

Chapter 6 Mitigation Measures

1 What are the preliminary mitigation measures for Alternative 2?

The preliminary mitigation measures for Alternative 2 (the Applicant's proposal) are outlined in this chapter, and organized by Built Environment and by Natural Environment.

This should be considered a preliminary list, as the Master Planned Development will go through future approval processes, at which time additional impacts may be identified, and which could require mitigation not included in this list. As part of the MPD process, the City will determine which of these mitigation measures may be made conditions of project approval.

At the time future implementing applications are submitted, and approvals sought, the City will determine whether and what type of additional environmental review is required to address any additional identified impacts.

Mitigation measures are identified in the EIS to address adverse environmental impacts that are likely to occur as a result of a proposal. Mitigation measures are changes or conditions added to a proposal that will avoid, minimize, or compensate for adverse impacts.

Mitigation is defined as:

- Avoiding;
- Minimizing;
- Repairing or restoring;

- Reducing or eliminating over time;
- Replacing, enhancing, or providing substitute resources; and/or
- Monitoring the impact and taking appropriate corrective measures.

Mitigation can come in a variety of forms, from paying impact fees to local school districts, or changing the design of the project to avoid impacts to wetlands or other sensitive areas. Some mitigation may be required by city or county development regulations, or other local, state, or federal laws. Mitigation can also be based on information on adverse environmental impacts in the SEPA document.

The EIS has identified *general* mitigation measures for Alternative 2 only. However, *specific* mitigation for a proposed project will be identified during the MPD process. No development will occur without the approval of the City on such items as mitigation.

The following list of potential mitigation measures could be implemented to meet the requirements of SEPA. For some identified impacts, no specific mitigation measures are necessary if existing City standards or State law already provide adequate mitigation of potential impacts.

Built Environment

Land Use

No specific mitigation is identified for land use impacts, since the City's current Comprehensive Plan allows for any of the alternatives to be developed.

However, development will need to be in compliance with several codes and ordinances; compliance with the policies and standards set forth in these ordinances, or the functionally equivalent standards, should mitigate many of the impacts on the surrounding areas and on the character of Black Diamond.

These include:

- City of Black Diamond Comprehensive Plan
- Master Planned Development Ordinance – BDMC 18.98
- Sensitive Area Ordinance – BDMC 19.10
- City of Black Diamond Engineering Design and Construction Standards
- MPD Design Standards & Guidelines
- Tree Preservation Ordinance – BDMC 19.30
- Gateway Overlay District Ordinance
- Black Diamond Urban Growth Area Agreement
- Black Diamond Area Open Space Agreement

Transportation

Over the course of project buildout, construct all new roadway alignments as depicted in the 2025 Transportation Element of the Comprehensive Plan, or functionally equivalent alignments, that are necessary to provide access to and circulation within the project. In addition, the following intersections should be monitored under a Transportation Monitoring Plan which could be incorporated into the Development Agreement for the MPD, with each designated improvement being required at the time defined in the Monitoring Plan. Intersection improvements outside the City limits may be mitigated through measures acceptable to the applicable agency.

