



Whatcom Clean Water Program Quarterly Progress Report October – December 2013

1. WATER QUALITY MONITORING & RESULTS

Data reporting - Whatcom County Public Works (Public Works) is developing a centralized database to make countywide water quality sampling data available online to the public. Until the database is operational, countywide monitoring data is available from Public Works staff upon request.

Both the lower Nooksack River watershed and the Drayton Harbor watershed are subject to water quality standards established to protect “primary contact recreation” as a designated water use. Primary contact state-wide bacteria criteria include that fecal coliform organisms must not exceed a geometric mean (“average”) of 100 colonies per 100mL and not more than ten percent of samples can exceed 200 colonies per 100mL (referred to as 90th percentile).

Whatcom Clean Water Program focus area monitoring results in this report appear in Excel spreadsheet data format, in colony forming units (CFU) per 100 milliliters (mL) of sample for each sample location.

BERTRAND WATERSHED

Fecal coliform concentration

Short-term, routine sampling in Bertrand focus area -

Washington Department of Ecology (Ecology) inspectors conducted routine water quality sampling at ten established locations (see Appendix Map 1 for short and long-term sampling locations). Routine sampling occurs approximately every two weeks. See Figure 1 for short-term routine monitoring results.

During November and December, routine sampling results showed elevated fecal coliform levels in water entering United States from Canada, especially in Cave Creek. Ecology staff communicate data to the senior environmental protection officer at Ministry of Environment, Canada for follow up. In the Jackman Ditch drainage, results continue to show substantial increases in bacteria levels as water flows from the border (BEJK2.0) to the downstream sampling site (BEJK0.2).



Based on 2013 data, none of the ten short-term sampling sites in the Bertrand watershed meet state water quality criteria due to high values for the estimated 90th percentile. Only BENF2.0 and BEDF3.7 meet the geometric mean criterion.

Long-term, routine sampling – Within the larger Nooksack basin, Public Works and Northwest Indian College (NWIC) staff collect routine water quality samples two times per month at 13 long-term monitoring stations. Two stations are sampled once per month.

Specific to Bertrand watershed, Public Works and NWIC routinely collect water quality samples twice per month at station B1 and once per month at station B3 on the Bertrand Creek mainstem. At the lowest downstream Bertrand station (B1), routine sampling on November 19 following a large rain event resulted in a count of 21,600 CFU/100mL. This result indicates fecal bacteria levels over 100 times the state standard established to protect people’s health.

Figure 2. Bertrand Creek fecal coliform geometric mean annual historical comparison, Station B1 and B3

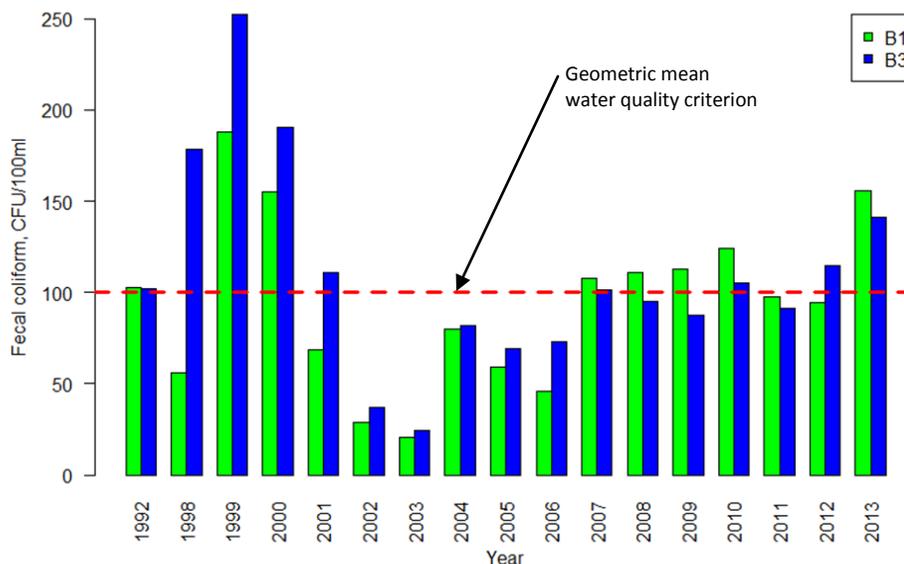


Figure 3. Bertrand Creek fecal coliform estimated 90th percentile annual historical comparison, Station B1 and B3

