The South Waterfront Brownfield Cleanup Project

Remedial Action Summary

The cleanup project at the ZRZ Realty Company (ZRZ) South Waterfront site is being conducted under the Oregon Department of Environmental Quality (DEQ) Voluntary Cleanup Program. All of the remedial actions described here have been approved by the DEQ. The ZRZ cleanup project is divided into two phases: river bank/river bottom and uplands. Cleanup of the upland portion of the site was mostly completed in 2010. Beginning in 2011, work is focused on the riverbank and river bottom. In-water work is scheduled between July 1 and October 31, to fit in the "in-water work window" established to protect fish listed under the federal Endangered Species Act in the lower Willamette River.

Remediation in Four Reaches. The project goals are to protect human health and the environment by implementing numerous remedial actions for contaminated bank soils and river sediments at the ZRZ Realty Company waterfront property. The project involves a small amount of in-water sediment dredging, bank excavations, bank stability structural-repair and replacement, capping of contaminated bank soils and capping of contaminated river sediment. The project has four distinct sections or "reaches", reflecting the river dynamics and uses: slipway, south bridge, north bridge and downstream.

Capping the Contamination. The 16.4-acre project includes areas located below the proposed top of the bank, of which approximately 13 acres are located below the line of ordinary high water. The cleanup includes a cap over all portions of the bank and sediment within the site boundaries. The cap is generally clean sand with different types and sizes of rock placed on top to prevent erosion. In an agreement reached with the National Marine Fisheries Services ["NMFS"], smaller river gravel will be placed on top of 7.4 acres of the in-water cap to further improve habitat for fish.

Containing or Removing Soils. Human health and ecological hot spots of contamination near the top of the riverbank will be excavated and disposed of either in an on-site containment cell ("ecological hot spot" soils).

Recognizing River Forces. The design for each of several design reaches is based on a number of existing conditions and design criteria. Variations of river hydrology and, river flow dynamics during various flow events, up to the 100-year flood event, geological characteristics and processes, river bottom topography, and land/river uses (e.g., barge launching, vessel traffic) are determining factors in the proposed sediment and bank cap designs. The sediment cap has to demonstrate long-term protection. The designs must also meet certain factors of safety for slope and seismic stability and cap surfaces must remain stable during extreme flow events and hydraulic forces, including waves generated by vessel activity and wind.

Stabilizing and Enhancing Riverbank Habitat. The existing riverbank is covered with a variety of materials, including rock, ship ballast stones, brick, tile, concrete and metal debris from past industrial activities. The proposed cleanup action addresses slope stability and contamination along 2,700 linear feet of riverbank on ZRZ property. Existing debris- covered banks in the north part of the slipway reach (approximately 100 linear feet) and in the south and middle bridge reaches (approximately 450 linear feet) will be excavated to a more gentle slope than existing and the lower

half of the bank stabilized with rock. Existing materials in the north bridge reach (approximately 400 linear feet) will be left in place and repaired where needed; the upper boundary of the existing bank protection will be lower than at present. The top of all engineered bank sections will be at an elevation below the line of ordinary high water. In the slipway and bridge reaches, the riverbank above the engineered portion will be capped with clean soil and planted with native plants. The existing bank in the downstream design reach (approximately 1,650 linear feet) will be covered with clean fill at a gentler slope and planted with native vegetation to the lowest elevation that plants will grow. Bioengineering techniques will be used to protect the fill slope from erosion and support native plants.

Meeting Greenway Goals. Following completion of the riverbank and river sediment caps, a layer of clean soil will be placed over the entire Greenway setback, extending from the top of bank 100 feet inland (west).

The completed project will meet the goals of the DEQ cleanup program: protect human health and the environment. The entire project area on the riverbank and in the water will provide enhanced habitat for fish and wildlife, including salmon and steelhead listed as Threatened under the federal Endangered Species Act. The cleaned up riverbank meets the goals of the City of Portland South Waterfront Greenway code. The 100 feet Greenway setback from the top of the riverbank will support future upland Greenway improvements when the ZRZ property is developed.