



## Whatcom Clean Water Program Quarterly Progress Report January - March 2014

### 1. WATER QUALITY MONITORING & RESULTS

**Data reporting** - Several state, federal and tribal agencies, and non-governmental organizations monitor fecal coliform and other water quality parameters throughout Whatcom County. To make countywide water quality monitoring data available online to the public, Whatcom County Public Works (Public Works) is working with Lummi Nation and other partners to develop a centralized database. Until the database is operational and populated with historic data, countywide monitoring data are available from Public Works staff upon request.

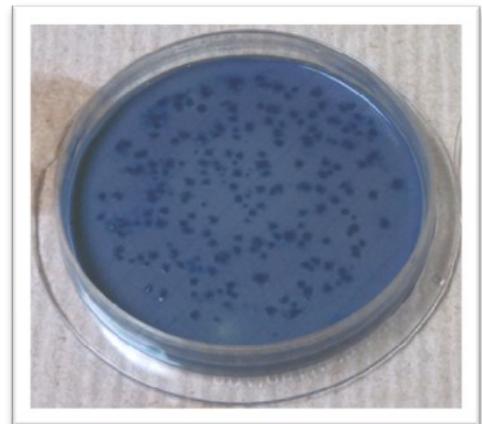
Whatcom Clean Water Program focus area monitoring results for fecal coliform bacteria are reported in colony forming units (CFU) per 100 milliliters (mL) of sample for each sample location.

#### LOWER NOOKSACK/PORTAGE BAY WATERSHED

Fecal coliform density

##### **Monitoring in Bertrand focus area -**

To support bacteria pollution identification and correction efforts, Washington Department of Ecology (Ecology) inspectors continued to monitor fecal coliform bacteria levels at ten established locations in the Bertrand watershed (see Appendix Map 1 for short and long-term sampling locations). See Table 1 for Ecology's routine monitoring results this quarter.



*Fecal coliform bacteria colonies grown from a water sample*

#### Washington State bacteria criteria for surface water quality standards

Washington State standards establish that fecal coliform organism levels must not exceed a geometric mean ("average") of 100 colonies per 100mL, with not more than 10 percent of samples exceeding 200 colonies per 100mL (referred to as 90th percentile). These criteria protect public health and "primary contact recreation" as a designated freshwater use.

To protect shellfish harvesting in Washington, fecal coliform organism levels in marine water must not exceed a geometric mean of 14 colonies per 100mL, and not have more than 10 percent of samples exceeding 43 colonies per 100mL.

The federal Clean Water Act requires states to identify waters that do not meet state standards, and to develop a cleanup plan targeted at pollution sources. Water cleanup plans – also called total maximum daily load studies (TMDL) - include an analysis of water quality sampling data and a strategy to limit pollution to meet state water quality standards.

In June 2000, the Washington Department of Ecology established fecal coliform pollution limits for the Nooksack watershed through adoption of its TMDL analysis. TMDL target geometric mean fecal coliform concentrations for Bertrand Creek (station B1) and Kamm Creek (station K1) are 49 and 35 respectively. The target geometric mean for the mainstem Nooksack River at Marine Drive (station M1) is 39. These geometric mean targets are below the criterion established in the state's water quality standards. The target geometric mean is the expected value when bacteria is meeting the 90<sup>th</sup> percentile criteria. When the TMDL goals are met, the beneficial use of shellfish harvesting should be protected.

Water quality standards for surface water in Washington are described in Chapter 173-201A Washington Administrative Code. The standards are established and regulated by Washington Department of Ecology and approved by U.S. Environmental Protection Agency.



WSDA's supplemental sampling in the Jackman drainage indicates improvement in water quality as water flows from upstream to the downstream Jackman ditch monitoring station during the quarter (Table 2), while Ecology's routine sampling data for the Jackman Ditch drainage continues to show generally increasing concentrations of bacteria above state water quality criteria at the downstream site (Table 1). For full results of WSDA monitoring in Bertrand watershed this quarter, see Appendix Table 3.

Whatcom County Public Works and Northwest Indian College staff collected routine water quality samples at Station B1 six times during the quarter. Station B1 is the farthest downstream, publically accessible monitoring station on Bertrand Creek's mainstem before the stream enters the Nooksack River. As shown in Table 3, water quality criteria were exceeded during three of the six sampling events.

Table 4 reports fecal coliform densities measured by Lummi Natural Resources staff at Station SW118. Station SW118 is located on the mainstem of the Nooksack River south of Marine Drive and just downstream from Whatcom County's fecal coliform monitoring Station M1. Stations M1 and SW118 are freshwater sampling locations before the Nooksack River flows into marine water of Bellingham Bay and Portage Bay. As described in the Washington State bacteria criteria for surface water quality standards shaded area on page 1 of this report, the target geometric mean at Station M1 is 39. During February and early March, fecal coliform bacteria densities measured in the Nooksack River failed to meet the target geometric mean level of 39 established by the Lower Nooksack Basin Bacteria TMDL.

**Table 4. Lummi results (CFU/100mL) - Quarter 1, 2014**

	SW118
1/14/2014	18
1/16/2014	9
1/23/2014	13
2/11/2014	48
2/18/2014	1100
3/6/2014	64
3/11/2014	33
3/13/2014	11

#### **Monitoring in Kamm focus area -**

The Kamm Creek watershed, southeast of the City of Lynden, was included as a fecal pollution identification and correction focus area during late 2013. Ecology began routine sampling in the Kamm watershed during this quarter. Initially, three locations were regularly sampled, with other sites added as a result of high fecal counts in the Morman Ditch area. See Table 5 for fecal coliform sampling results and Appendix Map 4 for sampling locations.

**Table 5. Ecology's Kamm watershed monitoring results (CFU/100mL) - Quarter 1, 2014**

	K1	K2	K3	Morman Ditch 1	MD2	MD3
1/14/2014	66	34		9		
1/29/2014	800	56		3800		
2/10/2014	220	40		67	15	160
2/27/2014	92	14	18	100	130	190
3/5/2014		38		500	100	700
3/10/2014	17	14		13		
3/25/2014	44	11		120	21	

Ecology's fecal coliform monitoring results helped identify at least one property with non-dairy livestock as a fecal pollution source. The property owner is working cooperatively with Whatcom Conservation District to correct the pollution runoff problem.

