# SR 3 Freight Corridor - New Alignment

## Water Resources Discipline Report

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Prepared for:
U.S. Department of Transportation
Federal Highway Administration
Washington State
Department of Transportation

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# Acronyms, Abbreviations & Definitions

| | |
|---|---|
| ADT | Average Daily Trips |
| APE | Area of Potential Effect |
| BMP | Best Management Practice |
| CARA | Critical Aquifer Recharge Area |
| CAVFS | Compost-Amended Vegetated Filter Strips |
| cfs | cubic feet per second |
| Cu | Total Copper |
| DOH | Department of Health |
| CZM | Coastal Zone Consistency Determination |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| EPA | Environmental Protection Agency |
| EPM | WSDOT's Environmental Procedures Manual, 2010 |
| FEIS | Final Environmental Impact Statement |
| FEMA | Federal Emergency Management Agency |
| FHWA | Federal Highway Administration |
| GIS | Geographic Information Systems |
| HRM | WSDOT's Highway Runoff Manual |
| LOS | Level of Service |
| MP | Milepost |
| NEPA | National Environmental Policy Act |
| NP | Natural Dispersion |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| OHWM | Ordinary High Water Mark |
| RCW | Revised Code of Washington |
| SPCC | Spill Prevention, Control and Countermeasures |
| SWPPP | Storm Water Pollution Prevention Plan |
| TDA | Threshold Discharge Area |
| TESC | Temporary Erosion Sediment Control |
| TMDL | Total Maximum Daily Load |
| W.M. | Willamette Meridian |
| WAC | Washington Administrative Code |
| WDFW | Washington Department of Fish and Wildlife |
| WRIA | Water Resource Inventory Area |
| WSDOT | Washington State Department of Transportation |

# Executive Summary

## *What is the Proposed Action?*

The proposed SR 3 Freight Corridor – New Alignment project would construct a two-lane 6.5 mile limited access highway with a design and posted speed of 50 miles per hour (mph) on a new alignment approximately 3,000 feet to the east of existing State Route (SR) 3. The major portion of the highway would run through Mason County while the northern end would be located in Kitsap County. The proposed alignment would begin at MP 22.81 on SR 3 and connect back to the existing SR 3 alignment at MP 29.49 (see Figure 1). The north end connection to existing SR 3 is proposed just north of SW Lake Flora Road, and the south connection is just south of the intersection with SR 302. The proposed bypass highway would carry regional through traffic from Shelton to Bremerton and would be the mainline for SR 3. The existing SR 3 would become a "Business Loop" serving downtown Belfair with connections to SR 106, SR 300, and the Old Belfair Highway.

## *What are the Water Resources in the Study Area and how are they Important?*

"Water resources" refers to surface waters, floodplains, water quality, groundwater, and drainage. Water resources are an important environmental asset to protect as further described below:

- Surface waters and floodplains are natural resources that provide valuable wildlife habitat.
- Surface waters are valuable recreation areas.
- Surface and groundwater are sources of drinking water.
- Floodplains are areas where significant rain events overflow stream banks to allow natural stream meander. Floodplains also provide storage to reduce the duration and magnitude of flooding in upland areas.
- Good water quality is important in maintaining human health, wildlife habitat and vegetation.
- Groundwater is used for irrigation and farming.
- Drainage systems distribute sediment, nutrients and large debris throughout the watershed and provide food plus habitat for aquatic and terrestrial species.

## *What information was used to create this report?*

A qualitative assessment of project-related impacts to surface waters, floodplains, water quality and groundwater is provided in this report. This information is based on existing conditions and proposed modifications to SR 3. Potential water quality impacts from operation of the project were estimated quantitatively through guidance from the Washington State Department of Transportation's (WSDOT's) *Environmental Manual* (WSDOT, 2020). Water quality impacts associated with the construction and operation of the project were assessed by comparing existing and proposed annual pollutant loads to the project study area receiving waters. In addition, information was gathered from a number of sources, including:

- Wetland Discipline Report (2021),
- Geographic Information Systems (GIS),
- Geology and Soils Environmental Discipline Report (2021),
- Public agencies, and

- WSDOT *Highway Runoff Manual* (WSDOT, 2019)

## *What is the Existing Environment?*

### Topography

The project corridor is located within the Puget Lowland and is situated near the boundaries of Kitsap and Mason Counties, Washington. The proposed alignment trends generally northeast/southwest and traverses glacially-sculpted prairies and uplands. The topography consists of rolling hills and prairies incised by generally meandering drainages, controlled by southwest-trending hillocks and valleys sculpted during the last stage of continental glaciations in the region. Elevations along the proposed roadway corridor vary from approximately 274 feet to approximately 390 feet, based upon preliminary cross sections provided by WSDOT. Various closed depressions in the upland terrain are occupied by wetlands and/or small lakes (such as Devereaux Lake and Kriegler Lake). These are commonly associated with glacial scouring or the formation of "kettles" (by sedimentation around and over "dead ice") during the last glaciations. The generally hilly and locally planar upland topography has been incised by several drainages, including Coulter Creek (to the east of the alignment) and an unnamed tributary to Coulter Creek traversed by the alignment. Lynch Cove, at the terminus of Hood Canal, is located west of the site, near Belfair. North Bay, at the north end of Case Inlet, is located south of the site.

### Climate

The corridor is within the Puget Sound Lowlands climatic zone, which has a temperate maritime climate. Winters are typically cool and wet, while summers are generally mild and dry. Winter average temperatures are typically in the 30s to 50s and average summer temperatures are generally in the 60s to 70s. Average annual precipitation is approximately 50inches and average annual snowfall is approximately 2 inches (AgACIS, 2021). See Section 3.1 of this report for further discussion regarding project area climate.

**Enhanced runoff treatment, enhanced water quality treatment** (versus *basic water quality treatment*) The use of runoff treatment BMPs designed to capture dissolved metals at a higher rate than basic treatment BMPs.

**Basic (water quality) treatment** (versus *enhanced water quality treatment*) The Washington State Department of Ecology's performance goal is to achieve 80% removal of total suspended solids for influent concentrations that are greater than 100mg/l, but less than 200mg/l. For influent concentrations greater than 200mg/l, a higher treatment goal may be appropriate. For influent concentrations less than 100mg/l, the facilities are intended to achieve an effluent goal of 20mg/l total suspended solids.

### Vegetation

According to the Soil Survey of Mason County, Washington (Ness, 1960) and the Soil Survey of Kitsap County (McMurphy, 1980), the vegetation in the project area includes Douglas fir, Pacific madrone, western hemlock, spruce, western red cedar, big leaf maple, Lodgepole pine, and alder. The understory includes salal, ferns, huckleberry, Oregon grape, rhododendron, nettles, and various grasses. In wetland areas and drainage channels are mosses, reeds, rushes, and sedges. The area has been extensively logged in the past. Currently the landscape is composed of second and third growth forest stands and open pasture.

### Wetlands

Thirty-eight wetlands have been identified in the project area, thirty-one in Mason County and six in Kitsap County. The permanent wetland impacts for the project total 0.11 acres, and permanent buffer impacts total 7.78 acres. Most vegetation types are dominated by a scrub-shrub vegetation class, although forest, emergent, and aquatic vegetation classes were apparent with wetlands generally providing low to moderate levels of biological, chemical, and physical functions. Using Ecology's four tiered rating system, one of the wetlands is considered Category II; twelve are considered Category III, and twenty-five are considered Category III. All the wetlands have a depressional hydro-geomorphic class. See Section 3.7 of this report for further discussion regarding project area wetlands. In addition, see the Wetlands Discipline Report (Parametrix, 2021).

### Soils

The General Soil Map in the Soil Survey of Kitsap County, Washington identifies all of the soils within the Kitsap County segment of the project to be composed of Alderwood-Harstine Series soils.

The Soil Survey of Mason County, Washington does not include a General Soil Map; however, the predominant soil type mapped within the study area is Alderwood gravelly sandy loam, With the exception of Orcas peat, all mapped soils are identified as moderately to excessively well drained and generally do not contain hydric soil indicators (NRCS 2020). One hydric soil (Orcas peat) is mapped in a small area near the northern end of the study area. See section 3.1 of this report for further discussion regarding project area soils. In addition, see the updated Geology and Soils Environmental Discipline Report (HWA, 2021).

## *What Impacts would Result if the Project was not Built?*

If the SR 3 Freight Corridor was not constructed some minor improvement may be made as part of normal maintenance activities along the existing SR 3 highway. If the bypass is not built the water resources within the study area could see negative effects from increased traffic congestion and continued development consistent with available zoning.

## *How would the Proposed Project Impact Water Resources?*

Enhanced water quality treatment is required for areas of roadway with average daily traffic (ADT) greater than 15,000 (Highway Runoff Manual (HRM) (WSDOT, 2019). SR 3 currently carries 19,000 daily trips (in 2018) and by 2045 the new corridor is expected to carry well over 15,000 ADT. Storm water improvements under the Proposed Build Alternative would be built in accordance with WSDOT HRM standards. The project has been designed to avoid or minimize impacts to water resources by placing the new alignment away from any existing streams, rivers, wells, and wetlands to the full extent possible. All new roadway runoff would receive enhanced treatment and flow control there by eliminating adverse impacts to water resources.

This project would require approximately 33 acres of new impervious surface. The majority of this surface would be built on a new alignment. Stormwater flow control and quality treatment would be provided for the new impervious area as required.
This project would have a major impact to groundwater in the form of recharge rates. The 33 acres of new impervious surface would cause a decrease in groundwater recharge rates in some areas.

Floodplains would not be impacted as a result of this project. The proposed project is outside the mapped floodplain boundaries and is not anticipated to change floodplain or flooding characteristics throughout construction.

## *What Mitigation Measures are Proposed?*

Precautions would be taken to minimize detrimental impacts to the environment, however where impacts are unavoidable, mitigation would be used to help offset the initial impacts. Due to an increase in impervious surfaces, natural dispersion and infiltration would provide the majority of the treatment and flow control for this project. However, some sections of roadway such as intersection and curves may not be able to accommodate the use of natural dispersion and infiltration, due to roadway geometry creating concentrated flows. In these areas the use of compost-amended Biofiltration Swale and or stormwater treatment ponds would be constructed to control and treat stormwater runoff from the new highway. Permit conditions from regulatory agencies along with BMPs will be utilized to mitigate project impacts.

The proposed alignment would permanently impact a total of 0.11 acres of wetland habitat and 7.78 acres of wetland buffer habitat. The extent of temporary impacts to wetlands and buffers is not yet known and will be determined as the project design is refined.

As there are no wetland mitigation banks in the project vicinity, a permittee-responsible mitigation project(s) will be required to compensate for unavoidable impacts. Per Mason County and City of Bremerton codes, mitigation must occur in the same watershed as the impacts. Public lands and private land with willing sellers are options for securing wetland mitigation sites.

# 1. Introduction

## *1.1. Description of the Build Alternative (Proposed Action)*

The proposed SR 3 Freight Corridor – New Alignment project would construct a two-lane 6.5 mile limited access highway with a design and posted speed of 50 miles per hour (mph) on a new alignment approximately 3,000 feet to the east of existing State Route (SR) 3. The major portion of the highway would run through Mason County while the northern end would be located in Kitsap County. The proposed alignment would begin at MP 22.81 on SR 3 and connect back to the existing SR 3 alignment at MP 29.49 (see Figure 1). The south end connection to existing SR 3 is proposed just south of the intersection with SR 302, and the north connection is just north of SW Lake Flora Road. The proposed bypass highway would carry regional through traffic from Shelton to Bremerton and would be the mainline for SR 3. The existing SR 3 would become a "Business Loop" serving downtown Belfair with connections to SR 106, SR 300, and the Old Belfair Highway.

The typical cross-section of the proposed improvement is shown in Figure 2 and its construction elements would include the following:

- Two 12-foot travel lanes with 8-foot shoulders
- Stormwater treatment facilities – natural dispersion and infiltration, compost-amended vegetated filter strips, and treatment wetlands
- Acquiring right of way and implementing managed access
- A roundabout at the north end of the alignment to connect the existing SR 3 corridor to the new corridor at Lake Flora Road
- Two roundabouts to connect the south end of the new corridor to the existing SR 3 corridor at SR 302
    - The western roundabout would provide access to the existing SR 3 corridor
    - The eastern roundabout would provide access to SR 302 and the proposed SR 3 Freight Corridor
- A roundabout at the north end of the alignment to connect the existing SR 3 corridor to the new corridor at Lake Flora Road
- Right-in-right-out access to provide access to North Mason High School and Belwood Lane


**Figure 1. SR 3 Freight Corridor Project Vicinity**

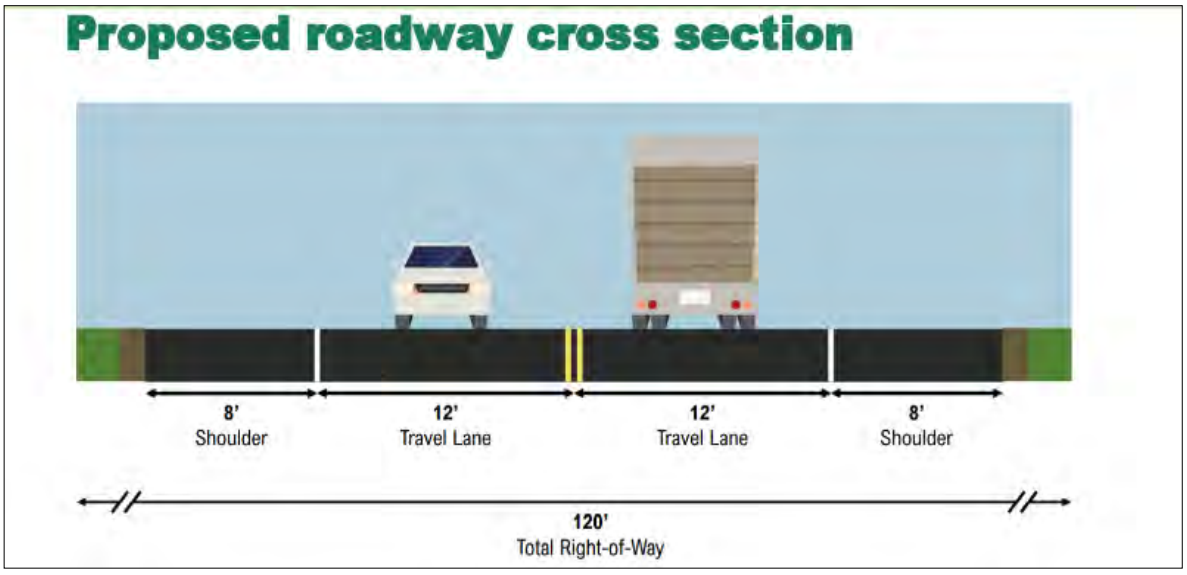


**Figure 2. SR 3 Proposed Highway Cross-section**

## *1.2. What is the Purpose of this Project?*

The purpose of constructing the SR 3 Freight Corridor – New Alignment (Freight Corridor) is to provide a reliable high-speed regional route between Kitsap and Mason Counties, moving freight and regional traffic between Shelton and Bremerton, thus bypassing the urban center of Belfair. This project would reduce congestion and improve safety through Belfair and provide an alternate route during recurring highway closures resulting from vehicular crashes and other incidents. Implementation of this project would provide safe and reliable regional access to jobs, goods, and services, improve efficiencies for all public service providers, and lower the current crash rate on SR 3 through Belfair.

## *1.3. Why is the SR 3 Freight Corridor – New Alignment Project Needed?*

A new Freight Corridor around Belfair is needed to improve regional mobility for freight, passenger vehicles and transit. The improvements would increase mobility, reduce congestion through Belfair, and improve safety.

