

OAKS BOTTOM WETLAND WORKSHOP

WORKSHOP SUMMARY
November 2, 2007

Workshop Attendees

Alicia Rawlins, BES	Krey Price, TetraTech
Anne Nelson, BES	Libby Smith, EnviroIssues
Blair Bean, BES	Lynn Barlow, BES
Bob Sallinger, Audubon	Mark Wilson, Parks
Cindy Studebaker, BES	Merri Martz, TetraTech
Claire Puchy, BES	Mike Houck, Urban Green Spaces Institute
Dave McAllister, Parks	Mike Rosen, BES
David Turner, Multnomah County, Vector Control	Mischa Connine, Oregon Dept of Fish & Wildlife
Deborah Lev, Parks	Paul Ketcham, BES
Greg Savage, BES	Ralph Rogers, EPA
Jennifer Goodridge, BES	Ry Thompson, BES
John Reed, Parks	Ryan Orth, EnviroIssues
Josh Cerra, Friends of Oaks Bottom	Scott Clement, BES
Josh Henman, Multnomah County, Vector Control	Sean Bistoff, BES
Julie Wilson, EnviroIssues	Steve Bricker, Parks
Kathleen Murrin, Parks	Sue Thomas, Parks
Kaitlin Lovell, BES	Travis Williams, Willamette Riverkeeper

Welcome, Introductions, Agenda Overview, and Goals of the Workshop

(Julie Wilson, EnviroIssues)

Facilitator Julie Wilson welcomed participants to the Oaks Bottom Wetland Workshop. There are three broad goals for today's session:

- to review the goals set out in the 1988 Coordinated Resource Management Plan (CRMP), with particular emphasis on the swamp wetland, emergent wetland, and the Willamette River riparian area;
- to discuss the proposed first phase of the joint BES-Parks project on this site; and
- to review the proposed culvert/off-channel habitat enhancement project relative to the CRMP goals.

The first portion of the meeting will include a presentation from various Parks staff on site background, the CRMP, and current practices at Oaks Bottom. Following that, BES staff will discuss the elements of Phase I of the proposed project (culvert replacement and off-channel habitat enhancement), including three short presentations on the areas potentially affected: water levels, vegetation communities, and wildlife species.

Workshop participants will then break out into small groups to discuss desired future conditions at the site. The groups will report back to the large group and, after lunch, discuss any conclusions reached about desired future conditions and determine whether there is compatibility between what the group wants to achieve at the site and what the project will be able to do. The meeting will conclude with a summary of the day's discussions and proposed next steps.

Oaks Bottom Site and Management Goals

(Kathleen Murrin, Deborah Lev, Marks Wilson, and Steve Bricker, Parks)

Site Background

Kathleen Murrin provided background on the Oaks Bottom Wildlife Refuge. Portland Parks and Recreation has management responsibility for Oaks Bottom, but also “co-manages” the site with its several partners. A number of the site partners met last July to discuss an update on the proposed wetland and off-channel habitat enhancement project. The group at that time recognized a need for regular meetings of the partners to discuss issues and status of management direction. There are some substantive issues to address at the site and this meeting is serving the need to bring interested partners together for discussion.

Deborah Lev provided some historical and ecological context on the Oaks Bottom Wildlife Refuge. The CRMP was developed in 1988 by several interested groups in a movement to protect the site for resource values and provide access to nature for people in a way that minimized disturbance to the site. At that time, Parks managed shallow water wetlands as habitat for birds and vegetation, while also working with Multnomah County Vector Control to manage the mosquito population through use of the water control structure. Mike Houck, who was recruited as a graduate student at PSU in 1970 to work on Oaks Bottom protection, added that it was important to keep in mind the historical context of Oaks Bottom as well. In fact, the city of Portland and Portland Parks and Recreation had planned to fill in Oaks Bottom in the mid to late 1960s and into the early 1980s. There were plans to put the Children’s Museum, Locomotive Museum, soccer and baseball fields in Oaks Bottom after filling was completed. Today’s meeting is evidence that attitudes toward the role of natural areas in general and Oaks Bottom specifically has changed dramatically in the intervening almost forty years. The CRMP was a response to that historical fact and that Multnomah County had separately proposed to drain the area in 1988 to address mosquito control issues. The CRMP should be understood as a macro-level management plan. The Harza study went into further detail about site conditions and needs and is a good step in the direction of updating the plan.

