

REMEDIAL INVESTIGATION WORK PLAN

ST. JOHNS LANDFILL

PORTLAND, OREGON

EXECUTIVE SUMMARY

Metro has prepared this Remedial Investigation Work Plan (RI Work Plan) for St. Johns landfill to meet requirements of the Remedial Investigation/Feasibility Study (RI/FS) Scope of Work (SOW) of the Consent Order issued to Metro on October 31, 2003, by the Oregon Department of Environmental Quality (DEQ). The Consent Order stipulates that an RI/FS shall be conducted at the St. Johns Landfill, property owned by Metro, in accordance with OAR Chapter 340 Division 122. The St. Johns Landfill is a closed solid waste landfill located in the St. Johns/ Rivergate Industrial District in the north part of the city of Portland. The landfill is bounded by Smith Lake to the east, Columbia Slough to the south and west, and an arm of Columbia Slough (“North Slough”) to the north.

Purpose. The purpose of this RI Work Plan is to establish the framework for completing the RI of the landfill through an iterative process, and to describe the work scope that will address initially identified data gaps and areas where the interpretation of the data is uncertain. In addition, as requested by the DEQ, the RI Work Plan addresses specific comments previously raised by the DEQ and presents a project management plan for the RI/FS process.

Landfill History. The St. Johns Landfill was operated from 1932 to 1980 by the City of Portland, and from 1980 to 1991 by Metro. Metro assumed ownership responsibility in 1990. The landfill site was formerly a shallow lake surrounded by natural silt dikes. From 1940 to the late 1960s, the landfill was operated as an open dump with no daily covering or compaction. In 1969, the landfill was converted to a sanitary landfill and received a long-term solid waste disposal permit in 1973. In 1980, construction of a 55-acre expansion on the east side of the landfill was initiated, bringing the total area of the site to approximately 240 acres. The expansion area began receiving waste in 1985. In 1991, Metro stopped accepting waste at the landfill, and currently no waste is accepted at the site.

Landfill Closure and Management. In the early 1990s, an improved final cover system was constructed over the entire landfill, the landfill surface was contoured for effective drainage of stormwater, and the site was revegetated. The cover includes a flexible polyethylene membrane over a compacted silt layer to prevent infiltration of precipitation into the waste. An active landfill gas extraction and control system was installed to limit gas build-up under the final cover system, and to prevent air emissions. Additional groundwater and leachate monitoring wells were installed to monitor the landfill and its potential impact on adjacent surface water and groundwater. In 1997,

Metro implemented an improved, comprehensive environmental quality monitoring program.

Land and Water Use Near the Landfill. Current (and historical) land use in the general vicinity of the landfill is recreational, residential, commercial, and industrial (light and heavy). Zoning in the area is heavy industrial, heavy industrial with environmental protection, heavy industrial with environmental concern, open space, open space with environmental protection, and open space with environmental concern. The Rivergate Industrial District is an expanding regional hub for land and water transport of commodities. The existing mix of commercial and industrial land uses in the district is expected to continue expanding in the future.

The landfill is within the boundaries of the Smith and Bybee Lakes Wildlife Area, and represents approximately 240 acres of the Wildlife Area total of 2,000 acres. The Natural Resources Management Plan for Smith and Bybee Lakes regulates land use at the landfill, consistent with the City of Portland zoning code. The plan calls for open meadow habitat and passive recreational use for the landfill. Future use of the landfill is expected to include enhanced wildlife habitat, trails, environmental education activities, and other allowed uses. Planned future uses of the Wildlife Area are expected to include enhanced wildlife habitat and improved trails. Metro has just completed construction of a recreational facility along the northeast shore of Smith Lake, which includes an improved trail and roadway, a ramp for launching non-motoring boats, restroom facilities, and landscaping.