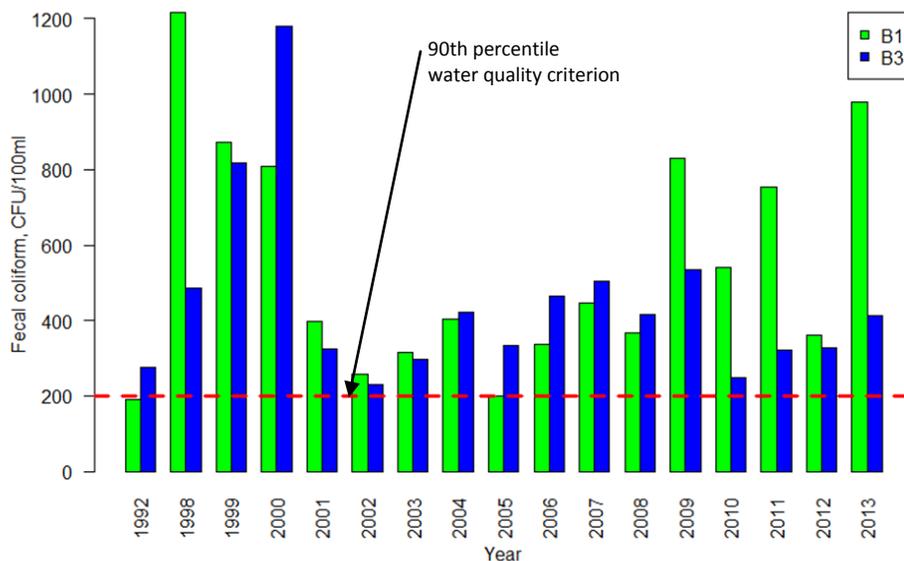


Figure 2 and Figure 3 compare current year with past years' geometric mean and estimated 90th percentile status at downstream mainstem Bertrand Creek monitoring stations B1 and B3; fecal coliform bacteria levels at these stations fail to meet established water quality standards.

Summary of 2013 Bertrand focus area data –

- Based on 2013 data for Bertrand watershed, ongoing fecal pollution reduction efforts will prioritize the Jackman drainage and McClellan Creek drainage.
- In Jackman Ditch, water is significantly cleaner upstream when the ditch enters the U.S. than when it enters Bertrand Creek downstream.
- Of the three Canadian border monitoring sites, Cave Creek requires the greatest reduction.

**Summary of annual water quality data for lower Nooksack River watershed
(Portage Bay Shellfish Protection District)**

B1 is the furthest downstream, long-term water quality monitoring station before Bertrand Creek enters the Nooksack River. Similar long-term downstream sites are monitored in other sub-watersheds that drain to the Nooksack River: Anderson Creek, Fishtrap Creek, Kamm Creek, Scott Ditch and Tenmile Creek.

Comparing fecal coliform sampling results in 2012 with results in 2013, annual geometric means and annual estimated 90th percentiles increased in all of the sub-watershed locations:

Annual geometric means			Annual estimated 90th percentile		
Waterbody	2012 annual geo mean	2013 annual geo mean	Waterbody	2012 annual est. 90 th	2013 annual est. 90 th
Anderson Creek	75	99	Anderson Creek	371	578
Bertrand Creek	94	156	Bertrand Creek	360	979
Fishtrap Creek	112	183	Fishtrap Creek	467	562
Kamm Creek	117	167	Kamm Creek	389	504
Scott Ditch	88	160	Scott Ditch	405	467
Tenmile Creek	49	104	Tenmile Creek	264	535

Increases in sub-watershed bacteria levels during 2013 as compared to 2012 are reflected in water quality monitoring results for the Nooksack River. Station M1 at Marine Drive is the lowest downstream monitoring location on the Nooksack River that is included in the Whatcom County's long-term monitoring program. In 2013 as compared to 2012, M1's annual geometric mean more than doubled from 16 to 37. M1's annual estimated 90th percentile for 2012 was 77 and increased to 97 in 2013.

The geometric mean of 37 and estimated 90th percentile of 97 at M1 both meet state water quality criteria. However, the increasing trend is cause for concern because freshwater from the Nooksack River flows to the marine waters of Bellingham Bay and shellfish beds of Portage Bay. Safe shellfish harvest in Portage Bay is in danger due to increasing fecal coliform levels measured at marine stations. If shellfish beds are closed to harvest, we have failed to meet water quality standards because a beneficial use (shellfish harvest) is not supported.

Continued increase in freshwater fecal coliform levels will not improve conditions in the shellfish growing area. The state Department of Health's (DOH) 2013 Early Warning System Summary assigned a "threatened" status to five marine stations and a "concerned" status to three stations in the Portage Bay shellfish growing area. These assignments were based on how close the stations are to failing to meet National Shellfish Sanitation Program standards. See Figure 4 for map of Portage Bay shellfish growing area.

DOH provides the early warning summary to county governments so that corrective actions can take place before water quality at the listed stations fails shellfish standards. Reduction in fecal coliform levels in freshwater flowing to the shellfish growing area is required in order for stations in the Portage Bay growing area to be removed from threatened or concerned status.

Long term water quality monitoring results in Fishtrap Creek show fecal coliform levels increase as the stream flows through city of Lynden. Lynden is beginning work on its municipal separate storm sewer system (MS4) permit, which will require an illicit discharge detection and elimination program. Sampling in support of that program is to begin in March 2014. Lynden will be required to report fecal pollution exceeding water quality standards and say how the city is going to fix the problem(s). The MS4 permit establishes timelines. As that work moves forward, Lynden will necessarily be involved as a partner in addressing elevated fecal coliform levels in Fishtrap Creek. A relatively small portion of the Kamm watershed is in city limits.

