County: Whatcom
Grant No: SEANWS-2016-WhCoPW-00004

PROJECT TITLE: Northwest Straits Project: Marine Resources Committee Administration and Operations

TASK NO: 2 DELIVERABLE NO: 6 (Final Chuckanut PIC report including summary of fecal coliform data trends, copy of educational materials produced, volunteer names and hours, photos, news articles and presentations)

PROGRESS REPORT: [ ] PROJECT FINAL REPORT: [x]

PERIOD COVERED: October 1, 2016 –September 29, 2017

DATE SUBMITTED: September 29, 2017

This project has been funded wholly or in part by the United States Environmental Protection Agency. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

County: Whatcom
Grant No: SEANWS-2016-WhCoPW-00004

North Chuckanut Pollution Identification and Correction Final Report 2016-2017

North Chuckanut Bay is a recreational shellfish harvesting area with elevated bacteria levels and has been closed to recreational shellfish harvest since 1997. This area is a small embayment in south Bellingham with a railroad trestle crossing the mouth and restricting tidal circulation. The primary freshwater discharge to this bay is Chuckanut Creek with a seven square mile watershed. There are also smaller drainages from the residential area on the northwest side of the bay and a seasonal creek that runs through the City of Bellingham Woodstock Farm. Land uses in the Chuckanut Creek watershed include a residential area (Chuckanut Village), a forested park with hiking and biking trails (Arroyo Park), and rural residential and forested areas in the upper watershed.

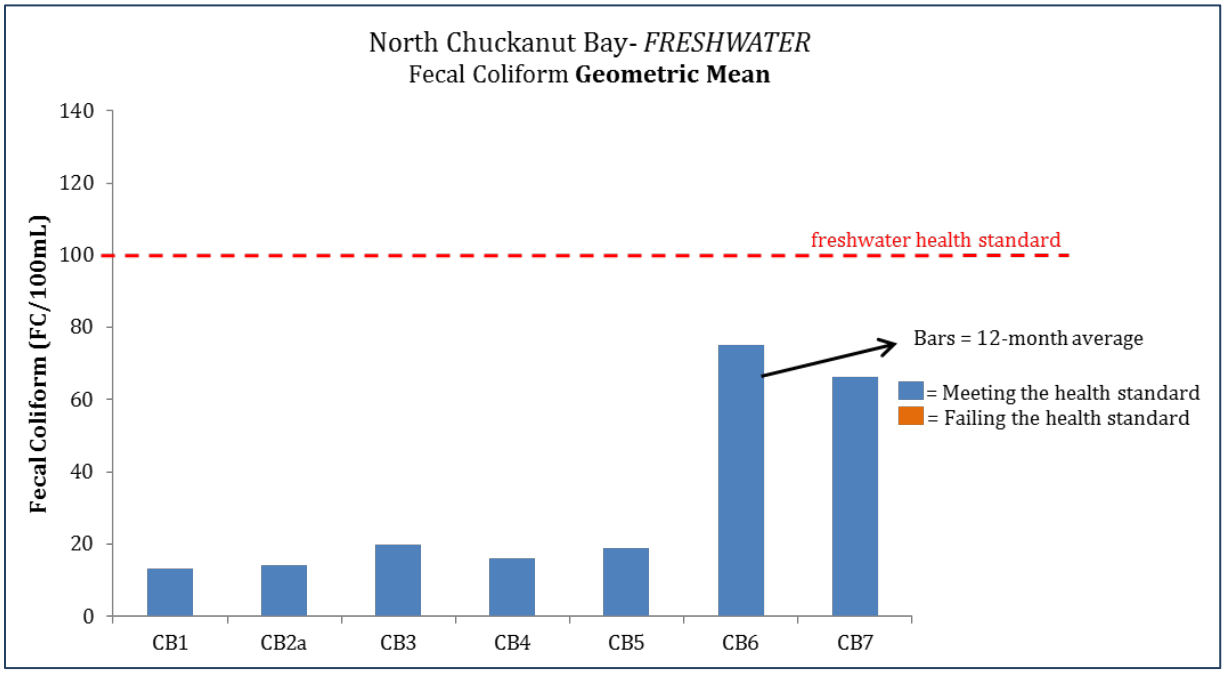
Bacteria criteria are set to protect public health. Department of Ecology water quality standards use fecal coliform as an indicator bacteria (see Table 2). The presence of fecal coliform bacteria indicates the presence of fecal material from human or other warm-blooded animals in the waterbody. The MRC has been working with the Whatcom County Health Department, Whatcom County Public Works – Natural

