

City of Lake Oswego/Tigard Water Partnership
Water Treatment Plant Expansion Project
Land Use Permit – Construction Management Plan
January 12, 2012

1.0 Purpose

This document summarizes the Construction Management Plan (CMP) specific to the Water Treatment Plant (WTP) Expansion as required by the City of West Linn Land Use Application; all figures cited in this plan are included in Section 20 of the Land Use Application Packet.

2.0 Project Overview

The existing WTP, originally constructed in 1967 and expanded in 1980 and 1996, is currently rated at 16 mgd peak capacity and has successfully met the water demands of the City of Lake Oswego as well as its wholesale customers. The WTP is being expanded to 38 mgd to provide additional supply capacity to Lake Oswego as well as to become the primary water supply for the City of Tigard. Throughout construction, the existing WTP will need to remain in operation, continuing to provide drinking water to its customers. This criterion determines the construction sequencing, duration and work hours, and is the basis for this construction management plan.

3.0 Construction Schedule

The preliminary plan for construction activities and associated durations is summarized below:

- Pre-Construction/Site Preparation Activities (3 months): March 2013 – May 2013
- Major Construction Activities (26 months): June 2013 – July 2015
- Post-Construction/Finish Work Activities (3 months): August 2015 – October 2015

This is a tentative schedule that may change during final design or in response to the selected contractor's construction schedule and permit approvals. As presented, construction and related activities associated with the expansion of the WTP are currently estimated to take a total of 32 months to complete, with major construction work requiring approximately 26 months. Permit-related activities associated with each major milestone are discussed in detail in the following subsections.

The project includes removal of several existing trees on the property. Tree removal activities will be performed prior to construction during the November 2012 to mid-February 2013 timeframe to avoid the nesting season of migratory birds.

3.1 Pre-Construction/Site Preparation Activities

Prior to commencement of major construction activities, the following will be completed:

- Pre-construction meeting with Contractor, including review of land-use conditions of approval and building permit requirements and constraints;
- Pre-construction Survey;

- Installation of tree protection and site security fencing along property lines and as established during the Land Use process;
- Installation of erosion control devices;
- Mobilization, including Contractor and key Sub-contractor construction trailers
- Ongoing communication with neighbors regarding each preconstruction activity

Pre-construction meeting: A Pre-construction Meeting will be held following contract award to brief the selected Contractor in detail about the site-specific constraints and contract requirements related to construction management. These requirements include limits of disturbance, in which all staging, storage, and equipment maneuvering must be confined, as well as tree protection fencing requirements, and other conditions of approval from the land use permit.

Documenting existing conditions: The condition of the existing streets, landscaping, fencing and other structures adjacent to the project site and proposed truck haul routes will be catalogued during a Pre-construction Survey; findings from the survey will be memorialized with photographs and video.

Fencing: To ensure that the impacts of the construction are confined to the property boundaries, temporary construction and tree protection fencing will be installed around the construction site, including stockpile and staging areas. This construction fence, anticipated to span the entire property boundary, is a chain-link fence; similar fencing serves as tree protection fencing. All fencing shall be installed per City of West Linn standards. Additional temporary fencing may be installed by the contractor to ensure worker safety and to provide construction site security and tree protection fencing where needed. All tree protection zones will meet West Linn Arborist requirements. Prior to construction a final tree protection plan will be submitted to West Linn's Arborist for review and approval. Green construction fabric is commonly affixed to site boundary fencing to screen interior activities from view by adjacent residents and to provide some moderate level of sound attenuation.

Erosion Control: Following installation of fencing, temporary erosion control measures on the site will be installed. All ground-disturbing activities will have required erosion and sediment control features installed before construction commences. For additional details on the erosion control best management practices and devices, see Section 14 of this Land Use Application Packet. Some portions of required permanent stormwater facilities are anticipated to be constructed at this time, to supplement temporary erosion control facilities. Additional erosion control best management practices will be determined and incorporated into final designs.