### Increase Mobility

SR 3 in the Belfair urban area experiences chronic traffic congestion and declining operational Levels of Service (LOS) for traffic. Because SR 3 is the major north- south link between Mason and Kitsap counties, Belfair is a choke point on this regional highway and serves as the only freight route through southwest Kitsap and northeast Mason Counties. SR 3 is designated as a critical rural freight corridor and is part of the National Highway Freight Network (NHFN). SR 3 is also identified as a National Highway System (NHS) route and as a Highway of Statewide Significance (HSS). The National Highway System route designation extends from the Hood Canal Bridge in the north to Shelton in the south, passing through the Belfair urban area, the City of Bremerton, the Puget Sound Industrial Center - Bremerton (PSIC - B), and connecting with SR 16.

SR 3 carries most of the daily commute trips from SR 106, SR 300 and populated coastal areas in Mason County north to Bremerton and via SR 16 to points in Pierce and King Counties. Regional traffic using SR 3 must pass through the commercial area of Belfair having numerous access points with high turning volumes. Southbound traffic destined for Shelton, Grays Harbor, and Olympia also must pass through Belfair.

### Reduce Congestion

A combination of freight, commute, and recreational traffic volumes cause severe congestion through the Belfair urban area. Congestion is occurring during peak commute hours (7:00-9:00 AM and 4:00-6:00 PM), weekends, holidays, and during the tourist season (May-September).

SR 3 had an average of 19,000 vehicles per day in 2018 south of Lake Flora Road. Highway LOS analysis shows the one-mile segment of SR 3 north of Lake Flora Road, the signalized intersection at NE Clifton Lane, and the unsignalized intersection at Old Belfair Highway, are all failing LOS standards (see also the SR 3 Freight Corridor Transportation Discipline Report).

Several studies conducted over the last decade have shown that traffic congestion and safety concerns will overwhelm SR 3 in the near future. The operational analysis of the project area indicates that the roadway currently operates below minimum acceptable service standards on this portion of the highway. Without the Freight Corridor, operational performance for freight and regional through traffic on the portion of existing SR 3 through Belfair will continue to decline to the point of chronic failure by 2045. If no action is taken, travel times in the project area are expected to get worse as future traffic volumes increase.

The current highway does not support regional transportation needs. This route experiences seasonal fluctuations from tourist traffic and recreational users and is the most direct and expedient alternate land route for traffic from Bremerton to Interstate 5 if SR 16 or the Tacoma Narrows Bridge becomes blocked. Southbound traffic destined for Shelton, Grays Harbor, and Olympia must pass through Belfair. As land located in the corridor continues to be developed, and regional trips continue to increase, traffic congestion through Belfair will be exacerbated. The Bremerton Economic Development (BED) Study for US 101, SR 3 and SR 16 in Mason and Kitsap Counties (WSDOT 2012a) showed the Freight Corridor project was the top priority project for the local communities and stake holders.

If the Freight Corridor project is not built, the SR 3 would be an important regional facility that will fail to provide efficient regional and local traffic mobility. A bypass would improve the roadway system around Belfair and would reduce travel time.

### Improve Safety

Crash records in the study area indicate that the type and severity of crashes appears to be consistent with congested urban conditions. Rear-end and property damage only (PDO) or non-injury crashes account for the greatest number of crashes. The number of crashes tends to increase under congested conditions, but the severity of those crashes is generally lower, due to lower speeds. In the study area, between January 2018 and December 2022, 402 crashes were reported. Two were fatal crashes and eight were serious injury crashes. One serious injury crash was at the intersection of at the Lake Flora Rd intersection (MP 28.78). The remaining two fatal crashes and seven serious injury crashes. During

this time, 330 crashes occurred between the study intersections with the majority occurring between Lake Flora Road to NE Clifton Lane (42%) and between NE Clifton Lane to SR 106 (40%).

### Support of Local Plans

The area is developing based on local agency comprehensive plans and zoning. However, the area lacks a completed transportation network appropriate for the community. The Bremerton Economic Development (BED) Study showed the SR 3 Freight Corridor is the top priority project for the local communities and stakeholders. The Freight Corridor has been included in the transportation elements of the Mason County and the City of Bremerton comprehensive plans.

## *1.4. Purpose of this Report*

This water resources discipline report has been prepared in support of the National Environmental Policy Act (NEPA) Environmental Assessment (EA) for the proposed project. The report characterizes the existing water resources that may be affected by the proposed project; describes the methods used in the characterization; discusses the potential effects of the proposed project on surface water, floodplains, water quality, groundwater and drainage; describes the planned conservation measures for preventing and minimizing the potential effects of the proposed project on these water resources; describes the planned mitigation measures to compensate for the potential effects of the proposed project on these water resources; and identifies any significant unavoidable adverse effects on water resources that are expected to result from the proposed project. For the purpose of this report, the project area is a 0.5 mile buffer around the proposed corridor.

## *1.5. Project Background*

The Washington State Department of Transportation (WSDOT) completed the "Belfair Bypass Analysis" report in May of 1997. The completion of this report marks the beginning of 12 years of extensive analysis of a highway project that was first envisioned 50 years ago. The 1997 report was initiated largely as the result of a prospective right of way donation from a private landowner for the purpose of constructing a roadway that would bypass the community of Belfair. $50,000 was appropriated by the Legislature to prepare a corridor and environmental analysis to establish a route in order to decide whether or not to accept the right of way donation for the bypass. The report concluded that the concept of providing a SR 3 bypass around the community appeared to be a viable means of improving mobility in the corridor, and recommended the construction of a bypass be pursued.

In the ensuing years, several more studies of the Freight Corridor were completed. In general, these studies clearly demonstrate that population and commercial growth in the SR 3 corridor will eventually overwhelm the existing roadway, necessitating significant improvements be made, such as the Freight Corridor. While the Freight Corridor was the focus for many of these studies, alternatives to the bypass were analyzed as well. Also, other roadway improvements have been identified to address growing congestion and safety concerns along SR 3, such as installation of signals, construction of two-way left turn lanes, and capacity improvements at intersections.

The ultimate goal of performing these analyses is to quantify the purpose and need for the transportation investments, especially the Freight Corridor . Recent cost estimates for the Freight Corridor are approximately $78 million. In September of 2008, the "Belfair Bypass Traffic Analysis Report" was submitted to WSDOT by their consultant, Transpo. The report presents the results of

previously completed analyses of how a specific Freight Corridor option (referred to in Transpo technical memoranda as the "retained alternative") would impact traffic operations on existing SR 3, as well as how Freight Corridor connections to existing SR 3 would function in the design year for the project, 2045. Through the documentation of future deficiencies, and how the "retained alternative" addresses those problems, the report illustrates the need and purpose for the Freight Corridor.

## *1.6. Description of Alternatives*

After conducting preliminary studies, WSDOT narrowed the number of potential alternatives to the Build and No Build Alternatives. As outlined above, the proposed Build Alternative would provide one general-purpose lane in each direction, standard shoulders, and turn lanes at major intersections along the new route. Details regarding the Build Alternative are included in the above Description of Proposed Action section.

### Alternative 1: No Action Alternative

Under the No Build Alternative, the project would not be built. Only routine maintenance, repair, and minor safety improvements would take place on SR 3 in the study area over the next 20 years. WSDOT is evaluating the No Build Alternative to provide a reference point for comparing the effects, both positive and negative, associated with the proposed build alternative.

### Alternative 2: Build Alternative (Proposed Action)

The proposed SR 3 Freight Corridor – New Alignment project Build Alternative would construct a two-lane 6.5-mile limited access highway with a design and posted speed of 50 miles per hour (mph) on a new alignment approximately 3,000 feet to the east of existing SR 3. The major portion of the highway would run through Mason County while the northern end would be located in Kitsap County. The proposed alignment would begin at MP 22.81 on SR 3 and connect back to the existing SR 3 alignment at MP 29.49 (see Figure 1). The north end connection to existing SR 3 is proposed just north of SW Lake Flora Road, and the south connection is just south of the intersection with SR 302. The proposed bypass highway would carry regional through traffic from Shelton to Bremerton and would be the mainline for SR 3. The existing SR 3 would become a “Business Loop” serving downtown Belfair with connections to SR 106, SR 300, and the Old Belfair Highway.
See further discussion under Description of Proposed Action including Figure 1, a vicinity map, and Figure 2, a cross-sectional map. To view the project layout refer to Appendix C.

## *1.7. Project Benefits*

The primary benefits of the project are improving mobility in the SR 3 corridor by providing a bypass around the community of Belfair. The Freight Corridor would reduce congestion, and improve safety for the traveling public and those that live along the mainline corridor.

# 2. Studies, Coordination, Methods, and Regulations

## *2.1. Report Foundation*

This report was prepared in accordance with the WSDOT Environmental Manual (EPM) Chapters 430 (Surface Water), 431 (Wetlands), 432 (Floodplains), and 433 (Groundwater) (WSDOT, 2020).

## *2.2. Information Sources*

Available literature was reviewed to summarize the climate, topography, soils and geological conditions in order to identify water resources and represents the best information available at the time of this report. The literature was used to identify and evaluate the existing conditions of the project area and determine storm water design requirements. Information sources include:

- Geographical Information System (GIS) data available from WSDOT (2020);
- Environmental Procedures Manual, WSDOT (2020);
- Highway Runoff Manual, WSDOT (2019);
- Mason County website (www.co.mason.wa.us);
- Kitsap County website (www.kitsapgov.com);
- Ecology Storm Water Management Manual for Western Washington (Ecology 2019)
- Department of Ecology Website (www.ecy.wa.gov)

## *2.3. Methodology and Regulatory Settings*

### Surface Water and Water Quality

Surface water is all water naturally open to the atmosphere, such as rivers, lakes, reservoirs, ponds, streams, wetlands, seas, and estuaries.

Stormwater from the proposed Freight Corridor would primarily be infiltrated. Applying this approach to managing stormwater removes any pollutants and contaminants. Since stormwater would not be discharging to surface waters no pollutant loading analysis will be conducted. The definition for surface water and water quality can be found at: http://apps.leg.wa.gov/WAC/default.aspx?cite=173-201A

Some residents within the unincorporated areas of Mason and Kitsap Counties are not connected to a municipal sewer system, therefore they depend on private onsite treatment systems". Since there are no combined sewer systems within the project footprint, a combined sewer outfall reduction plan is not required. The Belfair Wastewater and Water Reclamation Facility was completed in 2012 to service the city of Belfair. The construction activities for the Freight Corridor would need to accommodate existing wastewater facilities. Due to proximity of the current proposed centerline to the Belfair Wastewater and Water Reclamation Facilities and because the centerline would cross the force main pipeline to the new facilities, consultation with the utility would be required to provide adequate clearance for the force main line and other existing structures. Existing gravity sewer lines along SR 3 through Belfair would not be affected by construction activities. (See Public Services & Utilities Discipline Report, January 2021)

Since the nearest saltwater shoreline is approximately 3/4 mile away from the project, a Shellfish Closure Response Plan is not required.

The Clean Water Act is the primary federal regulatory mechanism for addressing water quality. Several key provisions that affect the planning, design, and construction of transportation projects include:

- The Clean Water Act Section 401 – water quality certification, which covers discharges to waters of the U.S. subject to a federal permit. In addition, it requires certification that the discharge will not violate state water quality standards. Ecology is the lead agency for permitting and enforcement through the state 303(d) list of impaired water bodies. For any water body on the 303(d) list, a total maximum daily load (TMDL), which specifies limits of pollutants entering a water body, must be developed.
- Clean Water Act Section 402 – the National Pollutant Discharge Elimination System (NPDES), covers discharges from point sources, municipal storm systems and construction areas. Ecology is the lead agency for permitting and enforcement.
- Water Pollution Control Act (RCW 90.48) – the primary water pollution law for Washington State. Under state statute, discharge of pollutants into waters of the state is prohibited unless authorized. WAC 173-201A mandates water quality standards for surface waters.
- State of Washington Growth Management Act (State of Washington, 1990) – requires the designation and protection of critical areas such as wetland, fish and wildlife habitat, aquifers and geologically hazardous areas such as steep slopes and areas that flood frequently.
- State of Washington Shoreline Management Act (State of Washington, 1971) – requires local governments to protect shoreline functions of streams that have a flow rate greater than 20 cubic feet per second (cfs), including environmental functions such as fish and wildlife habitat.
- State of Washington Hydraulic Code – administered by the Washington Department of Fish and Wildlife (WDFW), this code requires a permit for work that will affect the bed or flow of any state waters. The state hydraulic code contains rules that protect all fish life, not just the listed species.
- Water Resources Act of 1971 (RCW 90.54) – outlines the fundamentals of water resource policy for the state to ensure waters are protected and fully utilized for the greatest benefit to the citizens of Washington. The Act provides direction to Ecology and local governments in implementing water resource programs.
- Total Maximum Daily Loads (TMDLs) Ecology 303d listings (2021) – Water Quality Improvement Projects or TMDLs determine the amount of pollutant loading in a given water body (river, marine, wetland, stream, or lake) can receive and still meet water quality standards. Where water bodies do not meet water quality standards for a particular pollutant, TMDLs are added as pollutant limits into permits to bring water quality up to standards.

## Floodplains

The assessment of floodplains consisted of reviewing available information on the 100 year floodplains in the project study area. It has been determined the project area does not lie within a 100 year floodplain.

## Groundwater

The assessment of groundwater consisted of reviewing available information on existing groundwater resources in the project study area, reviewing design information, identifying potential effects that the Build and No Build alternatives would have on groundwater resources, and identifying methods to avoid and minimize groundwater impacts.

Groundwater in the area serves the community in a handful of ways, the most important of which is to provide clean drinking water to the public. See section 3.5, Figures 7a & 7b of this report - depicts type A and type B wells located near the project. There are 27 wells within a half mile radius of the project limits. Type B wells are defined in WAC 246-291 and are generally private wells. Type A wells are defined in WAC 246-290 and provide water for a larger population than type B wells (WSDOT GIS, 2011).

Considerations to protect groundwater resources are generally associated with protecting the aquifers that supply public drinking wells. The Safe Drinking Water Act (42 USC 300f-300j) sets standards for public and community drinking water systems, including those supplied by groundwater.

The Sole Source Aquifer Program, as described in Section 1424(e) of the Safe Drinking Water Act of 1974, outlines the following guidelines in which an aquifer can be designated as a sole source aquifer: if there are geological distinguished boundaries, if the aquifer supplies 50% or more of the drinking water, and if there are no alternative sources that can legally and economically supply 100% of the population.

The Sanitary Control Areas (SCAs) provide a minimum distance to a drinking water source. The regulations state the water purveyor shall maintain a SCA around all sources for the purpose of protecting them from existing and potential sources of contamination. For wells, the minimum SCA shall have a radius of 100 feet, unless engineering justification demonstrates that a smaller area can provide an adequate level of source water protection. No source of contamination may be constructed within the SCA without the permission of the DOH and the purveyor. The regulations don't define sources of pollution and state highways are not identified in the WAC as potential sources of contamination. However, DOH guidance identifies stormwater runoff and spills resulting from vehicular accidents on roadways as potential sources of contamination.

