

UNIVERSITY OF OREGON  
NORTH CAMPUS CONDITIONAL USE PERMIT PROJECT  
**Conditional Use Permit**  
**Stormwater, Sanitary Sewer, and Water Analysis Report**

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## **INTRODUCTION**

This report provides an evaluation of the stormwater, sanitary sewer, and water supply infrastructure requirements to support the UO North Campus Conditional Use Permit (CUP). This report includes an analysis of stormwater management requirements to demonstrate compliance with applicable City Code requirements.

## **STORMWATER**

### **Existing Conditions and Drainage Patterns**

The existing site south of the railroad tracks is fully developed with buildings, parking lots, walkways, outdoor storage areas, and green space (i.e. lawns, landscaping, gardens, and riparian areas). The existing site north of the railroad tracks (the Riverfront Area) consists primarily of vegetated land with paved bike and pedestrian paths. The most significant impervious surface within the Riverfront area is a 60' wide roadway corridor extending from the north end of Riverfront Parkway to a point near Autzen footbridge.

Stormwater runoff from the site is ultimately conveyed to the Millrace or the Willamette River. Existing drainage basin boundaries and destination points are shown on Drawing C01 and summarized as follows:

- **South Millrace Basin (Basin A)**: This basin represents the majority of the site south of the railroad tracks and is characterized as the area that drains by gravity to the Millrace. The majority of the drainage in this basin is collected and conveyed through piped conveyance systems, but drainage adjacent to the Millrace is conveyed by sheet flow. The piped conveyance systems discharge to the Millrace through multiple outfalls.
- **Riverfront Pump Station Basin (Basin B)**: This basin includes the area served by the Riverfront Pump station, and includes land south and north of the railroad tracks. Drainage within this basin is conveyed through public piped conveyance systems within Riverfront Parkway and Millrace Drive. The storm drain system enters the pump station through a 21" main located in Riverfront Parkway and the pump station discharges stormwater through a 14" force main to an outfall on the north bank of the Millrace (located under the Riverfront Parkway bridge).
- **North Athletic Field Basin (Basin C)**: This basin includes the athletic field located near the south end of the Autzen footbridge. Surface and subsurface drainage from the field is conveyed to the Willamette River through a 10" private outfall.
- **North Millrace / Willamette Basin (Basin D)**: This basin includes the remaining land in the Riverfront area that is conveyed to the Millrace or Willamette River through sheet flow or shallow surface flow. Flows from this basin are distributed throughout the length of the adjacent Millrace and River.
- **Hilyard Street Outfall Basin (Basin E)**: Although this basin is not within the North Campus CUP boundary, it is adjacent to the east edge of the CUP boundary and is noted here for context. This basin includes the cul-de-sac at the north terminus of Hilyard Street and may include some of the paved yard/lot located north of the cul-de-sac. Drainage from this basin is conveyed through a 12" public outfall to the Willamette River.

### **Soil and Groundwater Conditions**

**Soils:** Based on City of Eugene and Natural Resource Conservation Service (NRCS) mapping, the soils throughout the site are classified as sandy and gravelly soils with relatively high infiltration rates, with Hydrologic Soil Group (HSG) classification of A or B. However, geotechnical boring log data, available from the 1990 Riverfront Research Park Environmental Site Assessment (ESA), indicates

differing conditions. Specifically, deposits of fill are present in multiple locations throughout the site. Fill deposits vary in depth, but may reach 15' deep in certain areas. The historical borings indicate fill material may have a high silt content and may have a significantly lower infiltration rates than the native sand and gravel soils.

Groundwater: Monitoring well data presented in the 1990 ESA indicates seasonal high groundwater depth ranges from 10'-15' within the study area. Oregon Water Resources Department well log data indicates a similar depth to groundwater within the study area.

Future Geotechnical Investigation: Future development projects will include geotechnical investigation, infiltration testing, groundwater measurement, and engineering studies to determine if and where infiltration is feasible.

### **Stormwater Management Approach for Future Development**

Development within the site will adhere to the applicable stormwater management requirements at the time of the development. The City of Eugene stormwater management requirements are set forth by Eugene Code (EC) Section 9.6790-9.6796 and the Eugene Stormwater Management Manual (SWMM). The 2014 SWMM is the current edition at the time of this report. Additional regulatory requirements may apply to projects impacting waters of the state. The following is a summary of the applicable stormwater management standards and the approach for stormwater management for development and redevelopment at the site.

