Regional District of Central Okanagan

Collection System Annual Report 2023

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Collection System Summary

The Regional District of Central Okanagan (RDCO) provides sewer service to the City of West Kelowna (CWK), the District of Peachland, Westbank First Nation (WFN) Reserves 9 and 10, and Ellison.

The RDCO owns, operates, and maintains the regional collection trunk mains and associated lift stations which includes approximately 28 km of trunk mains and two lift stations that collect wastewater for treatment at the Westside Regional Wastewater Treatment Plant (WRWTP). The RDCO operates and maintains:

- District of Peachland's wastewater collection system
- Westbank First Nation Reserves (WFN) 9 and 10 wastewater collection system
- Ellison collection system

Operator Certification

The RDCO has an established training program that follows the BC Environmental Operators Certification Program (EOCP) and includes additional training such as, First Aid, Transportation of Dangerous Goods (TDG) and Confined Space Entry. In 2023, there was a total of seven staff working in the utilities department with varying degrees of qualifications and EOCP certifications as listed below in ***Table 1***.

Table 1 – RDCO Water Systems and EOCP information

Operator Name	EOCP #	EOCP Certificates
Kevin Trottier (Senior Operator)	4607	WWC-3, WD-3, WT-3, CH
Shane Dorey	9216	WWC-1, MWWT-1, WD1, WT2
Doug Murray	8918	MWWT-2, WD1
Peter Meersma	8244	WD-2, MWWT-1, WWC-2, WT-2, Plumber
Angela Lambrecht (Lab)	6468	WT-1, WD-1, MWWT-1, CH
Greg Beloin (Lab)	7787	WT-1, WD-1, WWC-1, MWWT-2, CH

Westside Regional Wastewater Treatment Pant (WRWTP)

The British Columbia Environmental Operators Certification Program (EOCP) classes the Westside Regional Wastewater Treatment Plant as a Level IV facility, EOCP # 157.

The Plant (***Figure 1***) is in West Kelowna, British Columbia and is owned and operated by the RDCO. The WRWTP receives wastewater from the CWK, the District of Peachland and WFN Reserves 9 and 10.

The WRWTP operates the Westbank Process that uses biological nutrient removal (BNR) in sequential anaerobic, anoxic, and aerobic zones. The three-stage activated sludge process removes both nitrogen and phosphorus from the wastewater and achieves a high carbonaceous biochemical oxygen demand (BOD) removal. Aluminum Sulphate is used for supplemental Phosphorus removal. This, along with clarifiers, Aqua Cloth Media filters and an ultraviolet disinfection system reduce the pathogens, solids and nutrients that discharge into Okanagan Lake.

Figure 1 – Westside Regional Wastewater Treatment Plant

Odor Control Program

An odor control program is in place and RDCO staff monitor continuous Hydrogen Sulphide (H2S) levels at select locations along the trunk mains using Acrulog/OdaLog portable gas detectors (***Figure 3***) and the data is collected weekly.

Figure 2 – Acrulog

H2S is noticeable at extremely low concentrations and offensive to certain people at 3 – 5 parts per million (ppm). It is commonly referred to as the “rotten egg” smell. It is released from the wastewater in the collection system as a direct result of sulfide production.

A proprietary nitrate-based additive is being utilized in the collection system to help keep the H2S production to a minimum. H2S, when combined with water can form sulfuric acid which aggressively attacks and corrodes certain types of sewage pipe and other surfaces. The nitrate-based product helps to eliminate this problem as well as decrease the H2S formed in the system.

The additive is environmentally friendly, non-toxic, and requires no special handling or storage procedures. It has been utilized at several lift stations throughout the collection system, including:

- RDCO Lift Stations – East Trunk, Casa Loma, Hitchner (owned by CWK)
- WFN Lift Stations – IR10, Ferry Wharf, Westside Road, Shelter Bay
- Peachland Lift Stations – Sixth Street, Peachland Main, Robinson, Renfrew

In September 2014, the RDCO and the CWK staff partnered in a trial monitoring program where odor loggers were placed in previously identified odorous areas within the CWK collection system. Data collected during the two-week trial confirmed that all locations monitored would benefit from chemical addition. CWK staff began dosing additive in several of their lift stations in 2016.

