

**Chehalis Basin Partnership Water Quality Committee**  
**Grays Harbor Forestry Building**  
**Montesano, Washington**  
**June 14, 2007**  
**9:00 a.m.**

**Meeting Summary**

**MEMBERS PRESENT:**

Terry Willis, Citizen, Grays Harbor  
Terri Franklin, Grays Harbor Citizen  
Dave Rountry, Department of Ecology  
Chanele Holbrook-Shaw, Citizen, Thurston County  
Patrick Wiltzius, City of Chehalis

**OTHERS PRESENT:**

Randy Lehr, Grays Harbor College, Natural Resources Program Director  
Valerie Gow, Puget Sound Meeting Services  
Carolyn West, Intern, The Evergreen State College  
Tiffney Justice, Intern, The Evergreen State College

**Call to Order**

Terry Willis called the Chehalis Basin Partnership Water Quality Committee meeting to order at 9:24 a.m.

**Water Quality Monitoring in the Scatter Creek Area – Report from Evergreen Students Working with Chanele Holbrook-Shaw to Monitor Sites on Heernett Properties**

Carolyn West and Tiffney Justice provided a slide presentation on their work monitoring sites on Heernett properties located in Scatter Creek.

Ms. West reported the project was initiated by Chanele Holbrook-Shaw and the Heernett Foundation for water quality chemistry and profiles within Scatter Creek in the Tenino area. The projects included testing five different locations on Scatter Creek in three different headwater systems. Ms. Justice said that as students enrolled in an environmental class at the college, the goal was to put the studies into practice in a real setting.

One of the major concerns was fish and that became the focus to find salmon to determine what water quality parameters to test. The first test was dissolved oxygen (DO) as saturation for adult salmon must be 80% or more. Salmon need an intermediate water temperature of 70 degrees Fahrenheit or above and a neutral pH. She described healthy levels for nitrogen to phosphorous ratios and healthy velocity flows of the stream to assist in migrating and spawning. Spawning requires a depth of 18 centimeters.

Ms. West reported the testing was conducted under Department of Ecology (DOE) and Environmental Protection Agency (EPA) guidelines using testing methods considered acceptable.

Ms. Justice displayed a map of the Heernett property and identified the testing sites. Sites 1, 2, and 3 are believed to be in the same system while site 4 appears to be an independent water system. Sites 5, 6, and 7 are in the same system.

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Ms. Justice referred to Mills Pond and tests for oxygen saturation and temperature. Ms. Holbrook-Shaw reported there have been discussions with the Heernett Foundation and the Department of Fish and Wildlife (WDFW) and other fish organizations to determine if there is a way to connect the stream to the pond. However, it is an old mill site and there is concern about possible pollution sources in the water and what could be released if the two are connected. Mills Pond is a beaver pond that would be great juvenile rearing habitat. The natural water fall recently purchased upstream is also a natural fish barrier. If the two systems are opened, additional habitat could be attained. Core samples were taken from the pond to determine sediment contents.

Ms. Justice said pond water was tested for several water quality parameters as well as trace metal analysis. The results revealed no levels of concern for trace metals.

The presentation included photographs of each site including water quality tests conducted. The tests were performed from April 10 through May 23 on a weekly basis. Information was shared on tests results for each site. Ms. Justice noted there was an increase in turbidity in some of the areas. Most of the test results were consistent. Ms. West explained that initial testing for turbidity occurred during rain and that the numbers may not be accurate for that reason. The trend shows the discharge drops dramatically during summer months. Ms. Holbrook-Shaw added that none of the rivers in the Chehalis Basin are meeting instream flows. In Scatter Creek, there were excessive beaver dams throughout the system that held water for fish. However, because of development, removal of dams is occurring leading to the drainage of the system sooner.

Ms. Justice and Ms. West shared results on water quality trends based on data results.

Discussion followed on site 2 near a farmer's house and site 6 near the Mills Pond testing above 31 causing a nitrogen limiting factor. Cows on the farm were removed last winter. Ms. Holbrook-Shaw said the foundation is working to purchase the property. The farmer had a good buffer around the creek.