Stormwater Destination / Flood Control (EC 9.6791): EC 9.6791 and SWMM Section 1.4.3 require projects to demonstrate that the receiving public storm drain systems have adequate hydraulic capacity to handle increase flows from proposed development or redevelopment. The site is located entirely within the Willamette River Basin, which has not historically experienced flooding problems. As such, prescriptive flow control or detention requirements do not apply. However, detention may be appropriate for certain localized areas where the receiving storm drain system does not have the capacity to accept additional flows. The following provides a summary of the potential destination points within the site and applicable flood control considerations.

- Onsite Infiltration: Onsite infiltration will be utilized to the maximum extent feasible, in accordance with EC 9.6792 (see Water Quality, below). Piped stormwater conveyance systems will likely be required to accommodate overflow from infiltration systems, or provide primary conveyance in areas where infiltration is not feasible due to soil conditions, environmental concerns, or other factors. Piped conveyance systems will discharge to existing public or private storm drainage infrastructure or waterways at the one of the destination points listed below.
- South Millrace (Basin A / Destination Point A): Destination Point A is the Millrace located south of the railroad tracks and upstream from the Millrace control structure, and is the destination point for the Basin A. The Millrace and downstream conveyance system is a public stormwater system.

The water level within the Millrace is governed by a control structure located at the west end of the site. The control structure consists of an adjustable weir gate that can be manually operated (lowered) during extreme storm events. In 2008, the City of Eugene modified the Millrace control structure to lower the water level and address localized flooding issues observed during the 2006 flood. Based on discussions with City staff, the control structure has adequately addressed

flooding concerns. However, future modification to the control structure may be required depending on the grading and hydraulic requirements for future projects adjacent to the Millrace. The conveyance system downstream from the control structure consists of dual box culverts extending under the railroad tracks. The Millrace continues as an open channel downstream from the railroad tracks and passes through another culvert at the bike path crossing prior to discharging to the Willamette River.

It is anticipated that future development within Basin A will maintain similar drainage patterns and will continue to drain to Destination Point A. Redevelopment may include new or reconfigured piped conveyance systems and new outfalls to the Millrace, and the delineation of Basin A may change over time. However, the existing piped conveyance systems and outfalls will remain intact to some degree. There are no known capacity issues with the public drainage system for Destination Point A, but redevelopment projects within Basin A will need to assess capacity issues within the existing private storm drain system on a project-by-project basis. New outfalls to the Millrace may be subject to additional stormwater management requirements under the Endangered Species Act. Refer to Destination Point D for further discussion.

- Riverfront Pump Station (Basin B / Destination Point B): Destination Point B is Riverfront Pump Station, and is the destination point for the Basin B. The public storm drain systems within Riverfront Parkway and Millrace Drive are expected to have adequate capacity and depth to fully accommodate redevelopment within Basin B on the south side of the railroad tracks. The public storm drain system extending north of the railroad tracks is expected to accommodate future development within the existing limits of Basin B north of the railroad tracks, and may be capable of serving a larger basin area east and west of the existing limits of Basin B. Future projects north of the railroad tracks will need to assess pump station limitations with City staff if the limits of Basin B are expanded with redevelopment.

It should be noted that the Riverfront Parkway pump station and the surrounding land surface is within a depression. This area is below the base flood elevation at the adjacent Willamette River and below the water surface elevation of the Millrace. Drainage for this area relies entirely on the pumping systems and there is no overland conveyance route for floodwater to escape. Because of this, special care should be taken when extending the Riverfront Parkway storm drain system to the area north of the railroad tracks, to ensure that flood risks are considered. Grading modifications north of the railroad tracks should be designed with similar precautions.

- North Athletic Field Basin (Basin C / Destination Point C): Destination Point C is an existing 10" private piped outfall to the Willamette River located just west of Autzen footbridge and is the destination point for Basin C. Redevelopment projects within the Riverfront area may utilize the existing piped conveyance system upstream from Destination Point C. Depending on stormwater management strategies, it may be possible to expand the contributing basin area for Destination Point C, however, this system is relatively shallow and may not be suitable for extension significantly beyond the existing basin area.
- North Millrace / Willamette Basin (Basin D / Destination Point D): Proposed development within the area north of the railroad tracks (Riverfront area) will utilize onsite infiltration and will maintain sheet flow drainage patterns to the Millrace and Willamette River where practical. Where onsite infiltration and sheet flow are not practical, piped conveyance will be required. It may be possible to extend piped conveyance systems from Destination Points B, C, and E, but those systems

may not be capable of serving the entire Riverfront Area. New outfalls to the Millrace and Willamette River may be required. Possible outfall locations are shown on Drawing C01.

