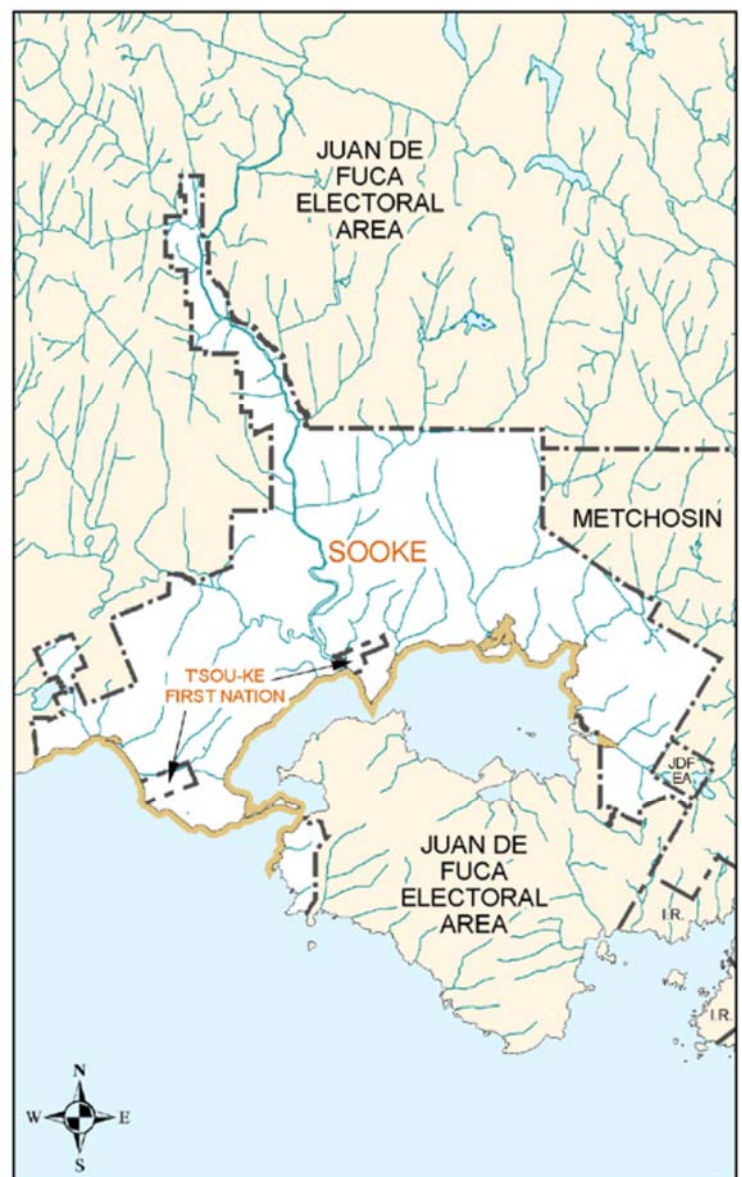


District of Sooke Stormwater Quality 2015 Data Summary

Parks & Environmental Services

Environmental Protection



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DISTRICT OF SOOKE STORMWATER QUALITY 2015 MONITORING DATA SUMMARY

INTRODUCTION

This report summarizes work completed in 2015 by the Capital Regional District (CRD) Integrated Watershed Management Program (IWMP) in the District of Sooke. The program works in cooperation with the District of Sooke to limit the impacts of contaminated stormwater runoff on the environment, to protect public health and to meet the district's commitments in the *Liquid Waste Management Plan, 2010*.

IWMP monitors stormwater flows and the receiving environment for changes in water quality. In 2015, CRD staff collected stormwater data along the shorelines of areas considered for future sewage expansion (Kaltasin and Whiffin Spit North) as well as some surrounding stormwater discharges. Much of the routine monitoring and reporting was reduced in 2015 to put aside resources for compliance monitoring of the marine environment in 2016 and the streams in 2017. The projects planned in 2016 and 2017 are in cooperation with the District of Sooke and the Ministry of Environment (MOE) to comply with recommendations outlined in the MOE report, "*Water Quality Assessment and Objectives for Sooke Watersheds, Inlet, Harbour and Basin*" (draft).

RESULTS AND DISCUSSION

Fecal Coliform Levels: Stormwater Discharges, Watercourses and Marine

In 2015, IWMP staff collected data from 45 stormwater discharges (13 were creeks). Data showed fecal coliform contamination (counts greater than 200 CFU/100 mL) in 9 of the stormwater discharges. This level of contamination indicates sources of sewage or animal waste with the potential to cause adverse human health effects from primary contact activities (e.g., swimming and ingestion). Eleven of the discharges were not flowing on at least 1 occasion. This data is displayed in Table 1.

