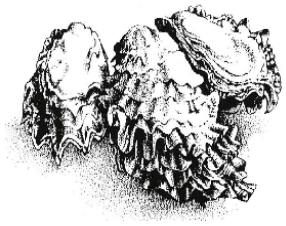
Drayton Harbor Shellfish Protection District

Recovery Plan- 2007 Update



3/21/07

Drayton Harbor Shellfish Protection District Advisory Committee

Introduction

Drayton Harbor has ideal conditions for shellfish. In the early 1990s, the Lummi Nation annually harvested over 30,000 pounds of clams from Drayton Harbor. The first commercial oyster farm began operations over a hundred years ago.

But the health of Drayton Harbor has been a concern for nearly 20 years. Bacteria from human and animal waste have been found in the harbor, at levels high enough to make shellfish unsafe to eat. In 1998, a countywide process ranked the Drayton Harbor watershed as the top priority for non-point pollution control. A detailed study completed in 1991 by a team of state agencies found the following bacteria sources were significant threats to water quality:

- Livestock waste from noncommercial agriculture
- On-site septic systems
- Boats and marinas
- Blaine sanitary sewer system

These factors led to a major shellfish downgrade in Drayton Harbor in 1995, with the entire harbor closed to shellfish harvesting in 1999. The Drayton Harbor Shellfish Protection District was formed in 1995, and a volunteer committee was appointed by the Whatcom County Council to work on reducing bacterial pollution and restore shellfish harvesting. A recovery plan was created and put into action that year.

Since then, many citizens, businesses, tribes, and government agencies have been working together to address the bacteria polluting the harbor's shellfish beds. In 2004, some prime shellfish areas were partially upgraded, thanks to many projects including:

- Major repairs of the Blaine sewer system
- Approved nutrient management plans for all commercial dairies
- Identification and repair of over 50 failing on-site sewage systems near the harbor
- The creation of the Drayton Harbor Community Oyster Farm, which was launched by the Puget Sound Restoration Fund in 2001, bringing in 30 new partners and harvesting its first crop of oysters in 2004—the first commercial harvest in nearly 10 years

In spite of these successes, harvesting is still prohibited on several hundred acres of important commercial, tribal, and recreational shellfish grounds. Throughout the watershed, bacteria are still carried into the harbor during major rainstorms. The community is now turning its attention to the upper watershed, where on-site sewage systems and livestock waste from hobby farms are likely sources of bacteria.

This update of the recovery plan reflects progress towards shellfish recovery in Drayton Harbor. The plan was previously updated in 2000.

Objectives

This plan identifies seven objectives that need to be achieved in order to fully restore shellfish harvest in Drayton Harbor.

Objective One

Establish Coordinated Program for Drayton Harbor

Pollution sources in the Drayton Harbor watershed are varied and a number of entities have jurisdiction over these sources. To ensure that all significant sources are being addressed, a mechanism to coordinate restoration and protection efforts is necessary.

The Drayton Harbor Shellfish Protection District Advisory Committee (the Committee) is currently the main mechanism for coordinating water quality cleanup efforts. The Committee met on a monthly schedule from June 1995 through September 2004, and is presently meeting every two months. Rather than regularly convening the group of implementing agencies, the Committee has chosen to invite agency representatives to meetings on an as-needed basis.

The Whatcom County Stormwater Division (called the Water Resources Division until 2005) hired a shellfish coordinator in fall 2001. This staff person was employed through fall 2003, and coordinated water quality data from various agencies and assisted with on-the-ground recovery and monitoring projects. Between fall 2003 and fall 2004, Water Resources support of shellfish recovery activities focused on attendance at monthly meetings, provision of meeting summaries, and compilation of quarterly reports of implementing agencies' activities that are sent electronically to DOH. Water Resources staff also assisted with community outreach efforts, such as the annual Open House and Oyster Feed. In fall 2004, a marine resources planner position was filled to assist with coordination of water quality data, community outreach, and on-the ground recovery projects.

Projects since 2000 have been funded by a wide array of public and private programs, which are always short-term in nature and usually project-specific. Whatcom County Water Resources provided special shellfish project funding of $15,000 per year for on-the ground studies in Drayton Harbor in 2002 and 2003. In 2005/2006, the Whatcom County Public Works budget provided $160,000 for marine projects, with $73,000 applied directly to Drayton Harbor projects and another $30,000 to shellfish outreach projects with an emphasis on Drayton Harbor. In 2007/2008, approximately $80,000 will be available for priority Drayton Harbor projects.

Recommendations

1A: Secure dedicated funds for implementation of all aspects of this plan using the Shellfish Protection District authority (RCW 90.72) or other means.

High Priority

In 1995, the Whatcom County Council limited the funding of the Drayton Harbor Shellfish Protection District to existing funding provided by the Whatcom County flood fee, until such time that existing funding became inadequate to implement a specific work plan.

A partial reopening of the beds has been achieved using existing funding and grants. However, the Committee feels that the situation is now at the point that without a dedicated and ongoing source of funding, the community will not be able to restore and maintain the level of water quality needed to

sustain recreational, tribal, and commercial harvesting opportunities in Drayton Harbor.

Other Shellfish Protection Districts (for example, Snohomish County's Lower Stillaguamish Clean Water District) finance their programs by assessing each tax parcel based on land use classification and/or percent impervious cover. For example, single-family residences in the Lower Stillaguamish are assessed an annual flat rate of $22.45 under RCW 90.72. There is a different rate structure for retail properties that is based on the percentage of lot size that is impervious surfaces. Rates range from $6 to $67 per ¼ acre from very light to very heavy industry categories.

Recommendation: The Committee believes that existing funding and grants are insufficient to achieve the goal of upgrading the entire harbor to Approved status and a priority should be placed on identifying a dedicated and sustainable source of funding for program implementation. One funding option that the Committee supports is a watershed-wide assessment to fund implementation of this program until and beyond an upgrade to Approved status.

