2036 Hydraulic Grade Line
- 2051 Hydraulic Grade Line
- Ultimate Hydraulic Grade Line



TITLE

HUNTERS CRESCENT LONGITUDINAL PROFILE

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

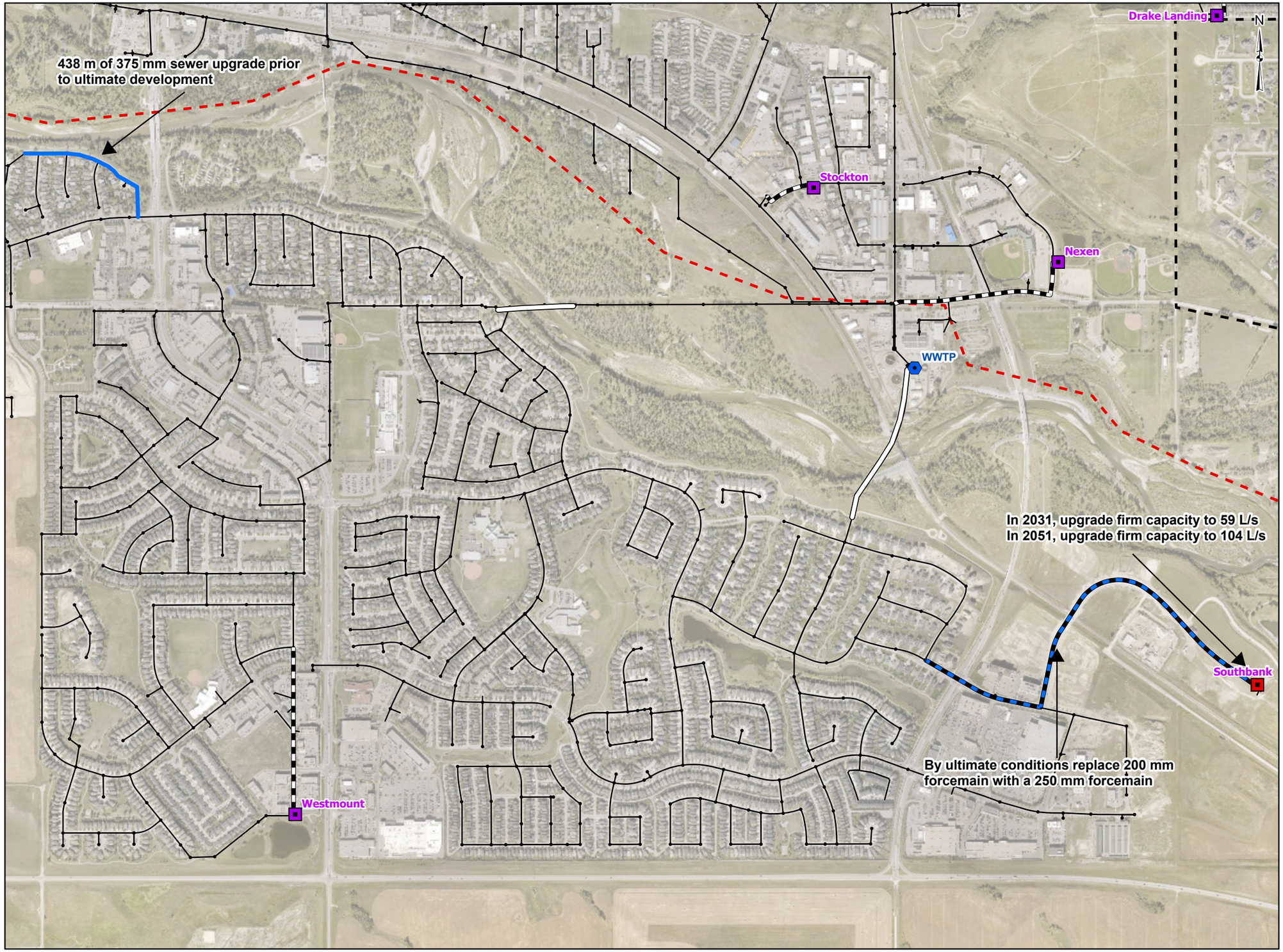
PROJECTION

NAD 1983 3TM 114

0 500 1,000 Meters
1:40,000

FIGURE	6.16
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.16 Hunters Crescent Profile



LEGEND

- Town Boundary
- Study Area
- Sanitary Manhole
- Syphon
- Wastewater Treatment Plant
- Lift Station Upgrade
- Lift Station
- Forcemain
- Forcemain Upgrade
- Sanitary Sewer
- Sanitary Sewer Upgrade