Ms. West described the testing and analysis for trace metals, nitrate, total phosphorus, and nitrogen, etc. The results indicate the creek is conducive for salmon but further testing in the summer months would be necessary to test for temperature variations as well as testing for e-coli, which was not tested.

Ms. Willis commented positively on the sampling effort. Ms. Willis noted the presentation included several comments that appeared to point to agriculture as a possible negative influence. Ms. Willis cautioned that as time has gone by and as science has explored, it's no longer possible to claim that buffers are saviors of the system. She said she is hopeful science will one day determine the importance of buffers and cautioned against tagging agriculture as the cause of some of the problems unless there is scientific fact to justify a particular case. Additionally, there were comments surrounding turbidity that appeared to point to agriculture activity causing turbidity. Turbidity is extremely volatile as to what can create turbidity within a system. Ms. Willis advised the students that the information was well presented but that it's important not to speculate on potential causes of sampling results unless the results can be scientifically proved.

Randy Lehr agreed it's important for the presenters to qualify what's conveyed; however, there is scientific evidence that supports the ability of buffers to filter out sediments and pollutants. That's not to say that in their absence there wouldn't be additional loading. However, there are some viable studies showing buffers reduce loading levels of phosphorus, nitrogen, and sediment.

Discussion followed about funds available to landowners to maintain appropriate buffers.

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Ms. Holbrook-Shaw complimented the students on their efforts. She said she provided them with brief background information and both students aggressively pursued testing with limited knowledge of the area.

Ms. Holbrook-Shaw described the testing sites and some of the challenges associated with sampling the sites. Ms. West said they documented the actual testing methods. Field notebooks also included weather conditions and wildlife observed at testing sites. During the first three weeks of the sampling, the weather was mostly rainy. Weather was generally sunny the last three weeks of sampling.

Ms. Willis asked about the source of water feeding the creek. Ms. Holbrook-Shaw replied the creek is fed by surface and groundwater, which is fairly consistent with the rest of the Chehalis.

Ms. Holbrook-Shaw added that the students reverified their testing methods and results and worked with the Chehalis Tribe to run some of the labs.

### **Status Report on General Water Quality Trends Based on Recent Monitoring**

Mr. Lehr summarized the work to date in monitoring water quality at a number of sites throughout the basin.

Eighty-three sites were selected for sampling. Collection of samples began in October 2006 through March 2007 for all major water quality parameters – DO, suspended solids, temperature, pH, and turbidity, etc. Several comparisons and analysis was conducted on the different parameters based on the site and time of year. Data was pulled from the USGS gauging stations throughout the basin.

Mr. Lehr displayed graphics of the data points and highlighted average flows for different years plotted over time. The trend line is statistically significant as it means there is less water flowing in the river than there was 50 years ago, and it is consistent with DOE's 1995 study. Another downward trend, and statistically significant, is an increase in the variability of mean flows – years where more flows are experienced and years where less flows are experienced.

Ms. Holbrook-Shaw asked whether the changes in instream structures, such as large woody debris, could affect flows. Mr. Lehr said DOE interpreted the trend as increased water withdrawal. The trends are significant and they exist. Minimum flows are statistically increasing with the variability decreasing. The results indicate there is more water flowing during minimum flows. There has been a slight decrease in precipitation over the timeframe, but it doesn't appear that any large changes in precipitation account for the change.

Terri Franklin commented on logging activity and the release of more water as trees are logged. There are many factors to consider for what's causing the trend. Mr. Lehr acknowledged that there is a combination of factors contributing to maximum and minimum flows. Withdrawals will have an effect as well as changes in the recharge of the groundwater aquifers and rain entering the river system faster. There are also changes in canopy cover. The forest harvest cycle has increased causing more exposed ground resulting in groundwater discharge.

Mr. Lehr said DOE attributed most of the changes to increased water withdrawal. He said he hopes to look at the data in greater detail, such as the amount of impervious surfaces to see if there is correlation in the discharge patterns.