Mobilization: In parallel with other pre-construction activities, the Contractor (and key Sub-contractors) is anticipated to mobilize construction trailers; locations for construction parking are shown in Section 20, Figure 6.0 of this Land Use Application. Other mobilization activities include installation of construction signage, on site and off site contractor parking, site access, temporary power, potable water, sanitary service and other utilities, and

mobilization of construction equipment (excavators, cranes, etc) to the site.

Ongoing communication with neighbors: The City of Lake Oswego has been working with neighbors on a Good Neighbor Plan (GNP) since October 2010. The GNP outlines mutually agreed upon goals to guide the design, construction, operations and ongoing communications for the project. The City will continue to coordinate project activities with the neighborhood during construction using methods applicable to specific and routine project matters (e.g., email, project website, postcard, neighborhood meetings, telephone and social media).

3.2 Major Construction Activities

Construction activities will include, but are not limited to:

- Surveying and preliminary site investigations
- Demolition of existing facilities
- Excavation
- Construction, including:
 - Civil Works – earthwork, buried utilities and roadways
 - Structural/Architectural Works – Concrete and steel frame building construction
 - Mechanical Works – Including plumbing and HVAC
 - Electrical and Instrumentation – Including primary and secondary site power
- Ongoing communications with neighborhood residents about construction activities.

During construction, the Contractor will establish normal work hours, generally Monday through Friday, 7 a.m. to 7 p.m. with some night and weekend shifts (potentially around the clock), as needed, during key system interties. These critical interties will be identified during detailed design and more accurately scheduled during the construction phase. Variances from allowed work hours/days for these activities will be sought if/when they are determined to be required. As previously discussed, interties between new and existing operating treatment processes are critical points during construction, as the WTP must continue to produce drinking water for its customers while the plant is under construction. Illumination needed after dusk will be directed to shine down and into the work area as much as possible/practical, and not into the surrounding neighborhood. With the exception of security and safety lighting determined necessary by the contractor or WTP staff, lights will remain off when no work is being performed on-site. Construction activities during nighttime work periods will only occur with approval from West Linn’s City Manager, where applicable.

Throughout construction, public access to the WTP site will be restricted. See Section 2.4 – Construction Impacts for additional discussion of construction-related activities.

The City of Lake Oswego and the Robinwood Neighborhood Association have identified preferred methods of communication during construction in the GNP, including a 24-hour project construction hotline, regular meetings with the project Construction Manager, representatives from the Contractor and Public Outreach representatives.

3.3 Post-Construction Activities

After the construction is substantially complete, the following activities will be completed:

- Site restoration and revegetation;
- Final site fencing
- Site clean-up
- Removal of erosion control devices.

Restoration of all temporary disturbed areas will include amendments of soil and landscaping. Landscaping will include seeding and planting of disturbed areas with a native seed mix. Trees, shrubs and groundcover will be planted as shown in Section 20, Figures 12.0 through 12.6. This work will be completed at the conclusion of the project.

Finally, based on the Pre-construction Survey, all damaged streets, landscaping, fences or structures will be restored to existing or better condition. In some cases, improvements to the street may be required to bring the street up to current standards. Street improvements will be made in accordance with City of West Linn construction standards.

4.0 Site Management

4.1 Construction Staging and Stockpiling

Construction staging and stockpile areas will be located within designated disturbance areas as shown in Section 20, Figure 6.0 of the Land-Use Application Packet. Several types of stockpiles are expected: general excavation material, aggregates, engineered backfill, and topsoil. Portions of the stockpiled materials will be used in day-to-day operations. Topsoil material will be used to restore the project site at the end of construction and applied to disturbed surfaces to support plant growth. Storage of stockpiled materials on site will reduce the need to haul materials off-site for storage and haul back on site later. Stockpiles will be managed to control dust and runoff.

To determine the extent and location for the staging areas, space needs for staging and operations during the construction period have been carefully reviewed. As much as possible, the plan minimizes the space requirements for construction-related activities by compressing and consolidating lay-down and work areas, and avoiding impacts to significant trees. At the same time, a certain amount of construction area is essential to build the permanent facilities, allow adequate room to maneuver construction equipment, and support worker safety.