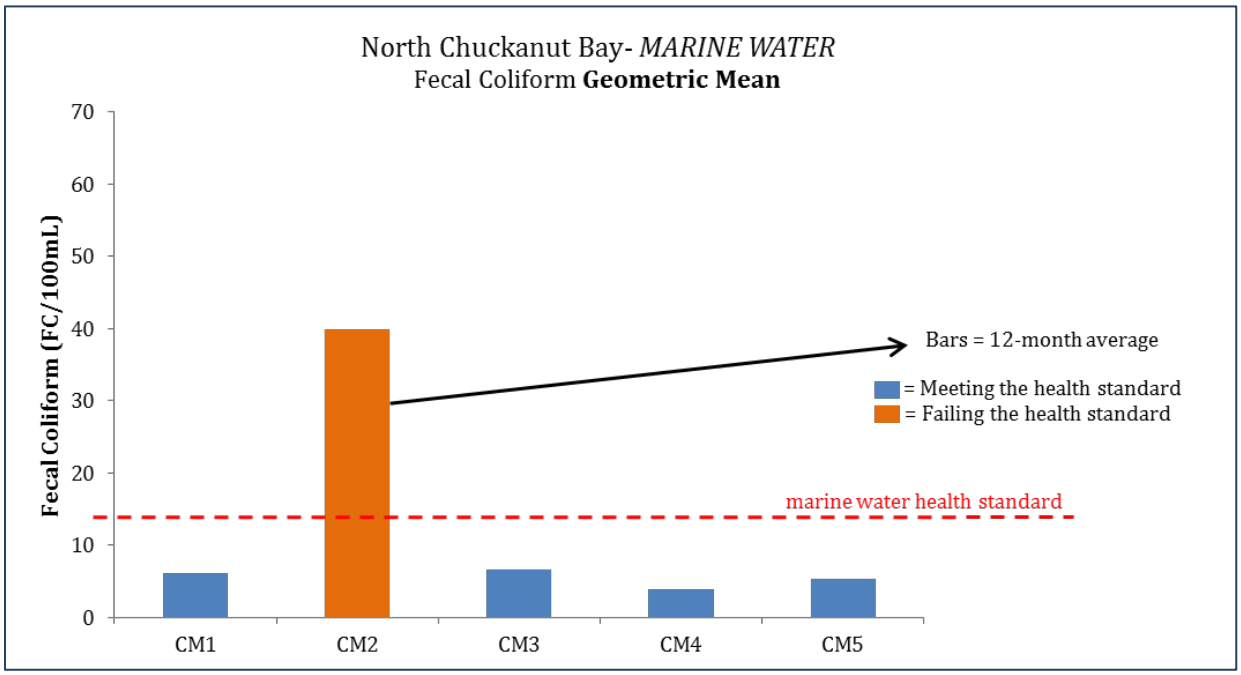
Resources, Washington Department of Health, citizen volunteers, and the local community to conduct intensive water quality sampling (in both the freshwater and marine water), establish a community driven Pollution Identification and Correction Program, and ultimately restore the recreational shellfish area. The goal of this project is to characterize fecal coliform levels within the Chuckanut watershed and seasonal variation of those bacteria levels to identify sources of pollutants, suggest water quality improvement projects, attain water quality standards, and protect beneficial uses (including recreational shellfish harvesting). Seven freshwater sites and five marine sites are sampled on either a monthly or bi-monthly basis, simultaneously – unless weather prevents marine sampling (see map above).

Table 2. Department of Ecology Water Quality Standards for Whatcom County watersheds.