Fecal coliform levels in the 9 discharges with counts above 200 CFU/100 mL ranged from 200 to 110,000 CFU/100 mL. The highest count was found in discharge 2073 (10 m north of gazebo, north of Whiffin Spit) at an estimated flow of 8 L/min in April. This discharge also displayed sudsy water indicating a sewage source, but was not flowing upon a second visit in September. The other discharges with exceptionally high counts (10 times above 200 CFU/100 mL) were 2063 (parallel to the long wharf north of 6961 Wright Road), 3,800 CFU/100 mL, and 2067A (middle of cement retaining wall at 1643 Dufour Road, 12,000 CFU/100 mL). The counts at 2063 and 2073 were higher than usual.

Sewer Service Area Expansion

The District of Sooke is considering other areas for expansion of the sewage service area. The 2 areas identified as the most likely candidates include Kaltasin and the Flats catchment, and Whiffin Spit North. IWMP staff monitor 6 stormwater discharges from each area. CRD data has determined that marine habitat around both areas is highly sensitive and includes shellfish beds and eelgrass; however, there is less flushing around Billings Spit. Swimming is more likely to occur around Billings Spit. Kayaking and other boating activities occur near the Whiffin Spit shoreline, but little swimming.

Due to significant flow rates from 3 watercourses discharging from the Kaltasin area (Sooke River, Alderbrook Stream and Lannon/Saseenos Creek), high contaminant loadings to the marine environment are possible. Whiffin Spit flows generally have lower fecal coliform counts than the creeks from the Kaltasin area and they are dry in summer.

Table 1. 2015 Fecal Coliform Data for Stormwater Discharges

CRD Outlet Number	Outlet Diameter (mm)	Point of discharge	Nature of shoreline	Location	Date sampled	Flow (L / min)	Fecal coliforms (CFU / 100 mL)	Sample comments
2027	stream	AHWL	rock beach	Wildwood (Matheson) Creek, east end of Roche Cove	2015 Apr 22	400	<10	No odour, discharge clear
2029	600	I	sand and silt beach	Gillespie Creek, 1424 Gillespie Road (Grouse Nest)	2015 Apr 22	60	<10	No odour, discharge clear
2030	stream	AHWL	sand and black silt	Veitch Creek under Manser Road bridge	2015 Apr 22	2,000	40	No odour, discharge clear
2033A	stream	AHWL	rock	300 m west of Lorimar Point, halfway between Lorimar Point and Cooper Cove	2015 Apr 14	16	<10	No odour, discharge clear
2034	750	AHWL	rock beach	Cooper Cove, 500 m east of Stone Pipe Landing Bar and Grill	2015 Apr 14	Null	Null	Flow too low to sample
2035	500	AHWL	rock beach	Cooper Cove at Stone Pipe Landing Bar and Grill	2015 Apr 14	10	25	No odour, discharge clear
2036	stream	AHWL	rock bottom, silt beach	Ayum Creek, south side of Sooke Road	2015 Apr 22	2,000	<10	No odour, discharge clear
2039	stream	I	rock and silt shore	Saseenos (Lannon) Creek, 10 m west of 6007 Sooke Road	2015 Apr 22	150	<10	No odour, discharge clear
2040	200	I	rock and sand beach	Between 2057 and 2059 Kaltasin Road	2015 Oct 01	Null	Null	Under water, could not access
2041A	200	I	rock and sand	Between 1976 and 1986 Kaltasin Road	2015 Oct 01	Null	Null	Dry, not sampled
2042	200	I	rock beach	In front of 1976 and 1986 Glenidle Road	2015 Oct 01	Null	Null	Dry, not sampled
2042A	creek	AHWL	---	Alderbrook Creek, T'sou-ke First Nation	2015 Apr 22	60	40	No odour, discharge clear
2043	river	I	sand beach	Sooke River at end of Soule Road	2015 Apr 22	Null	<10	No odour, discharge clear
2046	900	I	rock beach covered with oyster shells	Throupe Stream, 5 m south of 6377 Belvista Place	2015 Apr 22	48	230	No odour, discharge clear
2047	500	AHWL	rock beach	15 m north of Dover Street	2015 Apr 13	10	<10	No odour, discharge clear
2047A	500	AHWL	rock beach	Under house at 6526 Water Street, immediately below the end of the pavement	2015 Apr 13	4	10	No odour, discharge clear
2048	800	AHWL	rock beach	8 m south of 6526 Water Street	2015 Apr 13	16	550	No odour, discharge clear
2048A	---	---	rocky	Bottom of Church Street between 2 overhead docks in tree roots	2015 Apr 14	Null	Null	No odour, discharge clear
2049A	stream	AHWL	rock beach	West side of driveway of Ty Collwyn Retreat on Felton Lane	2015 Apr 14	12	140	No odour, discharge clear
2049AA	200	---	---	Beside BBQ patio at foot of Felton Lane	2015 Apr 14	30	<10	No odour, discharge clear
2050	ditch	AHWL	rock beach	50 m north of 6647 Sooke Road	2015 Apr 14	8	40	No odour, discharge clear
2051	600	AHWL	rock and silt beach	6647 Sooke Road	2015 Apr 14	12	80	No odour, discharge clear