1B: Identify and pursue grants and loans for program implementation.
Low Priority
Recommendations in the Plan have been implemented by a variety of mechanisms since 2000. Usually projects are pursued independently, either by implementing agencies or the nonprofit Puget Sound Restoration Fund, which has actively pursued funds to conduct targeted on-the-ground projects that complement the Community Oyster Farm project (initiated in the summer of 2001). The City of Blaine, the Port of Bellingham, the Whatcom County Marine Resources Committee, the Whatcom Conservation District, and the Northwest Indian College have been consistently active in procuring funding for their Drayton Harbor projects and programs in the past few years. Various entities will likely continue to pursue short-term funds for specific projects. The Department of Ecology (Ecology) has some responsibility under the closure response strategy to assist local government in identifying potential funding mechanisms for projects that will lead to reopening the shellfish beds.

Recommendation: The Committee recognizes the value of grants and loans in implementing specific projects. Grants and loans should continue to be pursued and partnerships developed to assist with restoration and protection projects. Ecology should continue to forward information regarding grants and loans as it has done in the past.

Objective Two

Identify Pollution Sources and Monitor Water Quality

Bacterial water quality monitoring in the Drayton Harbor watershed, funded by various programs, has been ongoing, though sometimes only sporadically, since 1997. It has been under the guidance of several groups, including:

- **Port of Bellingham.** The Port has contracted with Hirsch Consulting Services (HCS) since 1997 to monitor water quality in Blaine Harbor. In spite of repairs to the Blaine sanitary sewer system, bacterial pollution in the harbor remains high. All monitoring stations in the commercial area have violated both parts of the DOH shellfish standard (geometric mean less than 14 colonies/100ml and 90^{th} percentile less than 43 colonies/100ml). All stations in the recreational area have violated the second, less forgiving part of the standard. These data have also revealed a seasonal pattern with the highest concentrations occurring in the fall/winter and late summer and the lowest in the spring. In

addition, higher fecal coliform (FC) loading occurs in the commercial portion of Blaine Harbor than in the recreational area, suggesting a FC source in the commercial area.

Camera inspections and dye studies have failed to identify a source of FC loading in or near the commercial marina. High FC bacteria counts during some rainfall events coupled with historic observations of bird congregations on building roofs shifted the focus to wildlife sources. In the summer of 2003, the Whatcom County Marine Resources Committee (MRC) conducted a bird count and, during the winter of 2003-04, the County contracted with PSRF and HCS to conduct stormwater monitoring at roof and storm drains in the commercial area of the marina. Bird counts and stormwater fecal coliform data indicated that runoff co-mingled with accumulated bird feces is a source of FC loading to Blaine Harbor. In 2004, the MRC and the Port installed stormwater planters at the rooftop drains of the building with the highest bird counts to assess the effectiveness of this stormwater best management practice. Samples were collected at the stormwater planter installation sites and at stormwater outfalls to Blaine Harbor during three storm events before and three storm events after installation. While the average observed FC removal rate was 50%, there was no statistically-significant difference in FC means or loading between pre- and post-installation values.

As of 2005, results for all sample stations within the commercial portion of Blaine Harbor continued to exceed the water quality standard. The Port's routine water quality monitor program in Blaine Harbor, though much abbreviated compared to previous years (now summer months only vs. monthly sampling through 2005) will extend through 2010 per requirements of a moorage expansion project. *Annual cost for summer months only marine sampling: $5,000.*

- **Washington State Department of Health (DOH)**. Marine water quality sampling at 11 sites in Drayton Harbor has been conducted by the DOH Shellfish Program on a bi-monthly basis since 2000. In spite of no mandate to monitor "Prohibited" areas like Drayton Harbor, DOH has made a commitment to continued monitoring in the harbor. In 2004, DOH reclassified portions of Drayton Harbor to "conditionally approved" with closures occurring after rainfall events greater than or equal to 0.5 inch in 24 hours. In that same year, PSRF began conducting wet weather marine sampling to provide additional data for use in supporting an increase in the rainfall threshold that triggers growing area closures. These data resulted in the 2006 revision of the closure level to greater than or equal to 0.75 inch of rain in 24 hours. Currently, five sampling sites meet the water quality standards for harvest under low rainfall conditions, but not high (four of these sites are in the conditionally approved portion of the harbor). Three sites meet the water quality standards under all conditions, while three sites exceed the standards regardless of rainfall conditions.

- **Northwest Indian College (NWIC).** NWIC has been sampling freshwater stations in Dakota and California Creeks on a bi-weekly or monthly basis since 1999. They have also sampled three high-priority storm drains that discharge from east Blaine into both Drayton Harbor and Semiahmoo Bay. Fecal coliform concentrations in both creeks steadily declined from 1999 through 2003, but have risen since then. All sites still meet the geometric mean water quality standard, but have exceeded the 10% of samples greater than 100 FC/100 mL portion of the standard. Fecal coliform concentrations are significantly higher in the storm water discharges in east Blaine (90^{th} percentile calculations range from 409 to 877 colonies/100ml). These levels exceed standards for freshwater. Results of this work may be used to locate retrofitted storm water treatment facilities in Blaine and identify other potential sources of high bacterial levels. This program has been reduced due to expiration of grant funds. Whatcom County Public Works funded monthly sampling at 10 sites in 2006 and 2007. *Annual cost for monthly sampling at 10 stations: $5,600.*

- **Blaine Seafood Processors**. Fecal coliform concentrations in fish processing wastewater, which discharges to the mouth of Drayton Harbor, have declined significantly in 2002 and 2003 compared to previous years. Following extensive remedial sanitation actions, bacteriological quality in wastewater has improved from a fecal coliform geometric mean of 397 in 1999 to 10 in 2003. These levels have continued to remain low through 2006. *Annual cost for routine sampling: $11,000*

- **RE Sources' Countywide Pledge Program**. PSRF and Hirsch Consulting partnered to sample urban and rural storm water runoff from East Blaine (California Creek mouth northward to Marine Drive) during the late summer and winter season for two consecutive years beginning in the summer of 2002. Fecal coliform (FC) densities for this project ranged from < 1-3,040 colonies/100 mL. Geometric means ranged from 13-238 colonies/100 mL and the percentage of samples at each site exceeding 200 FC/100 mL ranged from 8-58%. Two of 10 sampling stations exceeded the Washington State Class A Water Quality Standard for the FC geometric mean (100 colonies/100 mL) and 8 of 10 stations failed to meet part two of the fecal coliform standard (where no more than 10% of samples shall exceed 200 colonies/100 mL). Fecal coliform loading estimates were correlated with 4-day rainfall at 6 out of 10 sampling stations. At most sampling stations, peaks in loading coincided with 4-day rainfall greater than 1.00 inch. Fecal coliform bacteria densities were higher for urban versus rural stations ($p<0.10$), however loading estimates were significantly higher for rural stations ($p<0.05$) due to greater flow volumes.