Of the two Ecology monitoring stations upstream of Station Morman 1, Station MD3 (same location as WSDA's Station KA-5) showed higher fecal coliform concentrations than Station MD2. Station MD3 picks up flow from land south of Hampton Road. Several of the eight dairies in the Kamm watershed are concentrated south of Hampton Road. Based on Ecology's data that showed elevated fecal coliform levels near dairy loca-

tions, WSDA selected supplemental monitoring sites in the Kamm watershed. WSDA sampled twice in 10 locations in the Kamm drainage during March 2014. See Appendix Map 5 for WSDA sampling locations in Kamm Creek watershed and Table 6 below for sampling results.

**Table 6. WSDA's Kamm watershed monitoring results (CFU/100mL) - Quarter 1, 2014**

	KA-1	KA-2	KA-3	KA-4	KA-5	KA-6	KA-7	KA-8	KA-9	KA-10
3/17/2014	7	45	15	84	58	920	2	76	14	2
3/25/2014	5	18	<2	16	190	1500	<2	13		2

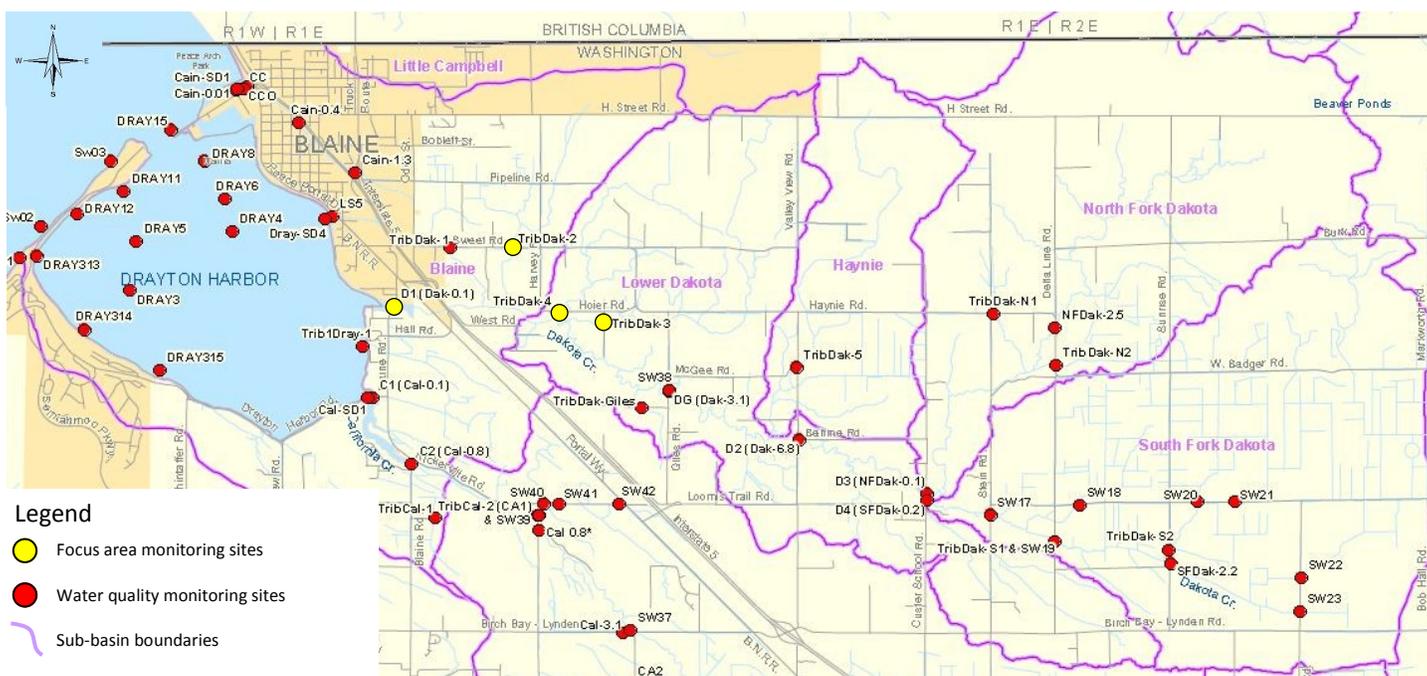
**DRAYTON HARBOR WATERSHED**

Fecal coliform density

**Long-term routine sampling -**

In the Drayton Harbor watershed as a whole, Whatcom County Public Works staff collects routine water quality samples on a monthly basis at approximately 30 stations. At eight of those stations, Northwest Indian College (NWIC) staff collects samples a second time each month. Nooksack Indian Tribe Natural Resources staff collects samples twice per month from an additional 26 short-term monitoring sites in the Drayton Harbor watershed. Figure 7 shows water sampling locations.

**Figure 7. Water quality monitoring stations - Dakota Creek sub-basin (part of Drayton Harbor watershed)**



**Water quality monitoring in Lower Dakota Creek focus area**

Whatcom County Public Works' bacteria pollution identification and correction efforts are focused in Lower Dakota Creek because the small creeks draining to Lower Dakota Creek have the highest geometric mean fecal coliform levels in the Dakota Creek watershed. Geometric mean fecal coliform levels in Lower Dakota neighborhood creeks are two to four times water quality criteria established to protect public health. Geometric means are based on results from the previous 30 samples.

As part of Whatcom County's routine water quality sampling route, three monitoring stations (TribDak-2, TribDak-3 and TribDak-4) are located in tributaries to Lower Dakota Creek. Tributary monitoring locations are subject to freshwater bacteria criteria.

Station D1 is located at the mouth of the Dakota Creek mainstem where the creek flows into Drayton Harbor. Station D1 is subject to stricter marine shellfish harvesting bacteria and recreational uses.

