

Birch Bay Watershed Characterization
Birch Bay Stormwater Advisory Group – Meeting Summary
Birch Bay Community Bible Church – Jackson Rd.
July 18, 2007

Keats Garman gave an introduction of the meeting to the audience. Ground rules for the meeting include no interrupting the presenters, and holding questions until after presentation.

Peter Gill of Whatcom County PDS introduced the project and the presenters to the audience: Stephen Stanley from the Washington State Department of Ecology, John Carlton and Joanne Schuett-Hames from Washington State Department of Fish and Wildlife, and Margaret Clancy of ESA Adolffson.

Margaret Clancy provided a presentation overview. This project is jointly funded by the Washington State Department of Ecology (DOE), the Washington State Department of Fish and Wildlife (WDFW), the State of Washington Puget Sound Partnership (PSP), the United States Environmental Protection Agency (EPA) and the Washington State Department of Community, Trade and Economic Development (CTED), among others. This project is being tested as a multi governmental model for assisting smart land use planning. Today's presentation will discuss the project goals, the characterization of water processes, a wildlife habitat assessment, a land use and build out analysis, and a synthesis and next steps.

- There were 3 goals discussed for this project. The first goal discussed was to identify protection or restoration areas for long term functioning of marine and freshwater systems while providing for development consistent with the Sub Area Plan. A second goal is to develop tools for a more effective and efficient approach to land use decision-making and to tie this approach to the prevention of stormwater impacts at the watershed scale. Finally, a goal of the project is to apply science-based watershed characterization methods that could be used in other watersheds in the Puget Sound Region
- In order to prevent confusion, things that this project does not address were discussed. These items include supplanting/replacing previous planning efforts, imposition of new regulations, altering existing zoning, establishing new utility, taxing, or regulatory districts/agencies/authorities.
- The approach to this project contained 4 components, discussed here in no particular order. The first component discussed was to refine previous watershed characterization using basin-specific data. A second component was to rank water, nutrient, and pathogen processes using techniques that depict the relative importance of each sub-watershed. Thirdly was to add a metrics-based fish and wildlife assessment to evaluate existing habitat conditions based on locally identified priority species. A final component was to incorporate build-out scenarios examining potential land use patterns based on current zoning regulations.

- A description of the study area was given. The Birch Bay Watershed was divided into 31 sub-basins, which were then grouped into 4 Watershed Management Units. These 4 areas are the Birch Point, Central North, Central South and Terrell Creek.

Stephen Stanley discussed surface water hydrology, including characterization objectives and hydrologic process scoring,

- Surface waters were identified by reviewing an inventory of wetlands and through the use of aerial photos and lidar imaging tools. Once identified, a rough characterization of wetland quality was determined using the imaging tools and ground truthing.
- A watershed approach toolbox was used in an attempt to set wetlands and streams in a watershed context, with respect to priority value. This approach viewed the watershed in a broad, mid, and fine-scale. DOE watershed characterization guidance and WDFW wildlife analysis helped describe, identify, and map processes that drive site functions at the broad scale. At the mid scale, DOE characterization scoring methods and WDFW LHA were used to identify areas for protection and restoration. Finally, at the fine scale, the Washington State Department of Transportation Wetlands Assessment & WDFW Wildlife Method, the DOE Rating System, and Best Available Science for Wetlands Vol. 2 were used to identify best restoration sites, assure no net loss, and to protect wetland functions and wildlife guilds.
- In order to help identify protection and restoration of sub-basins at the watershed scale, a matrix for Birch Bay was created. This matrix identifies low, moderate, and high levels of alteration of watershed processes along the 'X' axis. Along the 'Y' axis lies low, moderate, and high importance of watershed processes. Using this matrix, if there is a high level of alteration of watershed processes and a high level of importance to watershed processes, the site would be suitable for restoration. If there is a high level of alteration of watershed processes and a low level of importance to watershed processes, the site would be suitable for development. If the area has a low level of alteration of watershed processes and a high level of importance to watershed processes, the site would be suitable for protection.
- The objective of the characterization process is to identify, at the watershed scale, important or key areas on the landscape for maintaining watershed processes, how these important areas have been altered, and areas for protection and restoration.
- A brief overview of the hydrologic cycle was given. This overview covered delivery, movement and loss of water, through the processes of precipitation, infiltration and discharge, and evapotranspiration, among others. Some of the controls on the hydrologic cycle include precipitation, vegetation, topography, soils, and surficial geology.
- An equation was created for the scoring of watershed sub-basin values. This equation reads: Importance for surface water + Importance for groundwater + Importance in evapotranspiration = importance of a sub-basin in the hydrologic process. As a result of these calculations, 6 maps were created.

