

# Chapter 5. Environmental Constraints Assessment

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## What is the purpose of this environmental constraints assessment?

The Environmental Constraints Assessment provides a planning tool for the following purposes:

- Identify key environmental resource areas for the broad range of corridor alternatives that will require more analysis under NEPA and SEPA;
- Provide a summary of the environmental limiting factors within each environmental resource area;
- Provide an overview of the environmental tradeoffs expected between the different corridors under consideration;
- Provide preliminary environmental information to supplement the transportation, engineering, and cost analyses used to support the selection of the project corridor, and alternative roadway alignments to be carried forward into the more detailed environmental analyses;

- Provide preliminary environmental information to stakeholders, as part of the community outreach conducted for the project; and
- Provide preliminary environmental data to help specify the scope and level of detail of the environmental analysis that will be required for the environmental document.

This environmental constraints assessment is a broad level evaluation of the range of alternative segments, based upon data that is readily available. As the range of alternatives is narrowed, more focused evaluation that includes ground surveys and detailed database searches will be conducted.

## How was the environmental constraints assessment conducted?

### General Approach

The environmental constraints analysis identifies the existing conditions for each resource area, identifies the primary issues and constraints associated with each

### National Environmental Policy Act (NEPA)

Federal legislation that focuses on federal activities and the desire for a sustainable environment balanced with other essential needs of present and future generations, establishes federal agency responsibility, and creates the basic framework for integrating environmental considerations into federal decision-making.

### State Environmental Policy Act (SEPA)

Washington State legislation that establishes an environmental review process for all development proposals and major planning studies prior to taking any action. SEPA includes early coordination to identify and mitigate any substantial issues or significant effects that may result from a project or study.

resource area, and provides definitions for resource specific terms.

The range of corridor alternatives (see Chapter 4 for description of corridors) was divided into individual corridor segments. A total of 19 corridor segments were identified (labeled A through S, as shown in Figures 5-1 through 5-18)). The segments are based upon corridor definitions, which means that the specific location of a roadway alignments could vary within a given corridor – or that more than one roadway alignment could ultimately be considered within a given corridor. For this reason, the corridors studied in this preliminary assessment are much wider than the width that would be needed for a new roadway. The widths of the study segments vary based on the following considerations:

- Those segments that would use the existing SR 302 corridor would not require significant disturbance, so the constraints analysis was limited to 1/8-mile on either side of the existing alignment.
- Those segments that would require construction of a new corridor would have a greater level of disturbance, so the constraints analysis was limited to ¼ -mile on either side of the proposed new alignment.
- Segment S is located in a relatively undeveloped area, and thus more options may exist for where an alignment could be located within the corridor;

therefore, the constraints analysis was limited to a 1-mile width for the corridor segment.

For each environmental resource area, available Geographic Information System (GIS) data were overlaid on the corridor segments; then the extent to which the environmental resource occurs was assessed for each segment.

Once the existing conditions were established in each environmental resource area, the primary issues and constraints were identified, based upon the guidance described in the following section.

## Guidance for Environmental Review

Guidance for the environmental review and documentation for roadway projects is provided by:

- FHWA policies and procedures to ensure agency compliance with NEPA requirements, as set forth by the Council on Environmental Quality (CEQ) are provided in the WSDOT Environmental Procedures Manual [M 31-11] (WSDOT 2007b); and
- SEPA policies and procedures, as set forth in the Washington Administrative Code (WAC) 197-11-960.

The resource areas analyzed during the environmental constraints analysis are those identified in the Environmental Procedures Manual (WSDOT 2007b). For

all of the resource areas analyzed, information regarding the jurisdictions (local, state and federal) and the applicable policies, ordinances and regulations were identified. A summary of the laws and regulations that were identified in this assessment is provided in Appendix D.

Table 5-1 summarizes the resource areas considered in this assessment.

## Data Sources

The environmental constraints analysis was a programmatic level analysis, based upon existing GIS data, primarily from Pierce, Kitsap and Mason Counties, as well as other appropriate data sources, including the following:

- WSDOT
- Washington Department of Fish and Wildlife's (WDFW) Priority Habitat and Species (PHS) database
- Natural Resources Conservation Service (NRCS)
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI)
- U.S. Environmental Protection Agency (EPA)
- Washington Department of Natural Resource's (WDNR) Natural Heritage Program (NHP) database
- National Marine Fisheries Service (NMFS)
- University of Washington Special Collections Library
- General Land Office (GLO)
- Washington Archeological Sites database
- Washington State Historical Properties database
- Native American Tribe database
- Washington Employment Security Department database
- U.S. Census Bureau
- U.S. Geologic Survey (USGS) quadrangle maps

**Table 5-1. Environmental Resource Areas**

<b>Environmental Resource Area</b>	<b>General Definition</b>
<b>Earth (Geology and Soils)</b>	Geologic setting, topography, geologic hazards, soil types.
<b>Air Quality</b>	Level of air pollution, including carbon monoxide and particulate matter.
<b>Surface Water</b>	Streams, lakes, ponds, canals, bays.
<b>Wetlands</b>	Areas with saturated soils supporting vegetation suited to such conditions (i.e. swamps, bogs, marshes, etc.).
<b>Floodplains</b>	Areas susceptible to inundation during a flood event.
<b>Groundwater</b>	Aquifers and groundwater wells.
<b>Wildlife, Fish and Vegetation</b>	Habitat conditions, particularly as they affect state and federally protected species.
<b>Energy</b>	Consumption of energy to construct, operate and maintain project related features.
<b>Noise</b>	Defined as "unwanted sound" near state managed roadways.
<b>Hazardous Materials</b>	A medium considered toxic to humans or the environment.
<b>Land Use, Plans and Policies</b>	Local jurisdictions, zoning and planning activities under the Growth Management Act, which must be considered.
<b>Coastal Areas and Shorelines</b>	Coastal zones in 15 coastal counties in Washington and shorelines; includes land within 200 feet of the ordinary high water mark.
<b>Wild and Scenic Rivers</b>	Federal designation (none occur in the area).
<b>Farmland and Agriculture</b>	Several regulatory definitions, but in general, any land used for the production of food, feed, fiber, forage, oil seed crops, or other crops.
<b>Public Lands [Section 4(f), 6(f) and Forests]</b>	Parks, recreation areas, wildlife/waterfowl refuges, and state and federal forest land.
<b>Historic, Cultural and Archeological Resources</b>	Structures or artifacts of historical or cultural significance.
<b>Environmental Justice</b>	Identify and address, as appropriate, disproportionately high or adverse impacts to minority and/or low income populations.
<b>Visual Impacts</b>	Impacts of transportation projects on visual perception.
<b>Transportation</b>	Movement or circulation of people and goods.
<b>Public Services and Utilities</b>	Public services include police, fire protection, schools, parks, recreational facilities and maintenance services. Utilities include electricity, natural gas, water, wastewater and telecommunications.

## **What environmental constraints were identified for the study corridor segments?**

The results of the constraints assessment for elements of the natural and built environment are provided in the following sections. A summary matrix is presented at the end of this chapter that provides “at-a-glance” results of the environmental constraints assessments.

## Geological Hazards

### *Existing Conditions*

Geological elements identified in the study area are shown in **Figure 5-1**; existing conditions for these elements are described as follows.

- **Landslide Hazards:** The corridor segments that include areas designated as landslide hazards are Segments A (87%); B (38%); I (24%); H (20%); and E and J (16% each). Landslide hazard areas have not been designated within any of the other corridor segments.
- **Steep Hillides:** The corridor segments that include areas designated as steep hillides are Segments L (34%); K (29%); M (22%); F (19%); Q and S (12% each); E and H (8% each); I (2%); and J (1%). Segment A has less than 1% of its area comprised of steep hillides, and the remaining segments have no designated steep hillides.
- **Seismic Hazards:** The corridor segments that include areas designated as seismic hazards are Segments C (98%); D (83%); A (56%); P (52%); B (38%); N (21%); I, J, and O (19% each); H (15%); R (14%); and E (9%). Segments F, G, K, L, M, Q and S have no seismic hazards present within their defined perimeters.

### *Primary issues and constraints*

- Henderson Bay is identified as having steep hillides along much of its shoreline, with geological hazards such as seismic and landslide hazards at both shorelines associated with Segment H.
- Segment G is the only segment with no geologic hazards present within its defined boundaries. All other segments have some geologic hazard identified. Thus, the project alternatives will need to consider the location and type of geological hazard in roadway design.
- Steep hillides tend to be associated with coastal shorelines for the segment identified. Segments H and A also have geological hazards in those portions along Henderson Bay. Segment J has geological hazards along the west side of Henderson Bay.
- Project construction within a geologic hazard area is regulated by the adopted Critical Areas Ordinance for the county (Pierce, Kitsap, or Mason) in which the hazard is located.
- As the corridor alternatives are narrowed and potential alignments identified, ground survey will be required to verify the presence of geologic hazards, to further qualify the level of hazard.

### Geological Definitions

#### Landslide Hazard

Landslide hazards areas are areas potentially subject to mass movement due to a combination of geologic, seismic, topographic, hydrologic or manmade factors.

#### Steep Hillides

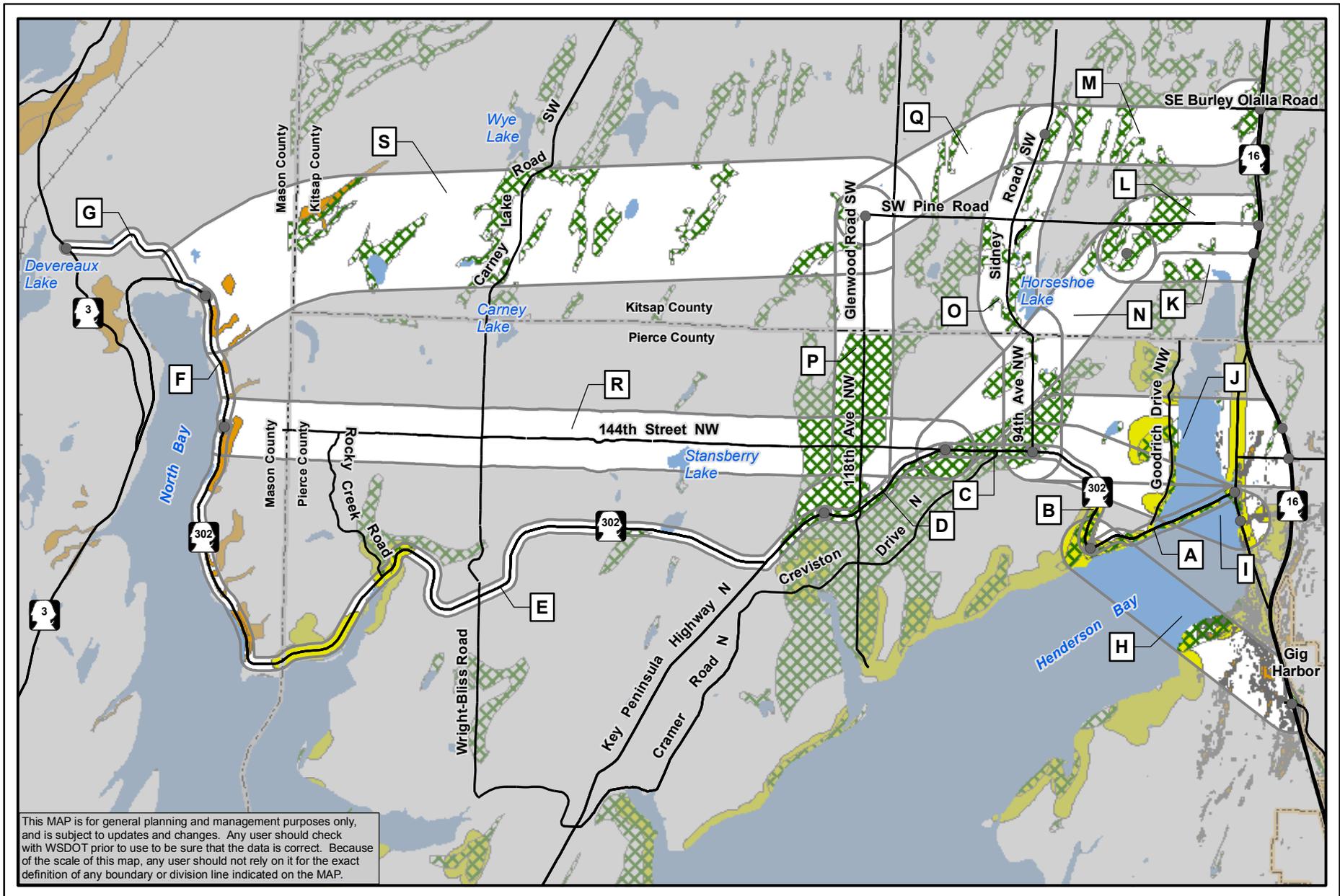
Steep hillides are those hillides identified by Kitsap, Mason and Pierce Counties as unstable and/or with greater than 20% gradient, which may be unstable.

#### Seismic Hazard Area

Seismic hazard areas are areas subject to severe risk of damage as a result of earthquake-induced landslides, seismic ground shaking, dynamic settlement, fault rupture, soil liquefaction, or flooding caused by tsunamis.

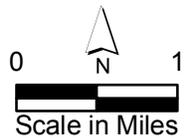
#### Critical Areas Ordinance

These laws protect locally designated critical/sensitive areas, which include geologic hazard areas. Local critical areas ordinances may identify areas susceptible to erosion, sliding, earthquake, or other geological events, which pose a threat to health and safety when incompatible development is sited in areas of significant hazard. Unless the local laws conflict with state law, WSDOT must be consistent with the requirements of local regulations.



DATE: February 29, 2008

Source: Pierce County, Kitsap County, Mason County



- Corridor Segments
- A Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- Steep Slopes
- Landslide Hazard
- Hazardous Soils

**Figure 5-1**  
**Potential Environmental Constraints**  
**Geological Hazards**  
 SR 302 Corridor Study

## Air Quality

### *Existing Conditions*

Air quality elements identified in the study area are shown in **Figure 5-2**; existing conditions for these elements are described as follows.

- No air quality non-attainment areas or maintenance areas are present within any of the corridor alternatives.
- The northern portion of the Gig Harbor Urban Growth Area (UGA) is the only UGA present within any of the corridors. Segments H, I, and J are partially located within the Gig Harbor UGA.

### *Primary Issues and Constraints*

- Transportation Conformity does not apply to any of the corridors because none of the corridors are within air quality maintenance areas.
- Temporary construction activity could generate temporary, localized emissions.
- State law and WSDOT standard contact provisions require fugitive dust control during construction.
- Open burning of slash material generated by clearing or grading is prohibited within UGAs.
- Open burning is allowed outside of UGAs, but requires a permit from the local fire marshal.

#### **Air Quality Definitions**

##### **Non-Attainment Area**

An area that does not meet one or more of the National Ambient Air Quality Standards (NAAQS) for the criteria pollutants designated in the Clean Air Act.

##### **Maintenance Area**

An area that previously was considered a "Non-Attainment Area" but has achieved compliance with the NAAQS.

##### **Transportation Conformity**

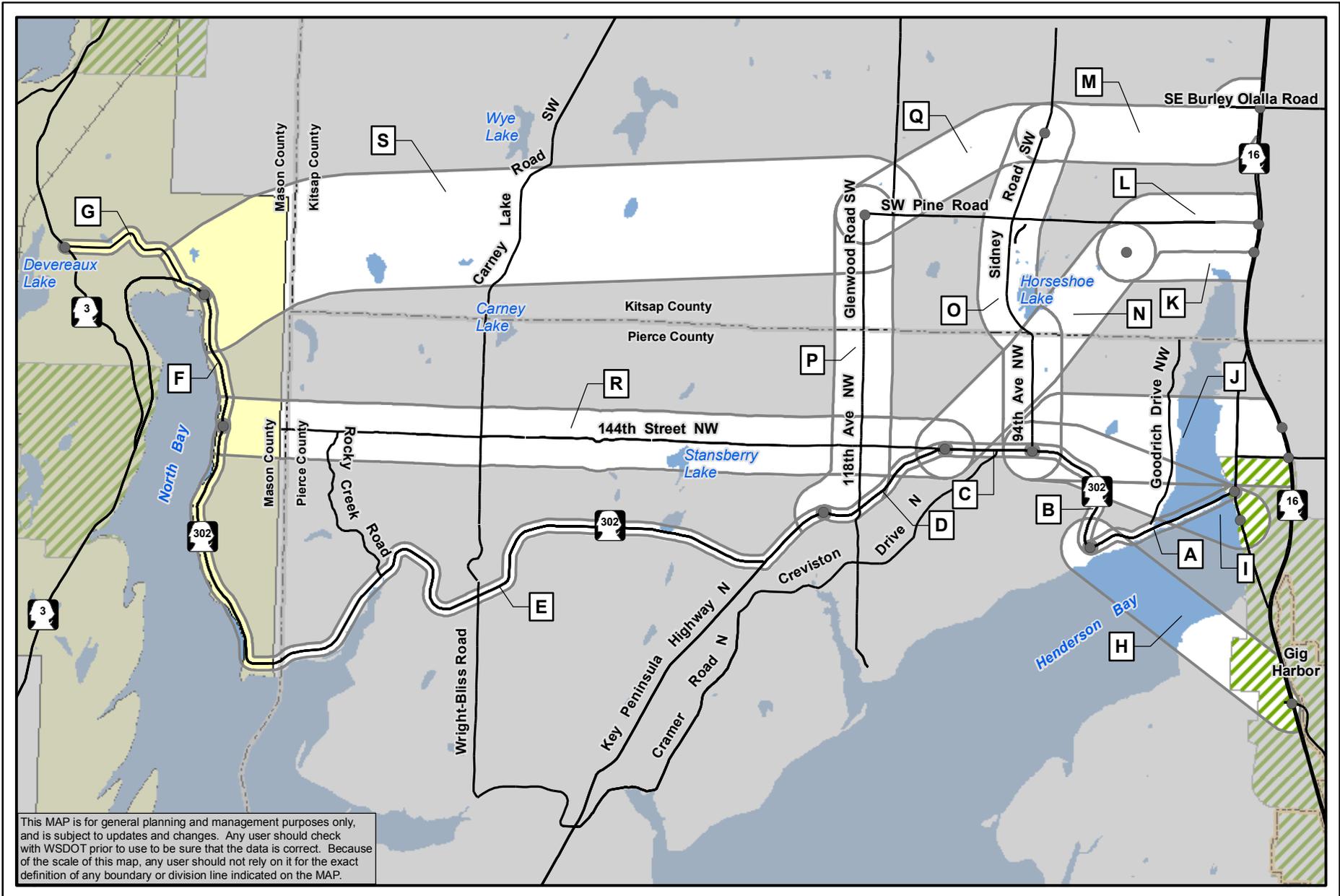
Projects are in conformity when they do not (1) cause or contribute to any new violation of any standards in any area, (2) increase the frequency or severity of any existing violation of any standard in any area, or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

##### **Urban Growth Area (UGA)**

Areas designated by a county, under the Washington Growth Management Act, which are planned to support urban type development and densities within the next 20 years, and are not expected to remain rural in character.