Since 1988 and the development of the CRMP, Parks has changed the ways in which it manages its sites to be more focused on ecosystem management to achieve desired future conditions. After fish were listed under ESA, City Council wanted to go beyond compliance to the recovery of fish species. The City identified areas where they thought they could achieve greatest benefit for fish and Oaks Bottom was one of those sites. The City contracted with Harza to evaluate ecosystem management and potential projects at Oaks Bottom, given the multiple desired benefits, including enhanced habitat for fish and wildlife, passive recreation, and vector control.

The City reviewed the list of potential projects that Harza identified in its study and considered those that had greatest the multiple benefits, including revegetation, invasives control, ponds for fish and wildlife habitat, and improving oak savannah. One of the projects identified in this study involved replacing the existing culvert to alleviate potential liability with the entrapment of listed fish species when there is overflooding at the site. The existing culvert is high enough that it is left dry at times. It was recognized then that lowering the culvert would make it passable for fish and provide a winter refuge.

In 2002, Parks entered into a partnership with the US Army Corps of Engineers (USACE). Funding was made available through Section 206 of the Water Resources Development Act to conduct a study to determine the feasibility of an aquatic ecosystem restoration project at the site. Unfortunately, funding was halted before the feasibility study could be completed. However, there has been continued interest in pursuing site restoration and the project has progressed.

The evaluation of existing and potentially outdated management plans is a Parks priority. In an ideal world, Parks and BES wouldn’t be discussing plan updates in the context of a particular project. However, the bureaus are now on a path towards a project and are hoping to address the plan as it addresses specific project issues. At the same time, Parks also recognizes the multiple opportunities to enhance fish habitat within the south reach of the Willamette River. The project opportunity at Oaks Bottom cannot be fully understood without considering the adjacent areas and habitat connections.

Kathleen added that the CRMP comprises the current existing guidance for management of the site's ecosystem. While the goals and objectives in the CRMP need to be updated, they do address the challenge of balancing ecosystem health and passive recreational use, as well as vector control. Two specific questions for the group to consider about a CRMP update include:

- Should we look for a stronger hydrologic connection at the site than we have now?
- How much open water is needed to support our wildlife goals?

Site Management

Mark Wilson and Steve Bricker discussed current site practices at the Oaks Bottom Wildlife Refuge. Mark explained that he and Steve are responsible for the day-to-day management of the site, as well as site planning and implementing the CRMP. The purpose of this background information is to relay what has changed since 1988 relative to the three habitats of interest for today's workshop: the swamp wetland, emergent wetland, and the Willamette River riparian area.

Steve Bricker, who was foreman of the Westmorland District in 1988, provided site management history. In 1988 there was no natural resources component of the Parks program. However, by the time a water control structure was installed at the site in September 1991, Parks had begun to adopt a natural resources approach to site management. A Water Control Advisory Committee was appointed to provide guidance on water levels and the water control structure was utilized to manage willow encroachment and purple loosestrife. Water levels were elevated at the site from 1991 throughout most of 1993.

Ralph Rogers completed a Master's thesis on the water level schedule at Oaks Bottom and a Coordinated Resource Management Group was convened in 1994 to oversee the implementation of a refined water control regime. The proposed schedule was designed to control nuisance vegetation, as well as the mosquito population. In general, good control was maintained at the site, however, the water control structure was easily vandalized and there were times where the structure was not on-schedule due to the removal of the flash boards. Purple loosestrife eventually proliferated, due to the water being drawn down. Efforts to manage the purple loosestrife with a beetle release in 1994 and a spray application in 1998 and were both unsuccessful. Then, with the emergence of West Nile Virus and a shift in focus from the floodplain mosquito species to a suite of species called summer mosquito, a different water level schedule was required.

There are continued challenges to implement the CRMP for invasives control, while also controlling the mosquito population. Invasives such as purple loosestrife and reed canary grass both have active populations at the site. Ralph Rogers commented that properly managed, the water control structure would be effective at managing invasive species. Mike Houck asked whether Multnomah County Vector Control has "veto power" over proposed natural resource enhancements. Multnomah County's Dave Turner responded that Vector Control does not view themselves in an oversight role but wants others to recognize that the program has a responsibility to manage the site based on vector control thresholds. Turner stated explicitly that Multnomah County Vector Control does not have "veto power" over Oaks Bottom management nor do concerns over West Nile Virus drive management objectives.