  The sum of the mean daily loading estimates for all project sampling stations was 6.94E+10 as compared with daily loading estimates for California Creek (7.10E+09) and Dakota Creek (4.49E+10), (NWIC, 2004), (Landau Associates, 2001). While it appears unlikely that any individual drainage sampled impacts fecal coliform levels at shellfish growing areas, taken together the loading potential of the smaller drainages appears comparable to one of the larger creeks. This sampling program has identified two high priority urban storm drainages that should be considered for retrofitting a treatment system that will help reduce fecal coliform bacteria before discharge to Drayton Harbor. *Annual cost for monthly stormwater sampling at ten sites, 6 months/year: $10,000.*

- **Whatcom County Stormwater Division.** Special shellfish project funding supported five water quality monitoring projects in 2006. These include:
  - See NWIC monitoring above.
  - Tributaries to California Creek are being sampled quarterly and during six storm events for fecal coliform bacteria and stream flow. This information will be used to estimate bacteria loading from ten sub-drainages and identify priority areas for follow-up actions. *Project Cost: $19,900*
  - A microbial source tracking study in Drayton Harbor and the California Creek watershed conducted by Whatcom County, PSRF, DOH, and EPA to differentiate human, bovine, and equine sources of fecal coliform contamination. Freshwater and marine samples will be collected during five events between November 2006 and April 2007 and sent to the Institute of Environmental Health and the EPA Manchester laboratory for PCR and ribotyping analysis. Results of this study will be used to develop targeted source control programs in the watershed. *Cost to County: $20,530. Cost to other partners: PSRF, $8,000 and Trillium, $8,000.* ***Total project cost: $36,000***
  - Marine wet weather sampling during rainfall closures is being conducted by PSRF from spring 2006 through spring 2007. The intent of this program is to determine if the harvest closure threshold can be adjusted upward from 0.75 inches to 1.00 inches in 24 hours. *Cost to County: $3,900*
  - In 2006, Whatcom County staff conducted an optical brightener (OB) study in the California Creek and Tenmile Creek watersheds to assess human-caused fecal coliform contamination in

these water bodies. OBs are whitening agents added to most laundry detergents. Since they are not naturally occurring in the environment, their detection in streams indicates the presence of domestic wastewater due most likely to on-site septic system leaks, direct discharges, cross connections, or sewage leaks. Whatcom County contracted with Herrera Consultants and HCS to conduct a larger OB study in the California Creek watershed in 2006-07. Results of these studies will be used to develop targeted source control programs. *Project Cost:$8,010.*

- **Whatcom County Marine Resources Committee (MRC).** In 2006, Whatcom County hired Hirsch Consulting to develop a monitoring plan for sampling freshwater inputs to Drayton Harbor, Birch Bay, and Chuckanut Bay and to train volunteers to perform sample collection. Stream flow measurements and samples for fecal coliform analysis are obtained monthly. This project began in June 2006 and is anticipated to continue through June 2009. Data are used to assess fecal coliform loading and to inform citizens about the need for clean marine waters for safe shellfish harvesting. *Annual Cost: $8,000*
- **Washington State Department of Ecology (DOE).** In 2006, a TMDL study for the harbor was initiated, which will add another dimension to monitoring efforts in the basin. The federal Clean Water Act requires water bodies that fail to meet water quality standards undergo a Total Maximum Daily Load (TMDL) study. This process includes identifying pollutants and sources, estimating the pollutant reduction required to attain water quality goals, and developing source control strategies. DOE included Drayton Harbor on the 2006 303(d) list as a priority water body and is conducting a TMDL study for fecal coliform bacteria.

Recommendations

Within this section of the plan, some tasks are identified as "Special Projects." These projects are short-term monitoring projects that will be designed to answer specific questions related to source identification and pollutant reduction.

2A: Develop and fund a coordinated water quality monitoring program to identify pollution sources and to track changes in water quality.

High Priority

A Coordinated Water Quality Monitoring Framework for the Drayton Harbor Shellfish Protection District was written by Hirsch Consulting Services in January 2000. This plan called for:

- Long term funding administered by a lead agency
- Development of a Quality Assurance Plan
- Establishment of partnerships in the form of an MOU between participating agencies regarding data sharing, sampling coordination, and reporting of results.

Whatcom County Stormwater has been compiling Drayton Harbor watershed water quality data from the various entities working in the watershed. Coordination of this data can assist with evaluating trends and identifying potential sources of fecal coliform bacteria. To date, none of the monitoring programs have any dedicated long-term funding source and the January 2000 Coordinated Water Quality Monitoring Framework has not been fully implemented. A work group began meeting in spring 2005 to review, update, and implement a coordinated water quality monitoring program.

Recommendation: The Committee supports continued work to update and implement the coordinated monitoring program. A long-term sustainable source(s) of funding to coordinate and implement the coordinated monitoring program should be identified. ***Committee is requesting $50,000 per year to support this recommendation.***

2B: Increase capacity for following up on monitoring findings.
High Priority
Currently there is no formal mechanism for follow-up investigation of fecal coliform spikes that are observed during regular monitoring activities.

Recommendation: The Committee recommends the development of a systematic approach to investigate causes of high fecal counts in fresh water bodies observed through monitoring. The approach could include activities such as an initial field visit. If the source is suspected to be related to on-site septic systems, the findings would be relayed to Whatcom County Health; violations of the Critical Areas Ordinance would be relayed to Whatcom County Planning and Development Services; issues related to commercial farms would be relayed to the Washington State Department of Agriculture. Field visits as well as results from further investigations by other agencies would be logged and reported to the Committee at its regular meetings.

In situations where a fecal source is not readily apparent, special monitoring may be required. The Committee recommends allocating funds toward this purpose. ***The committee is requesting $75,000 per year for 1 FTE to perform follow-up investigations in problem drainages, initial landowner contact and education, and coordination with other local agencies for technical support***.