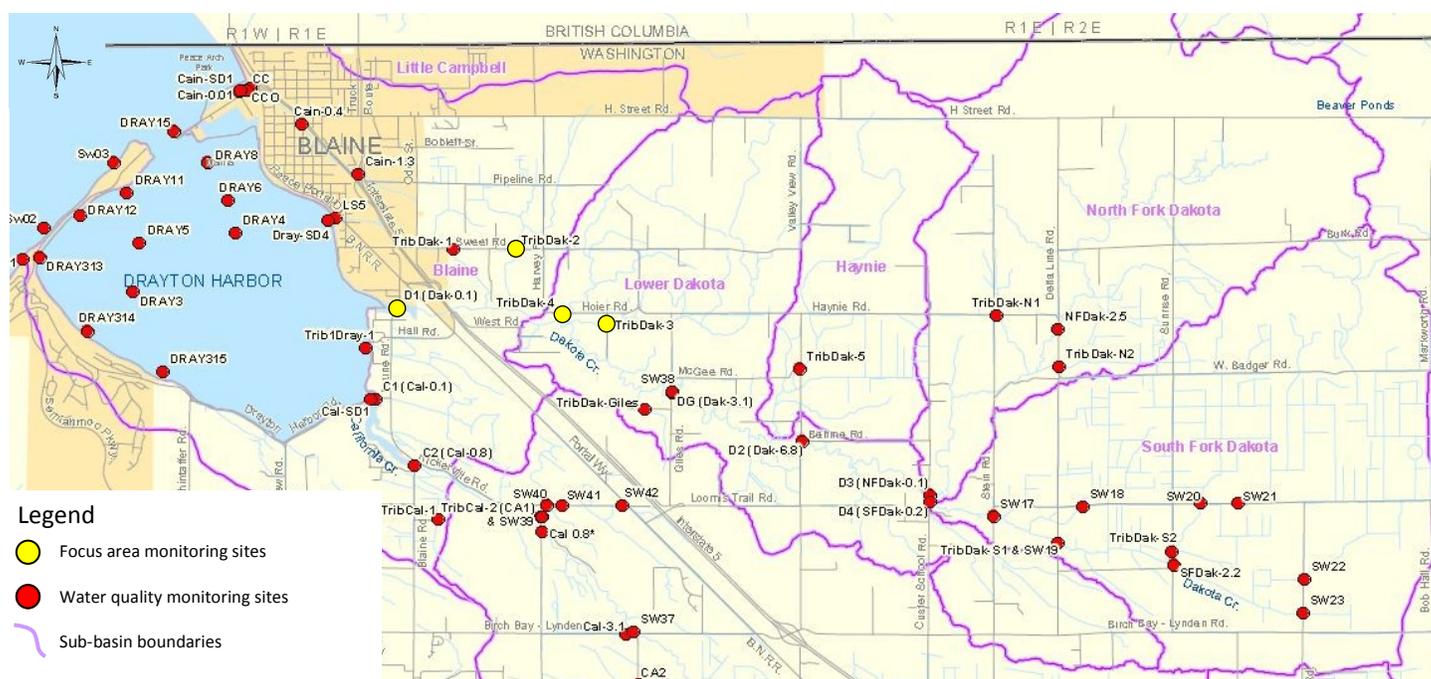
DRAYTON HARBOR FOCUS AREA (Lower Dakota Creek)

Fecal coliform concentration

Long-term routine sampling -

Throughout the Drayton Harbor watershed, Public Works staff collected routine water quality samples on a monthly basis at approximately 30 stations. At eight of those stations, NWIC collects samples a second time each month. NWIC also collects one sample per month at two stormwater outfalls—one in Blaine and one at the mouth of Cain Creek. Nooksack Indian Tribe (NIT) Natural Resources staff collected samples twice per month from an additional 26 short-term monitoring sites.

Figure 6. Water quality monitoring stations - Dakota Creek sub-basin (part of Drayton Harbor watershed)



Public Works bacteria pollution identification and correction efforts are focused in Lower Dakota Creek. Monitoring stations are located in three tributaries to Lower Dakota Creek and at the mouth of Dakota Creek where it flows into Drayton Harbor (station D1). See Figure 6 for location of focus area monitoring sites. See Figure 9 for Drayton Harbor shellfish harvest classification map

Station D1 is subject to marine water quality standards established to protect shellfish harvesting and recreational uses. A criterion to protect safe marine water shellfish harvesting and primary contact recreation is that fecal coliform organisms must not exceed a geometric mean (“average”) of 14 colonies/100mL. Additionally, not more than 10 percent of samples can exceed 43 colonies/100mL (referred to as 90th percentile).

