ATTACHMENT 1

Department of Community Services
Land Use Planning Division
www.multco.us/landuse

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DECISION OF THE HEARINGS OFFICER

An Application for Community Service Conditional Use Permit for Utility Facility (Filtration Facility), Community Service Conditional Use Permit for Utility Facility (Pipelines), Community Service Conditional Use Permit for Radio Transmission Tower (Communication Tower), Review Use for Utility Facility (Pipeline – EFU), Design Review (Filtration Facility, Pipelines, Communication Tower, Intertie Site), Significant Environmental Concern for Wildlife Habitat (Lusted Rd Pipeline, Raw Water Pipeline), Geologic Hazard (Raw Water Pipeline) and Lot of Record Verifications

Case File:	T3-2022-16220
Applicant:	Bonita Oswald, Portland Water Bureau, City of Portland
Property Owners:	Various
Location:	Across from 35319 SE Carpenter Lane, Gresham, OR Tax Lot 1S4E22-00400 and 1S4E22D-00100 Alt. Account #R994220980 & R994220820 Property ID #R342619 and R342603
Pipeline and Intertie Location:	Portions of Dodge Park, Cottrell Road, Lusted Road, Altman Road (right-of-way) and 35227 SE Carpenter Lane (R342606), 36910 SE Lusted Road (R237226), 36800 SE Lusted Road (R237225), 36322 SE Dodge Park Blvd (R154381), 33304 SE Lusted Road (R342513), 6704 SE Cottrell Road (R342553), 34747 SE Lusted Road (R341824), property SE of 34747 SE Lusted Road (R342633), tax lot between 37039 SE Lusted Road and Lusted Rd (R342647)
Base Zones:	Multiple Use Agriculture – 20 (MUA-20)(treatment facility, some pipelines and intertie site) Exclusive Farm Use (EFU)(some pipelines) Commercial Forest Use (CFU)(some pipelines) Rural Residential (RR)(some pipelines)
Overlay Zones:	Significant Environmental Concern for wildlife habitat (SEC-h) & water resources (SEC-wr), Geologic Hazards (GH)

Hearing on Remand: April 16, 2025 at 9:00 am at East County Health Center, 600 NE 8th Street, Gresham, Oregon 97030 in Sharron Kelley Room (Virtual Attendance allowed)

I. BACKGROUND

On November 29, 2023, a Multnomah County hearings officer issued a decision ("2023 Decision") approving, with conditions, the permits described above. The 2023 Decision was appealed to LUBA and on January 22, 2025, LUBA remanded the decision finding that the hearings officer misconstrued Multnomah County Code ("MCC") Section 39.7515(B) resources.

On February 25, 2025, the county received a request from the applicant, Portland Water Bureau ("PWB") to proceed with the application on remand. The county mailed notice to all individuals who participated in the initial review that a public hearing would be held on April 16, 2025 at 9:00 am.

A public hearing was conducted on April 16, 2025 with participation be allowed in person and virtually. The record remained open after the hearing for a total of four post-hearing periods. During the first period, parties were given until May 5, 2025 at noon to file evidence and argument regarding the issues on remand. During the second period, all parties were allowed to file responses to written materials filed during the first post-hearing period on or before noon on May 19, 2025. During the third period, opponents and County staff were allowed to file final written arguments on or before noon on May 27, 2025. During the fourth period, the applicant was allowed to file arguments on or before noon on June 3, 2025. I suggested that the parties file arguments in the form of a draft decision. Additionally, all parties were given a period of three days after the close of each of the above periods to object to any document filed during the preceding period and were advised that a failure to raise objections during those periods would waive them. These deadlines were set out in Exhibit S.1, my order regarding post-hearing record periods. The Exhibit S.1 order memorializes the deadlines I set at the conclusion of the April 16, 2025 public hearing.

II. RESPONSE TO RECORD OBJECTIONS

Near the close of the April 16, 2025 hearing, I left the record open for an extensive period of time. A summary of the periods I set was filed in the record as Exhibit S.1 and they included periods for the receipt of objections from the parties to materials filed in the prior post-hearing period. A number of objections were filed to materials filed by a number of parties at various times during the periods set for the receipt of record objections. A response to my order that is Exhibit V.3 and a response to record objections filed by others were also filed. I addressed some of the objections in interim orders that are a part of the record. All objections are further addressed and resolved as follows:

(1) On May 8, 2025, Cindy Bennington filed an objection to the post-hearing record claiming that she filed three documents with Multnomah County Planning that are not included in the record. I denied that request for the reasons stated in my Order of May 9, 2025, Exhibit T.2 of the record which I adopt by reference herein.

(2) On May 22, 2025, after the close of the record for the receipt of evidence, Cindy Bennington filed objections to Exhibit U.20.i 09. Her objection is Exhibit V.2 of the record. On May 23, 2025, in Exhibit V.3 which I incorporate by reference herein, I found that Ms. Bennington included evidence and argument in her objection letter rather than making a claim that the

Filtration Facility

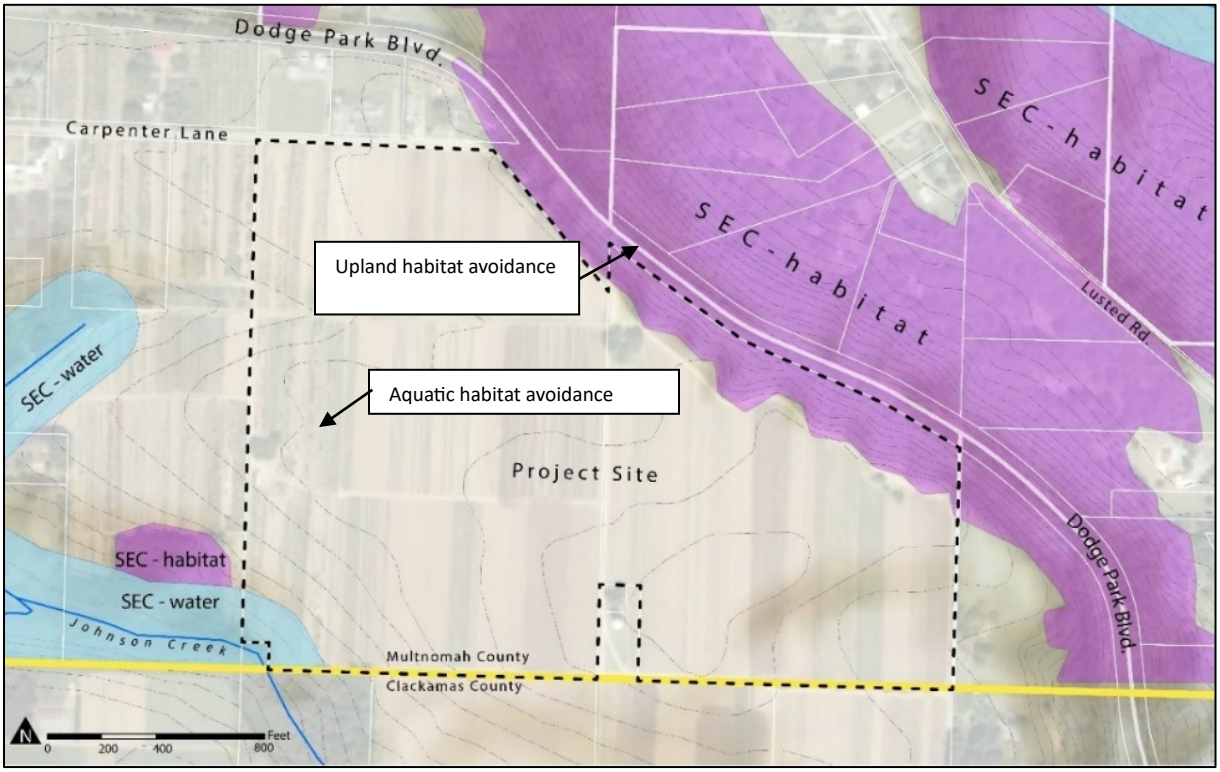

Exhibit A.11, page 2 (labels updated for remand legal context)

As explained by Exhibit A.11, page 1:

> "At the filtration facility site, there are two SEC overlays: SEC-water resource (SEC-wr) and SEC-habitat (SEC-h). These overlays are shown on Figure 1. The SEC-wr area provides a 200-foot buffer along Johnson Creek, located in the southwest corner of the filtration site. Project design options evaluated within the buffer included a perimeter access road, stormwater basins, and stormwater piping. In the proposed site design, all development is set back from the SEC-wr area, completely avoiding the protected water resource area. Native plantings are proposed on the exposed SEC slopes to enhance habitat functions."
>
> "The SEC-h overlay applies to forested habitat located on the steep slopes along the northeast edge of the site. Project design options evaluated in this habitat area included open-cut pipeline connections (to Dodge Park Boulevard and Lusted Road), site access to Dodge Park Boulevard, and a perimeter access road. The open-cut pipeline and site access alternatives in the SEC-h area were eliminated for environmental and seismic reasons. The perimeter road was relocated to avoid the SEC-h overlay. In the proposed site design, all development is set back from the SEC-h area, completely avoiding the protected habitat area."

Pipelines and Intertie

Proposed Pipeline alignments and construction methods were modified during the design process to avoid impacts to protected resources within the SEC zones. Exhibit A.11, page 2.

minimum of approximately 80 to 100 feet below the invert of the constructed pipelines. In addition, the three wells located within 300 feet of the work area are screened at depths of at least 200 feet below the invert of the constructed pipeline. Construction vibrations are not expected to impact the performance of private wells because the distances and depth of the wells is too far from the construction work areas to result in damage. Similarly, construction of the [finished water pipelines] project is not anticipated to impact the pumping capacity or the water quality of the water wells located in the vicinity of the [finished water pipelines] work for the same reasons." Exhibit I.65, page 4.

Groundwater Contamination

According to PWB's groundwater experts:

> "Protecting groundwater resources for water supply is a central tenet of the Portland Water Bureau's mission as a public water utility, and PWB works extensively to prevent groundwater impacts from both Bureau operations and activities conducted by others. Groundwater from the Columbia South Shore Well Field (CSSWF), which includes wells that tap the Troutdale Formation, is an important part of the drinking water supply for Portland and the metro region. The Water Bureau has experience safely operating a water treatment facility in the vicinity of water supply wells, as Portland's Groundwater Pump Station sits in the center of the CSSWF and includes treatment chemical handling similar to the inventory planned for the filtration facility." Exhibit S.29, page 1.
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> "The Water Bureau has a long history of active groundwater protection dating back to the original development of the well field in the early 1980s. The goal of the Water Bureau's groundwater protection work is to prevent future groundwater contamination and to discover and remediate pre-existing contamination. The Water Bureau also provides technical assistance to businesses managing hazardous materials and educates the public on how to help protect groundwater. The Water Bureau monitors groundwater quality regularly at all active municipal supply wells and more than 80 additional monitoring wells around the City's well field. This allows the Water Bureau to characterize the water quality throughout the well field and provide an early warning for previously unknown contaminants." Exhibit S.29, pages 1-2.
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> "Groundwater quality at the Filtration Facility site has also been tested to evaluate the potential for pesticide contaminants of concern to be present in water discharged from the dewatering system for the deep excavation on the west side of the property, or, after operations, from the underdrains of the project buildings. None of these compounds were detected. Exhibit U.20.g, page 12.

C. "Fish Habitat Areas" (Aquatic Habitat & Water Quality)

The language of Policy 16 of the 1977 Framework Plan directed County decisionmakers "to require a finding [on] prior to approval of a *** quasi-judicial action that the long-range availability and use of the following [natural resources] will not be limited or impaired." "Fish Habitat Areas" are one such resource. As I have found that Policy 16 was implemented, for community service and conditional uses by the adoption of MCC 39.7515(B), I find I must answer the question whether PWB's Project will adversely affect fish habitat areas. I have done so and have found that it will not. I have done so based

on detailed expert evidence provided by PWB and draft findings proposed by PWB's attorneys. I have revised PWB's draft findings in places based on my own review of the evidence contained in the record.

In the event that a reviewing court disagrees that the 1977 Framework Plan provides the categories of natural resources that must be addressed in this proceeding to find compliance with MCC 39.7515(B), the majority of this section addresses the broader category of aquatic natural resources and the related category of water quality. Accordingly, I also find that the Project will not adversely affect aquatic natural resources and will not adversely affect water quality for the reasons set forth herein.

Expert Testimony

Applicant's Experts

The applicant provided expert testimony related to stormwater management and fish habitat areas (including the potential for impacts to water quality and to aquatic habitat more broadly) from Todd Alsbury and Ted Brown, of Biohabitats, Inc.

Biohabitats reviewed and provided input on stormwater management system design (Exhibit N.58) provided by Emerio Design (Rafael Gaeta, PE, Josh Meyer, PE, and Pat Tortora, PE) and reviewed by Angela Wieland, PE of Brown and Caldwell and Erik Megow, PE of Stantec. Biohabitats also reviewed and provided input on the stormwater flow spreader and vegetated slope design (Exhibit N.59) provided by Mark Graham of Stantec, Rafael Gaeta of Emerio Design, and Jason Hirst, of NNA Landscape Architecture, and reviewed by Erik Megow of Stantec.

Biohabitats (Aquatic Biology and Stormwater)

Todd Alsbury's resume is provided in Exhibit N.66. Mr. Alsbury, of Biohabitats, is a fisheries biologist and holds a Bachelor of Science (B.Sc.) degree in Aquatic Wildlife Biology from the University of Montana. Mr. Alsbury has extensive experience in stream restoration work and watershed and aquatic habitat assessment and monitoring. He has provided habitat assessments and determined appropriate mitigation actions for developments in the floodplain and for instream construction projects. His experience includes implementation of temperature monitoring and identification of sources of heating, conducting fish passage assessments, and conducting biological assessments under assessment methodologies developed by ODFW, Washington Dept. of Fish & Wildlife, U.S. Fish & Wildlife Service, and the Environmental Protection Agency. During his seven years as a District Fish Biologist for the Oregon Department of Fish and Wildlife, Mr. Alsbury spearheaded the collection of extensive biological and physical data on fish populations and their habitats within the North Willamette Watershed District (NWWD), which includes the Project area. Overall, I find that Mr. Alsbury is qualified by education and experience to provide the expert testimony he has provided in this case, particularly related to fish habitat areas (including the potential for impacts to water quality and to aquatic habitat more broadly).

Ted Brown's resume is provided in Exhibit N.66. Mr. Brown, also of Biohabitats, has over 30 years' experience in ecological restoration, watershed management, and planning and stormwater management services. Mr. Brown holds a Master of Science degree in Civil Engineering from the University of Virginia and is a registered professional engineer in a variety of states. As relevant to his role in evaluating the Project, Mr. Brown's technical expertise specifically includes stormwater infrastructure, including leading stormwater and management planning and design for large projects, such as at the

University of Virgina. Mr. Brown's technical expertise also notably includes facilitating implementation of stormwater controls to achieve compliance with Total Daily Maximum Load (TMDL) standards in a variety of watersheds and designing proactive approaches to assessing and bolstering resilience to natural hazards caused by climate change. Mr. Brown's experience includes playing important roles in the development and writing of state stormwater manuals in four states and writing natural guidance for EPA to support he NPDES Phase II Stormwater Program. Overall, I find that Mr. Brown is qualified by education and experience to provide the expert testimony he has provided in this case, particularly related to the potential for the project's stormwater management system to adversely affect fish habitat areas (including the potential for impacts to water quality and to aquatic habitat more broadly).

Stormwater System Design

As noted above, Biohabitats reviewed and provided input on stormwater management system design (Exhibit N.58) provided by Emerio Design (Rafael Gaeta, PE, Josh Meyer, PE, and Pat Tortora, PE) and reviewed by Angela Wieland, PE of Brown and Caldwell and Erik Megow, PE of Stantec. Biohabitats also reviewed and provided input on the stormwater flow spreader and vegetated slope design (Exhibit N.59) provided by Mark Graham of Stantec, Rafael Gaeta of Emerio Design, and Jason Hirst, of NNA Landscape Architecture, and reviewed by Erik Megow of Stantec.

Rafael Gaeta, PE, of Emerio Design (resume at Exhibit N.66), has 28 years of experience in civil engineering design and project management, including stormwater facilities, water quality facilities, and detention and retention systems. Mr. Gaeta holds a Bachelor of Science degree from Portland State University and is a registered Professional Engineer in both Oregon and Washington. Mr. Gaeta has served as the task lead for the Project civil services, including stormwater management. I find that Mr. Gaeta is qualified by education and experience to provide expert testimony on stormwater management.

Mark Graham of Stantec (resume at Exhibit A.155), has over 25 years of experience in the water industry, with specific technical expertise in water quality and water treatment. Mr. Graham hods a Master of Science degree in Environmental Engineering from the University of Cincinnati and is a licensed Professional Engineer in Washington, Oregon, North Dakota, Colorado, and California. I find that Mr. Graham is qualified by education and experience to provide expert testimony on the engineering design of the flow spreader and vegetated slope.

Jason Hirst, of Nevue Ngan Associates (NNA) Landscape Architecture (resume at Exhibit N.66), is a Registered Landscape Architect in both Oregon and Washington and holds a Bachelor of Landscape Architecture degree from Washington State University. Mr. Hirst has worked on a variety of public and private projects, including the design of natural areas, with his main area of expertise sitting at the intersection of natural system and the built environment. This main area of expertise is particularly applicable to his work designing the landscaped slope between the flow spreader feature of the stormwater system for the Project and the riparian area around Johnson Creek. I find that Mr. Hirst is qualified by education and experience to provide expert testimony on landscape design and function.

Erik Megow, PE, of Stantec (resume at Exhibit N.66). is a water resource engineer with more than 14 years' experience as a consulting engineer in water resources, including specific expertise in stormwater best management practice design, hydraulic and hydrology modeling, stream restoration and stabilization design, and stormwater management. Mr. Megow holds a Bachelor of Science degree in Mechanical Engineering from the University of Minnesota. His experience includes serving as the lead designer and stormwater analyst for regional stormwater treatment for the City of Victoria, Minnesota,

including design of stormwater basins to meet volume control and water quality requirements. I find that Mr. Megow is qualified by education and experience to provide expert testimony on stormwater management.

Josh Meyer, PE, of Emerio Design (resume at Exhibit N.66). has six years of experience providing civil design with a specialty in stormwater design. Mr. Meyer has a Bachelor of Science degree in Civil Engineering from George Fox University and is a registered Professional Engineer in Oregon. Mr. Meyer's expertise includes design of hydromodification, water quality, and water quantity control facilities, as well as design of conveyance systems. I find that Mr. Meyer is qualified by education and experience to provide expert testimony on stormwater management.

Pat Tortora, PE, of Emerio Design (resume at Exhibit A.155), has 29 years of civil engineering experience, including expertise in storm drainage facilities specifically. Mr. Tortora holds a Bachelor of Science degree in Civil Engineering from Oregon State University and is a registered Professional Engineer in Oregon, Washington, California, and Idaho. Mr. Tortora's experience includes the design of an extensive on-site multi-planter storm system for a large affordable housing project and the stormwater management plan for the Canby School District. I find that Mr. Tortora is qualified by education and experience to provide expert testimony on stormwater management.

Angela Wieland, PE, of Brown and Caldwell (resume at Exhibit N.66), has 22 years of experience with subject matter specialties in stormwater and green infrastructure and conveyance infrastructure, particularly working as a technical reviewer (which was her role in the Project, Exhibit N.58, page 1). Ms. Wieland has a Master of Science degree in Environmental Engineering from Oregon State University, a Bachelor of Science degree in Civil Engineering from the University of Portland, and is a registered civil engineer in Oregon. Ms. Wieland's experience includes the assessment, planning, and management of water quality and quantity in stormwater planning; NPDES compliance support for public bodies, stormwater master planning, hydromodification best management practices, TMDL implementation plans, and assisting multiple jurisdictions with the development of stormwater management manuals and public works design standards for stormwater. I find that Ms. Wieland is qualified by education and experience to provide expert testimony on stormwater management.

Opponents' Experts

Aquatic Biology and Toxicology

"**Ian Courter** is a cofounder of Mount Hood Environmental (MHE), an Oregon-based science consulting company with additional staff in Washington and Idaho. MHE specializes in fisheries research, water quality monitoring, and aquatic toxicology. Prior to establishing MHE, Ian provided project leadership, management, design, analysis, and data collection for Cramer Fish Sciences in Gresham, Oregon. In addition to his role as a senior scientist, Ian served as the Program Lead for Oregon operations. Ian has served as principal investigator on a variety of salmon and steelhead research projects in watersheds throughout the Pacific Northwest including the Cowlitz, Klamath, Willamette, Yakima, Wenatchee, Methow, Deschutes, Owyhee, Snake, Upper Columbia, and Sacramento/San Joaquin River Basins. He has a Master's degree in Fisheries Science with a minor in Natural Resource Policy and Law from Oregon State University, a bachelor's degree in Environmental Biology from Pacific University, and a Project Management certification from Portland State University, among other certifications." Exhibit N.43, page 70.

"**Lauren Courter** is a toxicologist and a co-founding scientist of Mount Hood Environmental (MHE), an Oregon-based science consulting company with additional staff in Washington and Idaho. MHE specializes in fisheries research, water quality monitoring, and aquatic toxicology. For nearly thirteen years she has been a principal investigator on aquatic toxicology and water quality research, regularly contributing to various MHE technical writing assignments covering a wide variety of topics. Prior to MHE, Lauren engaged in eight years of academic research in the fields of carcinogenesis, molecular toxicology and neurobiology. Her graduate and post-graduate work focused on the genotoxicity of polycyclic aromatic hydrocarbons and toxicant effects on neurodevelopment, respectively. She has a Ph.D. in Toxicology from Oregon State University and a bachelor's degree in Biology with a minor in Business Administration from Pacific University. Lauren is an expert in the study of non-target impacts of herbicides on aquatic and human health. She has written numerous reports and is well-published in her field. More specifically, her consulting research focuses on the effects of terrestrial and aquatic herbicide applications on sensitive aquatic species, relic sediment contamination on ESA-listed salmonid species, and water quality and nutrient monitoring. Her research has spanned basins across Oregon and Washington, including the Deschutes, Willamette and Upper Columbia basins. Lauren regularly serves as a consultant to several private timber companies leading herbicide monitoring efforts on the Oregon coast to determine non-target impacts of and the risks associated with silvicultural operations on human health and aquatic species. She has also served as a legal expert on several issues, including aquatic toxicity work in Douglas County, Oregon on an accidental release of concrete into the Umpqua River. More recently, she has been contracted as an expert to review and disseminate existing contaminant data and literature for the Portland Harbor Superfund Site." Exhibit N.43, page 70.

Stormwater Systems Engineering or Design

Opponents did not provide any evidence in the record from an author that claimed to, or was evidenced to, be qualified by education or experience to provide an expert opinion on stormwater systems, their design, or their engineering.

Facts and Conclusions

Biohabitats Analysis Overview

Biohabitats reviewed the Project with respect to potential adverse impacts that could occur to aquatic natural resources or water quality from operations of the Project. Exhibit N.55. As further explained in the Expert Testimony section above, the expert opinions in Exhibit N.55 were provided by a team of Biohabitats staff "with direct knowledge of the status of fish and aquatic habitat in the area" (Mr. Alsbury) as well as "staff with experience and expertise in stormwater design and performance of typical best management practices for stormwater systems" (Mr. Brown). Exhibit N. 55, page 1.

Biohabitats assessed the pre- and post-construction conditions of aquatic habitat and water quality in the area of potential effect of the Project. Exhibit N. 55, page 1. These areas of aquatic habitat include watersheds containing sensitive aquatic species including several listed as endangered under the Endangered Species Act. Exhibit N. 55, page 1.

Although the primary analysis by Biohabitats in Exhibit N.55 focuses on Johnson Creek and Beaver Creek "because of their proximity to the project area," Exhibit N.55 "covers all area aquatic habitats, including the Sandy River *** through, for example, a reduction in stormwater discharge rates and improved water quality compared to the pre-developed condition[.]" Exhibit S.31, page 5. Additionally,

protections of Beaver Creek are protective of the Sandy River, as that is the ultimate destination of Beaver Creek. For this reason, Biohabitats examined TMDLs and 303(b) listings for the Sandy River when evaluating the Project's effects on water pollution. Additionally, the "closest unnamed tributary of the Sandy River [with] its confluence over 1.25 miles away from … the only [stormwater system] discharge point that ultimately flows to the Sandy River watershed[.] This distance additionally ensures the Sandy River will not be adversely affected by the project." Exhibit S.31, page 4; *see also* Exhibit S.32, page 24, Figure 9 on page 25, and Figure 10 on page 26 (depicting distances to Sandy Wild and Scenic buffer areas).