Table 8 reports routine fecal coliform monitoring data for the first quarter 2014; the routine data shows relatively good water quality results in the Lower Dakota Creek tributaries. Geometric mean results for this same area are shown in Figure 9. The geometric mean values are based on the last 30 samples and illustrate a history of high fecal contamination levels in the Lower Dakota Creek area relative to other parts of the Drayton Harbor watershed.

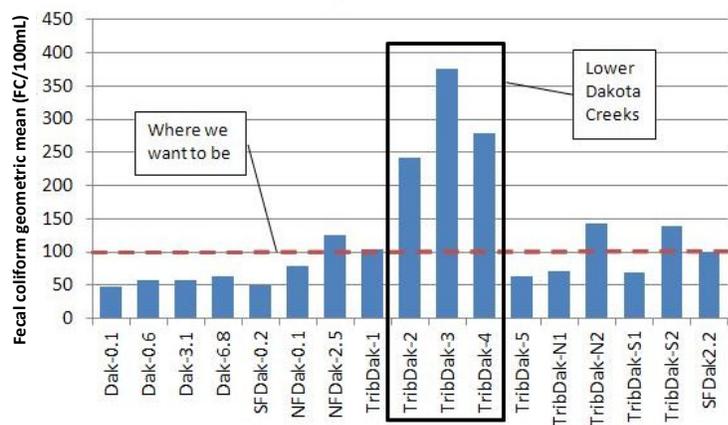
Whatcom County Public Works staff reviewed sampling results with Drayton Harbor Shellfish Protection District Advisory Committee members. The advisory committee formed two work groups; one to focus on pollution source issues near the mouth of Drayton Harbor and one to focus up-stream in the watershed.

Whatcom County Public Works staff worked with advisory committee members to develop a study to look at bacteria levels in marine sediment. Public Works staff researched sediment sampling and analysis methods and proposed a future pilot sediment study to a WWU class for a Salish Sea service learning project.

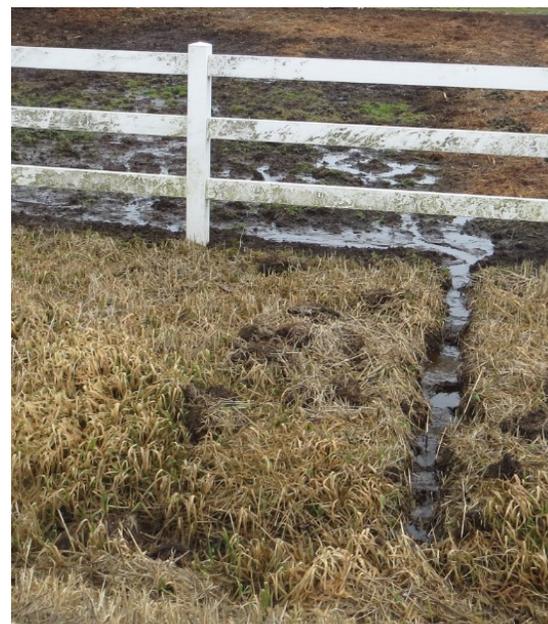
**Table 8. Public Works and NWIC monitoring results in Lower Dakota Creek drainage (CFU/100mL) - Quarter 1, 2014**

	D1 (Dak-0.1)	TribDak-2	Trib-Dak3	Trib-Dak4
1/21/2014	23			
1/30/2014	40	58	110	82
2/3/2014	88			
2/20/2014	25	37	50	41
3/20/2014	35	19	23	56

**Figure 9. Bacteria levels in Dakota Creek watershed (geometric mean)**



Muddy, manure-contaminated runoff (1) is allowed to flow into a ditch (red arrow) within a livestock confinement area. The confinement area ditch flows to a roadside ditch (2). The fecal coliform density result of a sample taken from the runoff to the roadside ditch at (2) was 78,000 FCU/100mL. The roadside ditch flows to a local Whatcom County creek which flows to a recreational beach and shellfish area.



Example of manure-contaminated runoff from a horse confinement area allowed to flow into a roadside ditch that flows to a local Whatcom County creek.

## 2. SITE ASSESSMENTS

### 2.1 Regulatory property assessments and results this quarter

#### **Ecology** (*non-dairy livestock properties*)

Ecology inspectors focused bacteria pollution identification and correction efforts in the Bertrand and Kamm watersheds.

- During initial property visits in the Bertrand watershed, inspectors recommended corrective actions at two properties with moderate risk of discharging bacteria pollution to water. Inspectors maintained communication with property owners to ensure pollution correction actions are taken.
- Through a visual survey, Ecology inspectors confirmed 49 non-dairy livestock keeping properties in the Kamm Creek watershed, with another 16 properties identified as likely to have livestock.
- Based on visible field conditions and proximity to high fecal counts, inspectors prioritized landowner contacts. Of a total 65 properties with non-dairy livestock in Kamm watershed, inspectors identified 22 properties as high priority for inspection.
- In March Ecology inspectors and a WSDA Dairy Nutrient Management Program inspector conducted an aerial survey to assess field conditions in focus areas. Inspectors used pictures and information from the fly-over to prioritize follow-up and communicate with landowners about livestock and manure management practices that can result in fecal pollution to local waterways.

Ecology Activity during reporting period				
	Total since January 2013 (incl. 1st Qtr 2014)	Bertrand watershed 1st Qtr 2014	Kamm watershed 1st Qtr 2014	Other watersheds 1st Qtr 2014
Initial property visits	45	2	4	
Follow up visits	7			
Watershed Statistics				
	Total	Bertrand watershed	Kamm watershed	Other watersheds
Non-dairy livestock properties identified	160	90	65	5*
Inspected properties requiring follow-up	20	14	6	
Evaluated properties determined to be low-risk without follow up needed	29	25	4	
Landowner limited/denied property access	23	17	4	2

*\*Non-dairy livestock properties evaluated outside of focus areas are based on complaint follow-up, not on full watershed evaluation. This number does not represent total number of properties with non-dairy livestock.*

#### **Ecology complaint response & referrals to other agencies:**

On an ongoing basis, members of the public and agency employees report pollution concerns to Ecology's office. Reports are entered into an Environmental Report Tracking System (ERTS) and distributed to appropriate regulatory agencies for response.