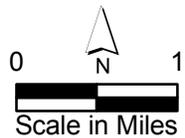
##### **Fugitive Dust**

Solid airborne matter emitted from any non-combustion source.



DATE: February 29, 2008

Source: Mason County, Pierce County



- A Corridor Segment ID
- Corridor End Point
- Major Road
- Corridor Segments
- County Boundary
- + Railroad
- Urban Growth Areas
- Mason County Smoke Management Areas

**Figure 5-2**  
**Potential Environmental Constraints**  
**Air Quality**  
 SR 302 Corridor Study

## Surface Waters

### *Existing Conditions*

Surface water features identified in the study area are shown in **Figure 5-3**; existing conditions for these features are described as follows.

- Segments occur across three sub-watersheds: the Mason, Elgin, and Puget watersheds.

#### **Water Courses:**

- Segments A, B and C do not cross any water courses.
- Segments F, G, H, I, J and O contain less than 5,000 linear feet of water courses
- Segments D, E, K, L, M, N, and Q contain between 5,000 and 10,000 linear feet of water courses.
- Segments P, R and S contain greater than 10,000 linear feet of water courses.

#### **Water Bodies:**

- Segments B, C, D, M, and P contain no water bodies.
- Water bodies account for less than one tenth of the total acreage of Segments E, F, G, K, L, N, O, Q, R and S.
- Water bodies account for between one tenth and one fourth of the total acreage of Segments I and J.
- Water bodies account for approximately 40% of the total acreage of Segments A and H.

#### **Clean Water Act 303(d) Category 5 Listed Waters:**

- Two streams (Minter Creeks and its unnamed tributary) and four locations in North Bay are listed as impaired due to fecal coliform bacteria levels.
- Two streams (Minter and Huge Creeks) are listed as impaired due to dissolved oxygen levels.

### *Primary Issues and Constraints*

- To promote compliance with federal and state water quality standards, work that could result in a discharge to waters of the U.S. would be required to obtain a Section 401 Water Quality Certification under the Clean Water Act.
- Any work in, over, or under navigable waters of the U.S., or work that affects the course, location, condition or capacity of such waters, would be required to comply with Section 10 of the Rivers and Harbors Act of 1899 and obtain a permit from the Corps.
- Work that would discharge materials into waters of the U.S. would be required to comply with Section 404 of the Clean Water Act and obtain a permit from the Corps.
- Prior to construction of the project, a National Pollutant Discharge Elimination System (NPDES) construction stormwater permit would need to be obtained, to ensure no contaminated runoff negatively impacts nearby surface water.
- Any construction activity that would use, divert, obstruct, or change the bed or flow of State waters would need to obtain and comply with a Hydraulic Project Approval (HPA).
- Construction and post-project impacts to surface water, such as stormwater runoff from increased impervious surfaces, would be analyzed to determine any impacts on aquatic species listed under the Endangered Species Act.
- Shorelines are subject to locally adopted shoreline master programs (see Coastal Areas and Shorelines).
- As the corridor alternatives are narrowed and potential alignments identified, ground survey will be required to verify the presence and condition of surface waters.

#### **Surface Water Definitions**

##### **Water Courses**

Rivers, streams and canals.

##### **Water Bodies**

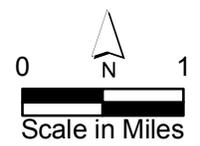
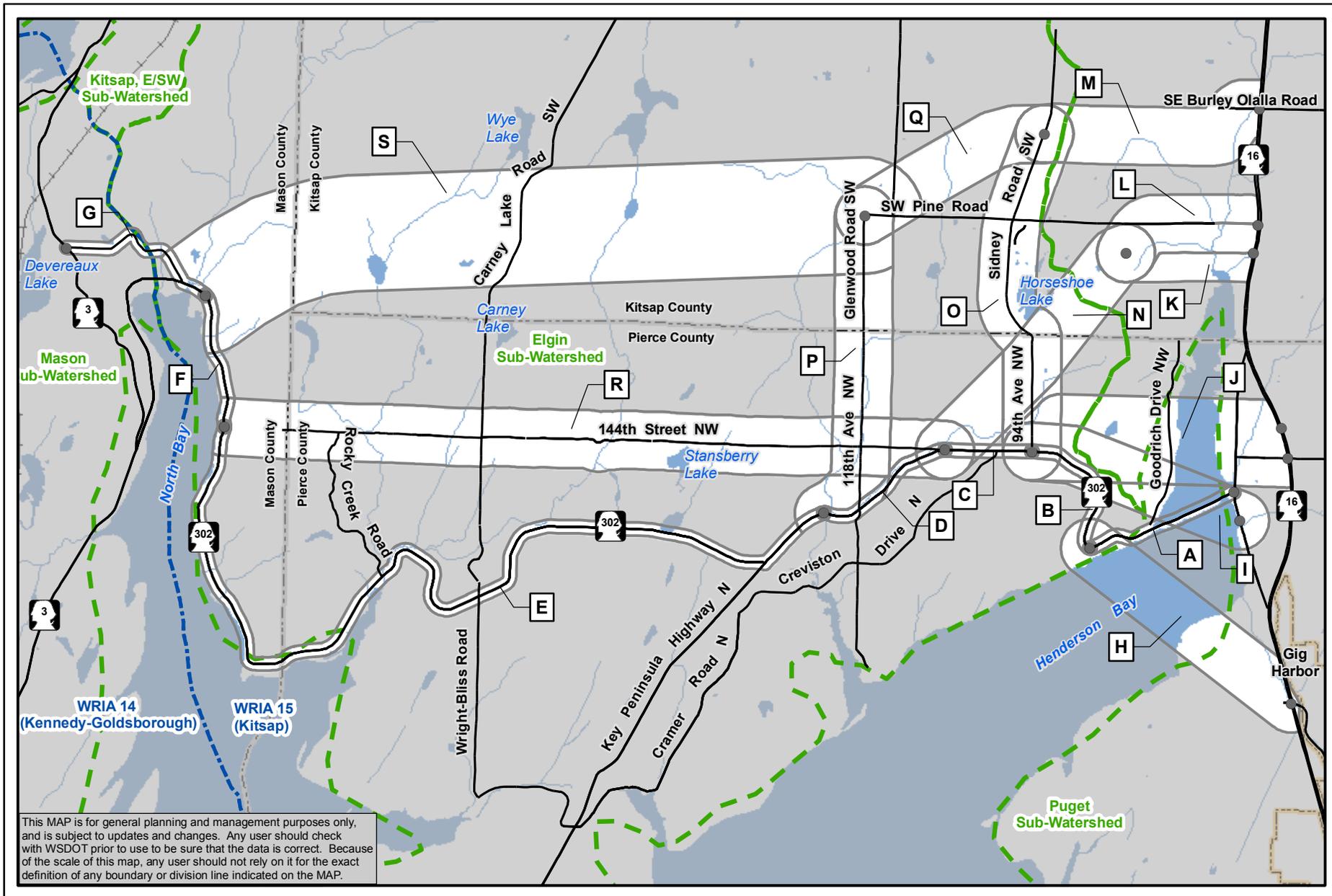
Open water such as lakes, ponds, or bays.

##### **Impervious Surface Area**

Pavement, roofs, and other compacted or hardened areas that do not allow the passage of rainfall or runoff into the ground. Such surfaces can also be considered pollutant-generating if they also regularly receive pollutants, usually due to the use of the surface by motor vehicles (e.g., a roadway). Increasing impervious surface area can contribute pollutants and lead to changes in water flow for nearby surface waters.

##### **303(d) Category 5 Listed Waters**

Waters for which at least one characteristic or designated use is impaired, as evidenced by failure to attain the applicable water quality standard for one or more pollutants.



- Corridor Segments
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- WRIA Boundaries
- Sub-Watershed Boundaries
- Streams
- Water Bodies

**Figure 5-3**  
**Potential Environmental Constraints**  
**Surface Water Features**  
 SR 302 Corridor Study

## Coastal Areas and Shorelines

### *Existing Conditions*

Coastal areas and shorelines identified in the study area are shown in **Figure 5-4**; existing conditions for these elements are described as follows.

- Marine shorelines, designated as shorelines of statewide significance, occur in significant portions of Segments A, E, F, H, I and J.
- Marine shorelines, designated as shorelines of statewide significance, occur in minor portions of Segments G, K, R and S.
- Shoreline Management Areas, as designated by Kitsap County, occur in minor portions (less than one twentieth of the total area of the segment) of Segments K, N, O and S.
- Segments A, E, H and R contain less than 10,000 linear feet of Pierce County designated shorelines.
- Segments I and J contain greater than 10,000 linear feet of Pierce County designated shorelines.
- Segments B, C, D, L, M, P and Q do not contain areas designated as shorelines.

### *Primary Issues and Constraints*

- The greater the amount of area designated as a shoreline of significance within a segment, the greater the potential constraints on construction and development within that area.
- Marine shorelines within in the study area have been designated as shorelines of statewide significance.
- Regulations also apply to freshwater shorelines (see the Surface Water section of this chapter). Work within designated shoreline areas are also regulated by laws governing and protecting surface waters.
- For any construction within a shoreline zone, the project would be required to follow all guidelines and obtain any permits authorized under local shoreline master programs, adopted under the Shoreline Management Act (SMA) to prevent the inherent harm (including impacts to water quality) in an uncoordinated and piecemeal development of the state's shorelines. The SMA applies to (1) all marine waters, (2) streams with a mean annual flow greater than 20 cubic feet per second, (3) lakes 20 acres or larger, (4) upland areas 200 feet landward of the Ordinary High Water Mark (OHWM) of these waters and (5) biological wetlands, river deltas and some portions of the 100-year floodplain, when these areas are associated with other designated shoreline features.
- Development and activities within shoreline areas are regulated further based on local shoreline environment designations. Development within shoreline areas is also regulated by local Critical Areas Ordinances.
- To ensure compliance with applicable laws that protect the waters of the coastal zone, a coastal zone management act certification (CZM) would be required.

### **Shoreline Definitions**

#### **Shorelines of Statewide Significance**

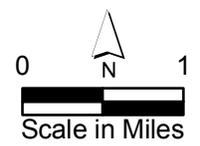
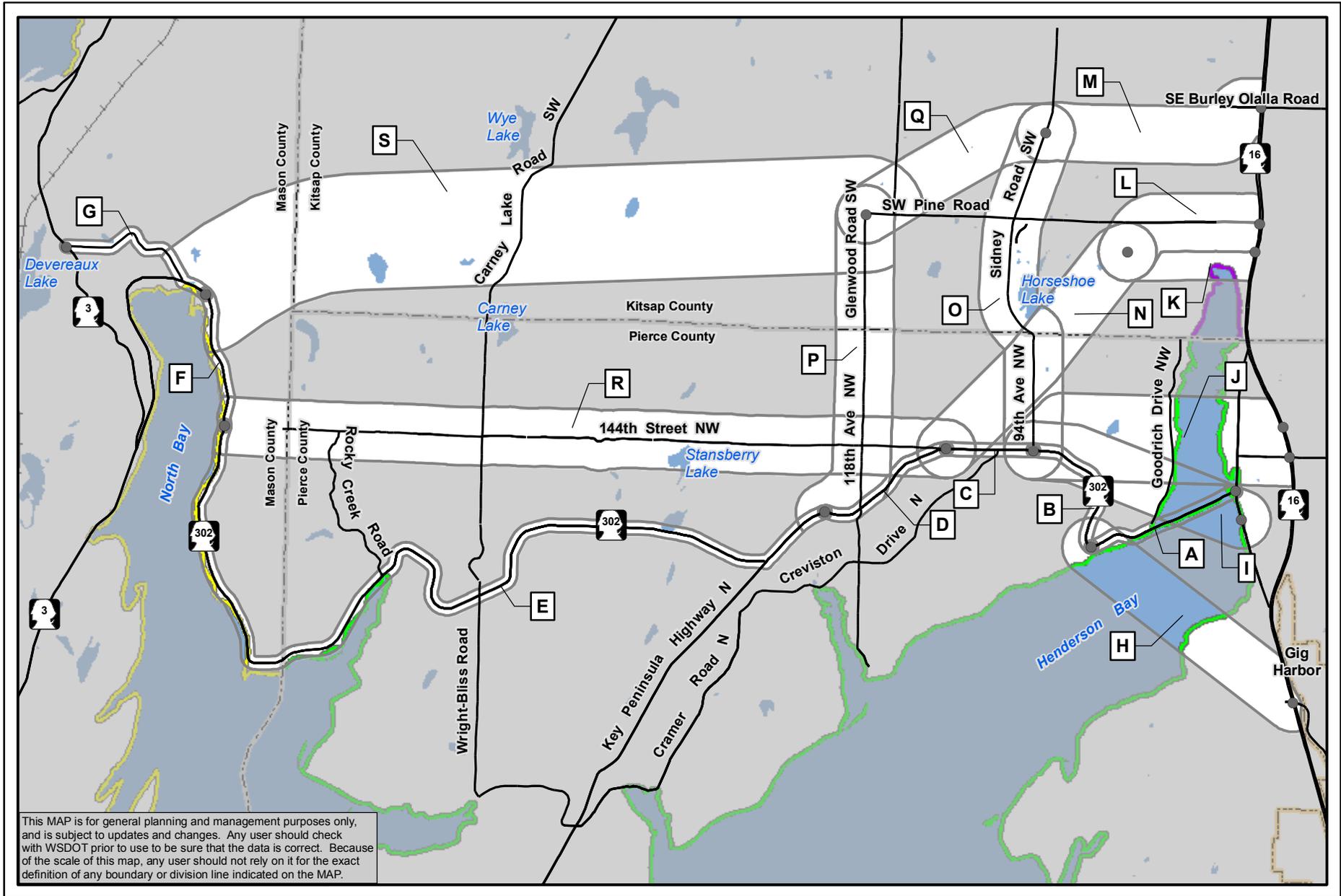
Shorelines of statewide significance are those for which there is special interest in preserving the natural characteristics and in encouraging and increasing public access.

#### **Local Shoreline Environment Designations**

Designations that classify shorelines by degree of human impact and are employed to regulate use by classification. Designations vary by county: Kitsap County designates shorelines as natural, conservancy, rural, semi-rural, and urban. Pierce County designates shorelines as natural, conservancy, rural, rural-residential, and urban. Mason County designates shorelines as natural, conservancy, rural and urban.

#### **Critical Areas Ordinance**

These laws protect locally designated critical/sensitive areas, which include shorelines. Local critical areas ordinances identify required buffers for each shoreline category. Unless the local laws conflict with state law, WSDOT must be consistent with the requirements of local regulations.



- Corridor Segments
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- Mason County Shoreline Management Area
- Pierce County Shoreline Management Area
- Kitsap County Shoreline Management Area

**Figure 5-4**  
**Potential Environmental Constraints**  
**Marine Shoreline Areas**  
 SR 302 Corridor Study

## Wetlands

### *Existing Conditions*

Wetlands identified in the study area are shown in **Figure 5-5**; existing conditions are described as follows.

- The segments with the highest percentage of the segment area comprising wetlands include segments H (40%), A (29%), I (23%), and J (16%). These segments all cross Henderson Bay. The identified wetlands are associated with the bay.
- Wetlands comprise between approximately 2% and 7% of the area within Segments E (4%), F (5%), K (3%), L (2%), M (5%), N (7%), O (6%), P (4%), Q (3%), and S (2%).
- Less than 1% of Segments G (0.70 acre) and R (26.75 acres) are occupied by wetlands. The Segment G corridor encompasses 80.44 acres, of which 0.70 acre is identified as wetlands. The Segment R corridor encompasses 2,074.07 acres, of which 26.75 acres are identified as wetlands.
- Segments B, C and D contain no wetlands in the NWI or Pierce County database. However, field reconnaissance would be required to confirm this.
- A total of 973.29 acres of wetland habitat are present within the corridor segments assessed, according to the NWI database and wetland data obtained from Pierce, Kitsap and Mason counties.

### *Primary Issues and Constraints*

- Any alternative that involves Segments A, H, I, or J will impact estuarine wetlands associated with Henderson Bay.
- Segments E, F, and K contain estuarine wetlands associated with North Bay (for segments E and F) and Henderson Bay (for segment K). Impacts to estuarine wetlands within Segments E and F may not be avoidable. Impacts to estuarine wetlands in Segment K may be avoidable.
- Direct wetland impacts may be avoidable in Segments B, C, D, R, L, and S. Direct wetland impacts appear to be likely in Segments G and L.
- Direct impacts to wetlands will require mitigation. Mitigation monitoring may require a 10-year commitment and maintenance of the mitigation site may also be a permit requirement. The ratio of required mitigation to offset direct wetland impacts will be dependent upon the functions and values provided by the wetlands impacted.
- It is expected that additional wetlands that have not been identified among the NWI or Pierce, Kitsap and Mason county sources are present within the study area. As the corridor alternatives are narrowed and potential alignments identified, ground survey will be required to verify the presence of wetlands and identify additional wetlands.
- Wetland delineation must be performed by a wetland biologist for each wetland potentially impacted by the project, to determine and document the function and value of the wetland.