## *2.4. Required Permits*

WSDOT will be acquiring project environmental permits and clearances needed for construction activities for the Freight Corridor Project. The following is a list of water resource-related permits or approvals that may be required, and the agency with jurisdiction:

- NPDES Construction Storm water General Permit – Ecology
- Critical Areas Ordinance Approval (CAO) – Mason & Kitsap Counties
- Hydraulic Project Approval (HPA) – WDFW
- Coastal Zone Consistency Determination (CZM) – Ecology
- Section 401 Water Quality Certification – Ecology
- Section 404 Permit – US Army Corps of Engineers

# 3. Project Area Then and Now

## *3.1. Natural Framework to Surface Water*

### Regional Geological and Tectonic Setting

The subject project is within the Puget Lowland physiographic province. The Puget Lowland is a broad low-lying region between the Cascade Mountains to the east and the Olympic Mountains to the west. It is mostly underlain by a thick and complex sequence of glacial and interglacial unconsolidated deposits of mainly Pleistocene to Holocene age. Bedrock is not exposed in the study area. Depths to bedrock in the vicinity have been inferred from water well logs, seismic reflection profiles and regional mapping. Estimated depths to bedrock in the area have varied among different workers, including approximately 300 to 500 feet (Buchanan-Banks and Collins, 1994); approximately 600 feet (Jones, 1996) and 1200 to 2000 feet (Hall et al., 1974). The bedrock is inferred to consist primarily of volcanic and sedimentary rock of Tertiary age. Isolated outcrops of dark, fine-grained basalt of the Crescent Formation occur north of the project area, west of Sinclair Inlet (Haeussler and Clark, 2000).

During the Pleistocene, continental ice sheets advanced and retreated within the Puget Lowland area. At least 7 glaciations, with associated longer-duration interglacial periods, have been identified in the stratigraphic record to date (Troost et al., 2009). Extensive glacial till and outwash deposits underlie the existing plains, prairies and uplands of the project vicinity. The glacial deposits mantling most of the site vicinity are associated with the Vashon Stade of the Fraser glaciation that occurred from approximately 13,000 to 18,000 years before the present. The ice sheets that formed the Puget Lobe of the Cordilleran ice sheet had a maximum southerly extent approximately 15 miles south of Olympia. The ice sheets terminated laterally against the Olympic Mountains to the west and the Cascade Range to the east (Armstrong et al., 1965). Alpine glaciers on the flanks of the Olympic and Cascade Ranges also contributed glacial deposits to the Puget Lowland area.

Following melting of the ice sheets, surficial processes of erosion, deposition and plant growth have further modified the landscape. Surficial deposits (post-glacial) within the project area include Holocene-age (≤ 10,000 years old) alluvial deposits (including sand, silt, clay) in drainages and peat, in current and former wetland areas.

The structural setting of the Puget Lowland is determined by the interaction of tectonic plates. The Juan de Fuca plate is subducting beneath the North America Plate, the surface interface of which is known as the Cascadia Subduction Zone, located approximately 50 miles west of the Washington coast. In addition, the eastern edge of the Pacific Plate is moving northward along the San Andreas Fault to the south. The combination of ongoing subduction of the Juan de Fuca plate and northward movement of the Pacific plate causes a compressional regime in the Puget Lowland (Wells et al., 1998; Johnson et al., 2004). This compression has resulted in a series of west-to northwest-trending faults and basins and uplifts that are locally bounded by reverse faults. Two such faults in the region are the Seattle Fault, to the north of the project site, and the Tacoma Fault, located approximately two miles south of the project limits (Logan and Walsh, 2007). The zone between these two faults (including the project area) has been tectonically uplifted by crustal shortening and movement alovertical displacement of between three and ten feet in the area and tsunami wave heights in the 3 to 5-foot range for Lynch Cove and in the 5 to 6.5-foot range for North Bay (Venturato et al., 2007).

## Regional Soils

The General Soil Map in the Soil Survey of Kitsap County Area, Washington assigns all of the soils along the subject highway corridor in the Kitsap County portion to the general soil association *"4 –Alderwood-Harstine: Nearly level to steep, moderately deep, moderately well drained soils; on uplands."*

The Alderwood Series: "*The Alderwood series consists of moderately deep, moderately well drained soils that formed in glacial till. Alderwood soils are on uplands and have slopes of 0 to 30 percent."*

The Harstine Series: "*The Harstine series consists of moderately deep, moderately well drained soils that formed in glacial till. Harstine soils are on uplands and have slopes of 0 to 45 percent"* (Soil Survey of Kitsap County Area, Washington, McMurphy, 1980).

The Soil Survey of Mason County, Washington does not include a General Soil Map; however, the dominant soil types on the detail sheets are assigned to the Alderwood Series and the Everett Series.

The Alderwood Series: *"The Alderwood Series consists of brown, well-drained, upland soils. They have developed from mixed gravelly glacial till dominated by acid igneous rock."*

The Everett Series: *"The Everett series consists of somewhat excessively drained, pale-brown gravelly soils. They occur as inextensive gravel ridges on the glacial moraines, or, more commonly, as fairly continuous outwash channels between ridges of Alderwood soils"* (Soil Survey of Mason County Area, Washington, Ness, 1960).

## Regional Groundwater

Most of subject project is located within Watershed Resource Inventory Area (WRIA) No. 15 (*"Kitsap"*) as defined by the Washington State Department of Natural Resources (DNR) and the Washington State Department of Ecology (DOE). The southwest end of the project crosses the administrative boundary into WRIA No. 14 (*"Kennedy-Goldsborough"*). For management purposes, these watershed areas have been divided into sub-watersheds, known as Watershed Administrative Units (WAUs). The southwestern end of the project (including the SR3/SR302 intersection is within the Mason unit (WAU No. 140101); the central portion of the project essentially straddles the boundary between the Key Peninsula unit (WAU No. 150106) and the Lynch Cove unit (WAU No. 150204), and approximately the northern third of the project is within the Lynch Cove unit. See also the Geology and Soils Environmental Discipline Report (HWA, 2021).

Numerous local resource studies indicate the presence of both shallow and deep groundwater resources in the vicinity of the project, the presence of perched groundwater and permanent and seasonal wetlands, and the possible presence of seasonal springs in areas where the groundwater table and/or glacial till layers may be close to the ground surface. These issues are discussed in more detail in the Wetlands and Hazardous Materials Discipline Reports.

Soil erosion of vegetated areas is typically minimal because of the high infiltration rates generally associated with gravely soils. In addition, the relatively flat terrain in the project area limits the erosion potential with vegetation coverage. When the natural vegetation is removed, especially on construction sites, runoff increases and erosion can occur, but should be minimal due to proper installation and maintenance of BMPs.

Detailed information on project study area soil, soil drainage, water holding characteristics and erodibility are presented with the project Geology and Soils Environmental Discipline Report (HWA, 2021).

## Climate

The project study area is located in a marine temperature climate where temperatures range from almost 75˚F in the summer to just above freezing in the winter. The average annual temperature is 52˚F; annual precipitation is approximately 45 inches of rain with an average of 8 inches of snow. The greatest amount of monthly rainfall occurs in the fall and winter months, as summarized 3 (NRCS, 2020) (see Figure 3).

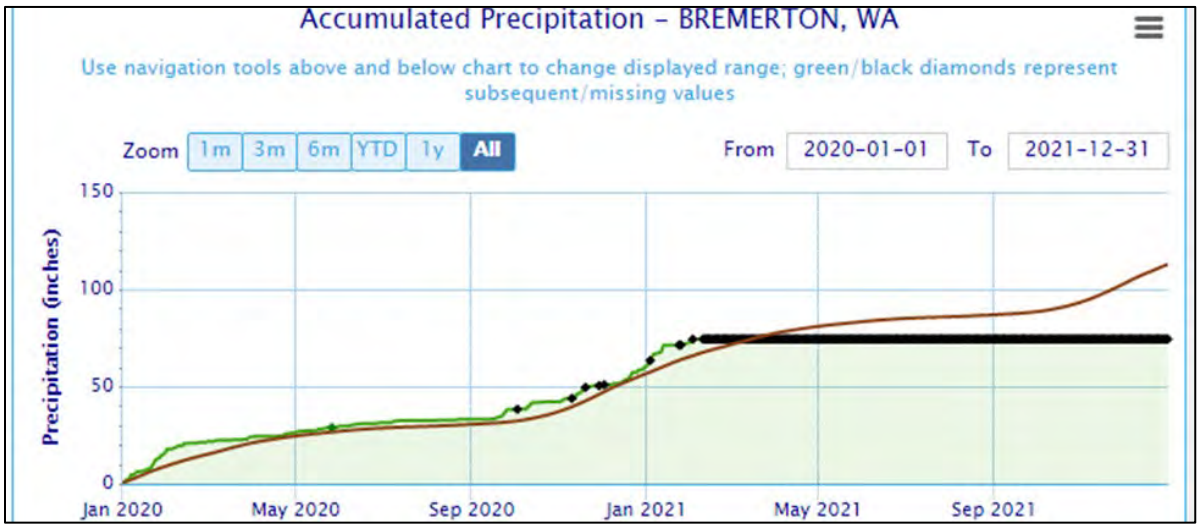


**Figure 3. Annual Precipitation Bremerton Washington (Source: Natural Resources Conservation Service 2020)**

## *3.2. Surface Waters*

The project study area lies within the Kennedy-Goldsborough 14 and Kitsap 15 Water Resource Inventory Area (WRIA). Figure 4 below shows the project limits relative to the nearest WRIAs.

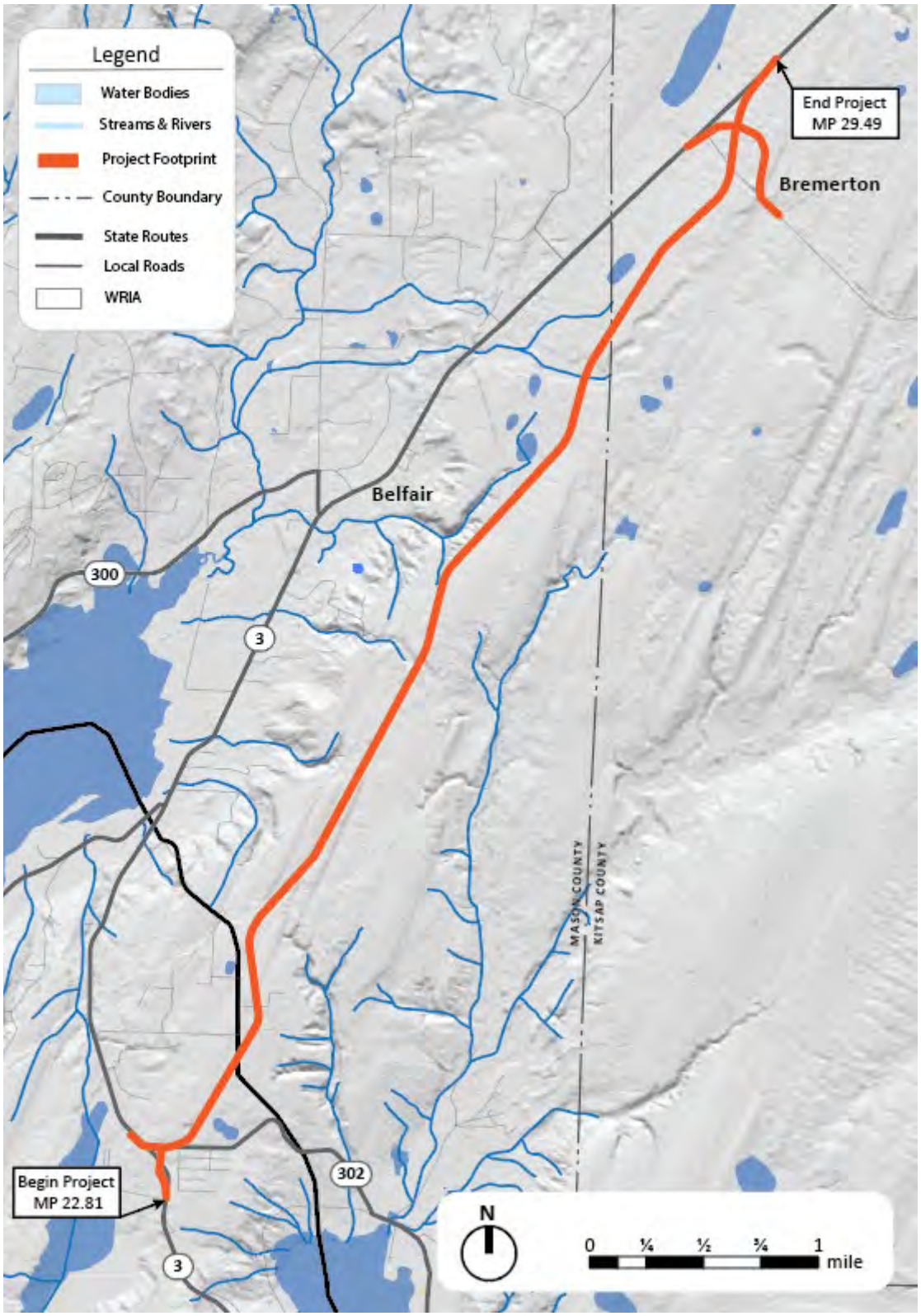


**Figure 4. Water Resource Inventory Area (WRIA)**

## Streams

The only stream in the project area is the Unnamed Tributary to North Bay-Case Inlet. There would be no construction impacts to the stream.

Some additional information for the two Water Resource Inventory Areas that the project travels through:

- Kennedy-Goldsborough 14 has an area of 382 sq. miles. The southern end of the project lies within the NE area of the WRIA 14. The WRIA boundary splits both Case Inlet and Hood Canal. There are several unnamed streams to the south and east of the new alignment and should fall outside the project area.
- Kitsap 15 has an area of 986 sq. miles. The majority of the project lies within WRIA 15. Both WRIA 14 and 15 share the same boundary line, which splits both Case Inlet and Hood Canal. There are several unnamed streams on both the east and west sides of the project alignment. However, these are outside the project area with the exception of an unnamed tributary to North Bay.

## Marine Waters

At the south end of the project and ½ mile southeast is the north end of Case Inlet. Hood Canal lies within ¾ mile to the east of the south half of the project. These marine waters would not be impacted by this project.

## *3.3. Water Quality*

The Federal Clean Water Act establishes a process for states in developing information on the quality of its surface waters. Section 305(b) of the statute requires that each state periodically prepare a water quality assessment report. The U.S. Environmental Protection Agency (EPA) compiles the information on the state reports, summarizes them, and transmits the summaries to Congress along with an analysis of the status of water quality nationwide.

Ecology 303(d) is a list of surface water bodies that do not meet the state's water quality standards. Ecology uses categories to rate the water quality of the water body. Categories range from one to five, with five being an impaired water body on the 303(d) list that exceeds one or more of the pollutants and that there are no set TMDLs or pollution plan. No TMDLs have been identified within the project limits or within a half mile radius of the project (Ecology GIS, 2021).

## *3.4. Drainage*

WSDOT and Ecology use threshold discharge areas (TDAs) to design storm water treatment facilities and quantify the impacts of storm water runoff to water resources. The HRM defines TDAs as "an on-site area draining to a single natural discharge location or multiple natural discharge locations that combine within 0.25 miles downstream (as determined by the shortest flow path)" (WSDOT, 2019). Project designers use TDAs to measure the site's hydrological characteristics as further explained in the HRM. The project study area has 25 TDAs.

Currently, there are no storm water treatment facilities within the project limits. Presently roadside ditches collect runoff from the existing SR 3 roadway at the connection points of the new alignment.

Natural dispersion and infiltration would provide the majority of the treatment and flow control for this project. However, some sections of roadway i.e. intersection, connection points and curves may not be able to accommodate the use of natural dispersion and infiltration, due to roadway geometry creating concentrated flows. In these areas the use of compost-amended Biofiltration Swale and or stormwater treatment ponds would be constructed to control and treat stormwater runoff from the new highway. The BMPs that would be used for the proposed project would provide enhanced water quality treatment, therefore, no adverse or unavoidable impacts would result to the water resources.