Marine Water Standards	**Freshwater Standards (Birch Bay, Terrell Creek, and Cain Creek watersheds)**	**Freshwater Standards (Other Watersheds – including Chuckanut)**
Fecal Coliform Bacteria	Fecal Coliform Bacteria	Fecal Coliform Bacteria
• Geometric Mean- 14 FC/ 100mL • 90th Percentile- 43 FC/100mL	• Geometric Mean- 50FC/ 100mL • Not more than 10% exceed 100 FC/100mL	• Geometric Mean- 100FC/ 100mL • Not more than 10% exceed 200 FC/100mL

Water Quality summaries (graphs below) are shared monthly on the Whatcom County Public Works website and the MRC website. These summaries feature the geomean data as it is an easier average for the general public to understand. These statistics also provide a clear idea of water quality at specific sites. Overall, higher bacteria counts are being found at the marine site at the mouth of Chuckanut Creek and that site is not meeting the geomean water quality standard.





This past year, the MRC added 4 bracket sites in effort to narrow down potential sources causing higher bacteria counts near the mouth of Chuckanut Creek. Those bracket sites were sampled 5 times during this grant year, with a goal of sampling those sites during both the wet and dry season. No significant high bacteria counts were found. See Table 1 for results. The MRC will continue to assess what is coming into the system in this area. There has been interest is conducting sediment sampling at marine station CM2 and the MRC will be looking for funding opportunities to support that work.

Table 1.

Date	24-Hour	72-Hour	AC1	OC1	CC1	WF1	Entered By:	Date Entered:	QA/QC'ed By:	Date QA/QC'ed:
11/30/2016	NR	0.21	2	80	50	14	TP	12/13/2016	TP	12/13/2016
1/31/2017	0	0.02	9	15	ND	ND	AV	2/6/2017	AV	2/6/2017
4/24/2017	trace	trace	4	4	5	4	TP	5/8/2017	TP	5/8/2017
5/9/2017	0	trace	4	19	4	9	TP	5/17/2017	TP	5/17/2017
6/29/2017	0	0	40	D	15	86	AB	7/5/2017	AB	7/5/2017

Conference Call with DOH

On February 17th MRC Staff, along with staff from Whatcom County Public Works, Whatcom County Health, and WA Department of Health met via conference call to discuss the MRC Chuckanut Bay Project, water quality sampling results, actions that have been taken to address potential fecal pollution sources to the bay, and any technical assistance needed for the project. Staff at DOH are concerned about the higher counts being found in mouth of Chuckanut Creek. More sampling and community outreach was encouraged, however, DOH is hesitant to move towards even a partial/conditional recreational beach classification. The following next steps were identified:

Whatcom County

- Provide a red/yellow/green OSS status map for the Chuckanut Bay watershed.
- Investigate City of Bellingham Stormwater outfalls into wetland area near BC6. The City of Bellingham Public Works Department should have GPS locations for all their stormwater outfalls.
- Provide salinity data with the marine sample results.
- Provide updated information on the Woodstock Farm OSS inspections when completed.
- Open House at Woodstock Farm in March or April with the Community

WDOH – Shellfish

- Calculate the estimated 90th percentiles for the marine stations. Provide a water quality summary report to Whatcom County partners.
- Provide technical assistance (on the ground) to Whatcom County on this project if requested.
- Update WDOH Shellfish program management.

OSS Inspections and Community Open House

Figure A.

As of early February 2017, 27 of the 40 parcels with on-site-sewage systems (OSS) had evaluations completed by Whatcom County Health. Of those 27 parcels, 6 OSS with minor maintenance required, 1 with major maintenance required, and the remaining 20 OSS were satisfactory. Of the remaining 13 OSS, 3 have had an evaluation in the last 3 years completed by an Operation and Maintenance Specialist (see figure A).

MRC member Atina Casas conducted the fresh water sampling in early 2017 and was able to make contact with a local Chuckanut Village resident who mentioned she and other neighbors were suspicious of a property having failing/non-existent septic systems due to strong sewage odors occasionally. Coincidently, a failure was identified in late February along Fairhaven Ave. and the MRC noticed water quality improvements at the fresh water site closest to the parcel.

A sanitary survey was completed at Woodstock Farm on March 7, 2017. The OSS was found to be a newly installed ATU w/pressure distribution. There was no evidence of sewage on the ground by the tanks or the drainfield during the site inspection. Property owner has a contract with a provider to evaluate the OSS every 6 months, and waste strength sampling is included in the contract.