Figure 7. Lower Dakota Creek fecal coliform geometric mean annual comparison

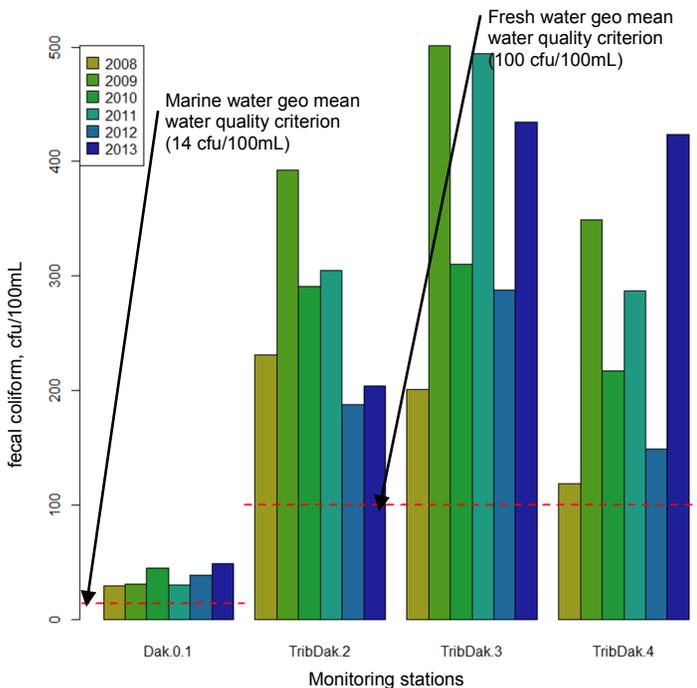
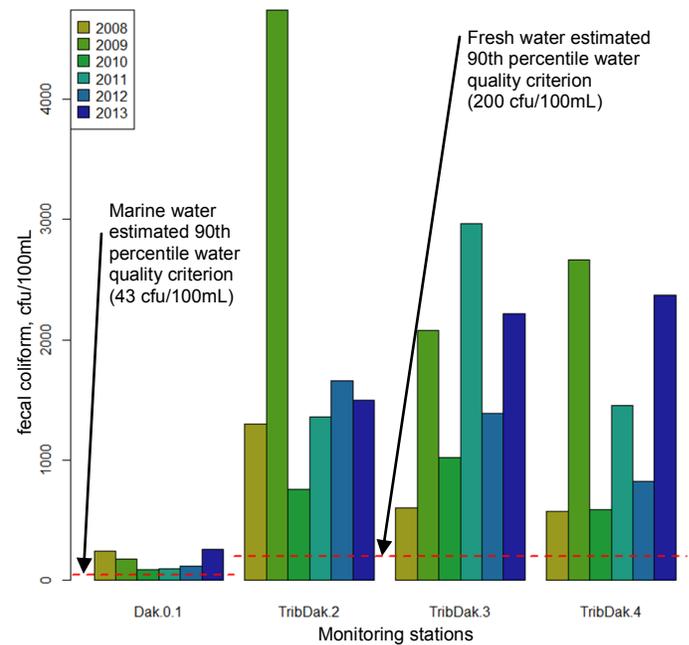


Figure 8. Lower Dakota Creek fecal coliform estimated 90th percentile annual comparison



Summary of 2013 Drayton Harbor focus area data

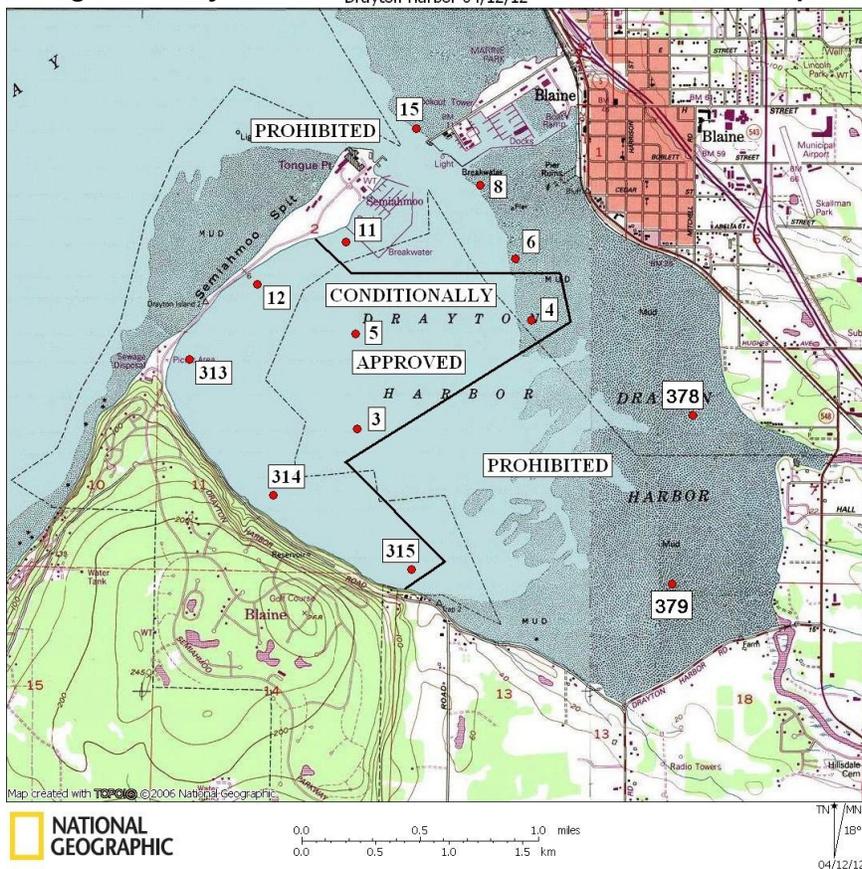
- During 2013 in comparison to 2012, the majority of the routine sampling sites in the Drayton Harbor watershed have shown increased bacteria levels.
- The current three-year geometric mean at D1 is 39 FC/100mL, nearly three times the marine criteria.
- The tributaries to Lower Dakota Creek (TribDak2, TribDak3, and TribDak4) continue to have the most elevated bacteria levels in the Dakota subwatershed with three-year geometric means of 235, 400, and 265 FCU/100mL respectively. See Figure 7 and Figure 8 for annual geometric mean and estimated 90th percentile historical comparisons.
- A tributary to Lower California Creek at Kickerville Road (CA1) has shown increasing bacteria levels in 2013 with 7 of 11 samples exceeding 200FCU/100mL this year. Three of the seven high fecal count samples have been above 2000 FCU/100mL.
- The Brown-Malloy drainage in upper California Creek (CA14) continues to show elevated bacteria levels. Five of 8 samples exceeded 200 FCU/100mL in 2013 and two of those samples exceeded 2000 FCU/100mL.