TITLE

EXISTING SYSTEM UPGRADES FOR FUTURE GROWTH

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

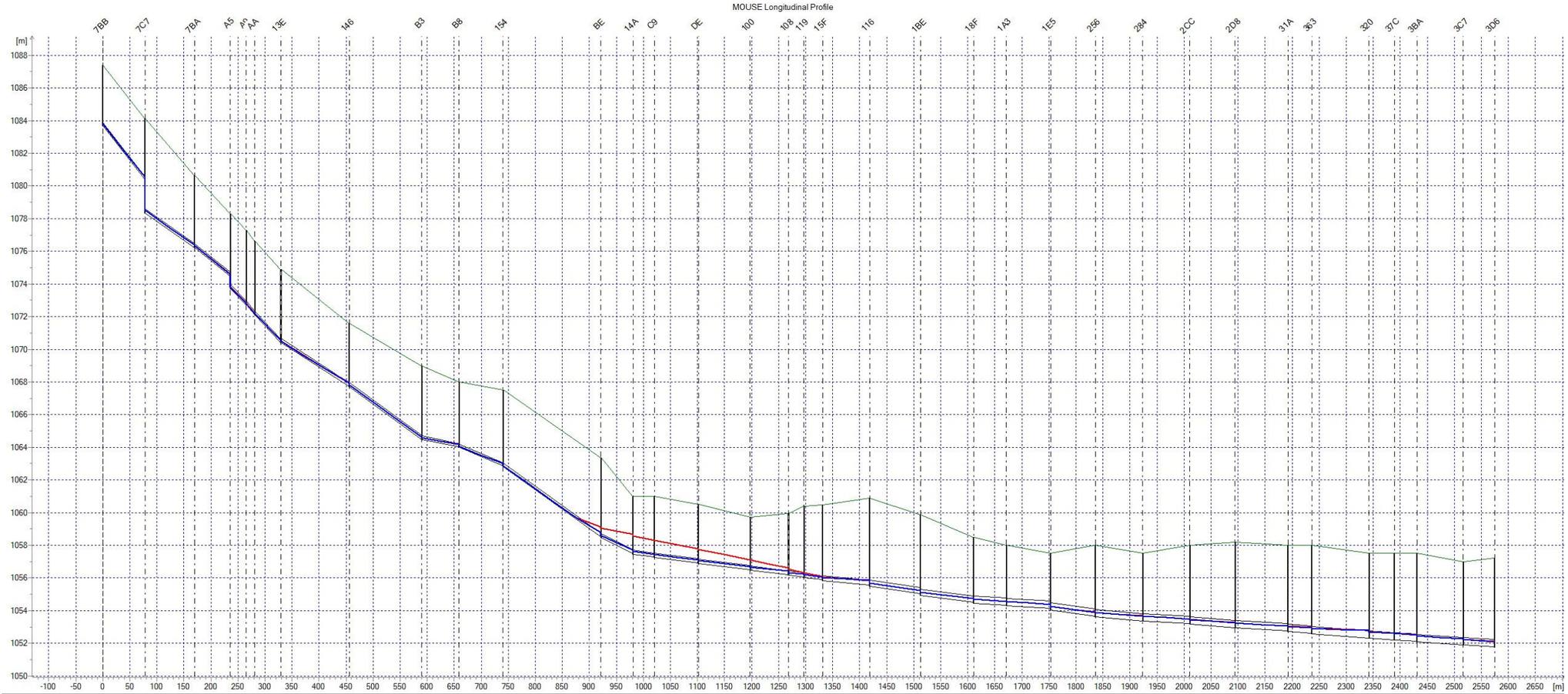
NAD 1983 3TM 114

0 130 260

1:11,000 Meters

FIGURE	6.17
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 6.17 Upgrades

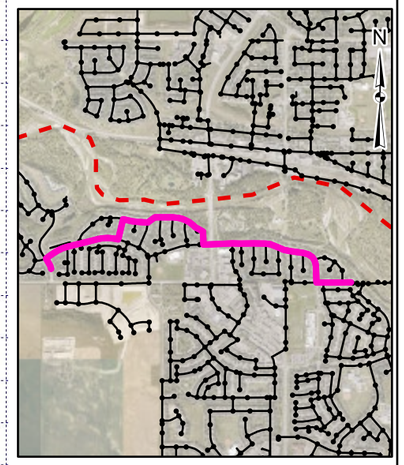


Link ID	Pipe 1673	Pipe 1825				Pipe 1505	Pipe 1506	Pipe 150C	Pipe 1267	Pipe 150D			Pipe 128C	Pipe 150K	Pipe 1510			Pipe 12C1	Pipe 1280	Pipe 12D6		Pipe 12CK	Pipe 12F9	Pipe 151C	Pipe 127D	Pipe 151D	Pipe 151K		Pipe 152B			Pipe 1387	
Link Diameter	0.2000	0.2500						0.2000		0.2500								0.3000	0.3750		0.4500												
Shaft ID	7BB	7C7	7BA	A5	A9	AA	13E	146	B3	B8	154	BE	14A	C9	DE	100	108	119	15F	116	1BE	18F	1A3	1E5	256	284	2CC	2D8	31A	363	320	37C	3BA	3C7	3D6
Shaft Diameter	1.2000																																	
Ground Level		1084.12	1080.67				1074.90	1071.61	1068.96	1068.00	1067.50	1063.35	1061.00		1060.50	1059.73			1060.46	1060.90	1059.86	1058.50	1058.00	1057.50	1058.00	1057.50	1058.00	1058.17	1058.00		1057.50			1057.00	
Invert Level		1078.33	1076.22				1070.39	1067.69	1064.43	1063.99	1062.80	1058.45		1057.25	1056.89	1056.48			1055.84	1055.48	1054.93	1054.44	1054.29	1054.02	1053.62	1053.36	1053.17	1052.93	1052.71	1052.58	1052.30		1052.09	1051.91	
Link Slope	4.19	2.27	2.63	3.27		3.43	2.11	2.39	0.68	1.39	2.36	1.60	0.41		0.40	0.41	0.37	0.40	0.32	0.46	0.44	0.18	0.19	0.46	0.29	0.19	0.29	0.19	0.22	0.26	0.23	0.20	0.19	

8/11/2011

LEGEND

- Town Boundary
- Study Area
- Sanitary Manhole
- Existing Sanitary Sewer
- Hunters Crescent Profile Alignment
- Ultimate Hydraulic Grade Line
- Ultimate Upgraded Hydraulic Grade Line