## *3.5. Groundwater*

Mason and Kitsap Counties do not have any sole source aquifers designated by the EPA in the project area at this time.

- Mason County website (www.co.mason.wa.us);
- Kitsap County website (www.kitsapgov.com);
- Geographical Information System (GIS) data available from WSDOT (2020);

The Belfair Sub-Area Critical Aquifer Recharge Area (CARA) falls outside the influence of this project. However, there are three wells that have been recommended for Wellhead Protection Areas (WPA). The new alignment crosses the recommended Buffer Zone for wells 1 & 2 at the southern end of the alignment. In addition at the northern end of the alignment, the alignment crosses Zones 1, 2 & 3 including the Buffer Zone for Well 4. All three wells are type A. The definition of wellhead protection zones are based on travel time rates of ground water. The different zones are based on horizontal time of travel in years. See Appendix B.

- Zone 1: one year
- Zone 2: five years
- Zone 3: ten years
- Buffer Zone: extends up gradient of zone 3 and may include the entire zone of contribution.

Guidelines for the construction of new alignments in the vicinity of CARA and WPA can be found at:

- WSDOT Highway Runoff Manual (HRM) (2019) 2-6.1.3
- The agreement between WSDOT and WSDOH "WSDOT Highways & Drinking Water Well Sanitary Control Areas-Screening Criteria". *See Appendix A.* http://www.wsdot.wa.gov/NR/rdonlyres/426DEF64-3BE9-4965-8414-441B878F0D46/0/SCAScreeningCriteria.pdf
- Belfair Environmental Features. *See Appendix B.* http://www.co.mason.wa.us/code/comp_plan/Belfair_Enviromental_Features.pdf

The CARA and WPA review is intended to limit potential contaminants within designated critical aquifer recharge areas.

The project area is adjacent to private drinking wells. All BMPs will be built a minimum 100 foot radius away from well heads as outlined in WSDOT's Highway Runoff Manual (HRM) (2019). Both surface and groundwater are hydraulically connected and flow west towards Hood Canal and east-southeast towards Case Inlet.

Groundwater in the area serves the community in a handful of ways, the most important of which is to provide clean drinking water to the public. Figure 5 depicts type A and type B wells located near the project. There are 27 wells within a half mile radius of the project limits. Type B wells are defined in WAC 246-291 and are generally private wells, however, they are considered public water supply wells. Type A wells are defined in WAC 246-290 and provide water for a larger population than type B wells (WSDOT GIS, 2011).

## *3.6. Floodplains*

The FHWA requires an analysis of potential encroachments on the 100-year floodplain and/or regulatory floodway. Substantial encroachments or incompatible floodplain development can adversely affect project approval.

Impervious surfaces alter the hydrologic characteristics of a wetland, causing higher volumes of water to run off faster than would be found in natural conditions. This can cause streams to overflow, responding faster and more intensely to precipitation events. This can result in deep cuts of stream channels, further contributing to increased runoff velocities, restricting the natural meander of the stream, and altering floodplain characteristics. The ultimate effect is a reduction in the hydrologic storage capacity of the watershed, which affects water quantity and quality, aquatic and riparian habitat and alteration of wetland functions.

As shown on the Mason and Kitsap County Flood Insurance Rate Map published by the Federal Emergency Management Agency (FEMA) and provided digitally in the Mason and Kitsap County GIS database, the project area would not affect this floodplain. The project footprint is located outside of the 100-year floodplain.

## *3.7. Wetlands*

Impacts to the wetlands are detailed in the Wetlands Biology Discipline Report (WSDOT 2021). Thirty-eight wetlands equaling 10.07acres were identified in the project area. Of the identified wetlands: 1 is considered a Category I, 12 wetlands are categorized as II, and twenty-five are considered Category III. There are 0.11 acres of wetlands anticipated to be permanently impacted by the project. In addition, the project would permanently impact 7.78 acres of wetland buffers.

The identified wetlands provide a greater wildlife habitat function than water quality and hydrologic functions. Support of habitat functions can be attributed to characteristics such as seasonal ponding, multiple Cowardin classes, well developed buffers, and connectivity with other habitat types. Water quality functions are supported to a lesser degree due to lack of sediment, nutrients, and toxins entering most of these wetlands (low opportunity).

At total of 0.11 acres of permanent wetland impacts are currently expected to occur as a result of the proposed project (see also the Wetlands Discipline Report, WSDOT 2021).

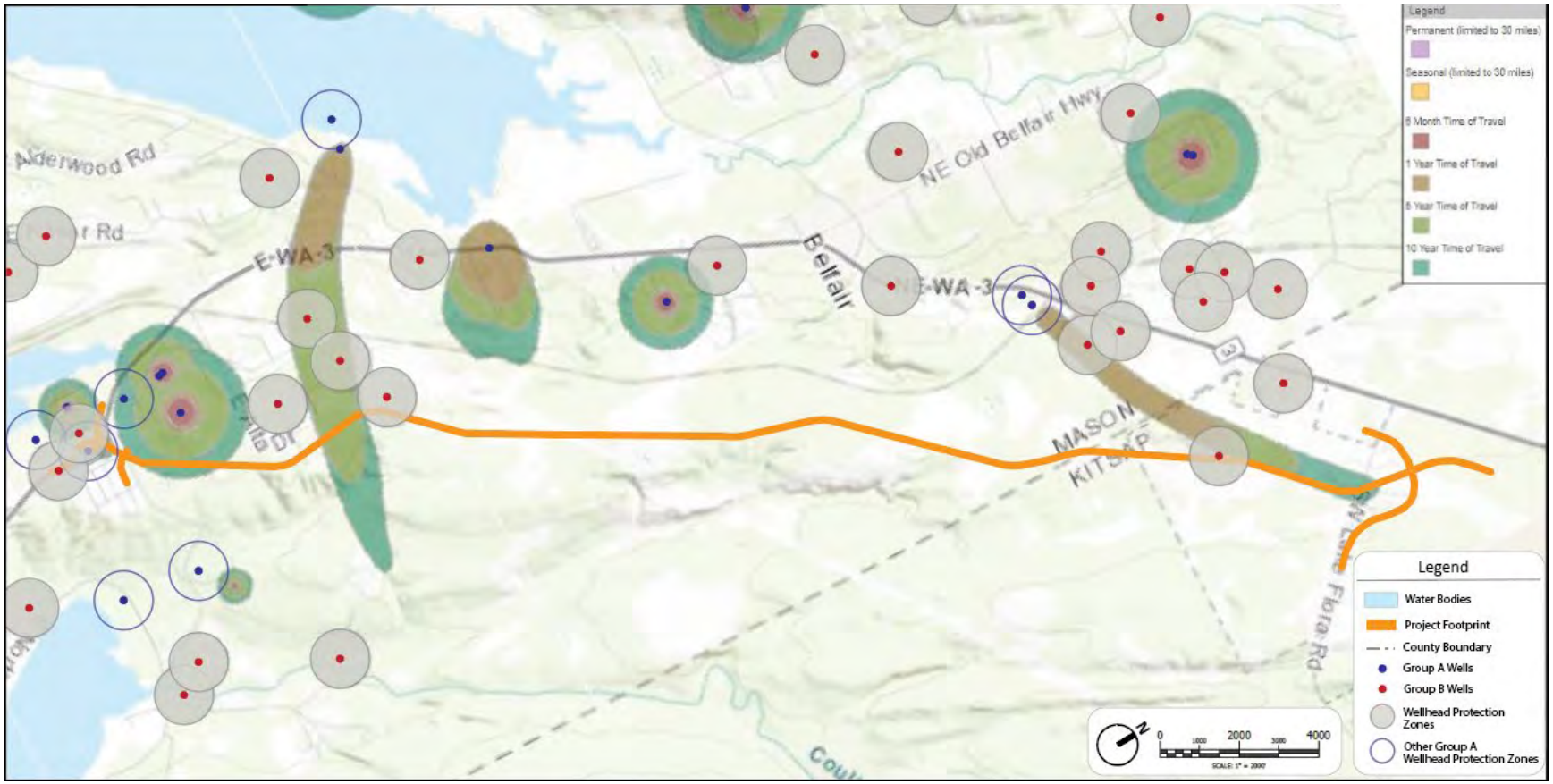


**Figure 5: Nearby Drinking Wells & Wellhead Protection Zones within ½ Mile Buffer**

Proposed permanent impacts to wetlands are shown in Table 1 below by classification. Also, see Attachment C – TDA and Alignment for wetland locations.

**Table 1. Wetland Impacts**

| Wetland | Ecology[a]/ Local Jurisdiction[b] | Wetland Size (acre) | Associated Watershed[c] | Permanent Wetland Impact Area (acre) | Permanent Wetland Buffer Impact Area (acre) |
|---|---|---|---|---|---|
| **AD** | III | 0.4 | WRIA 14 | 0 | 1.14 |
| **AP** | III | 0.115 | WRIA 15 | 0 | 0.36 |
| **AQ** | IV | 0.03 | WRIA 15 | 0.01 | 0.16 |
| **AY** | II | 3.737 | WRIA 15 | 0 | 0.79 |
| **B** | IV | 0.035 | WRIA 15 | 0.01 | 0.16 |
| **BC** | IV | 0.098 | WRIA 15 | 0 | 0.04 |
| **BG** | IV | 0.338 | WRIA 15 | 0 | < 0.01 |
| **BK** | III | 0.211 | WRIA 15 | 0 | 1.69 |
| **BL** | III | 0.086 | WRIA 15 | 0 | 0.81 |
| **I** | IV | 0.037 | WRIA 15 | 0.02 | 0.18 |
| **K** | IV | 0.2 | WRIA 15 | 0 | 0.03 |
| **U[D]** | III | 0.680 | WRIA 15 | 0 | 0.37 |
| **V[D]** | IV | 0.041 | WRIA 15 | 0 | |
| **W[D]** | IV | 0.008 | WRIA 15 | < 0.01 | |
| **Y + Z** | III | 0.3 | WRIA 14 | 0.06 | 2.04 |
| **Total** | **-** | **10.277** | **-** | **0.11** | **7.78** |

[a] Ecology rating according to Hruby (2014).
[b] Mason County Code (MCC) Chapter 8.52.110; *Bremerton Municipal Code (BMC) 20.14.300.
[c] WRIA 14 – Kennedy and Goldsborough Watershed; WRIA 15 – Kitsap Watershed.
[d] Overlapping buffers: counted as single impact.

Wetlands within the project work area are shown in Figures 6a through 6g below.