For the post-construction condition, Biohabitats considered the potential for the Project to have adverse effects on aquatic natural resources and concluded, and I find, that "necessary project design, operation, and maintenance plans are in place to prevent harm to water quality and aquatic habitat." Exhibit N.55, page 1; Exhibit U.20.a, page 38 (reaffirming conclusion after review of all comments in record). Biohabitats additionally notes that the Project "will utilize an adaptive management approach to continuously assess and implement new opportunities for improving program effectiveness in preventing adverse impacts to aquatic resources in Johnson and Beaver Creeks." Exhibit N.55, page 1. Overall, Biohabitats concludes that it is their "expert opinion that the project will not adversely affect aquatic habitat or water quality." Exhibit N.55, page 1. Biohabitats reaffirmed that conclusion after "considering all of the comments in the record[.]" Exhibit U.20.a, page 38. For the reasons provided in this section, I agree, and find that the Project will not adversely affect "fish habitat areas," water quality, or aquatic habitat broadly.

Pre-Construction Conditions

Adequacy of Study of Pre-Construction Conditions

Commenters, particularly the Courters and Ms. Richter in proposed findings, argue that the pre-construction study for Biohabitat's analysis was insufficient. For example, the Courters argued:

> "No field surveys or quantitative aquatic assessments were conducted. Critical baseline data regarding habitat, species presence, and water quality were omitted[,]" and that "Biohabitats did not conduct a single aquatic species survey to inform its conclusions. No fish surveys, no amphibian sampling, no macroinvertebrate assessments, and no seasonal water quality monitoring were included. The entire analysis is speculative. These types of species surveys are customarily included in any aquatic habitat evaluation." Exhibit S.21, pages 1-2.

At Exhibit W.3a (Richter proposed findings), page 24, Cottrell and RFPD1 argued:

> "Opponents' experts explained what is customary industry standard for evaluating aquatic species for a project of this type in detail including weekly or monthly field survey using well-documented protocols over a three-year period to estimate species diversity and density using direct capture or passive observation methods."

As explained above, the six words of MCC 39.7515(B) do not require "quantitative aquatic assessments" or any specific survey, sampling, monitoring, or inventory. Nor do the words require any particular methodology for determining whether the Project may "adversely affect" aquatic natural resources ("fish habitat areas"). Opponents assert that weekly/monthly protocols for three years are

"customary industry standard" and "necessary" for an "aquatic habitat evaluation" but nowhere in MCC 39.7515(B) is there a requirement for an "aquatic habitat evaluation." Instead, the standard requires evaluating the potential for adverse effects from the "use" (the Project) on the resource area – in this case fish habitat. While some level of understanding of nearby aquatic habitats is needed to understand the potential for adverse effects, the bar set by opponents is the wrong one for this Project's level of potential externalities. Furthermore, it is obvious that a three-year study period, if required, would cause unreasonable delay for applicant seeking the approval of conditional use permits, including community service permits – something it is unlikely the 1977 Board intended for a land use system that is designed to provide for the prompt approval or denial of land use applications.

For the reasons that follow, I find that the analysis of the pre-construction condition of Project area aquatic habitats covered by Biohabitats' expert reports provides the necessary evidence in the record to determine that the Project will not adversely affect aquatic natural resources. Notably, "habitat conditions near the project areas were assessed by Todd Alsbury, who has over 25 years of experience conducting monitoring, restoration, and management of fish population and their habitats in the Johnson and Beaver Creek watersheds specifically. Mr. Alsbury has been involved in project planning since 2021, including field review of project proposals on subject properties and in rights of way, assisting with development of best management practices (BMPs), and in-field review in preparation of this memorandum and prior project-related assessments (see Exhibit I.95)." Exhibit N.55, page 3. That is to say, not only is Mr. Alsbury qualified by education and experience as an expert in the general area of aquatic biology, but Mr. Alsbury also has specific experience monitoring fish and their habitats **in these specific watersheds**, including for the government during his seven years as a District Fish Biologist for the Oregon Department of Fish and Wildlife, when Mr. Alsbury spearheaded the collection of extensive biological and physical data on fish populations and their habitats within the North Willamette Watershed District (NWWD), which includes the Project area. Exhibit N.55 (resume). This specific expertise lends credibility to his summary of the habitat conditions, water quality, and aquatic species distribution around the Project area he found relevant to his analysis of the potential for the Project to adversely affect aquatic natural resources. It is reasonable for me to accept an expert's own analysis of the level of investigation needed in a specific context for a specific Project.

As Mr. Alsbury explains, and as I find, "[n]ative migratory fish species are well studied in [the Project] area, due to their at-risk status (most populations in the region are listed under the Endangered Species Act) and regional importance. The distribution of native migratory fish is often used as a surrogate for the presence and distribution of other species with less research available to determine the extent of distribution." Exhibit N.55, page 7. Mr. Alsbury drew on his expertise in these specific watersheds as well as a number of past studies, including the "***24k Project***" conducted as part of the Oregon Plan for Salmon and Watersheds ("***Oregon Plan***") by the Oregon Department of Fish and Wildlife ("***ODFW***"). Exhibit N.55, page 8. The primary goal of the 24K Project was to develop consistent and comprehensive baseline datasets on fish habitat distribution at a scale of 1:24,000 (24K) by obtaining universal input and agreement from other Oregon Plan participating projects. Exhibit N.55, page 8. The 24K Project dataset also provides documentation of direct observations from those Oregon Plan participating projects and important information on barriers to migration, species origin and present production information, and timing of life-stages. Exhibit N.55, page 8.

The 24K Project dataset provides information for Johnson Creek and Beaver Creek on both current and historic habitat distribution (defined as "suitable areas believed to be currently or historically used by wild, natural, and/or hatchery fish populations"). Exhibit N.55, page 8. Overall, "[t]he 24K Project provides extensive and authoritative information about the fish habitat distribution in the area where the

project is proposed." Accordingly, reliance on the 24K Project's extensive and authoritative information – in addition to Mr. Alsbury's personal experience and many other cited sources in his expert reports – was sufficient study for Mr. Alsbury to provide his expert analysis of the potential for the Project to adversely affect aquatic natural resources.

The 24K Project, Mr. Alsbury's personal experience, and other cited sources in Mr. Alsbury's expert reports together provide evidence on which a reasonable person would rely to obtain *the level of information needed* to analyze the potential for this Project to adversely affect aquatic natural resources in the area. I note that the level of information needed in this case may not be the same level of information that would be needed for other projects applying this standard, projects applying other land use standards, or experts using other analytical approaches. However, MCC 39.7515(B) does not prescribe a methodology or analytical approach required to meet the standard and therefore the only question is whether the study completed by Mr. Alsbury is adequate to conclude that the Project will not adversely affect aquatic habitat or water quality. I find that it is.

Notably, no opponent identified how their criticisms of the analysis Mr. Alsbury provided of pre-construction conditions would change the potential for adverse impacts from the Project, particularly given that it is based on "widely relied upon, public, scientific information on the distribution of aquatic life in area streams"[31] (including the extensive and authoritative information from the 24K Project) and based on Mr. Alsbury's specific experience both in these watersheds and having worked on the project, including field review of project proposals, and involvement in project planning since before construction commenced. Exhibit N.55, page 3. There are multiple valid pathways to arrive at the same conclusion. "For example, seasonal water quality sampling would indicate that surrounding land uses (agricultural) are significant contributors of sediment to Johnson Creek. However, sampling is not needed to know that this is true (Capel, et.al. 2018, Shortle, 2021, USGS 2010)." Exhibit U.22.a, page 22.

Instead, opponents' arguments are that Mr. Alsbury could have completed a variety of additional tasks ("electrofishing," "snorkel surveys," "minnow traps," etc., Exhibit S.21, page 2) but not that in doing those additional tasks would have changed the result of Mr. Alsbury's analysis. Exhibit S.21, pages 2-3. In fact, opponents point out that they did do a variety of additional tasks ("snorkel surveys (August 22, 2023)," "amphibian surveys," "photographic evidence") and that "none of these findings were disputed by Biohabitats[.]" Exhibit S.21, page 3. Biohabitats did not dispute those findings precisely because the snorkel surveys, amphibian surveys, and photographic evidence provide evidence in the record confirms that Mr. Alsbury's approach is valid – as it was confirmatory of what Mr. Alsbury found. Identifying a different methodology to come to the same conclusion does not detract from the validity of the conclusion itself.

Moreover, opponents argue that a lack of "direct field observation" means that Biohabitats has "no basis to assert" its conclusion that the Project will not adversely affect aquatic natural resources. Exhibit S.21, page 3; Exhibit W.3a, page 24 ("waters adjacent to the subject property were never field surveyed by PWB or its experts"). First, Biohabitats *did perform* field observations, even if not the specific types of field observations, like "snorkel surveys", that the Courters think should be required by the six words of MCC 39.7515(B). *See* Exhibit N.55, page 3 ("Mr. Alsbury has been involved in project planning since 2021, including field review of project proposals on subject properties and in rights of way … and in-

[31] Exhibit U.20.a, page 21.

field review in preparation of this memorandum and prior project-related assessments (see Exhibit I.95).")

Second, the Courters assert that the specific types of field observations they claim are necessary are those "customarily included in any aquatic habitat evaluation." Exhibit S.21, page 2. However, the six words of MCC 39.7515(B) are not aimed at the completion of an "aquatic habitat evaluation" but rather at the *evaluation of the Project* and its potential to adversely affect area natural resources.

As Biohabitats explains, and as I find was appropriate for evidence to support findings under MCC 39.7515(B), the "goal of Biohabitat's analysis was not to evaluate the aquatic habitat in Johnson Creek or other area waterways. As the title of the document states clearly, the goal was evaluation of the 'Potential for Aquatic Natural Resources Effects From the Bull Run Filtration Project.' Those potential effects (be them positive or adverse) can only be caused by the externalities of the project – such as stormwater discharge. This is why Exhibit N.55 focuses on 'Review of Stormwater Design and System Operation and Maintenance' starting on Page 10 and why the Biohabitats team performing the evaluation included Ted Brown, an expert in stormwater design and performance of best management practices for stormwater systems. Notably, no one challenged Biohabitat's conclusion that 'the project stormwater systems … are the only project aspect which has the potential to have an adverse effect on water quality or aquatic species.'" Exhibit U.20.a, pages 20-21.

"Furthermore, it was not necessary to conduct detailed species surveys because Biohabitats made the conservative assumption that fish, amphibians, and other aquatic species are or historically were present in these habitats, and that any externality of the project that would degrade aquatic habitat could impact aquatic species now or in the future. Notably, the species assumed to be present or historically present are the same as those identified by the Cottrell CPO and PHCA (See Exhibit N.43, Page 52 Cottrell CPO & PHCA Adverse Effects Report). The commenters in Exhibit S.21 state: 'It should be noted that none of these findings were disputed by Biohabitats.' Page 3. Indeed, that is exactly the point – Biohabitats made the conservative assumption that any species shown by official sources, scientific studies, Biohabitats' own experience and in-field reviews for this project, and any findings of opponents were present[32] or were historically present, and thus taken into account in review of project externalities that could affect aquatic habitat." Exhibit U.20.a, pages 21-22.

In this light – that the "the focus of the report [was] on the externalities of the project and those externalities' potential to adversely affect aquatic habitat for any species" Exhibit U.20.a, page 23 – it is clear that the Courters' claim that Biohabitat's conclusions were made "without empirical data" is false. Exhibit S.21, page 2. "Biohabitats' report in N.55 was based on extensive empirical data in the stormwater management report in Exhibit N.58. Exhibit N.58 has 668 pages of analysis and data." Exhibit U.20.a, page 22. Additionally, as noted above, Biohabitats' report is based on "widely relied upon, public, scientific information on the distribution of aquatic life in area streams"[33] (including the

[32] One exception is related to Juvenile salmonids as explained in Exhibit U.20.a, Page 22n8. ODFW data shows that salmonids, like other species, are not present above Cottrell Pond, which currently provides a complete barrier to fish passage. "Therefore, it is unlikely that juvenile salmonids were found adjacent to the project site, but this nuance is ultimately irrelevant given the approach of the report." Exhibit U.20.a, Page 23.

[33] Exhibit U.20.a, page 21.

extensive and authoritative information from the 24K Project). Overall, it cannot be said that Biohabitat's review was done "without empirical data."

Pre-Construction Habitat Conditions

"Johnson Creek, located to the southwest of the main Filtration Facility site, and Beaver Creek, which passes near the Intertie Site near Lusted Road and the distribution main along Cottrell Road, are the main considerations for aquatic habitat that could be affected" by the Project – pre-construction habitat conditions in each of these creeks are "generally considered poor." Exhibit N.55, page 3.

"Channelization and development have greatly reduced riparian vegetation throughout most of the Johnson Creek and Beaver Creek watersheds" and the "riparian corridor is either narrow, minimal, or lacking[.]" N.55, page 3. "The loss of riparian habitat decreases shading and elevates water temperature, typically reduces the filtration of pollutants and sediments from runoff and can result in channel incision and streambank instability." Exhibit N.55, page 3.

Johnson and Beaver creeks are each also "highly fragmented by frequent road crossings" which "often create barriers to the upstream passage of native migratory fish that historically occupied the upper reaches" of the creeks (with those upper reaches being the relevant portions of the creeks in the Project area). Exhibit N.55, page 3.

Note that the reach of Johnson Creek adjacent to the Filtration Facility site is sometimes referred to (by both the applicant and by other parties) as the "headwaters" of Johnson Creek. "The term "headwaters" is somewhat misleading in this situation, as it does not refer to a ready source of water such as a spring. Instead, runoff from the proposed site and the surrounding uplands (shown in the Johnson Creek Upper Watershed Figure [attached to Exhibit S.29]) feeds the stream channel of Johnson Creek that passes by the Filtration Facility site. Above the reach of Johnson Creek near the Filtration Facility site, the Johnson Creek stream channel is underground in a pipeline under a commercial nursery field in Clackamas County. Above the reach under the nursery field (to the south of Bluff Road), there are areas where the stream is above ground. That is, there is a significant length of Johnson Creek above the reach near the Filtration Facility site – most of which is severely impacted by existing agricultural uses and other development." Exhibit S.29, page 3n1.

Pre-Construction Water Quality

"Oregon's Department of Environmental Quality (ODEQ) lists Johnson Creek as a water quality limited 303(d) stream. The listings are primarily due to high temperature (from lack of riparian canopy), bacteria (from wildlife, agriculture, and septic systems), and toxics (from remnant pesticides used in agricultural operations) among other factors contributing to degraded water quality." Exhibit N.55, page 4. "The North Fork of Beaver Creek is also listed as a water quality limited 303(d) stream for temperature and bacteria due to causes similar to Johnson Creek." Exhibit N.55, page 4; Exhibit N.58, Table 2 (complete listing of TMDLs and 303(d) parameters for Johnson and Beaver Creeks).

Water Temperature. For both Johnson and Beaver Creek watersheds, "[w]arm water temperature is a widespread existing problem" even in the upper reaches near the Project area, and "[n]umerous investigations … have consistently indicated that summer water temperatures do not meet state water quality standards" in these watersheds and "are often hotter than state water quality standards for rearing and migratory salmon and trout." Exhibit N.55, page 4. This issue, "together with potential nutrient

contributions, result in [Dissolved Oxygen] concentrations that frequently drop below guidelines in the summer" and "limit salmon and trout productivity throughout both watersheds." Exhibit N.55, page 4. "Elevated water temperatures are caused by low summer base flows, lack of riparian shade, and impoundment of water in ponds[.]" Exhibit N.55, page 4. "Historically, streams were kept cool by forests that shaded the stream channels. But in 2002, the average effective shade over mainstem Johnson Creek was just under 40%" and Beaver Creek shows a similar concern. Exhibit N.55, page 5.

Turbidity/Sedimentation. As explained above, both Johnson and Beaver Creeks in the Project area suffer from high levels of sediment resulting from "[s]ediment laden runoff from agricultural operations" and "removal of riparian and upland vegetation to convert forested areas to agricultural operations[,]" Exhibit N.55, page 6, and this has already has occurred at the main Filtration Facility site to facilitate it uses as a nursery. The use of the SEC area for agricultural cropland is shown in Exhibit N.64, pages 16-20. These high levels of turbidity/sedimentation degrade the instream and riparian habitats that aquatic species rely on to survive and the "increases in fine sediment … can impact stream substrate used by aquatic insects and spawning fish. Fine sediment covers and compacts gravel, reducing the ability of aquatic insects to respire and limiting survival of eggs deposited by fish through reduction in oxygen available to developing embryos." Exhibit N.55, page 6.

The Courters accuse Biohabitats of using photos "intended to distort perceptions of pre-construction conditions," particularly as to a photo on Page 7, Exhibit N.55, of Johnson Creek which was taken after farming at the Filtration Facility site ended. Exhibit S.21, pages 3-4. While Biohabitats agrees that the one photo was after farming at the Filtration Facility ended, "it is representative of the impact of agricultural operations in the area (which were still ongoing upstream of the Filtration Facility property). Sediment coming from those lands contributed to degradation of instream habitat shown in the photo." Exhibit U.20.a., page 27. More importantly, the "sedimentation of Johnson Creek in the upper basin from agricultural uses is a well understood and documented phenomenon" – as discussed by the US Geological Survey in Attachment 2 to Exhibit U.20.a. and shown in Figure 6 of Exhibit U.20.a. from that USGS report, provided below.

Figure 6. US Geological Survey photograph in Attachment 2 titled: "High flows in the upper basin mobilize large amounts of sediment"

"Sediment deposition from the previous use of the filtration facility site and ongoing agricultural operations upstream covers the entire stream bottom from side to side, filling in holes and undercut banks typically used by fish and other aquatic organisms for cover and foraging opportunities. The creek in this area is shallow with limited instream wood or cover that is typically present in streams with intact riparian areas. Agricultural practices like those used at the property prior to the development of the Filtration Facility contributed to the sediment seen in the photo [above] and led to current conditions that negatively impact aquatic and semi-aquatic species in the area." Exhibit U.20.a, page 28.

Pre-Construction Aquatic Species Distribution

Ms. Richter proposes findings that "All parties appear to agree that Johnson Creek and Beaver Creek … support several species of native migratory and resident fish including cutthroat trout and sculpins. Ex N.55, p 8 and N.43, p 48." Exhibit W.3a, page 24." Exhibit W.3a, page 24. The applicant's expert provided consistent aquatic species distribution evidence: "Johnson Creek and Beaver Creek support several species of native migratory and resident fish that are common to Oregon rivers and streams including: coho salmon (ESA listed – threatened), fall Chinook salmon (ESA listed – threatened), winter steelhead (ESA listed – threatened), cutthroat trout (Oregon – sensitive species), rainbow trout, lampreys, minnows (e.g., dace, shiners), and sculpins." Exhibit N.55, page 8.

Johnson Creek. Cutthroat trout are known to be present as far upstream as Cottrell Road[34] in Johnson Creek. Exhibit N.55, pages 8-9. "ESA listed fish species (coho and winter steelhead) are considered present in Johnson Creek up to a point that is 2.26 miles downstream of the southwest corner of the Filtration Facility site (ODFW, 2023). The distribution of ESA listed fish [in Johnson Creek] likely ends at that location due to the presence of 14 barriers to migration (dams, fords, road culverts) that are documented between 307th Ave. and Cottrell Road. All except one of the barriers are deemed to be partial barriers to upstream migration, so there may be occasions when they are passable to ESA listed fish." Exhibit N.55, page 9; Exhibit W.3a (Richter proposed findings), page 24 ("coho salmon are documented in Johnson Creek within two miles downstream and steelhead trout distribution is documented within one mile downstream"). However, currently, a "large pond creates a complete barrier immediately upstream of Cottrell Road (between Cottrell Road and the Filtration Facility site)." Exhibit N.55, page 9. That pond is referred to in these findings as "***Cottrell Pond***". Cottrell Pond will be discussed further below related to the proposed removal of Cottrell Pond (and removal of the only complete barrier to upstream migration in Johnson Creek) as part of the Project.

Beaver Creek. "Cutthroat trout are distributed upstream to Lusted Road in all the upper tributaries of Beaver Creek3. The Intertie Site is further upstream, across Lusted Road. ESA listed fish species are considered present 1.42 miles downstream of Lusted Road on the South Fork Beaver Creek and 1.92 miles downstream of Lusted Road on the North Fork Beaver Creek." Exhibit N.55, page 9.

Amphibians. "In addition to fish species known to be present in the Johnson and Beaver Creek watersheds, several amphibian species are present in wetland and riparian habitats near the Filtration Facility, Intertie Site, and along the Pipeline alignments. There are 63 observations of amphibians (including northern red-legged frog, Pacific chorus frog, Oregon slender salamander, Dunn's salamander, northwestern salamander, roughskinned newt, Pacific giant salamander, and western painted turtle) reported within the upper Johnson Creek and Beaver Creek watersheds based on data collected from iNaturalist (iNaturalist, 2025) and surveys conducted for BES in reaches of Johnson Creek

[34] Cottrell Road is the first public right of way to the west of the Filtration Facility site.

downstream of the Filtration Plant (Adolfson, 2000)." Exhibit N.55, page 9; Exhibit W.3a (Richter proposed findings, page 24 ("The parties also agree that these water bodies are home to a wide variety of amphibians including the northern red-legged frog, rough-skinned newt, salamanders and turtles."). "Amphibians rely on healthy, intact riparian areas where they can forage and seek refuge from predators, with many species being dependent on waterbodies to breed. Red-legged frogs are a state sensitive / strategy species in Oregon that use riparian vegetation, moist forests, and woodlands, as well as dense brush and logs during summer months. The project will enhance the existing riparian and upland areas compared to the previous agricultural land use, which directly negatively impacted habitats required by amphibians to survive." Exhibit N.55, page 10; *see also* Exhibit U.20.a., pages 37-38 (noting that the Project will improve conditions for salamanders that may be found in the Project area "by restoring the riparian buffer and reducing sediment and other adverse inputs into aquatic habitats").

Other Species. Biohabitats' primary analysis in Exhibit N.55 specifically looked at fish, which is appropriate given the focus in the 1977 Comprehensive Plan on "Fish Habitat Areas." However, Biohabitats clarified that Exhibit N.55 addresses "protection of waterways for all aquatic species" – even those "likely to be present in the area [that] were not specifically mentioned in Exhibit N.55, including river otters, macroinvertebrates, freshwater mussels, and crayfish" mentioned by other commenters in the record – as other species like those "rely on the same characteristics of water quality and aquatic habitat analyzed in Exhibit N.55." Exhibit S.31, page 2. For any macroinvertebrates or other aquatic species that also may use surrounding riparian areas, like amphibians, Biohabitats notes that "the project does not propose any removal or disturbance of riparian vegetation along Johnson Creek. In fact, there will be substantial improvements that will increase the current riparian buffer width along Johnson Creek, improving conditions for macroinvertebrates and all other aquatic species compared to the pre-development conditions." Exhibit S.31, page 14. "Overall, the project will improve all these sources of impairment (sedimentation, pollutants, temperature, hydrology, etc. [analyzed in detail below]) when compared to pre-development conditions, which will benefit (rather than adversely affect) all aquatic life, including those species not specifically mentioned in Exhibit N.55" and species that rely on the surrounding riparian areas. Exhibit S.31, page 2; *see* Exhibit N.43 (Cottrell/PHCA), page 52 (identifying as relevant to amphibians the same categories of sources of impairment "sedimentation, toxic runoff, temperature increases, and increased flashy flows"); Exhibit S.31, page 18 (explaining that "the project will improve water quality and reduce impacts on aquatic habitat compared to pre-development conditions for all aquatic/semi-aquatic species present in Johnson Creek in the area" including frogs). This approach is consistent with the fact that the natural resource to be protected is "Fish Habitat Areas" – not fish themselves. This is true whether the standard applied is the 1977 Framework Plan's list of "natural resources" ("Fish Habitat Areas") or the 2016 MCCP glossary definition ("a stream, wildlife habitat"). Accordingly, focusing on "sources of impairment (sedimentation, pollutants, temperature, hydrology, etc.)" to that habitat is a valid approach under MCC 39.7515(B).

Incremental Habitat Degradation

The Courters claim that Biohabitats "characterize Johnson Creek as degraded" and "representative of an urban stream" in an effort to suggest "that further impacts are acceptable simply because the stream has already experienced disturbance reflects flawed reasoning" that "promotes incremental habitat degradation[.]" Exhibit S.21, page 3. Biohabitats responds, and I find, that "Biohabitats does not suggest that the headwater segment of Johnson Creek adjacent to the Filtration Facility site is representative of an 'urban stream' nor that further impacts are 'acceptable' because of the current condition of Johnson Creek. In fact, Biohabitats described the headwaters as having their origins in the urban/rural interface of Multnomah and Clackamas Counties. Biohabitats described land uses varying

from heavily developed urban uses in the lower and middle reaches of Johnson Creek (e.g., Cities of Portland, Milwaukie, and Gresham) and Beaver Creek (e.g., Cities of Gresham, Fairview, Troutdale) to rural and agricultural use in the upper portions of both watersheds. (N.55 Pg. 3).” Exhibit U.20.a, pages 24-25.