Wet Season Monitoring - Public Works, Nooksack Indian Tribe and the Drayton Harbor Community Oyster Farm began a Drayton Harbor wet season monitoring project this quarter. Between November 2013 and February 2014, the project's enhanced monitoring includes weekly, coordinated fresh and marine water sampling. Sixteen freshwater sites are sampled weekly. An additional six freshwater sites in the lower California and Dakota Creek drainages are sampled bi-weekly.

The wet season supplemental freshwater monitoring is coordinated with weekly sampling of thirteen marine sites in Drayton Harbor. Project partners sampled an additional nine marine stations during December. Additional marine stations include sites outside of the harbor.

Monitoring results in November following rain events showed elevated bacteria levels in both the freshwater and marine waters. Public Works staff will complete a report for the project in April 2014.

Figure 9. Drayton Harbor shellfish harvest classification map



The majority of Drayton Harbor is classified as “Prohibited” for the harvest of shellfish. The remainder of the area is classified as “Conditionally Approved”, allowing it to be open to harvest from February through October. During the months of November through January, the conditionally approved area is closed to commercial shellfish harvest because all monitoring stations in the bay fail to meet state water quality criteria.

2. SITE ASSESSMENTS

2.1 Regulatory property assessments and results this quarter

Ecology (non-dairy livestock property inspections) **BERTRAND WATERSHED**

Scheduled assessments in Bertrand focus area:

- Ecology inspectors completed one initial property visit and three follow-up visits in the Bertrand watershed.
- During the initial property visit, inspectors determined the livestock-keeping practices presented a low risk for contributing fecal pollution to waterways.
- Of the three follow-up inspections, two property owners are working cooperatively with Whatcom Conservation District to address pollution concerns. Since October, the third property owner has not responded to Ecology's multiple offers of technical and financial assistance.

Ecology is unable to verify if corrective actions have taken place. Water quality monitoring downstream of the property continues to show elevated fecal coliform bacteria levels. The property owner will receive a second warning letter encouraging cooperative response.

	Ecology Activity		
	Total since January 2013 (incl. current qtr)	Bertrand watershed this qtr	Outside Bertrand watershed this qtr
Initial visits	39	1	
Sites requiring future follow-up	20	1	
Follow-up visits completed	7	3	2
Sites determined to be low-risk without follow up needed	19		
Landowner limited/denied property access	8		

Ecology inspectors completed few new inspections this quarter due to challenges in scheduling appointments with non-responsive residents. Inspectors try to contact residents through phone calls and door hangers requesting a call back.

Ecology referrals to other agencies:

Various sources report pollution concerns to Ecology's office. Reports are entered into an Environmental Report Tracking System (ERTS) and distributed to regulatory agencies for appropriate response.

- Ecology inspectors responded to two ERTS reports related to one property owner for improper manure spreading in the Kamm watershed. A warning letter is pending for this property.
- One ERTS report regarding cattle access to the Sumas River was referred to Whatcom County Planning and Development Services for follow up as a previous Critical Areas Ordinance violation. No follow-up action report for this property was received.
- Ecology inspectors referred a site to Whatcom County Health Department to assess waste management practices from multiple RVs on the two properties upstream of high bacteria counts. County Health assessed the site and found no obvious fecal pollution problems.

Washington State Department of Agriculture (WSDA) (dairy property inspections) **BERTRAND WATERSHED & DRAYTON HARBOR WATERSHED**

As of the end of the quarter, 112 licensed dairies operate in Whatcom County. Fifteen dairies have building facilities located in the Bertrand watershed along with one methane digester. Four additional dairies have fields located within the watershed.

WSDA activity in Bertrand focus area:

- WSDA staff completed three routine dairy facility inspections and three follow-up inspections.
- The three routine inspections found the dairies to be in compliance.
- Two follow-up inspections showed that facilities who had received letters identifying specific corrective actions had substantially addressed the issues.

WSDA (cont.) —

- WSDA and Ecology have identified poor pasture management, including pasturing of various non-dairy animals, as a potential fecal pollution issue at one dairy.

