5.5 Alternative 3: Nonstructural Flood Protection

Nonstructural Flood Protection (Alternative 3) would not result in geographically broad-scale flood damage reduction during a major flood or greater when compared to the other action alternatives. The implementation of Local-scale Flood Damage Reduction Actions would protect key properties and infrastructure from flood damage, and would protect a substantial portion of the residential structures—as well as some commercial and other structures—in the Chehalis River floodplain through elevation, other floodproofing measures, and buy-outs. This alternative would reduce the pattern of damage and recovery to structures and their contents associated with major floods or greater, but would not reduce flood damage to transportation systems and agricultural properties or crops at a Basin-wide scale.

Alternative 3, as compared to the No Action Alternative, would result in an increased benefit to aquatic species habitat function through implementation of Aquatic Species Habitat Actions. As compared to Alternatives 1 and 2, Alternative 3 would result in greater benefits to aquatic species habitat function because there would be none of the adverse effects associated with Large-scale Flood Damage Reduction Actions structural components. As compared to Alternative 4, Alternative 3 would result in less benefit to habitat function because the treatments associated with Alternative 4 would result in increased habitat function.

5.5.1 Flood Damage Reduction

5.5.1.1 Benefits from Implementing Flood Damage Reduction Actions

Geographically broad-scale reductions to flood depths and extents would not result from the implementation of Alternative 3 (see Figures 5.5-1 through 5.5-3). However, the implementation of Local-scale Flood Damage Reduction Actions would protect key properties and infrastructure from flood damage, and would protect up to 75% of the residential and 25% of the commercial, industrial, or other non-residential structures in the Chehalis River floodplain through elevation, other floodproofing measures, and buy-outs. Alternative 3 would reduce flood damage to structures in the Chehalis River floodplain by implementing a single action.

5.5.1.2 Impacts of Implementing Flood Damage Reduction Actions

The benefits of Alternative 3 would be localized to structures that are floodproofed, and properties and infrastructure protected by Local Projects. Closures of I-5 (up to 4 days) would continue during major floods. WSDOT would continue to use its detour route when I-5 is closed for more than 24 hours. Local roadways that currently flood during major floods would continue to do so, except where smaller-scale flood damage reduction projects reduce flooding of local roadways. The Chehalis-Centralia Airport would continue to flood during major floods, restricting flights and use of the airport for emergency response. Rail lines, including BNSF, Union Pacific, and the Curtis Industrial Park line, would continue to be flooded during major floods.

Alternative 3 has the potential to reduce threats to human health and safety when compared to the No Action Alternative, because Alternative 3 would protect structures in the floodplain and allow people the option of safely waiting out many floods in their homes. However, Alternative 3 would not improve the ability to access critical medical facilities as compared to the No Action Alternative, and would not reduce disruption to industry, commercial businesses, and public services—with the exception of protecting the structures that house them in the event those structures have been floodproofed. Similar to the No Action Alternative, but on an accelerated scale, minor localized adverse impacts on the built and natural environment would occur as a result of the implementation of Alternative 3, which are described in detail in Chapter 4.

Potential impacts on cultural resources and tribal resources would be less in magnitude than the rest of the action alternatives due to the reduced level of excavation and structural components, but could still result in moderate to significant adverse impacts on cultural resources due to the predicted archaeological potential. The extent of potential impacts on tribal resources would be determined pending additional coordination with tribes and continued government-to-government consultations.

Alternative 3 would not result in significant adverse impacts on any elements of the built or natural environment, as described in more detail in Chapter 4. Noted impacts resulting from Alternative 3 are minor or moderate; however, bank stabilization impacts on fish habitat cumulatively could be significant, depending on the project setting.

Figure 5.5-1

Alternative 3 Changes in Downstream Inundation During 100-year Flood – Upper Chehalis Basin