Notably, the Courters do not argue that Johnson Creek is *not* degraded, but simply that it is not “urban.” Given the Courters insistence on establishing the pre-construction characteristics of Johnson Creek as critical to the analysis under MCC 39.7515(B), it is confusing that they then object when Biohabitats does just that and accuses Biohabitats of endorsing incremental habitat degradation. To the contrary, Biohabitats’ summary of the pre-construction characteristics of Johnson Creek establishes baseline conditions against which Biohabitats shows, as discussed in the next sections, that the “externalities of this project will improve the quality of habitat in Johnson Creek for all aquatic species. By improving the quality of habitat – whether it started from a degraded baseline or not – it cannot be said that the project will adversely affect water quality or aquatic resources in Johnson Creek.” Exhibit U.20.a., Page 25.

Pre-Construction Nursery Use’s Impact

Ms. Richter proposes findings that: “PWB expert evaluation **assumes** that nursery farming on the facility property was adversely affecting riparian areas” and that “**Without documentation**, the hearings officer lacks any basis from which to conclude that the impacts before construction were any greater than what will result after construction” and that “**Without any evidence to suggest otherwise**, it might be reasonable to assume, given the long-standing farm practices, that the fish, amphibians and microorganisms within the adjacent streams were not impacted by farming practices.” Exhibit U.W3a, page 25.

However, Biohabitats did not need to know “exactly where and how” various species are in Johnson Creek to know that “nursery farming on the facility property was adversely affecting riparian areas.” *See* Exhibit U.W3a, page 25 (“Compliance with the strict adversely affect standard requires knowing exactly where and how the resources exist.”). It is certainly not the case that Biohabitats simply “assume[d]” “without documentation” and “without any evidence” that nursery farming on the Filtration Facility site was adversely affecting aquatic habitats. Instead, Biohabitats consulted with an agricultural expert, Mr. Prenguber, to understand that prior use. Exhibit U.20a, page 20. Additionally, Biohabitats consulted a large number of professional publications in its expert reports. Exhibit N.55, pages 19-20 (15 references cited); Exhibit U.20.a, page 39 (10 references cited). With the exception of the Exhibit U.20.a document from the final open record period, opponents had the opportunity to review those sources and explain in the record if they disagreed with the conclusions Biohabitats’ was drawing based on those sources. No opponent did so.

For example, in the statement that Ms. Richter finds objectionable, Exhibit W.3a, page 25 that (“seasonal water quality sampling would indicate that surrounding land uses (agricultural) are significant contributors to sediment to Johnson Creek. However, sampling is not needed to know that is true. (Capel, et al. 2018, Shortle, 2021, USGS 2010.” Ex U.20.a. p 22.), Biohabitats provides citations to two U.S. Geological Survey documents (Capel, et al. 2018 and USGS 2010) and a study published by Palgrave Macmillan in Palgrave Studies in Agricultural Economics and Food Policy (Shortle, 2021). Exhibit U.20.a, page 39. Moreover, one of those sources, USGS 2010, is provided in full in the record as Attachment 2 to Exhibit U.20.a.

Overall, it is simply not the case that Biohabitats "assume[d]" "without documentation" and "without any evidence" that nursery farming on the Filtration Facility site was adversely affecting aquatic habitats. I find that it was.

Assessment of the Project's Potential for Adverse or Beneficial Effects

At the outset, I find that the approach taken by Biohabitats is an appropriate methodology for assessing the potential for adverse effects to aquatic natural resources and water quality under MCC 39.7515(B). That is not to say that other approaches would not be appropriate. The six words of MCC 39.7515(B) do not prescribe any particular approach. Also, I am not saying that the methodology used by Biohabitats would be appropriate for all projects in Multnomah County subject to the standard. However, for this Project and this analysis, I find that the methodology provides substantial evidence on which I can conclude that the Project will not adversely affect aquatic natural resources nor water quality.

Aquatic Habitat Avoidance

Also notable is the effort taken by PWB to avoid aquatic habitats in the first place. "PWB has made key design choices to avoid waterways throughout the project area, including boring beneath Beaver Creek at Cottrell Road, staying within the existing public right of way for pipeline alignments to the maximum extent possible, and, where not possible, placing pipeline alignments outside of riparian areas and instead using previously developed farm roads and farm areas." Exhibit N.55, page 6.

As explained by Exhibit U.20.a at page 4:

"[T]he project was carefully designed to avoid crossing Beaver Creek. The Water Bureau prioritized avoidance of Beaver Creek throughout the design development process. During development of the design and evaluation of pipeline alignment alternatives, proposed finished water pipeline alignments and construction methods were modified to avoid impacts to Beaver Creek. Two separate crossings of the North Fork of Beaver Creek were evaluated, one on Lusted Road and one on private land south of Lusted Road. A second pipeline route was evaluated that crossed the Middle Fork of Beaver Creek in Altman Road. The final pipeline design realigned the pathway connecting Dodge Park Boulevard and Lusted Road, avoiding all crossings of Beaver Creek in this area.

For most of their lengths, pipeline alignments are located within developed road rights of way. Pipelines buried within existing roads and road shoulders proved an effective way to avoid disturbance to Beaver Creek. As an additional precaution, where the Lusted Road Distribution Main travels within the Cottrell Road right of way and must cross Beaver Creek, the pipe is bored below the Beaver Creek culvert crossing, with no surface disturbance within 100 feet of the creek. Additionally, where the finished water pipeline must connect with an existing conduit adjacent to Beaver Creek, the pipeline connection was adjusted so that it is entirely within the Altman Road and Oxbow Drive rights of way, with no disturbance to Beaver Creek or its riparian vegetation."

Stormwater Management System & Best Management Practices (BMPs) Evaluated by Biohabitats

In evaluating the potential for the Project to have an adverse effect on aquatic natural resources, including "fish habitat areas" and water quality, Biohabitats concluded, no one challenged, and I now find, that the Project stormwater systems are the only Project aspect which has the potential to have an adverse effect on aquatic natural resources. Exhibit N.55, page 10. Accordingly, a general summary of

the design of Project stormwater systems is provided first below, followed by an analysis of each of the factors that contribute to water quality and quality of habitat and how that factor will overall be improved (rather than adversely affected) by the Project.

In developing their expert opinion, Biohabitats reviewed, the following "***Project Stormwater Reports***," each of which represents the expert testimony of its author:

- Exhibit N.58, **Filtration Facility** Stormwater Drainage Report.
  - Authors providing expert testimony: Rafael Gaeta, PE, Emerio Design, Josh Meyer, PE, Emerio Design, Angela Wieland, PE, Brown and Caldwell, Erik Megow, PE, Stantec
- Exhibit N.59, Stormwater **Flow Spreader** and Vegetated Slope.
  - Authors providing expert testimony: Mark Graham, PE, Stantec, Rafael Gaeta, PE, Emerio Design, Jason Hirst, LA, NNA Landscape Architecture
- Exhibit A.75, the **Finished Water Intertie** Stormwater Drainage Report.
  - Authors providing expert testimony: Pat Tortora, PE, Emerio Design, Rafael Gaeta, Emerio Design.[35]
- Exhibit A.77, the **Pipelines** Project Stormwater Report.
  - Authors providing expert testimony: Pat Tortora, PE, Emerio Design, Rafael Gaeta, Emerio Design.[36]

Biohabitats also provided the following note in its Exhibit S.31 report in footnote 1:

> "Note that the Exhibit A.75 Finished Water Intertie Site Stormwater Drainage Report and Exhibit A.77 Pipelines Stormwater Management Report are each marked as a 60% design for review purposes. However, the authors of those reports, from Jacobs and Emerio, have confirmed to Biohabitats that the design has not changed between 60% and 100% design. Additionally, the conclusions in Exhibits A.75 and A.77 were verified based on higher rainfall levels than assumed in the PAC Tool."

In its Filtration Facility Site Stormwater Drainage Report, Josh Meyer, PE of Emerio Design described the facility's proposed stormwater drainage system and site conditions and concluded:

> "Stormwater management for the [**Filtration] Facility site** will meet or exceed all applicable stormwater design requirements, which are found in Multnomah County Code (MCC), the Multnomah County Design and Construction Manual (MCDCM), the City of Portland's Stormwater Management Manual (SWMM), and the City of Portland 2020 Sewer and Drainage Facilities Design Manual (SDFDM), including those for water quality treatment, flow control, and conveyance capacity. The proposed stormwater system also includes capacity to manage future changes in rainfall due to climate change, as discussed in Attachment L." Exhibit N.58, page 29.

The **Intertie** stormwater system uses a "lined basin with underdrain to achieve both water quality and treatment flow control requirements." Exhibit A.75, page 11. The standard achieved includes removal of

[35] *See* Exhibit A.198 showing that Mr. Gaeta certified the stormwater system design details and calculations.
[36] *See* Exhibit A.199 showing that Mr. Gaeta certified the stormwater system design details and calculations.

70% of Total Suspended Solids ("***TSS***") for the water quality design storm. Exhibit A.75, page 11. "The basin is designed to filter the site's runoff through a bioengineered soil mix and gravel media, which is then collected by an underdrain and routed to a flow control structure. The flow control structure has an orifice at the outlet structure to regulate the amount of stormwater released to ensure that the water quality storm is detained and treated." Exhibit A.75, page 11. The basin also serves as a pollution reduction facility, providing water quality treatment through biofiltration media. Exhibit A.75, pages 11-12. Temperature of water from the Intertie site is cooled down by hyporheic process of discharging through the subsurface media and released via an underdrain. Exhibit A.75, page 12.

The **Pipelines** stormwater system will provide both stormwater quality treatment and flow control using dispersion through native vegetation and enhancement of the roadside shoulders with seeded vegetation and amended soils – a system known as Filter Strips. Exhibit A.77, page 13. Filter Strips are a preferred BMP for providing stormwater quality treatment through biofiltration and hydrologic attenuation through vegetated flow paths. Exhibit A.77, pages 13-14.

Biohabitats reached their expert conclusions "after reviewing the Project Stormwater Reports and after receiving extensive responses to [their] questions posed to stormwater and project designers." Exhibit N.55, page 10.

Neither the Courters nor any other opponent has purported to be an expert in stormwater management, as explained above. This is perhaps most clear in the Courters' complaint that there are "no quantitative modeling, no flow estimates, and no sediment loading analysis to support" Biohabitats' analysis of the stormwater system's potential to adversely affect water quality. Exhibit S.21, page 6. To the contrary, "In Exhibit N.58, and hundreds of pages of attachments, quantitative modeling to inform the design of treatment, detention, and conveyance stormwater facilities is provided. These quantitative models include calculated estimates of flows used to design and analyze each proposed facility (each pond, for example). Sizing and design of stormwater treatment facilities in accordance with the MCDCM and Portland SWMM meets water quality performance standards addressing pollutants of concern, including Total Suspended Solids (TSS), which addresses [the Courter's] concern about 'sediment loading'. For TSS specifically, the estimated percent reduction of TSS by facility type used in the stormwater management system is provided in Table 3, page 6, Exhibit N.58." Exhibit U.20.h, page 9.

The extensive expert analysis in the Project Stormwater Reports which were unchallenged by any opposing expert testimony provide a reasonable basis to conclude that it is feasible for the applicant to provide stormwater management systems that will function as designed. I find this notwithstanding the fact that issues have arisen with the construction stormwater management system, particularly because that construction stormwater management system was not implemented using the Project Stormwater Reports' design, but instead was modified in material ways that caused the construction issues. That is, the construction flow spreader is "a temporary version of the flow spreader [that] was installed by the contractor for construction activity" and does not reflect the final design of the flow spreader in Exhibit N.59. Exhibit U.20.h, page 9 that will be utilized when the facility is operational. Moreover, as explained immediately below related to BMPs, these are not mere unenforceable promises. I am imposing a modified version of Staff's proposed condition of approval that will specifically require that the stormwater systems implemented by the Project are installed and operated as designed in the Project Stormwater Reports. If they are not, that will be a matter for code compliance.

Best Management Practices (BMPs)

The Courters dismiss the 700+ pages of analysis and data provided by the stormwater experts in the Project Stormwater Reports as mere "unenforceable promises" and "reli[ance] on proposed BMPs … as 'guarantees' against environmental harm[.]" Exhibit S.21, page 5. However, as explained by the applicant's stormwater experts in Exhibit U.20.h, pages 6-7, the Best Management Practices (BMPs) "integrated into the project's stormwater systems' designs are based on proven, effective techniques, incorporating scientific research, industry standards, and practical experience." *See also* Exhibit U.20.a., page 30. The applicant's stormwater experts note that it is unclear why the Courters call BMPs "unverified," as their "use is enforced by local and state regulators and [they] are based on the best available science to prevent adverse effects on natural resources. In this way, the BMPs serve as an appropriate objective measure to ensure protection of natural resources around the project. Moreover, stormwater BMPs have been applied at the Filtration Facility with additional, voluntary consideration for the local conditions, including an analysis of local storm volumes, slope conditions, and soil types." Exhibit U.20.h, page 6.

Moreover, "BMPs are not promises, they are proven practices that provide well documented water quality treatment benefits when designed, operated and maintained as required by state-of-the-practice design criteria such as that specified in the City of Portland Stormwater Management Manual and the Multnomah County Design and Construction Manual to which the project's stormwater system was designed. When these criteria are adhered to, specific water quality performance outcomes have been consistently documented in the literature." Exhibit U.20.a., page 30. Finally, the system is not just copy/pasting BMPs from "general stormwater manuals" onto the site (Courters, Exhibit S.23, page 2). Instead, the system designed to address the unique characteristics of the Filtration Facility and Filtration Facility site by applying BMPs and other field-proven engineering principles. Exhibit U.20.h, page 10.

Rather than "unenforceable promises", a condition of approval from the 2023 HO Decision requires that "no work shall occur under this permit other than that which is specified within" the written narratives and plans in the record. 2023 HO Decision, page 73. This condition of approval ensures that, if the Water Bureau did not keep their "promises" to build the stormwater system designed to address the unique characteristics of the Filtration Facility and Filtration Facility site, it would, indeed be enforceable through a county code violation process. *See* Exhibit W.1, page 5 (staff describing Enforcement Code and process).

An additional, more specific to the stormwater system, proposed condition of approval is provided below.

The Courters are also concerned that the stormwater BMPs will "fail in the field under winter storm conditions[.]" Exhibit S.21, page 5. "To the contrary, the stormwater management systems have been designed for storms up to and including the 25-year, 24-hour design storm event, and have been further designed to consider the 50- and 100- year storms. As shown in Tables 4 and 5 of Exhibit N.58 Attachment L (Climate Change Considerations in Design of Stormwater Management System), the 'Filtration Facility detention ponds will continue to function and maintain freeboard during the 50- and 100-year design storm events[.]]' Therefore, the filtration facility stormwater system will not fail under even the most extreme (100-year) winter storm conditions." Exhibit U.20.h, page 7.

Finally, the Courters argue that the stormwater BMPs will fail because of "steep slopes, and clay-heavy soils." Exhibit S.21, page 5. However, these "factors are addressed in the design of the specific

stormwater management systems for the project. First, the stormwater conveyance and treatment systems are designed to prevent concentrated flows down slopes[.]" Exhibit U.20.h, page 7. The "only steep slope that will interact with the stormwater system is the area below the flow spreader" which is specifically designed, as explained in Exhibit N.59, to provide "energy dissipation and evenly distributes flows … without creating erosion or scour (evidence by gullies or rills) or mobilizing sediment." Exhibit N.59, Page 2. The flow spreader is an "appropriate facility for use on this slope, as evidenced by the fact that the slope is approximately 12%, well below the SWMM standard of a gradient of 20% or less." Exhibit U.20.h, page 7 (citing Exhibit N.59, page 4). "Second, due to the limited measured infiltration at the Facility site (the commenter's concerns about the type of soils appears to be about limited infiltration potential), the proposed system does not rely on the use of infiltration for stormwater management. Instead, stormwater treatment and detention facilities, as well as offsite conveyance, are used in conformance with the MCDCM and Portland SWMM. (See Exhibit N.58, Section 1.6.1, for a discussion of infiltration and Section 2.2 for a discussion of soil types.)" Exhibit U.20.h, page 7.

As Biohabitats explains, and I find, particularly when "compared to the nursery pre-development condition where no BMPs existed, the BMPs will provide better water quality treatment and protection" as evidenced in the Project Stormwater Reports. Exhibit U.20.a., page 30.

Extensive Stormwater Infrastructure

The Courters state that the Project will have "no stormwater infrastructure, nor County plan for stormwater conveyance." Exhibit S.21, page 6. As evidenced by the extensive discussion of stormwater systems in these findings, it is inaccurate to say that there is "no stormwater infrastructure" proposed to serve the project. In fact, the stormwater infrastructure for the Project is extensive, including systems that collect and convey stormwater, treat stormwater, detain stormwater, and discharge stormwater off site at rates and locations consistent with pre-development conditions. The Courters here "may be implying that project stormwater needs to be discharged only to a public stormwater main (a 'County plan') for the project to be built. This is not the case. First, discharging to an overland flow path and maintaining existing drainage patterns, particularly for linear construction, is allowable and preferred by the governing stormwater design standards, provided that adequate outfall protection and energy dissipation and/or erosion control are used. This project has proposed these measures at each point of discharge according to the relevant stormwater design standards and site-specific needs, coordinating with Multnomah County in the development of Facility and off-site stormwater management systems." Exhibit U.20.h, page 8.

Instead, it is the pre-construction use of the site that had "no stormwater infrastructure[.]" As detailed above, the pre-construction discharge of stormwater from the Filtration Facility site was wholly uncontrolled, often running over and through bare, tilled earth to Johnson Creek without the benefit of any flow control or water quality treatment.

Biohabitats Independent Assessment

Notably, Biohabitats did not simply "rely" on "third-party" designs of the stormwater system as stated by the Courters in Exhibit S.21, page 3. Instead, "the Biohabitats team performing the evaluation included Ted Brown, an expert in stormwater design and performance of best management practices for stormwater systems. Mr. Brown conducted many hours of review of the project stormwater proposal, including many meetings with project stormwater system designers, challenged project stormwater designers' assumptions, and provided input on improved designs that were incorporated into the final

design in Exhibits N.58 and N.59. Biohabitats did not simply 'rely' on the project stormwater designers 'intentions' – but instead **Biohabitats provided an outside, third-party review**, was an active participant in the design process, and helped shape the proposed stormwater system and project more generally to ensure that the project will not adversely affect aquatic natural resources." Exhibit U.20.a, page 24.

Notably, no other party in this proceeding has claimed to, or is evidenced to, be qualified by education or experience to provide an expert opinion on the engineering, design, or function of the Project's stormwater management systems.

Sedimentation

At the **Filtration Facility** site, the "stormwater system (detailed in Exhibit N.58) will reduce the potential for sediment transport and discharge compared to the predevelopment agricultural conditions (which included periods of exposed, cultivated soils) by using vegetated stormwater management facilities (i.e., BMPs) approved in the Portland Stormwater Management Manual (Portland SWMM) implemented specifically for sediment removal (refer to Exhibit N.58, Table 3). In addition, proposed vegetated areas at the Filtration Facility will be restored using permanent native grassland seeding with trees and understory plants appropriate for the surrounding context and for habitat restoration. The extensive re-vegetation of the site will dramatically reduce sediment runoff. See N.60 (Filtration Facility Site & Lighting Drawings), 00-LU-306 Landscape Plan." Exhibit U.20.h, page 5.

Moreover, at the Filtration Facility site, "post-construction site conditions will convert approximately 14[37] acres of the total 95-acre site to impervious surface. In addition, approximately 33 acres of cropland will be restored to native meadow, grassland, or Oak woodland." Exhibit N.55, page 10. "Compared to the prior agricultural conditions of the site, this will decrease sediment loading from the site (CBP, 2018; Stuntebeck et al., 2011)." Exhibit N.55, page 11. Additionally, stormwater BMPs at the Filtration Facility site use a treatment train approach (meaning that runoff is treated and managed through multiple BMPs), including an ecoroof, vegetated swales, filter strips, bioretention facilities, and stormwater planters. These BMPs are Portland SWMM approved facilities to meet water quality performance standards (including reduction of sedimentation) and "Table 3 of the Filtration Facility Stormwater Drainage Report shows collective reduction in sediment loading by upwards of 70%. Additionally, for storm events greater than the water quality design storm, the proposed detention ponds will provide further treatment by allowing sediment to settle out during the time water is detained in these facilities." Exhibit N.55, page 11.

Exhibit N.59 (Stormwater Flow Spreader and Vegetative Slope) explains how the stormwater conveyance and treatment systems are designed to prevent concentrated flows down slopes. As concluded on page 6 of Exhibit N.59, "the proposed flow spreader and vegetated slope are conservatively designed, exceeding design criteria in the SWMM for similar facilities. The design achieves even flow distribution across the vegetated slope and limits maximum flow velocity to a maximum of 1.3 ft/s (less than half the SWMM criteria), providing energy dissipation and preventing erosion problems and sediment transport off the [Filtration Facility] site or into Johnson Creek."

[37] The Courters in Exhibit U.15 state the Filtration Facility will include "approximately 40 acres of impervious surface[.]" Exhibit U.15, page 5. This is incorrect.

It is unclear why Ms. Richter (representing the Cottrell) states that "[r]etention and filtration of stormwater will not remove the fine sediment inputs in Johnson Creek that are created by operation of the new asphalt and concrete surfaces." Exhibit N.69, page 6. The stormwater system will indeed remove fine sediment. "Fine sediment is a component of total suspended solids (TSS). The project stormwater system, as described in Exhibit N.58 Filtration Facility Site Stormwater Drainage Report, will address water quality concerns (including fine sediment) from impervious surfaces including asphalt and concrete surfaces." Exhibit S.29, page 11.

The **Intertie** site stormwater management system includes grassy swales and bioretention and uses a treatment train approach (meaning that runoff is treated and managed through multiple BMPs) to provide both water quality and water quantity treatment. Exhibit N.55, page 11. "Sediment loads from the 0.57-acre site will be reduced compared to the predevelopment (agricultural land) condition loads because of the proposed post-development stormwater treatment system." Exhibit N.55, page 11. After reviewing the proposed stormwater system, Biohabitats concluded that the system "will significantly reduce the amount of fine sediment contributed to … Beaver Creek[] compared to the previous agricultural land uses." Exhibit N.55, page 6. Further, after implementation of stormwater management designs including management of runoff through multiple BMPs, the "result is stormwater traveling to … Beaver Creek in a manner that contributes significantly less sediment loading to the receiving waters compared to the pre-development agricultural land use. Therefore, the project will not adversely affect, and will instead positively affect, sediment loading of aquatic habitats in the area." Exhibit N.55, page 11.

The **Pipelines** will "have no post-development changes compared to pre-development conditions with respect to water quality and water quantity." Exhibit N.55, page 11.

The commenter in Exhibit N.10 (Meacham) expressed concerns that the improvement of the farm road between Dodge Park Blvd. and Lusted Road – where the Finished Water Pipelines will be placed underground -- would lead to additional sedimentation ("muddy water") and suggests other unspecified negative effects. Exhibit N.10, page 2; Exhibit S.5, page 1. However, this is not a new road, but instead an "improvement over the previous farm road in this same location that did not have stormwater BMPs in place to reduce impacts to fish, wildlife, and their habitats. See Exhibit A.77. To meet the stormwater requirements for both stormwater quality treatment and flow control along the pipeline alignment, the project proposes to use dispersion through native vegetation and enhancement of the existing county right of way and the gravel road across agricultural land between Dodge Park Blvd. and Lusted Road with seeded vegetation and amended soils, referred to as filter strips. Filter strips are a common and preferred BMP for ODOT for stormwater quality treatment and flow attenuation, providing filtration and infiltration along vegetated flow paths. See Exhibit A.77 for additional information about the pipelines stormwater system." Exhibit S.31, page 7.

Mr. Meacham provided testimony that the position of the road does not "avoid the headwaters of the North Fork of Beaver Creek." Exhibit S.5, page 1. This was responded to by Biohabitats at Exhibit U.20.a, pages 3-4. Most importantly, "Beaver Creek does not extend to the improved road area" as "any flow of water here has been buried by the commercial nursery use of the land" and "the proposed improved farm road does not cross the "swale" the commenter identifies, but instead turns to the west and follows the southern property line before turning south on another farm road and connecting to Dodge Park Blvd." Exhibit U.20.a, page 3. "Overall, the improved road will not adversely affect natural resources." Exhibit S.31, page 7. Note also that "[p]rior to construction, in the same alignment along the edge of the farm field, there was an existing impermeable farm road that had been in use for quite some

time. Therefore, this is not a 'new impermeable road' being installed for the project." Exhibit S.30, page 2.