Overview of Phase I Project

(Scott Clement, Jennifer Goodridge, Claire Puchy, BES)

Phase I Project Elements and Objectives

Scott Clement presented the proposed Phase I project objectives and elements. These objectives and elements originated from a feasibility study conducted by the City of Portland and the USACE to recommend a restoration plan for Oaks Bottom. The restoration plan had 15 separate components from which 6 were selected for implementation and were grouped into three construction phases. These included the following basic project activities:

- Phase 1
 - Replace culvert and hydrologically reconnect Oaks Bottom to the Willamette River

- Modify water control structure as necessary to reduce stranding potential
- Restore tidal slough channels
- Restore surrounding 15-acres of Palustrine wetland and riparian habitat
- Phase 2.
 - Remove water control structure
 - Install step weirs in channel to reservoir
 - Restore surrounding Palustrine wetland and riparian habitat
- Phase 3.
 - Create ponds and islands in approximately 4.0 acres reservoir habitat
 - Restore surrounding 27-acres reservoir and ponds with native vegetation

The current proposal is to implement Phase I. This includes the following five project objectives:

1. Create viable access corridor for juvenile salmon into Oaks Bottom
2. Restore salmonid refuge, rearing habitat & wildlife habitat
3. Reduce the potential for fish stranding following high Willamette River flow events
4. Remove non-native invasive species and revegetate with a diverse mix of native plants species.
5. Community Involvement

To achieve these objectives, the proposal includes the following five project elements:

1. New culvert crossing under the Springwater Trail & Oregon Railroad (replacement of existing 5-foot culvert with a 12-foot box culvert)
2. Removal of existing water control structure and construction of log weirs and a new water control structure, from a cedar bole, at new location much closer to reservoir
3. Slough channel excavation for salmonid rearing season habitat (75% inundation October-mid-July)
4. Slough channel clear & grub for OHW connectivity to ponds to the north
5. Riparian & wetland vegetative restoration & invasive species management addition of habitat diversity & complexity

Scott noted that the proposed project elements include one aspect of the original Phase II, in the replacement of the water control structure. Deb added that the project team originally believed they could carry-out Phase I as it was described in the City-USACE study, but later believed the project not feasible without the replacement water control option.

Ralph Rogers asked about the extent to which there is a commitment to this overall phased path once BES and Parks have begun with Phase I. Scott replied that if the City is successful in Phase I, there will be momentum for the other phases of the core study, but at this point only Phase I is proposed. A discussion of long-term site maintenance and management will influence further proposed site improvements.

Josh Cerra asked how critical clearing and grubbing are to achieve the targeted 75% inundation during the salmonid rearing season. Scott replied that the clearing and grubbing will remove approximately 12 inches of soil and will achieve OHW connectivity to help avoid the entrapment issue. Cindy Studebaker added that the area of clear and grub is along a historic side-channel.

Merri Martz commented that the timing and phasing around the water control structure remains an open issue. The BES/USACE feasibility study identified several options for replacing or modifying the structure. While entrapment is an issue at the moment, the overall solution is subject to debate.

Dave McAllister commented that an ODFW study found that there are other in-channel opportunities for fish habitat enhancement in the area. In light of this information, is Oaks Bottom the best place to focus enhancement efforts? Is there a known population associated with this area? Scott replied that Oaks Bottom is one of the last tidally-influenced off-channel opportunities along the Willamette River in the City.

Historical Information

Scott presented a series of aerial photos of the Oaks Bottom Wildlife Refuge area to illustrate site conditions and changes over time. These included:

- 1851- vegetation mapping
- 1936- high-water conditions; the railroad berm is constructed by this time
- 1939- an off-channel meander bend is visible
- 1942- low summer flow; no standing water; meander bend appears to have been cut-off
- 1955- channels entering reservoir from east slope
- 1961- oxbow near the culvert outlet appears to be cut-off
- 1972- low flow condition; willows encroaching; motorcycle racetrack; south landfill is apparent
- 1989- reservoir at low level; evidence of recent high water; flooding is result of a beaver dam
- 1996- approximate 100 year flood event; south and north fill are just above the water level

Phase I—Potential Site Effects

The group discussed the potential effects of proposed project activities. Scott reported that without the proposed project, there will not be inundation sufficient to reach the 75% target for salmonid habitat during the rearing season. Only approximately 30 feet up to the water control structure would be available for rearing habitat. With the removal of the water control structure, channel excavation to the south reservoir, and clearing and grubbing, the site would achieve 1500 lineal feet of salmon rearing habitat that meets the 75% inundation target as well as reducing stranding in the clear and grub area.