Exhibit 6-1**Intersection Improvements**

Study Intersection	Jurisdiction	Mitigation
SE 288th Street/216th Avenue SE	Black Diamond	Signalize. Add NBR turn pocket.
SE 288th Street/232nd Avenue SE	Black Diamond	Add NBR turn pocket and provide a refuge for NBL turning vehicles on EB approach.
SR 169/SE 288th Street	WSDOT	Signalize. Add NBL turn pocket. Add second SBT lane (SBTR).
SE Covington Sawyer Road/ 216th Avenue SE	Black Diamond	Add EBL, NBL and SBR turn pockets.
SE Auburn Black Diamond Road/ 218th Avenue SE	King County	Provide a refuge for NBL turning vehicles on EB approach.
SE Auburn Black Diamond Road/ Lake Sawyer Road SE	Black Diamond	Signalize. Add WBL turn pocket.
SE Auburn Black Diamond Road/ Morgan Street	Black Diamond	Roundabout.
SR 169/Roberts Drive	Black Diamond/WSDOT	Add second SBT and NBT lanes. Add SBL and NBL turn pockets.
SR 169/SE Black Diamond Ravensdale Road (Pipeline Road)	Black Diamond/WSDOT	Add second SBT and NBT lanes. Add SBL turn pocket.
SR 169/Baker Street	Black Diamond/WSDOT	Signalize.
SR 169/Lawson Road	Black Diamond/WSDOT	Signalize. Add SBL turn pocket.
SR 169/Jones Lake Road (SE Loop Connector)	Black Diamond/WSDOT	Signalize. Add WBL, NBL, and SBL turn pockets.
SR 169/SR 516	Maple Valley/WSDOT	Add second NBL turn pocket.
SR 169/SE 240th Street	Maple Valley/WSDOT	Add additional SBT lane on SR 169 from north of 231st Street to Witte Road. Add second NBT lane at SR 169/240th Street.
SR 169/Witte Road	Maple Valley/WSDOT	
SR 169/SE Wax Road	Maple Valley/WSDOT	
SR 169/SE 231st Street	Maple Valley/WSDOT	
SR 169/SR 18 EB Ramps	Maple Valley/WSDOT	
SR 516/SE Wax Road	Covington/WSDOT	Add second SBL, WBR, and NBL turn pockets.
SR 516/168th PI SE	Covington/WSDOT	Add NBL and EBR turn pockets.
SR 516/Covington Way SE	Covington/WSDOT	Optimize signal timings.
SE 272nd Street/160th Avenue SE	Covington/WSDOT	Signalize.
SE Kent Kangley Road/ Landsburg Road SE	Maple Valley/King County	Add SBL turn pocket and provide a refuge on WB approach for SBL turning vehicles.
SR 169/SE Green Valley Road	WSDOT	Signalize.
SE Auburn-Black Diamond Road/ SE Green Valley Road	King County	Provide a refuge on EB approach for NBL turning vehicles.
SR 169/North Connector	Black Diamond/WSDOT	Signalize. Add second SBT and NBT lane. Add EBL, EBR, SBR, and NBL turn pockets. End additional NBT lane 1,000 feet north of intersection.
Lake Sawyer Road/Pipeline Road	Black Diamond	Signalize. Add EBL, WBL, NBL, and SBR turn pockets.
SE Auburn Black Road/Annexation Road	Black Diamond	Signalize. Add EBL, EBR, WBL, NBL, and SBR turn pockets.
SR 169/South Connector	Black Diamond/WSDOT	Signalize. Add SBR and NBL turn pockets.

As noted previously, for each potential signal, the Applicant shall first consider and present a conceptual design for a roundabout as roundabouts are the City's preferred method of intersection control.

Explore multi-party opportunities that bring additional Metro transit and Sounder transit to Black Diamond, and explore the possibility of a park and ride location.

Over the course of the MPD buildout, assist in reducing transportation demand by including adequate facilities for alternative modes such as transit, bicycling, and walking, that will accommodate a future connection between on-site trails and pathways to other parts of the City, as well as allow for a later connection between the Lawson Hills MPD and The Villages MPD.

Noise

Long term noise controls shall be addressed through BDMC Chapter 18.78.

Short term construction noise should be reduced by employing the best management practices below:

- Construction noise could be minimized with properly sized and maintained mufflers, engine intake silencers, engine enclosures, and turning off equipment when not in use.
- Stationary construction equipment should be located away from sensitive receiving properties where possible. Where this is infeasible, or where noise impacts would still be likely to occur, portable noise barriers should be placed around the equipment (pumps, compressors, welding machines, etc.) with the opening directed away from the sensitive receiving property.
- Although as safety warning devices back-up alarms are exempt from noise ordinances, these devices emit some of the most annoying sounds from a construction site. Where feasible, equipment operators should drive forward rather than backward to minimize this noise.

- Ensure that all equipment required to use backup alarms utilizes ambient-sensing alarms that broadcast a warning sound loud enough to be heard over background noise but without having to use a preset, maximum volume. Or, use broadband backup alarms instead of typical pure tone alarms. Such devices have been found to be very effective in reducing annoying noise from construction sites.
- Requiring operators to lift rather than drag materials wherever feasible can also minimize noise from material handling.
- Substituting hydraulic or electric models for impact tools such as jackhammers, rock drills and pavement breakers would also reduce construction noise.
- Electric pumps could be specified if pumps are required.
- If pile driving becomes necessary, impact pile-driving should be minimized in favor of less noisy pile installation methods. If impact pile driving is required, the potential for noise impacts should be minimized by strict adherence to daytime only (or more stringent limits), especially when pile driving is within 500 feet or less of sensitive on- or off-site receivers. Pile driving noise may also be reduced using sound-absorbing barriers or other means.
- Finally, the developer will establish a noise control “hotline” that would allow neighbors affected by noise to contact the City or the construction contractor to ask questions or to complain about particularly noisy activities.