"The **Lusted Road Distribution Main (LRDM)** will be within the developed area of the right-of-way of SE Cottrell Road and cross under Beaver Creek below the culvert that conveys the creek, just downstream of Cottrell near the intersection of Dodge Park and Cottrell Road. Although the selected low impact design alignment passes through the SEC-WR zone where the zone encompasses the Cottrell Road right-of-way, neither the creek itself nor any of the vegetated corridor will be disturbed. Accordingly, there is no risk associated with the LRDM of introducing sediment laden water into Beaver Creek that would lead to adverse impacts to aquatic species in the creek and associated riparian area." Exhibit N.55, page 11.

Additionally, "[r]iparian and upland revegetation actions along with implementation of stormwater BMPs in and around the Filtration Facility, Pipeline alignments, and Intertie will significantly reduce the amount of fine sediment contributed to Johnson and Beaver Creeks [and other area aquatic habitats, such as the Sandy River] compared to the previous agricultural land uses." Exhibit N.55, page 6; Exhibit S.31, pages 5-6 (other aquatic habitats).

Overall, the above described "design choices will reduce the potential for sediment being introduced to area streams that would lead to adverse impacts to aquatic resources." Exhibit N.55, page 7. The overall "result is stormwater traveling to Johnson Creek and Beaver Creek in a manner that contributes significantly less sediment loading to the receiving waters compared to the pre-development agricultural land use" at the Intertie and Filtration Facility sites. Exhibit N.55, page 11.

Therefore, Biohabitats concludes, and I find, that the Project "will not adversely affect, and will instead positively affect, sediment loading of aquatic habitats in the area." Exhibit N.55, page 11.

<u>"Pollutants of Concern"</u>

"Similar to sedimentation, the project stormwater treatment practices will result in lower pollutant loading rates in area aquatic habitats compared to the pre-development agricultural land use." Exhibit N.55, page 12.

The "***Pollutants of Concern***" for Biohabitats' analysis appropriately looked at any TMDL or DEQ 303(d) parameters for Johnson Creek and for the Sandy River (where Beaver Creek ultimately flows). *See* Exhibit N.58, page 5, Section 1.6.2. As required by the performance standards for stormwater treatment in Table 1-2 of the Portland SWMM, the Project stormwater systems use of a pollution reduction facilities that will reduce these Pollutants of Concern compared to the pre-construction use. Exhibit N.58, page 5 (Filtration Facility); Exhibit A.75, page 11 (Intertie); Exhibit A.77, pages 13-14 (Pipelines – using filter strips and applying ODOT standard requiring better quality after the project, rather than Portland SWMM).

Some of the Pollutants of Concern are legacy **pesticides** found in the Project area, including DDT, DDD, DDE, and Dieldrin. Exhibit N.58, page 5. As detailed above, "the prior nursery crop production at the Filtration Facility and Intertie sites required the application of pesticides, resulting in runoff with

pesticide loading into area aquatic habitats. In contrast, PWB has committed[38] to not applying pesticides or herbicides to any vegetation of the project. Additionally, the project includes removal and beneficial reuse of soils that were contaminated by agricultural use of pesticides, under guidance and permitting from ODEQ. The removal of contaminated soils, in combination with the commitment to not applying any new pesticides or herbicides to project areas, will result in a dramatic reduction in pesticide loading rates traveling from project areas into area aquatic habitats." Exhibit N.55, page 12.

Ms. Richter argues that Biohabitat's analysis on this topic amounts to "[s]imply stating the pesticides were polluting the streams to a greater degree than will occur with stormwater treatment, without any testing" and that "is a conclusion, not substantial evidence." It is substantial evidence, however, because it is an expert opinion based on evidence and expertise. Ms. Richter's assertion is that pre-construction water testing (weekly, for years) is the *only* evidence that could be substantial evidence. However, that argument ignores the extensive stormwater engineering reports that conclude – in compliance with SWMM standards – that the Project stormwater systems include pollution reduction facilities that will reduce pesticides, as well as other pollutants. As this is precisely the performance standard that must be met under applicable stormwater standards, and as there are no stormwater system design experts who have testified to challenge the conclusions of the Project Stormwater Reports, it is inaccurate to say that Biohabitats "[s]imply state[s]" a bald "conclusion" that there will be a reduction in pollutant loading leaving the Project sites.

Another Pollutant of Concern is **bacteria**. Exhibit N.58, page 5. The Project "will result in reduced bacteria loading compared to the pre-development agricultural condition. The Johnson and Beaver Creek impairments for bacteria are primarily attributed to livestock, wildlife, and/or failing septic systems in the watershed. The proposed site conditions at the Filtration Facility, Intertie, and pipeline alignments do not create any added sources of bacteria loading compared to existing conditions. Additionally, the stormwater BMPs on site will treat bacteria loads. A new state of the practice septic system will be installed within Basin A of the Filtration Facility site, and the Intertie site and pipeline alignments do not have any restrooms or other sources of septic effluent." Exhibit N.55, pages 12-13.

Other Pollutants

Although the focus of the stormwater systems – and Portland SWMM and other regulations used to design those stormwater systems – is on Pollutants of Concern, the "vegetated stormwater management facilities utilize sedimentation and filtration as the primary unit treatment processes" and these processes will remove both Pollutants of Concern and other pollutants. Exhibit N.58, page 5. "The treatment capability of the BMPs of the project stormwater systems are estimated to result in a pollutant load reduction of at least 40% more from the site area being treated by the BMPs" which will "result in lower pollutant loading rates in area aquatic habitats compared to the pre-development agricultural land use." Exhibit N.55, page 12.

One non-Pollutant of Concern Biohabitats specifically looked at is excess **nutrients** (e.g., total phosphorus and total nitrogen), which can contribute to impaired water quality. Exhibit N.55, page 12. "Like sediment, compared to the prior agricultural conditions of the site, nutrient loading from developed land is anticipated to be less[.]" Exhibit N.55, page 12. "As noted above, on the eastern

[38] "PWB also proposed this commitment as a condition of approval, which was incorporated by the former Hearings Officer into the prior Final Order as a condition of approval on page 84." Exhibit N.55, page 12, fn5.

portion of the Filtration Facility site, about 29 acres of cropland will be restored to a native meadow and oak woodland, which will produce significantly lower nutrient loading compared to the prior cropland use[.]" Exhibit N.55, page 12. "At the Intertie site, the conversion of 0.31 acres of cropland to impervious surface will result in a net reduction in nutrient and other pollutant loading based on land cover change. Additionally, the stormwater BMPs on site (swales and bioretention) will provide additional load reductions of at least 40%. The proposed pipelines will create temporary disturbances during construction but will have no post-construction changes compared to existing conditions with respect to water quality." Exhibit N.55, page 12.

Opponents raised concerns that runoff from "**impervious surfaces**" will carry various pollutants, such as "oils, metals and chemical residues" and "degrades water quality, diminishing the ability of streams and wetlands to support fish and invertebrates." Exhibit S.10 (Swinford), page 2. This is not the case. The Filtration Facility and other Project stormwater systems will treat runoff from impervious surfaces before discharge. "[I]mpervious surface areas at the Filtration Facility drain to onsite vegetated stormwater quality treatment facilities, including planters, basins, grassy swales, filter strips, and an ecoroof, all designed to meet the Portland SWMM requirements and remove pollutants of concern. These BMPs use a combination of unit removal processes including sedimentation, filtration, sorption, infiltration, and biologic uptake to specifically address potential water quality impacts from impervious surfaces (including any 'oils, metals, and chemical residues') prior to discharge at the Points of Discharge described in Exhibit N.58." Exhibit U.20.h, page 3.

One commenter claimed that trucks associated with the Project will be shedding **microplastics** into Beaver Creek, Johnson Creek and the Columbia River. Exhibit S.2 (Shapiro), page 1. In response, Biohabitats explained:

> "Microplastics are, unfortunately, abundant in the aquatic environment and there is no reason to believe that Johnson Creek, Beaver Creek, or any other area waterway is an exception. *** [E]ven the most isolated areas in the United States—national parks and national wilderness areas—accumulate microplastic particles after they are transported there by wind and rain. *** The Brahney study found that: *** '[U]rban centers and resuspension from soils or water were shown to be the principal sources for wet-deposited plastics. By contrast, plastics deposited under dry conditions were smaller in size, and the rates of deposition were related to indices that suggest longer-range or global transport.' ***Operations at the Filtration Facility that could contribute to microplastics in the environment are the transport of materials used in the treatment process to and from the site as well as staff commutes to operate the facility. However, the proposed level of increase in vehicle trips (particularly when taking into consideration the predevelopment agricultural use of the land[39]) will have a negligible impact on the quantity of microplastics in area waterways, and a negligible corresponding increase in risk associated with microplastics contributing to degradation of aquatic habitat. It is the cumulative effect of millions and millions of vehicles – and other sources of microplastics carried globally and deposited on waterways – that have the potential to degrade aquatic habitats." Exhibit U.20.a, page 2.

Moreover, to the extent the microplastics concern is related to on-site trips, the stormwater system will address them in the same manner as other pollutants. As explained by the applicant's stormwater

[39] "The pre-development agricultural use of the land included use of tractors and other rubber-tired farm equipment that contributed microplastics and other contaminants that directly impacted aquatic habitat in Johnson Creek." Exhibit U.20.a, page 2n2.

experts, the stormwater system uses "plant and soil media to treat stormwater using a combination of unit removal processes including sedimentation, filtration, sorption, infiltration, and biologic uptake" all of which are commonly classified as "bioretention" facilities. Exhibit U.20.h, page 1. Studies indicate that microplastics are removed from stormwater runoff by stormwater systems using bioretention facilities consistent with those proposed at the Filtration Facility site, with removal being correlated with TSS removal. Exhibit U.20.h, page 2. "Thus, microplastics in stormwater runoff are anticipated to be removed using bioretention facilities as proposed at the Filtration Facility site." Exhibit U.20.h, page 2.

The potential pollutant of pre-existing contaminated soils at Project sites is addressed later in this 2025 Decision.

Overall, the stormwater systems for the Project will significantly reduce pollutants, including Pollutants of Concern, nutrients, microplastics, and other pollutants, in area aquatic habitats. Accordingly, the Project "will not adversely affect, and will instead positively affect, pollutant loading to aquatic habitat in the area." Exhibit N.55, page 13.

"Contamination" From Filtration Facility Chemical Use"

Commenters expressed concerns that the filtration facility's use of chemicals puts area aquatic habitats "in danger of being contaminated by the water filtration plant." Exhibit N.33, page 1. As explained below, I find, as did the previous Hearings Officer under the "hazardous conditions" approval criterion, that the Water Bureau will safely handle chemicals at the Filtration Facility. Overall, Biohabitats concludes, and I find, that "chemical use in the filtration facility will not adversely affect aquatic natural resources." Exhibit U.20.a, page 7.

Related to the topic of concerns about contamination from water treatment chemicals at the Filtration Facility, there is confusion from some commenters about the function of the overflow basins. *See, e.g.*, Exhibit N.33, page 1 (Courter) ("The filtration plant will always need to pump water out of the facility in order to prevent their overflow ponds from actually overflowing."). This is inaccurate. The Filtration Facility will be "operated as a zero liquid discharge facility, meaning that no process water (be it untreated Bull Run water or finished water after processing) will be discharged to Johnson Creek. Overflow basins are on site to contain process water when operational conditions warrant diversion from the main treatment process. Water sent to the overflow basins is then processed back through the facility." Exhibit U.20.a, page 7. "Stormwater that falls into the Area 90 overflow basins can be pumped to Pond C (one of the six dry detention ponds), but if the stormwater is comingled with any process water it will be returned to the head of the facility. Further description of the overflow basin functions can be found in the separately prepared technical memorandum titled 'Overflow Basin Overview TM' in the land use record Exhibit I.60. Both basins include underdrain systems, described in Section 3.3[.]" Exhibit N.58 (Filtration Facility Stormwater Report), page 16.

Pipelines Specific Concerns

Commenters expressed concerns about the effects that the Finished Water Pipelines "down Dodge Park Blvd will have on springs that feed into Beaver Creek." Exhibit N.15, page 1. While this comment ultimately appears to be about "pipeline construction", PWB has provided information about how the presence of the operating Pipelines underground – in the area of Dodge Park and in other areas – will not adversely affect groundwater resources that may feed area springs that feed into area aquatic habitats. Exhibit S.30, page 12, "explains that, in part because groundwater is found only below the bottom of the

excavated depth of the pipeline installation, the pipeline … operation will not change groundwater flows or reduce the flow from existing springs into Beaver Creek" and therefore, Biohabitats concludes, and I find, there will be no "long term impact that could adversely affect natural resources in the area" from the presence of the operating Pipelines underground in areas near aquatic habitats. Exhibit S.31, page 9. The permanent installation of the Pipelines will also include an important design feature of "the intermittent placement of trench cutoffs that will stop water flowing along the low permeability zones of backfill of the pipeline and interrupt flow of water along the pipeline. The trench dams prevent the pipeline from acting as a 'French drain' that could otherwise alter a shallow groundwater regime." Exhibit S.30, page 14.

Opponent Charles Ciecko expresses a concern that "pipeline drains" in the raw and finished water pipelines. Mr. Ciecko assumes "that these drains are utilized when pipelines must be emptied for the purpose of repair or maintenance activities." He is concerned this will "cause localized ponding, erosion or run-off into local drainage swales and protected watercourses." Exhibit N.48, page 19. PWB responded to this concern and explained that it "has been operating the conduit systems that convey Bull Run water to Portland for over a century, including all of the associated drainage blow-offs, which are the same as [the "drains" Mr. Ciecko has identified that] will be associated with the new pipelines. All drinking water systems have a periodic need to drain the pipes and there are well-established best management practices (BMPs) in place across the utility sector for conducting this activity safely and without adverse impacts on the surrounding environment. For example, Portland Water Bureau implements the appropriate BMPs by dechlorinating previously treated drinking water when it must be released and controlling flow rates using valves and energy dissipation BMPs such as rip rap to prevent water quality, erosional, or other impacts to the environment. The new pipeline segments associated with the filtration facility will be operated and maintained using the same established BMPs." Exhibit S.30, page 25. Biohabitats reviewed Exhibit S.30, and concluded, and I find, that "[c]onsidering, in particular, the BMPs in place for conducting standard draining of pipes in drinking water systems, the pipeline drains will not adversely affect aquatic habitat or water quality in the project area." Exhibit S.31, page 16.

Filtration Facility Groundwater Seepage or Depletion

Commenters express concerns that the collection of groundwater in underdrains could have an adverse effect on aquatic natural resources in Johnson Creek by either creating an "artificially elevated flow volume" – see Exhibit S.14 ("dewatering activity is not temporary. It is expected to continue … possibly into operations") – or by "groundwater depletion" which will "lower the water table"[40] and "lead to a decline in water quality and quantity to the area" aquatic habitats and springs. Exhibit S.15, page 1.

The only interaction the operating Filtration Facility will have with groundwater at the site will be the operation of the underdrain systems, which will only interact with the "perched" groundwater at the site, and not the deeper Springwater Formation aquifer that is about 50-ft below the ground surface, nor the even deeper Troutdale Formation aquifer from which area wells source water. Each of these geologic areas is described in more detail earlier in this 2025 Decision.

[40] A "point of clarification is that there is no 'water table' associated with the perched water that will be passively re-routed by the underdrain system. A 'water table' is the elevation at which water in an unconfined aquifer is in equilibrium with atmospheric pressure. The elevation of the perched water is dependent on the distribution of unconsolidated geologic material and is not considered an aquifer." Exhibit U.20.g, page 14.

A description of the underdrain system is provided in Exhibit U.20.g, pages 2-3:

> "After the completion of the facility, seasonally variable amounts of groundwater seepage will be collected by an underdrain system beneath the below-grade structures of the process basins, the clearwell, and the overflow basins. When groundwater seepage is high enough that water pressure builds up below the structure foundations, the underdrain system will allow the water to flow away from under the foundation to the stormwater system, relieving uplift pressure on the slab and preventing structural damage during periods of extended wet weather. In this case, seepage beneath the process basins and clearwell will drain to a pump station, where it will be pumped to a stormwater pond at the ground surface, and then discharged to Point of Discharge #1. Seepage beneath the overflow basins will flow by gravity to the flow spreader at Point of Discharge #2."
>
> "The subgrade beneath foundations of below grade structures was not disturbed after the required excavation was achieved [during construction prior to this remand]. Drain rock was placed on the undisturbed native soils, and then drain piping was placed above the drain rock and covered with additional drain rock. When groundwater seepage into the zone below the structures is relatively low, the groundwater stays in the subgrade soil below the structure. It is only during periods of extended wet weather that the seepage will create uplift pressure to be relieved through the underdrain systems."
>
> "The groundwater seepage that passively collects in the structural underdrain systems will not adversely affect the local aquifers, habitat areas, seeps and springs, or Johnson Creek because precipitation will continue to infiltrate across the site and beneath the structures. Only when pressure builds up beneath the structures do the underdrains function to protect the structures. At other times, the water around the structures will naturally infiltrate into the groundwater system through the foundations' drain rock and native soils."

Importantly, the underdrain system will not include any active dewatering processes. The only groundwater that will be collected is through passive seepage into the underdrain systems, as explained more extensively elsewhere in this decision. "Pumping" of water implies active dewatering, where water is pulled or sucked out of the ground in the manner of a domestic well. This is not the case. The only pumping that will occur is after the groundwater seepage has moved via gravity flow from the underdrains into a low collection point, where a pump exists. The water is then pumped from the low collection point to the higher elevation stormwater management system at the ground surface. Exhibit U.20.g, page 11.

Notably, this will not create a "water quality" issue as the commenter in Exhibit S.15 is concerned about. Groundwater at the Filtration Facility site was tested to evaluate the potential for pesticide contaminants of concern to be present in water discharged from the underdrains of the project buildings. Exhibit S.29, page 2. None of the contaminants of concern were detected in the testing. Exhibit S.29, page 2. Moreover, any water collected in the underdrains will pass through the stormwater management system before discharge. Finally, any "springs in the area would be fed by Springwater Formation groundwater sources that rise and fall seasonally in this manner. Dewatering that is necessary for construction of the project will mimic the regular fall of water levels and will not have any impact on water quality when those groundwater sources refill from precipitation." Exhibit U.20.g, page 14. This will be even more

true for the operating project's underdrain system, which will have only a negligible effect on groundwater availability. Overall, the applicant's groundwater experts conclude, and I find, that the Project "will not cause a 'decline in water quality' in area springs or wells." Exhibit U.20.g, page 14.

Nor will the underdrain system "lower the water table" and "lead to a decline in water … quantity to" Johnson Creek as expressed in Exhibit S.15, page 1. The amount of water that will accumulate in the underdrains will vary by season. Even in wet seasons, the "amount of groundwater seepage that will be collected by the underdrain system … will have a negligible effect on groundwater availability" for natural resource purposes, such as springs and Johnson Creek, and during dry seasons, the groundwater is anticipated to not collect in the underdrains at all, and instead "naturally infiltrate into the groundwater system through the foundations' gravels." Exhibit U.20.g, page 14. There is no risk of adverse effects on natural resources from the Project creating a water quantity issue.

Moreover, "the major source of groundwater that supplies Johnson Creek through seeps and springs is the deeper aquifer that is about 50-ft below the ground surface. This deeper aquifer was not and will not be impacted or pumped in association with [Filtration Facility] operation (as it is well below the perched groundwater areas). The perched groundwater will be recharged quickly [after construction dewatering is completed] (over a few wet months as explained in [Exhibit U.20.g, page 6]), and, regardless, the perched groundwater contributes only negligible amounts of groundwater to Johnson Creek.[41] Post-construction, the perched groundwater from the filtration facility site [collecting in underdrains] will continue to contribute only negligible amounts of groundwater to Johnson Creek." Exhibit U.20.a, page 9; Exhibit U.20.g, page 3 ("the contribution of groundwater seepage to the stormwater system will not artificially elevate flow volumes in Johnson Creek and will have a negligible contribution compared with the surface water and groundwater flow contributions to Johnson Creek from the upper watershed area").

Accordingly, Biohabitats concludes, and I find, that the "groundwater seepage that passively collects in the structural underdrain systems will not adversely affect riparian habitat areas or Johnson Creek because the groundwater seepage will be a negligible contribution compared with surface water and groundwater flow to Johnson Creek from the upper watershed area, as explained in [Exhibit U.20.g]. Moreover, that small contribution to Johnson Creek will pass through the stormwater management system, providing quantity and quality controls." Exhibit U.20.a, page 8. "If anything, the water from the underdrains will serve to cool stormwater from the site and reduce thermal loading in Johnson Creek." Exhibit U.20.a, page 36; Exhibit U.20.a, Attachment 2 (USGS Fact Sheet), page 4 ("groundwater discharge cools the stream").

Concerns about the quantity of underdrain groundwater "displace[d]" by the Project appear to be what drove staff's proposed condition at Exhibit W.1, page 7 ("Circumstance #2") "[i]f the Hearings Officer

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[41] As explained by the US Geologic Survey Fact Sheet, in this area of the Johnson Creek basin, "the direction of groundwater flow is not toward Johnson Creek or its tributaries but out of the drainage basin toward the lower-elevation Sandy[.] As a result, recharge to the groundwater system … does not discharge to Johnson Creek but instead flows out of the basin." Exhibit U.20.a., Attachment 2, Page 2. This is consistent with the applicant's groundwater expert's explanation that "The Filtration Facility site is located at the extreme eastern edge of the Springwater Formation at the edge of the Sandy River canyon. Natural groundwater flow from the site into the Sandy River canyon diverts water offsite in a direction away from the Johnson Creek watershed. This diminishes the site's natural potential for contributing groundwater into the Johnson Creek watershed." Exhibit U.20.g, page 3.

finds that, in the absence of conditions, such circumstance could result in impacts that would not be allowed under MCC 39.7515(B)." The proposed condition, however, is not phrased in the clear and objective terms that ideally would be used in conditions of approval in order to avoid deferring compliance in a manner contrary to law. *See Rhyne v. Multnomah County*, 23 Or LUBA 442, 447 (1992). As a result, I have not imposed it.

PWB, in an apparent attempt to do as staff asked, proposed I impose a revised version of the condition proposed by staff that would require compliance with MCC 39.4325(G). As worded, however, the PWB condition would also have deferred review of the stormwater/drainage plans in violation of *Rhyne*.[42] As a result, I reviewed the plans to determine whether they comply with MCC 39.4325(G). I find that they do and, that as designed, a facility constructed as proposed will comply with MCC 39.7515(B).

MCC 39.4325(G) requires that stormwater/drainage control plans for new impervious surfaces be provided and that the system proposed be adequate to ensure that the rate of runoff from the lot for the 10 year 24-hour storm event be no greater than that before development. Exhibits N.58 demonstrates that the PWB stormwater/drainage system complies with that code requirement and also meets the more rigorous standard imposed by the Multnomah County Design and Construction Manual, Section 5 – Drainage that requires that stormwater systems be designed to limit post-development discharge flow rated to pre-development levels for 25-year design storm events. *See*, Exhibit N.58, pdf pp. 7-8 re design requirements addressed by report. PWB's engineers also addressed concerns regarding PWB's proposed flow spreader and proposed vegetated slopes in Exhibit N.59.

Biohabitats reviewed these and other exhibits and concluded that the Filtration Facility project "will not adversely affect water quality or aquatic habitat in the area (including in Johnson or Beaver Creek" based on their review of the Project Stormwater Reports and Biohabitats questioning of stormwater and project engineers. Exhibit N.55, pdf 10. Biohabitats reaffirmed its conclusion in Exhibit S.31. I, therefore, find that the stormwater system as designed will provide quantity and quality controls protective of Johnson Creek, Beaver Creek and the surrounding riparian habitat areas when built and operated as proposed by PWB.

To assure that the stormwater/groundwater improvement are developed and operated as promised, I will impose the following condition of approval to assure compliance with MCC 39.7515(B):

> ***To control the amount of stormwater/groundwater being directed to Johnson Creek, PWB shall implement the stormwater management improvements shown in the Filtration Facility Site Stormwater Drainage Report (Exhibit N.58), the Stormwater Flow Spreader and Vegetated Slope TM (Exhibit N.59), and in the Filtration Facility Site Plans (Exhibit N.60) and operate them as promised in said plans.***

Note that this condition supersedes the prior condition of approval related to the same system at 2023 HO Decision, pages 84-85, as the plan for the system itself has been updated.