Table 1, continued

CRD Outlet Number	Outlet Diameter (mm)	Point of discharge	Nature of shoreline	Location	Date sampled	Flow (L / min)	Fecal coliforms (CFU / 100 mL)	Sample comments
2052	170	AHWL	rock beach	South side of wharf at 6669 Horne Road	2015 Apr 14	Null	Null	Dry, not sampled
2052A	100	AHWL	rock beach	6669 Horn Road under wharf	2015 Apr 14	2	<10	No odour, discharge clear
2053	600	AHWL	rock beach with clay base	5 m north of Seaparc	2015 Apr 14	8	320	No odour, discharge clear
2056	500	AHWL	rock and silt beach	South side of Government Wharf	2015 Apr 13	8	<10	No odour, discharge clear
2057	ditch	AHWL	clay base	75 m south of Government Wharf	2015 Apr 13	44	50	No odour, discharge clear
2060A	stream	AHWL	rock beach	60 m south of Sooke Harbour Marina, 10 m south of overhead wharf	2015 Apr 13	24	<10	No odour, discharge clear
2061	ditch	AHWL	clay	100 m south of Sooke Harbour Marina	2015 Oct 01	5	70	No odour, discharge clear
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2062	100x250	AHWL	rock beach	North of 6961 Wright Road, 5 m south of concrete stairs	2015 Sep 25	Null	Null	Flow too low to sample
2063	ditch	AHWL	rock beach	North side of 6961 Wright Road, parallel to long wharf with metal cones on pilings	2015 Oct 01	5	140	No odour, discharge clear
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2064	stream	AHWL	silt and oyster shells	Wright Road creek; south of 6961 Wright Road	2015 Apr 22	60	70	No odour, discharge clear
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2065	stream	AHWL	mud flat	200 m northwest of 1655 Whiffin Spit Road	2015 Oct 08	4	780	No odour, discharge clear
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2065A	stream	AHWL	sand	Northwest of 1655 Whiffin Spit Road, 60 m west of long wharf	2015 Sep 25	Null	Null	Dry, not sampled
2066	600	AHWL	pebble beach	West of 1655 Whiffin Spit Road	2015 Apr 13	80	530	No odour, discharge clear
2067A	---	AHWL	rock	Middle of cement retaining wall at 1643 Dufour Road	2015 Apr 13	10	12,000	No odour, discharge clear
2068	ditch	AHWL	rock beach	1643 Dufour Road	2015 Apr 13	8	10	No odour, discharge clear
2069	ditch	AHWL	clay	100 m west of Possession Point Road	2015 Apr 13	180	1,000	No odour, discharge clear
2070	ditch	AHWL	rock beach	West side of Possession Point Road	2015 Apr 13	1	820	No odour, amber discharge
2071	ditch	AHWL	rock beach	East side of Possession Point Road	2015 Apr 13	16	105	No odour, discharge clear
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2073	500	AHWL	rock beach	10 m north of gazebo, north of Whiffin Spit parking lot	2015 Apr 13	8	110,000	No odour, sudsy discharge
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Table 1, continued

CRD Outlet Number	Outlet Diameter (mm)	Point of discharge	Nature of shoreline	Location	Date sampled	Flow (L / min)	Fecal coliforms (CFU / 100 mL)	Sample comments
2074	600	AHWL	rock beach	1 m north of walking bridge at Whiffin Spit parking lot	2015 Apr 13	10	110	No odour, discharge clear
2101	900	AHWL	rip rap	Ella Stream, point of discharge, 300 m southeast of sawmill, 15 m south of wharf and green building	2015 Apr 17	65	<10	No odour, discharge clear
2102	stream	AHWL	rock beach	Broom Hill Stream, point of discharge, south side of West Coast Road, 20 m west of white building	2015 Apr 17	50	740	No odour, discharge clear
2103	9000	AHWL	rock beach	Kemp Stream, point of discharge, south side of West Coast Road, 0.25 km west of log purchase	2015 Apr 17	250	<10	No odour, discharge clear