New outfalls may be subject to the City's Standards Review process, and will likely be subject to the US Army Corps (COE) / Oregon DSL permitting process. Outfalls permitted under the COE/DSL process are expected to be subject to the 2014 National Marine Fisheries Services (NMFS) document NWR-2013-10411, Standard Procedures for Endangered Species (SLOPES) for Stormwater, Transportation or Utilities. These standards involve more rigorous treatment, flow control, and LID requirements for new development contributing to the outfall. Exemptions to the NMFS flow control standards may apply for outfalls discharging directly to the Willamette River.

- Hilyard Street Outfall (Basin E / Destination Point E): The City has developed a concept plan for a future roundabout at the location of the existing cul-de-sac at the north terminus of Hilyard Street. The roundabout will provide access to the EWEB Riverfront property and possible access to the western edge of the UO Riverfront property. Public storm drain infrastructure may be reconstructed and extended as part of that project and may serve as a destination point for stormwater runoff from UO Riverfront property within this area. The existing outfall and public system is relatively shallow, so future extensions may not be feasible unless the public system is reconstructed at a greater depth.

Stormwater Water Quality (EC 9.6792): Stormwater runoff from new or redeveloped impervious surfaces must be treated for water quality. Treatment methods must be selected in the following order:

- Priority 1: Onsite Infiltration using Vegetated / Low Impact Development (LID) Methods.
- Priority 2: Onsite Filtration using Vegetated / Low Impact Development (LID) Methods.
- Priority 3: Onsite Mechanical Treatment with Payment of 50% LID Fee.
- Priority 4: No Onsite Treatment with Payment of 100% LID Fee (for Offsite Mitigation)

Onsite infiltration must be utilized where feasible. Lower priority methods may be utilized if required due to site constraints, poor infiltration rates, shallow groundwater, steep topography, or space constraints. Treatment methods and onsite infiltration feasibility will be evaluated on a project-by-project basis, and will depend on the findings of the geotechnical investigations. Treatment methods will conform to the standards of the SWMM. Notable stormwater treatment exemptions and alternatives are summarized below:

- Treatment of existing equivalent onsite areas may be utilized in lieu of treatment for new development.
- City standards do not require stormwater treatment for synthetic turf fields unless the athletic fields incorporate an impervious surface into the field cross section. However, redevelopment projects may voluntarily elect to include stormwater treatment through infiltration or other means.
- Treatment is not required for new or replaced impervious surfaces less than 1,000 square feet, constructed within a 12-month period.
- Stormwater treatment is not required for projects that replace existing impervious surface for the purpose of maintenance or repair of the continuance of the current function, provided that less than 50% of the storm drainage system is replaced.

Stormwater Flow Control (EC 9.6793): Flow control standards apply when stormwater is discharged to a headwater stream or a pipe that discharges to a headwater stream at an elevation above 500'. These conditions are not present for this project and flow control is not required. See the Stormwater Destination / Flood Control section for further discussion about possible detention/retention.

Stormwater Oil Control (EC 9.6794): In the context of this site, oil control standards apply to projects that will result in more than 100 vehicles per 1,000 square feet of gross floor area or more than 100 off-street parking spaces.

Stormwater Source Control and Environmental Issues (EC 9.6795): Stormwater source control standards include prescriptive design criteria for activities that present a risk of point source pollution, such as loading areas, trash collection areas, storage of liquid materials, and storage of bulk materials. These standards will apply to future development and redevelopment projects within the site.

The source control standards also apply to land with suspected or known contamination. There have been historic environmental issues throughout the study area, including releases of laboratory wastes, petroleum hydrocarbons, and coal gas tar. Investigation and remediation activity has occurred since the time of the 1990 Environmental Site Assessment. DEQ records indicate the site has a "Partial No Further Action" status. Future development projects will include environmental review to ensure the requirements of SWMM Section 3.8 are addressed.

If onsite stormwater management (infiltration) systems are pursued with future development, DEQ and an environmental professional should be consulted to ensure stormwater infiltration does not have adverse environmental impacts.

Stormwater Operations and Maintenance: Stormwater facilities will be privately operated and maintained. An Operations and Maintenance Plan will be included with development review submittals for future projects.