2C: Develop and implement a long-term monitoring strategy with baseline sites and parameters identified.
High Priority
An important component to a water quality monitoring program for the Drayton Harbor Shellfish Protection District is long-term, baseline data. Long-term data using consistent locations, parameters, and methods help identify patterns in water quality, focus pollutant reduction efforts, and evaluate the effectiveness of implemented strategies.

Recommendation: In coordination with 2A, a long-term monitoring strategy for the Drayton Harbor watershed should be developed. This strategy will include ambient monitoring stations, parameters, and standard protocols for baseline monitoring. Until the time that this program in established and implemented, continue monthly tributary sampling through current NWIC program.

2D: Special Project: Increase the frequency and locations of water quality sampling in Dakota and California Creeks.
High Priority
Portions of Drayton Harbor are now *Conditionally Approved* for harvest, with restrictions based on rainfall. In order to upgrade these areas to *Approved,* the specific drainages and sources responsible for high fecal counts during storm events must be identified and addressed. A monitoring strategy to address these concerns would involve regular sampling at multiple tributary sites and intensive wet-weather sampling.

Recommendation: The Committee recommends continuing the special project monitoring in California Creek and the development of a monitoring strategy for Dakota Creek involving increased tributary samples to help identify potential bacteria sources. The Whatcom Conservation District's assistance should be requested in identifying drainages that are likely to be contributing to high fecal counts during storm events.

2E: Special Project: Conduct Phase 2 of microbial source tracking in the Drayton Harbor

watershed.
High Priority
Phase 1 of the MST study is a pilot project that consists of data collection at five sites in the watershed over five months, beginning in November 2006. Data collection for Phase 1 will conclude in spring 2007, with results expected in the late summer or early fall.

Recommendation: If feasible, statistically-reliable, and cost-effective, the Committee supports initiating Phase 2 of this project, which would expand MST efforts to the entire watershed and would identify prominent sources of fecal coliform bacteria (initially human vs. animal; secondarily, presence of bovine *E. coli*) in California and Dakota Creeks and in the marine waters of Drayton Harbor.

2F: Special Project: Conduct wet-weather monitoring in the harbor.
High Priority
Currently, portions of Drayton Harbor have a conditional approval for shellfish harvest. This approval is based upon 0.75 inches of precipitation in a 24-hour period. Rainfall events greater than 0.75"/24hrs result in a five-day closure. Additional monitoring in the harbor during or immediately following rain events may result in an adjustment of the conditional approval criteria and result in more available days for harvesting within the year. This special project concludes in spring 2007.

Recommendation: Pending final results, the Committee recommends continuing the wet-weather monitoring program in the harbor to further evaluate the impact of rain events on water quality within the harbor.

2G: Encourage continued monitoring of water quality at a reduced number of stations and frequency within Blaine Harbor.
High Priority
The Water Quality Certification/Modification associated with the Port of Bellingham's marina expansion required a water quality monitoring plan to establish baseline water quality in the marina prior to the project and provide long-term monitoring during the operation of the marina. The long-term monitoring program requires, at a minimum, a full year of sampling with a monthly frequency in years 1, 3, 5, and 10. Monitoring during the off years may or may not be warranted depending on the results of the monitored years. Data collected by the Port to address these requirements have been helpful in evaluating potential sources of bacteria in the marine waters. The Port shares this data with Whatcom County for incorporation into the larger database.

Recommendation: The Committee encourages the Port's continuation of water quality monitoring in the Blaine marina. This data collection effort should be coordinated with other monitoring efforts in the harbor and watershed. The Committee also supports the recommendations made in the 2005 Blaine Harbor Water Quality Monitoring Summary report:
1. Development of BMP standards to address boaters' sewage treatment management; periodic routine inspection of recreational and commercial vessels to ensure proper operations of sanitation devices; and ensure vessels follow pump out procedures
2. Explore approaches to prevent build-up of bird feces on docks, floats, and rooftops
3. Re-evaluate the long term monitoring plan with permitting agencies to determine if quarterly sampling (to include the wet season) could yield better sampling data; consult with DOH to develop a reporting strategy for sewage discharges to Blaine Harbor.

2H: Special Project: Conduct circulation studies of Drayton Harbor.
Low Priority
Section C of the *National Shellfish Sanitation Program Manual* requires a "review of hydrographic factors that may affect distribution of pollutants." In 2000, there had been minimal study of circulation patterns in Drayton Harbor. Since that time, a circulation study of Semiahmoo Bay was conducted by Hay and Company (through a cross-boundary partnership). This study included Drayton Harbor, but the resolution of the study was coarse. In 2003, Whatcom County contracted with the PSRF and DOH to design and conduct a series of circulation studies to improve the understanding of how water is exchanged from the commercial portion of Blaine Harbor with surrounding marine waters. This series of studies revealed that there is little if any exchange of surface waters from Blaine Harbor to surrounding waters during the ebb tide; however, it appears that deeper water does exit Blaine Harbor during the ebbing tide. Based on these studies, it appears that fecal coliform-contaminated surface water from inside Blaine Harbor has little if any impact on water quality in most of Drayton Harbor. *Cost to County: $2,000*

Recommendation: While these studies have provided some valuable information about circulation patterns, the Committee believes additional studies may be warranted to help further identify sources of bacteria in the system.

2I: Continue to update the 2004 report titled "Tracking Reports and Projects of Potential Pollution Sources in the Drayton Harbor Watershed, 1991-2003."
Low Priority
In spring 2004, Geoff Menzies, the Committee chair, and Katie Callahan, Whatcom County Water Resources, developed an annotated bibliography of reports and projects regarding potential pollution sources in the Drayton Harbor watershed.

Recommendation: The Committee supports an annual update that includes new projects and studies.

Objective Three

On-Site Sewage Systems

According to the 1995 Watershed Action Plan, the soil types in most of the watershed pose severe limitations for septic tank drainage fields. A 1997-1998 intensive survey of 252 on-site septic systems (OSS) in the watershed revealed 54 failures, all of which have now been repaired. To date, most OSS inspections are a result of complaints or applications for repair loans. In 2002 and 2003, Whatcom County Health inspected 77 OSSs in the watershed, identifying 22 problems that have since been corrected. However, this strategy is unlikely to locate and address all OSS problems and their effects on Drayton Harbor shellfish.

Washington State's OSS rules were revised in 2005, with Whatcom County adopting revisions to local regulations that will go into effect in mid-2007. Some of the revisions include:

- **Requirements for more regular inspections**. Conventional systems will need to be inspected every three years, and unconventional systems every year. Reports must be submitted to the Whatcom County Health Department.