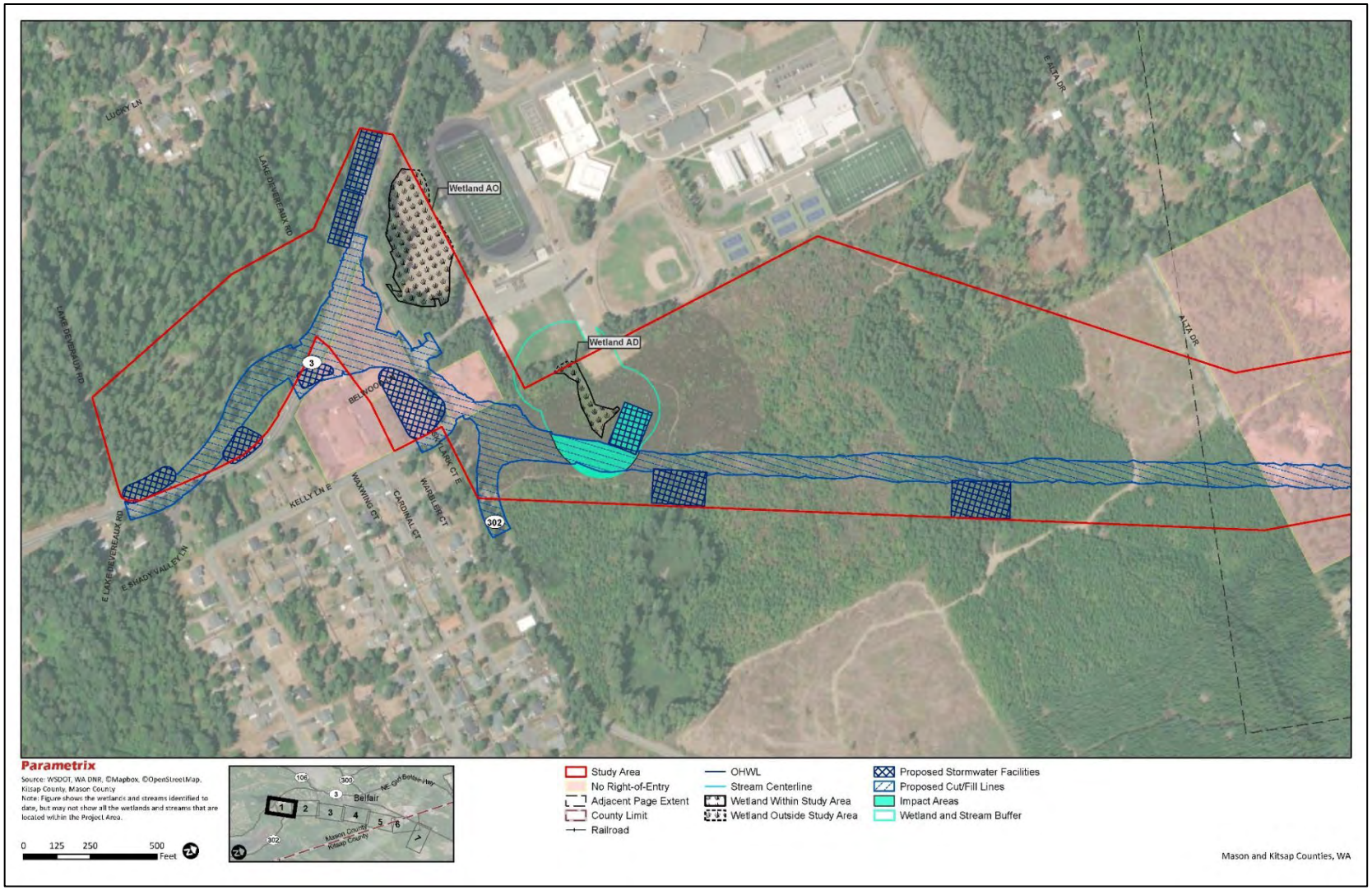


**Figure 6a. SR 3 Freight Corridor Study Are with Wetlands and Streams**

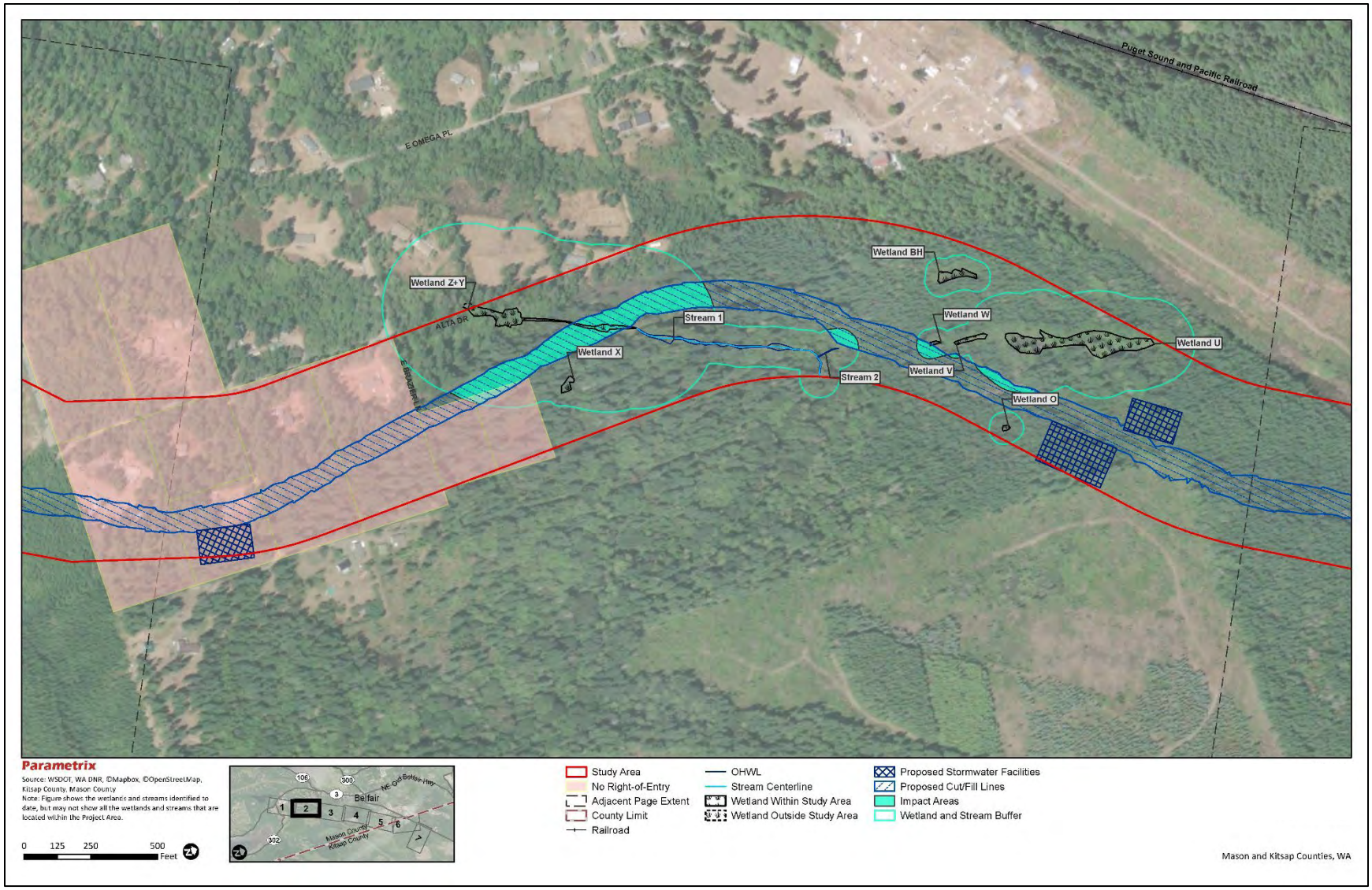


**Figure 6b. SR 3 Freight Corridor Study Are with Wetlands and Streams**

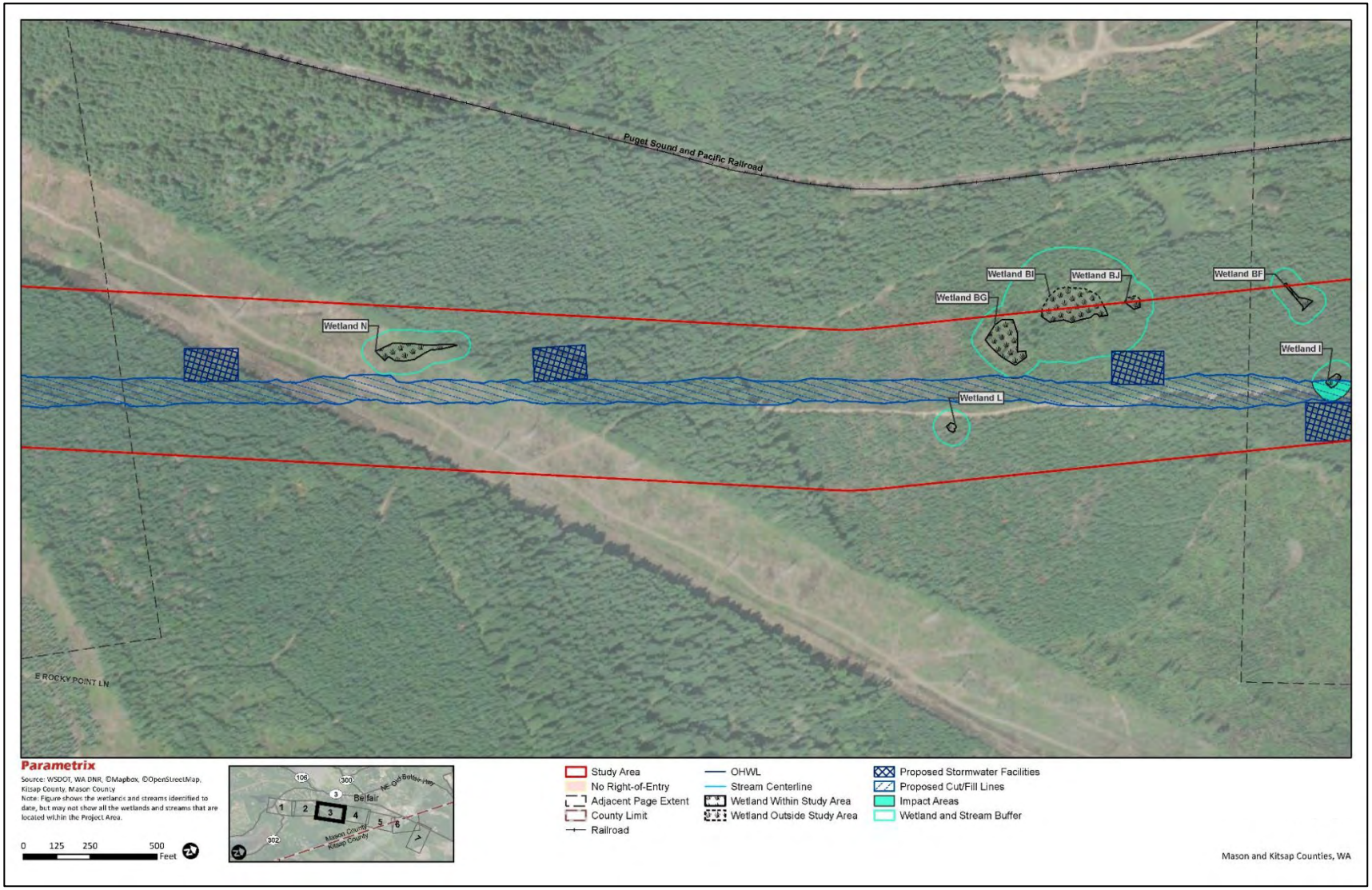


**Figure 6c. SR 3 Freight Corridor Study Are with Wetlands and Streams**

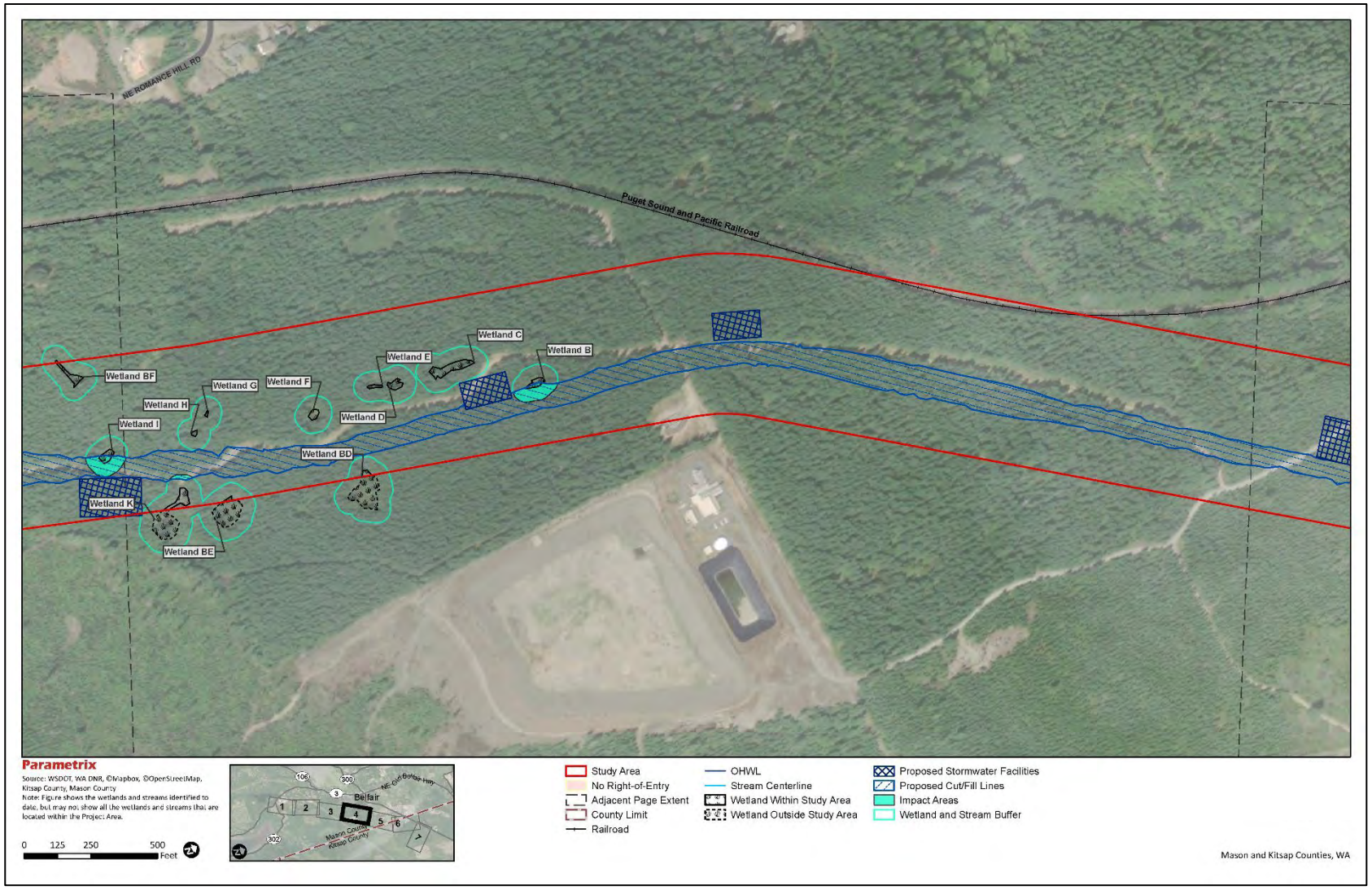


**Figure 6d. SR 3 Freight Corridor Study Are with Wetlands and Streams**

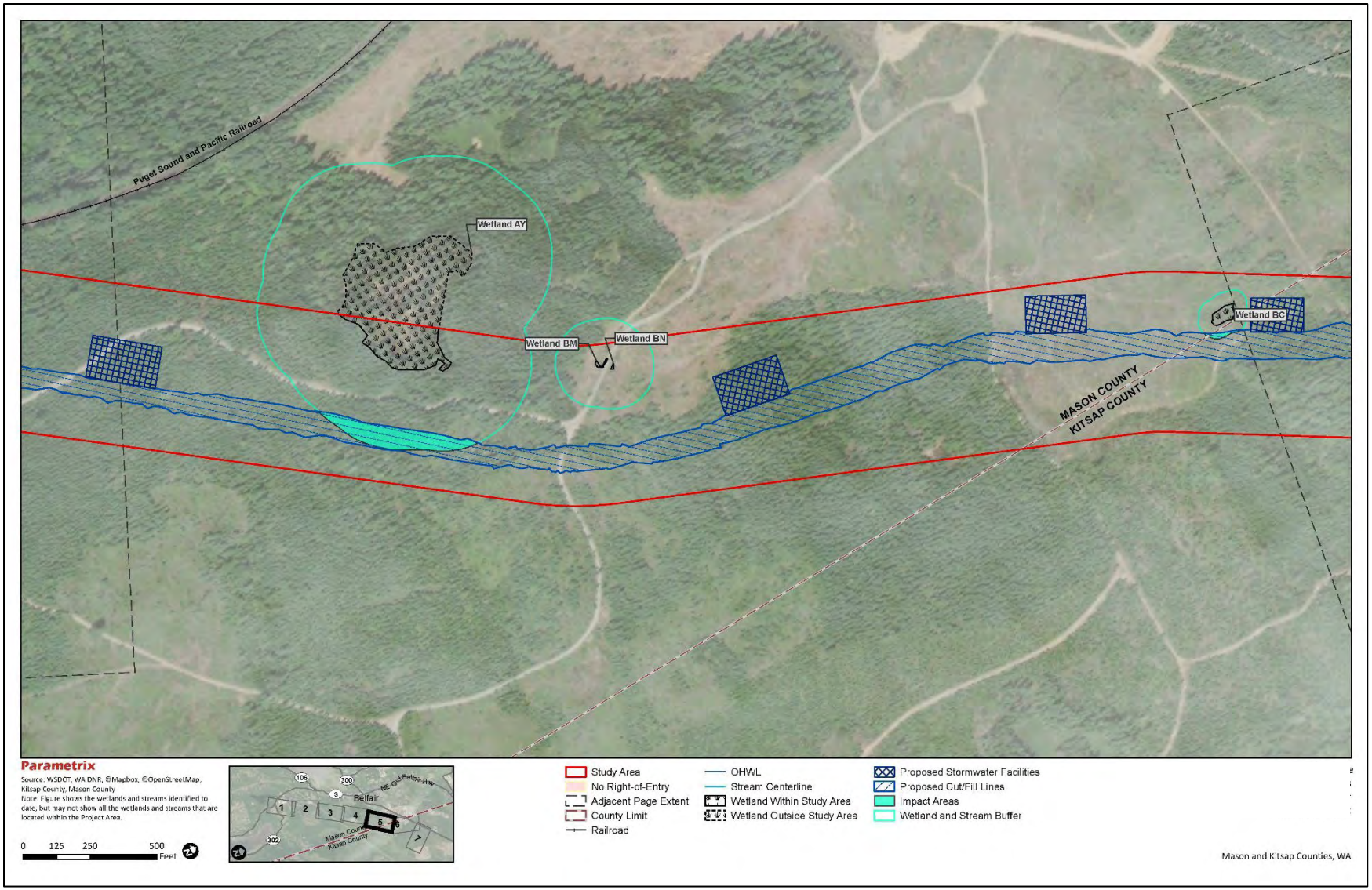


**Figure 6e. SR 3 Freight Corridor Study Are with Wetlands and Streams**

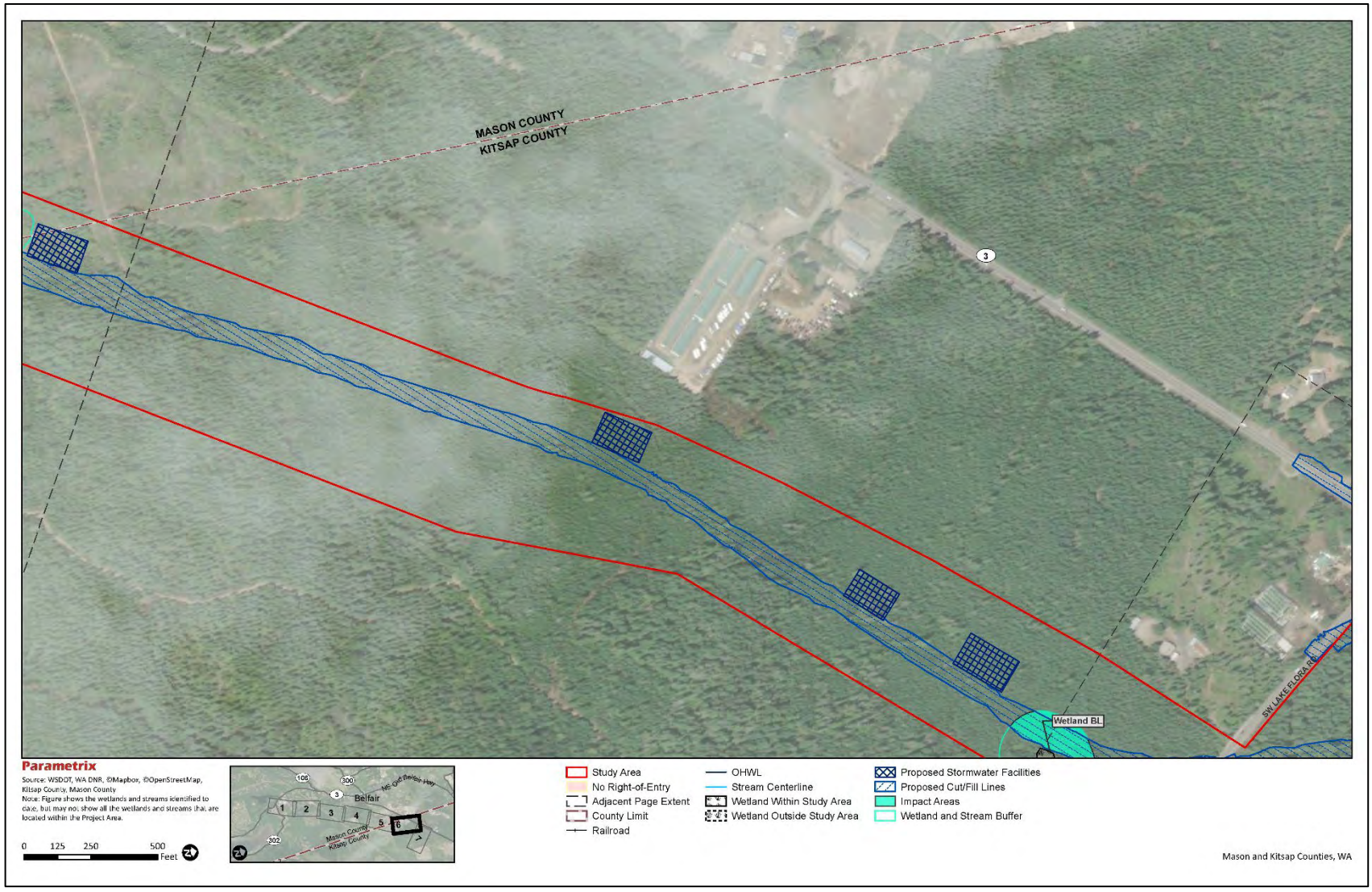


**Figure 6f. SR 3 Freight Corridor Study Are with Wetlands and Streams**

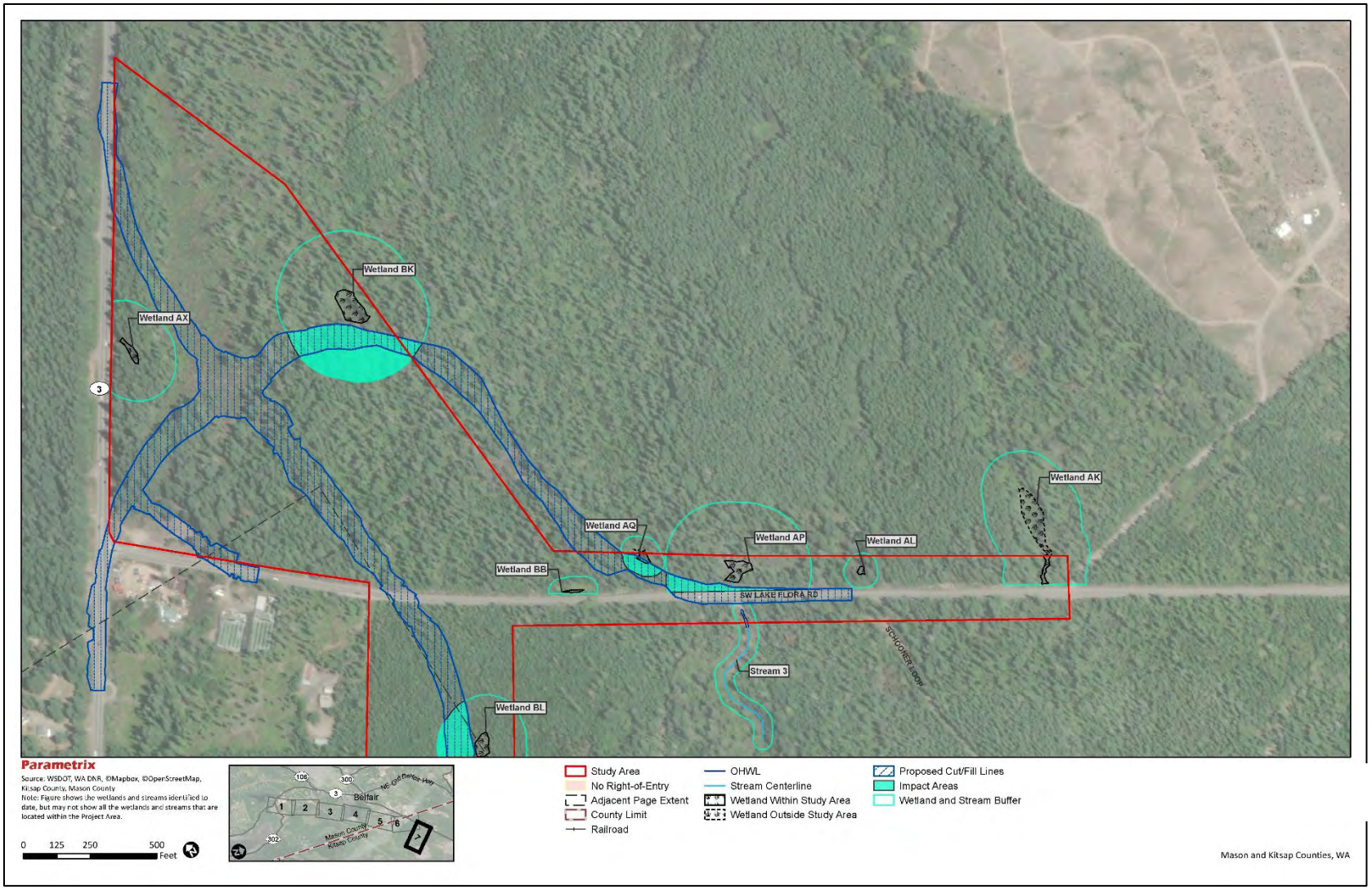


**Figure 6g. SR 3 Freight Corridor Study Are with Wetlands and Streams**

## *3.8. Additional Site Characteristics*

The Hazardous Materials Discipline Report (HWA, 2021) found that there are no significant, unavoidable adverse impacts that are expected to result from the proposed project that cannot be reasonable mitigated. The potential exists for an accidental release of hazardous materials to the environment, from release of hazardous materials utilized during the construction process, which could result in risks to human health or the environment, create potential liabilities, increase project costs, and/or cause schedule delays. This potential is minimal, and is typically mitigated via best management practices during construction, as specified in project contract documents.

# 4. Environmental Consequences

The proposed project is designed to avoid or minimize the potential adverse water resources effects of the project in both the construction and operational phases. The effects of the project action are described below.

## *4.1 No Build Alternative*

### Construction Impacts

Under the no-build alternative, no construction will occur; therefore there are no construction impacts.

### Operational Impacts

From an operational standpoint, the no-build alternative will cause the LOS to deteriorate due to increased congestion. In addition, the increased traffic will continue to degrade water quality and aquatic habitats and may increase contaminants entering groundwater. When no BMPs are applied runoff from disturbed construction areas is conveyed to ditches and storm drains and could ultimately reach waters of the State, effects could include increases in nutrient loading and turbidity and exceed state allowable limits, which could be harmful to aquatic organisms.

## *4.2 Build Alternative - Construction Impacts*

### Surface Water and Water Quality

For the Build Alternative, work below the Ordinary High Water Mark (OHWM) is anticipated to occur that may include culvert installation and possible wetland impacts. During construction, best management practices would be developed and implemented to assure that all water quality related commitments, regulations and permit conditions are met.

Additional activities that may impact water resources are asphalt paving, culverts installation, soil disturbance, clearing and grading of vegetation, utility and conduit installation. The proximity of construction vehicles to water resources increases the risk of hazardous materials, sediment, and pH altering substances impacting water resources. This risk will be minimized through the implementation of Best Management Practices (BMPs). These may include the following TESC BMPs: silt fence, check dams, soil covers, stabilized construction entrance, street cleaning, sediment control barriers and others. Construction Water Quality Monitoring (CWQM) will be required during construction and after the completion of construction activities until the construction site is fully stabilized.

If no BMPs are implemented, or they are unsuccessful or implemented incorrectly, the construction activities associated with the proposed project could have temporary adverse effects on surface water and or groundwater quality. When no BMPs are applied runoff from disturbed construction areas is conveyed to ditches and storm drains and could ultimately reach waters of the State, effects could include increases in nutrient loading and turbidity and exceed state allowable limits, which could be harmful to aquatic organisms.

Spills or leaks of hazardous materials could occur within the project limits where construction equipment is parked, used, fueled, or maintained; where infrastructure is renovated or constructed; and where hazardous materials are stored. If these substances enter waterways, they may degrade water quality, resulting in negative effects on aquatic resources, including aquatic organisms and the species upon which they feed. In addition, concrete leachate may be generated during roadway construction. Runoff from uncured concrete has a pH above 10.0 and can raise the pH when it comes in contact with surface water. For many organisms a pH of 7.5 or greater can be lethal to aquatic ecosystems.

There is a potential for releases of hazardous materials and wastes such as oil, grease, and fuels used on construction equipment at work sites and in staging areas. If hazardous materials enter waters of the State, either immediately or via transport through the soils adjacent to streams, chemicals may have a serious adverse toxic effect on water quality and aquatic organisms present within the water body. This may also affect water quality downstream of the project. A Spill Prevention, Control and Countermeasure (SPCC) Plan would be developed and implemented to help prevent construction related impacts to water quality. Spills would be controlled by measures outlined in the SPCC plan.

There is an estimated three acres of temporary staging area required for construction activities. The development and use of staging areas could compact surface soils, thereby altering the amount of storm water that infiltrates the soils and increasing the amount of surface runoff in the immediate area. Controlling the flow rates from the construction site is necessary to ensure that the flow does not exceed the capacity of the storm drain system.