## **SANITARY SEWER**

Existing gravity-fed public and private sanitary sewer infrastructure is available within the majority of the site south of the railroad tracks and within the eastern portion of the site north of the railroad tracks (Riverfront area). Gravity-fed sanitary sewer systems are not readily available within the western side of the Riverfront area, but pumped systems are possible. Existing and possible future destination points are shown on Drawing C02 and summarized below:

- Riverfront Pump Station System (Destination A): Riverfront pump station is a public pump station serving the eastern half of the site south of the railroad tracks. The pump station is located at the intersection of Riverfront Parkway and Millrace Drive. The pump station discharges wastewater through a 6" force main extending to the south through Riverfront Parkway, ultimately discharging to the 30" gravity-fed main in Franklin Boulevard. Sanitary drainage is conveyed to the pump station through 8" public sanitary sewer mains, extending east and west within Millrace Drive. The 8" public main extends to the west approximately 250' beyond the end of Millrace Drive, and then north under the pedestrian underpass under the railroad tracks.

The mains within Millrace Drive are available to serve adjacent future development to the north and south of Millrace Drive and is capable of being extended farther to the west as a private



main. The 8" public main north of the railroad tracks is expected to be capable of serving the majority of the Riverfront area east of the Millrace. Capacity of the public mains and pump station will need to be confirmed with future development.

- UO Pump Station (Destination B): A private pump station located just east of Onyx and just north of the Millrace currently serves the Central Power Station and Planning/Facilities Management areas of the site. This system may be extended to the west for future development west of the Central Power station, but due to topography and limited system depth, additional pumping systems may be required. With future development, the eastern portion the current pump station drainage area (near the Zebrafish facility) may be modified to drain to the Riverfront Pump Station system. Private mainlines upstream from the pump station will be relocated and/or extended to accommodate future buildings and infrastructure.
- East 8<sup>th</sup> Avenue System (Destination C): This destination point is an existing 8" public sanitary sewer line within East 8<sup>th</sup> Avenue, which currently terminates approximately 170' west of the intersection of Hilyard and East 8<sup>th</sup> Avenue, southwest of the railroad tracks. The existing 8" public sewer near the intersection of Hilyard and East 8<sup>th</sup> Avenue is approximately 6' below the ground surface and is not likely deep enough to provide gravity-fed drainage for the proposed building sites. However, extending the 8" public gravity-fed line across the railroad tracks to the proposed roundabout may provide a destination point for future pumped sanitary sewer systems within the westernmost building sites in the Riverfront area.
- Broadway / Franklin System (Destination D): This alternative destination point explores extension of a new sanitary sewer crossing under the railroad tracks from the 18" sanitary sewer system that runs west within Broadway and Franklin. Two potential connection points and boring locations are shown in Drawing C02. This alternative would involve easements and railroad crossings, would likely be explored only if other alternatives are not available.

## WATER SUPPLY

Public and private water mains are available within the site south of the railroad tracks, as shown on Drawing C03. Redevelopment south of the railroad tracks will include relocation and/or extension of existing private water mains and services to accommodate the proposed buildings and infrastructure

Public water mains are available within close proximity to the proposed development sites at the west and east ends of the Riverfront area. Possible future connection points are shown on Figure 4 and summarized below:

- Riverfront Parkway System (Connection A): An existing dead-end 10" public (EWEB) main extends to a point near the south end of the Autzen footbridge. The dead-end main connects to a 10" looped system extending within Riverfront Parkway and Millrace Drive.
- Alder / Hilyard System (Connection B): There is an existing 16" public (EWEB) main extending from Alder to the old EWEB steam plant. This line crosses the railroad tracks north and west of the Alder Street alignment. At the north side of the tracks, the main extends into, or very close to UO property before extending to the west within the railroad right-of-way. Potential future connections could occur at the north side of the railroad crossing or the Hilyard Street right-of-way if access near the railroad crossing is problematic.



New public and private fire hydrants will be required with redevelopment throughout the site. New hydrant locations will conform to the Oregon Fire Code.

Based on past pressure/flow test data in the area, the static pressure within the public system is expected to range between 68-72 psi, depending on the time of day. Both the Riverfront Parkway and East 8<sup>th</sup> Avenue systems are expected to produce adequate fire flows. However, flow test information should be obtained to confirm available pressures and flows. Looped systems may be preferred to improve flows and circulation.