- One map showed the important areas for restoring/protecting hydrologic processes. This map showed that the Terrell Creek and Fingleson reach are important for the health of the whole watershed. This is primarily due to high permeability. There are also large quantities of water in the Central South, and lower portions of the Central North areas.
- A second map shows potential sources of pathogens, which have sources in both septic systems and livestock. Pathogens play a large role in the health of shellfish and should be an important point of consideration in protecting shellfish harvest areas.
- The third map displays potential sources of pathogens in regards to septic systems. This map showed all septic systems within 200 feet of streams and sub-basins with high, medium, and low potential as sources of pathogens. Septic systems within 200 ft. of streams are important, as most pathogens will die before traveling more than 200 ft. from septic systems. A density analysis shows that Terrell Creek Lower Tributary 1 East is the only sub-basin with a high potential source of pathogens from septic systems that contain septic systems within 200 ft of streams. It is important to note that residence time (duration between septic discharge and arrival in streams) and wetlands are beneficial for removal of pathogens.
- The next display showed a fourth map of sub-basins with suitability for protection, restoration, and development for pathogen processes. The display showed this map compared to the second map, which showed potential sources of pathogens.
- The final map display showed 2 maps to illustrate the important areas for the denitrification process relative to potential sources. Denitrification is important as it relates to algal blooms which can lower Dissolved Oxygen content, and pose a health risk for marine animals, as well as humans.
- Using GIS, a wetlands & riparian zone inventory was created containing characteristics such as wetland class. This inventory also includes the potential for wetland restoration and a level of alteration for wetlands and riparian zones. This tool can assist in refining the approach to protect the water quality in Birch Bay.

John Carlton of WDFW presented the wildlife assessment portion of the meeting.

- The wildlife assessment of the Birch Bay watershed is made at the mid and broad scale using expert knowledge and from datasets. The broad scale is used to interpret patterns on the landscape, rather than on individual properties.
- The broad scale method uses information from land use/cover, local knowledge and biologists to determine areas where waterfowl congregate to determine habitat quality. Certain features are known to have certain effects on habitat. For instance, in road systems, if there are more roads there is a decrease in habitat quality. If there is an increase in traffic there is a decrease in habitat. During this review it was shown that the Lake Terrell area still has better quality habitat than the downtown area of Birch Bay.
- Another tool in looking at wildlife habitat in the Birch Bay watershed was a conservation overlay. This overlay showed small groups of fish and wildlife and

categorized their dispositions to development. A review of a zoning overlay showed that if developed to the maximum level allowed, many species would be lost. One way to keep them is to create effective zoning densities and to downzone areas where high density is allowed. The result of this overlay is a determination that conservation efforts should be directed SE of Birch Bay, towards Lake Terrell

- The marine/marine riparian/nearshore conservation overlay shows that the entire area is of importance for the Great Blue Heron as well as other wildlife. Birch Bay is home to a large heron colony, which is 1 of 5 mega colonies.
- Based on the marine/marine riparian/nearshore conservation overlay the marine sediment regime should be restored. The Whatcom County Shoreline Management Plan update does a very good job in accomplishing this goal. Other restoration should include watershed hydrology and nutrient and pathogen processes. Some restoration tools that would improve the health of the Birch Bay watershed include the removal of groins and bulkheads, as well as protection of feeder bluffs.
- Terrestrial conservation overlay focuses on the Terrell Creek and amphibian wildlife core zones. The Terrell Creek core zone is an important habitat for a wide range of species, while the amphibian wildlife core zone near Lake Terrell is important due to low traffic impacts that reduce hydrological functions and transportation corridors.
- Some of the findings and recommendations based on the conservation overlay include discuss dwelling densities, habitat mosaics, roads and traffic, and migration routes. In order to preserve habitats, large areas of land should have reduced densities of ≤ 1 du/10ac., or ≤ 1 du/20ac. within the Terrell Creek and amphibian/wildlife area core zones. A mosaic of landscapes should be retained in order to provide a variety of wildlife habitat. These habitats include forests, wetlands, and open grassy areas that were formerly farms. It is also important to provide connectivity between these habitats in order to allow for migration of species. Reducing the creation of new roads in core areas, traffic softening, and signage near crossings will improve the terrestrial habitat. For connectivity, linkages $\geq 80\%$ of natural vegetation along the watershed boundary should be retained. Additionally, the Birch Bay watershed is part of a major flyway and recommendations for the flyway include retention of half mile wide landscapes, $\geq 80\%$ natural vegetation, minimum lighting, no tall buildings or cell towers, and minimum flight altitudes for aircraft
- For areas outside of the conservation overlays, recommendations include maintenance of natural vegetation in patches of ≥ 12 acres, retaining/restoring wetlands with consideration of connections to undeveloped uplands and focusing traffic away from conservation areas.

Margaret Clancy discussed the existing land use zoning and its relationship to the health of the Birch Bay watershed.