The potential erosion hazard is minimal because of the free draining soil types in the work area. Three types of soil have been identified in the project work area. These include; Alderwood series, Harstine series and Everett series, these types of soils are primarily glacier till and tend to be well drained. Other factors that influence soil erosion are slope steepness, disturbed soil exposure to wind/precipitation and timing/duration of project and types of work activities. Refer to the Geology and Soils Discipline Report (HWA, 2021) for specific descriptions of soils and erosion hazard.

Soil erosion of vegetated areas is typically minimal because of the high infiltration rates generally associated with gravely soils. In addition, the relatively flat terrain in the project area limits the erosion potential with vegetation coverage. When the natural vegetation is removed, especially on construction sites, runoff increases and erosion can occur, but should be minimal due to proper installation and maintenance of BMPs.

Temporary construction dewatering may be required during different phases of construction. Pumping to an upland area and infiltrating is the preferred method for handling dewatering. Terrain and soil type supports infiltration as a way of disposing turbid dewater. Water from a dewatering activity could be infiltrated in a nearby vegetated area, routed to a surface water system (per the Construction General Storm water Permit), or treated onsite.

Construction activities during the winter season (Oct. 1 – April 30) would increase the risk of construction runoff into waters of the State. Erodible earth not being worked is required to be covered within a 2 day period. Construction during the summer season (May 1 – Sept. 30) requires erodible earth not being worked to be covered within a 7 day period. During the summer months there is an increased likelihood of dust and the contractor would be required to develop and implement a fugitive dust plan.

Storm water culverts pass beneath the project area. Most of these would be installed during the summer months when there is little or no flow in the stream. In those cases where the work is being done while there is water flowing through the culvert, a temporary dam and pump bypass system would likely be installed prior to the start of any work activities and remain in place for the duration of the culvert installation. In addition, BMPs would be in place to control any turbidity increase.

Compensatory mitigation would occur to compensate for the 0.11 acre of permanent wetland impacts. Additional mitigation would also need to be conducted to compensate for the 7.78 acres of permanent buffer impacts. The mitigation approaches that may be used include concurrent mitigation, advance mitigation, and in-lieu fee. Types of mitigation that may be used include re-establishment, rehabilitation, establishment (creation), enhancement, and preservation.

Since mitigation would be implemented, effects from construction activities present a low to medium risk to water resources due to work taking place adjacent to and below the OHWM.

### Ground Water

Construction activities that result in vegetation clearing, soil compaction and other practices that decrease the permeability of ground surface and impede infiltration of precipitation, can potentially affect groundwater resources. Spills from construction equipment, if not properly contained, can enter and impact a shallow aquifer, and if a hydraulic connection to surface aquifers exists there can be impacts to deeper aquifers as well. A spill can contaminate domestic water supplies and aquatic habitat. There are 27 wells within a half mile radius of the project limits.

### Flood Plains

The proposed project is outside the mapped floodplain boundaries and is not anticipated to change floodplain or flooding characteristics throughout construction.

### Drainage

Through the use of BMPs, drainage impacts are expected to be minimal during construction. Typical BMPs used throughout construction may include construction of temporary ponds for infiltration or settlement, silt fence, mulching and check dams, among others. Please see Section 8-01 Erosion Control and Water Pollution Control in the 2021 Standard Specifications for more BMPs, as related to drainage. Also, see Highway Runoff Manual (HRM 2019), Section 6 Erosion Control Design Guidelines. Also, see Attachment C – TDA and Alignment, of this report.

## *4.3 Build Alternative – Operational Impacts*

### Surface Water and Water Quality

Operational impacts may result from storm water runoff, landscaping maintenance activities and spills from vehicle accidents. Pollutants in storm water runoff from roadway typically include total suspended solids (sediment typically consisting of sand, silts, and clays), nutrients (forms of nitrogen and phosphorous that act as plant growth stimulants), toxic metals (lead, copper, zinc, cadmium, chromium), biochemical oxygen demand (a measure of the tendency of polluted waters to consume life-supporting

oxygen supplies), and oil and grease. The preferred method for flow control/ runoff treatment is natural dispersion and infiltration. The majority of this project proposes to provide flow control and treatment by natural dispersion and infiltration. Roadway runoff would sheet flow off the paved surfaces onto the constructed vegetated slopes and existing natural areas within WSDOT Right of Way. If any areas are unsuitable for natural dispersion a different BMP would be used (i.e. CAVFS, Media Filter Drain and as a last resort, ponds).

Existing conditions are assumed to be present conditions without planned improvement projects. The project would result in a net increase of approximately 33 acres of impervious surfaces. The estimated existing and projected annual pollutant loadings for the project have not been estimated because roadway runoff would receive treatment and infiltration and would not enter any surface water bodies.

Scheduled maintenance programs developed for the storm water treatment system would include provisions for the regular removal of contaminants and restoration of treatment facilities.

Any anticipated project effects to fisheries and other aquatic species can be found in the Vegetation, Wildlife, and Fish and Aquatic Resource Discipline Report (WSDOT, 2012) and updated. Vegetation, Wildlife, and Fish and Aquatic Resource Discipline Report (Parametrix, 2021).