### Wetland Definitions

#### Wetland

Areas that are saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

#### Wetland Delineation

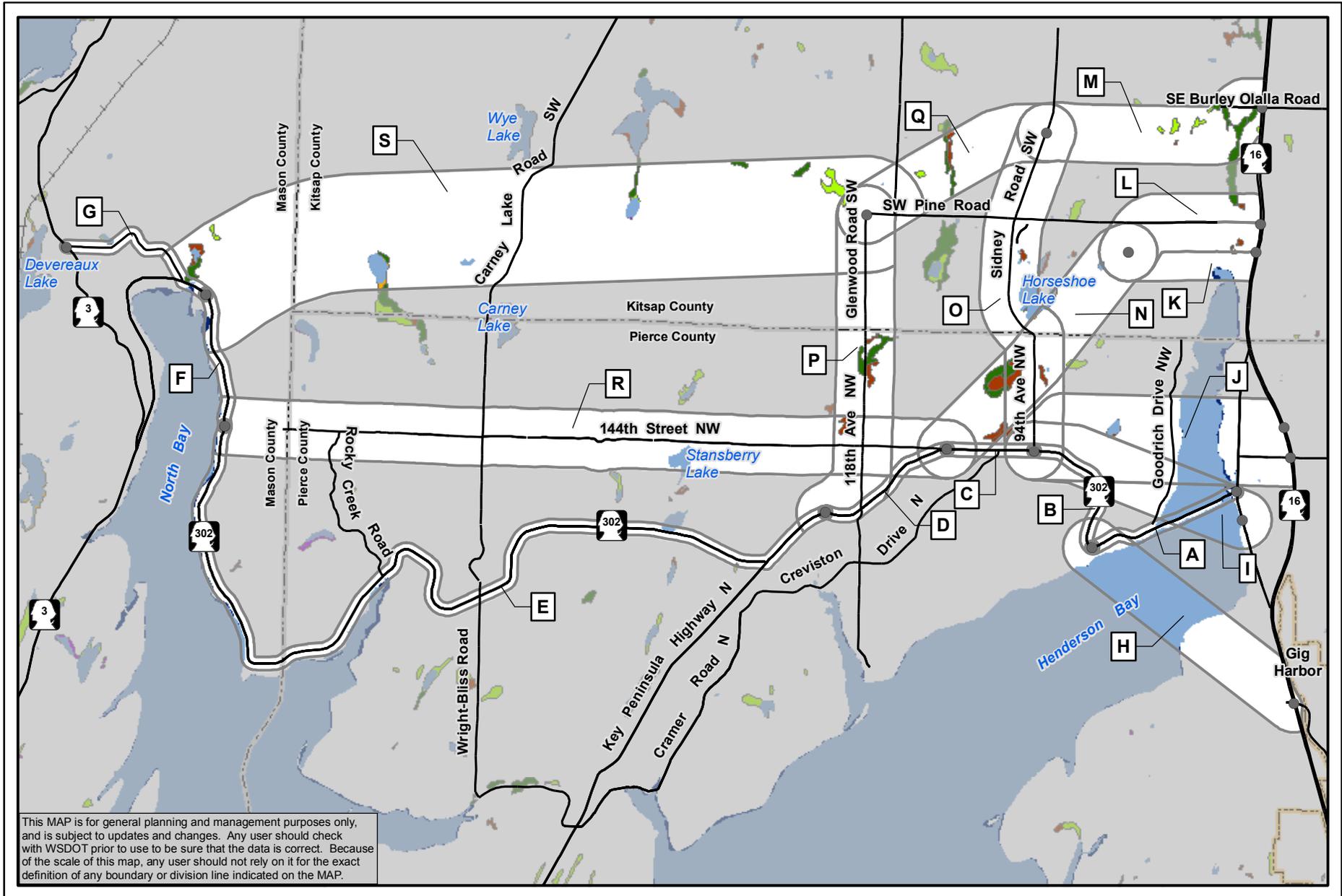
Determination of the jurisdictional limits of a wetland or other water that must include a map indicating the boundary of all waters of the U.S. (for Clean Water Act compliance), a report documenting the data collected, and conclusions reached regarding jurisdiction.

#### Estuarine Wetland

Estuaries are areas with free connection with the open ocean within which sea water is measurably diluted with fresh water from land drainage. Estuarine wetlands are wetlands associated with estuarine environments.

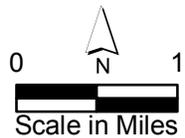
#### Critical Areas Ordinance

These laws protect locally designated critical/sensitive areas, which include wetlands. Local critical areas ordinances identify required buffers for each wetland category. Unless the local laws conflict with state law, WSDOT must be consistent with the requirements of local regulations



DATE: February 29, 2008

Source: National Wetlands Inventory



- |                     |                                 |                              |
|---------------------|---------------------------------|------------------------------|
| Corridor Segments   | Palustrine Aquatic Bed          | Palustrine Emergent Wetlands |
| Corridor Segment ID | Palustrine Scrub Shrub Wetlands | Lacustrine Wetlands          |
| Corridor End Point  | Palustrine Forested Wetlands    | Estuarine Wetlands           |
| County Boundary     |                                 |                              |
| Major Road          |                                 |                              |
| Railroad            |                                 |                              |

**Figure 5-5**  
**Potential Environmental Constraints**  
**Wetlands by Classification**  
 SR 302 Corridor Study

## Flood Plains

### *Existing Conditions*

Flood plains identified in the study area are shown in **Figure 5-6**; existing conditions are described as follows.

- Segments B, C and G do not contain any areas designated as Federal Emergency Management Agency (FEMA) 100-year flood plains.
- Segments F, K, L, M, N, O, P, Q, R and S have a minimal amount of area (less than one tenth of their total area) designated as FEMA 100-year flood plains.
- Segments D, E, I, and J have a moderate amount of area (between one tenth and one fourth of their total area) designated as FEMA 100-year flood plains.
- Segments A and H have a significant amount of area (over one fourth of their total area) designated as FEMA 100-year flood plains.

### *Primary Issues and Constraints*

- Potential development within the floodplain that is linked to project construction must be evaluated to ensure it is in compliance with local flood plain development plans.
- The greater the amount of area designated as a flood plain within a segment, the greater the potential constraints on construction and development within that area.
- Federal agencies must, to the extent possible, avoid adverse impacts to floodplains or avoid supporting floodplain development, per Presidential Executive Order 11988 (Floodplain Management).
- Project work must comply with the regulations of the Washington State Flood Control Management Act (RCW 89) governing flood plains.
- Project construction within Mason County that occurs in areas designated as special flood hazard zones under the County's Flood Damage Prevention Ordinance (#81-07) would be required to obtain a development permit that would regulate the amount and location of construction. Such work would also be subject to Mason County's Critical Areas Ordinance regulating frequently flooded areas.
- Project construction within Kitsap County floodplains would be required to obtain a development permit and would be subject to Kitsap County's Critical Area Ordinance and Flood Hazard Code, which regulate frequently flooded areas.
- Project construction within a flood hazard area in Pierce County is regulated by the County's adopted Critical Areas Ordinance.
- Work within 200 feet of most surface waters (often a frequently flooded area) also is regulated by a Shoreline permit from Ecology.

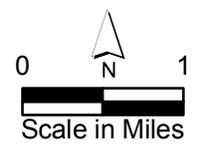
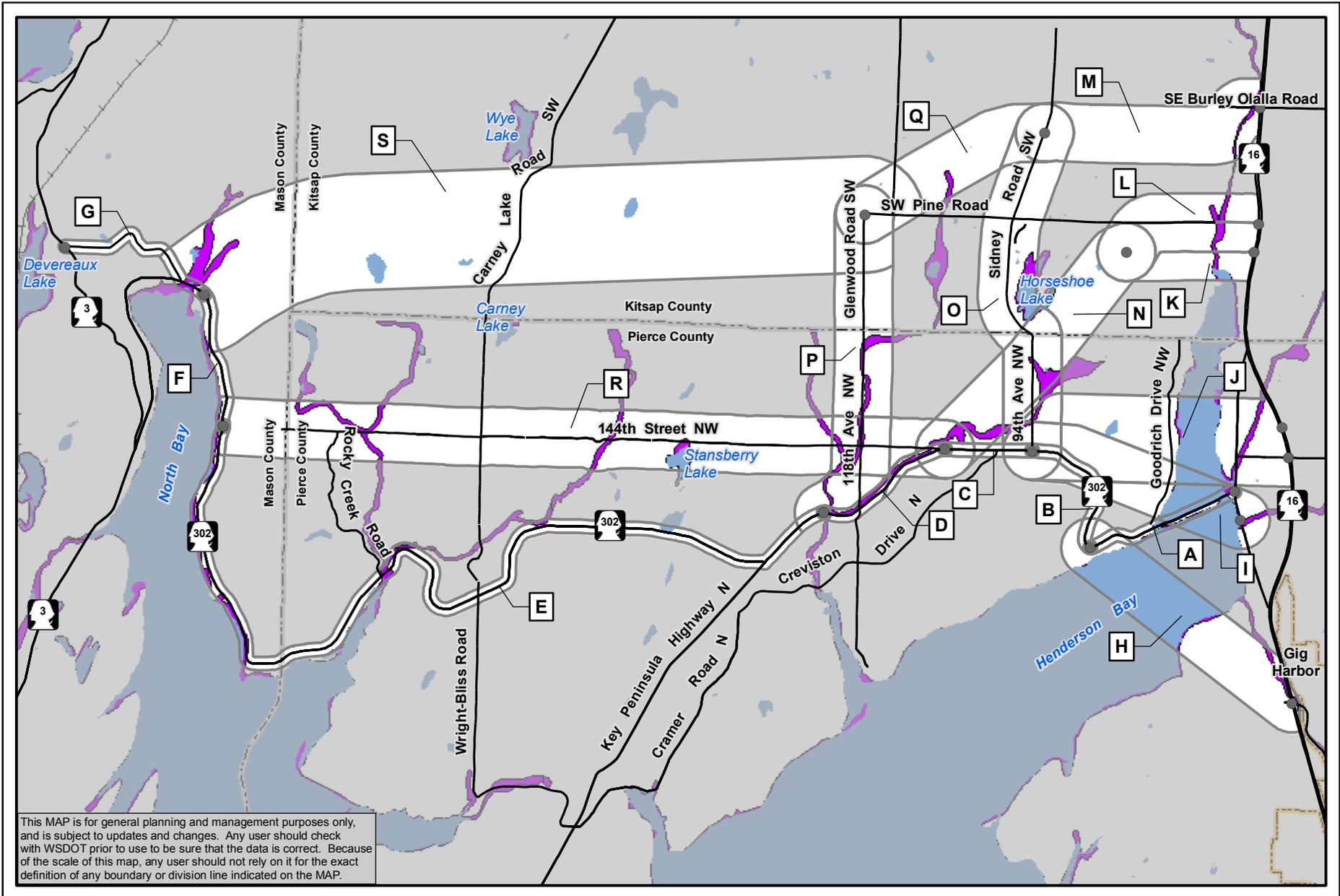
### Flood Plain Definitions

#### **FEMA 100-year Flood Plain**

The area inundated during a 100-year flood. The 100-year flood is a flood that has a one percent chance of being equaled or exceeded in any given year.

#### **Critical Areas Ordinance**

These laws protect locally designated critical/sensitive areas, which include flood plains. Local critical areas ordinances may identify areas susceptible to floods, which pose a threat to health and safety when incompatible development is sited in areas of significant hazard. Unless the local laws conflict with state law, WSDOT must be consistent with the requirements of local regulations.



- Corridor Segments
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- 100-Year Flood Plain (1% Annual Chance Flood)

**Figure 5-6**  
**Potential Environmental Constraints**  
**FEMA Flood Plains**  
 SR 302 Corridor Study

## Groundwater

### *Existing Conditions*

Groundwater features identified in the study area are shown in **Figure 5-7**; existing conditions for these features are described as follows.

- **Land Use Related to Groundwater Wells:** Many of the existing dwellings in the study area are located in rural or low-density suburban areas served by either private drinking water wells or small publicly-owned drinking water systems using wells.
- **Critical Aquifer Recharge Areas:** Neither Mason County nor Kitsap County have designated any Critical Aquifer Recharge Areas (CARAs) within the study area. As shown on the map, Pierce County has designated numerous CARAs corresponding to the wellhead protection zones surrounding existing small public drinking water supply wells. The density of CARAs in Pierce County roughly corresponds to the density of existing residential development that uses drinking water wells. Most of the corridor segments within Pierce County include at least one CARA. Exceptions include the southern portions of Segments O and P, which do not include any CARAs.
- **Sanitary Control Areas (Wellhead Protection Zones [WPZs]):** The state Department of Health (DOH) has specified Sanitary Control Areas (SCAs) around numerous small public drinking water system supply wells throughout the study area. The density of SCAs roughly corresponds to the density of existing residential development that uses drinking water wells. All of the corridor segments include at least one SCA. The lowest numbers of SCAs occur in Segments R and S, which include areas with the relatively lowest population density.

### *Primary Issues and Constraints*

- Unless properly controlled, new or widened roadways could alter surface hydrology and increase pollutant loadings from stormwater runoff. However, virtually all new roadway projects in the state require installation of stormwater collection, detention, and treatment systems. Those required control systems would minimize any increases in pollutant loadings and thereby prevent degradation of groundwater quality near the roadway.
- Most of the Pierce County segments include CARAs. Before a roadway can be constructed within a CARA, the Pierce County critical area ordinance requires submittal of a hydrogeological and water quality report, demonstrating why the roadway would not substantially increase pollutant loadings to groundwater. The stormwater detention and treatment systems required for any new roadway project in Washington are expected to satisfy that demonstration. Therefore, the presence of CARAs is not considered a significant constraint.
- All of the alternative corridor segments include at least one SCA representing a small public water supply well. The SCAs were designated by the DOH when that agency issued water well permit for the respective small public water supply systems. Before a roadway can be constructed within an SCA, the Department of Health requires submittal of a hydrogeological and water quality report, demonstrating why the roadway would not substantially increase pollutant loadings to groundwater near the drinking water well. The stormwater detention and treatment systems required for any new roadway project in Washington are expected to satisfy that demonstration. Therefore, the presence of SCAs is not considered a significant constraint.

### **Groundwater Definitions**

#### **Critical Aquifer Recharge Area (CARA)**

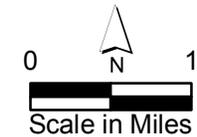
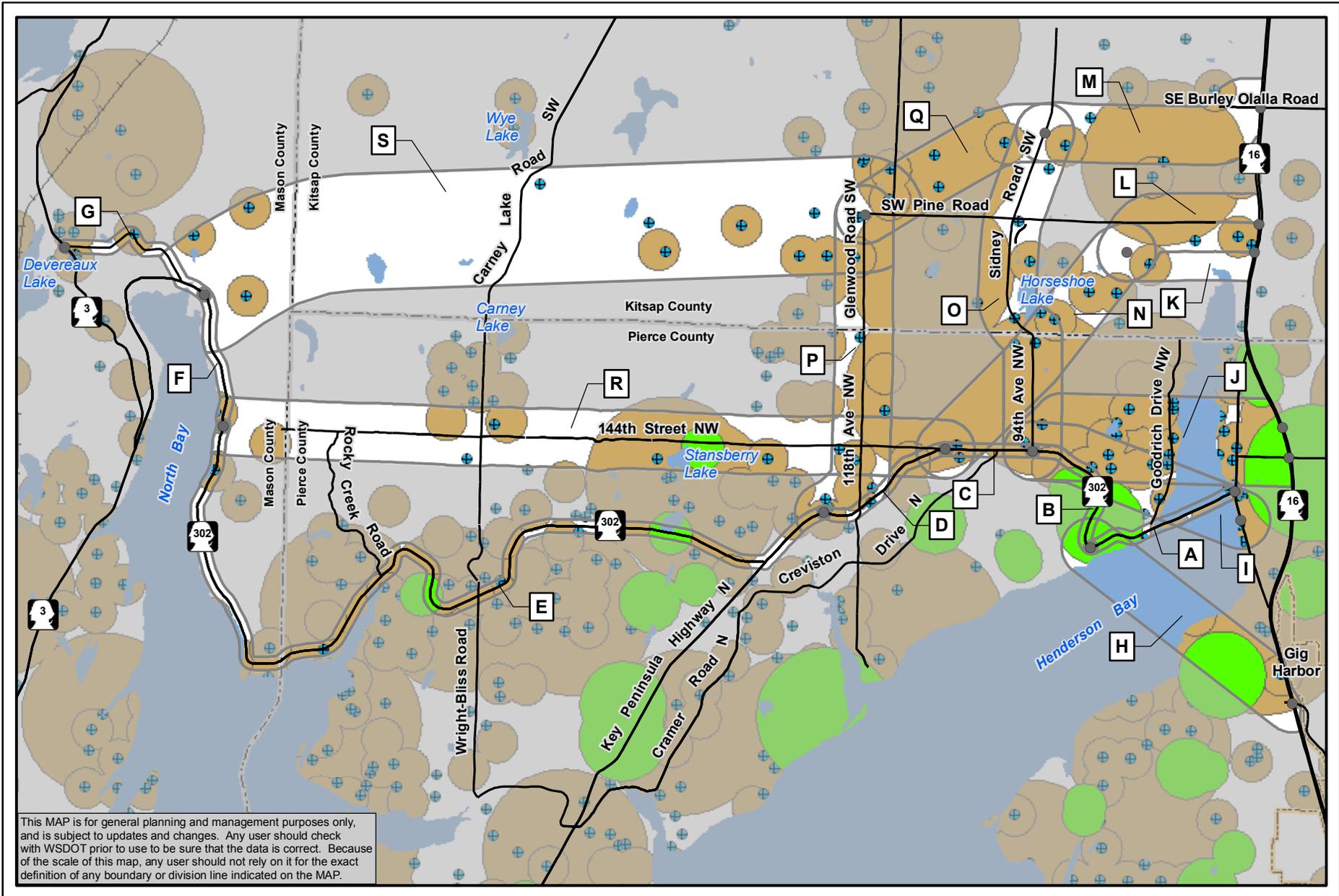
Designated zones, specified by Critical Area Ordinances, that surround public drinking water wells. Hydrogeologic and water quality reports must be submitted for County approval before pollutant-generating facilities (including roads) are allowed to be constructed within CARAs.