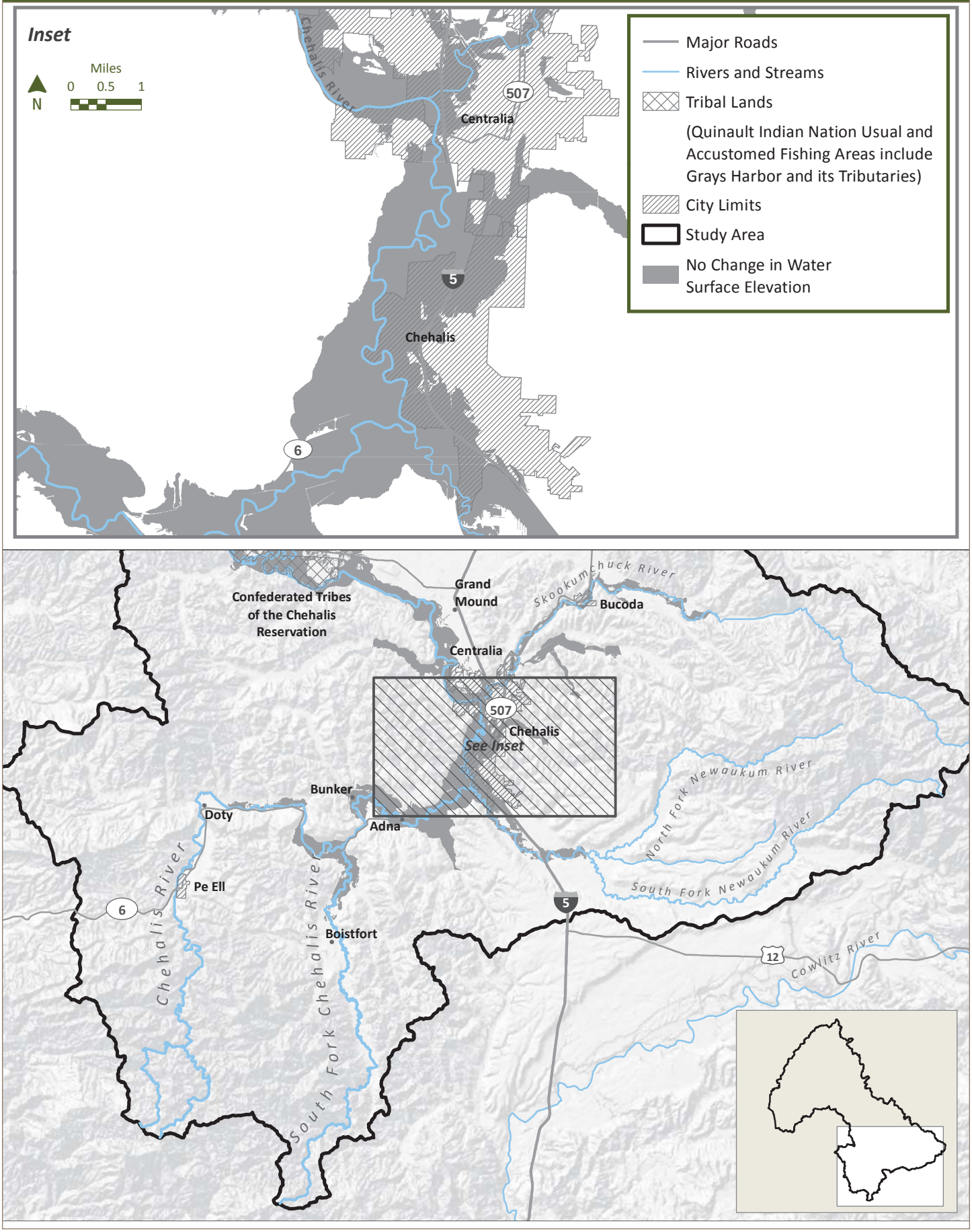


Figure 5.5-2

Alternative 3 Changes in Downstream Inundation During 100-year Flood – Middle Chehalis Basin