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Ms. Willis asked whether any more additional research will be conducted on flows. Mr. Lehr said there is two more years of funding and that he will be examining data to help determine some of the factors contributing to the trends. Ms. Willis asked that he also consider the river system including its gravel composition. Mr. Lehr said there is likely much sediment export occurring. Another grant available is the EPA grant that is quantifying sediment transport – where it is coming from and going to and whether it is having an effect on the substrate composition. Ms. Willis said it appears water is reaching the bottom of the Satsop much quicker than in the past. During flooding events, the area had at least 24 hours to prepare, now it's a matter of hours after a main rain event. Mr. Lehr said he wants to examine the daily relationships between the flood stations and review the responses of the gauging stations and the headwaters in the lower portions to ascertain over time if the window of discharge has changed.

Mr. Lehr referred to 2006 DOE documents for state water quality standards, which are the most sensitive standards with temperatures ranging between 9 and 12 degrees based on a seven-day average. Current data can't address temperatures because seven-day averages are not available to analyze. Samples have been collected on monthly intervals and it is possible to ascertain if there are any variations in the temperatures and whether they are nearing the window of 9 to 12 degrees. Mr. Lehr explained the impact of temperature variation. Over a seven day period, if the average temperature is warmer than 12 degrees Celsius, the water is in violation of the water quality standard because it's too hot to promote rearing and development of juvenile salmonids.

Mr. Lehr displayed results of turbidity. A five to ten percent increase is represented over the background levels. Identifying background levels however, is somewhat of challenge because they are seasonal.

Testing shows the pH window between 6.5 and 8.5. Levels less than that reflect water as too acidic and more as too basic with both extremes causing similar problems.

Mr. Lehr displayed results of fecal coliform bacteria. Criteria causing concern are results reflecting greater than 100 colonies per 100 milliliter sample for exceptional water, which is a classification in the most recent version of 50 colonies per milliliter. The primary driver is shellfish and the ability for the fecal coliform to affect the shellfish industry that led to a change in the policy. Within the samples, the goal was that not more than 10% of the samples were greater than 100 or 200, respectively.

Mr. Lehr said the numbers are used to highlight how the changes have occurred throughout the Chehalis Basin. He asked members to provide input on the most useful way to present the results.

Mr. Lehr reviewed monthly data averages for different water quality parameters and how they compared to water quality criteria.

In October, most of the temperatures fell within safe guidelines for salmonids but borderline for Char species. There were a few instances where temperatures spiked above the minimum criteria for juvenile salmonids. However, spawning doesn't generally occur until mid to end of November resulting in less impact to salmonids. Ms. Holbrook-Shaw said the data shows how important refugee areas are and the need to focus on those areas. Dave Rountry commented that there is a tendency to focus only on spawning periods as the most critical times but there are other juveniles in other lifecycle stages within the river that are just as vulnerable. Mr. Lehr said salmonids are migratory while Chars are not necessarily migratory and can be residents.

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Mr. Lehr responded to questions on how data are represented on the graphs. He noted that once the map is produced there will be data points at the specific sites that will be color coded to provide an overall view of the basin as a whole and how the sites correlate.

Mr. Lehr reviewed the results for turbidity. The issue concerns identifying background levels. From January through March, there are violations of the 5% to 10% level. It is safe to assume that background levels vary with the seasons but there are insufficient data to reach any conclusions. Mr. Lehr commented on the difficulty of correlating the data without background data. If data are presented there will be some qualification that the data will be interpreted based on identification of the background levels. He said he expected turbidity levels to be higher from October through January when more water is flowing through the system. However, that is not the case as February had the highest level of sediment in the water. Ms. Holbrook-Shaw commented that the most of the rain on snow events occurred in January and February. Mr. Lehr replied the data shows there is no correlation between the mean daily flows and the level of turbidity in the water. Ms. Willis suggested saturation may be a factor to consider. There may be higher water on drier ground with total saturation occurring in February causing an increase in turbidity. Mr. Lehr said the data contradicts other data related to what influences the amount of suspended solids. The graph represents an average across all 83 sites over the sampling period.

Mr. Lehr and members discussed and speculated on the data results and discussed rainfall events, timber activity, impacts from soil saturation, and background levels. Ms. Franklin commented on the breakdown of soils caused by logging that takes approximately five years to unbind and release. Mr. Lehr said for the most part, turbidity is from sediment in the water.