The group received several technical presentations addressing areas that could potentially be affected by the project, including water levels and terrestrial vegetation and wildlife.

Water Levels

Scott introduced several factors related to water levels at the site. If the water control structure is removed and slough excavation is performed, there is the potential that water levels at the site will drop by as much as 6 feet, with impacts to the wetland and groundwater. No conclusions have been reached as to the extent of these potential impacts, but several staff gauges and piezometers were recently installed to gather hydraulic data that will be useful in defining these potential impacts. The current water control structure allows for six feet of manipulation at the site and the proposed replacement water control structure and weirs would limit the range of water level manipulation to approximately three feet. Although the range of the replacement structure is more limited, the elevation of the structure could be determined by existing and desired vegetation types in the reservoir.

Jennifer Goodridge provided an overview of existing and potential water levels at the site through a series of maps with aerial photo overlay displaying achievable high and low water levels:

The first map displayed current site conditions. The emergent marsh has an area of 42 acres with an average of 17 acres of open water. The majority of the marsh area is covered in winter with a draw-down in the summer to the level indicated with a blue line. An orange line indicates the low-water condition. The current inundation levels are a result of no water control, with all flash boards pulled from the water control structure. Mark Wilson added that a small amount of site bathymetry is available, based on pole measurements. These readings indicate a 1.5 meter minimum in the average water level, with a 3-4 meter maximum in the winter months.

The second map illustrated the elevation of water that could be achieved with the proposed water control structure, placed at an elevation of 11 feet. The structure at this elevation would create approximately 33 acres of open water. The map displayed an orange line for the water level if drawn down to its minimum. This replacement water control structure has the potential to contribute to an eventual scrub-shrub habitat of approximately 26 acres. Slightly lower levels could be maintained at first to allow the emergence of that community to the area. The reservoir would continue to experience fluctuation, with summer lows and winter highs.

The third map showed a scenario at the site with no water control structure. Overall, the site would experience lower water levels. The achievable scrub-shrub habitat would be 14 acres in area. The winter high open water area would be 28 acres and the summer low open water area would be just 4 acres. However, it is unlikely that the 4-acre level would occur, as beaver damming would prevent this condition.

Mark Wilson commented that the site currently has active beaver management and that Multnomah County Vector Control periodically removes the beaver dam. Ralph Rogers commented that the beaver has a place at the site and estimated that in the past with beaver dams in-place, the pool minimum was at 7 feet. Ralph added that without a water control structure, the willow will eventually encroach, returning the site to the condition experienced before the current water control structure was installed. Wildlife managers are needed at the site to control a schedule of variable, artificial hydrologic conditions. Deb commented that the 1996 floods brought in a lot of sediment to the site and wondered if this sedimentation would affect the potential of an emergent scrub-shrub habitat. Ralph commented that both wapato and bulrush were observed at the site before the flood, which are deep water species; after the flood these species are not present.

Greg Savage asked about the extent of contamination at the site. Merri Martz responded that the wetland slough area is contaminated, but not necessarily more so than the reservoir. A level one report is currently under review by the Regional Sediment Evaluation Team as part of the COE permitting process

Vegetation & Wildlife Communities

Claire Puchy presented on the terrestrial aspects of the site and potential impacts from project activities. The City has been working on a citywide Terrestrial Ecology Enhancement Strategy (TEES) for incorporation to the Portland Watershed Management Plan. Through this exercise, Oaks Bottom was identified as a significant "anchor habitat" for terrestrial species. The TEES group has not made any site-specific recommendations for Oaks Bottom at this point, but has developed habitat type and species associations, using the Johnson and O'Neil habitat classifications. A number of "special status" species¹ were identified by relating these habitat associations to the habitats identified in the CRMP and are presented in a list, by habitat type. The bat species listed are based on a survey in the area completed by Matt Perkins at PSU. A more complete bird list is also available. Claire commented that the TEES group would appreciate any additions or clarifications to these species lists to make them as accurate as possible.