Notes:

Flow is visually estimated in litres/minute

Shaded cells have values above 200 CFU/100 mL and may be a concern to human health

Bacterial Results – Kaltasin and Flats

In 2015, IWMP staff sampled 3 of the 6 stormwater discharges as the other 3 along Billings Spit were dry. A slightly elevated fecal coliform count (230 CFU/100 mL) was measured in Throup Stream (2046). Alderbrook Creek, which often has elevated fecal coliform counts, had a low measurement (40 FC/100 mL). Stormwater discharges are rarely observed on Billings Spit, however sampling has shown elevated fecal coliform counts in the ocean during or following heavy rain suggesting contamination from animals or malfunctioning on-site sewage treatment systems may be entering the marine environment through groundwater. On December 2, 2013, bacteria from humans (1 location) and ruminant animals (3 locations) were detected in marine surface water around Billings Spit.

Bacterial Results – Whiffin Spit North

In 2015, staff collected water samples from 4 of the 6 discharges as 2 were not flowing. Elevated fecal coliform counts were measured in 3 of the 4 discharges (2063, 2064 and 2065). The highest count (3,800 CFU/100 mL) was measured from 2065 (south of concrete stairs near 6961 Wright Road).

To determine whether there was any impact from the stormwater discharges in the marine environment, staff sampled the marine environment in front of the stormwater discharges in fall 2015. Table 2 shows fecal coliform and enterococci results of the marine samples adjacent to the Whiffin Spit North area after a couple days of rain (no rain at time of sampling).

Table 2. Marine Bacterial Levels in Samples Collected Adjacent to the Whiffin Spit North Catchment Area

Discharge/Location	2061 – marine	2063 – marine	2064 – marine	2065 – marine
Fecal coliforms	40	92	33	500
Enterococci	27	220	37	280

Note: Shaded cells exceed Health Canada’s guideline for primary recreation.

The enterococci were elevated above primary recreation contact criteria for a single sample (70 CFU/100 mL) in front of 2063 and 2065. Bacterial source tracking analysis on marine water adjacent to discharge 2065 resulted in bacteria from human, gull and general sources for which there was no marker.

Due to the human result, staff collected samples upstream of discharge 2065. Results suggest a septic system failure, but more investigation is needed to determine which property. Chickens may be a contributing source.

Environmental Concerns

CRD staff did not assess stream or marine environment health in 2015. Previous results indicate that Alderbrook Stream, Throup Stream and Veitch Creek have the most exceedances of water quality guidelines and the parameters of concern in many of the creeks are fecal coliforms, turbidity and phosphorus due to human and animal presence in these watersheds.

Future Sampling Efforts

IWMP staff will conduct the following sampling activities in 2016:

- analysis of fecal coliform and enterococci levels at all 28 marine sampling stations (5 weekly samples) in winter and summer to comply with the MOE report, “*Water Quality Assessment and Objectives for Sooke Watersheds, Inlet, Harbour and Basin*” (draft).
- analysis of metals levels in the 28 marine sampling stations 1 time in the fall (coinciding with rainfall, if possible).
- analysis of dissolved oxygen at the deepest part of the Sooke Basin 1 time in summer.
- stormwater discharge sampling around Whiffin Spit North and the Kaltasin catchment areas.

PUBLIC EDUCATION

IWMP provides education materials and workshops for businesses, farmers, community groups and the general public on stormwater quality issues, and what can be done to prevent and reduce pollution. Part of the public education component includes promoting the use of Best Management Practices by the community. Best Management Practices are voluntary strategies for preventing stormwater pollution. IWMP staff also promote reporting of spills and are active by attending outreach events in Sooke. In 2015, staff participated in Seedy Saturday.

CONCLUSIONS

In 2015, CRD IWMP staff assessed stormwater quality in 45 stormwater discharges with a focus on those discharging from the Kaltasin and Whiffin Spit North shorelines. Nine of the 45 stormwater discharges had elevated fecal coliform counts that could pose a risk to public members undertaking activities like swimming. The sources include malfunctioning on-site sewage systems and animals. CRD data has measured similar fecal coliform contamination in both Kaltasin and Whiffin Spit North stormwater discharges and both areas have been shown to impact the marine environment; however, higher counts were measured from the Whiffin Spit North area in 2015.

In 2016, CRD, Sooke and MOE staff will be collaborating to conduct extensive monitoring of the marine environment. Some stormwater data will be collected as well in the Kaltasin and Whiffin Spit North areas, as budgets permit.