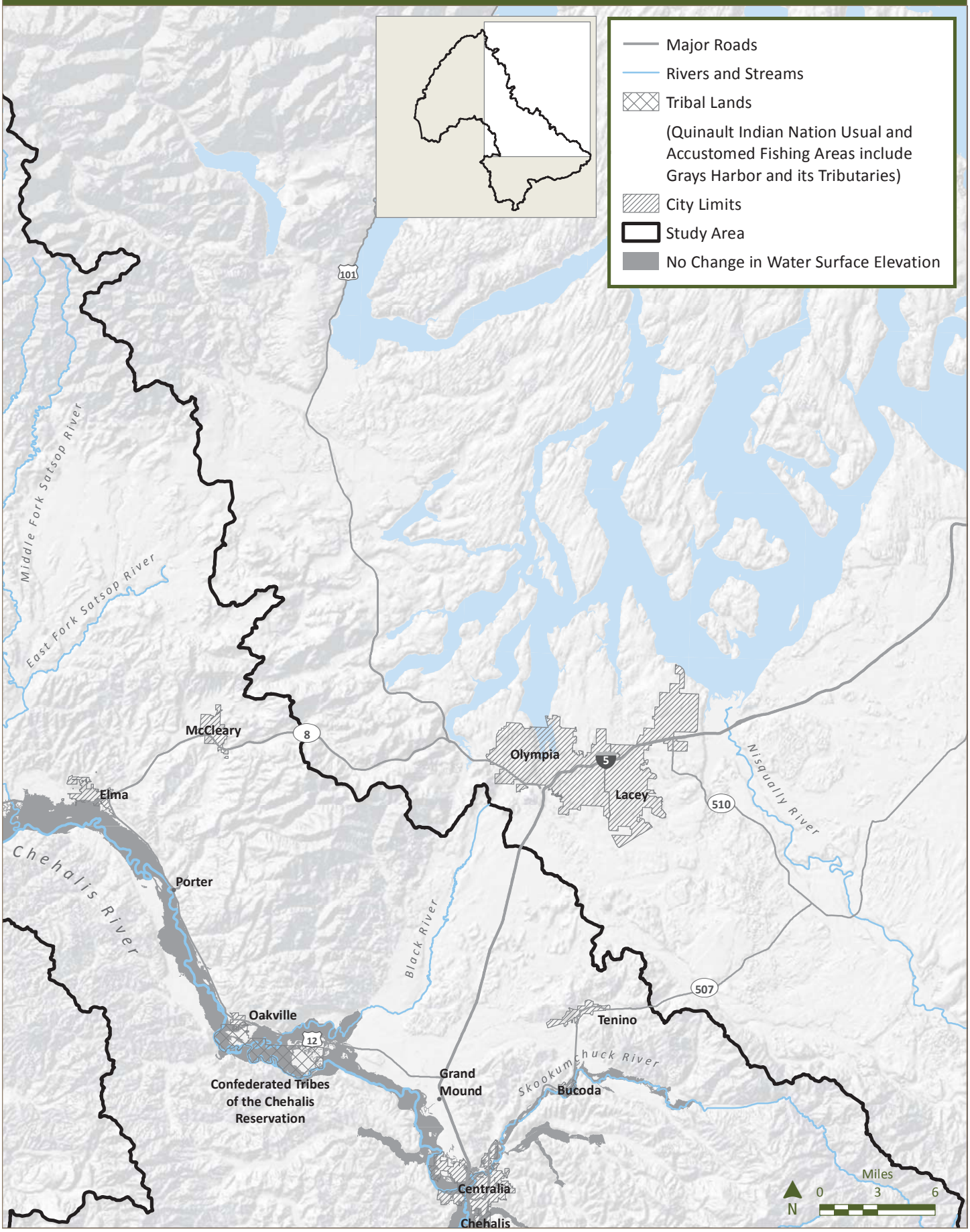
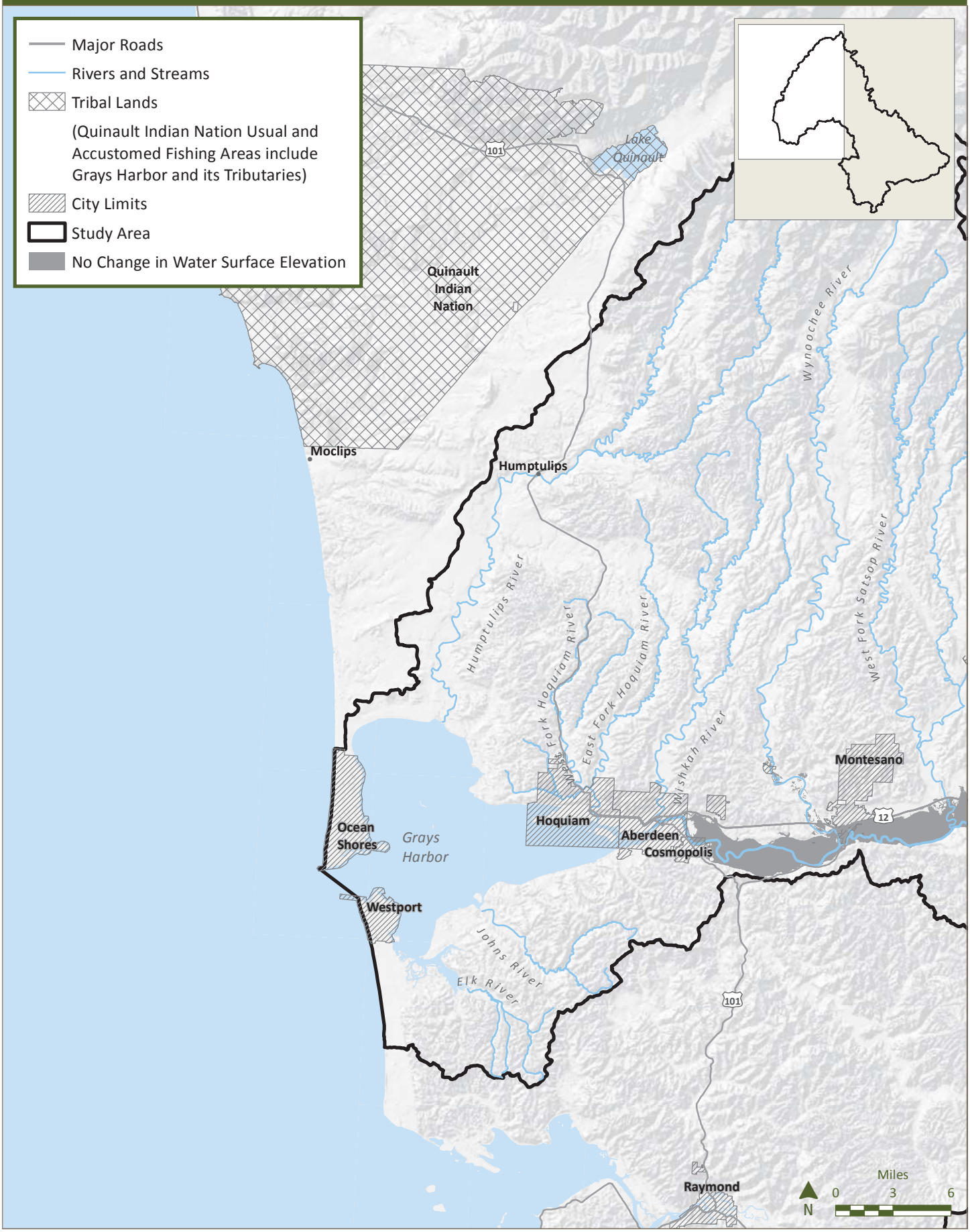