WSDA activity in Dakota Creek sub-basin (Drayton Harbor watershed):

Seven dairy facilities are located in the Dakota Creek focus area. One additional dairy has fields located within the watershed.

- WSDA staff completed one routine inspection. A follow-up inspection to review records will occur next quarter.

WSDA Dairy Nutrient Management Program received a two-year grant from Washington Department of Health. The grant will expand program capacity in Whatcom County and northern Puget Sound by hiring additional staff to monitor water quality, conduct compliance inspections and offer technical assistance. Technical assistance will be offered to third-party manure applicators to ensure proper application of dairy manure to non-dairy properties.

WSDA Activity			
	Bertrand watershed	Dakota (Drayton Harbor watershed)	Countywide
Routine	3	1	10
Close-out	0	0	0 ¹
Referral	1 ²	0	5
Initial	0	0	0 ³
Investigation	0	0	2
Follow-up	3	0	29

¹ Four dairies ceased operation during the quarter. Two close-out inspections had already been completed.

² A referral was made for a Bertrand dairy that already had a scheduled follow-up inspection.

³ Two dairies received new milk producer licenses to produce at former dairy facilities.

Whatcom County Health Department (WCHD) - (on-site sewage system (OSS) operation & maintenance) BERTRAND WATERSHED & DRAYTON HARBOR WATERSHED

WCHD activity in Bertrand focus area

- WCHD received seven Report(s) of System Status (ROSS) from residents living in the Bertrand/Fishtrap Creek watersheds. Two of the reports noted the need for system maintenance.
- Based on referral from Ecology due to high fecal coliform levels upstream of monitoring station B1, WCHD investigated sewage disposal practices for two properties with multiple, occupied recreational vehicles on site. WCHD noted no obvious signs of improper sewage disposal.

Due to consistently high fecal coliform levels during summer 2013, Ecology referred to WCHD parcels that drain to Jackman Ditch to determine whether failing OSS could be contributing fecal pollution to surface water. WCHD requested property owners allow

WCHD Activity					
Watershed	# of ROSS - 4th Qtr	ROSS— maintenance needed	ROSS - Failures	Other Failures	Failures Repaired
Bertrand/Fishtrap	7	2	0	0	0
Drayton Harbor	57	14	1	0	0

WCHD to survey individual OSS function, or for property owners to submit a ROSS.

- One referred property submitted a ROSS to WCHD during 4th quarter 2013. The ROSS was for the main residence on the property. Because WCHD had received a citizen complaint regarding the OSS for an apartment on the property, WCHD followed up. The property owner did not evaluate the apartment's OSS because the owner could not locate the septic tank. The apartment is currently vacant. WCHD has given the owner until April 2014 to locate the tank.
- Of the 16 Jackman Road parcels of interest, O&M status for five systems remains unknown due to lack of landowner response.
- Of the 14 referred parcels along Guide Meridian and H Street, O&M status for nine systems remains unknown due to lack of landowner response.

2.2 Enforcement summary

Ecology (non-dairy livestock properties)

- Ecology inspectors accompanied an EPA criminal enforcement officer during an investigation of a dairy manure spill in the Drayton Harbor watershed.
- Inspectors conducted an investigation of manure-contaminated discharge into tributaries of Saar Creek, which drains to Canada. Ecology enforcement action is pending against the berry producer responsible for the polluted discharge.

Washington State Department of Agriculture (WSDA) - Dairy Nutrient Management Program (dairy properties)

WSDA began a formal enforcement action on a dairy in the Drayton Harbor watershed, with a penalty expected to be issued in early 2014. The enforcement action is related to a significant manure discharge to a California Creek tributary that resulted in fish kill and water quality violations as far as five miles downstream. The dairy producer did not report the spill to agency staff; the pollution was discovered during routine monitoring by Whatcom County Public Works. The pollution resulted in a week-long closure of the beach and commercial shellfish harvest.

WSDA completed a stipulated settlement with a dairy in the Bertrand watershed. The Pollution Control Hearings Board dismissed two contested Orders and the dairy paid a \$11,500 penalty. The dairy agreed to a schedule of preventative maintenance on its underground conveyance system, protocols for nutrient application, employee training, and records retention and submittal.

3. AGRICULTURAL BMP COST SHARE PROGRAM

Funding through the National Estuary Program (NEP) is available to help landowners in Whatcom County pay for projects that reduce pollution from horses and livestock. Landowners may receive up to 75 percent of costs for qualifying projects. No landowners have participated in the program.

Ecology is adding a project compliance assurance position at Bellingham Field Office (BFO). The compliance assurance position will coordinate best management practice (BMP) implementation in Whatcom, Skagit and Snohomish counties. If no NEP Whatcom County Ag BMP projects are identified by next spring, the money may be made available to other county Pollution Identification and Correction programs. Skagit and Pierce counties have used NEP Ag BMP funds to implement water quality improvement projects.