The proposed alignment would permanently impact a total of 0.11 acres of wetland habitat and 7.78 acres of wetland buffer habitat. The extent of temporary impacts to wetlands and buffers is not yet known and will be determined as the project design is refined.

As there are no wetland mitigation banks in the project vicinity, a permittee-responsible mitigation project(s) will be required to compensate for unavoidable impacts. Per Mason County and City of Bremerton codes, mitigation must occur in the same watershed as the impacts. Public lands and private land with willing sellers are options for securing wetland mitigation sites.

### Flood Plains

Additional impervious surfaces typically result in increased stream velocities, runoff volumes and turbidity, which may alter characteristics of the floodplain. Permanent stormwater facilities included in the project are designed to prevent increased volumes, material transport and sedimentation deposits that could also alter floodplain characteristics downstream. The proposed project is outside the mapped floodplain boundaries and is not anticipated to change floodplain or flooding characteristics due to proposed storm water flow control facilities.

### Drainage

Similar to floodplains, additional impervious surfaces may increase stream velocities and runoff volumes. This would contribute to increased turbidity and erosion, downstream flooding, and aquatic habitat loss. However, with installation of flow control facilities and the use of BMPs, impacts to drainage are expected to be minimal or nonexistent.

## *4.4 Indirect and Cumulative Impacts*

Indirect and cumulative impacts may occur within the project area. Indirect impacts typically occur as a result of a proposed project, but take place later in time than the initial action. Cumulative impacts occur

as a result of the combined effects of several proposed or foreseeable project actions that may take place in the project area before, during, or after the project timeframe.

Indirect impacts include water quality effects that propagate downstream. Water Quality can be affected by a change in flow rate. Decreases in base flows create higher concentrations of less diluted pollutants. Higher flood peak flows can create a strong "first flush" effect where pollutants are washed into water bodies. Because flow control design standards are included in the project, indirect impacts to water quality resulting from changes in flow rates are expected to be minimal.

Changes in land use patterns resulting from a project can cause indirect impacts to water quality. Changes in land use patterns are not anticipated as a result of this project, and therefore do not result in impacts to water resources. Refer to the Land Use and Relocation Discipline Report (SCJ, 2021) for specific impacts from land uses.

Indirect impacts related to project area water resources could include impacts to biology and wetlands addressed in the Biology and Wetland Discipline Reports.

Increases in impervious surface areas restrict groundwater infiltration and subsequent recharge of a shallow aquifer system. While the Build Alternative would have only a small impact on the shallow aquifer system, collective affects with other roadway improvement projects and subsequent urbanization can alter flow patterns, water table elevations and seasonal high water.

The project has potential impacts beyond the project area boundaries. It is not anticipated that this project would have a noticeable impact on water resources at a watershed scale

# 5. Mitigation

This section outlines mitigation measures that will be employed to offset impacts from both construction and the ongoing operational impacts of the No Build and Proposed Action Alternatives.

## *5.1 Construction*

### No Build Alternative

Under the No Build alternative, no construction occurs and therefore no mitigation is required.

### Build Alternative (Proposed Action)

The construction impact area would be minimized to the extent possible. To this end, the design intent is to minimize impacts to wetlands, existing wells, other water resources.

A number of local, state, and federal government permit requirements would be implemented to mitigate potential construction impacts on surface and groundwater resources. An NPDES Storm water Construction Permit will be obtained from Ecology prior to construction. This permit will cover activities in the highway right of way. The NPDES permit requires preparation of a Storm Water Pollution Prevention Plan (SWPPP). Implementing the SWPPP, following permit guidelines, and applying the measures listed below will minimize or avoid effects on water quality during construction:

- WSDOT will mark environmental sensitive areas, no-fill areas, wetlands, and mitigation with fencing prior to beginning work. The fencing is to remain in place throughout construction. WSDOT will clearly show sensitive areas, fencing requirements and permit conditions on plan sheets.
- WSDOT will assign an inspector to ensure compliance with all permit conditions through construction completion and site stabilization.
- Should any BMP or other operation not function as intended, the Contractor will take additional actions to minimize erosion, maintain water quality and meet all permit requirements.
- The Contractor will identify and develop staging areas for equipment repair and maintenance away from all drainage courses. Wash water from concrete trucks will not be dumped into storm drains or onto soil or pavement that carries storm water runoff. Thinners and solvents will not be used to wash oil, grease or similar substances from heavy machinery or machine parts. The Contractor will be required to designate a wash-down area for equipment and concrete trucks.

The Contractor will also be required to prepare and implement a TESC Plan as a first order of work to minimize construction-related water quality effects. The Contractor will be required to implement construction BMPs such as; preserving vegetation, installing straw wattles, compost socks, silt fence, temporary sediment trap/pond, check dams etc. BMPs will minimize short-term erosion effects associated with clearing and grading activities, such as increased turbidity and sedimentation on receiving waters.

A SPCC Plan will be developed and implemented by the Contractor as required by the NPDES General Stormwater Construction permit for the duration of the project and will comply with WSDOT standards. The plan will specify where petroleum products and other toxic materials can be stored along the right of way or in staging areas. In case of spills, a contingency plan will be established to avoid degradation of surface and groundwater. Spill control BMPs, including the proper storage and containment facilities, will be used during construction to minimize the effects of a spill. Specific spill control BMPs can be found in Volume 2 of Ecology Storm water Management Manual for Western Washington (Ecology, 2019).

Throughout construction, WSDOT's latest version of the Standard Specifications will be utilized. Section 1-07 Legal Relations and Responsibilities to the Public is of particular interest to limiting impacts to water resources. For example, under section 1-07.5(2) the contractor shall not degrade water in a way that would harm fish, prevent any fish-threatening silt buildup on the bed or bottom of any body of water and never block stream flow or fish passage, among other items. Please read the 2021 Standard Specifications for more information on obligations of the contractor.

Requirements of the Biological Assessment (BA) have not been finalized. The requirements of the HPA and 401 water quality certification have not been incorporated at this time. For any in water work the HPA and 401 will provide additional requirements for water quality monitoring (WQM), reporting, additional BMPs to isolate the work area from stream water, pH and turbidity limits, in-water work window and etc. It is anticipated that a WQM Plan will be required during construction through final stabilization. Please read the 2019 Temporary Erosion and Sediment Control Manual for more information on the obligations of the contractor.

As permits are acquired, final design decisions made, and the BA is completed, additional commitments for protecting water quality and aquatic resources from project impacts may apply. The information used to complete this water resources discipline report represents the best information available at the time.

## *5.2 Operation*

### No Build Alternative

Under the No Build alternative, no construction occurs and therefore no mitigation is required.

### Build Alternative (Proposed Action)

Storm water runoff will be managed in accordance with the Washington State Department of Transportation's Highway Runoff Manual (HRM) and Washington State Department of Ecology's Construction Stormwater General permit (NPDES). The HRM reflects the best available science in storm water management and ensures that WSDOT projects adequately protect the functions and values of critical environment areas. The HRM requires projects to provide permanent storm water treatment when new impervious surfaces are added. The NPDES covers stormwater discharges associated with construction activity.

Overall, groundwater recharge rates may decrease slightly as a result of added impervious surfaces. These effects will be offset by the installation and use of flow control facilities that utilize infiltration as

the primary treatment methodology. In regards to storm water treatment, mitigation for added impervious surfaces will include the installation of compost-amended vegetated filter strips (CAVFS), media filter drains and ponds to treat and control highway runoff. The use and implementation of these devices will help minimize the effects of added roadway surfaces, including sheet flow, water quality and infiltration rates. If necessary, outfalls may be outfitted with rocks and native vegetation to prevent erosion and scour at the point of discharge. These BMPs will be built a minimum 100 foot radius away from well heads as outlined in WSDOT's Highway Runoff Manual (HRM) (2019).

Maintenance of highway storm water facilities is an important part of WSDOT's maintenance program that helps to protect downstream water quality. WSDOT inspects, cleans, and maintains storm water catch basins, conveyance systems, outfalls, culverts, and water quality treatment structures on a regular basis. Wet weather inspections are performed to determine if the structures are operating as intended or if repairs are needed. Performance inspections are also conducted, especially for storm water quality and quantity BMPs, to determine their effectiveness, to observe and record high water marks, and to discover conditions that could damage the system. Roadway sweeping is performed as needed in areas where debris accumulation can impact the highway storm water system or adversely affect adjacent water resources. WSDOT conducts a roadside vegetation management plan that incorporates several elements designed to protect water quality. The vegetation management program incorporates Integrated Pest Management (IPM) in which localized, site-specific pest-control decisions are consistent with current department-wide management strategies. As part of the IPM, WSDOT provides annual training to vegetation management employees regarding new regulations, products, and procedures. All WSDOT employees responsible for pesticide application are required to obtain a pesticide applicators license from the Washington State Department of Agriculture. As required by state law, WSDOT maintains records of all pesticide applications. WSDOT also promotes the "Adopt A Highway" program in which volunteer groups of citizens' partner with WSDOT to remove litter and debris from storm water flows. The program benefits the water quality of receiving waters downstream from WSDOT storm water outfalls.

Permanent negative effects of the Build Alternative would be largely minimized through the inclusion of enhanced storm water treatment and flow control facilities to address all new added impervious surfaces. Overall, these facilities would address peak flow concerns and treat new pollutant loading levels to water bodies in the project area. Additionally, the improved storm water treatment associated with the project would decrease the possibility of groundwater contamination and may actually improve groundwater quality in some cases.

WSDOT Highway Runoff Manual also provides storm water runoff treatment and flow control BMP design criteria. Additional maintenance standards for storm water BMPs can be found in WSDOT Regional Road Maintenance/Endangered Species Act Program Guidelines. A Biological Assessment (BA) will be prepared and conservation measures to protect water quality will be implemented. These statewide maintenance criteria and guidelines are designated to ensure that all BMPs function at design performance levels and that the maintenance activities themselves are protective of receiving water quality bodies and its beneficial uses.

Due to the nature of the project, complete avoidance of wetland and wetland buffers is unattainable. To mitigate the impacted wetlands, a mitigation strategy will be developed. Please refer to the Wetlands Discipline Report for more information about wetland impacts and mitigation.

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# Appendix A – WSDOT Highways & Drinking Water Well Sanitary Control Areas

**AGREEMENT**

**WSDOT Highways & Drinking Water Well Sanitary Control Areas**

**"Screening Criteria"**

## Purpose:

The purpose of this agreement is to clarify expectations, establish project screening criteria, and facilitate communication among the Washington State Department of Transportation (WSDOT), water purveyors, and the Washington State Department of Health (DOH) when a proposed highway project intersects with the sanitary control area of a public water supply.

## Background:

DOH's mission is to protect the health of the people of Washington State by assuring safe and reliable drinking water per Revised Code of Washington (RCW) Chapter 70.116. WSDOT's mission is to keep people and freight moving by operating, maintaining, and improving the state transportation systems vital to our taxpayers and communities, per Chapter 47.01 RCW.

The Drinking Water Regulations in Washington Administrative Code (WAC) Chapter 246-290 for Group A public water systems and Chapter 246-291 WAC for Group B public water systems require a water purveyor to maintain a minimum Sanitary Control Area (SCA) to protect the drinking water source. The regulations state that the water purveyor shall maintain a SCA around all sources for the purpose of protecting them from existing and potential sources of contamination. For wells, the minimum SCA shall have a radius of 100 feet unless engineering justification demonstrates that a smaller area can provide an adequate level of source water protection. No source of contamination may be constructed within the SCA without the permission of DOH and the purveyor. The regulations don't define sources of pollution and state highways are not identified in the WAC as potential sources of contamination. However, DOH guidance identifies stormwater runoff and spills resulting from vehicular accidents on roadways as potential sources of contamination.

In furthering its mission, WSDOT must occasionally build or improve highways that encroach into SCAs. The federal Water Pollution Control Act (33 U.S.Code §1251 et seq.; also known as the Clean Water Act) and the Department of Ecology's regulations (Chapter 173-220 WAC), require WSDOT to treat stormwater using all known, available, and reasonable methods of prevention and treatment (AKART) as defined in WSDOT's Highway Runoff Manual (HRM). These regulations require that WSDOT treat runoff to a level that is compliant with surface water quality standards (WAC 173-201A). These standards are generally more stringent than the standards for drinking water thereby minimizing highway runoff as a potential source of pollution. Based on the best available information, WSDOT is doing all that is necessary to protect drinking water sources and to ensure that highways are not a potential source of drinking water well contamination.

As WSDOT satisfies the following screening criteria, both agencies agree that highway projects provide an adequate level of source water protection and therefore will not constitute a source or potential source of contamination and will not require an engineering justification as specified in the aforementioned Drinking Water Regulations.

## Drinking Water Well Screening Criteria:

1. The road location and construction setbacks are maintained such that the drinking water source intake structure is not in danger of physical damage.
2. All concentrated flows of untreated roadway runoff are directed via impervious channel or pipe and discharged outside the SCA.
3. If roadside vegetation management practices are identified as a potential source of contamination, the water purveyor will provide the location of the SCA to the appropriate WSDOT maintenance office for inclusion in the Integrated Vegetation Management Plan (IVMP) for that section of highway, as necessary to protect the wellhead. In accordance with the Puget Sound Highway Runoff Rule (WAC 173-270-040) and WSDOT policy, the IVMP ensures that roadside vegetation management practices are in compliance with health and environmental standards.
4. WSDOT complies with all National Pollutant Discharge Elimination System Permits as required per Section 402 of the federal Water Pollution Control Act.
5. WSDOT provides the water purveyor with contact information to be used in the event of any problems or questions that may arise.

Application of these criteria does not preclude the purveyor, who has authority over the Sanitary Control Area either outright or controlled through a covenant, from bringing a subsequent claim for actual or alleged damages to their drinking water well.

## Implementing the Screening Criteria

As requested, DOH will provide information on the location of public water supply wells to WSDOT, who in turn incorporates the information into its Geographic Information System (GIS). As a matter of course during project scoping and development, WSDOT checks the GIS to determine potential environmental impacts of its projects.

Application of the screening criteria will be initiated by WSDOT. A licensed professional engineer will review the screening criteria and attest to the well purveyor and DOH in writing on WSDOT letterhead that the screening criteria's conditions are satisfied. If there is disagreement on the potential project impacts to a public water supply well between the water purveyor and WSDOT region staff that cannot be resolved by these parties, the disagreement will be elevated for evaluation and discussion to the DOH regional office and WSDOT headquarters Environmental Services Office.

When a road project is expected to intersect with a public water supply well's SCA, WSDOT will contact the water purveyor. The water purveyor will confirm the location of the well and its SCA and, if such intersection exists, application of the screening criteria will be initiated by

WSDOT. It is expected that the purveyor will identify any signed SCA restrictive covenants and/or WSDOT will check for such covenants filed with the County Auditor's office.

This agreement shall take effect upon its execution as evidenced by the signatures below. Either party to this agreement may terminate it for cause by providing thirty (30) days written notice to the other party; provided that the parties shall consult during the period prior to termination to seek agreement on amendments, or other action, that would avoid termination.