#### **Sanitary Control Areas (SCA) or Wellhead Protection Zones (WPZ)**

Circular zones specified by the State Department of Health (DOH) around small public drinking water supply wells, inside which pollutant-generating facilities (including roads) cannot be constructed without approval by DOH.

#### **Critical Areas Ordinance**

These laws protect locally designated critical/sensitive areas, which include critical aquifer recharge areas. Local critical areas ordinances may identify areas where unrestricted development near public or private groundwater wells is to be avoided, due to the potential threat to health and safety. Unless the local laws conflict with state law, WSDOT must be consistent with the requirements of local regulations.



-  Corridor Segments
-  Corridor Segment ID
-  Corridor End Point
-  County Boundary
-  Major Road
-  Railroad
-  Aquifer Recharge Zones
-  Drinking Water Wells in Study Area
-  Sanitary Control Areas

**Figure 5-7**  
**Potential Environmental Constraints**  
**Groundwater**  
 SR 302 Corridor Study

## Wildlife and Vegetation

### *Existing Conditions*

Wildlife and priority habitat identified in the study area are shown in **Figure 5-8**; existing conditions for these elements are described as follows.

- Osprey, a priority species, have been documented within Segments I, K, L, and N. Mountain quail, also a priority species, have been documented within Segments P, Q and R. Three different priority species (mountain quail, western pond turtle, and western toad) have been documented within Segment S.
- Segments A, I and J all cross a portion of Henderson Bay that has been designated a priority habitat. Each of these segments contains priority habitat that accounts for between one tenth and one fifth of the total area of the segment.
- Segments E, F, H, K, R, and S each contain less than 5 acres of priority habitat, which is usually concentrated near bodies of water.
- Bald Eagle management zones cover over half of the total area of Segment F.
- Bald Eagle management zones occur in minor portions of Segments H, J, R, and S.
- No priority wildlife or vegetation habitat or species have been identified in Segments B, C, D, G, M, or O.

### *Primary Issues and Constraints*

- Construction near a priority species has the potential to impact that species. Impacts are greater where species occur closer to actual construction, or in corridors that contain more occurrences of priority species.
- Prior to project implementation, the presence or absence of any species listed as threatened or endangered under the federal Endangered Species Act (ESA) would need to be confirmed. If any such species are found to occur within the project area, a consultation as outlined under Section 7 of the ESA would need to be completed.
- Any construction activities within a Bald Eagle Management Zone would have the potential to impact protected bald eagle nesting habitat, and would need to adhere to the Bald Eagle Protection Rules as outlined by the Washington State Wildlife Commission. These rules require the preparation of a habitat management plan.
- Prior to project implementation, surveys must be conducted to locate active bald eagle nests. No project activities are allowed that could potentially take any bald or golden eagle, their parts, products, nests or eggs as outlined under the federal Bald and Golden Eagle Protection Act.
- Under the Migratory Bird Treaty Act, it is unlawful to take osprey, great blue heron or other migratory birds or their feathers, eggs, nests, and products, excluding game birds during established hunting seasons. All project actions within segments containing such a bird would be governed by this regulation.
- Project actions would adhere to local regulations for Mason, Pierce, and Kitsap Counties governing the use and development of shorelines and other designated critical areas that are protected for the benefit sensitive wildlife species.

### Wildlife and Vegetation Definitions

#### Priority Species

A species that is classified as an Endangered, Threatened, Sensitive, or Candidate species by Washington State; animal aggregations considered vulnerable; and species of recreational, commercial, or tribal importance that are vulnerable.

#### Priority Habitats

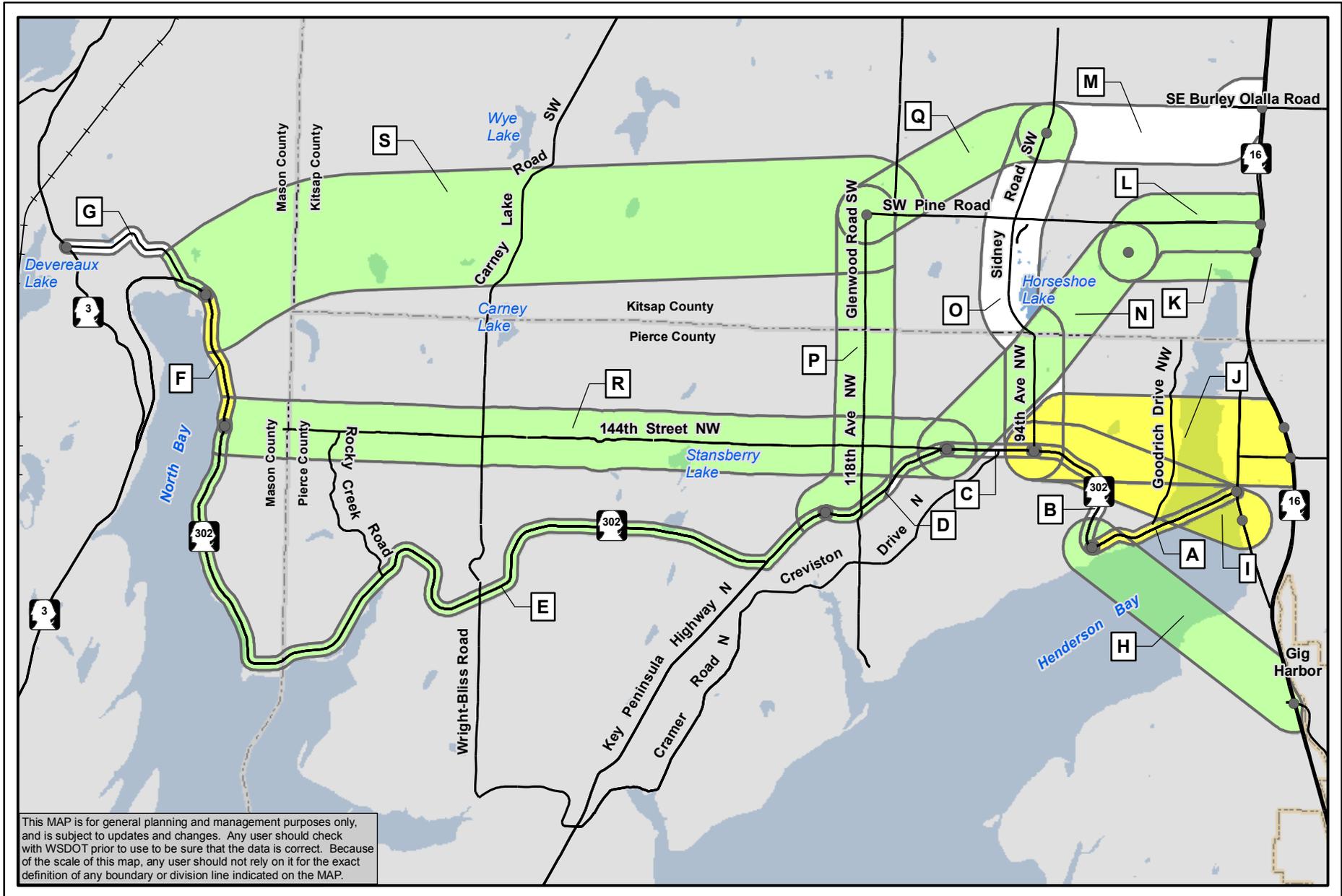
Habitat types or elements with unique or significant value to a diverse assemblage of species.

#### Bald Eagle Management Zone

A zone established by Washington State's Bald Eagle Protection Act. The zones exist to protect bald eagle nesting and roosting habitat, and include areas surrounding such sites as well as nearby shorelines.

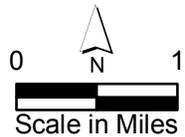
#### Take

Take includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting or disturbing an individual of a protected species.



DATE: February 29, 2008

Source: Washington Department of Fish and Wildlife.



- [A] Corridor Segment ID
- Corridor End Point
- SR302\_SR16Extension
- Major Road
- + Railroad
- ▭ Corridor Segments
- ▭ County Boundary
- Observed Wildlife Constraint - Medium to High
- Observed Wildlife Constraint - Low to Medium
- No Observed Wildlife Constraint

**Figure 5-8**  
**Potential Environmental Constraints**  
**Wildlife**  
 SR 302 Corridor Study

## Aquatic Wildlife

### *Existing Conditions*

Aquatic wildlife and priority habitat identified in the study area are shown in **Figure 5-9**; existing conditions for these elements are described as follows.

- Between three and eight different priority fish species (coho, Chinook or chum salmon, steelhead, large mouth bass, resident cutthroat trout, or channel catfish) occur in Segments D, E, G, H, I, J, K, L, M, N, O, P, Q, R and S.
- Priority fish species listed under the federal endangered species act (fall-run Chinook salmon from the Puget Sound Evolutionarily Significant Unit [ESU] and winter-run steelhead from the Puget Sound Distinct Population Segment [DPS]) occur in Segments D, E, H, J, K, L, M, P, Q, R, and S.
- Priority shrimp and shellfish concentrations (concentrations of hardshell intertidal and geoduck clams and non-native oysters) are present in Segments A, E, F, H, I and J.
- Surf smelt, a forage fish, spawning occurs along 1,650 feet of shoreline in Segment E.
- Recreational and tribal harvest of shellfish occurs on and adjacent to North Bay (Segments E and F) and Purdy Spit (Segments A, H, I and J). Shellfish and other recreational fisheries are monitored by the WDFW to ensure public safety and the preservation of the resource.
- No priority fish species, shrimp, or shellfish have been identified in Segments B or C.
- Eelgrass, a subaquatic habitat that provides refuge and forage area for a number of priority marine species or their prey, does not occur within the corridor segments but is present within North Bay, beyond project limits.

### *Primary Issues and Constraints*

- Construction near a priority species has the potential to impact that species. Impacts are greater where species occur closer to actual construction, or in corridors that contain more occurrences of priority species.
- Prior to project implementation, the presence or absence of any species listed as threatened or endangered under the federal Endangered Species Act (ESA) would need to be confirmed. If any such species are found to occur within the project area, a consultation as outlined under Section 7 of the ESA is required.
- Surface water quality impacts that extend outside of segment limits could have an effect on eelgrass and associated sensitive aquatic species.
- Forage fish such as Surf Smelt are protected under the ESA as a prey source for endangered and threatened fish species.
- All project activities that could impact Essential Fish Habitat (EFH) as defined and protected under the Magnuson-Stevens Act must consult with the National Marine Fisheries Service.
- All obstructions across or in a stream (such as a road crossing) will be provided with a durable and efficient fishway approved by WDFW, as required by the Washington State Fish Passage Law.
- Project actions would adhere to local regulations for Mason, Pierce and Kitsap Counties governing the use and development of shorelines and other designated critical areas protected for the benefit of sensitive aquatic species.

### **Aquatic Wildlife Definitions**

#### **Priority Species**

A species that is classified as a Endangered, Threatened, Sensitive, or Candidate species by Washington State; animal aggregations considered vulnerable; and species of recreational, commercial, or tribal importance that are vulnerable.

#### **Priority Habitat**

Habitat type or element with unique or significant value to a diverse assemblage of species.

#### **Essential Fish Habitat (EFH)**

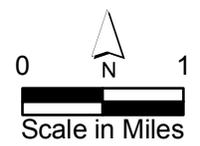
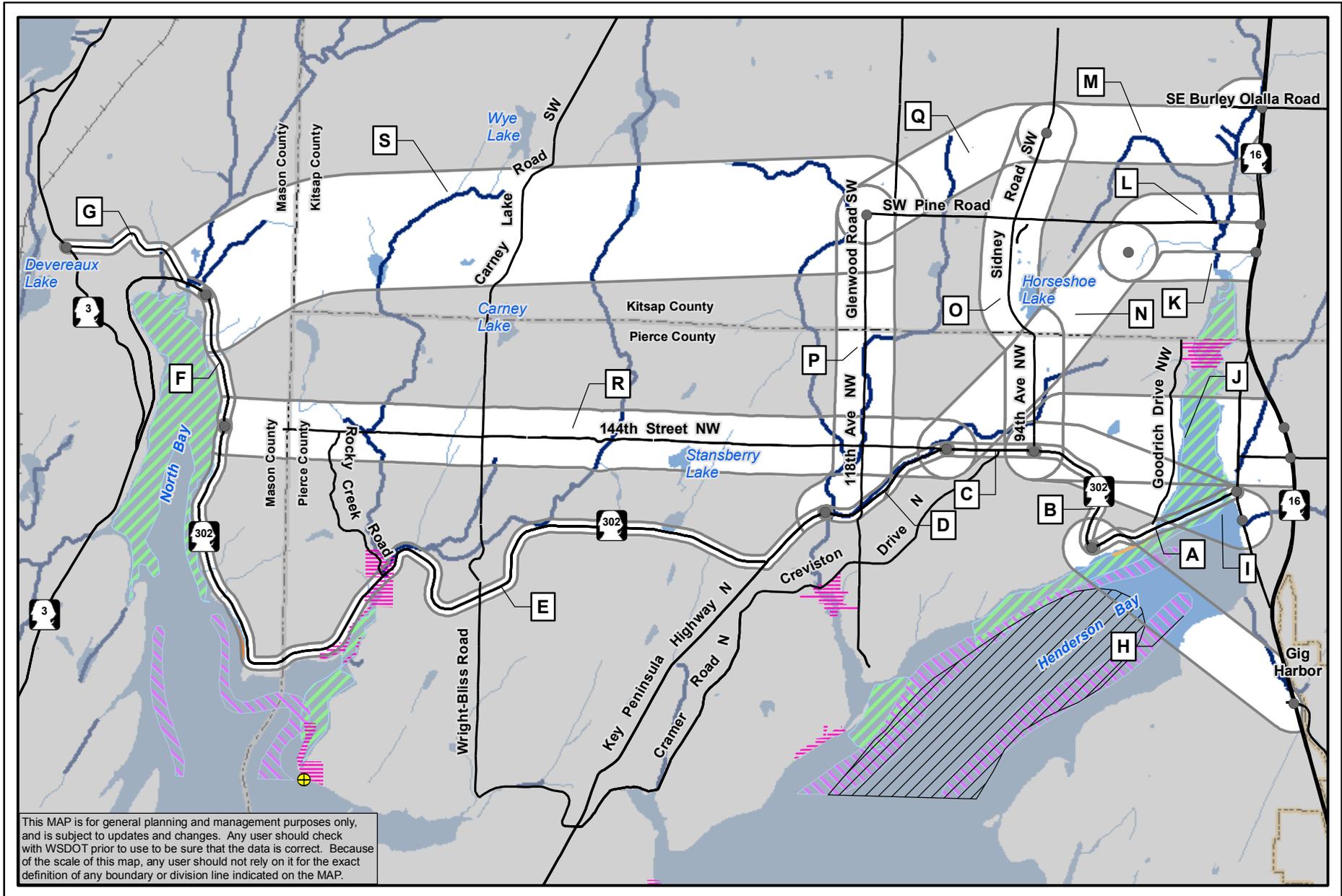
Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Applicable to the Coastal Pelagic (open ocean), Groundfish and Pacific Coast Salmon (Chinook, coho and pink salmon) fisheries.

#### **Evolutionarily Significant Unit (ESU)**

A designation used by the NMFS for certain local salmon populations or "runs" which are treated as individual species under the Endangered Species Act, as defined by NMFS.

#### **Distinct Population Segment (DPS)**

Vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species, as defined by NMFS and USFWS.



- Corridor Segments
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- Stream with Priority Fish Species
- Other Streams
- Surf Smelt Spawning
- Critical Salmon Habitat
- Seabird Colony
- Clam
- Geoduck
- Shrimp
- Oyster

**Figure 5-9**  
**Potential Environmental Constraints**  
**Aquatic Wildlife**  
 SR 302 Corridor Study

## Existing Land Use

### *Existing Conditions*

Existing land uses identified in the study area are shown in **Figure 5-10**; existing conditions are described as follows.

- Lowest concentrations of human-development are located in Segments N and S.
- Segments N and O include substantial portions of agricultural land use and park/recreation/open space
- Over half the area in Segment S is designated as resource land (primarily forest)
- The predominant land use in all other segments is residential
- Several corridors are centered on existing roadways (Segments A – G, K, L, O, P and R).

### *Primary Issues and Constraints*

- Under the State of Washington Growth Management Act (GMA), all three counties (Pierce, Kitsap, and Mason) have established countywide planning policies, Comprehensive Plans, and development regulations to accommodate existing and projected future population and employment, and to designate natural resource lands and critical areas. Under GMA, concurrency requires that infrastructure, including transportation, be in place or planned within six years of development.
- Potential environmental constraints related to critical areas are discussed in the wetland, floodplain, geology, groundwater, fish and wildlife sections of this chapter.
- The land use types that would be converted to transportation use must be considered for roadway projects.
  - Segment S has high potential that designated resource land would be converted to transportation use.
  - Segments N and O could require conversion of agricultural land, park/recreational/open space, as well as residential land use
  - All other segments would primarily require conversion of residential land use; with potential for conversion to a lesser degree of land uses that include resource lands, agriculture, government/public institution, industrial, commercial, and public recreation/open space.
- Conversion of land use along an existing transportation corridor is considered a lower land use impact than conversion of land use where no major roadway currently exists.

### Existing Land Use Definitions

#### **Growth Management Act (GMA)**

Washington State law that sets goals to guide planning in the larger, faster growing counties and cities within those counties, and provides for a regional transportation planning program to be administered by WSDOT.