Figure 5.5-3

Alternative 3 Changes in Downstream Inundation During 100-year Flood – Lower Chehalis Basin



5.5.2 Aquatic Species Habitat Actions Evaluation

Alternative 3, when implemented as a comprehensive strategy, would substantially increase abundance of native aquatic species, reduce the potential for future ESA listings, and substantially enhance tribal and non-tribal fisheries as compared to the No Action Alternative. As described in the introduction to Section 5.5, Alternative 3 would have an increased benefit to aquatic species habitat function over the long term as compared to the No Action Alternative, through implementation of Aquatic Species Habitat Actions. As compared to Alternatives 1 and 2, Alternative 3 would result in greater benefits and fewer impacts on aquatic species habitat function due to the lack of large-scale structural flood damage components. Alternative 3 would have fewer benefits to habitat function as compared to Alternative 4, because the treatments associated with Alternative 4 would result in increased habitat function.

5.5.3 Climate Change Analysis

This section provides an analysis of the adverse effects of Alternative 3 that contribute to climate change, as well as the effects of climate change on Alternative 3.

5.5.3.1 Adverse Effects Contributing to Climate Change

Overall, Alternative 3 is not anticipated to result in impacts that contribute to climate change. Alternative 3 is anticipated to result in beneficial effects with regard to climate change due to the wetland and riparian restoration activities and associated carbon sequestration that would occur with the Aquatic Species Habitat Actions associated with this alternative. These benefits would far exceed those expected to occur to the same resources under the No Action Alternative. In comparison to the other action alternatives, Alternative 3 would have fewer adverse impacts contributing to climate change than Alternatives 1 and 2, but would not offset the impacts of climate change (a beneficial result) as much as Alternative 4, due to the degree of wetland and riparian restoration activities and associated carbon sequestration associated with actions under that alternative.

5.5.3.2 Effects of Climate Change on the Proposed Alternative

It is assumed that actions such as Floodproofing and Local Projects associated with Alternative 3 would be designed in anticipation of projected future changes in precipitation, increased flooding, and drought conditions predicted with climate change forecasts. As a result, adverse impacts from climate change on the elements of this alternative are not anticipated, except for the reduced effectiveness of the Aquatic Species Habitat Actions low and high scenarios (see Section 4.8.7).

5.5.4 Mitigation

Significant, adverse impacts are not anticipated from implementation of Alternative 3, and therefore, compensatory mitigation measures are not expected to be necessary.