Public Utilities – Water

The facilities listed below are necessary to serve the development as proposed. The timing for construction and installation of these facilities shall be determined through a subsequent development proposal, such as a preliminary plat.

- Upgrade Spring Supply source per the Washington State Fire Fighters’ Association (WSFFA).
- Utilize the Tacoma Intertie, in addition to the Spring Supply per the WSFFA.

- Construct an appropriately sized reservoir in 850 Zone or construct an 850 Zone loop back to the existing system in the vicinity of Railroad Avenue.
- Construct a 750 Zone loop back to the existing system, or propose a functionally equivalent alternative as allowed in the MPD code.
- Complete the 850 loop in the North Property and the 850 loop in pipeline road with a pressure reducing station to the 750 Zone water main within the North Property.
- Construct needed water supply and storage improvements in accordance with the City’s Comprehensive Plan and necessary to serve the proposed development. Alternatively, a functionally equivalent improvement to the facilities above may be approved with the MPD.

Public Utilities – Sewer

The facilities listed below are necessary to serve the development as proposed. The timing for construction and installation of these facilities shall be determined through a subsequent development proposal, such as a preliminary plat.

- Construct sewer flow equalization storage reservoir.
- Construct trunk lines Nos. 1 and 4.
- Construct pump station 1 and force main 1 to equalization tank.
- Install local collection and conveyance systems in Villages and North Property.
- Construct wastewater storage and distribution as presented in City Comprehensive Plan and as necessary to serve the proposed development. Alternatively, a functionally equivalent improvement to the facilities above may be approved with the MPD.

Public Utilities – Stormwater and Water Quality

Stormwater runoff that is collected from impervious surfaces shall be mitigated in accordance with the 2005 *Stormwater Management Manual for Western Washington*, and stormwater designs should include low impact development techniques wherever practical and feasible.

Preserve the volume of stormwater for the groundwater area tributary to Black Diamond Lake and associated wetlands.

Provide enhanced water quality treatment as required by the 2005 *Stormwater Management Manual for Western Washington*.

Implement the stormwater program described in Appendix D to match total runoff volume discharges via surface and subsurface conveyance routes to Horseshoe Lake.

Provide mitigation facilities within the project limits or provide an agreement with King County for long term City ownership and/or maintenance of off-site facilities not within City limits.

Require a predominant use of native plants as part of the planting palette within the MPD. Reduce lawn planting wherever practical.

Reduce pavement width to minimize stormwater runoff.

Where point discharges to streams must occur, design the outfall to minimize impacts to the stream channel and avoid areas of significant vegetation.

Construct stormwater treatment and storage improvements (or functional equivalent) as presented in the City Comprehensive Plan as necessary to serve the development.

Visual and Aesthetics

Identify and preserve view corridors as set forth in the City's Comprehensive Plan Land Use Goals and Policies.

Implement the Gateway Overlay District as defined in BDMC Chapter 18.76.

Lighting will be subject to BDMC Chapter 18.70.

When roads are built that intersect existing streets or facilities or are constructed adjacent to existing streets, plant landscaping along the street and in other open space areas to soften building profiles and stormwater facility edges.

Historic and Cultural Resources

No impacts.

Public Services – Parks and Recreation

If a school site is developed and the Proponent proposes to build a joint-use facility, the proponent shall provide one or more youth/adult baseball/softball fields, soccer fields, tennis courts, or basketball courts in conjunction with the school site(s) or at an alternative location.

The park and recreation facilities to serve the new demand from the MPD could be set in the required Development Agreement, and may be constructed on- or off-site.

The cost of such facilities, including a proportionate share of facilities not fully warranted by the MPD buildout, could be provided by payment of fees.

Public Services – Schools

Full buildout of the MPD would warrant school facilities for which the following mitigation shall be imposed.

- a) A separate school mitigation agreement with the School District and the City could be entered into which will provide adequate mitigation of impacts to school facilities; or
- b) Impact fees could be paid at the rate specified in the Enumclaw School District 2009 Capital Facilities Plan or as subsequently amended.