The following graphs illustrate the effectiveness of the nitrate-based additive and its resulting reduction in H2S. The first graph (***Figure 3***) displays the H2S trend without the additive and the second graph (***Figure 4***) illustrates the benefit of the additive and the resulting reduction in H2S production.

Figure 3 – No Additive in the Collection system

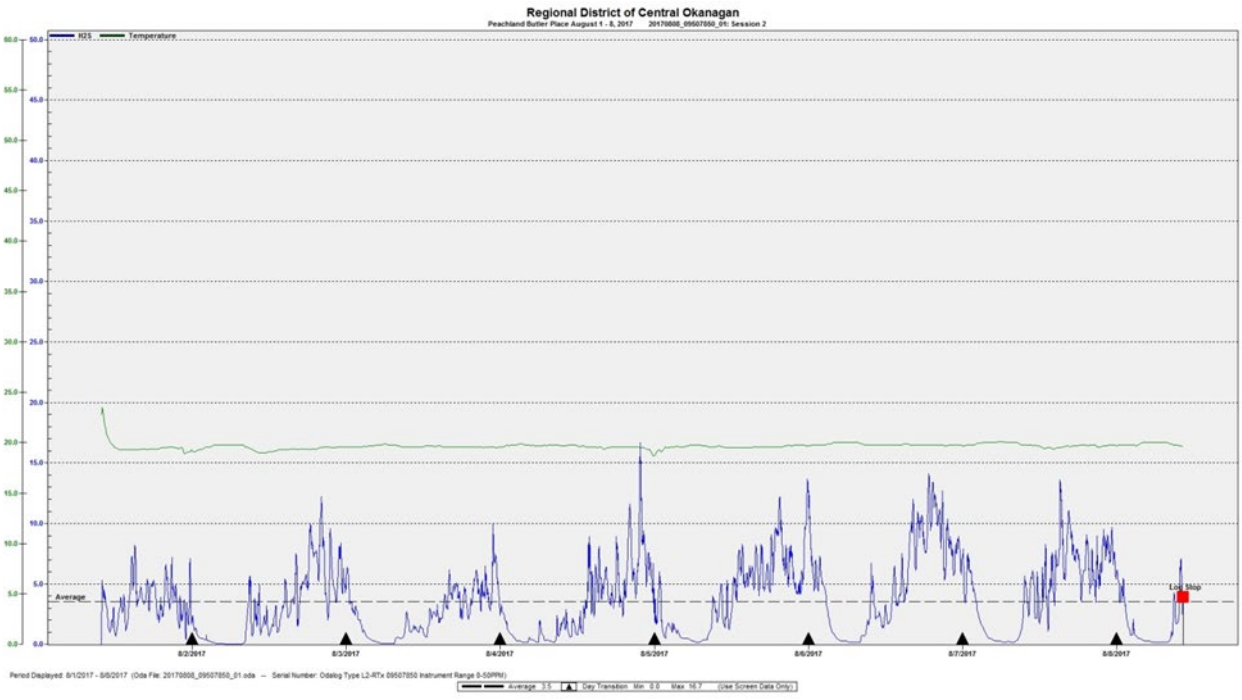
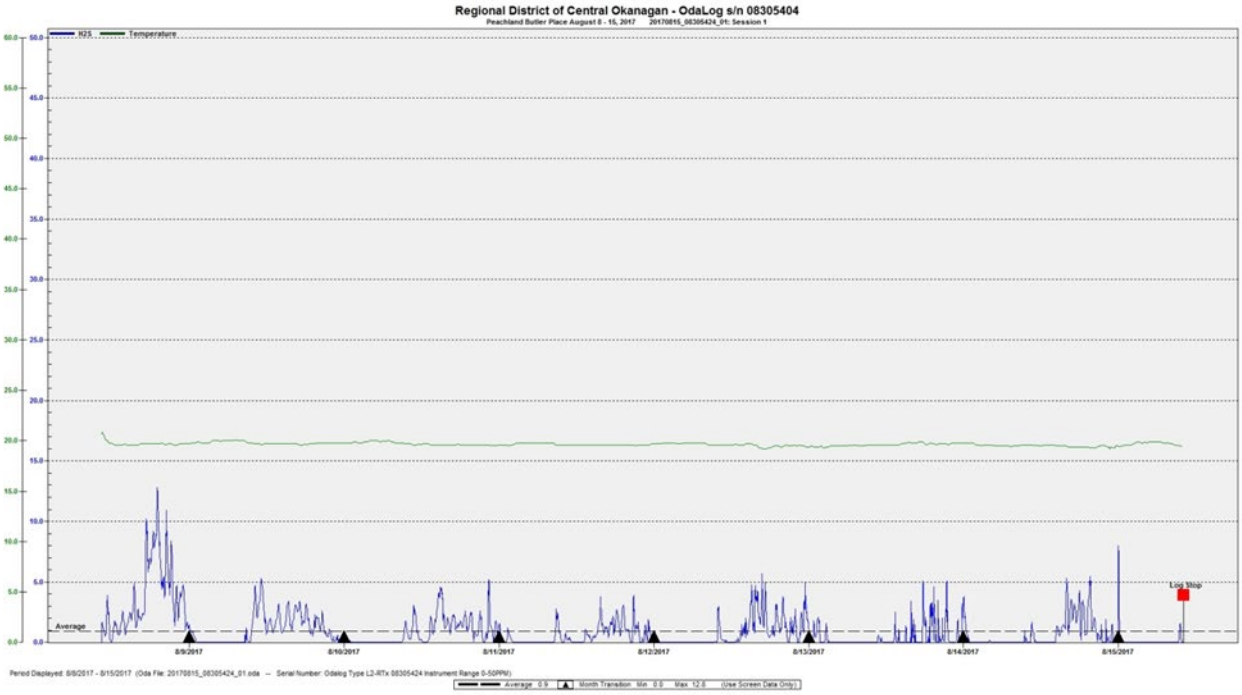