- **Locally developed operations and maintenance (O&M) program**. Whatcom County will create a written plan to guide development, construction, and overall management activities for

OSS. The plan will include identification of high-risk areas that may require additional requirements, such as shellfish areas.

- **OSS record transfers during property transactions**. When property changes hands, sellers will be required to turn over their system's current status report and maintenance records to buyers. Initially, only pumper records will likely be available, but as the requirement for regular inspections is implemented, the information for each system will be more extensive and more helpful to buyers.

Whatcom County established a low interest loan program in 2000 to assist homeowners with OSS repair costs, but this program has been discontinued due to problems with loan defaults.

Recommendations

3A: Establish an inspection and operations and maintenance (O&M) program for the Drayton Harbor watershed.

High Priority

Due to restrictions on staff time and resources, Whatcom County Health has not had an Operations and Maintenance program beyond the current complaint driven strategy. Like many communities, Whatcom County has focused their efforts on education to encourage improved homeowner management of OSSs.

With the changes in state and local regulations, and with the addition of new staff positions, Whatcom County Health will be switching to a more proactive approach in 2007. Several elements were considered by the state legislature in 2005 under HB1458 concerning on-site sewage systems in marine sensitive areas. Along with forthcoming guidelines from the state Department of Health, these should be considered while developing the Whatcom County O&M Program.

Recommendation: The Committee encourages the development and implementation of a proactive inspection and O&M program in the Drayton Harbor watershed as quickly as possible. ***The committee is requesting $75,000 per year for 1 FTE at the Whatcom County Health Department to work closely with landowners in the Drayton Harbor watershed to fully support this recommendation.***

3B: Until an inspection and O&M program has been established in Drayton Harbor, place a high priority on complaints to Whatcom County Health Department filed in the Drayton Harbor watershed.

Moderate Priority

Complaints on OSS are treated uniformly county wide. In 2007, the County will develop a system to review OSS complaints and repairs on a priority watershed basis, and will continue to report activities to the Committee on a quarterly basis.

Recommendation: The Committee encourages Whatcom County Health to prioritize OSS complaints in the Drayton Harbor watershed and to continue its quarterly reports to the Committee on complaints filed and actions taken in the watershed.

3C: Develop annual summary of OSS inspection reports and property transfers in the Drayton Harbor watershed.

High Priority

Each year, the shellfish district reports recovery activities to DOH. Key actions will include steps that were taken to identify and remedy failing OSSs. It would also be helpful to have a sense of the number of properties with OSSs that change hands in a given year.

Recommendation: To track the general status of OSS within the watershed, the Committee requests Whatcom County Health to provide a summary of property transfers and OSS inspection reports each year, for use in reporting to DOH. Quarterly updates

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Objective Four

Control Urban Stormwater Sources

Stormwater runoff is a source of fecal coliform pollution. In urban areas, pet waste and other non-agricultural causes are the primary sources. In rural areas, stormwater can carry bacteria from agricultural operations, non-commercial farms or on-site septic systems.

Studies and monitoring by the City of Blaine, the Puget Sound Restoration Fund/Hirsch Consulting, the Northwest Indian College, Whatcom County Planning and Development Services, and other parties have attempted to conclusively identify the most significant sources of fecal coliform bacteria. Some general sources, such as stormwater outfalls in East Blaine, have been determined to be chronic problems. Other general sources, such as sewer/stormwater cross connections along Peace Portal Drive, have been ruled out. However, because of the difficulties in typing bacteria as human or animal sources, specific causes of fecal pollution such as on-site septic systems or hobby farms have not been identified in every drainage.

The lack of knowledge of the exact causes of fecal pollution has required a comprehensive approach to managing stormwater. The City of Blaine is implementing a citywide stormwater management plan, which is primarily funded through a stormwater utility fee that was enacted in 2000. The fee has allowed for the construction of system improvements and a greatly improved level of maintenance of stormwater facilities.

To address stormwater issues in new development in unincorporated areas, Whatcom County Planning and Development Services (PDS) has designated the Drayton Harbor watershed as a Stormwater Special District, which requires on-site stormwater treatment on all lots less than five acres in size where impervious cover is increased by more than 500 square feet or where improvement costs exceed 50% of assessed property value. PDS has also designated the watershed as a Water Resource Special Management Area, which imposes conditions such as erosion and sediment control, phased clearing, and prompt soil stabilization on land clearing activities.

Proper disposal of pet waste is a specific urban stormwater issue that has received attention in recent years. Mutt mitt stations--dispensers with bags for picking and up and disposing dog waste--were installed at Marine Park, Semiahmoo County Park, the Blaine Marina, and the Semiahmoo Marina. Between April 2001 and June 2004, just over 14,000 mutt mitts were used, preventing over 16 trillion fecal coliform bacteria from entering the watershed.

Several other objectives focus on reducing rural sources. Over the next three to five years, tasks for this objective will focus on controlling urban stormwater runoff.

Recommendations

4A: Develop a pilot stormwater retrofit project in East Blaine to provide guidance for reduction of fecal coliform bacteria through City and County standards.

High Priority

Current building, development, and stormwater standards address general stormwater issues, but do not specifically target reduction of fecal coliform and associated pathogens. A pilot project to explore possible mechanisms for reducing these pollutants could provide information for incorporating fecal coliform reduction into development standards.

For the past three years, storm drains along the harbor from Marine Drive down to the mouth of Dakota Creek have been sampled (under various funding sources). All data have been shared with the City of Blaine, which has hired a consultant to design a demonstration stormwater treatment system that will reduce fecal coliform concentrations. The location of the facility has not yet been selected.

After the facility is constructed, the sampling program should recommence to track any improvements in water quality.

Recommendation: The Committee supports coordination with the City of Blaine and/or Whatcom County Planning and Development Services to explore and, if feasible, develop and implement a pilot project to reduce fecal coliform inputs from new urban development. The Committee recommends providing letters of support for funding requests that will further this project.

4B: Monitor water quality in West Blaine.

Moderate Priority

Due to a focus on East Blaine water quality issues, it has been approximately 10 years since water quality was monitored in West Blaine. For example, follow-up monitoring was planned to compare the effectiveness of two different bioswale systems in the Drayton Harbor Hillside development, but was never funded or implemented. Both systems drain into an area where shellfish beds are located.