4. EDUCATION & OUTREACH

- The WCWP website was updated with the Whatcom Clean Water Program Quarterly Progress Report, July-September 2013.
- Jackman drainage - In October and November, WSDA sent Jackman Ditch water quality sampling results to dairy producers in the drainage area to ensure producers were aware of elevated fecal coliform levels and patterns. Dairy is the primary land use in the Jackman drainage.
- Drayton Harbor beach and shellfish harvest closure - As a result of a dairy manure spill into a California Creek tributary, the Whatcom County Health Department (WCHD) issued a beach closure for Drayton Harbor at California Creek on October 18. Closures are communicated to the public with signage and online through the Beach Environmental Assessment, Communication & Health (BEACH) Program.



BEACH Program beach closure sign

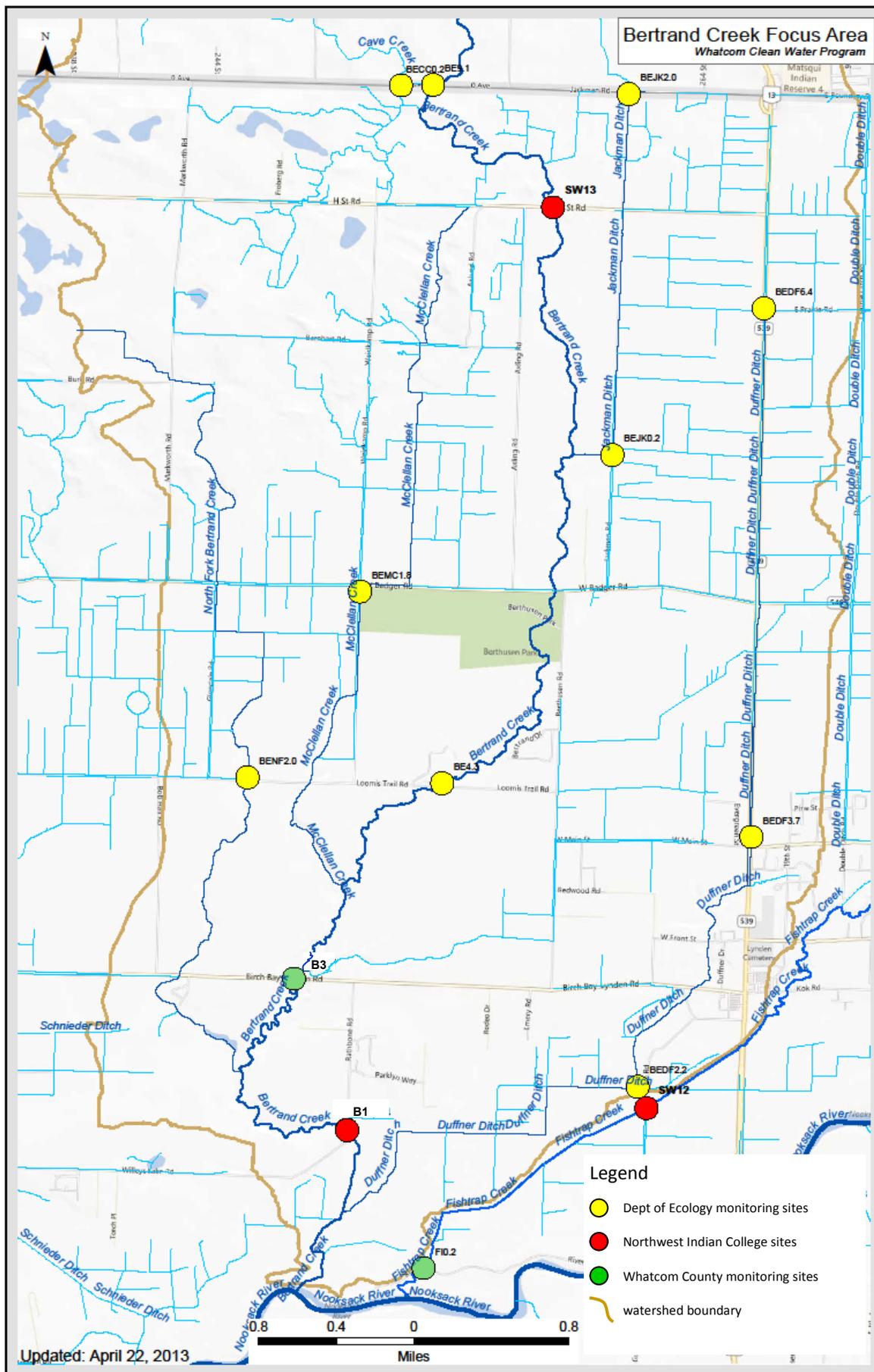
The week-long closure advised the public not to have contact with the water until further notice, noting “Contact with fecal contaminated waters can result in gastroenteritis, skin rashes, upper respiratory infections, and other illnesses. Children and the elderly may be more vulnerable to waterborne illnesses.” The State Department of Health closed Drayton Harbor commercial shellfish harvest for a week due to elevated fecal bacteria levels caused by the manure spill.

- Drayton Harbor dye study - Washington Department of Health and Whatcom County Public Works issued news releases to the Drayton Harbor community about a dye study conducted on December 10. Reporters from Bellingham Herald and King 5 TV covered the story, as well as the local KGMI radio station. The Drayton Harbor Community Oyster Farm manager hosted reporters on his boat to view the dye release and discuss challenges that fecal pollution poses to commercially viable shellfish farming.