**WASHINGTON STATE DEPARTMENT OF TRANSPORTATION**

5/23/06

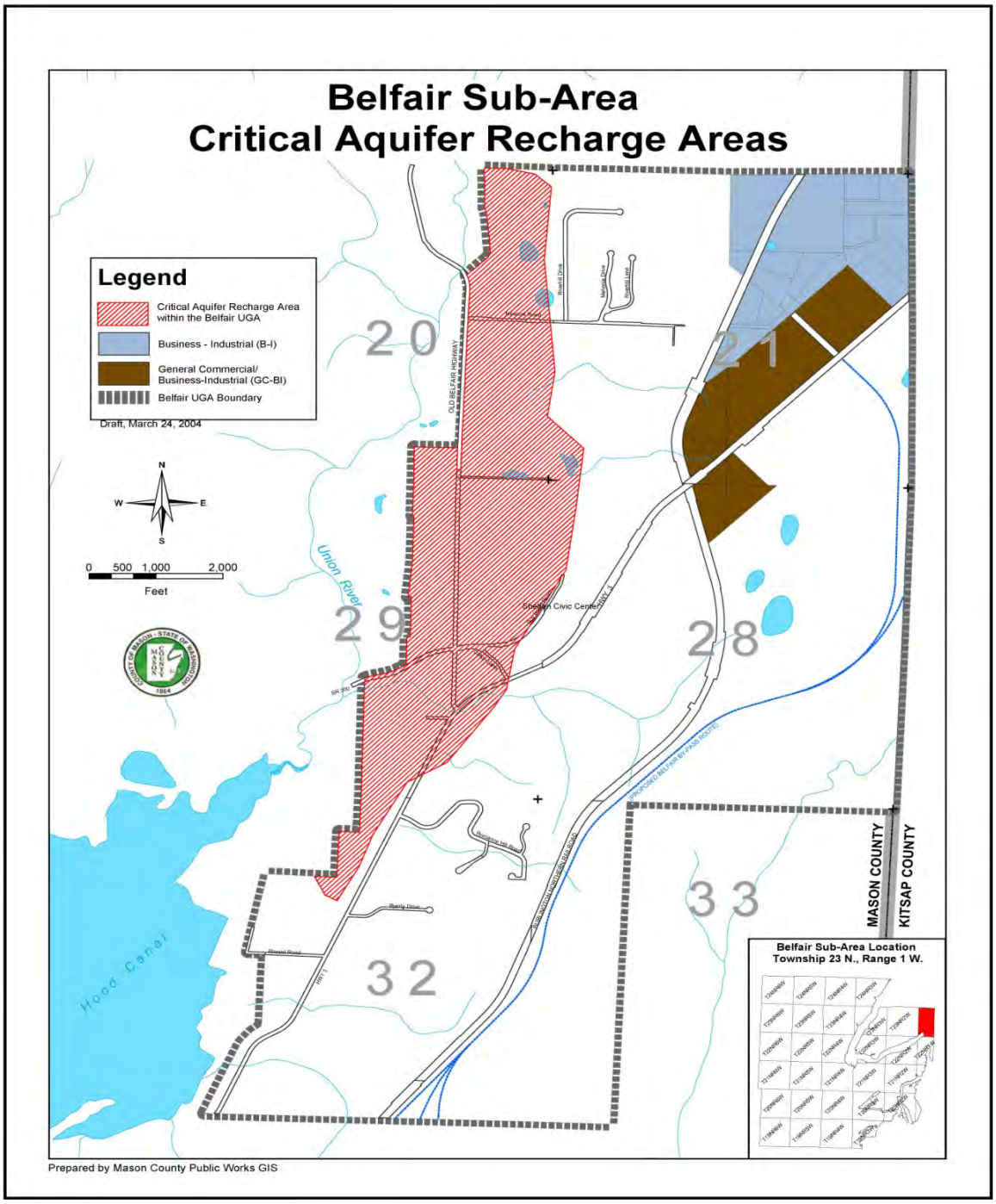
Megan White, P.E., Director — Date
Environmental Services Office

**WASHINGTON STATE DEPARTMENT OF HEALTH**

5/26/06

Denise Addotta Clifford, Director — Date
Office of Drinking Water

# Appendix B – Belfair Sub Area Critical Aquifer Recharge Areas



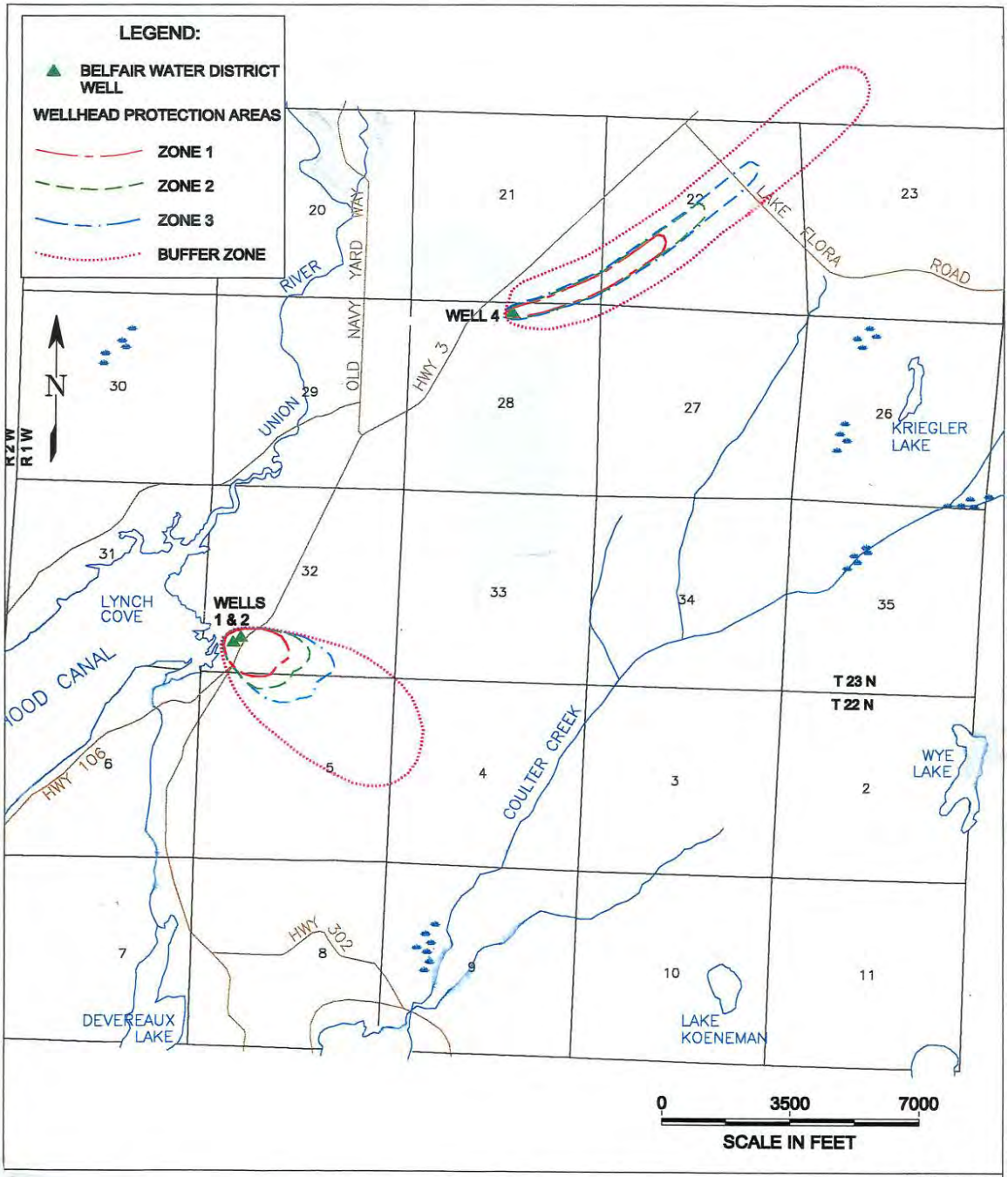


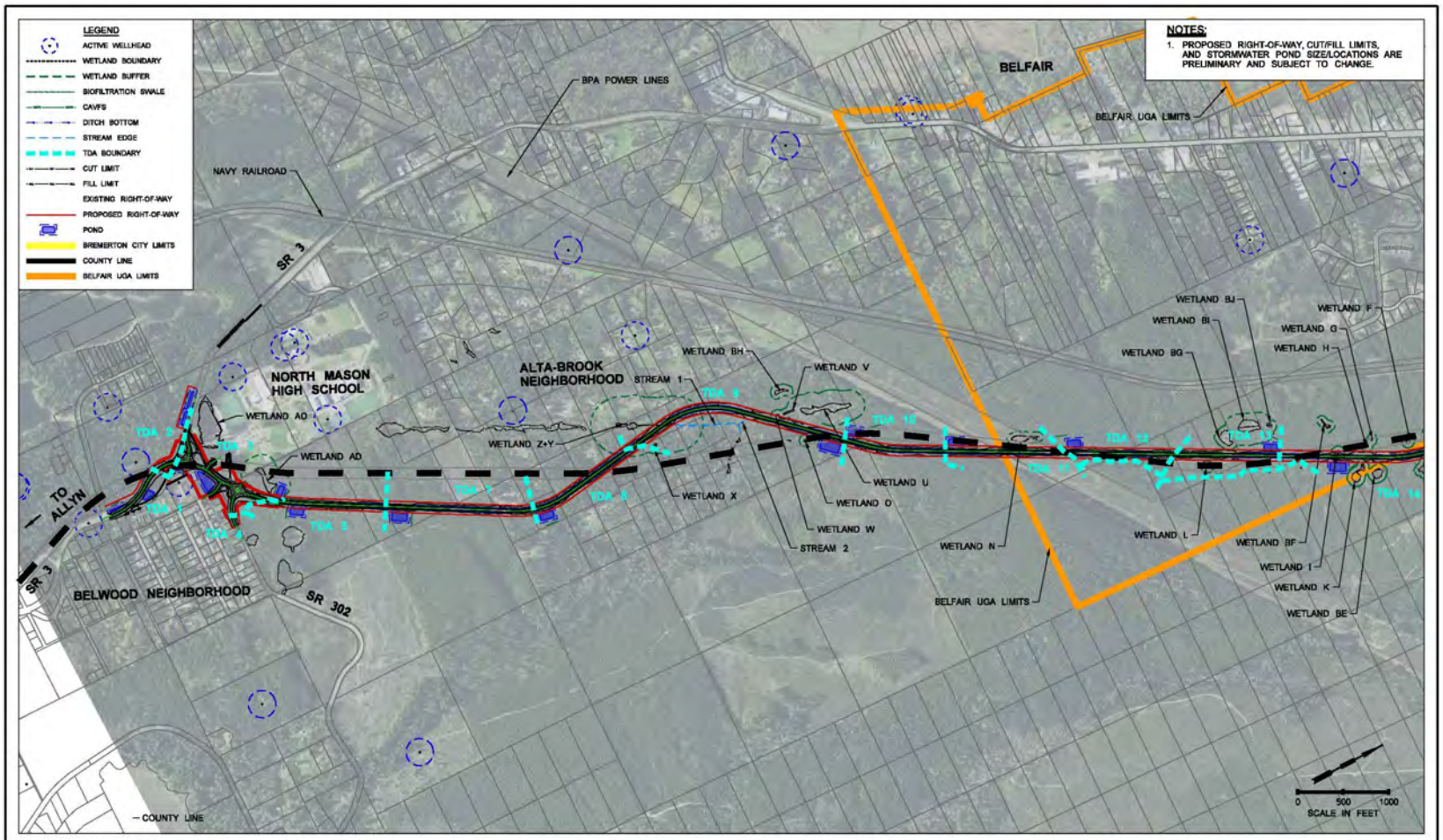

FIGURE 15

**RECOMMENDED WELLHEAD PROTECTION AREA FOR THE DEEP AQUIFER SYSTEM**

**BELFAIR WATER DISTRICT NO. 1 WELLHEAD PROTECTION PLAN**

ROBINSON & NOBLE, INC.

# Appendix C –TDA and Alignment

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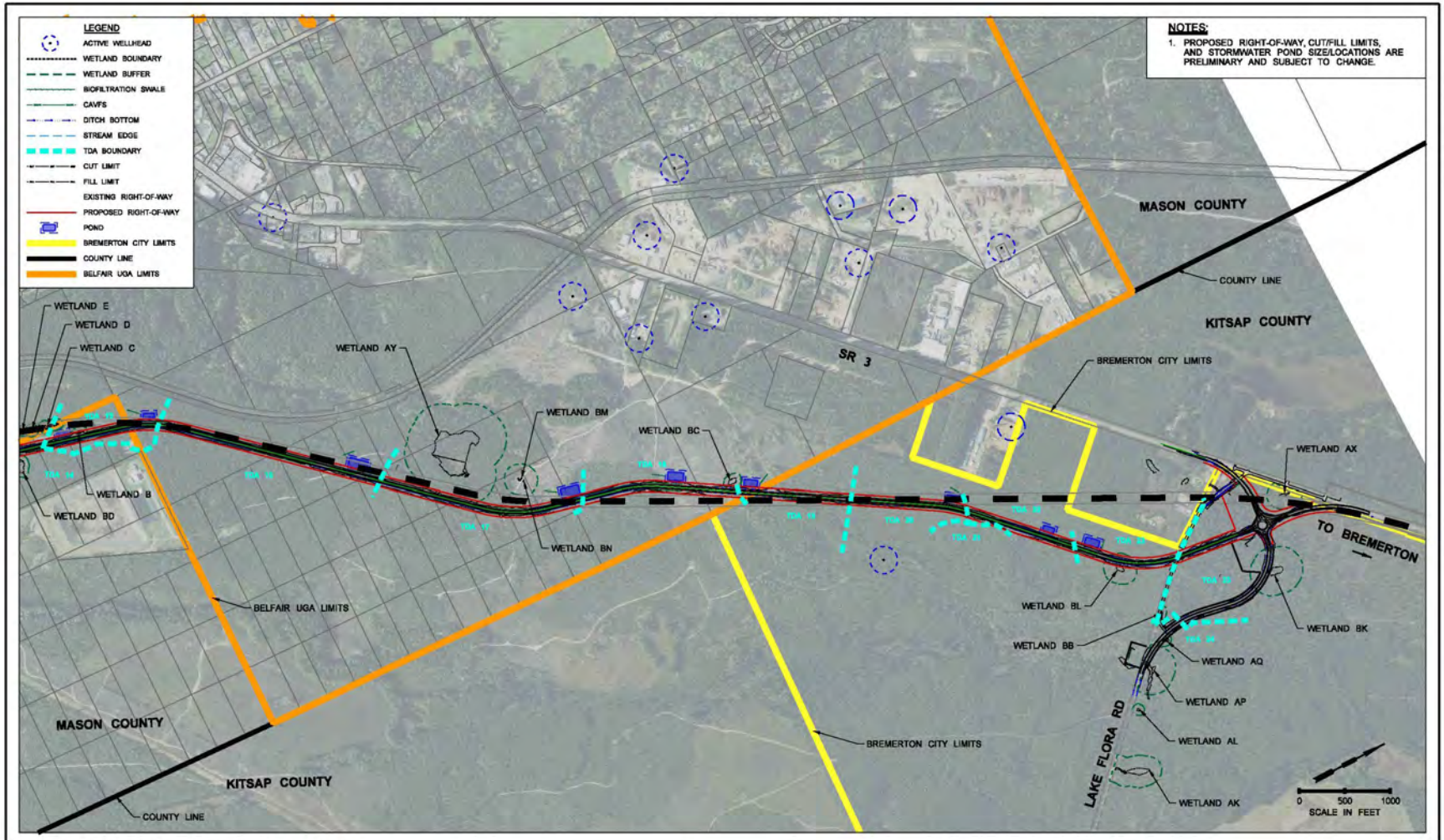


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PRELIMINARY

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P.E. STAMP BOX — DATE

Washington State Department of Transportation

**Parametrix**

# SR 3 FREIGHT CORRIDOR PRELIMINARY ALIGNMENT

PLAN REF NO. EX2

SHEET 2 OF 2 SHEETS