Before the West Blaine shellfish beds can be reclassified, there will need to be more regular monitoring of stormwater and more source reduction efforts in this area. The MRC began sampling a limited number of freshwater discharge sites in the western half of Drayton Harbor in 2006 and plans to continue this sampling through June 2009. However, there are a number of stormwater outfalls and drainages that are not being sampled through this effort.

Recommendation: The Committee encourages a review of the inventory of major stormwater outfalls from Harborview Road to Semiahmoo County Park, in order to determine which ones would be suitable for wet-weather stormwater sampling. The Committee also encourages pursuit offunding for monitoring the effectiveness of the two bioswale systems in the Drayton Harbor Hillside development.

Objective Five

Blaine Municipal Sewage Sources

During large storm events, stormwater enters Blaine's sewer system and can cause overflows and exceedences in design capacity for the wastewater treatment plant. Between 1995 and 2000, Blaine experienced thirteen combined stormwater/sewer overflows along Marine Drive. These overflows

coupled with high fecal coliform levels in and around the commercial portion of the Blaine Marina led local entities to work with Blaine to examine and make improvements to the wastewater collection and conveyance system. In 2000, the City of Blaine and the Department of Ecology negotiated a Consent Order that established a schedule of improvements to the system. Examples of investigations and improvements to the system include the inspection and repair of the sewer line along Marine Drive, dye-testing of the sewage system along Marine Drive and Peace Portal, removal of stormwater cross-connections, and installation of storage bladders at Lift Station #1. One of three criteria outlined by DOH for an upgrade of the shellfish classification was to rule out human sources as a contributor to the high levels of fecal coliform in the marina area. These major improvements to the wastewater system were a primary factor in addressing this criteria and the upgrade of a portion of the harbor to Conditionally Approved.

Due to the removal of ancestral remains at the existing wastewater treatment plant, which occurred during excavation to expand the treatment plant, the existing site may not be available for the long term. This renders the 1994 Blaine Sewer Plan virtually obsolete. The City updated it General Sewer Plan in September 2004.

Commercial shellfish harvesting north of Semiahmoo Spit in Semiahmoo Bay is prohibited due to the location of the wastewater treatment plant outfall pipe. Along with the closure of the commercial shellfish beds within Drayton Harbor, the Department of Health has recommended to the Whatcom County Parks Department closure of recreational shellfish harvesting in this area. Circulation studies conducted by Schwartz (1976) and by Menzies and Marcy (1998) show that under certain flood tide conditions, effluent from this sewer outfall pipe was capable of reaching the mouth of Drayton Harbor within five hours of discharge. Effluent from the Blaine STP is chlorinated after treatment to disinfect the discharge. There have been events when the chlorination has not proved effective, and high fecal coliform counts have been found in the effluent. Under these conditions, the effluent carrying fecal coliform pollutants may be contributing to the degraded water quality in the vicinity of the mouth of Drayton Harbor. Recent repairs to the outfall diffuser may reduce this influence and lead to at least a partial re-classification of recreational shellfish harvest along portions of the north side of Semiahmoo Spit.

Recommendations

5A: Support wastewater collection and treatment improvements to reduce potential impacts to shellfish beds.

High Priority

Plans for treatment plant redesign and expansion as outlined in the 1994 Sewer Plan were unable to be implemented due to ancestral remains found at the treatment plant site. The City of Blaine entered into a settlement agreement with the Lummi Nation with the condition of abandoning the existing treatment plant and relocating. The City updated its General Sewer Plan in September 2004 that calls for relocating the plant to the western end of Marine Park near the current lift station that pumps waste across the mouth of Drayton Harbor. This will address the concern about untreated waste flowing in pipes under the harbor. The plan calls for construction of an equalization storage facility under Marine Drive near the future plant location to be completed in 2007. Off-line equalization storage will help to address the issue of sewer overflows by providing additional off-line waste water storage. The new plant is planned to be constructed in 2009. In addition, the City of Blaine has implemented various short-term solutions and is developing additional improvements for the existing plant that do not involve excavation prior to the new plant being constructed.

Recommendation: The Committee encourages support of the City of Blaine in the implementation of long-term solutions identified in the 2004 General Sewer Plan Update. Provide letters of support to assist

with acquiring funds to implement this project.

5B: Support the City of Blaine's efforts to reduce inflow and infiltration (I&I) from the sanitary sewer collection system and to address capacity issues.

Moderate Priority

Blaine eliminated numerous illicit stormwater connections to sewer lines since 2000, including a stormwater connection from Blaine High School. I & I problems appear to have lessened in recent years with Blaine experiencing far fewer overflows. However, the treatment plant still experiences some flows that exceed 80% of their average monthly allowable volume. An equalization tank should be online shortly that should address I & I issues.

Recommendation: The Committee believes the City of Blaine's efforts to continue implementation of I&I reduction efforts should be encouraged, as well as, the Department of Ecology's continued work with Blaine to resolve the issues related to exceeding flow and treatment capacity.

5C: Support evaluation of effluent dilution and dispersion rates at the Blaine WWTP outfall and size of associated closure zone.

Low Priority

Blaine's wastewater treatment plant NPDES permit was updated in 2003 and required an investigation of the outfall. Through this investigation, Blaine detected a break in the outfall pipe 100 feet upstream of the diffuser. In 2004, the Blaine wastewater treatment plant outfall pipe and diffuser were repaired. The DOH, the federal Food and Drug Administration, and the Nooksack Tribe recently conducted a dye study to determine results of the dilution and dispersion of effluent at the outfall. The proposed treatment plant will use a Membrane Bioreactor (MBR) treatment process that produces a reuse quality effluent. Preliminary indications from DOH are that this will reduce the closure zone to the minimum allowed. These results will be used with the CORMIX model to evaluate the closure zone for existing effluent conditions and expected effluent conditions from a new treatment plant.

Recommendation: The Committee encourages support of the City of Blaine and the Nooksack Tribe's work with DOH to minimize the closure zone to the extent possible around the wastewater treatment plant based upon improvements to the diffuser, water quality data, dye study, and modeling efforts. These efforts may affect the closure zone at the County-owned tidelands along Semiahmoo Spit.