#### **Concurrency**

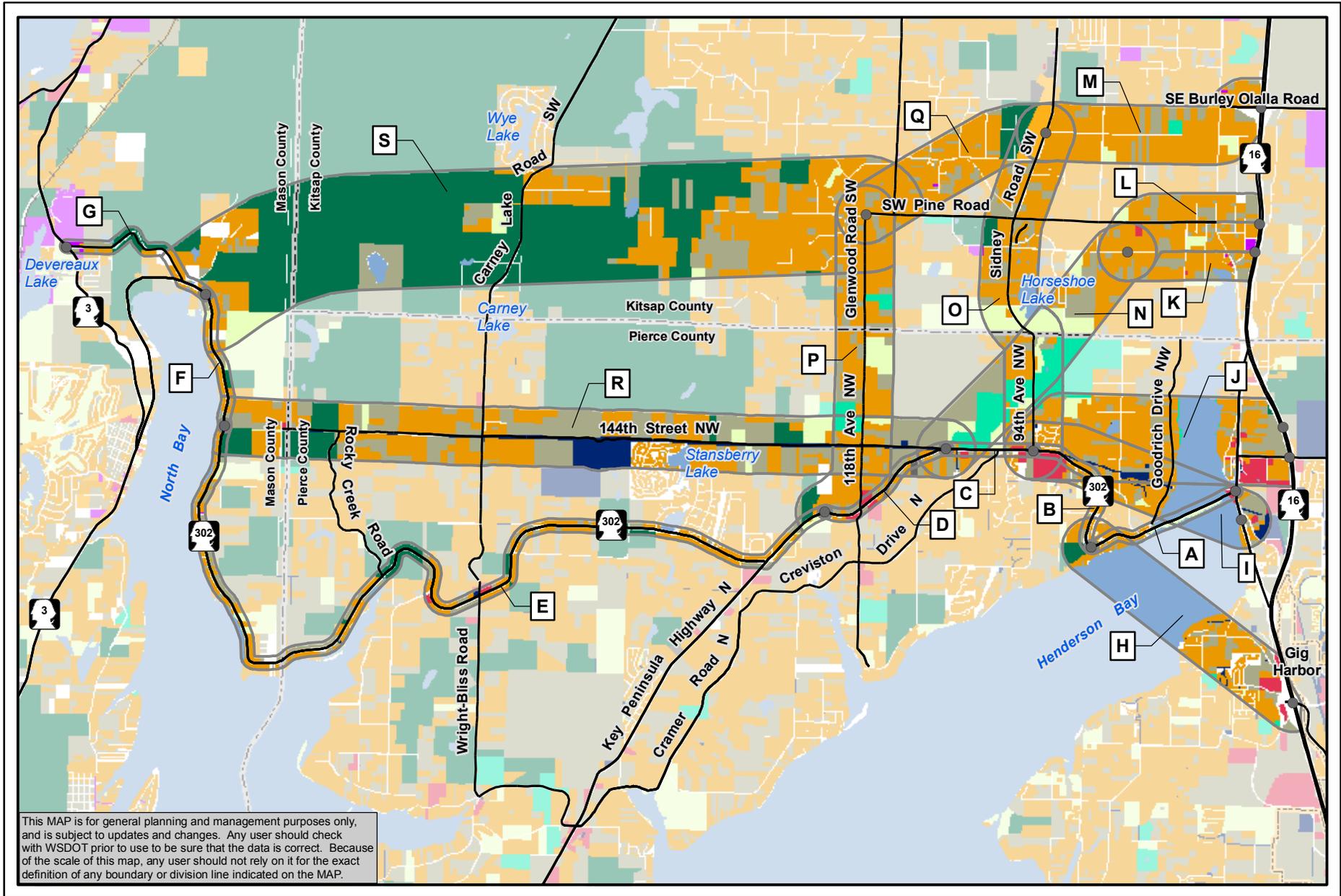
The requirement to have adequate infrastructure to support development, in place or planned within six years of development.

#### **Critical Area**

Critical areas include wetlands, streams, and other fish and wildlife habitat conservation areas; frequently flooded areas; geologically hazardous areas; and aquifer recharge areas.

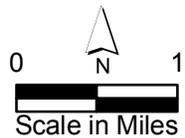
#### **Resource Land**

Land designated and set aside for forestry, agricultural, or mining uses.



DATE: February 29, 2008

Source: Kitsap County, Mason County, Pierce County



- |                     |                               |  |
|---------------------|-------------------------------|--|
| Corridor Segments   | Agriculture/Fishing           | Resource Lands                             |
| Corridor Segment ID | Government/Public/Institution | Retail/Commercial/Office                   |
| Corridor End Point  | Manufacturing/Industrial      | Transportation/Utilities/Communication/ROW |
| County Boundary     | Park/Recreation/Open Space    | Vacant                                     |
| Major Road          | Residential                   |  |
| Railroad            |                               |  |

**Figure 5-10**  
**Potential Environmental Constraints**  
**Existing Land Use**  
 SR 302 Corridor Study

## Future Land Use

### *Existing Conditions*

Zoning designations identified in the study area are shown in **Figure 5-11**; existing conditions for zoning are described as follows.

- Segments located in Mason County (F, G, and portions of E, R, and S) are zones with a rural designation that allows for a variety of land uses including residential, mixed use, and agriculture.
- Segments N, O, and P include agricultural zoning
- Segments I, J, O and S include mixed use zoning designations, which allow a mix of residential, commercial, and light industrial uses. Over half the area in Segment S is zoned as mixed use.
- The predominant zoning in all other segments is residential.

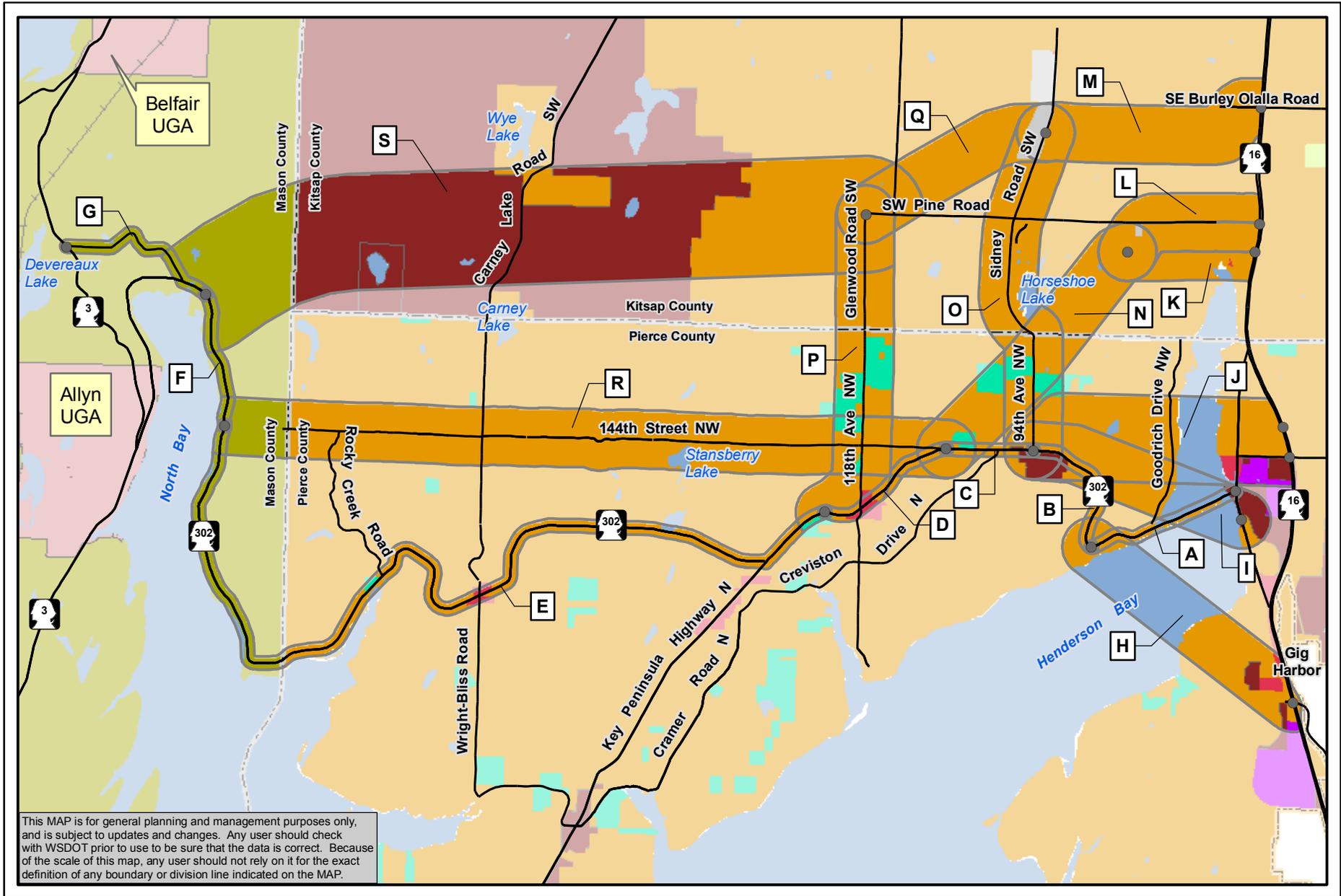
### *Primary Issues and Constraints*

- Under the GMA, all three counties (Pierce, Kitsap, and Mason) have established countywide planning policies, Comprehensive Plans, and development regulations to accommodate existing and projected future population and employment, and designate natural resource lands and critical areas. Under GMA, concurrency requires that infrastructure, including transportation, in place or planned within six years of development
- Zoning implements the future land use plan for the local jurisdiction, as adopted in its Comprehensive Plan.
- Roadways generally support planned residential and mixed use land uses.
- There is potential for conflict with planned land use patterns in areas zoned agricultural, as the presence of a highway can sometimes encourage adjacent commercial or light industrial development.

### Future Land Use Definitions

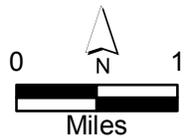
**Growth Management Act (GMA)**  
Sets goals to guide planning in the larger, faster growing counties and cities within those counties, and provides for a regional transportation planning program to be administered by WSDOT.

**Zoning**  
Statutory descriptions of the allowable uses of land as set forth by local planning authorities.



DATE: February 29, 2008

Source: Kitsap County, Mason County, Pierce County



- |                     |             |                                |
|---------------------|-------------|--------------------------------|
| Corridor Segments   | Agriculture | Mason County Rural Designation |
| Corridor Segment ID | Commercial  | Mixed Uses                     |
| Corridor End Point  | Industrial  |                                |
| County Boundary     | Public      |                                |
| Major Road          | Recreation  |                                |
| Railroad            | Residential |                                |

**Figure 5-11**  
**Potential Environmental Constraints**  
**Future Land Use**  
 SR 302 Corridor Study

## Agriculture and Resource Lands

### *Existing Conditions*

Agricultural and resource lands identified in the study area are shown in **Figure 5-12**; existing conditions for these elements are described as follows.

- Existing farmland is present in the vicinity of 94th Avenue W, south of Pierce-Kitsap County line. Additional land in this area is zoned as future farmland. 8 to 14% of segments C and O are covered with existing farmland in this area. Over 20% of segment N is covered. Segments N and O also include future designated farmland.
- Existing farmland is present along 118th Avenue W / Glenwood Road SW. Approximately 5% of Segment P is covered with existing farmland in this area; however, additional area is zoned as future farmland.
- Segments M and R have 1 to 5% coverage by existing farmland, with no additional zoned future farmland.
- Little to no existing or planned future farmland is present in the other corridor segments.
- Segment S has over 50% coverage by existing designated resource land (forest)
- Segments E, F, O, P, Q, and R have 2 to 12% coverage by existing designated resource lands.

### *Primary Issues and Constraints*

- Farmlands defined as “prime,” “unique,” or of state or local significance are protected by federal and state legislation. Early consultation with the NRCS, and state and local agencies is recommended, and a farmland Conversion Impact Rating should be determined, in coordination with these agencies, to identify the degree of impact for project alternatives.
- A Farmland Conversion Impact Rating considers both direct and indirect conversion of farmland.
- If the Farmland Conversion Impact Rating is high, alternatives must be considered to try to avoid farmland impacts.
- A high level of conversion of designated resource lands to transportation use has the potential to conflict with the intent to set aside land for use of that resource.

### **Agriculture Definitions**

#### **Prime Farmland**

Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion.

#### **Unique Farmland**

Land other than prime farmland that is used for production of specific high-value food and fiber crops.

#### **Farmland of Statewide or Local Significance**

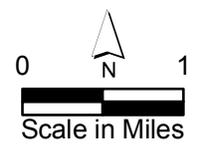
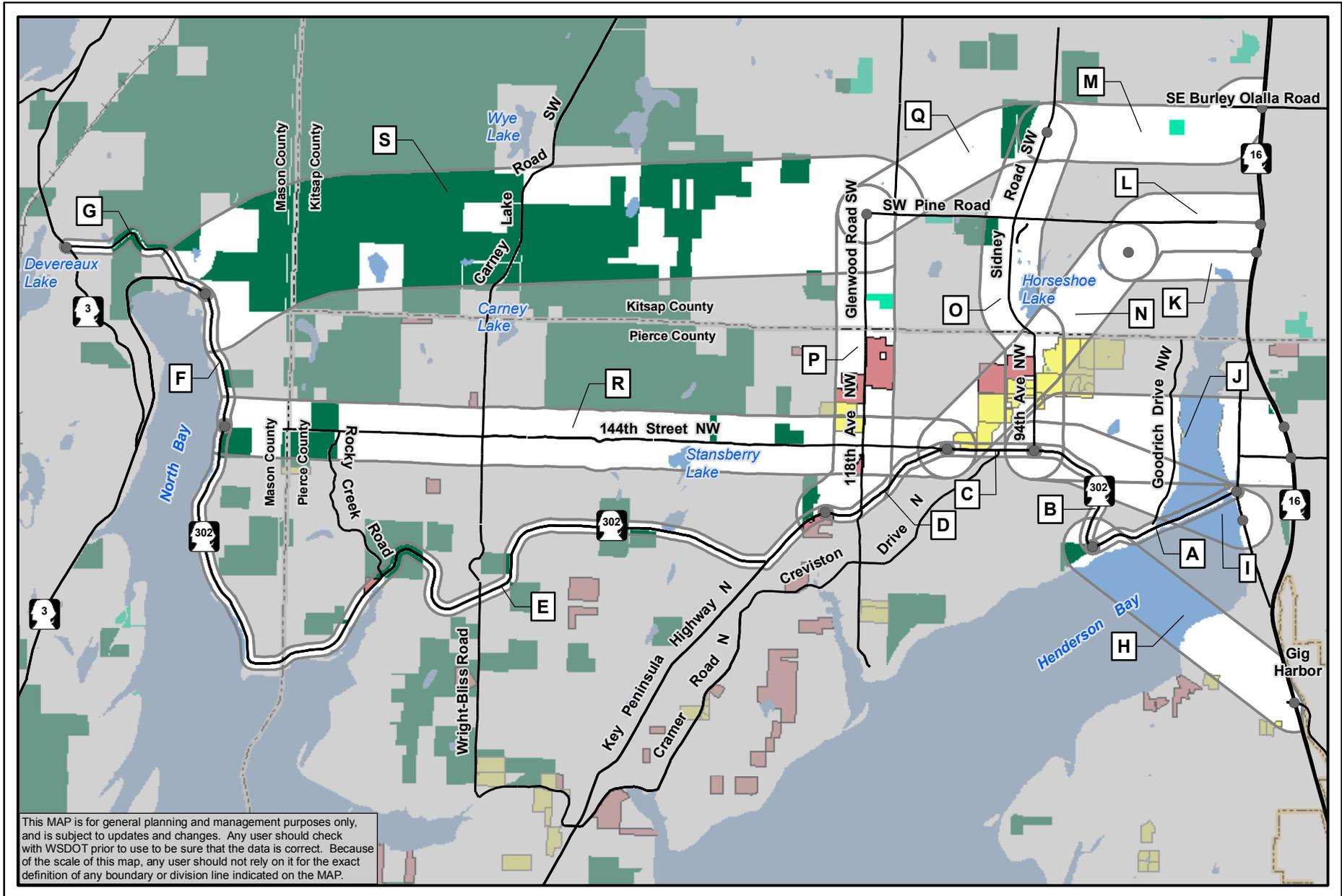
Farmland, other than prime or unique farmland, that is of statewide or local importance for the production of food, feed, fiber, forage, or oil-seed crops.

#### **Resource Land**

Land designated and set aside for forestry, agricultural, or mining uses.

#### **Indirect Conversion**

Acres remaining in a tract that is partially taken for right-of-way that (a) could no longer be farmed because the project would restrict access, or (b) would likely be converted because of accessibility to a new highway.



- A Corridor Segment ID
- Corridor End Point
- Major Road
- Corridor Segments
- County Boundary
- Railroad
- Existing Agricultural Land
- Future Agricultural Land
- Resource Lands

**Figure 5-12**  
**Potential Environmental Constraints**  
**Agricultural & Resource Lands**  
 SR 302 Corridor Study

## Social Factors

### *Existing Conditions*

Social elements identified in the study area are shown in **Figure 5-13**; existing conditions for these elements are described as follows.

- Existing SR 302 (Segments A through G) is fronted primarily by residential development
- Segments N, R, and S have the lowest percentage of residential development, although all segments include concentrated pockets of residences.
- All other segments primarily consist of residential land use.
- Several segments are centered on existing roadways (Segments A through G, K, L, O, P and R).

### *Primary Issues and Constraints*

- Higher concentration of residences increases the potential level of resident relocation that would result from roadway improvement or new construction.
- Social impacts include resident and commercial relocation that would result from property acquisition for a new or widened roadway, and impacts to community cohesion that could result.
- The potential for social impacts is highest where heavy concentrations of residences are present and where no major roadway currently exists; because a new highway can have the potential to divide a community.
- Although the potential for social impacts is less if the project consists of widening an existing roadway, it cannot be disregarded. Widening of a roadway, which results in the roadway carrying higher traffic volumes or higher levels of through-traffic, can have the potential to divide a community.
- Acquisition and relocation programs must be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended; relocation resources must be available to all relocatees without discrimination.
- A detailed community impact assessment will need to be completed for all alignment alternatives considered.
- Analysis must show that the project and potential relocations would not have a disproportionately high and adverse effect on minority or low-income populations.