- Ecology inspectors responded to nine ERTS reports this quarter. Investigation outcomes resulted in one warning letter to a landowner, one pending notice of violation and one technical assistance letter. One investigation is ongoing.
- Ecology referred a property to Whatcom County Health Department to assess a septic system. County Health confirmed damage to the function of the mound system due to livestock access and worked with the landowner to ensure system repair (see pp. 8-9 for more detail).
- In addition to providing recommendations for pollution source correction, Ecology notifies all livestock owners in need of corrective actions that Whatcom Conservation District (WCD) staff provide technical assistance to assess pollution risks and address identified pollution sources. WCD's non-regulatory technical assistance is provided at no cost to the landowner. Ecology strongly recommends commercial livestock landowners and any landowners with challenging pollution risk conditions contact WCD for assistance in addressing livestock-related fecal pollution concerns.

**Washington State Department of Agriculture (WSDA) (dairy property inspections)**  
**Bertrand Creek and Kamm Creek focus areas (LOWER NOOKSACK/PORTAGE BAY WATERSHED) &**  
**Dakota Creek focus area (DRAYTON HARBOR WATERSHED)**

As of the end of March 2014, 112 licensed cow dairies operate in Whatcom County. No dairies ceased operation during the first quarter of 2014.

<b>WSDA Activity</b>				
	Lower Nooksack/Portage Bay watershed		Drayton Harbor watershed	
	<b>Bertrand</b>	<b>Kamm</b>	<b>Dakota</b>	<b>Countywide</b>
Number of dairy facilities (end of quarter)	15	7	7	112
Number of dairies with fields in watershed	20	12	8	
<b>Number of inspections Quarter 1, 2014</b>				
Routine	3 <sup>1</sup>	0	1 <sup>1</sup>	6
Close-out	0	0	0	2
Initial	0	0	0	1
Referral	0	0	0	0
Investigation	0	3	1	26 <sup>2</sup>
Follow-up	1 <sup>3</sup>	0	1	5

<sup>1</sup> Two routine inspections were records review only.

<sup>2</sup> WSDA DNMP inspectors investigated bacteria pollution sources at six different facilities. Most investigations required more than one visit. One dairy required 16 investigatory visits during the quarter.

<sup>3</sup> The follow-up visit was a referral from Department of Ecology.

**WSDA Dairy Nutrient Management Program (DNMP) activity:**

- WSDA's DNMP hired and began training an additional inspector to increase capacity to monitor dairy manure management and water quality, identify high risk applications, and to provide regulatory technical assistance and/or enforcement as appropriate. Increased capacity afforded by the additional inspector supports efforts to protect water quality and shellfish harvest in three north Puget Sound counties, including Whatcom, Skagit, and Snohomish.
- In addition to monitoring in Bertrand and Kamm watersheds this quarter, the new inspector conducted 19 sampling events in the tri-county area with sampling at 50 different locations.
- DNMP staff, in cooperation with Ecology inspectors, conducted an aerial overflight of pollution identification and correction priority areas in both Portage Bay and Drayton Harbor watersheds. Following the overflight, a dairy inspector conducted investigations of two observed high risk manure applications on dairy fields. Photos of non-dairy livestock sites with potential water pollution issues were shared with agency partners for follow-up.
- DNMP water quality protection efforts in Whatcom County this quarter included investigations of winter manure solids application in the Dakota Creek drainage (Drayton Harbor watershed) and manure application to saturated fields in Johnson Creek (Sumas River watershed).
- Substantial staff time was spent during February and March on an ongoing dairy discharge in the Terrell Creek (Birch Bay) watershed. Initially high bacteria counts were detected by routine water quality monitor-

ing by Whatcom County Public Works and Nooksack Salmon Enhancement Association. Several agencies responded to high fecal counts to investigate possible sources. Manure discharge from the dairy facility was identified as one of the main contributors to the fecal coliform bacteria contamination to Terrell Creek. The fecal pollution resulted in late January beach closure at the south end of Birch Bay near where Terrell Creek flows into marine water (see below for BEACH Program notification). The closure remained in place for the duration of this reporting period, as the Health Department could not be assured that the producer had resolved the manure discharge problems from his dairy.

Saturday, February 1, 2014

## **Fecal Matters: Beach Closed to Swimming at Birch Bay near Terrell Creek, Whatcom County, WA.**

BEACH Program Update



On January 31, 2014, the Whatcom County Health Department issued a closure for Birch Bay at Terrell Creek. The closure was issued due to high bacteria counts in Terrell Creek. Terrell Creek discharges to the south end of Birch Bay. The public is to have no contact with the water until further notice.

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.

Stay updated about water quality at your beaches by keeping up with us on our blog [Fecal Matters](#), on [Facebook](#), or join our

[listserv](#).



The Washington Beach Environmental Assessment, Communication & Health (BEACH) Program is led jointly by Departments of Ecology and Health and consists of county and local agencies, tribal nations, and volunteers. The BEACH Program's mission is to reduce the risk of disease for people who play in saltwater by:

- Monitoring bacteria at popular, high risk beaches
- Notifying users when bacteria results are high or when a known pollution event has occurred
- Educating the public about the risks associated with polluted water and what each of us can do to reduce that risk

### **Whatcom County Health Department (WCHD) - (on-site sewage system (OSS) operation & maintenance) Bertrand Creek and Kamm Creek focus areas (LOWER NOOKSACK/PORTAGE BAY WATERSHED) & DRAYTON HARBOR WATERSHED**

Watershed	WCHD Activity						% of total # OSS evaluated
	# of ROSS* - 4th Qtr	ROSS— maintenance needed	ROSS - Failures	Other Failures	Failures Repaired	Total # OSS	
Bertrand/Fishtrap	14	10	0	0	1	1002	24
Kamm	2	0	0	0	0	222	28
Drayton Harbor	29	7	2	0	2	3068	84

\* ROSS = Report of System Status

- In January, WCHD staff presented a on-site sewage system (OSS) operation and maintenance (O&M) training class to a group of Tenmile watershed landowners. As a result of participating in the training class, 17 homeowners were certified to evaluate their own OSS.
- Based on referral from a Department of Ecology inspector, WCHD staff followed up in mid-February with a landowner in the Bertrand watershed regarding an OSS located in a pasture. The OSS was visibly impacted by horse access to the mounded system (see photos next page).