Public Services – Public Safety

The proposed development may require additional fire facilities and equipment, including a new or expanded fire station. A mitigation condition imposing a proportionate share of funding may be necessary.

Fiscal

Require an updated fiscal analysis to be presented at each subsequent phase as required by BDMC 18.98.

Natural Environment

Geology, Topography, and Soils

Mitigate all potential hazards in accordance with the Sensitive Areas Ordinance.

Erosion Hazards

Soil erosion can be addressed during site design and construction. During construction, the use of silt fences, hay bales, temporary sediment ponds, truck wash areas, regular road cleaning, and straw mulch or rock coverings can minimize risks associated with erosion, and the Proponent will be required to obtain coverage under the Department of Ecology's NPDES General Permit for Construction sites for each phase of the buildout.

Limit major earth moving and grading in till soils to the "dry season," between April and September, to avoid water quality impacts from erosion due to wet soils.

Utilize stormwater detention facilities that avoid increases in peak stream flows.

In cases where vegetation is an effective means of stabilizing stream banks, protect stream banks from disturbance to reduce the adverse impacts to stream erosion.

When a stream crossing occurs, utilize bridges or appropriately sized culverts for roadway crossings of streams to allow peak-flow high-water events to pass unimpeded and also preserve some normal stream processes.

Design stormwater facilities to avoid discharging concentrated stormwater flows on moderate and steep slopes in order to avoid severe land erosion.

Landslide Hazards

Avoid landslide hazard areas and utilize sufficient setbacks to increase the safety of nearby uses, or, where feasible, grade out the landslide hazard area to eliminate the hazard.

Manage stormwater and groundwater to avoid increases in overland flow or infiltration in areas of potential slope failure to avoid water-induced landslides.

Vegetation and Wetlands

If wetland impacts are unavoidable, create new wetlands and enhance existing wetlands in accordance with the SAO.

Replace the functions and values lost by direct wetland impacts, specifically wildlife habitat, flood control, and water quality functions.

Utilize structural measures such as silt fences and temporary sediment ponds to avoid discharging sediment into wetlands and other critical areas.

Provide “on the ground” protection measures such as wetland buffers, or root protection zones for significant trees.

Utilize low impact development techniques wherever practical and feasible.

Fish and Wildlife

When siting new stormwater outfalls to any stream, first consider the potential disturbance to adjacent wetlands, riparian buffers, unstable slopes, significant trees, and instream habitat. New stormwater outfalls should be located to avoid these impacts, and where all practical and feasible measures have been employed, provide mitigation in the form of outfall energy dissipaters and/or vegetation restoration and slope stabilization as necessary.

Ensure infiltration functions and capacities are not negatively affected at the cost of fish and other types of aquatic habitat downstream.

Provide a 300-foot-wide wildlife corridor from the western edge of the Core Complex to the City’s western boundary. The corridor should be located within areas of contiguous open space that form a network.

Consider wildlife forage preferences in plant species selection for enhancement areas.

When designing landscape plans for development parcels adjoining wetland buffers or wetland buffer enhancement planting plans, if any, consider locating mast-producing species (such as hazelnut) to mitigate for reduced food sources resulting from habitat reductions.

Climate Change

Minimize the extraction, processing, transportation, construction, and disposal of building materials through use of on-site materials, recycling, and proper waste management.

Ensure design guidelines allow the use of solar, wind, and other renewable sources.

Reduce transportation demand by including adequate facilities for alternative modes such as transit, bicycling, and walking, that will accommodate a future connection between on-site trails and pathways to other parts of the City, as well as accommodate a future connection between the Lawson Hills MPD and The Villages MPD.

Should a large employer or a group of similar employers locate in the commercial areas of the MPD, consider implementing a Transportation Management Association to reduce vehicle trips.

Summary

As previously stated, this should be considered a list of potential mitigation items. As part of the MPD process, the City will determine which of these mitigation measures may be made conditions of MPD approval.

References

- Booth, D.B., D. Hartley, and R. Jackson. 2002. Forest cover, impervious-surface area, and the mitigation of stormwater impacts. *Journal of the American Water Resources Association* 38(3): 835 to 845.
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- Schueler, T. 1994. The importance of imperviousness. *Watershed Protection Techniques* 1(3): 100-111.

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