TITLE

HUNTERS CRESCENT UPGRADES LONGITUDINAL PROFILE

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

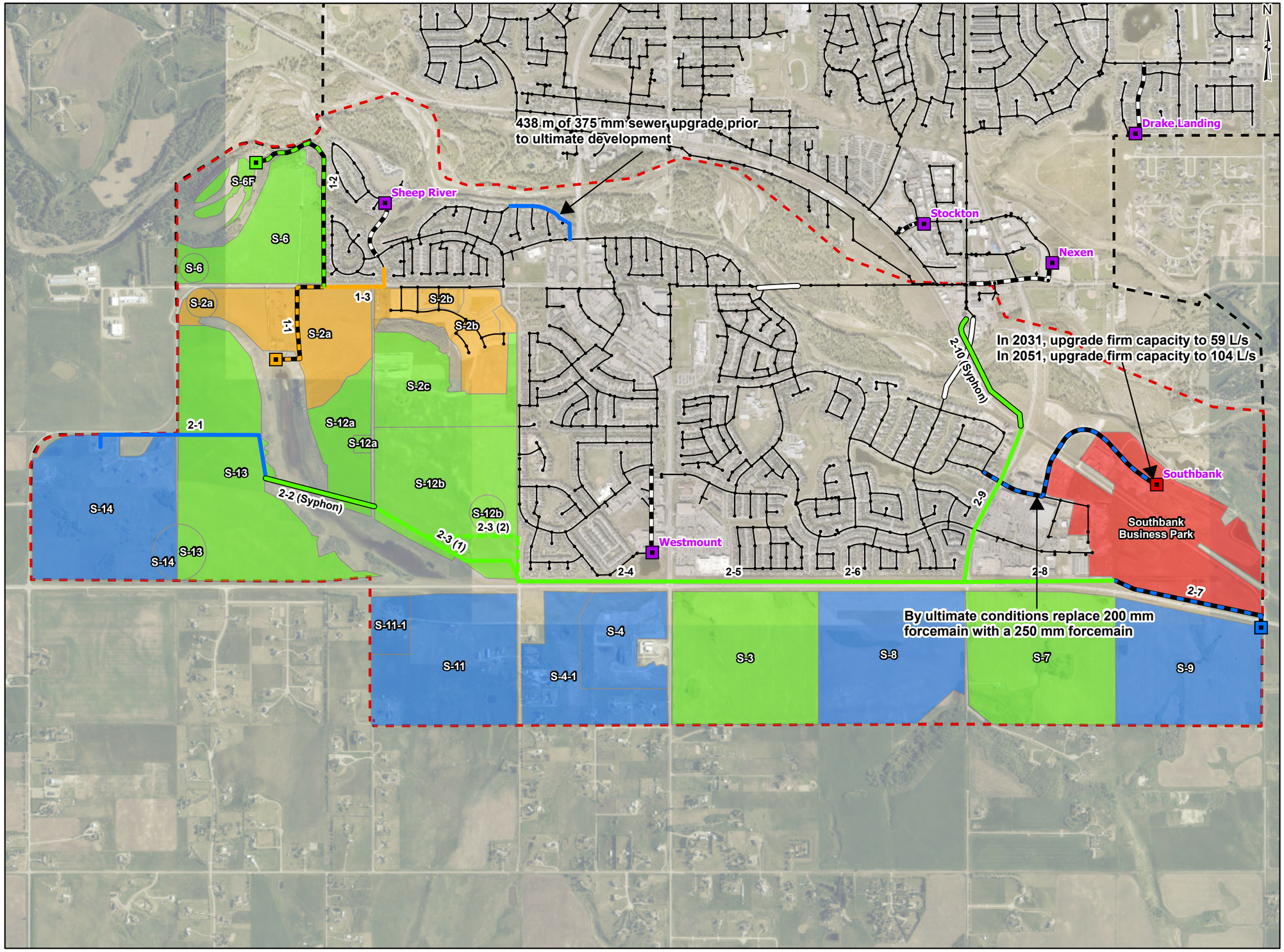
NAD 1983 3TM 114

0 500 1,000

1:40,000 Meters

FIGURE	6.18
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP251_Figures\Okotoks_SMP_Figures.aprx - Figure 6.18 Hunters Crescent Profile



LEGEND

- Town Boundary
- Study Area
- Sanitary Manhole
- Existing Sanitary Sewer
- Syphon
- Forcemain

Proposed Lift Station Stage

- Existing
- 2031
- 2036
- 2051
- Ultimate

Future Growth Staging

- 2031
- 2036
- 2051
- Ultimate

Sanitary Sewer Stage

- 2031
- 2036
- 2051
- Ultimate

Proposed Syphon

- 2031
- 2036
- 2051
- Ultimate

Forcemain Stage

- 2031
- 2036
- 2051
- Ultimate

Note: The dashed line 2-3 (2) denotes the alternative alignment for sewer 2-3.

TITLE

FUTURE SYSTEM STAGING

PROJECT

SOUTH OKOTOKS SANITARY MASTER PLAN

CLIENT

THE TOWN OF OKOTOKS

DATA SOURCES

- Topographic Map:Geodesy Group Inc., Southern Alberta Partners, Town of Okotoks, Vantor

PROJECTION

NAD 1983 3TM 114

0 260 520

1:21,000 Meters

FIGURE	7.1
DATE	5/13/2026
PROJECT NO.	29049
AUTHOR	svoegtlin

Document: Q:\Projects\29049_Okotoks_SMP\251_Figures\Okotoks_SMP_Figures\Okotoks_SMP_Figures.aprx - Figure 7.1 - Future Sanitary Sewer Concept

APPENDIX A
Concept Design

Tie-In	Pipe ID	Serviced Lands	Population	Employment	Residential Area	Non-Residential Area	Total Area	Generation Rate	Average DWF		Peaking Factors		Peak DWF		Total Peak DWF	Inflow - Infiltration		Total Peak WWF
									Residential	Non-Residential	Residential	Non-Residential	Residential	Non-Residential		Unit Rate	Flow Rate	
			(c)	(c)	(ha)	(ha)	(ha)	(L/c/d)	L/s	L/s			(L/s)	(L/s)	(L/s)	(L/s/ha)	(L/s)	(L/s)