In April 2017, the MRC and County Health began planning for an open house meeting in the Chuckanut Village to discuss water quality in the bay, the recent septic survey and to say thank you to the community for their participation. The meeting occurred on June 21, right on the shoreline of N. Chuckanut Bay. Invitations (see figure B and C) were sent to 49 residents and approximately 25 homeowners attended the event. It was a very positive turnout and residents were very thankful for the work that is being done to protect water quality, and the information that was shared. Four residents signed up to receive more information from the MRC.

Figure B.

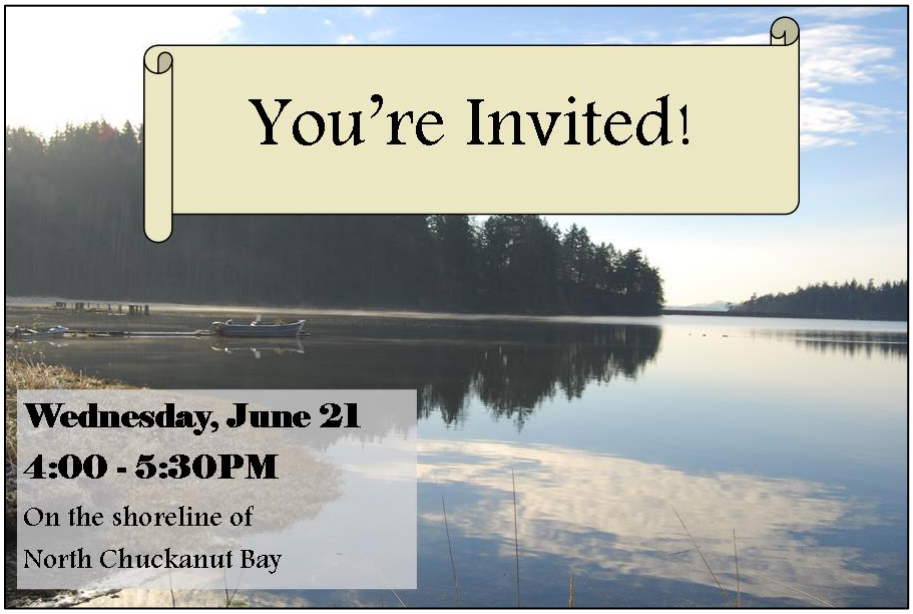
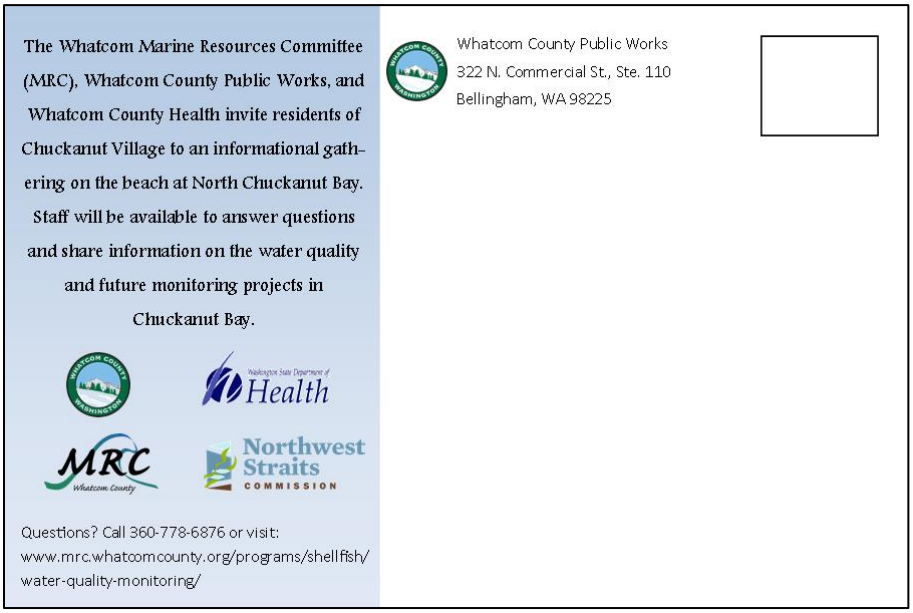


Figure C.