Figure 4 –Additive in the Collection system



Flow Monitoring Program

The RDCO operates and maintains seven flow monitoring sites (Carrington, Sonoma Pines, East Boundary, Two Eagles, Boucherie, Glenrosa and Louie Drive) within the collection system. These sites are used to collect flow data to apply a flow-based cost recovery program to each jurisdiction. Louie Drive, Boucherie and Two Eagles are back-up sites which help with data correlation, justification, and interpretation. Each site is visited weekly - data is collected and maintenance on equipment is performed as required.

Examples of the flow monitor, data collection equipment (***Figure 5***) and typical Flow monitor installation (Figure 7) are pictured below. In 2022 the RDCO is working to improve the Flow monitoring equipment capabilities with a satellite system for remote monitoring. Several units have been installed parallel to the existing monitors to validate flow data.

Figure 5 –Flow system technology

Maintenance

Collection system cleaning is performed yearly on each system. Typically, each system is broken up into three sections and one section is cleaned annually. Specific areas within the collection systems are done more frequently due to known odor issues (Campbell Road Siphon and Gellatly Road).

Generators are serviced annually and test-run every month to ensure smooth operation during a power outage or emergency. RDCO Backflow preventers are tested and serviced annually by qualified RDCO staff.

A Preventative Maintenance Management Program was purchased in 2014 and is currently being implemented by operations staff.