Dave McAllister commented that there are multiple opportunities for terrestrial habitat enhancement in the south reach of the Willamette River and asked if there is an emphasis at Oaks Bottom on terrestrial enhancement elements that are being missed at other sites across the city or that are not available at these other sites. Deborah commented that of the special status habitats represented at the Oaks Bottom site, riparian forest habitat is a unique opportunity. Mark added that westside grasslands are in short supply.

Mike Houck commented that habitats on the west side of the Willamette are not delineated in the species lists and the proposed future condition for Ross Island, shallow water and emergent wetland habitat, are not represented. Better opportunities for fish habitat restoration than what is proposed at Oaks Bottom may be present in the area. Houck also noted that this issue was a key theme in the Harza work on Oaks Bottom, noting that any management scenarios for Oaks Bottom should be integrated with other sites in this reach of the Willamette and the Ross Island-Holgate Channel complex. Mark Wilson commented that there are two active BES projects in the south reach of the Willamette River, including at the mouth of Stevens Creek and at Powers Marine Park.

Mark Wilson brought attention to the fact that the species list does not consider the critical land mass or home range required by various species; for example, a nesting pair of western meadowlarks requires 200-300 acres of habitat in order to be functional. This raises questions about the types of habitat and species that can be supported through restoration and maintenance at Oaks Bottom.

Break Out Groups: Focus on Desired Future Ecological Conditions

¹ Per the provided handout "Special Status Species" is a City term that includes wildlife species that are officially listed by the U.S. Fish and Wildlife Service (Candidate, Threatened, Endangered, Species of Concern), ODFW (Threatened, Endangered, State Sensitive, State Strategy), Oregon Natural Heritage Information Center (Ranked or Listed), Oregon Watershed Enhancement Board (Priority), Partners In Flight (Focal Species), or the Northwest Power and Conservation Council Willamette Basin Subbasin Plan (Focal Species).

Three break out groups were formed to discuss desired future ecological conditions for multiple site goals, how to best balance these goals, and, in light of their recommendations, priorities for updating the CRMP. The break out groups focused on the following six topical areas:

- Community recreation
- Invasive species
- Migratory birds
- Open water
- Vector control
- Wildlife/off-channel habitat

Group I

Kathleen Murrin reported on the discussion of the first break-out group. The group was able to identify desired future conditions for each of the six goal areas. Furthermore, the group came to consensus on a priority amongst these items:

Goal Area	Desired Future Conditions
1. Wildlife/off-channel habitat	<ul style="list-style-type: none"> ▪ Increase shrub-scrub habitat by two to three times ▪ Increase off-channel fish rearing habitat ▪ Improve hydrologic connection to Willamette River ▪ Increase the levels of functional habitat
2. Migratory Birds	<ul style="list-style-type: none"> ▪ Increase habitat diversity to support migratory bird populations
3. Invasives	<ul style="list-style-type: none"> ▪ Decrease invasive populations ▪ Increase native plant populations
4. Open Water	<ul style="list-style-type: none"> ▪ Increase open water area
5. Vector Control	<ul style="list-style-type: none"> ▪ Balance vector control with desired natural resource conditions
6. Community Recreation	<ul style="list-style-type: none"> ▪ Preserve natural resource conditions

In addition, the group identified several “drivers” that they felt must be considered along with these desired future conditions. These included the following:

- A commitment to adaptive management and flexibility.
- Active site management and ecological expertise.
- The use of a water control structure.
- Recognition that all goals are important.
- Community involvement.
- Development of a management plan in conjunction with Ross Island, Westhill, and Holgate Channel.

The group added that while vector control was recognized as an important goal for the site, it was not seen as a management driver.

Group II

Ryan Orth reported on the discussion of the second break-out group. The group spent the majority of their time discussing the tradeoffs between the different goal areas, and did not come to formal consensus on general desired future conditions. There were, however, some themes that emerged from the conversation related to each of the goal areas.

Goal Area	Discussion of Desired Future Conditions
Community Recreation	<ul style="list-style-type: none"> ▪ Given the interest in limiting human disturbance, it is important to focus on education and stewardship opportunities.
Invasives	<ul style="list-style-type: none"> ▪ Maintenance of invasives to allow for emergent shrub-scrub wetland; active site management with as limited input of maintenance as is feasible.
Migratory Birds	<ul style="list-style-type: none"> ▪ Riparian areas are beneficial for migratory songbirds and should

	be maintained and/or enhanced.
Open Water	<ul style="list-style-type: none"> Increased open water area is desirable, with seasonal control for management of invasives, as well as provision of habitat for species guilds throughout the year.
Vector Control	<ul style="list-style-type: none"> Vector control is necessary to balance public health management goals.
Wildlife/off-channel habitat	<ul style="list-style-type: none"> There are few opportunities for off-channel habitat in the area. Access to the area for salmonid rearing may change the nature of the existing wetlands.