### **Social Definitions**

#### **Community Cohesion**

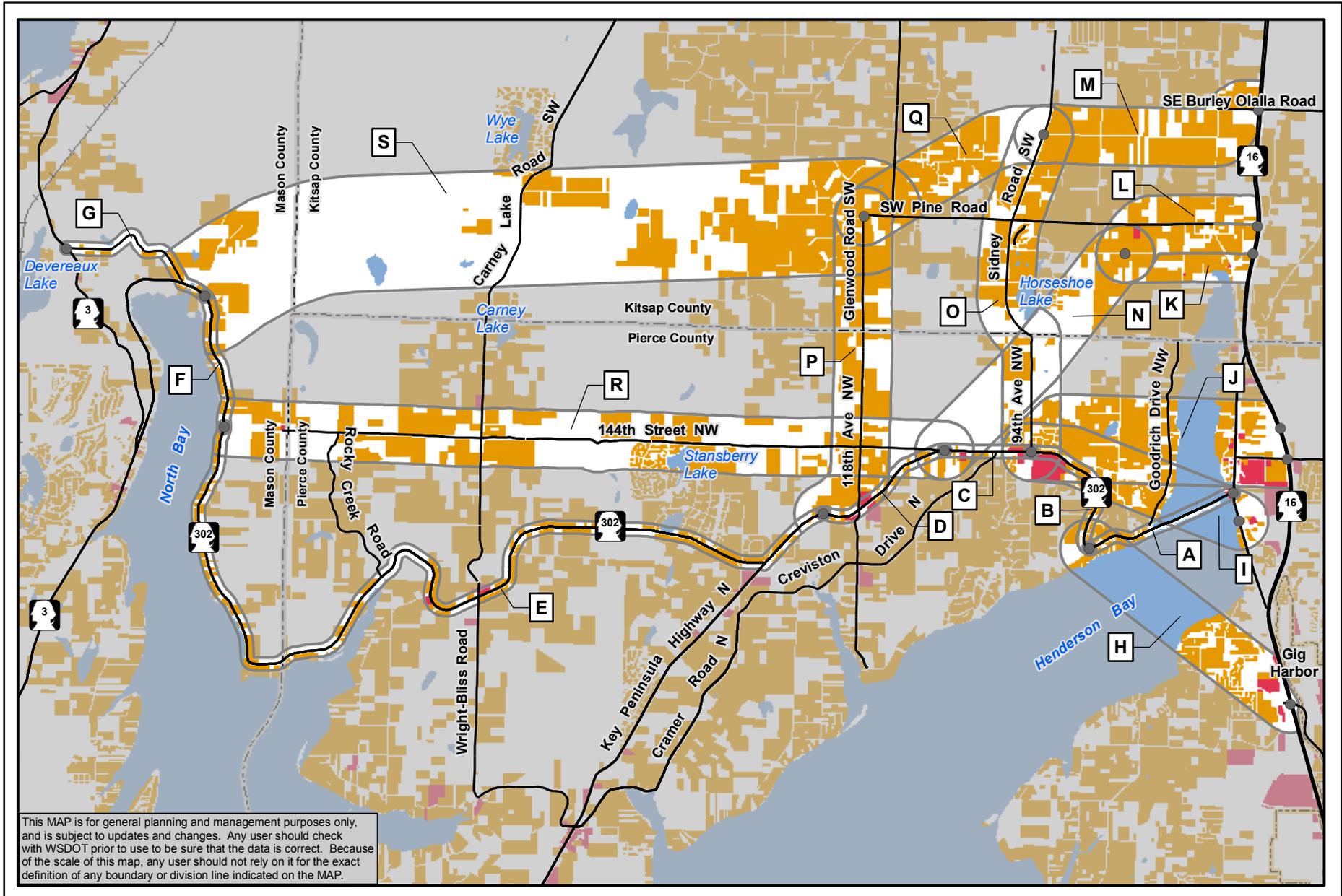
The ability of people to communicate and interact with each other in ways that lead to a sense of community, as reflected in the neighborhood's ability to function and be recognized as a singular unit.

#### **Community Impact Assessment**

A process to evaluate the effects of a transportation action on a community and its quality of life. The assessment process should include all items of importance to people, such as mobility, safety, employment effects, relocation, isolation and other community issues.

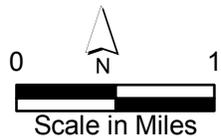
#### **Disproportionately High and Adverse Effect**

An adverse effect that: (a) is predominantly borne by a minority population and/or a low-income population; or (b) is suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.



DATE: February 29, 2008

Source: Kitsap County, Mason County, Pierce County



- Corridor Segments
- A Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- + Railroad
- Residential
- Retail/Commercial/Office

**Figure 5-13**  
**Potential Environmental Constraints**  
**Social Factors**  
 SR 302 Corridor Study

## Noise

### *Existing Conditions*

Noise elements identified in the study area are shown in **Figure 5-14**; existing conditions for these elements are described as follows.

- Current land use throughout the noise study area is rural or low-density suburban, with few existing noise sources other than the existing SR 302 and local roadways.
- Dwellings are adjacent to the roadway in all segments comprising the current SR 302 alignment (Segments A through G).
- For segments outside the current SR-302 alignment, a high density of existing residential land use occurs within Segments H, I, J, K, L, M, O, P and Q. It can be assumed that a relatively large number of dwellings in those segments would be near a new highway alignment within the corridor and therefore subject to new traffic noise.
- For segments outside the existing SR 302 alignment, the lowest density of existing residential land use occurs in Segments N, R and S. Residential land use comprises between 29% and 39% of the land within those segments. It can be assumed that greater opportunity exists for a new highway alignment to be constructed away from existing dwellings within those segments, in which case fewer residences would be subject to new traffic noise.

### *Primary Issues and Constraints*

- Roadway construction would cause temporary, localized noise increases. Temporary daytime construction activity is exempted from County noise ordinances. If nighttime roadway construction were required in order to avoid safety issues or to prevent traffic conflicts, then the construction would be required to satisfy nighttime noise limits at the property line of all existing residential land use. Otherwise, WSDOT would be required to request a temporary variance from County noise ordinances.
- If the includes improving the existing roadway along SR-302, then widening or shifting the road could move vehicles closer to existing dwellings. Doing so could increase the number of homes at which peak-hour roadway noise would exceed WSDOT's Noise Abatement Criteria (NAC).
- If the includes constructing a new highway alignment (or widening an existing street for a new highway alignment), then existing homes near the future roadway could experience noise exceeding the WSDOT's NAC. Furthermore, because existing noise levels at those locations are likely low, this action could cause noise increases exceeding WSDOT's Substantial Traffic Noise Increase criteria.
- WSDOT would be required to consider traffic noise abatement for all dwellings where future design year noise exceeds the NAC, or where a new roadway causes a Substantial Noise Increase.

#### Noise Definitions

##### **Decibel (dBA)**

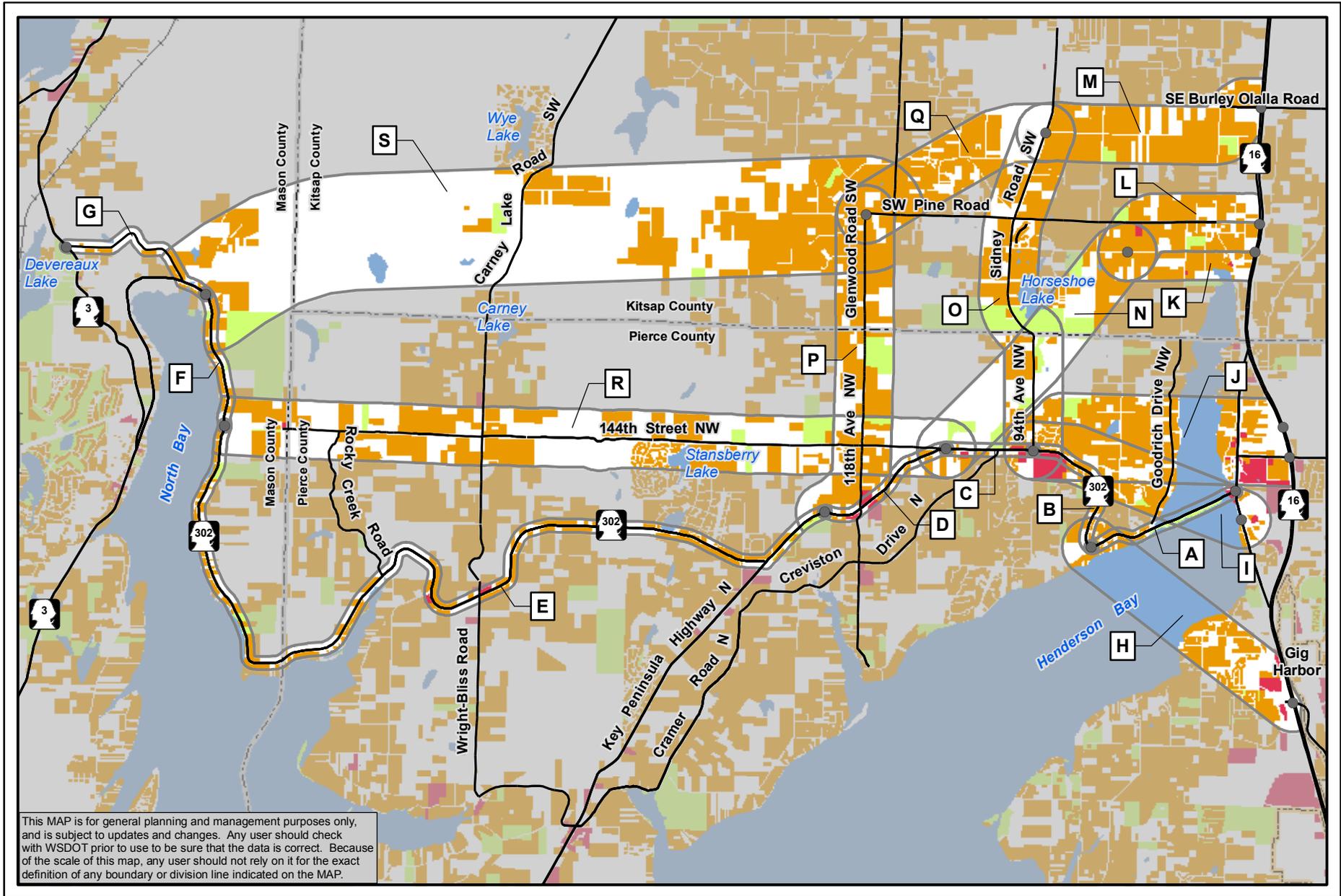
A weighted measure of sound level that simulates human hearing response. Noise can typically range from as low as 20 dBA in a quiet forest on a calm winter night, to as high as 90 dBA at a distance of 50 feet from a loud truck passing on the freeway.

##### **Noise Abatement Criteria (NAC)**

The traffic noise level above which WSDOT is required to consider traffic noise abatement. The NAC for residential areas is 66 dBA and the NAC for commercial buildings with outdoor use areas is 71 dBA.

##### **Substantial Noise Increase**

A traffic noise increase of at least 10 dBA during the peak-hour period.



DATE: February 29, 2008

Source: Kitsap County, Mason County, Pierce County



- Corridor Segments
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- Park/Recreation/Open Space
- Residential
- Retail/Commercial/Office

**Figure 5-14**  
**Potential Environmental Constraints**  
**Noise**  
 SR 302 Corridor Study

## Visual Quality

### *Existing Conditions*

Visual elements identified in the study area are shown in **Figure 5-15**; existing conditions for these elements are described as follows.

- Prominent shoreline environments are located at the west and east ends of the study area (Segments A, E, F, H, I, and J).
- Segments N and S have the lowest concentrations of development.
- Heavy concentrations of residential and commercial development are located in the eastern portion of the study area and along existing SR 302 (Segments E, H, I, J, K, L, M, P, and Q).
- The largest concentrations of recreation, open space and agricultural areas are near Segments F, N, O, and P.
- Several corridors are centered on existing roadways (Segments A through G, K, L, O, P and R).

### *Primary Issues and Constraints*

- Visual quality is assessed for view of roadway alignment alternatives, and views from roadway alignment alternatives.
- Visual quality tends to be higher near shoreline environments, due to the presence of water as a vivid visual element.
- Visual quality tends to be higher in less developed areas, as these areas are often more visually intact and harmonious with natural features.
- Viewer groups with the highest viewer sensitivity are frequently located within areas of residential or commercial development.
- Viewer groups with high viewer sensitivity are often located in or near recreational and agricultural areas.
- Visual quality is likely to be less affected by new roadway development centered on an existing roadway, because the roadway is already an existing visual element and part of the visual landscape.

### Visual Definitions

#### **Visual Quality**

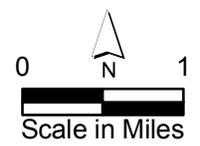
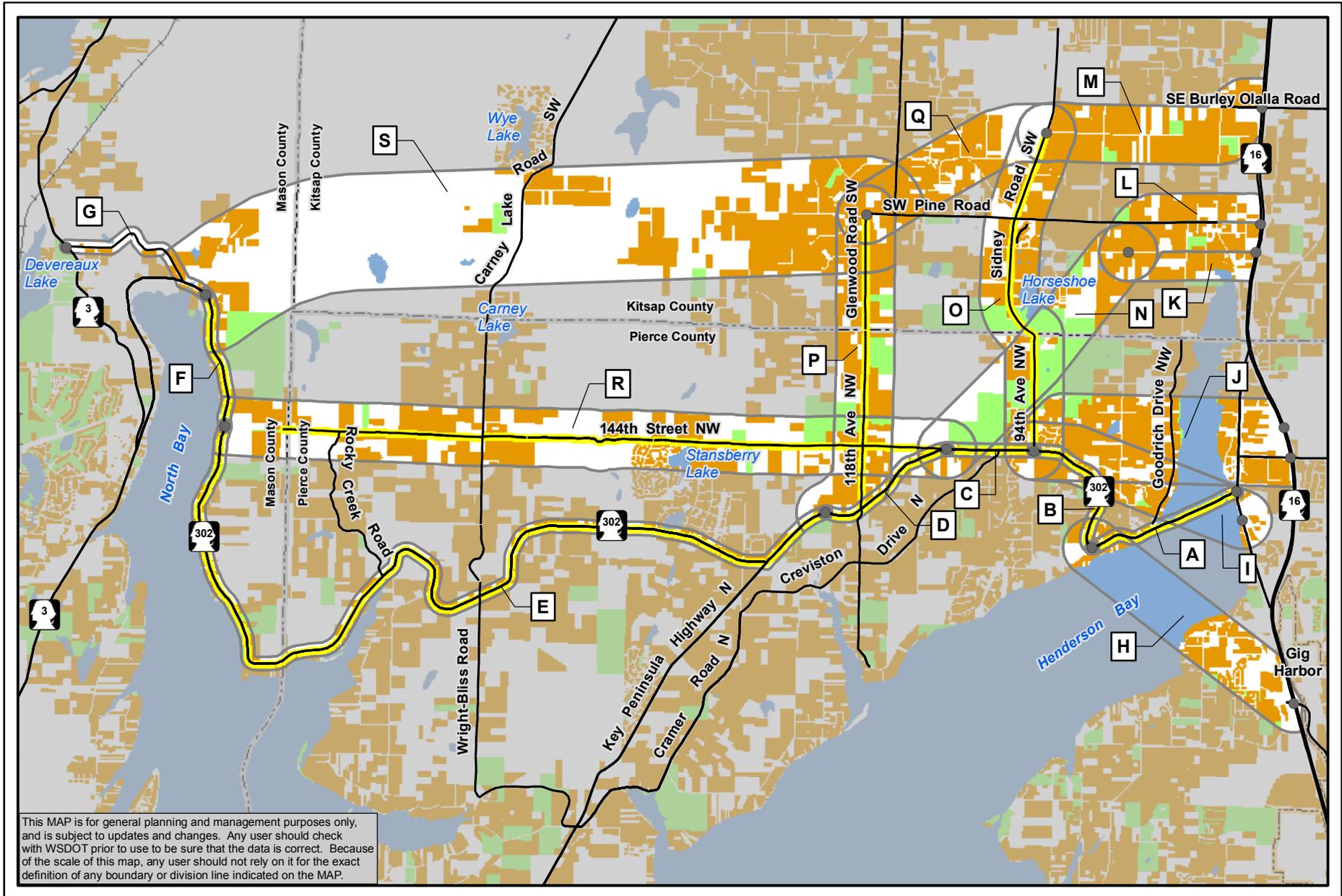
Character of the landscape, which generally gives visual value to a setting.

#### **Viewer Groups**

Classes of viewers differentiated by their visual response to a facility (roadway) and its setting. Response is affected by viewer activity, awareness, and values.

#### **Viewer Sensitivity**

The viewer's variable receptivity to the elements within the viewed environment. Sensitivity is affected by viewer activity and awareness.



- Corridor Segment
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- Residential & Commercial Uses
- Recreation, Open Space, & Agriculture
- Corridor Defined by Existing Roadway

**Figure 5-15**  
**Potential Environmental Constraints**  
**Visual Resources**  
 SR 302 Corridor Study

## Cultural Resources

### *Existing Conditions*

Existing historic, cultural, and archeological resources cannot be identified until detailed ground surveys and database inventories are completed, which was not feasible at the broad level of evaluation completed for this constraints assessment.

Land uses that have higher potential to include cultural resources, once detailed surveys and inventories are completed, are shown in **Figure 5-16**; existing conditions related to the potential for identification of cultural resources are described as follows.

- There are known archaeological sites within five of the corridor segments (Segments A, E, F, G and I)
- The Purdy Bridge (Segment A) is listed in the National Register of Historic Places (National Register).
- Prominent shoreline environments are located at the west and east ends of the study area (Segments A, E, F, H, I, and J).
- Heavy concentrations of residential and commercial development are located in the eastern portion of the study area and along existing SR 302 (Segments E, H, I, J, K, L, M, P, and Q).

### *Primary Issues and Constraints*

- The project is subject to Section 106 of the National Historic Preservation Act of 1966, as amended. Potential impacts identified under Section 106 are also subject to Section 4(f) of the Department of Transportation Act (see Public Lands).
- After the range of corridor alternatives is narrowed down to potential alignments, the Area of Potential Effects (APE) must be defined for each alignment alternative, in consultation between the Washington State Department of Archeology and Historic Preservation (DAHP) and WSDOT. The extent of the APE is influenced by the scale and nature of the undertaking.
- An archaeological survey will need to be conducted within the APE to determine the absence/presence of archaeological materials. There is a high probability for unknown and significant archaeological resources within the APEs of alternatives that are located near prominent shoreline environments, or in proximity to a water body, stream crossing or wetland complex.
- There is a high probability that eligible historic properties will be found within the APE of alternatives that are located within heavy concentrations of development. A historic resource survey will need to be completed for all developed properties within the APE greater than 45 years in age. Washington State Historic Property Inventory Database forms will need to be filled out for each building and/or structure that meets this criterion.
- Any work done in and around the Purdy Bridge, or on or near any additional properties that a survey identifies as eligible for the National Register, has the potential to result in an adverse effect determination under Section 106 and may require consultation with DAHP and the Advisory Council on Historic Preservation (ACHP) to resolve the effect or negotiate a Memorandum of Agreement.