[42] The Staff condition refers to MCC 39.7815(B) which I take to mean MCC 39.7515(B) given the fact the County code does not include a section numbered 39.7815.

Hydrology (Stormwater Quantity and "Flashy Flows")

Biohabitats examined the potential of the project to have hydromodification impacts. Hydromodification is "the alteration of natural flow patterns that result in the degradation of a stream". Exhibit U.20.h, page 5.

The Project has applied "stormwater management standards and controls … to address the potential for change in hydrologic condition (also known as hydromodification) by requiring post-development peak discharges to match or be less than pre-development peak discharges for a range of design storms (i.e., water quantity flow control). In addition, for smaller, more frequent storm events (i.e., the 2-year return frequency and less) post-development design criteria require over-control, which is intended to maintain discharge velocities to non-erosive levels. These levels of control are achieved by implementing a range of BMPs to slow, filter, infiltrate, and detain the runoff volumes. For larger storms, the detention ponds provide the most significant levels of water quantity flow control." Exhibit N.55, page 17.

"As documented in the Filtration Facility Stormwater Report [Exhibit N.58], the proposed stormwater management system will employ a treatment train approach, where flows are directed and conveyed to both water quality and water quantity control BMPs. In addition to treating the runoff from the Portland water quality storm (1.61 inch/24 hours) storm, there are flow control (quantity) requirements that range from over-control of the 2-year return frequency storm (limit the 2-year post-development peak flow to ½ the 2-year pre-development peak flow) to peak control of the 5-, 10-, and 25-year design storms (ensuring post-development discharge does not exceed pre-development discharge). The over-control of the smaller, more frequent storms is a presumptive design approach that will control peak flow rates and prevent the channel-forming flows associated with hydromodification." Exhibit N.55, page 17.
"Proposed onsite stormwater facilities (detention ponds, bioretention basin, and an ecoroof) have been designed in accordance with the MCDCM to control the release of post-development stormwater flows, such that the flow control requirements are met at each Point of Discharge (POD) from the Filtration Facility." Exhibit U.20.h, page 5.

"As outlined in Exhibit N.58, Section 3.5.2 and Attachment F, to further confirm that proposed onsite stormwater facilities address the range of hydromodification considerations (including flow alteration), facility sizing was also evaluated using the Clackamas County Water Environment Services (WES) BMP Sizing Tool, which uses continuous simulation modeling to evaluate pre- and post-development flows and the duration of those peak flows to size stormwater facilities for a range of geomorphically significant flows (established by ODOT as 42% of the 2-year peak flow through the 10-year peak flow). The sizing of the proposed stormwater facilities was confirmed by this WES Tool as meeting these hydromodification standards." Exhibit U.20.h, pages 5-6.

A number of commenters are concerned that the operating Project will be "dumping" water into Johnson Creek, which seems to express a concern about erosion, scour, and other types of impacts of hydromodification, and accordingly is addressed here. For example, a commenter states that "When the Plant is in operation PWB will continue to dump stormwater in Johnson Creek. This southwest corner of the plant is a SEC-Water Resource Area. PWB cannot mitigate the stormwater." Exhibit N.14, page 1; Exhibit S.21 (Courters), page 6 ("These conditions contribute to: altered stream hydrology ('flashy' flows)."); Exhibit N.28, page 2 (plan "shows Johnson Creek will be used for dumping Stormwater when the Filtration Plant is in operation").

As explained above, the stormwater system for the Filtration Facility is designed to address the potential for change in hydrologic condition (also known as hydromodification or as caused by "flashy flows") by meeting or exceeding design criteria which will maintain discharge velocities **to non-erosive levels**. Additionally, "at Point of Discharge #2, the flow spreader will spread flows out, reduce velocities even further, and promote the shallow infiltration and filtering of flows. The extensive plantings in the Grass/Brush Area and the Riparian Buffer Area described [below] will additionally slow velocities, re-spread flows, and promote shallow infiltration." Exhibit N.55, page 17. "The flow spreader and vegetated slope are an integrated facility which provides energy dissipation and evenly distributes flows … across the slope downstream of the flow spreader, conveying that flow to Johnson Creek without creating erosion or scour (evidenced by gullies or rills) or mobilizing sediment." Exhibit N.59, page 2. "The resulting flows from the flow spreader system will mimic the pre-developed flow conditions[.]" Exhibit N.59, page 2. "The stormwater system will reduce the instance of flashy flows by slowly releasing stormwater after it is filtered to improve the quality of water being released from the Filtration Facility site." Exhibit U.20.a., page 33.

"Overall, the Filtration Facility stormwater will not adversely affect Johnson Creek [or other area aquatic habitats, such as the Sandy River] through hydromodification [including 'flashy flows'] or any other adverse impacts to area aquatic habitat related to post-development stormwater discharge and velocity." Exhibit N.55, page 17; Exhibit S.31, pages 5-6 (other aquatic habitats and Sandy River, flashy flows).

"The **Intertie** site similarly provides hydrologic control based on the same design criteria. As documented in the Intertie Stormwater Report (Exhibit A.75), the proposed stormwater management system will employ a treatment train approach, where flows are directed and conveyed to both water quality and water quantity control BMPs to meet the range of design storm water quality and flow control requirements, including over-control of smaller, more frequent storms to address hydromodification risk. As a result, Intertie stormwater will not adversely affect Beaver Creek through hydromodification or any other adverse impacts to area aquatic habitat related to post-development stormwater discharge and velocity. For the pipeline alignments, post-development conditions will be the same as predevelopment conditions." Exhibit N.55, pages 17-18.

Engineered Infrastructure

The Courters assert that the proposed stormwater management "system introduces engineered infrastructure into an ecologically sensitive area … and creates permanent modifications to a riparian zone" and that this alone "constitute[s] an adverse effect." Exhibit S.23, page 2. This is an inaccurate statement. The entire stormwater management system at the Filtration Facility site, including the flow spreader, "is located entirely outside of the 200-foot SEC buffer that surrounds Johnson Creek, in an area that was previously used for commercial nursery farming, as shown in Exhibit N.59 Stormwater Flow Spreader and Vegetated Slope. A commercial nursery farm is not 'an ecologically sensitive area.'" Exhibit U.20.h, page 11.

"The SEC incorporates a 200-foot buffer area around Johnson Creek (and other area waterways) because scientific studies support the effectiveness of 100-foot or greater buffers in restoring and protecting stream habitats." Exhibit U.20.h, page 11 (collecting studies from nonprofits, peer-reviewed journals, and the EPA demonstrating that 100' buffers excel at restoring and protecting streams). "The SEC overlay zone creates a 200-foot buffer on either side of Johnson Creek – doubling the recommended 100-foot best practice to be additionally protective and create additional riparian area." Exhibit U.20.h,

page 11. Instead of placing "engineered infrastructure" into the 200-foot riparian buffer SEC area on either side of Johnson Creek, the Project will create additional high-value habitat within that riparian buffer. "The replacement of cultivated farmland with riparian buffer area planting will resist surface erosion, minimize the risk of thermal loading, and provide additional habitat." Exhibit U.20.h, page 11.

The Courters similarly argue that managing stormwater near Johnson Creek using "artificial infrastructure—including a concrete flow spreader, weir, and drain rock bedding—represents a clear and permanent alteration of natural functions." Exhibit S.23, page 2. However, as explained immediately above, the entirety of the stormwater system, including the flow spreader, will be on land that was previously used for commercial nursery farming. That land was not in its "natural" state but had been significantly altered on an ongoing basis and adversely impacted by decades of agricultural use. See Exhibit S.36, pages 2-3, "The Natural State of the Land & Many Uses of Soils"." Exhibit U.20.a., pages 36-37. In contrast, "[w]ork in the SEC zone has been limited exclusively to native planting." Exhibit U.20.h, page 12. The Project's restoration of the area below the flow spreader to riparian habitat using native plants will actually move the site *closer* to natural function than it was in its pre-construction condition. That is, rather than "transform a natural riparian buffer into a managed stormwater utility corridor" as the Courters state (Exhibit S.23, page 12), the Project will transform a heavily impacted commercial nursery field area into a natural riparian buffer area. Exhibit U.20.h, page 12.

Modification of "Natural" Drainage Patterns

Cottrell/PHCA argue that "overland flow and runoff patterns have permanently changed" as a result of the grading of the Filtration Facility site, and in particular express concerns about the site preparations having "permanently filled in [a] draw" on the western boundary of the site "that led into an ephemeral tributary of Johnson Creek" and that site preparations in "the SE corner of the property, near the raw water pipeline portal" have eliminated "a shallow draw" and "drainage [that] no longer exists." Exhibit N.43, pages 11-12; page 63 ("modification of natural water drainage"); *see also* Lauren Courter Oral Testimony, Hearing April 16, 2025, minute 02:22:47 ("what you don't see is the ephemeral tributary that is no longer -- that started at the surface of the site there. It has now been completely leveled, excavated").

Although these comments appear directed at construction grading, I find here that evidence in the record shows that the grading and stormwater management of the Filtration Facility site post-construction will restore the pre-construction points of discharge. As Cottrell/PHCA explain, pre-construction, there were three points of discharge at "portions of the property with the lowest elevation … the SW corner toward Johnson Creek's riparian area, the western edge of the property, and at the SE corner." Exhibit N.43, pages 11-12. The stormwater report confirms that "[t]hese three points of discharge will be maintained in the post-development stormwater system for the site." Exhibit N.58, page 14. For purposes of the stormwater report and for evidence provided by the applicant, these are named Point of Discharge #1 (Cottrell/PHCA's "the western edge of the property"), Point of Discharge #2 (Cottrell/PHCA's "the SW corner toward Johnson Creek's riparian area"), and Point of Discharge #3 (Cottrell/PHCA's "at the SE corner"). Additionally, the flow of stormwater from the site will be allocated among points of discharge in the same proportions as the pre-development flows were. Table 20, Exhibit N.58, pages 26-27. Overall, "the project will maintain the pre-development Points of Discharge" – both in location and in proportions of flow. Exhibit N.58, page 26. Accordingly, pre-construction drainage patterns will be reestablished as part of the operating Project and no point of discharge has changed, been "permanently filled in," or "no longer exists."

Similarly, for the **Pipelines**, commenters raised concerns that "operation of pipelines could disrupt natural drainage patterns[.]" Exhibit N.4, page 2. This is not the case. "The restoration following pipelines construction will return the landforms to the condition and general topography they were in prior to construction, not changing the existing drainage patterns of the area." Exhibit S.30, page 2. The culverts that carry water under Dodge Park Blvd were also a concern of commenters (Exhibit N.10, page 2). However, PWB confirmed that "[c]ulverts along Dodge Park Blvd will be replaced in the same location, size, and configuration, if disturbed by the pipeline construction. No change in the flow direction of stormwater is proposed along the pipeline alignments." Exhibit S.30, page 2.

Ms. Richter's Proposed Findings

Ms. Richter's proposed findings on this topic require some factual correction before they can be addressed.

First, Ms. Richter states that "most of the stormwater leaving the site will travel through the stormflow spreader." Exhibit W.3a, page 27. This is false. Table 20, on page 27 of Exhibit N.58, provides the details of post-development flow at each Point of Discharge and shows that flows are distributed among all three Points of Discharge. Among them, it is actually the western property line culvert (Point of Discharge #1) having the most flow for every one of the design year storms.

Second, Ms. Richter states that "[b]efore development, a substantial portion of the stormwater at the site infiltrated into the substrate, slowly percolating into the ground and travel as hyporheic flow into Johnson Creek and Beaver Creek. Once the ground was saturated, excess surface water flowed into Johnson Creek headwaters, but it entered the creek gradually over a length of 1400-1500 feet of stream bed." Confusingly, Ms. Richter cites to "Ex. A.73" as the source of these facts, which is both outdated (as it is the 2023 stormwater report that was replaced by Exhibit N.58) and contains none of these facts (perhaps why there is no page citation listed in Exhibit A.73). Moreover, these facts are false. It is untrue that there was substantial infiltration at the site pre-development – measured infiltration rates at the Filtration Facility site predevelopment were so low that under the Portland SWMM standards, infiltration was considered infeasible as a primary method of stormwater management. Exhibit N.58, pages 3-4 (SWMM standard is 2in/hour, site rates are 0.012 – 0.8in/hour). It is also untrue that "excess surface water … entered the creek gradually over a length of 1400-1500 feet of stream bed[.]" Again it is unclear how Ms. Richter came up with these numbers, as they are not in the Exhibit A.73 she cites. More importantly, this would mean that stormwater from the Filtration Facility site was entering Johnson Creek *beyond Cottrell Road*, as the record shows that Cottrell Pond is only 1,000 feet downstream. Exhibit U.20.a, page 13.

Ultimately, the conclusion Ms. Richter draws from these flawed "facts" is that "This redirection of flows will adversely [a]ffect natural resources because they create single points of discharge that will alter stream hydrology." Exhibit W.3a, page 27. As explained above, the Project has applied "stormwater management standards and controls … to address the potential for change in hydrologic condition (also known as hydromodification) by requiring post-development peak discharges to match or be less than pre-development peak discharges for a range of design storms (i.e., water quantity flow control)." Exhibit N.55, page 17. Opponents did not provide any expert testimony or otherwise explain why they consider this (or other) aspects of the Exhibit N.58 stormwater system design problematic or unable to address the potential for change in hydrologic condition in Johnson Creek.

Ms. Richter also questions whether "the storm spreader, if performing correctly, would disperse water over a length of the Johnson Creek Headwaters approximately 175-200 feet in length as PWB claims." Exhibit W.3a, page 28. However, those concerns are based on the construction flow spreader design ("eight discharge channels"). The construction flow spreader is "a temporary version of the flow spreader [that] was installed by the contractor for construction activity" and does not reflect the final design of the flow spreader in Exhibit N.59. Exhibit U.20.h, page 9. The construction flow spreader is addressed further below. As to the Project operations flow spreader, there will not be discharge channels nor will it create erosive flow down the vegetated slope. Exhibit N.59, page 4. Ms. Richter assumes that "the sloped topography will direct all the stormwater into a single point along the distribution field" and claims that the "record lacks any evaluation, technical testing or examination of this issue." Exhibit W.3a, page 28. To the contrary, there is an expert analysis of specifically this issue in Exhibit N.59:

> "The calculated flow velocity of 0.54 ft/s during the 25-year storm event is well below the design criteria of 3 ft/s, providing a safety factor (the ratio of desired performance to calculated performance) of 5.5 **to account for potential flow concentration as stormwater flows down the slope**. Any safety factor above 2.0 is appropriate for this application."

Exhibit N.59, page 4. Accordingly, I reject Ms. Richter's proposed findings on this matter.

Concerns About Agricultural Impacts of Drainage Patterns

Finally, I address here a related concern that the Project will adversely affect agriculture or agricultural natural resources (natural resources used for agriculture). For example, Ms. Swinford states that "Altered drainage patterns (due to new impervious surfaces) could also harm irrigation or soil moisture. These impacts would degrade soil quality and crop viability (loss of agricultural capability)." Exhibit S.10, page 2. Mr. Swinford similarly claims that "agricultural lands may be weakened due to … hydrologic disruption[.]" Exhibit S.11, page 1. The applicant's agricultural expert, Mr. Prenguber responds, and I find:

> "The claim that the Project will alter site drainage is not true. The PWB facility design keeps surface water flowing to the same off-site points of discharge as in the pre-development period. See Exhibit N.58, Filtration Facility Site Stormwater Drainage Report, page 26. For example, R&H Nursery (to the west of the filtration facility site) will continue to receive drainage water from the site to capture in their irrigation pond west of the Project. This will support irrigation of their fields and maintain soil moisture at optimum levels for plant growth."
> "Second, the operational stormwater system for the filtration facility will remove sediment before routing stormwater to off-site discharge points. Exhibit N.58, pages 6, table 3 and pages 17-20. This is beneficial for R&H Nursery in the post-development period, as the nursery will receive a reduced amount of sediment in its irrigation pond during storm events. A lower amount of sedimentation reduces the need for R&H Nursery to conduct periodic removal to maintain the pond's irrigation water storage capacity and avoid pump failure."
>
> "Soil quality will not be degraded with the lower flow rates of stormwater from the filtration facility site because there is less potential for erosion during high rainfall periods. Six dry detention ponds, a sloped basin, and an ecoroof provide stormwater flow

control for the filtration facility site. Exhibit N.58, page 20. These flow control facilities meet flow control performance standards that are intended to be conservative and prevent channel forming flows commonly associated with hydromodification. Detention pond sizing was also evaluated using the Clackamas WES BMP Sizing Tool that evaluates both peak flow and flow duration matching, providing additional assurance that the system protects against hydromodification. See Exhibit N.58, page 25. There will be no impact on crop yields, as irrigation from the farmers' pond will be more easily maintained with reduced pond sedimentation. Capacity to meet irrigation water requirements will also improve over pre-development conditions."
"For all of these reasons, the water drainage in the post-development period will not adversely affect nearby farmers' irrigation, soil moisture, soil quality, or crop viability."

Exhibit U.20, pages 5-6.

Noise

Opponents claim that "[c]ontinuous plant noise and vibrations will similarly drive other mammals, amphibians and birds from nearby forests and streams, undermining their quiet refuge and breeding success." Exhibit S.10, pages 1-2; *see also* Exhibit S.16 ("noise will be disruptive to fish").

The operating Project will not be a significant source of sound generation. "The filtration facility was carefully designed to mitigate noise generation through screening, topography, and structural buffering. The filtration facility Exterior Noise Analysis (Exhibit A.49) was prepared by acoustical engineers at Stantec and 'evaluated the highest noise levels generated by simultaneous operation of all equipment, including those with intermittent operation.' Exhibit J.69, page 1. This evaluation was a worst-case scenario including emergency equipment operation. In reality, the 'loudest equipment at the Facility is used only intermittently' and the emergency equipment is only operated for periodic testing, other than in an actual emergency. But even in an emergency, and even with all the intermittent equipment operating simultaneously, 'noise levels at the facility property line during operation will be within or below the range of current ambient sounds levels, and the type of noise generated by the facility will be similar to noises currently existing within the study area'. Exhibit J.69, page 2." Exhibit U.20.a, page 5, 19. "Given the design of the filtration facility, it is inaccurate to assert that the filtration facility will 'drive [species] from nearby … streams, undermining their quiet refuge and breeding success[.]'" Exhibit U.20.a, page 5.

Additionally, only a very high level of noise has the potential to impact aquatic habitats. As Biohabitats explains, "[n]oise has not been identified as a risk to aquatic species except for pile driving and other high amplitude construction related practices that occur underwater." Exhibit S.31, page 15. For the Project, "[t]here is no risk of high amplitude noise from construction activities (or for that matter operations) that would impact aquatic species in Johnson Creek as there is no underwater work proposed. Construction activities and the project sit more generally are a sufficient distance away to prevent risk of adverse impacts related to noise." Exhibit S.31, page 15. *See also*, Exhibit U.20.a, pages 5-6; Exhibit U.20.a, pages 18-19. "Semi-aquatic species including amphibians that may be present in the riparian area or Johnson Creek itself will benefit from improvements to the riparian buffer that will negate any risk related to temporary noises that may occur when emergency generators are required to operate," Exhibit U.20.a, page 6. Moreover, the character of noises are similar to the type of noises aquatic and semi-aquatic species have already experienced from the pre-construction agricultural use of the site. Exhibit S.16 ("fish get use[d] to sounds like the wind and various vibrations"). "Neither the

emergency generators nor the other minimal noises from the project operation will have the ability to create noises at a level that would lead to any impact to aquatic species in the area." Exhibit U.20.a, pages 18-19. Overall, Biohabitats concludes, and I find, that "[t]he streams and other aquatic habitats surrounding the project are sufficient distances away [to] eliminate the risk of impacts related to sound or vibration." Exhibit U.20.a, page 18.

Temperature

Temperature is addressed in this final section (immediately before describing proposed habitat improvements) as it is the only category of potential impairments where a small risk of adverse effects to area aquatic habitats (specifically, Johnson Creek) does exist. The small risk relates to the potential for a large rainstorm, on a hot day, that occurs before the new riparian plantings along Johnson Creek have had time to establish. As explained further below, the risk of that kind of storm on a hot day occurring before establishment of plantings is very low because, in 38 years of data reviewed, it has never happened. Nevertheless, as explained below, the Project will provide mitigation with an overall benefit to temperature conditions in Johnson Creek through extensive improvement of Johnson Creek's riparian areas and the removal of Cottrell Pond, which has been shown to create lethal temperature impacts in the creek. As the Project overall will positively affect temperature conditions in Johnson Creek, it cannot be said that the Project will adversely affect natural resources in this manner.

First, "stormwater runoff is not considered by Oregon Department of Environmental Quality (DEQ) to be a significant contributor of heat or 'thermal loading' to surface waters like Johnson Creek. Instead, DEQ has found that the largest contributor to elevated temperature is the increased impact from solar radiation loads due to disturbances of riparian vegetation." Exhibit U.20.h, page 4. As is explained in detail below, the Project will include extensive additional riparian vegetation around Johnson Creek.

Second, "PWB has included extensive BMPs in the Project Stormwater Reports to ensure that stormwater does not have an adverse temperature effect on area aquatic habitats." Exhibit N.55, page 13. "For the Filtration Facility, those BMPs include enhanced planting approaches to promote shading of detention basins, use of an ecoroof on 93,700 square feet of roof, [and] filtration practices like planters and grassy swales for conveyance and treatment[.]" Exhibit N.55, page 13. Additional "temperature management strategies have been incorporated into the Filtration Facility stormwater system design, including the minimization of stormwater detention facility drawdown times and standing water depth, as well as the installation of mature vegetation in stormwater management facilities to shade the facilities and reduce the effects of stormwater exposed to sunlight and a heated atmosphere. These temperature management strategies are not required by any stormwater regulations nor by the SWMM, but instead were voluntarily included by the project to protect nearby aquatic resources, even though stormwater is not considered significant contributor to thermal loading." Exhibit U.20.h, page 4.

Third, as noted above, temperature issues in Johnson Creek are a pre-existing condition related primarily to the removal of riparian areas by area landowners. "Historically, streams were kept cool by forests that shaded the stream channels. But in 2002, the average effective shade over mainstem Johnson Creek was just under 40%" and Beaver Creek shows a similar concern. Exhibit N.55, page 5. The Project will directly address riparian shade surrounding Johnson Creek at the project site. The riparian area revegetation "has already begun and will increase the riparian buffer width and provide additional protection from potential thermal inputs to Johnson Creek related to development of the Filtration Facility site." Exhibit N.55, page 13. In addition, the extensive revegetation of the Filtration Facility site

"will promote shallow groundwater recharge that will help regulate water temperature, flow rates, volumes, and velocities." Exhibit N.55, page 13.

Overall, Biohabitats concludes, and I find, that even before the removal of Cottrell Pond, the combination of BMPs, extensive revegetation of the upland habitat areas, and, once established, the Riparian Buffer Area (defined below), will prevent adverse thermal effects from the Filtration Facility. Exhibit N.55, page 15. In particular, "once established, the Riparian Buffer Area between the Filtration Facility and Johnson Creek will provide substantial benefit to aquatic species **by reducing temperatures of stormwater from the site below a level that leads to adverse impacts from the project**." Exhibit N.55, page 16 (emphasis added).

Risk of Adverse Thermal Effects at Filtration Facility

As initially proposed by PWB and reviewed by PWB's expert fish biologists at Biohabitats, the Project under conditions that have existed for at least 38 years, would not pose any risk of harm to fish and riparian habitat in Johnson Creek. It also found that once established, the Project's proposed extensive revegetation of the Filtration Facility site, particularly the Riparian Buffer Area (defined below) adjacent to Johnson Creek, will provide effective protection against adverse thermal effects in the creek from the Project under extreme temperature and storm conditions.