Group III

Bob Sallinger reported on the discussion of the third break-out group. Issues discussed by the group included the following:

Goal Area	Discussion of Desired Future Conditions
Community Recreation	<ul style="list-style-type: none"> Open water creates views, an opportunity to see wildlife, and can help abate human encroachment.
Invasives	<ul style="list-style-type: none"> Active site management is needed Use of water control structure to control invasives.
Migratory Birds	<ul style="list-style-type: none"> Importance of mudflat habitat in the fall.
Open Water	<ul style="list-style-type: none"> Water control: More control vs. less control and concerns about vandalism and maintenance of the water control structure.
Vector Control	<ul style="list-style-type: none"> Site management should not be driven by vector control. Increased bat and bird populations may help with vector control, but would likely not be a major driver. Control of the water area may have impacts on the need to hand or aerial spray the site. A more natural hydrologic regime may help to control the mosquito population.
Wildlife/off-channel habitat	<ul style="list-style-type: none"> Whether or not to enhance habitat for fish, as doing so may mean a compromise of other priorities. Mudflats and scrub/shrub habitat: potential to control water level and create mudflats in the fall when birds are migrating through and then flood the area in the spring to control invasives. The extent of contamination- how big of an issue is it?

Matching Project Goals to Site Goals

(Scott Clement, BES)

The group discussed Phase I project goals and elements. These included the following:

- Revegetation
- Box culvert
- Clearing and grubbing
- Water control structure
- Deep excavation
- Bole installation

Revegetation

The proposed project includes revegetation and active management of the site, adding native plant species for species complexity and diversity.

The group discussed their views on achievable revegetation results. Mark Wilson commented that a tree-shrub community is achievable, but a native herbaceous ground layer is unlikely to successfully establish itself in the presence of reed canary grass and purple loosestrife, which are both difficult and expensive to manage. David Turner referenced Sandy River Delta reed canary grass control efforts that have been successful, albeit very intensive and expensive. Lynn Barlow commented that the BES revegetation team considers reed canary grass to require long-term management and that the establishment of woody plants is the first step in that scenario. Ry Thompson asked how effective shading could be at controlling reed canary grass; *Cornus* (dogwood) is present on the site and may be a source of shade. Mark and Lynn responded with the belief that even with shading, reed canary grass would re-encroach on the area.

With respect to purple loosestrife, water levels were used successfully to control this invasive species in 1992, when the Oaks Bottom site was flooded from January through mid-August. Mark commented that part of the difficulty in using water as a control is that this species has a wide tolerance for water levels and that the effect of flooding was to push the community further upland, where it has now established itself. If water control is used, one approach would be to select a native revegetation species that corresponds with the desired hydrology. Josh Cerra added that there may be a seasonal temporal intersection where an appropriate native plant could be introduced that will be competitive with purple loosestrife and allow for mudflat shorebird habitat in the spring. Ralph Rogers commented that if favorable conditions for purple loosestrife-eating invertebrates can be established, this may be a control option. The previous attempt to control purple loosestrife with beetles was compromised by flooding of the area. Mark commented that one issue that would need to be resolved before using invertebrate control measures is a mechanism to encourage beetle migration upland in the fall season to ensure their survival.

Mike Houck asked how the approach to managing invasives would be affected if a significant draw-down of water occurred due to other project elements. Scott responded that piezometer data gathered over the next few months would inform a discussion of potential hydrological impacts of proposed project activities and the corresponding approach to invasives management.

Clearing and Grubbing

The group discussed proposed clearing and grubbing of the area of the historic slough channel to maintain ordinary high water connectivity to the ponds at the northern portion of the site. Scott explained that the clear and grub operation would remove approximately the top 12 inches of soil.