Area/ Lift stations cleaned in 2023 are as follows:

RDCO

- Areas – Thacker Road, Montigny Road, and Shannon Lake Road, Westbank Trunk to WWTP (November), Campbell Road (December)
- Lift Stations – East Trunk and Casa Loma

District of Peachland

- Areas - all sanitary lines behind the Peachland Elementary School & Lake side of Hwy 97 (October, September)
- Lift Stations – Sixth Street, Main, Hardy, Renfrew, Robinson (January)

WFN

- Areas – all sanitary lines North of Hwy 97 on IR#9 & Carrington Rd to Two Eagles Golf Course South of Hwy 97 (October)
- Lift Stations – Westside Road, Old Ferry Wharf, Elk, IR10 dosing chamber, Shelter Bay

Sunset Ranch

- Areas – Sanitary Main along Sunset Drive (October)

Improvements 2023

RDCO

- East Trunk capacity upgrade (ongoing)
- Easement clearing

City of West Kelowna

- Collaborative odor control monitoring with RDCO staff

City of Peachland

- Annual Force main Static Pressure test

WFN

- Odor control monitoring ongoing

Sunset Ranch

- None

Future Plans 2024

RDCO

- Continue flushing collection system – Westbank trunk and East Trunk will be cleaned monthly throughout the summer
- Replacement of older flow monitoring meters
- East Trunk capacity upgrades
- Continue video inspection
- Continue with odor control efforts
- Re-key locks

District of West Kelowna

- Collaborative odor control monitoring with RDCO Staff

District of Peachland

- Continue flushing collection system – all sanitary lines north of Princeton and high side of Hwy 97
- Continue operation, maintenance, and improvements of the Peachland Emergency Storge and Infiltration Facility to meet require capacity
- Continue with odor control efforts
- Re-key locks

WFN

- Continue flushing of collection system
- Replacement of flow monitoring meters
- Continue with odor control efforts
- Re-key locks

