Study Summary: Oaks Bottom Wildlife Refuge Habitat Assessment

(Harza Engineering for PPR and BES, January 2002)

Purpose of the Study:

Harza Engineering performed ecological, recreational and engineering analyses of the aquatic and terrestrial habitats and human amenities of Oaks Bottom. The purpose of this assessment was to evaluate what, if any, improvements could be made for salmon, as well as for other species' habitats and human uses.

Summary:

The Oaks Bottom Wildlife Refuge Habitat Assessment begins with a site history. Major points include the following:

- Two sets of railroad tracks on trestles crossed the site in the early 1900s. As the trestles deteriorated, a dirt berm was constructed. The structure is approximately 100 feet wide at the base, narrowing to 50 feet at the top and lies several feet higher than the highest recorded flood level.
- The City of Portland acquired the first 115 acres of the existing refuge in the late 1950s.
- About 20 acres of the area known as South Fill were used as a refuse dump and filled with 10 to 15 feet of waste, covered with a thin layer of soil.
- About 30 acres of wetlands at the north end of the site were owned by the Drake Company filled with 10-15 feet of excavated Multnomah silt from the Stadium Freeway project, creating the North Fill area. The Drake Company sold its 50-acre holding to the City in 1969.
- Portions of the site were heavily used by Off-Road Vehicles in the 1960s-1970s.
- Conservation efforts began in 1972, after a campaign by several groups. The site was surveyed by the state and maintenance by several groups began in 1984.
- In 1988, Oaks Bottom became Portland's first officially designated wildlife refuge. A management plan, written by the Olas Bottom Coordinated Resource Management Group (CMRG) was adopted.
- In 1991, the water control structure proposed by the CMRG was installed to control invasive vegetation, enhance wildlife habitat, and control floodplain mosquitoes.

Current site conditions are described for the following community types (based on existing vegetation):

- South Fill Area
- North Fill Area
- Wetland Swamp
- Riparian Habitat
- Upland Forest

Harza began their assessment of Oaks Bottom with a modified Ecological Diagnosis and Treatment analysis, called Urban System Diagnosis and Treatment (USDT). The USDT method consisted of a patient-template analysis whereby matrices of current habitat conditions ("patient") and desired future habitat conditions ("template") are compared. Both current conditions and desired future conditions were described against key system components, tempered by necessary ecological function and suitable conditions for target species. These system components included:

- Substrate/soils
- Cover (physical structure)
- Flow hydraulics
- Water quality

- Water temperature
- Food
- Competition
- Predators
- Connectivity
- Buffer
- Aspect/exposure

Target species (or life stages) were selected based on knowledge of current conditions.

The USTD analysis of the existing conditions was performed to diagnose what "treatments" might help attain these goals. Conflicts among the various uses were evaluated and treatments in the form of projects were identified. Analytical results were obtained for the following habitat types:

- Open Water
- Mudflat
- Emergent Marsh
- Riparian
- Oak-Madrone
- Upland Forest
- Grassland

Harza's analysis then employed a decision tool, Water Resource Assessment Method (WRAM) to help prioritize potential treatment projects identified by the USDT. The first step of WRAM was to identify social, environmental, and technical assessment variables important to make prioritization decisions. The Oaks Bottom Advisory Team identified 13 assessment variables that the project team used to evaluate 18 project alternative concepts. These assessment variables included the following:

- Off-channel salmonid habitat
- Ecosystem health
- Passive recreation
- Community stewardship
- Toxicant control
- Water quality assessment
- Erosion control
- Riparian enhancement
- Vector control
- Exotic species control
- Endangered Species Act compliance
- Feasibility
- Cost

The assessment variables were further condensed into four categories of two to four variables:

- Salmon/ESA;
- Passive Recreation/Community Stewardship/Vector Control/Toxicant Control*;
- Ecosystem health/exotic control/water quality; and
- Cost/feasibility.

* this pairing of factors was renamed Recontour/ Human Use/Vector Control within the WRAM analysis

The second step of the WRAM analysis was to perform pair-wise choices among projects or actions that would best achieve the stated goals. For each set of variables, an individual assessment variable within the WRAM framework was assigned a numerical value of 0 or 1 and compared to each of the other variables. In most cases, one variable had obvious benefit compared to the other one; in some cases of equivalent benefit, each variable was assigned 0.5; in other cases where both variables had positive impacts on the alternative but one variable was more preferable, values of 0.25 and 075 were used.

The third step of the WRAM process was to weight assessment scores. The Oaks Bottom Advisory Team determined weighting for the groupings of goals first, which were then divided equally amongst their constituent variables. When applied to the pair-wise ratings of project alternatives, the weighted variable scores led to higher ranks for specific projects that met priority goals.

Based on the WRAM analysis, projects that were identified to best achieve the stated goals in the stakeholders preferred order were geared to restoring a natural environment:

- increased hydraulic connection
- native revegetation; and
- addressing water quality

Projects of moderate interest included:

- exotic plant/animal control;
- stewardship;
- human use of the bottoms; and
- a desire to better manage Ross Island complex.

Least favored projects/actions that received lower than average scores:

- feral animal control;
- mosquito control;
- erosion control;
- toxicant control; and
- recontouring aquatic and terrestrial environments.

A total of ten Project Groups and 15 sub-projects were described including their purpose, benefit, tradeoff, uncertainty, cost, schedule, permitting and additional information needs.