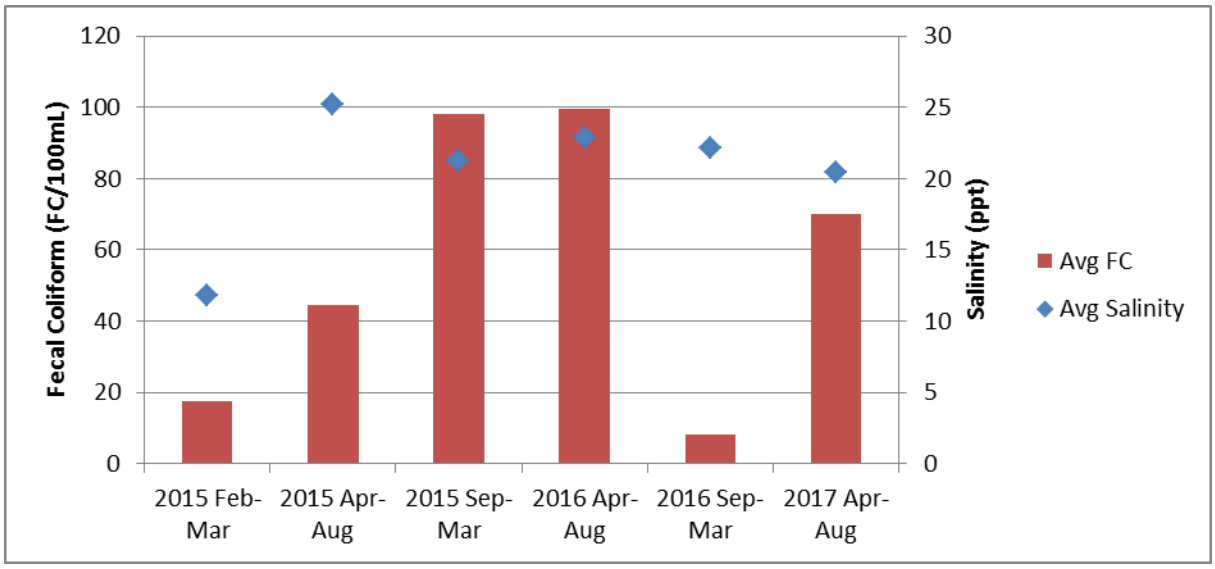
During this community meeting, it was clear that residents have noticed and are concerned with the issue of pet waste and people not properly disposing of their pet waste in the area. The MRC will focus on messages around best management practices for pet waste in future educational materials they produce.

Marine data and salinity

In all marine waters, the standards for approved shellfish growing waters is fecal coliform is 1) a geometric mean of 14 FC/100mL and 2) an estimated 90th percentile of less than 43 FC/100mL. Staff at DOH provided the following data tables showing the bacteriological results in relation to program standards. It can be seen from these graphs that three of the five marine stations fail the water quality standard.

Station Number	Number of Samples	Date Range	Range (FC/100 mL)	GeoMean (FC/100 mL)	Est 90th (FC/100 mL)	Meets Standard
CM1	30	5/8/2015 - 11/17/2016	1.7 – 920.0	7.3	68.5	No
CM2	30	4/6/2015 - 11/17/2016	2.0 – 1600.0	53.1	517.7	No
CM3	30	4/6/2015 - 11/17/2016	1.7 – 920.0	11.6	78.4	No
CM4	30	5/8/2015 - 11/17/2016	1.7 – 79.0	4.7	24.6	Yes
CM5	30	5/8/2015 - 11/17/2016	1.7 – 920.0	4.2	26.5	Yes

The salinity has been logged for every marine station and sampling run. The graph below shows the history of salinity and fecal coliform data since the beginning of this project. Previous studies have shown that salinity conditions impact the survival of fecal coliform bacteria, with fecal coliform mortality increasing at a higher salinity. However, there is no clear evidence shown from this graph that salinity has impacted the average fecal coliform levels in N. Chuckanut Bay.



Next Steps

The MRC will continue sampling on a bi-monthly basis at the sample sites established to continue building on the water quality data set DOH will use to reclassify the bay to open harvest. New bracket sites would be established during the 2017/18 grant year and sediment sampling around the mouth of Chuckanut Creek may occur depending on funding availability. There continues to be support from Whatcom County Public Works to pursue work in this area as part of the greater Whatcom County PIC program. The Chuckanut Village community is also very supportive of water quality being monitored in the bay and the MRC will continue to share project data and provide opportunities for the neighborhood to share their observations.