- Maps were created to show the existing land use-zoning, existing impervious surface, residential buildout, buildable area and a vulnerability analysis. The existing land use-zoning map displayed how parcels could currently be developed

according to their zoning designation. The existing impervious surface area map displayed the sub-basins according to the percentage of impervious surface. This is important as impervious surfaces impede infiltration and disrupt the hydrologic functions of the watershed. The map of residential buildout identifies parcels based on their current development level. These parcel categories include vacant, undeveloped, underdeveloped, non-conforming, and developed. The final map displays the buildable area which is determined by subtracting critical areas and their estimated buffers from the land base. The map of the vulnerability analysis shows the areas that are most at risk, helping to prioritize how development should occur within the Birch Bay watershed

- A tool used to assist in decision making was a 4-way Vven diagram with “Potential for Change” along the ‘X’ axis and “Ecological Value” along the ‘Y’ axis. In this diagram areas that have been determined to have a high potential for change and low ecological value have been deemed a good choice for development. Areas that have a high potential for change and high ecological value are a good choice for protection. Areas that have a low potential for change and a high ecological value should be protected and restored. Finally, areas with low potential for change and low ecological value should be used for restoration and mitigation.
- The next slide was a summary table showing an analysis of land use, hydrologic processes and habitat quality for each sub-basin. The land use analysis for each sub-basin included current impervious surface, potential development levels, potential impervious levels, vulnerability and its management unit vulnerability. The analysis of each sub-basin for hydrologic processes included hydrologic, pathogen, and denitrification processes, and management recommendations. The habitat quality analysis included habitat quality conditions and management unit quality.
- A watershed management plan was created based on a synthesis of the results from combining the wildlife habitat assessment with the watershed characterization. The recommendations were for protection of the Birch Point area, development and restoration for the Central North area, restoration and development for the Central South area, and protection and restoration in the Terrell Creek area.
- The next steps for the Birch Bay Watershed Characterization include developing/refining recommendations for land use, stormwater management, transfer of development rights, mitigation and permit review streamlining. A draft summary report still needs to be completed, followed by a finalized draft report based on Steering Committee Comments.

After the presentation there was a question and answer period

- Alan Freidlob stated that in March he testified to council with a great deal of skepticism, but would like to thank the presenters and their agencies for the amount of effort and commitment they have given. He would like to reserve the right for skepticism and would like there to be further consideration for how citizens can be involved in dialog, reviewing the report, and translating the

language into layman terms for the general public. He also volunteered to assist in education and public outreach.

- Keats Garman asked if the northern part of Birch Point would be included in the analysis. The response was that it would not be included because this is a review of the area within the physical boundaries of the Birch Bay watershed, which does not include the northern Birch Point area.
- Gerald Larson stated that there are intense developments along Birch Bay-Lynden Road planning to discharge stormwater to wetlands. He inquired if this is the appropriate method for managing stormwater. The response was that this is a question for the Birch Bay stormwater authorities, but that this report could be used to address surface water.
- Ralph Falk stated that the overall plan of the Bovencamp development is causing flooding and asked how this could be addressed. He also stated that he appreciates the report and would like a copy. The response was that this report is more appropriate to make recommendations on large scale areas, not individual properties. The report will hopefully be available by early August, and this PowerPoint presentation will go on the web.
- Ed Devine asked for a definition of restoration. The reply was that restoration is the restoring of processes or improving the level of ecological functions above the baseline level. There are many methods and an example is the removal of fill from wetlands. Ed asked if restoration included flooding of farmland and neighboring farmland.
- Ed Devine had concerns about the recommendation to leave a ½ mile wide area undeveloped for migratory flyways. If farmers aren't allowed to farm, what can they do? John Carlton responded that birds can fly over agriculture and that it isn't incompatible with agriculture. Ed stated that if people take farmland out of farming for restoration, it will be food off the table and money out of their pockets. John reiterated that these are recommendations that are completely voluntary, not required. This report is giving options and alternative, not making demands.
- Alan Freidlob supported John Carlton in that this report is an analysis/tool that was given by scientists and is not regulatory. It will simply give options to decision makers.
- Keats Garman asked if the study has, or if presenters have, suggestions/recommendations on how Low Impact Development (LID) can be incorporated. It was responded that there will be LID recommendations based on what areas look most appropriate for LID.
- Jo Slivinski asked if this report includes the 600 acres that were clear-cut and converted to pastureland by Trillium. She also asked if this is the type of report that would allow the public to interact with developers. It was responded that this could help understand local processes.
- Doralee Booth stated that the Puget Sound basin is expected to grow by 2 million people in 20 years. She asked if watershed planning is the best way to deal with stormwater. Hilary Culverwell from Puget Sound Partnership stated that they are part of the plan because of the importance. This type of planning is how we can protect Puget Sound and still accept growth. One of the reasons for Puget Sound

Partnership's involvement is because it is a valuable tool and could be used as a model for Puget Sound.

- Gerald Larson asked what the future holds for the gravel mine in the North Star Road area. He asked if it will become a landfill. Peter Gill responded that there are reclamation plans when gravel mines are closed.