The staging and stockpiling areas will require minor temporary grading and gravel surfacing and temporary haul/construction roads on-site, adjacent to the stockpiles. This will allow equipment and materials to be moved within the site and to minimize dust and mud related

concerns. See Section 20, Figure 6. Failure to construct adequate haul roads can lead to severe subgrade damage and erosion. Properly designed haul/construction roads promote worker safety as vehicular travel ways are clearly defined.

The project includes installation of several large diameter pipes (24-inch and greater). The large diameter pipe will require lay-down areas that will move through the site as the pipe is installed. Installation of the pipe also requires stockpiling of excavated material and imported backfill material. It is also anticipated that a portion of the staging area will be used for pipeline staging for the raw water and finished water pipes to be installed along Mapleton Drive.

In addition to pipe lay-down areas, staging areas will be needed for steel rebar lay-down and assembly areas.

It is anticipated that all area inside the site boundary fencing will be needed to accommodate project construction including staging, storage, tree protection, equipment movement and for lay-down work areas, temporary erosion and sediment control, and construction waste management.

4.2 Construction Waste Management

The Contractor will be required to develop and submit a plan documenting how construction waste management will be completed to meet the City of West Linn's goals for construction waste management, as well as salvage and recycling, if required. These materials may include the concrete/rebar, dirt, rocks, asphalt and other materials from demolition of the existing facilities, as well as field office waste. The contractor will be responsible for separating these materials from trash and recycling them. Containers and layout will be included in the staging areas shown in Section 20, Figure 6 of the Land-Use drawing set.

4.3 Hazardous Material

No hazardous materials will be permitted on site except for materials required for the construction of site improvements and operation of construction equipment, such as diesel fuel, hydraulic fluids and paint, in consumer quantities allowed by regulations. Use, transport and storage of any such materials will be minimized and quantities will not exceed consumer levels (intended for retail sale). On-site fuel transfer will be limited to designated construction staging areas and construction equipment will be stored in these staging areas overnight. Typically, the contractor will not store fuel, oil, or other hazardous materials on site, but rather will bring fuel to the site via maintenance vehicles on a daily basis. Additional details regarding hazardous material delivery, storage and containment will be coordinated with Tualatin Valley Fire and Rescue (TVFR) during building permit review.

4.4 Sanitation and Litter Facilities

The Contractor will be responsible for providing portable sanitation facilities for construction personnel for the duration of the construction project. The Contractor will also furnish and utilize suitable receptacles for waste and recyclables and ensure that all garbage is removed from the site on a regular (a minimum of weekly) basis.

5.0 Construction Impacts

5.1 Notifications

The contractor will be required to notify all local agencies, including emergency service agencies, public transit, solid waste collection companies, schools and effected neighborhood associations of the area impacted by construction prior to commencing construction. Periodic updates shall also be provided to ensure all agencies are apprised of construction progress. Impacts related specifically to noise, traffic and dust control are detailed in the following subsections.

5.2 Noise

Construction-related noise will be mitigated, as needed, to meet local noise ordinances for construction work. The following excerpt from the City of West Linn Municipal Code will be included in the contract documents to ensure compliance:

5.487.2.(c) The use of any mechanical device, fixed or mobile, operated by compressed air, steam, gasoline, electricity or otherwise, including the use of domestic power tools for lawn care, landscaping, and gardening as well as hobby craft and household maintenance at any time other than during the following hours, except by special permit granted by the City Manager:

- (i) Between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday;
- (ii) Between the hours of 8:00 a.m. and 5:00 p.m. on Saturday and Sunday and the following holidays:

- New Year's Day (January 1st);
- Labor Day (the first Monday in September);
- Thanksgiving Day (the fourth Thursday in November);
- Christmas Day (December 25th);
- Monday, when New Year's Day or Christmas Day falls on the preceding Sunday; and
- Friday, when New Year's Day or Christmas Day falls on the succeeding Saturday.