Mr. Lehr reviewed testing results for pH. He said he was surprised at the number of samples testing below the established criteria for pH. There have been pH issues observed at a number of sites around the basin for some time. He explained there can be changes in acidity based on decomposition or reestablishment of conifers as they can modify the soil with acid based root systems as well as different mosses. He noted that even in more pristine environments, acidic levels can occur but that the criteria is the most restrictive window in terms of what the fish need at different times of the year.

Mr. Lehr revised DO levels. Generally, there are several months of low levels of DO. Often, when fecal coliform levels are higher than the standards, a concurrent violation of DO standards occur, which is suggestive of other nutrients affecting the decomposition. Samples reflect depressed levels of DO in November and in some samples in February.

Members discussed sources of fecal coliform and evidence of nitrification and the correlation to DO levels. Mr. Lehr said more nutrients in water create more plants, which die and decompose. As plants decompose, bacteria and fungi absorb DO causing a decrease in levels. There also appears to be a relationship between fecal coliform and low DO levels. Mr. Lehr responded to questions about whether there is a correlation between eutrophic conditions and acidity. He said he has not examined the correlation. Mr. Rountry said DOE is exploring whether water quality violations for pH may be a function of nitrification.

Mr. Lehr reviewed average data trends for individual sites based on the samples collected. Data suggests that there are a few sites that appear to be driving the averages. For fecal coliform, more sites are within the safe zone with a few sites more chronically affected. For DO, the averages are below the minimum criteria with an equal amount or more above the standard necessary to maintain salmonids and Char. The graphs represent data collected from all 83 sites. For pH, violations appeared to be acidic levels. Sampling for temperatures revealed that for the most part, averages are within the safe zone. However,

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samples were only collected once every four weeks. It's difficult to determine whether the results signify water quality violations based on the testing cycle.

Mr. Lehr advised that when fecal coliform was higher than 100 milliliters, 70% of the sites violated DO criteria. When fecal coliform was between 50 and 100 milliliters, approximately 29% of the sites violated DO criteria.

Mr. Lehr said he coded each value for each site based on whether it violated any of one of the parameters. He said he counted the number of water quality violations for each site to aggregate the different parameters to determine whether a water quality violation occurred at each site. The information will be transferred to a map. Assistance will be sought to determine whether water quality at the test sites is healthy, moderately impaired, or impaired. All sites violated at least one of the parameters. Mr. Lehr said the graph represents the total number of data points that violated a water quality parameter at that site. The sites were selected to be above and below the confluence of major stream intersections to enable follow-on source identification testing. Funding enabled the purchase of long-term monitoring probes for testing at strategically located sites to measure water quality samples every 15 minutes to correspond to the one-month samples.

Mr. Lehr displayed a graph showing the healthiest and unhealthiest sites. The most consistent violations involved pH, temperature, DO, and fecal coliform. Mr. Lehr reported the results include a wide range of results with some sites impacted more than others. He noted when he reconfirms the data, he will provide the information to other subcommittees. Mr. Lehr said he will continue examining turbidity and potential sources.

Ms. Willis inquired about the sustainability of fish when water quality levels are compromised. Mr. Lehr replied that another model, EDT (Ecosystems Diagnosis & Treatment) is available that basically is a salmonid life history model providing information on life stage susceptibility.

Ms. Willis noted an environmental group published information about the Chehalis Basin experiencing the best fish population in recent years while studies continue to show the basin is not meeting instream flows. She questioned how instream flows affect fish. Patrick Wiltzius commented that only specific data points are monitored, which are likely not close to any refugee areas. Near the Centralia reach, there's a stratified lake reflecting high temperatures in one area and lower temperatures in another area where the fish are located. Another study could ascertain the number of refugee areas and how many fish are using those areas.

Members complimented Mr. Lehr on the presentation. He invited comments for improving the presentation of the data. Members offered some suggestions for improving and clarifying the presentation of sampling results.

Mr. Lehr solicited comments on the presentation for turbidity. Mr. Rountry suggested presenting the information in the same format in conjunction with an explanation of the data. The most important information is the relevant values and trends among the stations.