WCHD staff confirmed horses had trampled the drainfield, severely eroding the cover material and exposing the basin where the system discharges sewage effluent. WCHD required that the property owner hire a Glendon Biofilter installer to reconstruct the Glendon pods and that the installer evaluate the OSS and



*Before: A Glendon Biofilter septic system pod trampled by horses. Trampling caused cover material to slough away and expose parts of the basin. Sand wetted with sewage effluent is visible.*



*After: A certified Glendon Biofilter installer reconstructed the pods and conducted a flow test to confirm proper system function. The landowner installed exclusion fencing to prevent future damage to the system from livestock access.*

submit a Report of System Status (ROSS) upon completion of the repair. Additionally, WCHD requested that the landowner install livestock exclusion fencing around the Glendon pods and drainfield to prevent future damage.

WCHD staff confirmed completion of repair work to the mounded system in late March, including installation of livestock exclusion fencing.

- Department of Ecology referred a group of Jackman Road properties to WCHD in summer 2013 to determine whether failing OSS could be contributing fecal pollution to Jackman Ditch. Of the referral group, five properties remain who have not responded to WCHD requests to evaluate individual OSS function. If bracket monitoring or additional information warrants further investigation, WCHD will follow up in 2014.
- Similar to referrals along Jackman Road, Ecology referred to WCHD a group of 14 properties along Guide Meridian that contribute flow to the Jackman drainage. Eight landowners remain non-responsive to requests for OSS evaluation.
- One property in the Jackman Road area submitted a ROSS to WCHD during 4<sup>th</sup> quarter 2013. The ROSS was for the main residence on the property. The OSS for an apartment on the site was not evaluated; the owner reported the tank could not be located. As the apartment had been vacated, WCHD granted an extension to the owner until April 2014 to complete the evaluation for the apartment's OSS. By the end of March, the owner had not located the tank and suggested that he may want to abandon the OSS. WCHD set a date for late April for the owner to either locate the tank and complete the OSS evaluation or formally abandon the OSS.
- Though a dairy had been identified as the main source of fecal pollution detected in late January in the Terrell Creek drainage, other non-dairy livestock properties with visibly poor pasture conditions (manure contaminated muddy areas in proximity to surface water with potential to pollute) exist in the drainage area. As failing septic systems can also be a source of bacteria pollution to water, WCHD reviewed OSS evaluations for property owners in the area based on high bacteria counts and referrals from WSDA. Four properties of interest had no OSS evaluation on record. WCHD sent survey request letters to four properties with the following outcomes:

- Property 1: After initial deadline for response had passed, WCHD left a copy of the letter at the door with a business card requesting response. Through this reporting period, the landowner remained unresponsive.
- Property 2: Landowner contacted WCHD as a result of the mailed letter. The house has an older, undocumented OSS but no obvious signs of failure were noted at time of site visit. Because a newer permitted OSS exists on the property to serve an outbuilding, WCHD staff recommended the owner connect the house to the permitted system, which was sized to handle flows from the house. The owner is moving forward to complete that work.
- Property 3: Owner planned to hire a licensed O&M specialist to inspect the system, with expected ROSS submittal in April.
- Property 4: WCHD is waiting for response with a deadline set for May.

For properties potentially contributing non-dairy livestock-related bacteria pollution to waterways in the Terrell Creek drainage, Whatcom County Planning & Development Services (PDS) reviewed the parcels for applicability to the county's Critical Areas Ordinance (CAO). PDS determined parcels did not have areas mapped as wetlands or regulated streams and therefore did not fall within CAO regulation as currently administered. Due to limited enforcement staff, these sites were determined to be low priority for PDS follow up.

## 2.2 Enforcement summary

### **Ecology** (*non-dairy livestock properties*)

- Ecology issued warning letters to two landowners this quarter.
- Ecology enforcement action is pending against a berry farmer and custom manure pumper for manure-contaminated pollution allowed to enter Saar Creek fall 2013.

### **Washington State Department of Agriculture (WSDA) - Dairy Nutrient Management Program (DNMP)**

#### *(dairy properties)*

- In January 2014, WSDA issued a penalty to a dairy in the Drayton Harbor watershed in response to a manure discharge to a ditch and creek during fall 2013 that resulted in a week-long closure of the beach and commercial shellfish harvest. The producer appealed the penalty. WSDA and the producer reached a settlement during this quarter.
- WSDA enforcement action is pending for the dairy in the Terrell Creek drainage responsible for ongoing manure discharges to surface water.
- WSDA enforcement action is pending for a March 2014 dairy manure field application in the Fishtrap Creek watershed (part of the lower Nooksack/Portage Bay watershed). The manure application allowed manure-contaminated runoff to flow into roadside ditches, which carry pollutants to Fishtrap Creek. Just prior to this discharge, the producer had signed a Compliance Order of Consent with U.S. Environmental Protection Agency. The penalty was for a direct discharge to surface water of manure-contaminated runoff from the dairy's confinement area documented during a February 2013 inspection (see EPA below).

### **U.S. Environmental Protection Agency (EPA) -**

- In March 2014, EPA issued a penalty order to a dairy in the Fishtrap Creek watershed for a manure discharge from the dairy facility to a roadside ditch flowing to Fishtrap Creek and eventually to the Nooksack River and Portage Bay/Puget Sound. The pollution discharge was noted during a February 2013 EPA inspection of the dairy facility. EPA made the penalty order available for public

comment through early April. The Lummi Nation and Washington State Department of Health submitted comments regarding the draft order. The Lummi Nation requested the EPA to increase the proposed penalty to the maximum amount allowable.

### 3. INCENTIVE PROGRAMS to reduce fecal bacteria pollution

Livestock - A variety of funding options are available to Whatcom County residents who voluntarily want to address fecal pollution risks to surface water from their horses and livestock.