Objective Six

Agriculture

Several reports have cited poor agricultural practices as a source of bacterial contamination of water resources in the Drayton Harbor watershed. Specific recommendations for improvements have included, but are not limited to:

- Update and fully implement conservation farm plans at commercial dairies.
- Improve pasture management on small farms to provide adequate control of runoff quantity and quality.
- Reduce animal access to streams and drainage ditches through increased installation of fencing.
- Review animal densities on commercial and small farms to ensure they do not exceed the vegetation's capacity to utilize the nutrients in animal waste.

While there are a relatively small number of commercial farms in the watershed (less than 20), there has been a history of water quality violations related to their practices. The EPA, DOE, and WSDA have been inspecting commercial dairies and taking enforcement action when violations occur.

Significant efforts have been underway over the past seven years to address potential livestock contamination issues. The focus has been on the update of commercial and hobby farm plans by the Whatcom Conservation District, increased enforcement actions against commercial dairies from DOE and WSDA (since 2003) when violations occur, and implementation of the Whatcom County Critical Areas Ordinance that prohibits unrestricted access of hobby and commercial livestock to streams. The County is also providing funding to the Whatcom Conservation District for work with small farms.

The Committee has not focused on agricultural waste issues recently due to higher priority marine water quality issues around the mouth of Drayton Harbor. The Committee recognizes the need to continue to support those efforts that reduce livestock waste from the numerous non-commercial farms throughout the watershed. Opportunities that should be given a higher priority in the next few years include compliance with and enforcement of the Whatcom County Critical Areas Ordinance and its section on Conservation Program on Agriculture Lands (revised in 2005) and working with small farm landowners.

Recommendations

6A: Emphasize compliance with and enforcement of the Critical Areas Ordinance (CAO)-Conservation Program on Agriculture Lands (CPAL) to provide greater protection to the shellfish beds.

High Priority

The Whatcom County CAO was updated in 2005, and compliance and enforcement staff are being added in 2007. The CPAL section of this ordinance provides guidance and regulations for agricultural lands in critical areas. The conservation farm plans described in CPAL are intended to identify farming activities and the practices necessary to avoid their potential negative impacts to natural resources. This program applies to both commercial and small/non-commercial farms.

Recommendation: The Committee requests quarterly updates from PDS on CPAL compliance and enforcement activities in the Drayton Harbor watershed, as well as an annual written report that summarizes activities.

6B: Support efforts by the Conservation District and NRCS to launch an adaptive management program to determine if current nutrient management plans are adequate.

High Priority

In the past few years, a number of situations have occurred suggesting that current nutrient management plans may not be adequate to protect water quality and shellfish beds. In November 2003, special permits were given for late manure applications to assist in emptying manure lagoons prior to the winter. A rain event occurring shortly after the late applications resulted in high bacteria counts in the harbor. Additionally in 2005, several manure lagoons in the county reached maximum capacity prior to the T-Sum 200 date. This led to many farms requesting the ability to make early manure applications. Fortunately, through a combination of transferring manure to lagoons with extra capacity and dry weather for two weeks prior to the T-Sum 200 date, no lagoon overflows were observed. These and other situations suggest that current criteria for nutrient management plans should be revisited and adjusted where needed to protect water quality and shellfish beds.

6C: Improve communication and coordination between agencies working with agricultural activities to ensure proactive program to identify and resolve livestock pollution from non-commercial farms.

High Priority

While a variety of efforts have focused on improving Best Management Practices at commercial farms, limited resources have targeted small farm operations. Typically, identification of problems at small farms has been based upon a complaint-driven process. In the Drayton Harbor watershed, there are a large number of small farms located along Dakota and California Creeks that may be impacting water quality in these tributaries. Whatcom County Planning and Development Services has recently revised their CAO Nutrient Management compliance program to be more proactive in identifying small farms with violations, which will be a beneficial step towards reducing bacterial loads in these tributaries.

Recommendation: Encourage PDS to further develop the proactive program, report progress to the shellfish advisory committee, and coordinate with the Conservation District, WSDA, and qualified groups to provide technical assistance to landowners with small farms. ***The committee is requesting $75,000 per year for 1 FTE at the Whatcom Conservation District to work closely with PDS and provide technical support to landowners in the Drayton Harbor watershed to fully support this recommendation.***

6D: Continue coordination with the Whatcom Conservation District and/or WSDA for certification, implementation, and inspection of nutrient management plans for commercial dairies.

Moderate Priority

Since 2000, all dairies within the Drayton Harbor watershed have developed nutrient management plans. The majority of the dairies within the Drayton Harbor watershed have been certified with the Whatcom Conservation District. There is a continuous need for technical and financial assistance for dairies to update and implement nutrient management plans to protect water quality and shellfish beds. Ongoing funds for these agencies are required to ensure implementation of up-to-date farms plans.

Recommendation: Encourage the Conservation District and WSDA to explore options that will allow them to focus on improvements at the dairies with the most outdated farm plans or changes in the farm operations. This may require additional staff and funding. Farm plans that have been certified should be verified to be current on an annual basis.

Objective Seven

Boats and Marinas

Two marinas operate at the entrance of Drayton Harbor. The Semiahmoo Marina Condominium Association operates a 300-slip marina for pleasure boats, including a marine repair and fuel facility, and currently has eleven live-aboards. The Port of Bellingham maintains Blaine Harbor, which currently has 680 slips. Blaine Harbor supports commercial fishing vessels, fish processing facilities, and pleasure boats, including 50 live-aboards. Due to the number and variety of vessels that actively use the Blaine Harbor, this marina represents a greater potential source of pollution to Drayton Harbor (DOH Sanitary Survey 1995). As has been reported to the DHSPDAC, all live-aboard vessels in Blaine Harbor were inspected in 2003. New live-aboards are inspected when the residents move onboard.

The State Health Department's ambient water quality data, Western Washington University's oyster tissue sampling, and current water quality monitoring conducted by the Port of Bellingham all show high

fecal coliform levels recorded in the commercial section of Blaine Harbor as discussed earlier in this report. This indicates that there continues to be a significant nearby source(s) impacting the Blaine Harbor. In 2003, after considering the studies and system repairs around Blaine Harbor, the State Department of Health questioned the impact the bird population had on water quality within the marina.