### Cultural Definitions

#### **Area of Potential Effects (APE)**

Geographic area within which an undertaking may directly or indirectly cause change of character or use of historic properties eligible archaeological sites, traditional cultural properties, and historic structures.

#### **Historic Properties**

Any district, site, building, structure or object included in or eligible for inclusion in the National Register of Historic Places.

#### **Traditional Cultural Properties**

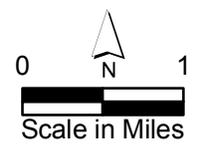
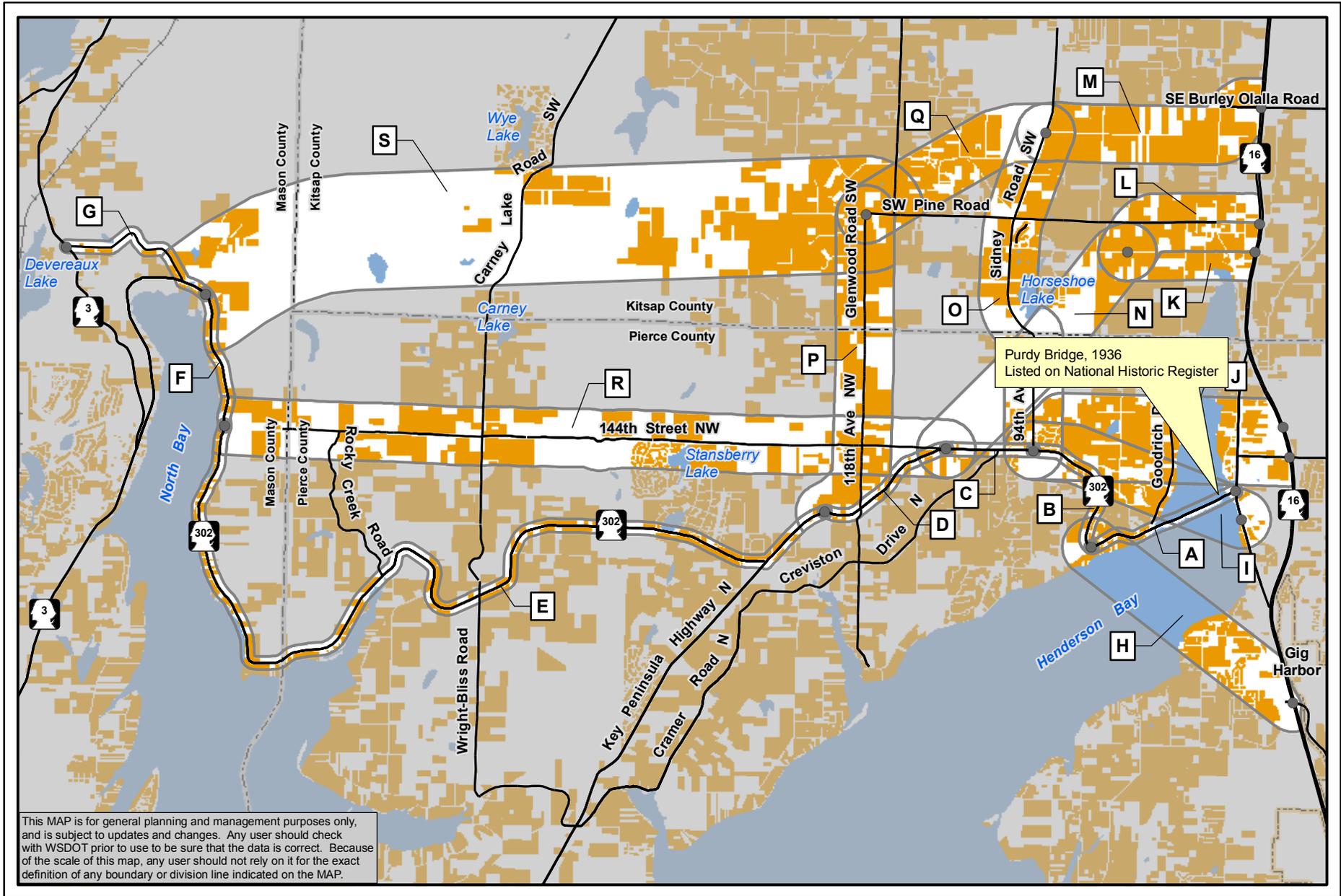
A district, site, building, structure, or object that is valued by a human community for the role it plays in sustaining the community's cultural integrity; generally a place that figures into important community traditions or culturally important activities.

#### **National Register of Historic Places (National Register)**

A list of districts, sites, buildings, structures or objects, each determined by NPS to be of historic, cultural, architectural, archaeological, or engineering significance at the national, state, or local level.

#### **Memorandum of Agreement**

A formalization of the means of resolving adverse effects agreed upon by the consulting parties, serving to specify mitigation, identify responsibility, render ACHP comment, and acknowledge effects on Historic Properties.



- Corridor Segments
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- Residential

**Figure 5-16**  
**Potential Environmental Constraints**  
**Cultural Resources**  
 SR 302 Corridor Study

## Public Lands

### *Existing Conditions*

Recreational and state-owned lands identified in the study area are shown in **Figure 5-17**; existing conditions for these elements are described as follows.

- Parks, recreational areas, or designated open space make up 5% or more of Segments N, O, and P.
- No parks, recreational areas, or designated open space are identified in Segments A, B, or D.
- All other segments include some park, recreational area, or designated open space (less than 5% of total segment area).

### *Primary Issues and Constraints*

- Potential impacts to public recreational lands are subject to Section 4(f) of the Department of Transportation Act. Potential impacts to cultural resources (see Cultural Resource discussion) or wildlife or waterfowl refuge areas are also subject to Section 4(f).
- Section 4(f) declares a national policy to preserve, where possible, the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. A Section 4(f) property cannot be converted to transportation use unless a determination is made that:
  - The transportation project will not have more than a “de minimus impact” on the area; or
  - There is no “feasible and prudent alternative” to using the property; or
  - The transportation project includes “all possible planning” to minimize harm to the property resulting from such use.
- As the corridor alternatives are narrowed and potential alignments identified, WSDOT will coordinate with local jurisdictions to identify any additional public recreational lands that are present within the corridor.

### Public Lands Definitions

#### **Section 4(f) Property**

Any publicly owned land from a public park, recreation area, wildlife or waterfowl refuge, or historic site of national, state, or local significance.

#### **De minimus impact**

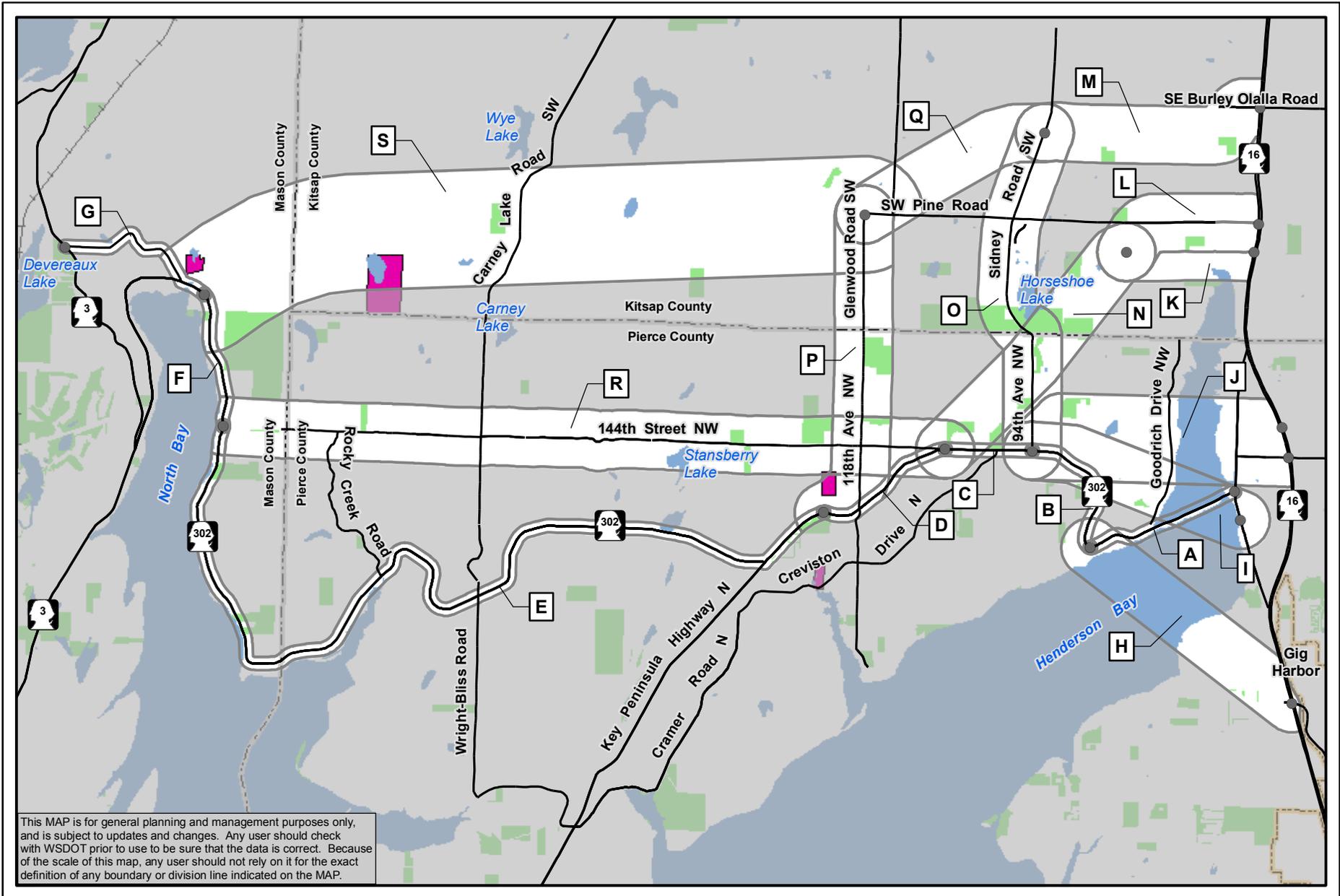
For historic sites, this means a determination of “no adverse effect” or “no historic properties affected” under Section 106 of the National Historic Preservation Act. For parks, recreational areas, or wildlife or waterfowl refuges, it means that an impact does not adversely affect the activities, features, and attributes of the property.

#### **Feasible and prudent alternative**

Avoids using Section 4(f) property and does not cause other severe problems of a magnitude that outweighs the importance of protecting the Section 4(f) property.

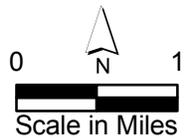
#### **All possible planning**

All measures that would reduce the adverse impacts resulting from the use of Section 4(f) property, unless some measures are not prudent.



DATE: February 29, 2008

Source: Kitsap County, Mason County, Pierce County, Washington Department of Natural Resources



- Corridor Segments
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- Park/Recreation/Open Space
- State-Owned Lands

**Figure 5-17**  
**Potential Environmental Constraints**  
**Recreational Lands**  
 SR 302 Corridor Study

## Hazardous Materials

### *Existing Conditions*

Potential hazardous material elements identified in the study area are shown in **Figure 5-18**; existing conditions for these elements are described as follows.

- County and WSDOT GIS files included listings for Ecology's Confirmed or Suspected Contaminated Sites (CSCS) and leaking underground storage tank (LUST) databases. Those databases indicate 14 reported hazardous material spill sites within the combined alternative corridor segments.
- Segments A,C,I,J, and O include the highest density of CSCS or LUST sites, expressed as sites per mile of segment. The density of reported sites within these segments ranges from one to six spill sites per mile of corridor. The highest density of six spill sites per mile of corridor was identified in Segment A; all others are under three spill sites per mile. This is lower than the density of hazardous material sites often found along corridors through urban commercial and industrial areas, which can exceed 10 to 20 spill sites per mile. Most of the reported sites are LUSTs at gas stations. It is unknown at this time which, if any, of the reported LUST or CSCS sites may have caused soil and groundwater contamination.
- Segments B,C,D,I and J have the highest levels of current commercial or industrial land use within the segment. Commercial and industrial land use is an indicator of the possible presence of gas stations, auto repair shops, and other commercial activity that sometimes use and store hazardous materials. Therefore, those land uses pose an elevated risk of including facilities with historical hazardous material releases.

### *Primary Issues and Constraints*

- The presence of historical spill sites near an alignment alternative could impact the project in several ways. It could expose construction workers to contaminated soil or groundwater; it could cause costly construction delays while specially trained contractors remove encountered contamination; and it could expose WSDOT to legal liability associated with acquiring contaminated property.
- After the roadway alignment alternatives are selected, WSDOT will conduct Phase 1 studies to identify and evaluate all reported spill sites within a short distance of the alignment.
- If the Phase 1 study indicates any reported spill sites have not yet been cleaned up by the current property owner, then WSDOT may be required to conduct supplemental Phase 2 field investigations to define the extent of contamination before construction can begin.
- WSDOT could request the current owners remediate their sites before WSDOT acquires the property. Alternatively, WSDOT could acquire contaminated property, and proceed with site remediation on its own.
- In the event that unreported contamination is encountered during roadway construction, then WSDOT will retain specially trained and certified cleanup crews to remediate the contamination before roadway construction continues.
- As the corridor alternatives are narrowed and potential alignments identified, ground survey and review of historical records and Ecology databases will be required to identify any additional potentially contaminated sites that may be present.

### Hazardous Materials Definitions

#### **Model Toxics Control Act (MTCA)**

Washington state regulation (WAC 173-340) governing reporting, monitoring, and cleanup of new and historical spills of hazardous materials.

#### **Hazardous Materials**

Substances regulated under the state MTCA, or similar federal regulations. These materials have the potential to contaminate soil or groundwater if they are accidentally spilled.

#### **CSCS and LUST Databases**

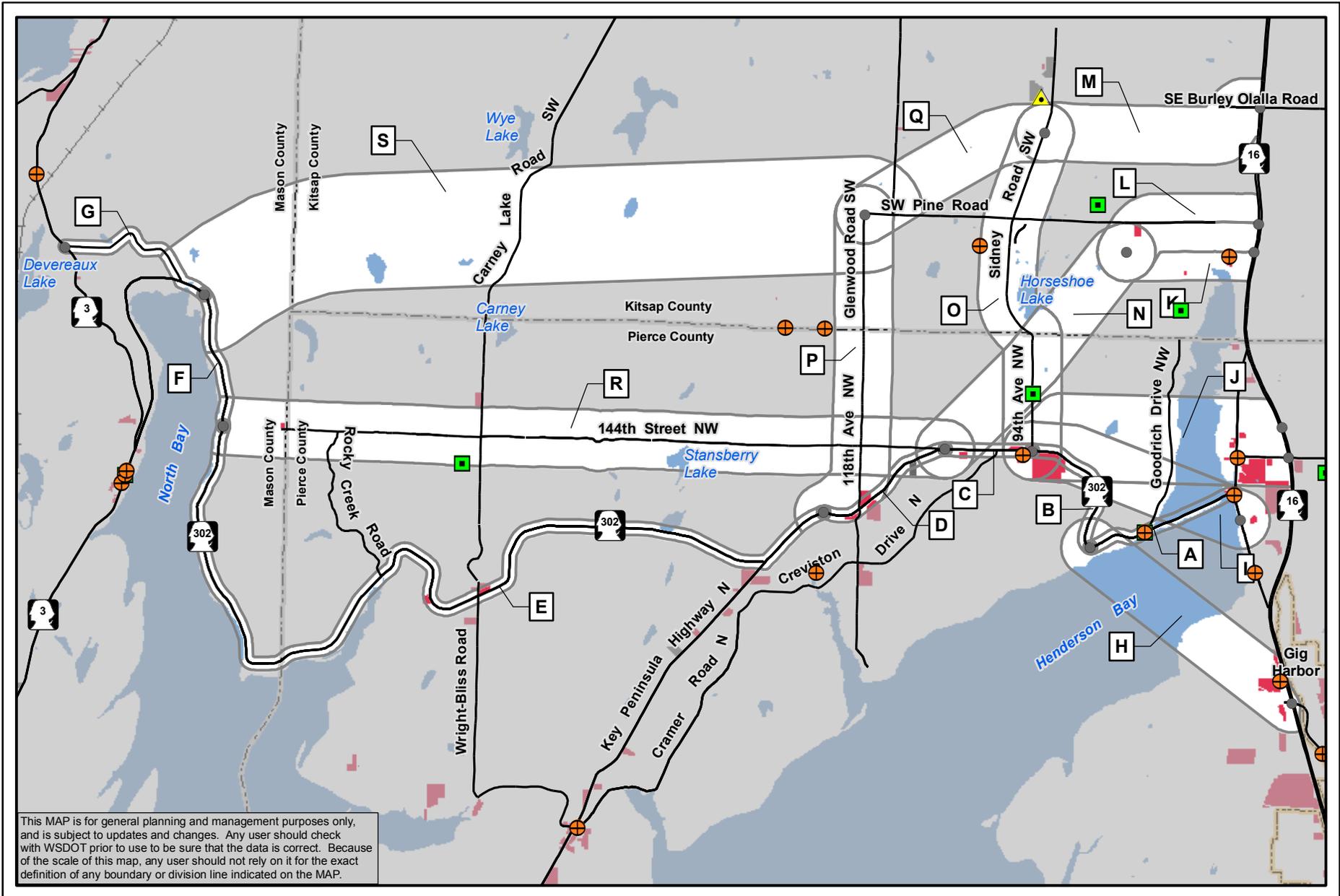
Ecology's Confirmed or Suspected Contaminated Sites (CSCS) and Leaking Underground Storage Tank (LUST) databases.

#### **Phase 1 Environmental Site Assessment**

Preliminary assessment to review existing regulatory files to identify historical operations that reported historical spills. The study typically includes a search of regulatory databases, site reconnaissance, and review of agency files.