Although up to 28 wells used for industrial, irrigation, or domestic purposes were identified within two miles of the landfill, the area is currently serviced by the City of Portland's municipal water supply. A study of fish consumption and recreational activities in Columbia Slough indicated that a small number of people were observed fishing in Columbia Slough, and reported eating fish from the Slough. Other activities observed on the Slough include swimming, boating, camping, and wildlife watching. The beneficial uses of North Slough are similar. The reasonably likely future use of water is anticipated to be the same as current uses.

Conceptual Hydrogeologic Model. The landfill refuse is underlain by up to 150 feet of sandy silt (overbank silt [OBS] deposits). The silt layer is thinnest along the northeast side of the landfill (30 feet or less) and thickest beneath the central and northwestern parts of the landfill. Sand and/or gravel underlie the sandy silt layer. Leachate constituents from the landfill that mix with surrounding groundwater can move to the adjacent sloughs, or through the silt to the sand/gravel layer. Vertical and horizontal gradients within the silt and gravel units beneath the landfill are flat, and on that basis movement is assumed to be slow. Groundwater gradients will be further evaluated during the RI to refine the hydrogeologic conceptual model.

Preliminary Risk Conceptual Site Models. Based on human health and ecological conceptual site exposure pathway models (CSMs) developed for the site, one or more ecological or human receptor groups potentially could be exposed to chemicals from the landfill which may have migrated into surface water adjacent to the landfill, sediment in the sloughs or lakes adjacent to the landfill, surface soil outside the landfill cap, and ambient air on the landfill. Groundwater flow patterns will be analyzed further in order to determine whether exposure to off-site receptors would be possible.

Initially Identified Tasks to be Completed. The following tasks will be completed in an iterative manner. Results will be tracked on a Decision Matrix to assist in tracking the project progress.

Develop Preliminary Locality of Facilities (LOFs). Additional data review and analysis will be completed to develop preliminary LOFs for groundwater use, sediment and surface water. The data analysis will consist of: 1) assessing the integrity of the current well and piezometer network at the landfill; and 2) conducting a detailed evaluation of existing groundwater and leachate elevation data.

Update the Beneficial Use Survey, As Needed. Once the preliminary LOFs have been determined, the Beneficial Use Survey will be updated as needed.

Conduct Surface Soil Sampling. Surface soil samples from areas outside the landfill cap (e.g., along the intertidal zone of the slough/landfill interface and/or at seepage faces along the edge of the landfill) and from the top of the landfill cap have not been collected for chemical analysis. Therefore, surface soil samples will be collected from the landfill rim for chemical analysis to assess potential risks associated with exposure to possible leachate constituents in surface soil outside the landfill cap. Surface soil samples will be collected from the landfill surface to evaluate the quality of the fill imported for the landfill cover.

Groundwater Data Quality Review. If the preliminary LOF for groundwater and the updated groundwater Beneficial Use Survey indicate potential offsite receptors of groundwater that could be emanating from the landfill, additional review of existing groundwater data will be conducted to determine whether the data set is sufficient to: 1) characterize the extent of the groundwater plume associated with the landfill to the extent needed to complete the Risk Assessment; and 2) meet the data quality objectives of the Risk Assessment.

Sediment Data Review. An extensive amount of sediment data in Columbia Slough in and around the landfill has been collected by Metro, the City of Portland, and others. A Data Quality Review will be conducted of these datasets to: 1) assess whether potential impacts to sediments from landfill contaminants has been adequately

characterized to the extent needed for the Risk Assessment; and 2) determine whether adequate data of sufficient quality is available to complete the Risk Assessment.

Collect Shallow Groundwater Samples For Chemical Analysis. Mini-piezometers will be installed to assist in evaluating: 1) the groundwater flux to the adjacent sloughs and Smith Lake; 2) groundwater quality discharging to the sloughs; and 3) develop the database needed to complete a risk assessment of the surface water exposure pathway.

Project Management Plan. The project management plan contained within this RI Work Plan presents: 1) reporting procedures; 2) the anticipated schedule for the initially identified tasks of the RI, as well as the targeted completion dates for the major milestones of the RI/FS process; 3) key roles on the project; and 4) management of deviations from the RI Work Plan.