#1	1-1 (FM)	**S-2a**	2,371	104	34.4	2.0	36.4	255	7.00	0.31	3.53	5.00	24.68	1.53	26.22	0.28	10.19	36.41
	1-2 (FM)	**S-6, S-6F**	2,927	128	36.6	2.2	38.8	255	8.64	0.38	3.45	5.00	29.82	1.89	31.71	0.28	10.86	42.57
	1-3	S-2a, S-6, S-6F	5,298	232	71.0	4.2	75.2	255	15.64	0.68	3.22	5.00	50.38	3.42	53.80	0.28	21.06	74.85
#2	2-1	**S-14**	4,189	183	57.1	3.3	60.4	255	12.36	0.54	3.32	5.00	40.98	2.70	43.69	0.28	16.91	60.60
	2-2 (Syphon)	**S-13**, S-14	9,167	401	129.6	6.9	136.5	255	27.06	1.18	2.99	5.00	80.96	5.92	86.87	0.28	38.22	125.09
	2-3	**S-12a**, **S-12b**, S-13, S-14	13,860	606	199.5	10.9	210.4	255	40.91	1.79	2.81	5.00	115.06	8.95	124.00	0.28	58.91	182.92
	2-4	**S-4, S-4-1, S-11**, **S-11-1**, S-12a, S-12b, S-13, S-14	18,623	815	298.0	10.9	308.9	255	54.96	2.40	2.68	5.00	147.50	12.02	159.52	0.28	86.48	246.00
	2-5	**S-3**, S-4, S-4-1, S-11, S-11-1, S-12a, S-12b, S-13, S-14	18,623	6,047	298.0	63.6	361.6	255	54.96	17.85	2.68	4.10	147.50	73.24	220.74	0.28	101.25	321.99
	2-6	S-3, S-4, S-4-1, **S-8**, S-11, S-11-1, S-12a, S-12b, S-13, S-14	18,623	12,034	298.0	114.0	411.9	255	54.96	35.52	2.68	3.66	147.50	129.83	277.33	0.28	115.33	392.67
	2-7 (FM)	**S-9**	0	5,914	0.0	45.4	45.4	255	0.00	17.45	4.50	4.12	0.00	71.89	71.89	0.28	12.70	84.59
	2-8	**S-7**, S-9	0	12,119	0.0	97.6	97.6	255	0.00	35.77	4.50	3.65	0.00	130.60	130.60	0.28	27.32	157.91
	2-9	S-3, S-4, S-4-1, S-7, S-8, S-9, S-11, S-11-1, S-12a, S-12b, S-13, S-14	18,623	24,153	298	212	509.5	255	54.96	71.29	2.68	3.25	147.50	231.80	379.30	0.28	142.65	521.95
	2-10 (Syphon)	S-3, S-4, S-4-1, S-7, S-8, S-9, S-11, S-11-1, S-12a, S-12b, S-13, S-14	18,623	24,153	298	212	509.5	255	54.96	71.29	2.68	3.25	147.50	231.80	379.30	0.28	142.65	521.95