- National Estuary Program (NEP) funding is available to help landowners pay for fencing and offstream watering facilities, manure storage, and heavy use area protection. Landowners may receive up to 75 percent of costs for qualifying projects. See “grant funding” at Whatcom Clean Water Program [website](#) for more information.
- Through Washington Conservation Commission, Whatcom Conservation District has funds available to help landowners install best management practices (BMPs) to protect surface water from livestock manure related fecal pollution. The funding is available to properties within watersheds flowing to shellfish growing areas. Whatcom Conservation District also administers the Conservation Reserve Enhancement Program.
- USDA Natural Resources Conservation Service (NRCS) offers financial and technical assistance to plan and implement BMPs to protect surface water and other resources. Voluntary programs offered by NRCS include the Environmental Quality Incentive Program.

Septic system - An on-site sewage system (OSS or septic system) loan program is offered by Industrial Credit Union and the Whatcom County Health Department to assist homeowners with repair or replacement of a failing OSS.

Ecology developed and filled a new compliance assurance position at Bellingham Field Office to facilitate and coordinate agricultural BMP implementation in Whatcom, Skagit and Snohomish counties.

### 4. EDUCATION & OUTREACH

Website - (<http://www.ecy.wa.gov/water/whatcomcleanwater/>)

The WCWP website was updated with new information, including :

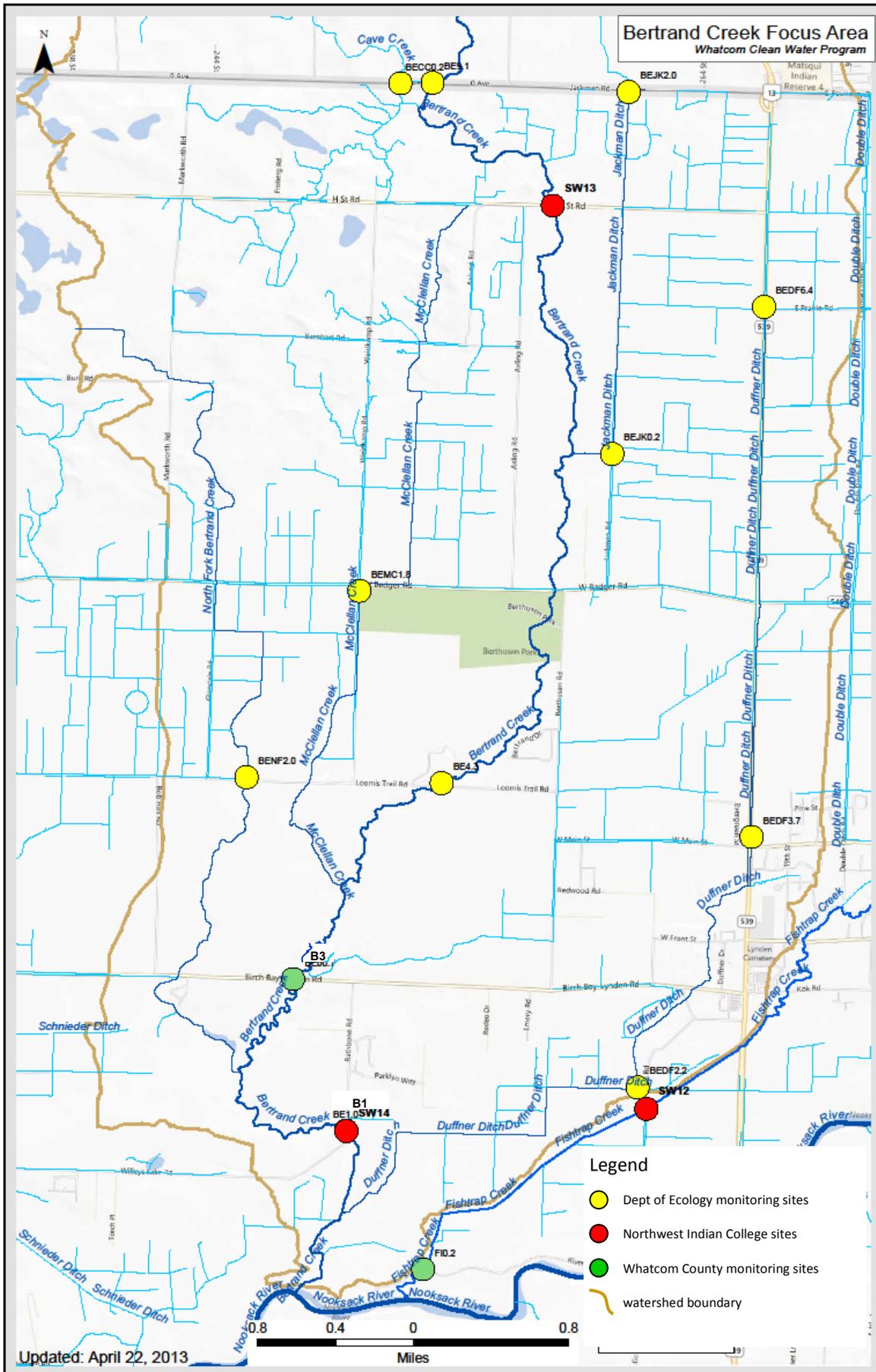
- October – December 2013 Whatcom Clean Water Program progress report
- List of program partners
- List of Frequently Asked Questions
- Drayton Harbor watershed map
- Information about Kamm Creek watershed as part of an expanded pollution identification and correction focus area