Participants discussed the potential effects of the clearing and grubbing operation on existing wetlands in the northern portion of the site. The site currently hosts unique wetlands with Oregon Ash and *Polygonum hydropiperoides*. The site appears to be too wet for reed canary grass to establish itself and has been hydrologically isolated from the river. Mike Houck asked about the possibility that the clearing and grubbing would alter the site's hydrology and impact the wetlands. Ralph commented on his belief that the existing wetland tree species are tapping into the groundwater. Again, current hydrologic testing will yield more information about the relationship of groundwater levels to the levels of the Willamette River.

Merri Martz asked if there was potential to learn from how this existing wetland community is configured and expand on it for other areas of the site. Ralph responded that this particular community has likely been established for a long period. Mark added that the wetland composition is fairly unique and therefore not a likely source of more universal information about potential site successes.

Participants discussed the potential for contaminated soils to be unearthed as a result of the clearing and grubbing operation. Scott reported that there is known DDT contamination on-site, but that it is not yet determined as to whether this contamination is above or below cleanup levels. The project team is working with federal soil guidelines to determine what actions would need to be taken to appropriately dispose of excavated soil.

Box Culvert

The group discussed the replacement of the existing 5-foot culvert with a 12-foot box culvert to hydrologically reconnect Oaks Bottom to the Willamette River. Open excavation through the berm are not

feasible due to the railroad's restrictions on rail down-time, heaving soils, and sheet piling depth limitations. Water velocity for fish passage is one of the primary design drivers.

Participants discussed culvert passage for both humans and wildlife. Several participants expressed concern about the potential to provide access to kayaks and canoes through a larger culvert. While grating could be designed into the culvert to prevent such passage, this oftentimes creates a maintenance problem as debris can clog the culvert opening. Wildlife will also use the culvert for passage and any design to prevent human encroachment should not at the same time restrict wildlife movement.

Of primary concern are the water velocities necessary for fish passage. Scott explained that while different sized facilities are still possible, they must meet this basic requirement. Krey Price mentioned that in addition to size, height is an important consideration. A submerged culvert under pressure flow conditions presents a new set of problems as fish are unlikely to swim from the surface to use a submerged passage. The group also discussed the role of sedimentation in the culvert and its potential effects on water velocities. Greg Savage commented that the results of modeling will help determine how tidal variation and slack waters could affect siltation in the culvert, thereby impacting water velocity and fish passage.

Water Control Structure Removal and Bole Installation

The current project proposal is to remove the existing water control structure and replace it with a cedar bole and two to three log weirs at a new location. This new water control structure would provide three feet of water level manipulation, compared to the current six feet of variability affected by the existing structure. Scott explained that under the current proposal, the change in manipulation would translate to losing two feet at the top of the existing range, and one foot at the bottom of that range. However, the water control structure could be placed at any number of elevations to meet the desired hydrologic condition. The primary question remains as whether to keep or remove and replace the existing structure. Scott noted that the use of a cedar bole and log weirs means that the structure will deteriorate over the course of approximately 50 years and should therefore not require a costly removal in the future. A rock weir was discussed as part of the original feasibility study, but it offers no water level control, so was rejected for the purposes of Phase I project design. Jennifer Goodridge commented that effective drawdown of the new structure may be limited by beaver damming. Scott responded that the beaver damming is only six inches higher than the existing water control structure minimum.

Participants discussed access to the replacement water control structure. Scott explained that the structure would have limited access by using a large woody debris path instead of a trail and that the structure itself would feature flash boards that could be locked in-place. Krey shared his concerns that this design essentially creates a bridge from one end of the site to the other and could lead to increased human use of the site and/or vandalism. Bob commented that signage can be an effective means of discouraging vandalism by identifying the wildlife that could be harmed by a person's actions.

The group discussed the issue of fish stranding. Deborah asked how fish would escape the reservoir in the event of overflowing. Scott responded that the water control structure would have a notch that provides a means of escape from the reservoir. Cindy added that the grading of the site would allow for positive drainage and that fish will respond to receding water and move out of the area. She added that under the proposed project, fish will be moving into the area during the winter season; this changes potential fish entrapment from the overflow occurrence once every 3-5 years to once per year. While the number of fish that could be stranded is fairly small, this remains an issue to be resolved with input from NMFS.

Ry Thompson asked if the placement of the water control structure could have an effect on invasive species management. Mark Wilson responded that the placement of the water control structure is unlikely to make much of a difference for the management of reed canary grass populations that have established themselves further upland. Reed canary grass requires water levels to be several feet over the growing point of the plant in order to be effective.