Note: Sewersheds shown in bold are newly added to the current sewer section; non-bolded sewersheds indicate upstream contributions.

			GRAVITY SEWER DESIGN										
Tie-In	Pipe ID	Serviced Lands	System Type	Pipe Roughness "n"	Min. Slope	Design Flow (Q_{design} / 0.86)	Actual Pipe Size	Design Pipe Size	Pipe Size/Min. Slope Check	Full-Flow Capacity	Full-Flow Pipe Area	Full-Flow Velocity	Design Q - Capacity Check
					(m/m)	(L/s)	(mm)	(mm)		(L/s)	(m^2)	(m/s)	
#1	1-1 (FM)	**S-2a**	Forcemain	0.013	0.0012	-	-	-	-	-	-	-	-
	1-2 (FM)	**S-6, S-6F**	Forcemain	0.013	0.0032	-	-	-	-	-	-	-	-
	1-3	S-2a, S-6, S-6F	Gravity	0.013	0.0018	**87.0**	397.8	450	OK	**121.0**	0.159	0.76	OK
#2	2-1	**S-14**	Gravity	0.013	0.0024	**70.5**	348.2	375	OK	**85.9**	0.110	0.78	OK
	2-2 (Syphon)	**S-13**, S-14	Syphon	0.013	0.0016	-	-	-	-	-	-	-	-
	2-3	**S-12a**, **S-12b**, S-13, S-14	Gravity	0.013	0.001	**212.7**	620.9	675	OK	**265.8**	0.358	0.74	OK
	2-4	**S-4, S-4-1, S-11**, **S-11-1**, S-12a, S-12b, S-13, S-14	Gravity	0.013	0.001	**286.1**	693.8	750	OK	**352.0**	0.442	0.80	OK
	2-5	**S-3**, S-4, S-4-1, S-11, S-11-1, S-12a, S-12b, S-13, S-14	Gravity	0.013	0.001	**374.4**	767.5	900	OK	**572.5**	0.636	0.90	OK
	2-6	S-3, S-4, S-4-1, **S-8**, S-11, S-11-1, S-12a, S-12b, S-13, S-14	Gravity	0.013	0.001	**456.6**	826.8	900	OK	**572.5**	0.636	0.90	OK
	2-7 (FM)	**S-9**	Forcemain	0.013	0.001	-	-	-	-	-	-	-	-
	2-8	**S-7**, S-9	Gravity	0.013	0.0012	**183.6**	567.8	600	OK	**212.7**	0.283	0.75	OK
	2-9	S-3, S-4, S-4-1, S-7, S-8, S-9, S-11, S-11-1, S-12a, S-12b, S-13, S-14	Gravity	0.013	0.001	**606.9**	919.9	1050	OK	**863.5**	0.866	1.00	OK
	2-10 (Syphon)	S-3, S-4, S-4-1, S-7, S-8, S-9, S-11, S-11-1, S-12a, S-12b, S-13, S-14	Syphon	0.013	0.001	-	-	-	-	-	-	-	-

Note: Sewersheds shown in bold are newly added to the current sewer section; non-bolded sewersheds indicate upstream contributions.