5.3 Traffic

The major construction work activities (approximately June 2013 to July 2015) will generate temporary traffic impacts. The sequenced demolition of the existing facilities, and the required excavation for and construction of the proposed facilities, is currently estimated to require approximately 71,000 cubic yards of soil removal, 19,000 cubic yards of concrete. It is assumed that, where possible, excavated material will be stockpiled on-site for use as back-fill around new structures, however, approximately 5,000 cubic yards of imported fill material will likely also be required. Assumed combined truck traffic from these activities are estimated to be 7,700 truckloads over the 26-month period.

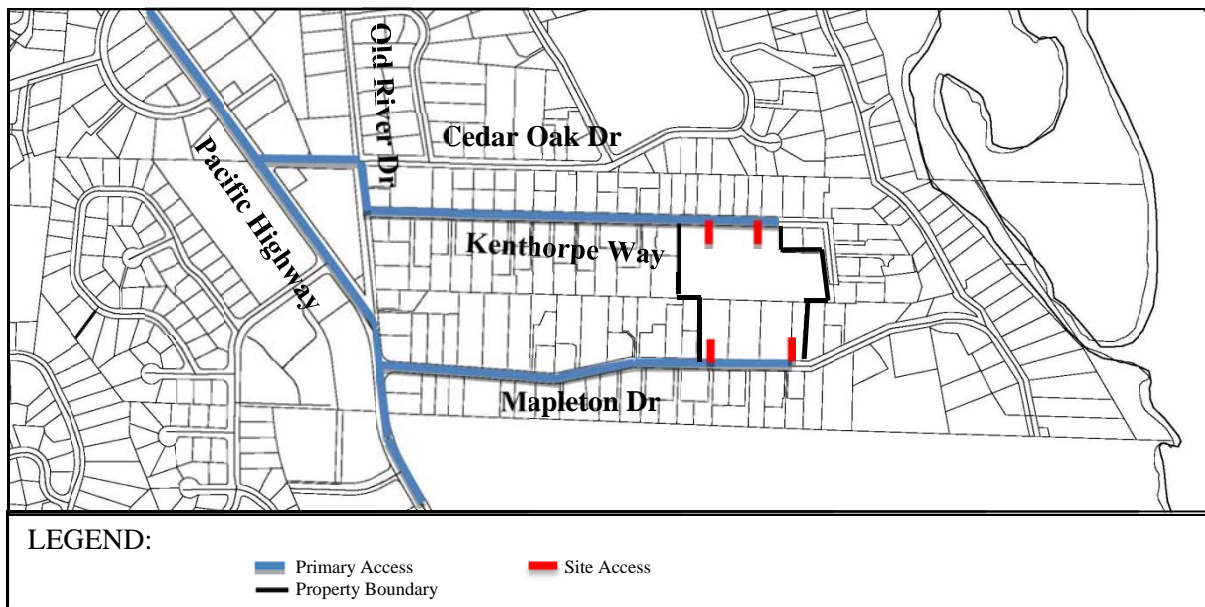
Construction traffic to and from the WTP will substantially increase traffic along the Mapleton Drive and Kenthorpe Way site access corridors. The Contractor will be required to maintain access to private properties throughout the construction period with few exceptions; those primarily associated with delivery of unusually large construction or permanent equipment for short periods, and then only with advanced coordination with affected property owners. Beyond such short term events, Mapleton Drive and Kenthorpe Way will remain open to public traffic at all times. A more-detailed analysis and traffic control plan will be developed as the design progresses, including provisions for detours, garbage routes, mail delivery, accommodations for pedestrian traffic and other traffic and access needs. All traffic control plans will be reviewed and approved by the West Linn Engineering Department prior to implementation.

To further minimize traffic impacts, personal vehicle traffic will be limited to plant staff, the Partnership’s construction management staff, and the Contractor’s management and supervisory staff. The contractor will be required to arrange off-site parking for its larger labor force in general; and to utilize shuttle busses, vans or other measures to transport its workforce to and from the project site, as practicable.