This risk is small because "in this area specifically, that kind of large storm during the dry season (when excessive heating is possible) has only occurred a few times in 38 years of data reviewed by the stormwater designers[.]" Exhibit N.55, page 15; *see* Exhibit N.58, Section 1.6.5, in particular page 9 ("Only one, 24-hour rainfall event that was reflective of a design storm rainfall range occurred within the defined dry season [of Jun 1 – Sep 30], and even then only for a 2-year design storm rainfall depth."). The stormwater experts' "indicates that rainfall depths associated with design storm events and yielding stormwater runoff do not predominately occur during the hot summer season (June-September) when thermal loading from site stormwater could be the greatest risk." Exhibit U.20.h, page 4. "However, even those few times in the 38 years of data were not accompanied by times of excessive heating – with the highest temperature day during those events being only 68 degrees." Exhibit N.55, page 15. That is to say, it would take a large storm, on a hot day that occurs *before* revegetation of the Riparian Buffer Area is established, to create a risk of adverse thermal effects in Johnson Creek from the Project – and that kind of large storm on a hot day simply *has not occurred* in the 38 years of data specific to this area. This is why it is accurate to say that, even before implementation of any of the measures described below, the risk of adverse thermal effects in Johnson Creek from the Project is small.[43]

"However, given that it is unknown how the potential impacts from climate change will alter the frequency or intensity of rainfall events in the future, PWB will take additional steps to ensure that the project will not adversely affect thermal loading in Johnson Creek." Exhibit N.55, page 16. Those measures were temperature monitoring and unspecified work with Johnson Creek Watershed Council to improve creek temperatures. Project opponents criticized the PWB mitigation and claimed it did not comply with MCC 38.7515. In response, PWB entered into a binding contract with the owner of the

[43] It lends credibility to Biohabitat's analysis that they did not simply dismiss this risk – however small – of an adverse impact from the stormwater system during the initial period before establishment of vegetation.

real property that includes Cottrell Pond which is approximately 1000 feet downstream of the Filtration Facility property and offered to remove Cottrell Pond and restore Johnson Creek and riparian areas on the purchased property. Biohabitats studied the benefits of this project and offered its expert opinion that the addition of the Cottrell Pond mitigation, the PWB Project "will ensure that the project will not adversely affect thermal loading in Johnson Creek." Exhibit U.20.a., p.10. According to Biohabitats, "[r]emoving Cottrell Pond would provide significant benefit to all aquatic resources in the creek and significantly decrease temperature loading in the area of Johnson Creek closest to the Filtration Facility." Exhibit U.20.a., p.10. Removing Cottrell Pond will remove this adverse impact [pond increasing temperatures by 15 degrees F to 79 degrees F – a temperature harmful to fish habitat], dramatically reducing thermal loading in this reach of Johnson Creek in a manner that significantly outweighs any risk of thermal loading in stormwater leaving Discharge Point #2 prior to the full establishment of the planned vegetation in the Riparian Buffer Area." Exhibit U.20.a., p. 13.[44]

PWB proposes (Exhibit U.20.a, page 18), and I impose, the following condition of approval related to the removal of Cottrell Pond and habitat restoration on the Pond Property:

> ***Regarding Cottrell Pond, as defined in Exhibit U.20.a, prior to final certificate of occupancy for the Filtration Facility, Portland Water Bureau shall purchase the Pond Property and provide a written report from an aquatic biologist confirming the establishment of a natural stream channel and additional riparian planting areas on the Pond Property.***

Overall, the combination of the voluntary temperature management strategies, the low risk of occurrence of a storm during a period of atmospheric heating that would yield stormwater runoff from the site, the addition of extensive plantings to restore and enhance the riparian area, and the removal of Cottrell Pond, leads to the conclusion that the project will not adversely affect thermal loading or aquatic natural resources in or around Johnson Creek and, therefore, will not harm fish habitat.

Ms. Richter's proposed findings do not convince me otherwise. As explained above, Ms. Richter's proposed findings start from the flawed premise that: "[m]itigation, by its definition, reveals that adverse effects have occurred and as such, it cannot be used to establish compliance with this standard. This exacting and strict 'no adverse effect' standard prohibits any adverse effect, even where it might be mitigated to some reduced level." Exhibit W.3, page 3. For the reasons explained in this section and elsewhere herein I disagree with Ms. Richter that "[m]itigation … cannot be used to establish compliance with this standard[.]" Instead, the key, using Ms. Richter's words, is what "reduced level" of impact the mitigation achieves, and, crucially, does that level move below the bar of "adversely affect[ing] natural resources." If it moves below that bar, the standard can be said to be met. If it remains above that bar, the standard cannot be met.

The following information provided by Exhibit U.20.a supports the expert opinion offered by Biohabitats that the addition of the Cottrell Pond removal project to the Water Treatment Facility proposal will comply with MCC 38.7515(B):

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[44] Biohabitats also noted that the removal of the dam would eliminate a dam that impedes the passage of native migratory fish to parts of the creek above the dam, including the stretch of the creek adjacent to the Filtration Facility site. Exhibit U.20.a., p. 15.

"The Johnson Creek Watershed Council (JCWC) and partners including the City of Gresham and the Oregon Department of Environmental Quality (ODEQ) studied the effects of in-line ponds on water temperature to assess the potential impacts to aquatic resources in Johnson and Beaver Creeks (City of Gresham, 2020, ODEQ, 2023). The study indicated that many inline ponds increase stream temperatures throughout both watersheds. The study demonstrated that individual ponds showed large differences in how much the temperature increased from upstream to downstream of the pond. The study also showed that removing ponds would reduce thermal loading and be an important part of working towards meeting the instream water quality temperature standard established by ODEQ (Table 1)." Exhibit U.20.a, page 13; *see also* Exhibit U.20.a, Attachment 2 (USGS Fact Sheet), page 4 ("significant warming occurs in stream reaches with shallow, unshaded ponds").

"Removal of Cottrell Pond has been identified by the Clackamas Partnership[45] as a priority project in their 'Strategic Restoration Action Plan [SAP] to guide voluntary restoration actions designed to improve stream habitat, water quality, and native fish populations.' Cottrell Pond is such a high priority because, in [those] studies by the City of Gresham [and ODEQ) (provided in [Exhibit U.20.a]), **Cottrell Pond increased stream temperature *more than any other remaining Johnson Creek pond studied,*** and was second highest in increase of stream temperature *for any creek* in the area." Exhibit U.20.a, page 11 (bolding added, italics in original, internal citation removed).

Cottrell Pond is a 0.73-acre pond located only 1,000 feet downstream of the southwest "The Clackamas Partnership notes that, in 2018, JCWC summer temperature monitoring showed that **the temperature in Johnson Creek rose from 64° F to 79° F (15° F increase)** as the stream flowed into and out of the Cottrell Pond, respectively. Stream temperatures ranging from 70-77° F **can lead to fish mortality within hours or days** of exposure if they cannot find cool water refugia. Stream temperatures exceeding 64° F can impact feeding and growth as well as increase exposure to pathogens (Table 2). By increasing thermal loading such that temperatures in the creek rise above levels that can lead to fish mortality, Cottrell Pond contributes direct thermal loading adverse impacts to aquatic resources in Johnson Creek. Removing Cottrell Pond will remove this adverse impact, dramatically reducing thermal loading in this reach of Johnson Creek in a manner that significantly outweighs any risk of thermal loading in stormwater leaving Discharge

[45] "According to their website, 'The Clackamas Partnership is a collaboration of Portland metropolitan area watershed councils, government agencies, tribes, and other organizations committed to improving watershed health. The Partnership recently developed a Strategic Restoration Action Plan to guide voluntary restoration actions designed to improve stream habitat, water quality, and native fish populations. The Strategic Plan covers the Clackamas River Basin, a stretch of the Willamette River, and other tributaries flowing into the east side of the Willamette River, including Abernethy, Kellogg, and Johnson Creeks. Historically, the Clackamas River and these tributaries supported thriving salmon, steelhead, and other native fish populations.' https://www.clackamaspartnership.org/ The 'fifteen organizations committed to restoring native fish populations' as part of the Clackamas Partnership collaboration include Johnson Creek Watershed Council, ODEQ, Metro, Oregon Department of Fish & Wildlife, and the U.S. Forest Service Department of Agriculture. https://www.clackamaspartnership.org/About/About" Exhibit U.20.a, page 11n5.

> Point #2 prior to the full establishment of the planned vegetation in the Riparian Buffer Area (described above)." Exhibit U.20.a, page 13 (bolding added, footnote omitted).

The other significant benefits of the Project's removal of Cottrell Pond which include the removal of a dam that is a complete barrier to fish passage and extensive riparian plantings – are discussed further below. Overall, the Project is well below the threshold of "adversely affect[ing] natural habitat resources." In fact, it appears likely that this part of the Project will result in a net benefit to fish and aquatic habitat in the Project area and downstream.

Intertie and Pipelines

Finally, other portions of the Project do not create a risk of thermal loading in area aquatic habitats. "The Intertie site represents less than 2% of the overall drainage area to the culvert under Lusted Road. The conversion of 0.31 acres of cropland to impervious surface will not influence temperatures in Beaver Creek compared to pre-development conditions. The site uses grassy swales and bioretention to manage the stormwater runoff which both have cooling benefits via filtration and infiltration. For the pipeline alignments, post-development conditions will be the same as pre-development conditions." Exhibit N.55, page 16.

Proposed Aquatic Habitat Improvement as Part of the Project

As noted above, "Elevated water temperatures are caused by low summer base flows, lack of riparian shade, and impoundment of water in ponds[.]" Exhibit N.55, page 4. "Historically, streams were kept cool by forests that shaded the stream channels. But in 2002, the average effective shade over mainstem Johnson Creek was just under 40%". Exhibit N.55, page 5.

"Reduction of stream temperatures requires a system-wide riparian landscape perspective. Restoring vegetation along stream banks to provide shade is one of the most effective means of reducing stream temperatures. Eliminating or bypassing in-line ponds is an additional restoration strategy identified by the Johnson Creek Watershed Council (JCWC) for reducing high water temperatures in the watershed (JCWC, 2015)." Exhibit N.55, page 6. "Johnson Creek Watershed Council is the local nonprofit organization organized in 1995 to protect, restore, and enhance the creek. The organization has been highly successful in advancing that mission through decades of projects, including controlling invasive species, planting native riparian vegetation, improving fish passage, and creating off-channel flood storage." Exhibit N.55, page 6n1.

The Project will both provide extensive restoration of vegetation along Johnson Creek to provide shade and eliminate the existing in-line pond known as Cottrell Pond, as described in the sections that follow.

Riparian Restoration Area at Filtration Facility Site and Vegetated Slope

Biohabitats agrees with the Courters that "vegetated buffers and forest canopy [are] essential for stream cooling and habitat complexity." Exhibit S.21, page 6. It is unclear, however, why the Courters assert there will be "Loss of vegetated buffers and forest canopy" caused by the Project. Exhibit S.21, page 6. To the contrary, "[r]evegetation of 2 acres in the southwest corner of the Filtration Facility site has already begun and will increase the riparian buffer width and provide additional protection from potential thermal inputs to Johnson Creek related to development of the Filtration Facility site." Exhibit N.55, page 13. As part of the Project, "the riparian buffer between the Filtration Facility and Johnson

Creek will expand from the narrow 50' strip in the southwest corner to a robust buffer exceeding 200 feet." Exhibit U.20.a, page 27.

Together with the "the removal of Cottrell Pond and associated extensive restoration of the riparian area downstream of the Filtration Facility [described in the section below], [the Project] will expand and connect the patches of healthy, intact riparian area that exist directly upstream and downstream of the filtration facility site." Exhibit U.20.a, Page 27. Rather than "fragment[ing]" riparian habitat, as stated by the Courters in Exhibit S.21, page 5, "the project will connect habitat – including connecting the improved riparian habitat around Johnson Creek to new upland habitat and the SEC-h habitat area on the other side of the Filtration Facility site, as illustrated on page 19, Exhibit N.56 (Figure 4)." Exhibit U.20.a, page 29.

"Stormwater leaving the Filtration Facility at Discharge Point #2 (the discharge closest to Johnson Creek) will be evenly dispersed using the flow spreader. The area immediately below the flow spreader will have approximately one foot of drain rock to accept water dropping off the flow spreader weir and then approximately twenty feet of native shrubs and grasses (the "***Grass/Brush Area***"). The planting plan for the Grass/Brush Area is provided in Table 3 [of Exhibit N.55, page 14]. This Grass/Brush Area below the flow spreader will allow for maintenance of the flow spreader and provides a buffer between the concrete flow spreader and tree roots lower on the slope." Exhibit N.55, page 13.

"Restoration of the area between the Grass/Brush Area and Johnson Creek (the "***Riparian Buffer Area***") has been underway since 2023 with the goal of establishing a functioning riparian forest. A functioning riparian area will provide a resilient plant cover, be resistant to surface erosion, shade runoff, and protect aquatic resources in the creek. The planting plan for the Riparian Buffer Area is summarized in Table 4 [of Exhibit N.55, page 15] and includes native shrubs and trees well suited to post-development conditions in this area and designed to augment existing woody native cover along Johnson Creek. Willow bundles will be incorporated in the plan for the purpose of quickly creating a means to slow and redisperse surface flow and stabilize soil in the Riparian Buffer Area." Exhibit N.55, page 14.

"PWB will take an adaptive management approach in response to challenges with establishing planned vegetation in both the Grass/Brush Area and the Riparian Buffer Area by adjusting the plant palette to those that are appropriate for post-development conditions. Plans are in place to irrigate plants as needed during drier months to ensure effective establishment and survival of the proposed vegetation. Appropriate measures to address challenges related to planting will be taken to ensure successful establishment and survival of vegetation between the flow spreader and Johnson Creek." Exhibit N.55, page 15.

Removal of Cottrell Pond and Improvement of Pond Property Riparian Area

"[T]o additionally ensure that the project will not adversely affect thermal loading in Johnson Creek, the project will facilitate the reduction of water temperatures in Johnson Creek by purchasing and restoring land between the Filtration Facility site and Cottrell Road, including removal[[46]] of a pond on the

[46] "The scope of the removal and restoration project is further described on Attachment 1 [to Exhibit U.20.a] and below. The Cottrell Pond removal and associated habitat restoration project will undergo further refinement of design and obtain all necessary permitting prior to being finalized. Biohabitats participated in the preparation of Attachment 1 and evaluation of the site for this project. Overall, [it is Biohabitat's] professional opinion based on design and construction of similar stream and habitat

property ("***Cottrell Pond***", Figure 2/3) known to be a source of heating in Johnson Creek. Removing Cottrell Pond would provide significant benefit to all aquatic resources in the creek and significantly decrease temperature loading in the area of Johnson Creek closest to the Filtration Facility." Exhibit U.20.a, page 10.

Figure 2. Cottrell Pond Location Relative to Filtration Facility Site

Figure 2 from Exhibit U.20.a, page 11.

The earthen dam that created Cottrell Pond is marked with a yellow pin on the map in Figure 2 from Exhibit U.20.a, page 11, provided above. Exhibit U.20.a, page 11.

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restoration projects, [and I now find that,] it is clearly feasible for the Water Bureau to reduce thermal loading and restore stream and aquatic habitat function in Johnson Creek through implementation of a project based on the concept described in [Exhibit U.20.a] and on Attachment 1." Exhibit U.20.a, page 10n4.

Figure 3. Cottrell Pond and Earthen Dam

Source: Clackamas Partnership, titled: "Cottrell pond from downstream end"

Source: Bonita Oswald, taken May 2025, showing earthen dam that created pond.

Figure 3 from Exhibit U.20.a, page 12.

“Cottrell Pond is a 0.73-acre pond located only 1,000 feet downstream of the southwest corner of the Filtration Facility site. The pond is formed by a man-made earthen dam that is approximately six feet tall and 100 feet long.” Exhibit U.20.a, page 13

“In addition to the up to 15° F temperature increase that Cottrell Pond causes, the earthen dam blocks fish passage into the upper reach of the Johnson Creek watershed. See Figure 4 [from Exhibit U.20.a]. Approximately ½ mile of fish habitat historically existed for native migratory fish above Cottrell Pond, including the reach adjacent to the Filtration Facility site.” Exhibit U.20.a, page 15.

Figure 4. Cottrell Pond culvert outflow to Johnson Creek (Complete Fish Passage Barrier)

Figure 4 from Exhibit U.20.a, page 15.

“PWB will remove the earthen dam and establish a natural stream channel with stream and riparian habitat intended to mimic the historic condition of Johnson Creek (Figure 5). The natural stream channel with functioning riparian area will provide benefits to all aquatic and semi-aquatic species by reducing temperatures in Johnson Creek and by increasing the amount and quality of available habitat needed to forage, grow, and reproduce.” Exhibit U.20.a, page 15.

“Beyond the significant benefits of removing the thermal sink and fish passage barrier, the quality of habitat will be improved by the addition of large wood, restored sediment transport, and the creation of pools and off-channel rearing habitats that will provide benefits to fish and amphibians in the area. Restoration of the riparian area will provide benefits to numerous species in the area by increasing shade that will help contribute to achieving stream temperatures below thresholds identified for cold water fish

species[.] Other benefits of restoring the riparian area along the new stream corridor include stabilization of the streambank which will reduce erosion and sedimentation in the stream, improvements in water quality resulting from filtering of pollutants that contribute to degradation of aquatic habitat, and maintenance of base flows during summer low flow periods. The project will also increase connectivity between habitats in two ways, first by removing a barrier to aquatic passage that has the potential to impact species that require migration to access habitats needed to forage, grow, and reproduce. The project will also provide connectivity between the riparian habitat and adjacent upland areas managed specifically for native flora and wildlife. In total, the project will restore 1.7 acres of native riparian forest habitat and 0.65 acres of wetland fringe habitat; and create an additional 3.8 acres of oak and native prairie habitat. Additional details regarding the restoration are provided in Attachment 1 [to Exhibit U.20.a] and Figure 5 [of Exhibit U.20.a] below." Exhibit U.20.a, pages 15-16.

Figure 5. Proposed Restoration of Johnson Creek Map (See Attachment 1)

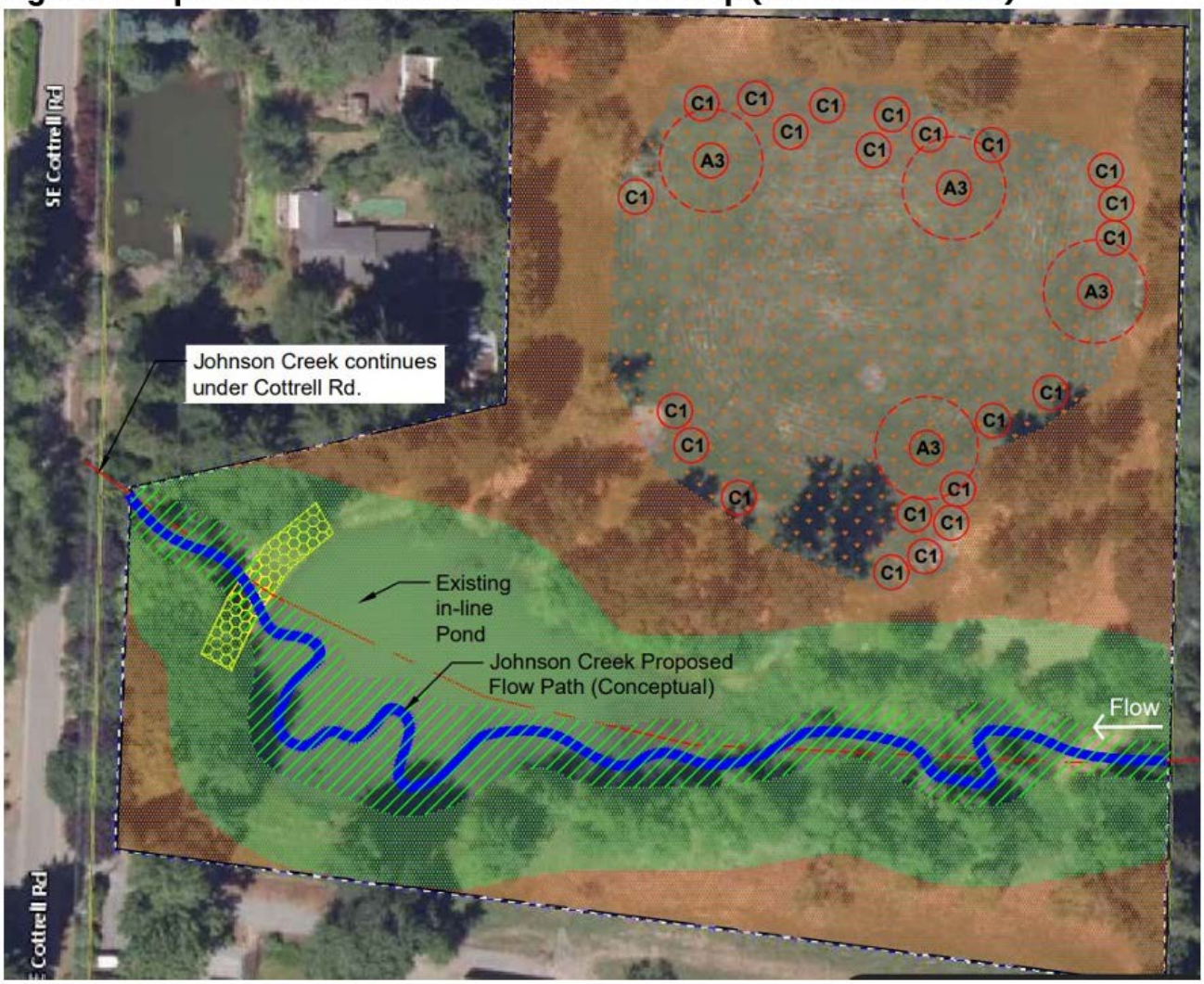

Figure 5 from Exhibit U.20.a, page 17.

I find that the implementation of this plan for restoration of Johnson Creek related to Cottrell Pond is feasible and likely to succeed. "The City, through the Portland Water Bureau, has entered into a Purchase and Sale Agreement (PSA) with the private owners of the property where Cottrell Pond is located (the "***Pond Property***"), which is zoned MUA-20 (the same as the Filtration Facility site). The

construction activities is provided in Exhibit H.3, Attachment 4. Nevertheless, there is extensive evidence in the record related to construction activities and impacts of construction activities, and I endeavor to set forth here what I find to be true, in case there is any question by a reviewing court or by the parties in the future whether I found a certain activity to be construction (and not subject to MCC 39.7515(B)) or the "use" subject to MCC 39.7515(B). Additionally, and in the alternative, for the reasons that follow and particularly because of their inherently temporary nature as construction activities, I find that the construction activities and associated effects are not "adverse" within the meaning of "adversely affect" in MCC 39.7515(B) intended by the drafters.

Construction Water Management

Regulation of Construction Water Quality and Erosion Control

The Water Bureau was required to obtain two necessary permits for ground disturbing activities during construction. First, the Project obtained an NPDES Construction Discharge Stormwater Permit 1200-CA permit from DEQ. Second, the Water Bureau also obtained an Erosion and Sediment Control (ESC) Permit from Multnomah County. Exhibit U.20.d, Attachment A, Exhibit E. These permits both provide agency and County review of construction plans and practices in order to maintain water quality and prevent erosion.

DEQ issued a 1200-CA coverage letter for the Project on June 14, 2023. Exhibit I.99. The permit has detailed requirements and standards for construction. Among other things, the 1200-CA permit requires:

- Implementation of any sediment controls prior to construction activities in that portion of the site. (Section 13.1.3)
- Management strategies throughout the project to meet and match the needs of each phase of construction. (Section 13.1.3)
- Protection of riparian areas, vegetation, trees and associated root zones, and vegetated buffer zones. (Section 13.2.1)
- Prevent soil compaction. (Section 13.2.12)
- Control all stormwater discharges, including peak flowrates and total stormwater volume to prevent channel and streambank erosion. (Section 13.2.16)
- Implement pollution prevention controls. (Section 13.3)
- Control discharges to meet all applicable water quality standards. (Section 14.1)

To show compliance with these requirements, an applicant submits an Erosion and Sediment Control Plan (ESCP) that must meet the three objectives: (1) implementation of best management practices (BMPs) in accordance with appropriate, recognized, and generally accepted engineering practices to prevent erosion and sedimentation, and to identify, reduce, eliminate, or prevent contamination of stormwater and water pollution from construction activities; (2) preventing violations of water quality standards and meet technology based effluent limitations; and (3) controlling peak flow rates and velocities of stormwater. (Section 15.2). The site must be monitored by a certified professional to ensure stormwater controls are properly installed, check for visible erosion and sedimentation, and complete any necessary maintenance, corrective actions, or stabilization measures. (Section 17.4). An extensive list of monitoring requirements is provided in Section 17.6.

The Multnomah County ESC permit requirements mirror many of the 1200-CA permit requirements. Notably, the Multnomah County ESC permit requires:

- Stormwater drainage control measurements are designed to perform as described in the most recent edition of the City of Portland Erosion and Sediment Control Manual and the City of Portland Stormwater Management Manual. MCC 39.6225(7).
- Ground disturbing activity shall be done in a manner which will minimize soil erosion, stabilize the soil as quickly as practicable, and expose the smallest practical area at any one time during construction. MCC 39.6225(8).
- Whenever feasible, natural vegetation shall be retained, protected, and supplemented. MCC 39.6225(11).
- Disposed spoil material or stockpiled topsoil shall be prevented from eroding into water bodies by applying mulch or other protective covering; or by location at a sufficient distance from water bodies or by other sediment reduction measures. MCC 39.6225(19).