Tie-In	Pipe ID	Serviced Lands	FORCEMAIN DESIGN						
			Required Capacity (100% of Q_{design})	Design Velocity	Actual Pipe Size	Design Pipe Size	Resultant Pipe Area	Peak WWF Velocity	Peak DWF Velocity
			(L/s)	(m/s)	(mm)	(mm)	(m^2)	(m/s)	m/s
#1	1-1 (FM)	**S-2a**	36.41	2.5	136.2	150	0.018	2.06	1.48
	1-2 (FM)	**S-6, S-6F**	42.57	2.5	147.2	150	0.018	2.41	1.79
	1-3	S-2a, S-6, S-6F	-	-	-	-	-	-	-
#2	2-1	**S-14**	-	-	-	-	-	-	-
	2-2 (Syphon)	**S-13**, S-14	-	-	-	-	-	-	-
	2-3	**S-12a**, **S-12b**, S-13, S-14	-	-	-	-	-	-	-
	2-4	**S-4, S-4-1, S-11**, **S-11-1**, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-
	2-5	**S-3**, S-4, S-4-1, S-11, S-11-1, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-
	2-6	S-3, S-4, S-4-1, **S-8**, S-11, S-11-1, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-
	2-7 (FM)	**S-9**	84.59	2.5	207.6	250	0.049	1.72	1.46
	2-8	**S-7**, S-9	-	-	-	-	-	-	-
	2-9	S-3, S-4, S-4-1, S-7, S-8, S-9, S-11, S-11-1, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-
	2-10 (Syphon)	S-3, S-4, S-4-1, S-7, S-8, S-9, S-11, S-11-1, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-

Note: Sewersheds shown in bold are newly added to the current sewer section; non-bolded sewersheds indicate upstream contributions.

			SYPHON DESIGN																	
Tie-In	Pipe ID	Serviced Lands	Peak DWF	Self-Cleansing Velocity	Actual Syphon Size	Design Syphon Size	Peak DWF Velocity	Self-Cleansing Achieved?	Peak WWF	Peak WWF Velocity	Max Velocity Acceptable?	Upstream Invert	Downstream Invert	Upstream Pipe Size	Maximum Upstream HGL	Downstream Pipe Size	Maximum Downstream HGL	Maximum Headloss Allowed	Length	Hazen-Williams Headloss	Headloss Acceptable?
			L/s	m/s	mm	mm	m/s		L/s	m/s		m	m	mm	m	mm	m	m	m	m	
#1	1-1 (FM)	**S-2a**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1-2 (FM)	**S-6, S-6F**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1-3	S-2a, S-6, S-6F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
#2	2-1	**S-14**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2-2 (Syphon)	**S-13**, S-14	86.87	1.00	333	300	1.23	YES	125.09	1.77	YES	1096.50	1090.00	375	1096.88	675	1090.68	6.20	618	5.26	Yes
	2-3	**S-12a**, **S-12b**, S-13, S-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2-4	**S-4, S-4-1, S-11**, **S-11-1**, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2-5	**S-3**, S-4, S-4-1, S-11, S-11-1, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2-6	S-3, S-4, S-4-1, **S-8**, S-11, S-11-1, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2-7 (FM)	**S-9**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2-8	**S-7**, S-9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2-9	S-3, S-4, S-4-1, S-7, S-8, S-9, S-11, S-11-1, S-12a, S-12b, S-13, S-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2-10 (Syphon)	S-3, S-4, S-4-1, S-7, S-8, S-9, S-11, S-11-1, S-12a, S-12b, S-13, S-14	379.30	1.00	695	675	1.06	YES	521.95	1.46	YES	1046.00	1041.59	1050	1047.05	900	1042.49	4.56	710	1.64	Yes

Note: Sewersheds shown in bold are newly added to the current sewer section; non-bolded sewersheds indicate upstream contributions.

APPENDIX B
Cost Estimates

Appendix B - South Okotoks Sanitary Master Plan Update Future System Cost Estimates

Project: South Okotoks Sanitary Master Plan Update
Client: The Town of Okotoks
Project #: 29049
Date: 5/14/2026