Recommendations

7A: Establish routine reporting on number and types of Marine Sanitation Devices (MSD) in Blaine Harbor and report to DHSPDAC.

High Priority

The Port of Bellingham inspected each live-aboard vessel for proper MSDs and reported the results to DHSPDAC and DOH in 2003. Inspections of MSDs continues for new live-aboards as they are approved for live-aboard status.

Recommendation: The Committee should request updates on MSD inspections on a quarterly basis and include this information in reports to DOH. Encourage the Port of Bellingham to develop a strategy for regular inspections and pump-outs for existing liveaboards. The strategy should include a system for monitoring useage of pump-outs and identifying violators (e.g. dye tablets).

7B: Continue distribution of educational materials regarding water quality specific to Drayton Harbor and environmental regulations via "Marina Update" newsletter and marina signs.

Moderate Priority

The Port has, on occasion, included environmental updates and education in the Blaine Harbor newsletters. A greater focus has been placed on educating boaters through a Pledge Program. PSRF developed and installed signs in eight locations in Blaine Harbor and Drayton Harbor warning boaters not to discharge sewage. The Port installed signs warning boaters that direct discharge of sewage was punishable with a $10,000 fine. The Port also installed signs directing boaters to pump-out stations.

Recommendation: The Committee encourages continued education of boaters in Drayton Harbor through coordination with other Port educational projects and communication to boaters and tenants in Blaine Harbor. A particular emphasis should be placed on pump-out stations, marine sanitation devices, and other Best Management Practices that help protect water quality.

7C: Continue work with Blaine Seafood Processors to address water quality issues related to operations and discharge to ensure water quality improvements continue.

Low Priority

The BSF NPDES permit was updated in 2001. DOE receives monthly water quality reports from BSP to track fecal coliform levels in outfall effluent. This new permit conditions required a reduction in fecal coliform levels in the outfall effluent and repairs to the outfall pipe. The current permit will expire in 2006. The Port of Bellingham, Whatcom County Water Resources, and PSRF met with Blaine Harbor commercial tenants in 2002 to discuss water quality issues in the harbor and provide information about Best Management Practices to reduce impacts.

Recommendation: Ecology should continue to insure Blaine Seafood Processors are meeting their NPDES permit requirements. Request BSP continue to share water quality data with Whatcom County Water Resources to be included in the Shellfish Protection District database.

Other Recommendations

8A: Continue efforts regarding community involvement and education in priority drainages.

High Priority

A variety of community involvement and education programs have been implemented in the past five years. Some examples include the Community Oyster Farm, Tideflat Tours, the Drayton Harbor open houses and Shuckin' on the Spit events, establishment of Mutt Mitt dispenser stations, newspaper articles, and volunteer water quality monitoring. These efforts have increased the community's awareness of water quality issues within Drayton Harbor and actions that can be taken to improve and protect water quality.

Recommendation: The Committee encourages continued implementation of community involvement and education programs and projects. An emphasis should be placed on expanding community outreach efforts to upper watershed residents. ***The committee is requesting $20,000 per year to support expanded public outreach programs for upper watershed residents.***

8B: Identify and map critical areas for potential restoration and conservation efforts. Consider opportunities for public acquisition, conservation easements, open space programs, and other tax incentive programs for riparian and wetland areas. (1995 Drayton Harbor Watershed Plan)

High Priority

Studies to identify priority areas for potential restoration and conservation projects were conducted in 2003 and 2004. The Department of Ecology and Puget Sound Restoration Fund conducted a watershed analysis in the Drayton Harbor watershed in 2003. This analysis provides recommendations for land use and restoration efforts focused on ecological processes, structure, and functions that will assist with the improvement of water quality in California and Dakota Creeks as well as Drayton Harbor. In 2003 and 2004, assessments were also conducted by the Whatcom Land Trust to identify priorities for salmonids as well as other species and resource issues. The Puget Sound Restoration Fund has worked with the Whatcom Land Trust in an attempt to purchase wetland areas in south Drayton Harbor through the National Wetland Conservation Grant Program. At that point, the price of land in this area was too high to be competitive in this program.

Recommendation: The Committee supports restoration and conservation opportunities identified through these assessments, including identification of potential funds to protect key sensitive sites.

8C: Work with the Nooksack Recovery Team (NRT) to annually update stream enhancement projects that have been completed in the watershed.

Low Priority

The NRT maintains a database and map illustrating stream enhancement projects throughout the county.

Recommendation: Projects that are completed in the Drayton Harbor watershed should be updated in this database on an annual basis.

8D: Enhance and regularly update the Drayton Harbor Shellfish Protection District website to make it more user-friendly.

Low Priority

In 2002, Whatcom County Water Resources reconstructed the Drayton Harbor Shellfish Protection

District website. The website now has pages dedicated to describing the shellfish protection district, the advisory committee, data and maps, projects to improve water quality, community calendar, and links to other resources. In addition, the Drayton Harbor website is directly linked to the Whatcom County Stormwater Division, Portage Bay Shellfish Protection District, and Marine Resources Committee websites.

Recommendation: The Committee supports Whatcom County's continued maintenance of the Drayton Harbor Shellfish Protection District website. This should include improving links between maps and data and enhancing information about how the community can be involved in improving and protecting water quality in the harbor.

8E: Continue involvement in the cross-boundary water quality and shellfish restoration effort, *Shared Waters*.
Low Priority
A *Shared Waters* workshop was held in 2001 and focused on shellfish issues and downgrades involving the Canada based Boundary Bay Workgroup and Drayton Harbor. Committee members and local agencies have continued to participate in the Shared Waters Roundtable meetings over the past three years.

Recommendation: The Committee supports continued involvement in Shared Waters to identify and implement activities to identify water quality concerns and solutions at a regional, cross-boundary level.

8F: Work with the City of Blaine and Whatcom County to discourage urban levels of development in the South Drayton Harbor portion of their Urban Growth Area (Area of UGA west of California Creek to Semiahmoo Development).

Recommendation: The Committee feels that urbanization of this area is incompatible with long-term protection of water quality and shellfish harvesting opportunities in Drayton Harbor. Blaine will be revisiting its Urban Growth Areas in 2007 as a component of its Comprehensive Plan update. The City of Blaine and Whatcom County should request the participation of a Committee representative for any public processes that examine land use in the South Drayton Harbor UGA.