Newsletter -

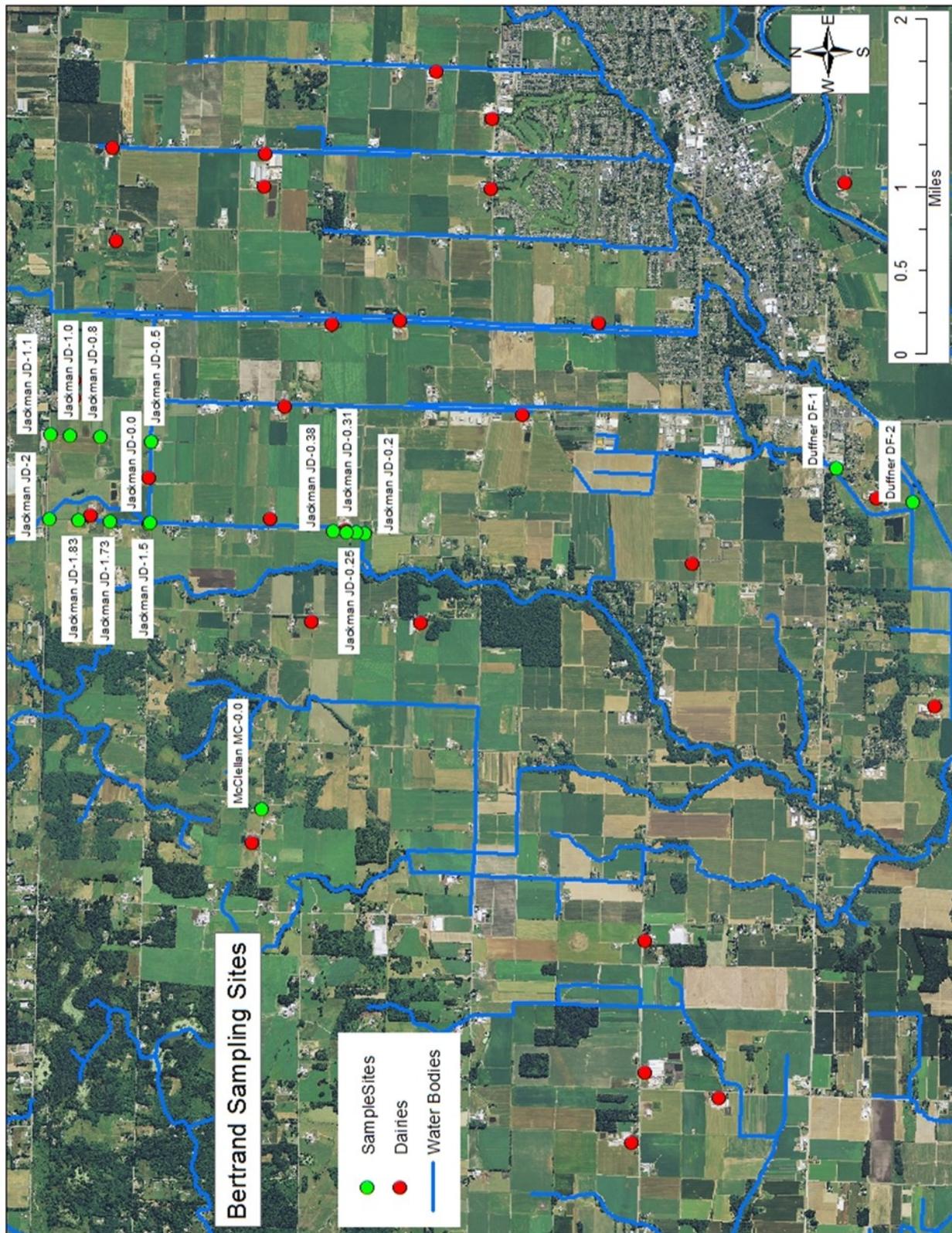
- Washington departments of Health and Ecology staff collaboratively produced a “Water Quality and Agriculture in Northwest Washington” article published in the February 2014 edition of WSU Extension’s Whatcom Ag Monthly newsletter (vol. 3, issue 2). The article highlighted the potential for sediment and bacteria to pollute water when practices such as v-ditching, converting fields from grass-to-crop production, and applying manure are done without implementing and maintaining best management practices to prevent discharges of pollutant-laden runoff.

#### Outreach and communication -

- WSDA Dairy Nutrient Management Program staff prepared a fact sheet on *Emergency Spill Response* and mailed it to all dairies statewide in March 2014.
- Whatcom Clean Water Program partners, including Washington departments of Health, Ecology and Agriculture, Nooksack Tribe, Lummi Nation, Whatcom County Public Works and Whatcom Conservation District staff attended a variety of meetings throughout the quarter. Attending shellfish protection district advisory committee meetings, Whatcom Clean Water Program meetings, Tenmile watershed meetings, and Farm Friends/ ReSources meeting allows partners to communicate activities and water quality status to meeting attendees.
- At the January 2014 Farm Friends meeting, Washington Department of Health staff provided an overview of bacteria pollution identification and correction programs, local focus areas, water quality status and program progress.
- In addition to providing an OSS operation & maintenance (O&M) homeowner workshop in January, WCHD staff coordinated with Whatcom County Public Works to schedule OSS O&M homeowner training events aimed at residents in the Lower Dakota Creek area. One training event is scheduled in Blaine for early May and another two training events are scheduled in mid-May and mid-June.
- In March Washington Department of Health staff presented Whatcom Clean Water Program information to the Whatcom County Council's Natural Resources Committee. The presentation explained the pollution identification and correction program, county shellfish harvest status, local focus areas targeted for improvement, water quality status and the desire for county leadership in making clean water a priority. The Blaine weekly newspaper, The Northern Light, published a follow-up news article titled, "*Fecal bacteria on the rise in Whatcom County.*"