Engineering: 10%
Contingency: 30%

Table B.1 - Future Sanitary System Detailed Cost Estimates

Item	Description	Unit Rate ($/unit)	Unit	Quantity (unit)	Cost ($)	Engineering ($)	Contingency ($)	Total ($)
Catchments S-2a, S-6 and S-6F Sanitary Sewer System								
1.1	Construct Lift Station 1-1 (Capacity = 36 L/s)	30,000	L/s	36	$ 1,080,000	$ 108,000	$ 324,000	$ 1,512,000
1.2	Excavate, Backfill, Supply and Installation of 667 m of 150 mm Forcemain (1-1)	300	m	667	$ 200,000	$ 20,000	$ 60,000	$ 280,000
1.3	Construct Lift Station 1-2 (Capacity = 43 L/s)	30,000	L/s	43	$ 1,290,000	$ 129,000	$ 387,000	$ 1,806,000
1.4	Excavate, Backfill, Supply and Installation of 1,140 m of 150 mm Forcemain (1-2)	300	m	1,140	$ 342,000	$ 34,000	$ 103,000	$ 479,000
1.5	1-3: Excavate, Backfill, Supply and Installation of 433 m of 450 mm Sanitary Sewer (3.0 m Deep)	778	m	433	$ 337,000	$ 34,000	$ 101,000	$ 472,000
1.6	1,200 mm Manhole (3.0 m Deep) for 1-3	21,000	ea	3	$ 63,000	$ 6,000	$ 19,000	$ 88,000
1.7	Pavement Rehabilitation for 1-1 and 1-3	1,000	m	580	$ 580,000	$ 58,000	$ 174,000	$ 812,000
				Sub-Total	**$ 3,892,000**	**$ 389,000**	**$ 1,168,000**	**$ 5,449,000**
Catchments S-3 Through S-14 Sanitary Sewer System – Deep Gravity Sewer Option								
2.1A	2-1: Excavate, Backfill, Supply and Installation of 1,178 m of 375 mm Sanitary Sewer (3.0 m Deep)	699	m	1,178	$ 823,000	$ 82,000	$ 247,000	$ 1,152,000
2.2A	1,200 mm Manhole (3.0 m Deep) for 2-1	21,000	ea	7	$ 147,000	$ 15,000	$ 44,000	$ 206,000
2.3A	2-2: Trenchless Installation of 617 m of 300 mm Sanitary Syphon	3,000	m	617	$ 1,851,000	$ 185,000	$ 555,000	$ 2,591,000
2.4A	2-3 (Option 1): Excavate, Backfill, Supply and Installation of 921 m of 675 mm Sanitary Sewer (3.0 m Deep)	1,277	m	921	$ 1,176,000	$ 118,000	$ 353,000	$ 1,647,000
2.5A	2-4: Excavate, Backfill, Supply and Installation of 836 m of 750 mm Sanitary Sewer (3.0 m Deep)	1,515	m	836	$ 1,267,000	$ 127,000	$ 380,000	$ 1,774,000
2.6A	2-5 and 2-6: Excavate, Backfill, Supply and Installation of 1,618 m of 900 mm Sanitary Sewer (10.0 m Deep)	2,823	m	1,618	$ 4,568,000	$ 457,000	$ 1,370,000	$ 6,395,000
2.7A	1,800 mm Manhole (3.0 m Deep) for 2-3 and 2-4	30,300	ea	10	$ 303,000	$ 30,000	$ 91,000	$ 424,000
2.8A	1,800 mm Manhole (10.0 m Deep) for 2-5 and 2-6	101,000	ea	9	$ 909,000	$ 91,000	$ 273,000	$ 1,273,000
				Sub-Total	**$ 11,044,000**	**$ 1,105,000**	**$ 3,313,000**	**$ 15,462,000**
Catchments S-3 Through S-14 Sanitary Sewer System – Lift Station Option								
2.1B	2-1: Excavate, Backfill, Supply and Installation of 1,178 m of 375 mm Sanitary Sewer (3.0 m Deep)	699	m	1,178	$ 823,000	$ 82,000	$ 247,000	$ 1,152,000
2.2B	2-2: Trenchless Installation of 617 m of 300 mm Sanitary Syphon	3,000	m	617	$ 1,851,000	$ 185,000	$ 555,000	$ 2,591,000
2.3B	2-3 (Option 1): Excavate, Backfill, Supply and Installation of 921 m of 675 mm Sanitary Sewer (3.0 m Deep)	1,277	m	921	$ 1,176,000	$ 118,000	$ 353,000	$ 1,647,000
2.4B	2-4: Excavate, Backfill, Supply and Installation of 836 m of 750 mm Sanitary Sewer (3.0 m Deep)	1,515	m	836	$ 1,267,000	$ 127,000	$ 380,000	$ 1,774,000
2.5B	2-5 (To Lift Station): Excavate, Backfill, Supply and Installation of 809 m of 450 mm Sanitary Sewer (3.0 m Deep)	778	m	809	$ 629,000	$ 63,000	$ 189,000	$ 881,000