ESCP plan sheets for both the filtration facility and the pipelines were submitted into the record during the 2023 proceedings of this matter. Exhibits 100, 101, and 102. Those plans were approved and the ESC Permit approval is provided in Exhibit U.20.d., Attachment A, Exhibit E.

In the 2023 proceedings in this case, these requirements were memorialized in a condition of approval that requires the Water Bureau to obtain any necessary permits from DEQ and from Multnomah County (the ESC Permit) prior to ground disturbing activities. This includes all DEQ stormwater permits identified under the 1200-CA and an ESCP for the entire Project.

Runoff From Intertie Site During Construction

Commenters express concern about adverse impacts to Beaver Creek related to construction activities such as the Intertie site being "packed and graveled, so it is no longer permeable" and "muddy water running off [the Intertie] site and down the road into Beaver Creek." Exhibit N.10 (Meacham), page 2. Similarly, another commenter provided testimony that "several field tile lines are directing runoff into Beaver Creek, located across from the Lusted Road Pipeline intertie. This runoff has resulted in increased silt downstream, clogging culverts and clouding the streams and adjacent ponds." Exhibit N.41, page 1; *see also* Exhibit N.43 (Cottrell/PHCA) ("overland flow is leaving the site, east flowing and downhill on SE Lusted Road, subsequently entering the north fork of Beaver Creek. Uncontrolled runoff is thereby adding increased sedimentation into Beaver Creek."); Exhibit N.53, page 1 ("I have noticed significant flooding and silt deposit find their way into the North Fork of Beaver Creek. … In years past, I have never seen the creek go over its banks or its the roads that are on my property. This year the creek was over the road and banks for close to a month straight. The amount of silt that I have seen come into the property both from the bottom of Lusted Road, which flooded three times this year, and though the drainage creek across the street from the site is very alarming. The drainage creek will run muddy brown for days after a rain event.").

The issue that caused the described construction runoff issue from the Intertie site "was short term and has been resolved." Exhibit S.31, page 8.

The Intertie site drainage issue "is a pre-existing issue, as this location has a history of flooding and continues to receive runoff from the larger farm parcels above the site immediately to the south." Exhibit S.30, Page 3. As shown in the map below, the Intertie site (shown on the map as the "Project Area") is only a very small portion of the area that drains to this northeast corner.

Construction Water Management (Especially Regarding the Flow Spreader)

Many commenters provided evidence into the record regarding concerns related to the construction water management system, and in particular the construction flow spreader's impacts to Johnson Creek. The most extensive explanation from commenters is found at Exhibit N.43 (Cottrell/PHCA), pages 21-22, and highlights concerns about when "groundwater was being pumped from the construction site into the creek at a rate of approximately 1 million gallons per day[.]"

Water Quality

During construction, the areas that will become the Filtration Facility's overflow basins are being used "to collect and store water for processing before being discharged. Pumping is being used in the construction water management system to move the water collected in the basins through a treatment system before discharge." Exhibit S.29, page 7. "The water in the basins is a combination of stormwater and groundwater from the shallow perched groundwater around the excavations[.]" Exhibit S.29, page 9. As noted, pumping is being used to move water collected in the basins, but it is inaccurate to say that the construction is pumping groundwater from the local aquifer (as Cottrell/PHCA stated in Exhibit N.43, page 11). Exhibit S.29, page 9.

Past Operation of Construction Flow Spreader

Many commenters expressed concerns that the operations of the construction flow spreader have adversely affected Johnson Creek. For example, one commenter states that "The daily pumping of around a million gallons of groundwater, overflow pond water and storm water thru a Flow Spreader into Johnson Creek adversely affects and alters the ecosystem of the Creek." Exhibit N.28, page 2.[87] Commenters focus on the use of the flow spreader to remove groundwater "to dewater deep excavation pits—some exceeding 20 feet in depth—for construction of facility infrastructure." Exhibit S.14 (Brooks), page 1. Other comments relevant to this topic are found in Exhibit N.6 (Courter) ("PWB started pumping one million gallons of ground water per day at the site and dumping it into Johnson Creek"); Exhibit N.14 (describing videos "of water being pumped and disbursed all over the ground and entering Johnson Creek" identified as Jennifer Hart Video 2d, 3a and 3b and dated 4.14.2025);[88] Exhibit N.43, page 21 (Cottrell/PHCA stating that "residents observed a substantial volume of water being discharged into Johnson Creek" and that "groundwater was being pumped from the construction site").

"The water handling during construction consists of a system that collects, treats, and discharges water … including handling both stormwater and perched groundwater seeping into excavations" necessary

[87] Another commenter states "The creek is usually about 6 to 8 inches deep and clear. It is now running at about 2 feet and very muddy and has been so for several weeks." Exhibit N.67, page 1. Biohabitats explains that "it is highly unlikely that this portion of the Johnson Creek watershed runs clear and 6 to 8 inches deep throughout the winter and during heavy rain events that may occur at any time of year. The upper portion of the watershed is primarily agricultural land that regularly contributes high levels of sediment into the creek due to lack of effective measures to reduce sediment inputs (e.g., riparian buffers, upland vegetative cover)." Exhibit S.31, page 17.

[88] The commenter in these videos represents that there is sedimentation in the water, but she has just walked through those areas, kicking up mud that did not come out of the flow spreader. The undisturbed flow of water shown as moving toward Johnson Creek does not appear to be muddy (Video 3b).

for construction. Exhibit S.29, page 2. Under DEQ permitting and regulations, the construction water has been discharged towards Johnson Creek via a construction version of the flow spreader. Exhibit S.29, pages 2, 6. The construction flow spreader is "a temporary version of the flow spreader [that] was installed by the contractor for construction activity" and does not reflect the final design of the flow spreader in Exhibit N.59. Exhibit U.20.h, page 9. That said, PWB is committed to establishing the final design of the flow spreader, including the extensive riparian plantings, much earlier in the construction period, as explained in further below.

PWB does not dispute that there was a short time period and has advised that "when the flow spreader was not functioning as designed for construction. Because of permitting delays, there was not enough time between construction of the flow spreader and the commencement of discharge to have planting established below the flow spreader. Instead, a section of rip rap was placed below the flow spreader to protect against erosion. The rip rap was improperly placed, resulting in a concentration of discharge for a period of time. The issue was identified and remedied with submersible pumps and other Best Management Practices." Exhibit U.20.h, pages 3-4. The corrections to the functioning of the construction flow spreader were done under the guidance of DEQ after DEQ issued a "Warning Letter with Opportunity to Correct" to PWB. Exhibit S.29, final page of PDF. "The Water Bureau proposed, and DEQ approved, corrections and process improvements to address the temporary issue." Exhibit S.29, page 3. The Warning Letter has been closed out and no further action is required related to this issue.[89] The project is in compliance with the 1200-CA permit. Exhibit U.20.h, page 4.

After reviewing Exhibit S.29 (the first open record period stormwater/groundwater memo), and based on Biohabitats' further conversations with the Project team, it is Biohabitats' expert opinion, and I find, that "the past operations of the flow spreader and construction water management system at the filtration facility generally – including the short time period when the flow spreader was not functioning as designed (see [Exhibit S.29, page 6]) and issues with sediment transport noted by commentors and shown in videos provided in the record (see [Exhibit S.29, pages 2-4]) will not have a long-term adverse effect on natural resources (including Johnson Creek) that extends beyond the construction period." Exhibit S.31, page 2. Biohabitats explains, and I find, that this conclusion is supported by the following facts:

- "The removal of shallow perched groundwater does not have a long-term impact that will extend beyond construction. Post construction, the shallow perched groundwater conditions will revert to preconstruction drainage patterns and will be driven by surficial recharge (precipitation)." Exhibit S.29, page 2.
- "[W]ater has been discharged towards Johnson Creek as regulated and permitted by the Oregon Department of Environmental Quality (DEQ). Issues with sediment transport noted by commentors and shown in videos provided in the record were also reviewed by DEQ. The Water Bureau proposed, and DEQ approved, corrections and process improvements to address the

[89] Note that, even if these activities were part of the "use" subject to MCC 39.7515(B), "In land use permit applications, evidence of prior land use violations is not generally considered as grounds for a denial, at least where there are no specific standards authorizing denial for such reasons. … Such evidence of prior [DEQ] violation does not show there will be repeated violations nor is it proper to punish the applicant for previous acts if an enforcement agency has already done so." *Stephens v. Multnomah County*, 10 Or LUBA 147, 152 (1984). Multnomah County does not now – and did not at the time of the *Stephens* case that arose in Multnomah County – have "specific standards authorizing denial" on the basis of a prior DEQ violations.

temporary issue. The DEQ approval letter is attached to [Exhibit S.29]. Those DEQ-approved corrections and process improvements have been implemented at the construction site." Exhibit S.29, pages 2-3.

- "Prior to water being discharged from the flow spreader, it goes through a treatment system that reduces sediment/turbidity to a level approved by DEQ." Exhibit S.31, page 3. Water quality testing was implemented as one of the DEQ process improvements proposed to address the flow spreader issue and "water quality samples taken from Johnson Creek show no exceedance of DEQ's standard for turbidity, which allows up to a 10% cumulative increase in downstream turbidities." Exhibit S.29, page 3. My review of the Hart videos showed clear water coming from the construction site; providing circumstantial evidence that this treatment system was operating as intended.
- "[T]he Filtration Facility site makes up only a small portion (about 11%) of the Johnson Creek watershed that feeds the reach of Johnson Creek adjacent to the Filtration Facility site … Accordingly, the overall impact of the construction-related flows from the DEQ-reviewed event, relative to total flow at Johnson Creek in a storm event, was small." Exhibit S.29, page 3.
- "Overall, flow spreader events involved short-term concentrated flows that caused minor erosion and sedimentation in Johnson Creek." Exhibit S.31, page 3.
- "The amount of sediment contributed to Johnson Creek in the pre-developed condition (a farm field) would be far more than occurred because of the temporary flow spreader construction-related flows. Similarly, the prior agricultural use of the property led to rapid changes in stream flows (flashy flows) associated with turbid runoff that did not have the chance to infiltrate into the ground as it otherwise would in a natural landscape." Exhibit S.31, page 3.
- "The long-term effects from the temporary flow spreader construction-related flows are negligible in comparison to the long-term benefits the project will have of reducing erosion and sediment loading that occurred with pre-development agricultural land use. There may have been short-term impacts to water quality associated with turbidity and sedimentation, but they were not of the level that would lead to direct or long-term adverse impacts. It is unlikely that water temperature in Johnson Creek was impacted by the short-term release of stormwater and groundwater as it occurred at a time of year when contributing flow would be similar in temperature as water in Johnson Creek." Exhibit S.31, page 3.

Additionally, any erosion or sedimentation "was minor in comparison with the amount of sediment introduced by the prior agricultural use into the creek during high intensity storm events that regularly occur during winter months in the region. Prior agricultural use of the Filtration Facility site and surrounding watershed area had no stormwater systems in place to reduce erosion and sedimentation to prevent adverse impacts to the creek. As a result, continual inputs of sediment have contributed to the current condition of aquatic habitat in Johnson Creek and the species that rely on that habitat for survival." Exhibit U.20.a., page 34.

A slightly different concern raised by commenters is that the "[d]ewatering of perched aquifers" has resulted "in reduced groundwater baseflow and thermal instability in" Johnson Creek. Exhibit S.21 (Courters), page 6. The Courters state "these impacts are not speculative" but cite to no source or study conducted to reach their conclusion. First, dewatering of perched aquifers has a negligible effect on groundwater baseflow to Johnson Creek. As explained by the applicant's groundwater experts, and as I find, "[p]erched groundwater from the project site is not a significant source of groundwater baseflow and thermal input in Johnson Creek." Exhibit U.20.g, page 15. The United States Geologic Survey Fact Sheet (Exhibit U.20.a, Attachment 2), "indicates that the direction of groundwater flow in the northern boundary of the Johnson Creek Basin is not towards Johnson Creek but out of the drainage basin

towards the Sandy River. Since the Filtration Facility is located along the northern border of the basin, at the extreme eastern edge of the Springwater Formation and the edge of the Sandy River canyon, groundwater flow from the site into the Sandy River canyon diverts Springwater Formation groundwater away from the Johnson Creek basin. Therefore, the project site does not provide enough groundwater baseflow to affect Johnson Creek. Thus, dewatering during construction will not have an adverse effect on the baseflow or thermal stability of the creek." Exhibit U.20.g, page 16.

Second, as the groundwater from dewatering has been sent to Johnson Creek, if anything it would have a beneficial effect on Johnson Creek temperatures, as groundwater would "serve to cool stormwater from the site and reduce thermal loading in Johnson Creek." Exhibit U.20.a, page 36; Exhibit U.20.a, Attachment 2 (USGS Fact Sheet), page 4 ("groundwater discharge cools the stream").

Future Operation of Construction Flow Spreader

The construction groundwater "dewatering" activity is temporary, and in fact the necessary groundwater has "now largely been drained, so the quantity of water removed from excavations will be lower [going forward] than during the initial construction period." Exhibit U.20.a, page 8; Exhibit S.29, page 3. For this reason, the construction water management system will primarily be managing stormwater going forward, along with dewatering flows from recharge of these lenses, "which will follow the same pattern as precipitation events." Exhibit S.29, page 3.
After reviewing Exhibit S.29 (the first open record period stormwater/groundwater memo), and based on Biohabitats' further conversations with the Project team, it is Biohabitats' expert opinion, and I find, that: "going forward (if or when construction resumes after this remand proceeding) the flow spreader, and construction stormwater management system at the filtration facility site more generally, will not have an adverse effect on natural resources (including Johnson Creek)." Exhibit S.31, page 4.
Biohabitats explains, and I find, that this conclusion is supported by the following facts:

- Testing of water quality samples taken from Johnson Creek to ensure no exceedance of DEQ's standard for turbidity "will continue for the duration of the construction of the facility site." Exhibit S.29, page 3.

- The Filtration Facility site "construction water management systems will be further modified for improved performance (that is, beyond what DEQ has required)" as follows:
    - "Two points of discharge will be employed – the current discharge at the flow spreader (Point of Discharge #2) and the culvert discharge on the western property line (Point of Discharge #1) – with up to a maximum of approximately 500 gpm (1.1 cfs) discharged to each location. This maximum can be maintained up to the 25-year recurrence, 24-hour duration storm event. Discharge from the flow spreader will generally correlate with the timing of runoff from precipitation events. [T]hese discharge rates are significantly lower than the pre-development 2-year storm event peak discharge rates [which is the most restrictive flow control requirement in the MCDCM] – 17% of the 2-year event at Point of Discharge #1 and 24% of the 2-year event at Point of Discharge #2." Exhibit S.29, page 3.
    - "[T]he flow control requirements outlined in the Multnomah County Design and Construction Manual (MCDCM) align with the flow control performance standards in the Portland Bureau of Environmental Services Stormwater Management Manual (SWMM) that are designed to address potential hydromodification (the alteration of natural flow patterns that results in the degradation of a stream) impacts by limiting the post-

development flow to 50% of the pre-development flow for design storm events (beginning with the 2-year design storm). These construction stormwater discharge rates will be well below that standard." Exhibit S.29, page 3.

- PWB will "remove the rip rap and instead establish the plantings described in Exhibit N.59 [the permanent flow spreader design] below the flow spreader." Exhibit S.29, page 6.
    - "This removal of the rip rap and installation of plantings includes grading the slope below the flow spreader to be level and not concentrate flows." Exhibit S.31, page 4. "This will be done during the next available window appropriate for plantings (for example, that is generally winter for bare root plants)" and PWB will "provide irrigation during the establishment period." Exhibit S.29, page 6. "The drain rock directly below the flow spreader described in Exhibit N.59 will be installed along with establishment of the plantings." Exhibit S.31, page 5. "Establishment of the plantings will involve adaptive management, which may include the use of coir fabric mats or other groundcover that will prevent erosion and sediment transport while plants are established and/or a temporary perforated pipe flow spreader below the areas where vegetation is actively being established." Exhibit S.29, page 6.

- "Overall, this strategy will establish the ultimate flow spreader design, including the extensive riparian plantings[,] much earlier in the construction period" allowing additional time so that the operational (post-construction) flow spreader will benefit from significantly more established plantings. Exhibit S.29, page 6.

- "The lenses of perched groundwater have now largely been drained, so the quantity of water removed from excavations will be lower than during the initial construction period. Recharge of these lenses, and therefore future dewatering flows, will follow the same pattern as precipitation events." Exhibit S.31, page 5.

- PWB has committed to increasing the rate of inspections of the performance of the flow spreader to daily in order to rapidly identify and respond to any new issues as soon as possible. Exhibit S.31, page 5.

- "Over the past few years, the Water Bureau has embarked on a planting program within the SEC zone in the southwest corner of the Filtration Facility site, with the objective of creating an area that functions as a riparian forest even while construction is ongoing, providing both habitat and water quality protection. This work will be ongoing during the construction period." Exhibit S.29, page 4.

"As the permanent stormwater facilities are completed," including the flow spreader as well as other aspects of the system, "they will be put into use and follow the operations described in Exhibit N.58 *Filtration Facility Site Stormwater Drainage Report*." Exhibit S.29, pages 3-4.

Groundwater is Not Contaminated

Commenters expressed concerns that groundwater was contaminated in the same way that surface soils are contaminated. Groundwater at the Filtration Facility site was tested to evaluate the potential for pesticide contaminants of concern to be present in water discharged from the construction dewatering

system. Exhibit S.29, page 2. None of the contaminants of concern were detected in the testing. Exhibit S.29, page 2.

Construction Management of Pesticide Contaminated Soils

Commenters expressed concerns that the construction activity of management of pre-existing contaminated soils will adversely affect natural resources. For example, in Exhibit N.43, Cottrell/PHCA express concerns that soil samples from the Filtration Facility site show levels of DDT, DDE, and Dieldrin above DEQ clean fill levels, that these pesticides have detrimental effects on wildlife, particularly birds, and are linked to human health adverse effects. Exhibit N.43, page 34.

Cottrell/PHCA is concerned particularly about construction activity that involves the "transport [to] and deposit [of] the contaminated soil" at "a 29-acre Clackamas County farm property owned by T&K Sester Family LLC located at Clackamas County Parcel No. 00603617, Map and Tax Lot 2S3E03 03302," referred to by the parties as the "***Gramor Property***." *See* Exhibit S.34, page 1; Exhibit N.43, page 34. Cottrell/PHNA argue that transportation of the soils to the Gramor Property "during the wettest months of the year … created a high risk of uncontrolled movement of contaminated sediments" and that the contaminated soil was not blended / disced / mixed in with the existing Gramor Property soils as required by DEQ. Exhibit S.43, page 34. Cottrell/ PHNA also states that DEQ did not take regulatory action that Cottrell/PHNA believes should have been taken, such as revocation of the Beneficial Use Determination ("***BUD***") that allowed placement of the soils on the Gramor Property.

It is notable that, within the same document (Exhibit N.43), Cottrell/PHNA argues both that the soils from the Filtration Facility site are, on the one hand, "contaminated" and "solid waste containing hazardous substances," page 34, and, on the other hand, "renewable, high-value Agricultural soils," page 63.

Expert Testimony

As explained earlier, the applicant provided expert testimony from Mr. Dennis Terzian RG, Principal Geologist at PBS, who I find to be qualified to provide an expert opinion on contaminated soils, how they have been managed by the Project, and the potential for the soils or management of soils to adversely affect natural resources. No other party to the proceeding purported to, or is evidenced to, have provided expert testimony on this topic.

Background

This background section is additive to what I have already found above.

The "excavation, movement, and stockpiling of soil are part of construction activities and are not a permanent component of the proposed land use of these properties." Exhibit U.20.d, page 1. "Placement of soil with low levels of contamination, similar to what has been or will be placed on the Gramor Property, is a regular occurrence on many properties across Oregon. DEQ has developed tools (including beneficial use determinations) to identify opportunities to divert contaminated materials from landfills to provide for a beneficial reuse. The requirements of the BUD are conservative to ensure that potential risk to human or ecological receptors does not occur." Exhibit S.34, page 4. DEQ considered evidence of the "potential effect on ecological receptors and the potential for contaminated soil to migrate to natural

ATTACHMENT 2

Field Note

Cottrell Pond Water Temperature Monitoring
Portland Water Bureau

Burke Strobel, Senior Fish Biologist (MS Marine Biology)

Dates: June 28-October 12, 2025

Purpose: Determine how Cottrell Pond affects water temperature in upper Johnson Creek during the summer months.

Methods: Two water temperature dataloggers (Onset Hobo Pro V2) were submerged and anchored to the stream bottom in Johnson Creek, one immediately upstream of the Cottrell Pond at the east property boundary of 8344 SE Cottrell Road, Boring, Oregon 97009 and one immediately downstream of the dam impounding the pond. Both data loggers were placed in actively flowing water and out of direct sunlight. Water temperatures were verified at the time of placement and at the time of retrieval using a calibrated Traceable digital thermometer. Dataloggers were left in place throughout the summer and removed after water temperatures had begun decreasing in the early fall to capture all possible peak temperature days. After retrieval, dataloggers were downloaded and analyzed using MS Excel. The seven-day rolling average of maximum daily water temperatures (7DADM) was calculated and compared to the relevant Oregon DEQ standard of 18°C for year-round rearing of salmonids.

The Johnson Creek Watershed Council (JCWC) performed a similar analysis in 2018. The results from 2025 were compared with those from the JCWC.

Results:

The Cottrell Pond warmed Johnson Creek by up to 8 °C in 2025. The creek upstream of the pond exceeded the 7DADM-based temperature standard on 12 days, but only by a maximum of 0.5 °C. The creek downstream exceeded the temperature standard on 86 days by a maximum of 6.7 °C.

In 2018, the Cottrell Pond was observed to exceed the temperature standard on 95 days, by a maximum of 8.2 °C, but did not exceed it at all upstream of the pond.

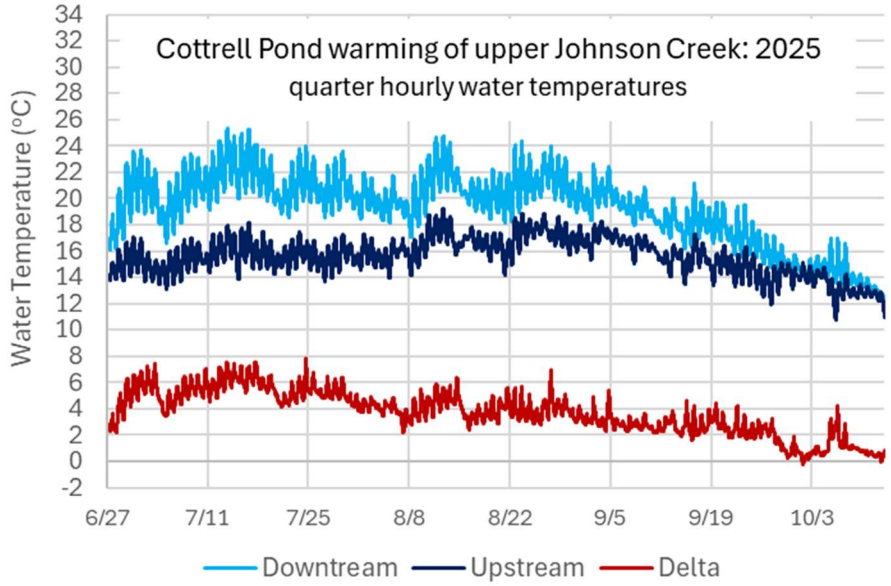

Figure 1. Water temperatures observed in 2025 upstream and downstream of Cottrell Pond, with the difference (delta) also plotted. Data collected and analyzed by Portland Water Bureau.

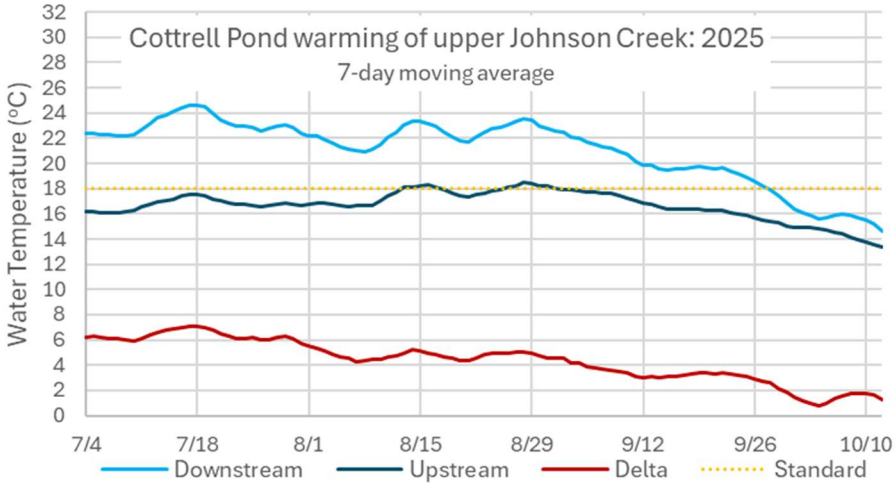

Figure 2. Seven-day rolling average of daily maximum water temperatures observed in 2025 upstream and downstream of Cottrell Pond, with the difference (delta) and relevant Oregon DEQ standard (18 °C) also plotted. Data collected and analyzed by Portland Water Bureau.

