WILLOWMOOR FLOODPLAIN RESTORATION PROJECT
STAKEHOLDER ADVISORY COMMITTEE

King County

KING COUNTY FLOOD CONTROL DISTRICT

Meeting #2: September 25, 2013

--Meeting Report--

SAC Members Present:
Paul Bucich, City of Bellevue
Anne Corley, Sammamish Rowing Association
Paul Fendt, Member At-Large
Dave Garland (for Heather Khan), Washington Department of Ecology
Greg Helland (for Michael Hobbs), Friends of Marymoor Park
Charles Ifft, U.S. Army Corps of Engineers
Jim Mackey, Member At-Large
Peter Marshall, Eastside Audubon
Dwight K. Martin, Sammamish Home Owners
Nancy Meyers, Member At-Large
Martin Nizlek, Washington Sensible Shorelines Association
Gilbert Pauley, Member At-Large
Jon Spangler, City of Redmond
Joe Thumma, JB Instant Lawn
Jim Trockel, Serve Our Dog Areas
Bill Way, Member At-Large
Susan Wilkins, Member At-Large
Jason Wilkinson, WRIA 8 Salmon Recovery Council

Project Team Staff and Consultants
Kate Akyuz, King County
Roger Dane, City of Redmond
John Engel, King County
Craig Garric, King County

Todd Bennett, NHC Consultants
Patty Dillon, NHC Consultants

Margaret Norton-Arnold, Committee Facilitator
Fala Frazier, Committee Administrator

Observers
Rory Crispin
Jeff McMorris
Scott Scheffield

Meeting Overview and Announcements
Margaret welcomed everyone and explained that the primary focus of the meeting was on the hydrology and hydraulics (H&H) associated with the Transition Zone and its interaction with both Lake Sammamish and the Sammamish River.

The October 23 SAC meeting has been moved to November 13. John Engel introduced himself; he is King County's Supervising Engineer for the Cedar/Sammamish Watersheds, and has oversight responsibility for the Willowmoor project. Kate Akyuz is working on a Frequently-Asked-Questions sheet for the project, which will be finalized and distributed to members in the next several weeks.

Member Reports

A number of SAC members had participated in a kayak and/or walking tour of the project area. Jim Mackey led the kayak tour and provided a summary video and report of that expedition. Michael Hobbs led the walking tour; those who had participated in that event expressed their thanks to Michael and were enthusiastic about the learning that had occurred.

Update: Maintenance in the Transition Zone

Kate provided members with an update on recent Transition Zone maintenance and historic maintenance costs. In addition to mowing and trimming, in 2013 sediment removal, as well as a pilot project on hand removal of the elodea, were completed. Maintenance costs have increased in recent years due to the need for more intensive permitting, monitoring, and mitigation efforts. King County is currently monitoring flow, water surface elevations, and water quality to evaluate maintenance effects. The pilot elodea removal project was costly and the County may use machine-removal methods in the future depending on overall environmental and economic effectiveness. Kate's presentation will be posted to the project website.

One committee member suggested that it would be helpful to see the various maintenance costs broken out by type: mowing vs. sediment removal vs. elodea removal, for example. A table with a detailed cost breakdown will be provided either in the FAQs or paper copy at the next meeting. In response to another question, Kate said that the County has not pursued sediment removal in the lower half of the Transition Zone because modeling had indicated that 80% of the benefits of sediment removal would be realized by concentrating this effort in the upper half of the Transition Zone. Following the sediment removal action a beaver dam was created half-way down the transition zone. King County anticipates that winter flows might naturally remove the dam and will be monitoring this situation.

Kate also emphasized that one of the primary goals of the Willowmoor project is to reduce maintenance costs for flood benefits to a more sustainable level over the long term.

Presentation and Discussion: Hydrology and Hydraulics

Patty Dillon and Todd Bennett from Northwest Hydraulic Consultants (NHC) provided members with introductory presentations on hydrologic and hydraulic concepts related to the Willowmoor project, followed by a presentation and discussion of methods, findings and recommendations from a Phase 1 Hydrologic Study. The report is currently being finalized by NHC and will be made available to members once the final report has been reviewed and approved by the County and the Flood Control District. The NHC presentation will be posted to the project website.

In comparing current hydrologic conditions to those used to design the original project in the early 1960's, NHC reported the following results based on current flow records (1966 – 2013):

- 10-year annual flood = 2,100 cfs
- 40-year spring flood = 1,960 cfs
- 1,500 cfs equates to approximately a 3-year event

Despite the increase in the 10-year flood, the Sammamish River channel continues to meet the downstream flood control objectives established when the weir was first constructed in 1964.

NHC explored several factors that could be contributing to this increase in flow magnitudes, including climate change, development in the contributing watershed, and statistical sample size. To date, however, it appears that these changes are most likely attributable to the effects of implementing the river scale flood control project in 1964, which included significant deepening of the river channel, and construction of the Transition Zone and weir.

NHC also examined trends in lake levels since the implementation of the Corps project. They presented work completed previously by King County that showed significant increases in days with lake levels between 27 and 28.5 feet (NGVD 29 datum) since project construction. Using hydrographs of lake level and streamflow data, NHC discussed possible relationships between high lake levels and other hydrologic and hydraulic factors, including Issaquah Creek inflows and peak Bear Creek flows causing backwater effects on the weir.