2.6B	2-6: Excavate, Backfill, Supply and Installation of 809 m of 450 mm Sanitary Sewer (3.0 m Deep)	778	m	809	$ 629,000	$ 63,000	$ 189,000	$ 881,000
2.7B	1,200 mm Manhole (3.0 m Deep) for 2-1, 2-5 and 2-6	21,000	ea	16	$ 336,000	$ 34,000	$ 101,000	$ 471,000
2.8B	1,800 mm Manhole (3.0 m Deep) for 2-3 and 2-4	30,300	ea	10	$ 303,000	$ 30,000	$ 91,000	$ 424,000
2.9B	Construct Lift Station at D/S End of 2-4 (Capacity = 322 L/s)	30,000	L/s	322	$ 9,660,000	$ 966,000	$ 2,898,000	$ 13,524,000
2.10B	Excavate, Backfill, Supply and Installation of 1,618 m of 400 mm Forcemain	702	m	1,618	$ 1,136,000	$ 114,000	$ 341,000	$ 1,591,000
				Sub-Total	**$ 17,810,000**	**$ 1,782,000**	**$ 5,344,000**	**$ 24,936,000**
Catchments S-7 and S-9 Sanitary Sewer System								
3.1	Construct Lift Station 2-7 (Capacity = 85 L/s)	30,000	L/s	85	$ 2,550,000	$ 255,000	$ 765,000	$ 3,570,000
3.2	Excavate, Backfill, Supply and Installation of 896 m of 250 mm Forcemain (2-7)	466	m	896	$ 418,000	$ 42,000	$ 125,000	$ 585,000
3.3	2-8: Excavate, Backfill, Supply and Installation of 822 m of 600 mm Sanitary Sewer (6.0 m Deep)	1,631	m	822	$ 1,341,000	$ 134,000	$ 402,000	$ 1,877,000
3.4	1,200 mm Manhole (6.0 m Deep) for 2-8	42,000	m	5	$ 210,000	$ 21,000	$ 63,000	$ 294,000
				Sub-Total	**$ 4,519,000**	**$ 452,000**	**$ 1,355,000**	**$ 6,326,000**
32 Street E Sanitary Sewer System and Sheep River Syphon								
4.1	2,400 mm Manhole (10.0 m Deep) at Junction of 2-6, 2-8 and 2-9	133,000	m	1	$ 133,000	$ 13,000	$ 40,000	$ 186,000
4.2	2-9: Excavate, Backfill, Supply and Installation of 929 m of 1,050 mm Sanitary Sewer (3.0 m Deep)	1,721	m	929	$ 1,599,000	$ 160,000	$ 480,000	$ 2,239,000
4.3	1,800 mm Manhole (3.0 m Deep) for 2-9	30,300	ea	6	$ 182,000	$ 18,000	$ 55,000	$ 255,000
4.4	2-10: Trenchless Installation of 732 m of 675 mm Sanitary Syphon	5,000	m	732	$ 3,660,000	$ 366,000	$ 1,098,000	$ 5,124,000
4.5	Road Rehabilitation for 2-9	1,000	m	929	$ 929,000	$ 93,000	$ 279,000	$ 1,301,000
				Sub-Total	**$ 6,503,000**	**$ 650,000**	**$ 1,952,000**	**$ 9,105,000**
Hunters Crescent Existing System Upgrade								
5.1	Existing Upgrade: Excavate, Backfill, Supply and installation of 438 m of 375 mm Sanitary Sewer (3.0 m Deep)	699	m	438	$ 306,000	$ 31,000	$ 92,000	$ 429,000
5.2	Existing Upgrade: Pavement Rehabilitation along Hunters Crescent	1,000	m	398	$ 398,000	$ 40,000	$ 119,000	$ 557,000
				Sub-Total	**$ 704,000**	**$ 71,000**	**$ 211,000**	**$ 986,000**
Southbank Business Park Existing System Upgrade								
6.1	Existing Upgrade: South Bank Lift Station: Increase Firm Pump Capacity from 28 to 59 L/s (2031)	250,000	l.s.	1	$ 250,000	$ 25,000	$ 75,000	$ 350,000
6.2	Existing Upgrade: South Bank Lift Station: Increase Firm Pump Capacity from 59 to 104 L/s (2051)	500,000	l.s.	1	$ 500,000	$ 50,000	$ 150,000	$ 700,000
6.3	Replacement: Excavate, Backfill, Supply and Installation of 1,331 m of 250 mm Forcemain at South Bank (Ultimate)	466	m	1,331	$ 620,000	$ 62,000	$ 186,000	$ 868,000
6.4	Pavement Rehabilitation for South Bank Forcemain Replacement Ultimate)	1,000	m	1,331	$ 1,331,000	$ 133,000	$ 399,000	$ 1,863,000
				Sub-Total	**$ 2,701,000**	**$ 270,000**	**$ 810,000**	**$ 3,781,000**
				Total (Assuming Deep Sewer Option)	**$ 29,363,000**	**$ 2,937,000**	**$ 8,809,000**	**$ 41,109,000**