#### **Phase 2 Investigation**

Field investigation to collect soil and groundwater samples, and to analyze the samples for contamination caused by releases of hazardous materials.

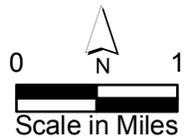


Source: Washington Department of Ecology, Pierce County, Kitsap County, Mason County



DATE: February 29, 2008

- Corridor Segments
- Corridor Segment ID
- Corridor End Point
- County Boundary
- Major Road
- Railroad
- Retail/Commercial/Office
- Manufacturing/Industrial
- Known Contaminated or Suspected Contaminated Sites
- Known Hazardous Waste Handlers
- Known Leaking Underground Storage Tanks



**Figure 5-18**  
**Potential Environmental Constraints**  
**Ecological Hazards**  
 SR 302 Corridor Study

## Energy and Global Climate Change

### *Existing Conditions*

Most of the vehicles traveling on SR 302 and the local roads serving the state highway use fossil fuels (gasoline or diesel) and emit carbon dioxide (CO<sub>2</sub>) from their tailpipes. CO<sub>2</sub> is one of the greenhouse gases (GHGs) recognized to contribute to ongoing global climate change. The issue of how emissions from human activities may affect the global climate has been the subject of extensive international research in the past several decades (Intergovernmental Panel on Climate Change [IPCC] 2007). There is now a broad consensus among atmospheric scientists that emissions caused by humans have already caused measurable increases in global temperature and are expected to result in significantly greater increases in temperature in the future. However, there is still considerable uncertainty about the exact magnitude of future global impacts and the best approach to mitigate the impacts. The IPCC reports that some level of global climate change is likely to occur, and that there is a significant possibility that it will result in adverse environmental effects. Several alternative mitigation measures were evaluated by the worldwide scientific community to reduce global emissions, including the first round of worldwide reductions in GHG emissions, as prescribed by the current Kyoto Protocol.

### *Primary Issues and Constraints*

In response to growing worldwide concerns, Washington State governor Christine Gregoire issued Executive Order 07-02, committing the State to reducing its GHG emissions to 50% of year 1990 levels by the year 2050 (Ecology 2007). To achieve this goal, Ecology is leading the Washington Climate Action Team (CAT), which is currently developing a set of methods to quantify and reduce GHG emissions. The CAT includes several working groups to focus on key issues, including how to reduce GHG emissions from transportation sources. That issue is being led by the Transportation Working Group or TWG. The TWG recommends a series of steps to reduce GHG emissions from statewide roadways (Ecology 2007). One of those draft recommendations is TWG Mitigation Option T-5, "Quantification of GHG Impacts of Transportation Plans, Programs, and Projects". This recommended mitigation option calls for refinement of existing GHG emission models to allow reliable estimation of regional emissions from individual roadway projects. The refined models would then be used to compare how each project alternative could affect regional GHG emissions. The SEPA/NEPA environmental documents that will be prepared for the SR 302 project will include an estimate of regional GHG emissions for each project alternative, and GHG emissions will be one of the factors used to select the final preferred project alternative.

### Energy and Climate Change Definitions

#### **Greenhouse Gas (GHG)**

Natural or man-made gases that can accumulate in the atmosphere and contribute to global climate change.

#### **Intergovernmental Panel on Climate Change (IPCC)**

United Nations international committee of scientists studying global climate change.

#### **Climate Action Team**

Committee, led by Washington Department of Ecology, tasked to develop ways to reduce state-wide greenhouse gas emissions.

#### **Transportation Working Group (TWG)**

Sub-committee of the Climate Action Team working to reduce state-wide emissions from transportation sources.

## Public Services and Utilities

### *Existing Conditions*

- Public services in a project area may include fire, police, schools, parks and recreational facilities, and maintenance services. Emergency service providers within the study area include:
  - Pierce, Kitsap, and Mason County fire departments
  - Pierce, Kitsap, and Mason County sheriff departments
  - Washington State Patrol
- Utilities may include municipal agencies, special utility districts, and private companies that provide services such as electricity, natural gas, water, wastewater or stormwater collection, and telecommunications.
- Numerous schools, parts, utilities, and public service providers are present within the study area. As the corridor alternatives are narrowed and potential alignments identified, ground survey and coordination with local agencies will be required to identify utilities and services that could potentially be disrupted by the Project.

### *Primary Issues and Constraints*

- Transportation projects may impact public services and utilities by increasing demand beyond the capability of service providers or by disrupting service.
- Construction impacts may include requiring relocation or adjustment of utility lines or facilities or interfering with police, fire, and emergency services.
- Higher concentration of development increases the potential level of utility or service disruption that would result from roadway improvement or new construction.
- Roadway construction within Segment S has higher potential to increase demand for utilities and services, since no major roadway is present and large amounts of the area are undeveloped.
- Under FHWA's NEPA implementing regulations, impacts on public services are considered as a socio-economic indicator. WSDOT has no checklist to guide analysis of utility and public service impacts; however, impacts on public services are covered in the Social Element Discipline Report
- Under SEPA regulations, public services and utilities are included in the analysis of impacts to the built environment. Under SEPA, "impacts to public services and utilities" refers to potential significant disruption or increased demand on services.
- Construction mitigation measures will include mapping of all utilities prior to project construction, and developing coordination plans with utility and service providers to minimize disruptions.

### **Public Service and Utility Definitions**

#### **Public Service**

Fire, police, schools, parks or other recreational facilities, maintenance, communications, water/stormwater, sewer/solid waste, and other governmental services or utilities.

#### **Utility**

Privately, publicly, or cooperatively owned lines, facilities, and systems for producing, transmitting, or distributing communications, cable television, electric power, light, heat, gas, oil, crude products, water, steam, waste, stormwater not connected with highway drainage, fire or police signal systems, street lighting systems, and traffic control system interties, which directly or indirectly serve the public.

#### **Utility Relocation**

The adjustment of utility facilities required by a highway project.; includes removing and installing facilities, acquiring necessary property rights in the new location, moving or rearranging existing facilities, or changing the type of facility, including any necessary safety and protective measures, or constructing a replacement facility.

## Summary Matrix

Table 5-2 presents an “at-a-glance” summary of the environmental constraints assessments for each of the study corridor segments. For each environmental resource area, each alternative corridor segment is identified as potentially having a high constraint, medium constraint or low/no constraint. The definition of the three constraint levels vary between the resource areas analyzed, based on several factors, including:

- the potential to impact each resource area based on the level to which each corridor segment is occupied by the resource;
- the regulatory compliance associated with each resource area; and
- the constructability of the Project within each corridor segment, based on the resource areas.

Tables 5-3 and 5-4 define the thresholds that were established to determine the level of potential constraint (i.e. high, medium, low/no) in each environmental resource area for the purposes of the summary matrix. Please note, for the broad range of alternative corridor segments, the projected level of environmental constraint is based upon observable levels of development and available GIS data. Detailed field survey and technical analysis will be needed to evaluate the environmental impacts of the narrower range of alignment alternatives.

Table 5-2. Summary of Environmental Constraints

Corridor Segment	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
<b>NATURAL ENVIRONMENT</b>																			
Geology / Soils	●	◐	◑	◑	◑	◑	○	◑	◑	◑	◑	◑	◑	◑	◑	●	◑	◑	◑
Air Quality	○	○	○	○	○	○	○	◑	◑	◑	○	○	○	○	○	○	○	○	○
Surface Waters	●	○	○	◑	◑	◑	◑	●	●	●	◑	◑	◑	◑	◑	●	◑	●	●
Shoreline	●	○	○	○	●	●	◑	●	●	●	◑	○	○	◑	◑	○	○	◑	◑
Wetlands	●	○	○	○	◑	◑	○	●	●	●	◑	◑	◑	◑	◑	◑	◑	○	◑
Floodplain	●	○	○	◑	◑	○	○	●	◑	◑	○	○	○	◑	◑	◑	○	○	○
Groundwater	◑	◑	◑	◑	◑	○	○	◑	◑	◑	○	○	○	◑	◑	◑	◑	○	○
Vegetation and Wildlife	●	○	○	○	◑	●	○	◑	●	●	◑	◑	○	◑	○	◑	◑	◑	◑
Aquatic Wildlife	●	○	○	◑	●	●	◑	●	●	●	◑	◑	◑	◑	◑	◑	◑	◑	◑
<b>BUILT ENVIRONMENT</b>																			
Existing Land Use	○	○	○	○	○	○	○	●	●	●	◑	◑	●	●	◑	◑	●	◑	●
Future Land Use Patterns	○	○	○	○	○	○	○	○	○	○	○	○	○	◑	◑	◑	○	○	○
Agriculture and Resource Lands	○	○	●	○	◑	◑	○	○	○	○	○	○	◑	●	●	●	◑	◑	●
Social Factors	◑	◑	◑	◑	◑	◑	◑	●	●	●	●	●	●	●	◑	◑	●	◑	●
Noise	●	●	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●	◑	◑
Visual	◑	◑	◑	◑	◑	●	◑	◑	◑	◑	◑	◑	◑	●	●	◑	◑	●	●
Cultural	●	◑	◑	◑	●	●	●	●	●	●	●	◑	◑	◑	●	◑	◑	●	◑
Public Lands	○	○	◑	○	◑	◑	◑	◑	◑	◑	◑	◑	◑	●	●	●	◑	◑	◑
Hazardous Materials	●	◑	◑	◑	○	○	○	○	◑	◑	○	○	○	○	○	○	○	○	○
Energy / Global Climate Change	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Public Utilities / Services	◑	◑	◑	◑	◑	◑	◑	●	●	●	●	●	●	●	◑	◑	●	◑	●

For the broad range of alternative corridor segments, the projected level of environmental constraint is based upon observable levels of development and available GIS data. Detailed field survey and technical analysis will be needed to evaluate the environmental impacts of the narrower range of alignment alternatives.

● = High Constraint      ◑ = Medium Constraint      ○ = Low/No Constraint

**Table 5-3. Description of Natural Environment Thresholds**

Element of the Natural Environment	Threshold Description
<b>Geology / Soils</b>	<p>High = segments where geological hazards occupy from 50% to 100% of the area defined for analysis for that segment</p> <p>Moderate = segments where geological hazards occupy from 10% to 49% of the area defined for analysis for that segment</p> <p>Low = segments where geological hazards occupy less than 10% of the area defined for analysis for that segment</p>
<b>Air Quality</b>	<p>High = segment located within air quality non-attainment or maintenance area</p> <p>Medium = segment not located within air quality non-attainment or maintenance area; but located within a UGA</p> <p>Low = segment not located within air quality non-attainment or maintenance area; nor located within a UGA</p>
<b>Surface Waters</b>	<p>High = greater than 10,000 feet water courses; and/or greater than 10% coverage of water bodies</p> <p>Medium = 5,000 to 10,000 feet water courses; and/or greater than 0% but less than 10% coverage of water bodies</p> <p>Low = less than 5,000 feet water courses; and 0% coverage of water bodies</p>
<b>Shorelines</b>	<p>High = major presence of coastal shoreline; and/or designated freshwater shoreline management area greater than 10% of segment area</p> <p>Medium = minor presence of coastal shoreline; and/or designated freshwater shoreline management area less than 10% of segment area</p> <p>Low = no designated shoreline management areas</p>
<b>Wetlands</b>	<p>High = greater than 15% observed wetlands coverage</p> <p>Medium = 1 to 15% observed wetlands coverage</p> <p>Low = less than 1% observed wetlands coverage</p>
<b>Floodplain</b>	<p>High = Segments with &gt; 25% of total area comprised of 100-year floodplain</p> <p>Medium = Segments with 10 to 25% of total area comprised of 100-year floodplain</p> <p>Low = Segments with &lt;10% of total area comprised of 100-year floodplain.</p>
<b>Groundwater</b>	<p>High = Segments with 3 or more critical aquifer recharge areas and high concentration of sanitary control areas</p> <p>Medium = Segments with 1 or 2 critical aquifer recharge areas and/or high concentration of sanitary control areas</p> <p>Low = Segments with no critical aquifer recharge areas and low concentration of sanitary control areas</p>
<b>Vegetation and Wildlife</b>	<p>High = greater than 10% priority habitat or Bald Eagle management zone</p> <p>Medium = priority wildlife or vegetation have been identified, but concentrations were not identified and comprise less than 10% of the segment</p> <p>Low = no priority wildlife or vegetation have been identified</p>
<b>Aquatic Wildlife</b>	<p>High = project would occur where concentrations of shrimp and shellfish are present</p> <p>Medium = project would cross streams where Priority Fish Species occur</p> <p>Low = no occurrence of shrimp or shellfish and no streams with Priority Fish Species</p>
<b>Energy / Global Climate Change</b>	<p>Medium = potential effect to climate change would be considered equally for all corridor segments. The relative potential for increase in GHG emissions cannot be assessed at the broad level of detail presented in this Report, but will be evaluated as part of the environmental analysis.</p>

Table 5-4. Description of Built Environment Thresholds

Element of the Built Environment	Threshold Description
<b>Existing Land Use</b>	High = conversion of substantial resource/agricultural land to transportation use; and/or no major roadway currently is present in area Medium = project would require conversion of existing land use to transportation along existing major roadway Low = project would require conversion of existing land use to transportation along existing highway
<b>Future Land Use Patterns</b>	High = presence of new or widened roadway is likely to conflict with planned future land use in the segment Medium = presence of new or widened roadway is not likely to conflict with planned future land use in the segment Low = presence of new or widened highway would support planned future land use in the segment
<b>Agriculture / Resource Lands</b>	High = greater than 5% existing farmland coverage, future designated farmland, and/or resource area Medium = 1 to 5% existing farmland coverage, future designated farmland, and/or resource area Low = 0 to 1% existing farmland coverage and/or resource area, and no future designated farmland
<b>Social Factors, and Utilities and Public Services</b>	High = heavy concentrations of residential development; project would result in new major roadway within the community Medium = heavy concentrations of residential development; project would result in widening existing roadway within the community Low = low concentrations of residential development; project would result in widening existing roadway within the community
<b>Noise</b>	High = high density of existing housing (greater than 50%), resulting in a high probability that a relatively large number of dwellings would be near a new or wider highway alignment and therefore subject to new traffic noise Medium = medium density of existing housing (20 to 50%), resulting in a medium probability that a large number of dwellings would be near a new or wider highway alignment and therefore subject to new traffic noise Low = low density of existing housing (less than 20%), resulting in a lower probability that a large number of dwellings would be near a new or wider highway alignment and therefore subject to new traffic noise
<b>Visual</b>	High = low concentration of human development; heavy concentration of recreation, farmland, open space and/or shoreline Medium = include shoreline; potential for removal of tree canopy; high concentration of human development and/or existing roadway Low = high concentration of human development and/or existing roadway; low concentration of natural elements
<b>Cultural</b>	High = high concentration of human development; proximity to known archeological site; and/or includes coastal shorelines, major water bodies, or major water crossings Medium = medium concentration of human development, water bodies and/or water crossings Low = low concentration of human development; no major water bodies and/or water crossings; no known archeological sites
<b>Public Lands</b>	High = public land is present and most likely could not be avoided by the project Medium = public land is present and could more likely be avoided by the project Low = public land is not present
<b>Hazardous Materials</b>	High = greater than 20% existing industrial/commercial coverage and/or greater than 5 identified spill sites per mile Medium = 8 to 20% existing industrial/commercial coverage and/or 1 to 5 identified spill sites per mile Low = less than 8% existing industrial/commercial coverage and less than 1 identified spill site per mile

## What did we learn from this environmental constraints assessment?

Following are the key conclusions from the environmental constraints assessment:

- Potential for impacts exists in 19 resource areas in the built and natural environment.
  - The environmental constraints assessment shows that many trade-offs exist between the different environmental resources are present among the corridor segments. Identification of primary issues and constraints do not lead to clear ranking between segments.
  - The environmental constraints assessment is based on high-level GIS data, the accuracy of which has yet to be verified in the field. This assessment is the first step in extensive environmental evaluation that will be conducted for this Project, and is intended to set the groundwork for the more detailed review that will be completed to narrow the broad range of corridor alternatives to project alignments, and ultimately for the analysis completed for the environmental document.
  - Often, trade-offs between elements of the built and natural environment are most apparent. Where high levels of development exist, the project has higher potential for community impacts, but may have lower potential for impacts to the natural environment. Where water bodies or largely undeveloped areas are present, community impacts may be lower, but higher potential exists for impacts to natural resources.
- At this broad level of assessment, it is difficult to differentiate between some 'parallel' segments that would perform similar traffic flow function. In these cases, a more focused transportation planning, engineering and environmental constraints analysis may be useful, to determine if one segment emerges as the less constrained option. Parallel segments where more focused constraints analysis is warranted include the following:
    - The segments that would require a bridge across Henderson Bay (Segments A, H, I and J) – this assessment shows that all corridor options would have significant built and natural environment constraints.
    - SW Pine Road (Segment K) and SW Spruce Road (Segment L) – this assessment shows potential for high built environment constraints along both segments.
    - 118th Avenue NW/Glenwood Road SW (Segment P) and 94th Avenue NW/Sydney Road SW (Segment O) – this assessment shows that Segment O is potentially more constrained by recreational and agricultural land. More focused analysis will provide more information about the characteristics of these land uses, and show whether it would be feasible to define an alignment

## How will this information be used in the next steps of the SR 302 Corridor Study?

This environmental constraints assessment establishes the foundation for all subsequent environmental analysis that will be completed for the SR 302 Corridor Study. The NEPA and SEPA guidance that was used as the basis for this assessment is the same guidance that will ultimately direct the environmental analysis.

Environmental analysis will become increasingly detailed as the corridor alternatives are narrowed, and alignment alternatives are defined. The environmental evaluation completed at each step of the process will provide the framework in which each subsequent step may be carried out.

As the range of alternatives is narrowed, the more focused analysis will include verifying and refining the GIS data for the individual segments. More detailed environmental analyses will include ground surveys by specialists in each environmental resource area; detailed evaluation of cultural, hazardous materials, and fish, wildlife and vegetation databases; and detailed analysis of local plans and policies. After the environmental process is initiated, detailed environmental analysis will be completed in all applicable resource areas for each of the Project alternatives.