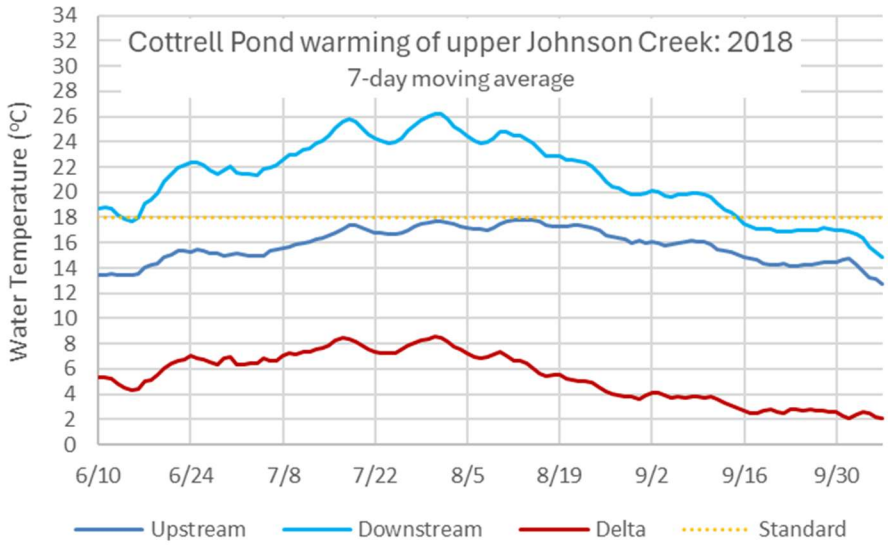

Figure 3. Seven-day rolling average of daily maximum water temperatures observed in 2018 upstream and downstream of Cottrell Pond, with the difference (delta) and relevant Oregon DEQ standard (18 °C) also plotted. Data collected and analyzed by Johnson Creek Watershed Council.

ATTACHMENT 3

Oregon
Tina Kotek, Governor

Department of Fish and Wildlife
Wildlife Division
4034 Fairview Industrial Dr. SE
Salem, OR 97302
(503) 947-6300
FAX: (503) 947-6330

March 6, 2025

Burke Strobel
Portland Water Bureau
1120 SW 5th Ave. Room 405
Portland, OR 97204
Phone: 503-467-1588
Email: burke.strobel@portlandoregon.gov

ODFW WILDLIFE CAPTURE, HOLDING, TRANSPORT AND RELOCATION PERMIT

Project: Cottrell Pond Site Restoration Project

This letter serves as authorization for the Portland Water Bureau (PWB) and authorized sub-permittees to capture, temporarily hold, transport, and relocate reptiles and amphibians encountered prior to and during implementation of the Cottrell Pond Site Restoration Project (Project). The Project will occur at Cottrell Pond in the Upper Johnson Creek watershed in Multnomah County. The Oregon Department of Fish and Wildlife (ODFW) understands the Projects will be conducted in a manner as described in permit application CHTR materials dated January 27, 2026, as amended on February 25, 2026, and as discussed with ODFW staff on March 2, 2026.

Project activities are expected to begin in **February/March 2026** and will end by **September 30, 2026**.

Authorization Purpose & Need: The purpose of this authorization is to facilitate capture, temporary holding, and relocation to benefit aquatic wildlife that may be present and encountered during the project. Several affected species are classified as "Protected Wildlife" (OAR 635-044-0430) and cannot be captured, held or released without authorization from ODFW.

Species Authorized: With the exception of federally listed species (e.g., Oregon Spotted Frog), this authorization covers all species of reptiles and amphibians present in the project area. Should Northwestern Pond Turtle become a federally listed species, this permit will not be valid unless a federal permit has been obtained from the U.S. Fish and Wildlife Service.

Authorized Methods: Dip Net, Hand Capture, Temporary Holding, Humane Euthanasia (Am. Bullfrog)

ODFW Recommendations:

1) Take measures to minimize disturbance and negative impacts to sensitive wildlife habitats during project activities.
2) Install solid silt fence around the perimeter of the project work area including staging areas to prevent reptiles and amphibians, and other wildlife from entering the work zone. Silt fence should be flush with the ground.

3) On a daily basis and prior to beginning operations, visually inspect the work area including silt fence, capturing and relocating wildlife found.
4) Inspect excavated / side-casted sediment for reptiles and amphibians that may be buried and trapped in the material. If excavated material is temporarily placed, place no more than six (6) inches deep to allow any reptile and amphibian that may be in the material to free themselves and to facilitate visual inspection.

Permit Conditions:

1) Personnel with adequate training, knowledge, and skills in amphibian and reptile identification and ecology must be on-site to ensure project operations are carried out in accordance with permit conditions.
2) Disinfect hands, boots/waders, and other project equipment before and after use at each capture site to prevent transmission of disease. Implement the standard "Disinfection of Field Equipment to Minimize Risk of Spread of Chytridiomycosis and Ranavirus" (NEPARC 2014-02) or equivalent protocol."
3) All native turtles captured (Western Painted Turtle and Northwestern Pond Turtle) are to be placed in an escape-proof container and delivered to the ODFW Clackamas office within 24 hours of capture, unless otherwise arranged with ODFW (Susan Barnes, Regional Wildlife Conservation Biologist, susan.p.barnes@odfw.oregon.gov or cell #503-320-9617).
4) Non-native wildlife captured may not be released or relocated live. Captured American Bullfrogs are to be humanely killed according to AVMA Guidelines for the Euthanasia of Animals (AVMA 2020 Edition). Carcasses may be disposed of on-site. Non-native turtles (e.g., Red-eared Slider, Snapping Turtle) are to be placed in an escape-proof container and delivered to the ODFW Clackamas office within 24 hours of capture, unless otherwise arranged with ODFW (Susan Barnes).

Sub-Permittees: Jade Ujcic-Ashcroft (City of Portland, BES)

Permit Expiration Date: This authorization is effective date of signature and expires **December 31, 2026.**

Record Keeping**:** All wildlife captures, including any non-target species and mortalities, are to be recorded on the annual Wildlife CHTR report form.

Report Due Date: A completed annual report and associated wildlife capture data is due to ODFW by January 30, 2027. Email reports to:

Wildlife.permits@odfw.oregon.gov

If you have questions regarding this authorization or the conditions listed above, please contact Wildlife.permits@odfw.oregon.gov.

Sincerely,

ODFW Wildlife Division
Wildlife Division Permits Specialist/Game Program Support
HQ – Salem, OR

ATTACHMENT 4

Attachments | Section 4 Appendix 2B: Construction and Erosion Control

CONSTRUCTION NOTES:

2. REMOVE EXISTING FENCE.
3. REMOVE EXISTING SHED.
4. INSTALL CONSTRUCTION ENTRANCE.
5. INSTALL TYPE 3 FIBER ROLL WATTLES PER DETAIL 1 ON SHEET 13.

SHEET NOTES:

1. BMP ALONG PERIMETER OF EXISTING POND MAY BE REMOVED FOLLOWING POND DEWATERING.

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		Revision	
Survey	Mon / Yr	XXXX	

Designed By	ST	Program Mgr	KWW
CAD Checked By		Const Mgr	XXXX
Checked By		Const Supvr	
Project Mgr	ST	Date	

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

Preliminary

Keith W. Walker, PE No 79596, Engineering Supervisor

Date

CITY OF PORTLAND, OREGON 1851

Cottrell Pond Restoration

Construction Management and Erosion Control

SAP Project No
W02229
1/4 Section

Sheet No
5 of 14

CONSTRUCTION NOTES:

6. INSTALL SEDIMENT MAT CONTROL BAG PER DETAIL 2 ON SHEET 13.
7. INSTALL TEMPORARY DIVERSION DAM.
8. INSTALL TEMPORARY DIVERSION PUMP AND PIPE.

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scale in feet

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		Revision	
Survey	Mon / Yr	XXXX	

Designed By	ST	Program Mgr	KWW
CAD Checked By		Const Mgr	XXXX
Checked By		Const Supvr	
Project Mgr	ST	Date	

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

Preliminary

Keith W. Walker, PE No 79596, Engineering Supervisor — Date

Cottrell Pond Restoration

Temporary Water Management

SAP Project No W02229
1/4 Section
Sheet No 6 of 14

ODEQ STANDARD ESCP NOTES:

1. HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (SCHEDULE A.8.C.I.(3))
2. ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS. (SCHEDULE A.12.B AND SCHEDULE B.1)
3. INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS. (SCHEDULE B.1.C AND B.2)
4. RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, THE ABOVE RECORDS MUST BE RETAINED BY THE PERMIT REGISTRANT BUT DC NOT NEED TO BE AT THE CONSTRUCTION SITE. (SCHEDULE B.2A.C)
5. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT. (SCHEDULE A 8.A)
6. THE ESCP MUST BE ACCURATE AND REFLECT SITE CONDITIONS. (SCHEDULE A.12.C.I)
7. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT WITHIN 10 DAYS. (SCHEDULE A.12.C.IV. AND V)
8. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. (SCHEDULE A.7.A.III)
9. IDENTIFY, MARK, AND PROTECT (BY CONSTRUCTION FENCING OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS. (SCHEDULE A.8.C.I.(1) AND (2))
10. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SCHEDULE A.7.A.V)
11. MAINTAIN AND DELINEATE ANY EXISTING NATURAL BUFFER WITHIN THE 50-FEET OF WATERS OF THE STATE. SCHEDULE A.7.B.I.AND (2(A)(B))
12. INSTALL PERIMETER SEDIMENT CONTROL, INCLUDING STORM DRAIN INLET PROTECTION AS WELL AS ALL SEDIMENT BASINS, TRAPS, AND BARRIERS PRIOR TO LAND DISTURBANCE. (SCHEDULE A.8.C.I.(5))
13. CONTROL BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND DOWNSTREAM CHANNELS AND STREAMBANKS. (SCHEDULE A.7.C)
14. CONTROL SEDIMENT AS NEEDED ALONG THE SITE PERIMETER AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION, BOTH INTERNALLY AND AT THE SITE BOUNDARY. (SCHEDULE A.7.D.I)
15. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES. TEMPCRARY OR PERMANENT STABILIZATIONS MEASURES ARE NOT REQUIRED FOR AREAS THAT ARE INTENDED TO BE LEFT UNVEGETATED, SUCH AS DIRT ACCESS ROADS OR UTILITY POLE PADS.(SCHEDULE A.8.C.II.(3))
16. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. (SCHEDULE A.8.C.I.(7))
17. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: CONSTRUCTION ENTRANCE, GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES. (SCHEDULE A 7.D.II AND A.8.C.I(4))
18. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE. (SCHEDULE A.7.D.II.(5))
19. CONTROL PROHIBITED DISCHARGES FROM LEAVING THE CONSTRUCTION SITE, I.E., CONCRETE WASH-OUT, WASTEWATER FROM CLEANOUT OF STUCCO, PAINT AND CURING COMPOUNDS. (SCHEDULE A.6)
20. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, FERTILIZER, PESTICIDES AND HERBICIDES, PAINTS, SOLVENTS, CURING COMPOUNDS AND ADHESIVES FROM CONSTRUCTION OPERATIONS. (SCHEDULE A.7.E.I.(2))

IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SCHEDULE A.7.E.III.)

21. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL. (SCHEDULE A 7.A.IV)
22. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE. (SCHEDULE A.9.B.III)
23. IF AN ACTIVE TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS. (SCHEDULE A.9.D)
24. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR. (SCHEDULE A 7.B)
25. AS NEEDED BASED ON WEATHER CONDITIONS, AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS. (SCHEDULE A.7.E.II.(2))
26. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND BARE GROUND ACTIVITIES DURING WET WEATHER. (SCHEDULE A.7.A.I)
27. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL. (SCHEDULE A.9.C.I)
28. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT AND BEFORE BMP REMOVAL. (SCHEDULE A.9.C.I)
29. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT. (SCHEDULE A.9.C.III & IV)
30. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN-UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME. (SCHEDULE A.9.B.I)
31. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS. (SCHEDULE A.9.E.II)
32. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE. (SCHEDULE A.7.F.I)
33. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.7.F.II)
34. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, ALL TEMPORARY EROSION CONTROLS AND RETAINED SOILS MUST BE REMOVED AND DISPOSED OF PROPERLY, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. (SCHEDULE A.8.C.III(1) AND D.3.C.II AND III)

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Survey	Mon / Yr	XXXX	

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Checked By		Const Supvr	
Project Mgr	ST	Date	

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

Preliminary

Kenneth M. Ackerman, Principal Engineer, PE No 19424

Date

Cottrell Pond Restoration

Erosion Control Details

SAP Project No W02229
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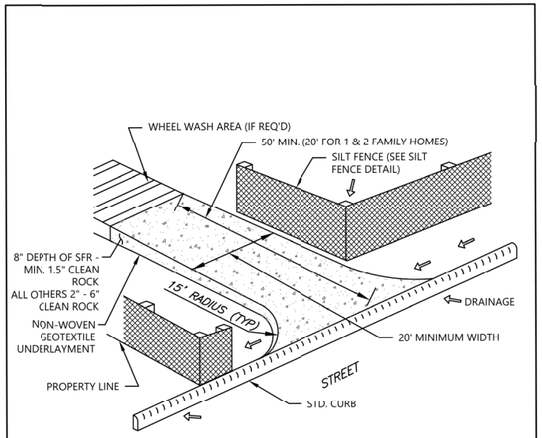
Attachments | Section 4 Appendix 2F: Erosion Control Details



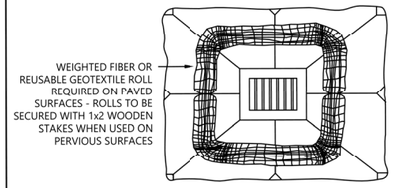
STABILIZED CONSTRUCTION ACCESS

NOTE:
CURB RAMP INSTALLATION SHALL NOT IMPEDE STORMWATER FLOWS, VEHICLE TRAFFIC, AND/OR BICYCLE TRAFFC.

DRAWING NOT TO SCALE

EROSION CONTROL MANUAL	STABILIZED CONSTRUCTION ACCESS Detail Drawing 3.12-A

***BIOBAGS MUST BE REMOVED AT END OF JOB**



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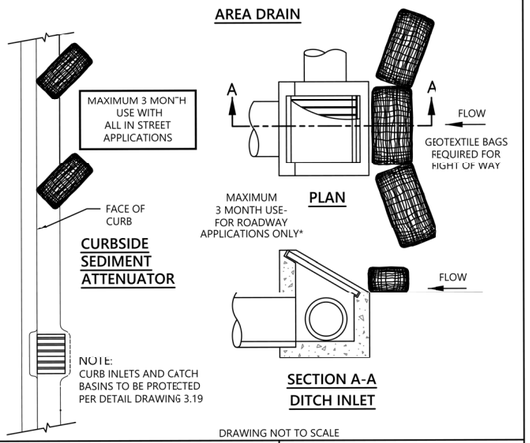
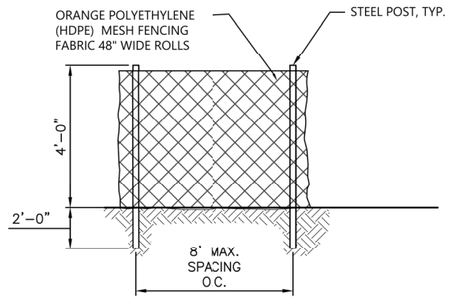


CURBSIDE SEDIMENT ATTENUATOR — **PLAN**

SECTION A-A
DITCH INLET

DRAWING NOT TO SCALE

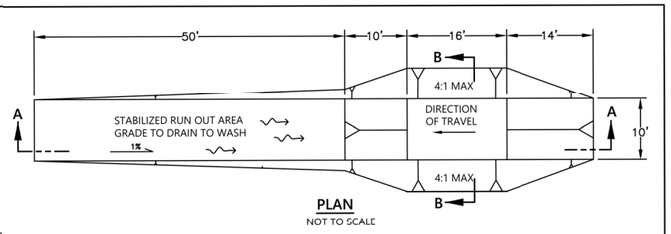
EROSION CONTROL MANUAL	FILTRATION BAGS AND SOCKS: TEMPORARY INLET PROTECTION Detail Drawing 3.16-A



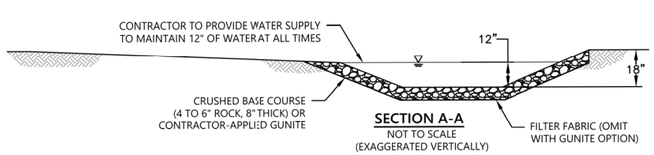
NOTES:
1. USE STEEL FENCE POSTS. INSTALL WHERE SHOWN ON PLANS.
2. FASTEN FABRIC TO FENCE PER MANUFACTURER'S RECOMMENDATIONS.
3. ENSURE ALL POSTS ARE SET FIRM AND STABLE INTO GROUND MIN. 2'-0" DEPTH. PROVIDE BRACING WHERE NEEDED TO STABILIZE.

1 **EXCLUSION ZONE FENCE - DETAILS**
NTS

EROSION CONTROL MANUAL



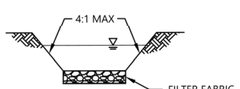
PLAN
NOT TO SCALE



SECTION A-A
NOT TO SCALE
(EXAGGERATED VERTICALLY)

NOTE:
1. CONTRACTOR TO REMOVE ACCUMULATED SEDIMENT FROM WHEEL WASH; MAY BE PIPED TO AN APPROVED SEDIMENT TRAP.

REFERENCE:
USE GEOTEXTILE FABRIC WITH AGGREGATE FOR A TEMPORARY TIRE WASH.

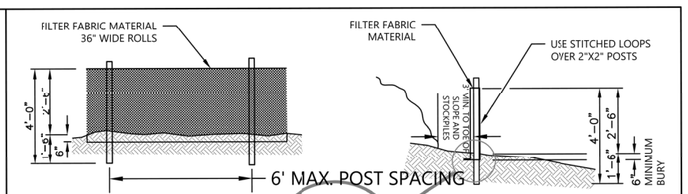


SECTION B-B
NOT TO SCALE
(EXAGGERATED VERTICALLY)

DRAWING NOT TO SCALE

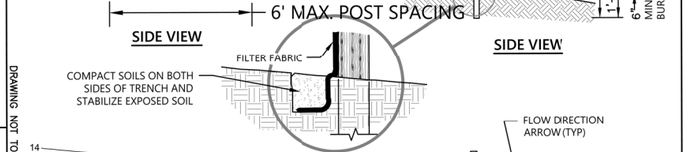
WHEEL WASH STRUCTURE Detail Drawing 3.13-A

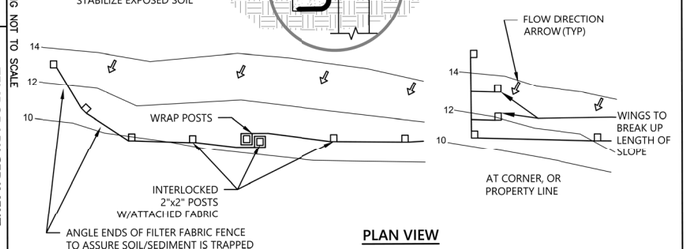
EROSION CONTROL MANUAL



SIDE VIEW

SIDE VIEW





PLAN VIEW

DRAWING NOT TO SCALE

TEMPORARY SEDIMENT CONTROL FENCE Detail Drawing 3.15-A

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Checked By		Const Supvr	
Project Mgr	ST	Date	

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Preliminary

Kenneth M. Ackerman, Principal Engineer, PE No 19424 — Date

Cottrell Pond Restoration

Erosion Control Details

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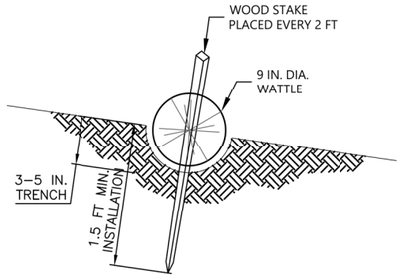
Attachments | Section 4 Appendix 2F: Erosion Control Details



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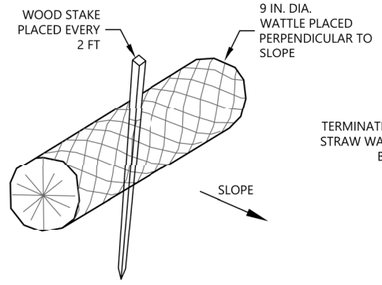

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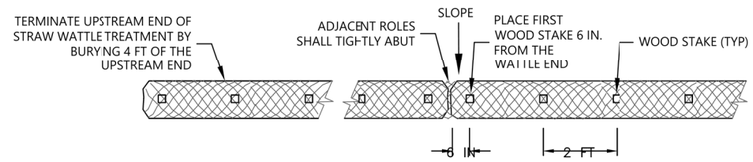


PLAN VIEW

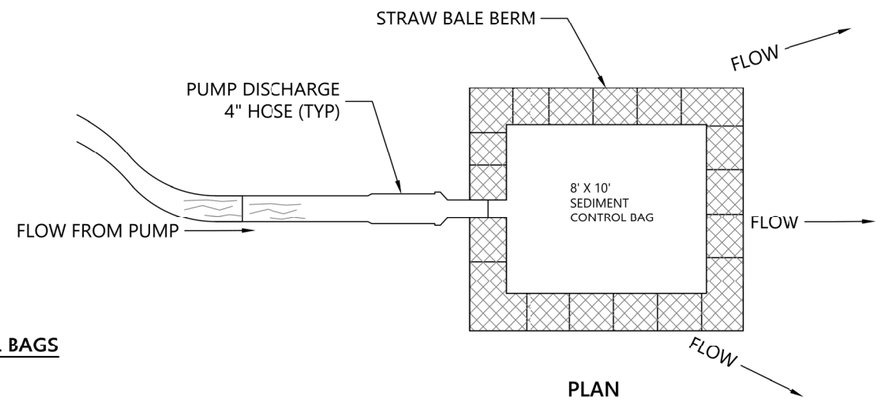
GENERAL NOTES ON INSTALLING STRAW WATTLES

A. INSTALL THE WATTLES , INSURING THAT NO GAPS EXIST BETWEEN THE SOIL AND THE BOTTOM OF THE WATTLE. THE ENDS OF ADJACENT WATTLES SHALL BE TIGHTLY ABUTTED SO THAT NO OPENING EXISTS FOR WATER OR SEDIMENT TO PASS THROUGH.

B. LIVE STAKES SHALL BE USED TO FASTEN WATTLES TO THE SOIL.

C. NO DAMAGE SHALL BE DONE TO THE WATTLE DURING INSTALLATION.

1 **STRAW WATTLE - TYPICAL DETAILS**
NTS



GENERAL NOTES ON INSTALLING SEDIMENT CONTROL BAGS

1. AVOID PLACEMENT OF THE SEDIMENT CONTROL BAG ABOVE STEEP SLOPES OR WHERE SATURATED SOIL CONDITIONS MAY CAUSE SOIL INSTABILITY.
2. INSTALL THE SEDIMENT CONTROL BAG ON A MILD SLOPE SO INCOMING WATER FLOWS DOWNHILL THROUGH THE BAG.
3. THE SEDIMENT CONTROL BAG MUST BE MONITORED DURING USE. THE SEDIMENT CONTROL BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR PASS WATER AT A REASONABLE RATE.
4. DISPOSE OF THE SEDIMENT CONTROL BAG WHEN FULL AND REPLACE WITH NEW BAG.
5. FOR DISPOSAL, THE SEDIMENT CONTROL BAG MAY BE CUT OPEN AND THE CONTENTS SEEDED AFTER REMOVING VISIBLE FABRIC.
6. SIZING AND MAINTENANCE OF THE SEDIMENT CONTROL BAG IS DEPENDENT ON THE PUMPED FLOW RATE AND AMOUNT OF SEDIMENT. CONTRACTOR SHALL VERIFY THAT SEDIMENT CONTROL BAG IS SUFFICIENT TO TREAT PUMPED DEWATERING WATER TO MEET ALL APPLICABLE STANDARDS AND PERMIT CONDITIONS.

2 **SEDIMENT CONTROL BAG**
NTS

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Survey	Mon / Yr	XXXX	

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Checked By		Const Supvr	
Project Mgr	ST	Date	

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