Mr. Rountry asked at what point, data from other studies will be consolidated with the data. Mr. Lehr explained other study data must meet approved standards. It may not be possible to consolidate all study data. Consolidation is also dependent upon approval from DOE. If there is a mechanism to include other data and if approved, Mr. Lehr said he will include data from other studies.

**Update and Discussion – Chehalis Basin Water Resources Survey**

Mr. Lehr distributed the original and updated version of the survey. After the last meeting, subcommittee input was integrated in the survey, which was then provided to a behavioral sociologist who specializes in research efforts, who reviewed the survey with a survey department for improvements and suggested changes. Major suggestions include moving away from a numeric ranking scale to a verbal description. Some questions were combined. Language was reviewed to ascertain how well it would appeal to a broad segment of the public. Another suggestion was moving the demographic questions to the end of the survey as it makes people feel less intimidated about filling out the information. He asked members to e-mail suggestions to him and to consider other options for questions #45 - #53 in terms of actions an individual can do to have an impact on water resources.

**Follow Up Discussion on TMDL DIP Status Report Regarding Actual Implementation and Gaps**

Mr. Rountry said the discussion is a follow up on conversations occurring over the last eight months for tracking implementation activities for water quality improvement activities. The goal is to track those activities implemented from the Detailed Clean-up Plan the committee helped author several years ago.

Mr. Rountry referred to questions about TMDL. TMDL is an acronym for Total Maximum Daily Load or the amount of pollution a water body can assimilate and still meet standards or expected beneficial uses. TMDL is a regulatory program. In the 2004 Detailed Implementation & Cleanup Plan, the plan calls for the committee to meet within a year and discuss the status of all activities implemented. As it has been over two years, Mr. Rountry said there is an obligation to pursue the directive.

A more comprehensive review of activities implemented across the watershed could be undertaken whether they have to do with a specific TMDL limits or something specific in the plan. Everyone is interested in knowing what work is occurring to determine if conditions are improving and what other priorities should be identified or how should the response to water pollution be adapted based on improvements occurring in one area or problems discovered in other areas. The Partnership continues to seek funding from the Legislature to continue its work. It would be beneficial to show some progress.

Mr. Rountry said he wasn't able to touch base with Ms. Napier but in the interest of the committees, Ms. Napier was going to use Plan 2 Fund software as a format for structuring a review and as a way to account for activities implemented. It will likely take some time to undertake the work. For the initial accounting of TMDL implementation activities, Mr. Rountry suggested the committee should move forward by using the table within the implementation plan and review the list of activities that have occurred, remains to be completed, and obstacles for implementation – whether funding, programmatic, or landowner acceptance issues. Mr. Rountry said he needs to meet with the committee and use the plan as the forum for inviting all contributing players to work on the issue.

Mr. Wiltzius said a list should be developed and RSVPs obtained for confirming attendance at the meeting. Ms. Franklin suggested scheduling the meeting in September after summer. The table could be e-mailed in advance so that members can begin research.

Mr. Lehr offered that a map of the projects could also be produced showing the results.

Members agreed to schedule a September meeting focused on documenting implementation activities.

*Mr. Wiltzius left the meeting.*

**Other Business**

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Mr. Rountry reported on a DOE Financial Assistance Workshop in the southwest region to assist people in preparing competitive grant applications prior to the next grant cycle in September. The workshop is held at several locations throughout the state to assist in preparation of the grant applications and to announce any changes in rules and eligibility requirements. The southwest region is the only region offering a hands-on workshop on a project basis. The workshops are scheduled June 19 and 21 from 9:00 a.m. to noon at the Lacey Community Center. He asked members interested in attending to RSVP as soon as possible.

Ms. Willis thanked Ms. West and Ms. Justin for their work and presentation.

Ms. Willis reported the next meeting is scheduled for July 19, 2007 at 9:30 a.m. However, it is likely the meeting will be canceled.

**Adjournment**

There being no further business, Ms. Willis adjourned the meeting at 12:11 p.m.

Prepared by: Valerie Gow, Recording Secretary  
Puget Sound Meeting Services