Ongoing work of the Drayton Harbor Shellfish Protection District Advisory Committee is supported by County Public Works and the state Health Department. The volunteer shellfish advisory committee was interested in estimating the influence of Dakota Creek on the Conditionally Approved portion of the Drayton Harbor commercial shellfish growing area. The Department of Health led the study to release harmless dye into mouth of Dakota Creek in order to track how water from Dakota Creek moves in the harbor. A study results report is pending.

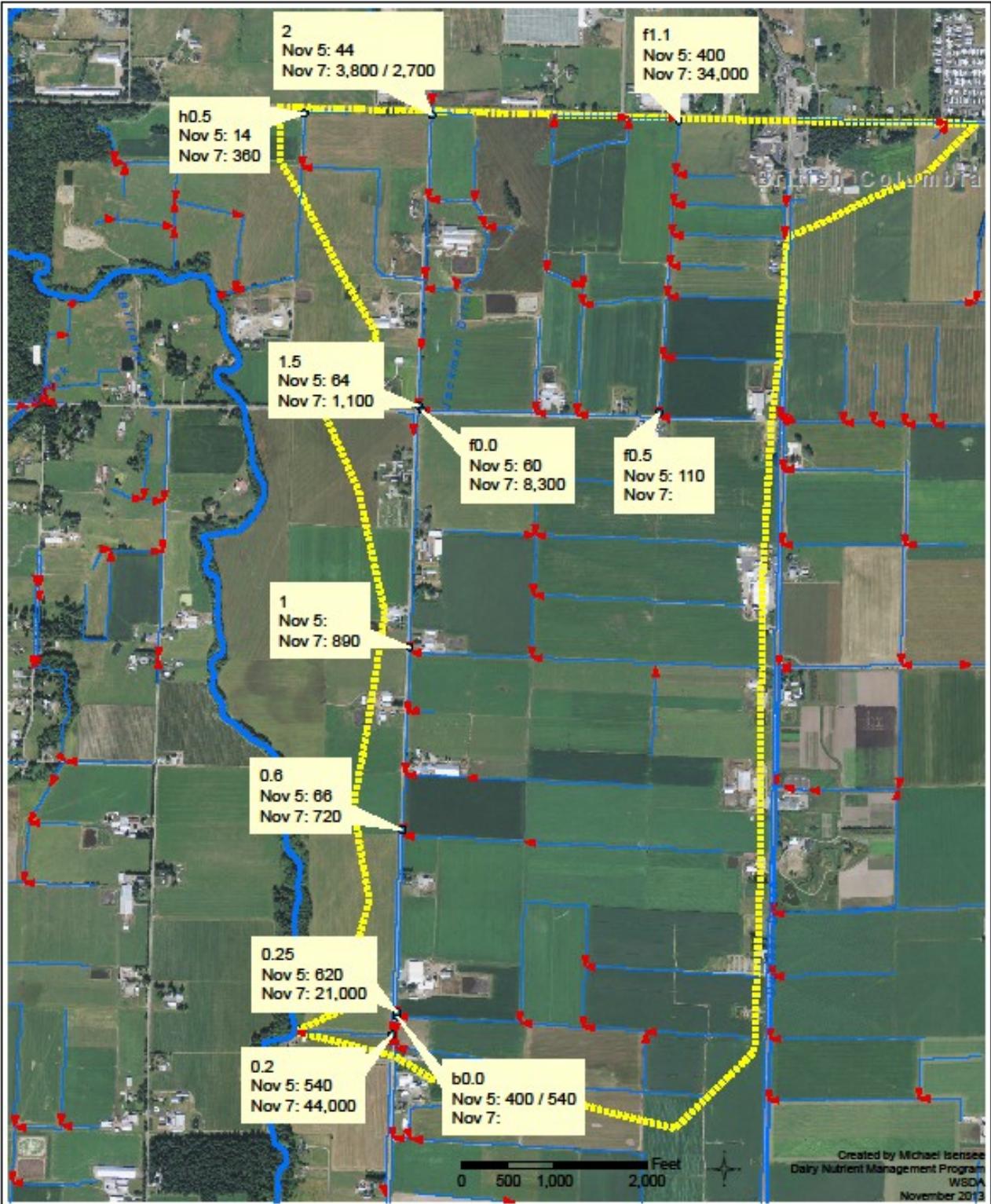


Drayton Harbor Community Oyster Farm shellfish grower Mark Seymour and state Department of Health environmental engineer Kay Rotell release harmless dye into the mouth of Dakota Creek at ebb tide on December 10, 2013. Along with state Health’s Jule Schultz, the team traced the dye throughout the day to gather data about circulation and dilution patterns. The data will help better understand to what extent the creek affects commercial and tribal shellfish harvesting area water quality.



Appendix Map 2. Example—WSDA Jackman drainage supplemental water quality monitoring results map

WHATCOM CLEAN WATER: JACKMAN DRAINAGE WSDA SAMPLING Nov. 5 & 7, 2013



Appendix Map 3. Kamm and Fishtrap watersheds water quality monitoring locations