Figure 1 summarizes the primary construction access routes for the project. As shown in the Figure, there are two primary access routes to the project site:

1. Pacific Highway (Highway 43) to Cedar Oak Dr. to River Road Dr. to S. Kenthorpe Way
2. Pacific Highway (Highway 43) to Mapleton Dr.

Figure 1: Primary Construction Access Routes



A traffic access plan will be developed prior to construction to address issues of public safety, traffic control signage and temporary traffic lights and street improvements for construction loads, where necessary. This plan will be developed collaboratively with the City of West Linn and Oregon Department of Transportation (ODOT). Where possible, any

required roadway improvements will be coordinated with City of West Linn capital improvement projects for relocation/replacement of the existing facilities to further reduce traffic impacts.

5.4 Dust

Construction entrances and exits are anticipated along both Kenthorpe Way and Mapleton Drive. At least one wheel wash that meets Clackamas County Water Environment Services (WES) erosion control standards will be installed at each access roadway to eliminate offsite migration of sediments and soils. Sediment control will comply with Oregon Department of Environmental Quality construction best management practices in compliance with the 1200-C permit for the project.

6.0 Protection of Vegetation

Trees to be protected adjacent to work areas are identified in Section 20, Figures 6.0 to 6.4. These trees will be clearly marked in the field by the contractor prior to construction. Trees to be protected that border or are within the work area will be fenced at the edge of the root protection zone or as otherwise directed by the City of West Linn City Arborist and noted in Section 12 of this Land Use Application Packet.

Tree protection fencing will be six-foot tall chain-link fencing secured to the ground with 8-foot metal posts driven into the ground. Fencing will be installed before construction work begins and will remain in place until all construction work is complete.

The Contractor will be responsible for ensuring that all tree protection fences are properly installed and maintained throughout the construction period. Damaged or improperly functioning fencing and other tree protection devices will be replaced immediately by the contractor.

7.0 Security

The Contractor will be responsible for site security throughout the duration of construction activities. This will include site security fencing during construction and other measures as will be determined during design of the WTP.

8.0 Emergency Response

Prior to construction, the Contractor will establish a communications plan with the City of Lake Oswego, TVFR and West Linn. A 24-hour hotline will be available for reporting incidents. Callers will be instructed to dial 911 for emergencies.

9.0 Erosion Control

Prior to construction, temporary erosion control measures will be installed around areas to be disturbed as well as areas where stockpiles will be placed. Erosion control will be installed per WES best management practices and in compliance with the City of West Linn's Erosion Control Standards, local and state permits, and the construction contract documents. The erosion control plan will be maintained and modified, as necessary, during construction and for wet weather construction periods. Erosion control measures will be implemented and monitored through a written inspection and maintenance program.

Erosion control measures may include, but are not limited to:

- Paved construction road entrances;
- Silt fencing, hay bales or straw wattles at all downslope limits of work;
- Dust control and abatement, including at least one wheel wash prior to construction site egress, and;
- Installation of temporary and permanent stormwater management.

The City of Lake Oswego's construction management staff will be on site full-time during construction and has expertise in erosion control requirements. Staff will be responsible for monitoring and ensuring that the erosion control devices are properly installed, monitored, and maintained by the contractor. At a minimum, the Contractor will also be required to inspect and repair erosion control devices on a daily basis. Damaged, missing or improperly functioning erosion facilities will be replaced immediately by the contractor. Sediment accumulated behind erosion control devices (*e.g.*, silt fences) will be removed regularly to prevent overtopping.

10.0 Additional Neighborhood Concerns

In addition to those GNP items specifically listed in the above sections, the City of Lake Oswego and the Robinwood Neighborhood GNP also addresses the following items that will occur during construction:

- Green construction practices
- Use of ultra-low sulfur diesel fuel (where possible)
- Site staging layout to reduce the need for construction vehicle backup beepers where not needed to meet OSHA requirements for worker safety
- Use of noise dampening fencing where needed
- Limiting vehicle idling
- Locating noisy portable equipment as far from residential receptors as practicable.
- Preconstruction survey of homes adjacent to the construction site will be performed.