Deep Channel Excavation

The deep channel excavation element involves the reclamation of historic slough channels on the site. Excavation depths are expected to be about 6 feet near the culvert, tapering to just a few inches towards the back. Three channels will be excavated in a similar manner, including those to the south end of the site, the middle, and towards the site's north end. One outstanding issue is that of contamination. The proposed project calls for the removal of approximately 7500 cubic yards of soil. Several hauling options are available depending on the disposal requirements.

Mischa asked about potential siltation in the excavated channels, and the possibility that this reduces target inundation for fish rearing habitat. Greg Savage responded that duration and inundation levels will make the biggest difference in siltation. Hydrologic analysis should yield more information on this matter.

Participants discussed the potential hydrologic changes at the site due to excavation. Jennifer Goodridge commented that there is a chance channel excavation will create a "curtain drain" through the wetland. Scott responded that as data is collected from the piezometers, more will be known about the site's hydrology. Mark asked how the inundation target for the salmonid rearing season could affect the excavation volumes. Cindy responded that the difference between 75% and 50% inundation amounted to very little in terms of the depth of excavation. Bob Sallinger asked about the certainty of hydrologic data being gathered. Jennifer responded that the water in the wetlands is higher than the Willamette River and that the data will reveal which is most influential on the site. Ralph commented that there is also likely a relationship of the site's hydrology to the Crystal Springs aquifer. Sean Bistoff commented that USGS may be able to help inform the extent to which Crystal Springs' seeps are discharging to Oaks Bottom surface water. Scott explained that piezometer and staff gauge data has been gathered since mid-September and will continue to be collected through the spring. Final correlations are expected to be drawn in the May/June timeframe.

Summary of Discussion

The group identified several issues, questions, and concerns in its discussion of project elements. Overall, there were no "red flags" about the proposed project elements, with the understanding that more information is needed to refine project design and before any final decisions are made. Participants offered ideas of where there is some agreement based on the day's proceedings. These include the following:

- There is a strong interest in a diversity of habitats at the site.
- There is a clear tradeoff between vegetation communities (both invasive and native) and the amount of open water; additional survey is needed on the site to understand existing and potential emergent plant communities.
- The proposed project concept is "fish-centric," with specific targets and management needs for salmonid species; a similar level of detail is needed to address the real tradeoffs for wildlife species.
- The preservation of management options is important if a hydrologic connection is made between the Oaks Bottom site and the Willamette River; a water control structure provides some flexibility.
- Active site management and monitoring by staff with expertise is needed.
- Public access (boat or foot) via an enlarged culvert needs to be prevented through project design

Next Steps

(Scott Clement, BES)

Scott presented the envisioned project schedule. The project team anticipates the following future activities:

- The completion of a predesign by the end of the year.
- TetraTech will begin design work in January.
- In June, additional hydrologic information currently being gathered at the site will be fed into the 60% predesign.

Jennifer asked if the project wants to spend money on design work if this could significantly change through the revelation of new data? Scott replied that any decisions about construction would not be made until after the 60% predesign, so the timing appears to work well. Krey added that the project team could begin to review piezometer and staff gauge data immediately to gain initial ideas about hydrologic trends and their potential effects on site design.

Mischa proposed that a separate project discussion focused on threatened and endangered species take place. This meeting is likely best held in a small group format. Claire commented that the TEES group could assist with the terrestrial portion of this discussion, but reiterated that they have not been working at a site-specific level. More information may be needed before this conversation can be most effective. Mike Houck added that the Harza study may be a good starting point for a conversation about affected species as it had identified a suite of species found on the site. Bob commented that for the sake of coordination it will be important for this conversation to occur before or around the time that other project information is being considered.

Mike Houck suggested that Parks gets closer to updating the CRMP, that they approach the development of a management plan that also includes Ross Island and Holgate Channel.

The group discussed how they will stay informed of project developments at Oaks Bottom. Anne Nelson announced that a new website is under development that will host many of the documents and studies discussed today. This address will be distributed to the group as soon as the website is complete and will have updated versions of documents, including the color charts from the Harza study.

The group agreed that they should reconvene for a follow-up meeting sometime in the late spring timeframe. Participants will be contacted with details as that time draws closer.

Julie Wilson and Parks and BES staff thanked all participants for their contributions to the discussion.