Sunset Ranch

- Continue flushing of collection system

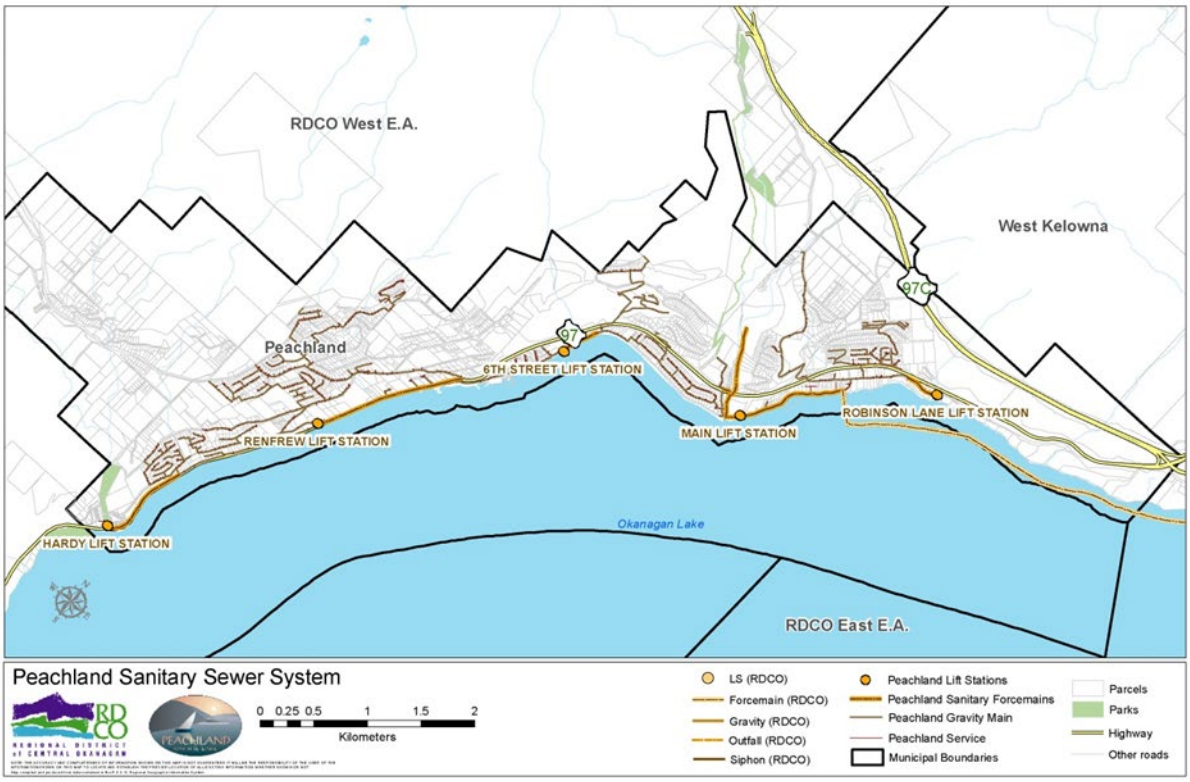
Conclusion

The RDCO is committed to its stakeholders to provide exceptional operation and maintenance of the collection system by encompassing monitoring programs by trained operators and delivering the best possible service to our end users.