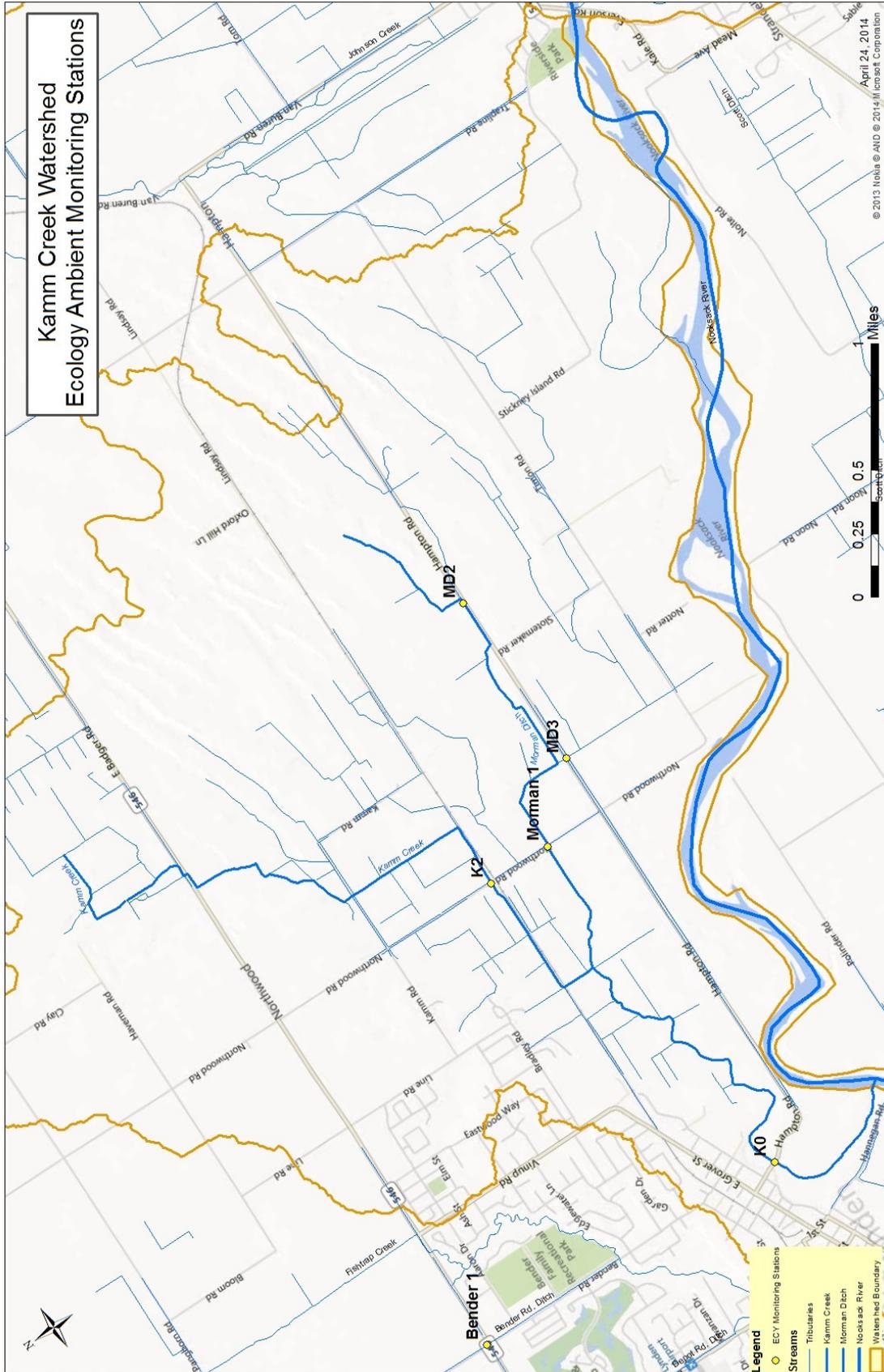
Appendix Map 2. WSDA supplemental water quality sampling locations - Bertrand watershed (Jackman Ditch, McClellan Creek and Duffner Creek)



**Appendix Table 3. WSDA water quality data - Bertrand watershed  
(Jackman Ditch, McClellan Creek and Duffner Creek)**

Station ID	GPS Coordinates	Location Description	1/29/2014	2/28/2014	3/4/2014	3/10/2014	3/18/2014	3/25/2014
<b>24 hr precipitation</b>			0.22"	0.1"	0.17"	0.0"	0.0"	0.02"
<b>Jackman Rd.</b>								
JD-0.2	48.974964° - 122.502042°	Jackman Road bridge, West side of road	740	44	220	88	210	74
JD-0.25	48.975689° - 122.501878°	0.25 mi North of bridge, north of lateral, East side of Jackman road	940	64	420	96		
JD-0.31	48.976450° - 122.501828°	0.31 mi North of bridge, south of driveway, East side of Jackman road		64	640	98		
JD-0.38	48.977625° - 122.501844°	0.38 mi North of bridge, East side of Jackman road		50	1100	90	220	92/100
JD-1.5	48.993533° - 122.501447°	25 feet north of H Street on East side of Jackman road		80/70	6800	360	280	40
JD-1.73	48.996874° - 122.501341°	25 feet South of lateral ditch coming from between lagoons East of Jackman road					420	29
JD-1.83	48.999606° - 122.501219°	1.83 mi North of Jackman road bridge, 25 feet South of lateral ditch					420	29
JD-1.9	49.001252° - 122.501310°	Wet field W of Jackman ditch at border		72				
JD-2	49.002136° - 122.501128°	Jackman ditch at border	500	11	12000	200	900	27
<b>H Street</b>								
JD-0.0 <sup>f</sup>	48.993422° - 122.501286°	25 feet East of Jackman road on North side of H Street		66	94	62	92	1000
<b>Lateral of H Street</b>								
JD-0.5 <sup>f</sup>	48.993478° - 122.490650°	25 feet north of H Street at lateral ditch south of BC mushroom farm		42	120	70/88	120	76
JD-0.8 <sup>f</sup>	48.997883° - 122.490212°	0.8 mi from H Street, 25 feet North of lateral ditch					170	140
JD-1.0 <sup>f</sup>	49.000484° - 122.490170°	1.0 mi North of H Street, 25 feet below lateral ditch		120				
JD-1.1 <sup>f</sup>	49.002181° - 122.490069°	Main ditch flow, 25ft South of Zero Ave at border	4600	110	840	34	210	210
<b>Duffner Creek</b>								
DF-1	48.934513° - 122.491927°	East side Duffner bridge on BayLyn Dr.				18	29	27
DF-2	48.927777° - 122.496115°	East side Schuleyman Rd. at culvert flowing to city stormwater facility				<2	2	4
<b>McClellan Creek</b>								
MC0.0	48.983195° - 122.538471°	West of pond drain on north side Barnhart road					150	4

Appendix Map 4. Ecology water quality monitoring locations — Kamm Creek watershed



Appendix Map 5. WSDA water quality monitoring locations — Kamm Creek watershed