NHC also noted that in 1998 the Transition Zone weir was modified, primarily to improve fish passage. A narrow low-flow notch was constructed at the midpoint of the weir, and the remaining crest of the weir was raised and leveled. Lake level data suggest that summer water levels have gone up since the 1998 weir modifications. However, additional analysis is needed to determine whether the increasing trends King County found in days with lake levels exceeding 27-28 feet (NGVD datum) are truly a long-term trend or a shift related to the modified weir.

NHC wrapped up their presentation by discussing next steps in hydrologic and hydraulic analysis for the Willowmoor project, including a recognition of the need to balance lake level control for both summer minimums and winter/spring highs with ensuring downstream flood control. This, in turn, drives the need to establish appropriate hydrologic and hydraulic design criteria, such as design flows and potential future changes in hydrology, to inform the development and selection of design alternatives.

Members asked questions and engaged in discussion:

Q: Could the uptick we are seeing be a function of more precipitation? And might this be representative of a "new normal?"
A: Weather variability could be part of it, but we can't tease that out today or for our upcoming report. We do know that the last 10-15 years have been wetter than the 10-15 years before that. We might see some specific trends as we continue to look more closely at the past decade.

Q: It looks like there have been increasing incidents in the lake levels reaching 27.5 feet, but no significant increases in lake levels up to 28.5-29?
A: Yes. We're not seeing very many extreme high water events. Lake levels currently exceed 29 feet at approximately a five-year recurrence rate.

Q: I'd like to understand the changes made to the weir in 1998 and the conditions that were in place before that. A lot of that seems to have been done for fish benefit. It would be good to get a copy of those original

documents. The summer levels in the lake seem to be holding; we saw very little drop in the lake level this year even with our low levels of precipitation. What would it mean to maintain summer lake levels?
A: We haven't established our design objectives for the project yet, but we could consider that as a possibility.

Q: How sensitive are the hydrographs to development in the basin? It looks like a lot of development over time hasn't translated into major changes in the hydrograph. Does that mean that development doesn't have many effects, or that the model is insensitive to those changes?
A: We haven't done the analysis yet to fully determine the effects of development. We have to calibrate the hydrologic models a little bit more to do that. For now though, it looks like the primary drivers for increases in lake levels/flows have to do with the timing and amount of the water coming in from Issaquah Creek and the other tributaries, in combination with the design and maintenance of the weir and Transition Zone. The volume of water from impervious surfaces might be having an effect, but we haven't quantified that yet.

Comment: Lake Sammamish residents are concerned about potential changes in the ordinary high water mark. Even a lake level increase of one foot can mean a shift of the water line onto our properties. I appreciate the data you are presenting here, and the very scientific approach you are taking to this. Thank you.

Next Steps: NHC will use the data and analysis results generated to-date to continue their analysis, creating as accurate a picture as possible of the existing conditions in both the lake and the river. The goal is to understand what is happening now and forecast what may happen in the future, in order to create design objectives for the Willowmoor project that can best address those conditions. Committee members can expect to hear more about this as we get deeper into the design objectives and project alternatives.

Public Comment

The numbers you are using for Bear Creek come from the 1962 Corps of Engineers design memo. In between that time and 1965, they changed the geometry of the Transition Zone, which went from 1200 to 1500 cfs. Bear Creek increased from 300-690 cfs.

Q: When was the last time anyone surveyed to verify that channel dimensions are correct? Would a blockage in front of the weir (i.e. cat tails) affect flows going into the Transition Zone?
A: We last surveyed Lake Washington to Lake Sammamish in 2009. And yes, vegetation upstream of the weir will affect the hydraulics of the lake system.

Q: When the notch was put into the weir in 1998, how much did that change flow levels? Did it diminish flow capabilities?
A: The weir was raised in the middle, not on the sides, and was designed to ensure adequate flow levels to help control flooding.

Project Design Objectives

Craig described some draft examples of design objectives that had been developed for committee discussion. In addition to the broader project goals, the design objectives are meant to measure and evaluate the potential performance of each of the project alternatives. These design objectives should be as "concrete" as possible; tangible measures that will enable both the County and the committee to compare and contrast among the various alternatives. Craig also explained that the design objectives need to be established with respect to reasonable project boundaries, as the project cannot be expected to address problems outside its purview. As an example, he suggested that while excessive sedimentation from tributaries and high fecal coliform levels may be problematic in the upper Sammamish River and Transition Zone, resolving these issues is well outside the scope of the project.

Margaret gave committee members a homework assignment to review the examples and add their own thoughts for what they would like to see measured and evaluated through the design objectives. These will continue to be refined over time, and will be modified as the County and the committee learn more about both the hydrology and hydraulics and the existing environmental conditions in the Willowmoor project area.

Next Meeting

The next meeting of the Willowmoor Stakeholder Advisory Committee is scheduled for Wednesday, November 13 from 4:00-7:00 p.m. The County's consultant team will attend that meeting to present and discuss information about the existing water quality and fish habitat conditions in the Transition Zone. In addition, the committee will continue to work on the design objectives.