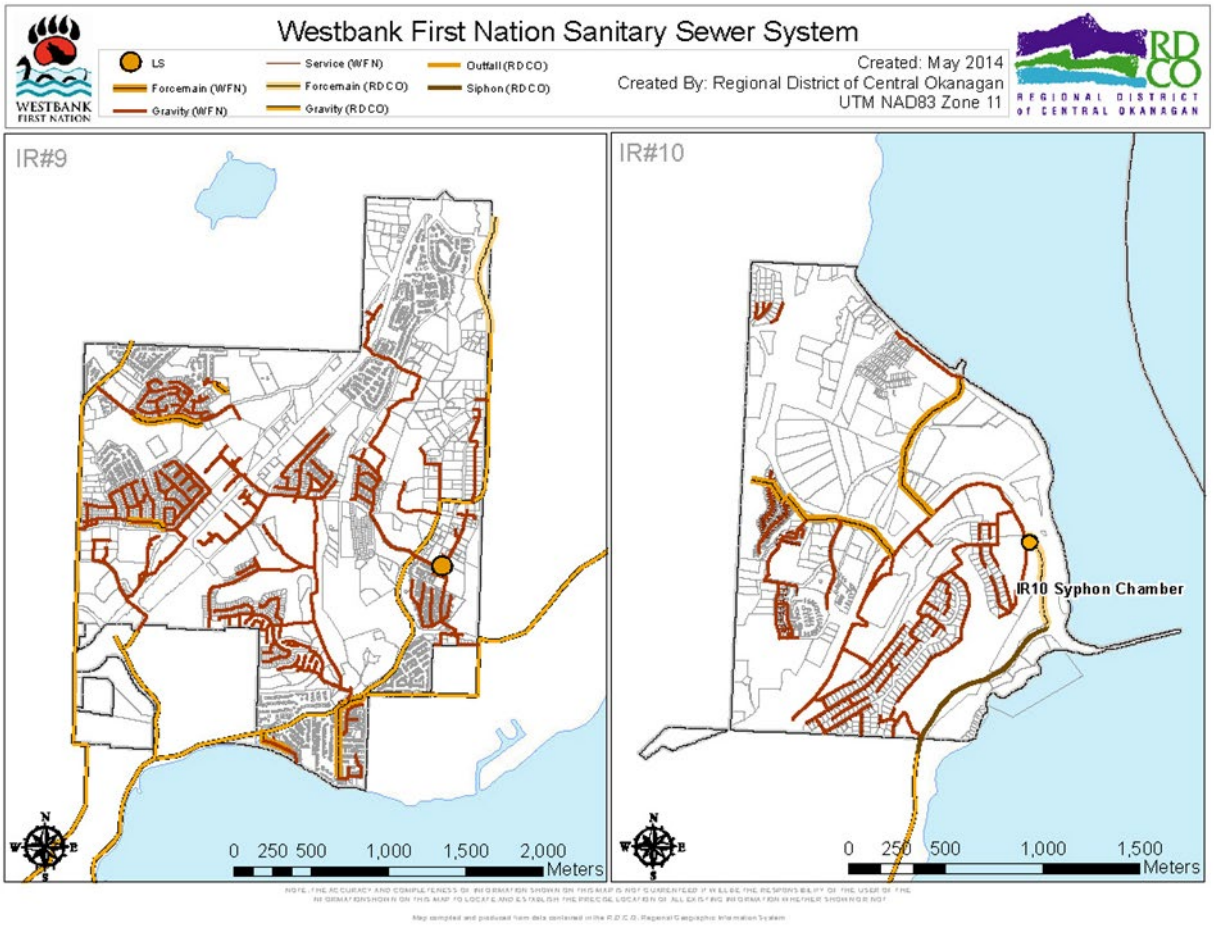
Appendix 1

Collection System Maps for the City of Peachland, WFN, DWK and Ellison

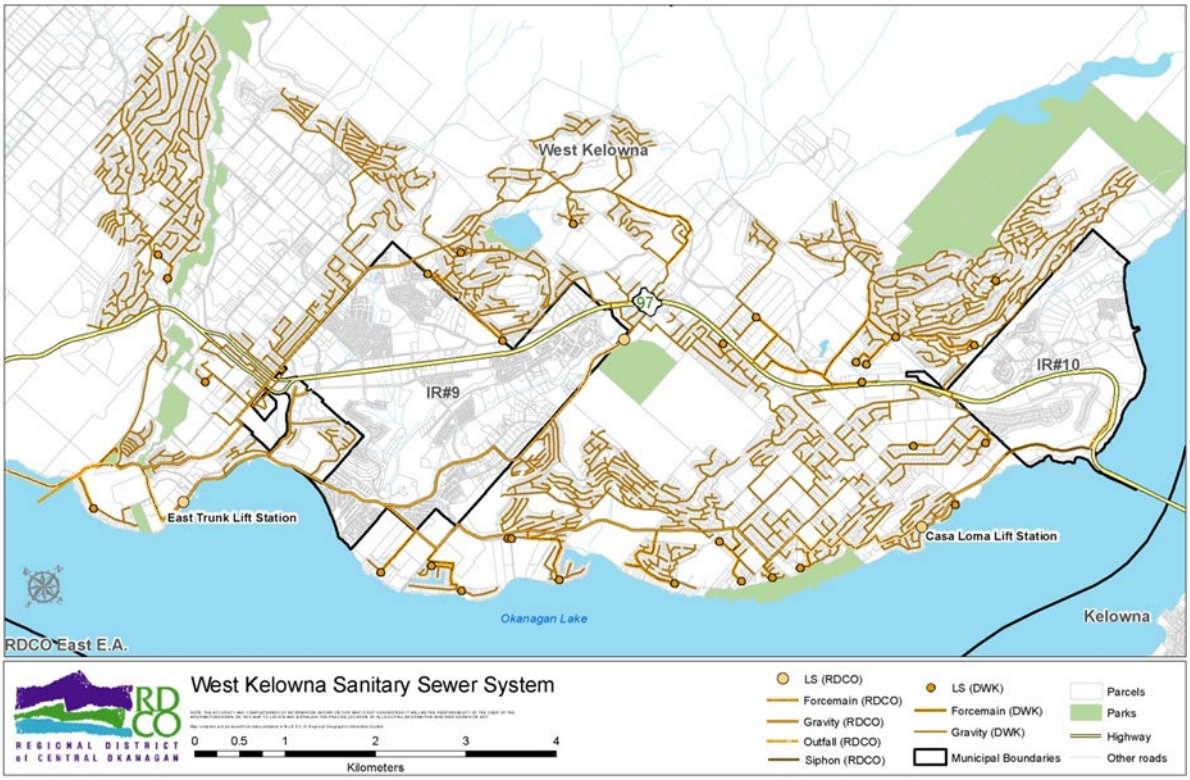
District of Peachland



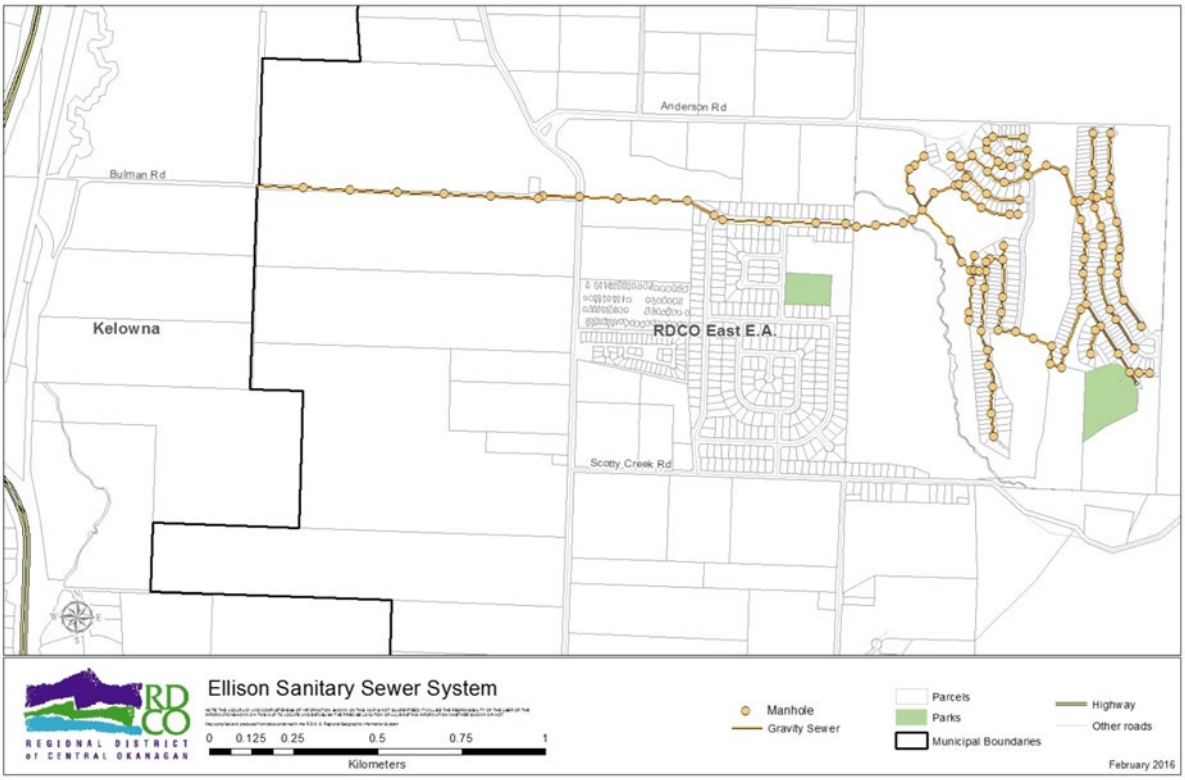
Westbank First Nation (WFN)



City of West Kelowna (DWK)



Ellison


Anderson Rd
Bulman Rd
Kelowna
RDCO East E.A.
Scotty Creek Rd
Ellison Sanitary Sewer System
REGIONAL DISTRICT of CENTRAL OKANAGAN
0 0.125 0.25 0.5 0.75 1
Kilometers
Manhole
Gravity Sewer
Parcels
Parks
Municipal Boundaries
Highway
Other roads
February 2016