

February 2020

Proposed Chehalis River Basin Flood Damage Reduction Project
SEPA Draft Environmental Impact Statement

Appendix I

Public Services and Utilities

Discipline Report

Publication No.: 20-06-002



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About this Document

This discipline report has been prepared as part of the Washington Department of Ecology's (Ecology's) State Environmental Policy Act (SEPA) Environmental Impact Statement (EIS) to evaluate a proposal from the Chehalis River Basin Flood Control Zone District (Applicant).

Proposed Action

The Applicant seeks to construct a new flood retention facility and temporary reservoir near Pe Ell, Washington, and make changes to the Chehalis-Centralia Airport levee in Chehalis, Washington. The purpose of the Applicant's proposal is to reduce flooding originating in the Willapa Hills and improve levee integrity at the Chehalis-Centralia Airport to reduce flood damage in the Chehalis-Centralia area.

Time Frames for Evaluation

If permitted, the Applicant expects Flood Retention Expandable (FRE) facility construction would begin in 2025 and operations in 2030, and the Airport Levee Changes construction would occur over a 1-year period between 2025 and 2030. The EIS analyzes probable impacts from the Proposed Action and alternatives for construction during the years 2025 to 2030 and for operations from 2030 to 2080. For purposes of analysis, the term "mid-century" applies to the operational period from approximately 2030 to 2060. The term "late-century" applies to the operational period from approximately 2060 to 2080.

Scenarios Evaluated in the Discipline Report

This report analyzes probable significant environmental impacts from the Proposed Action, the Local Actions Alternative, and the No Action Alternative under the following three flooding scenarios (flow rate is measured at the Grand Mound gage):

- **Major flood:** Water flow rate of 38,800 cubic feet per second (cfs) or greater
- **Catastrophic flood:** Water flow rate of 75,100 cfs
- **Recurring flood:** A major flood or greater that occurs in each of 3 consecutive years

The general area of analysis includes the area in the vicinity of the FRE facility and temporary reservoir; the area in the vicinity of the Airport Levee Changes; and downstream areas of the Chehalis River to approximately river mile 9, just west of Montesano.

Local Actions Alternative

The Local Actions Alternative represents a local and nonstructural approach to reduce flood damage in the Chehalis-Centralia area. It considers a variety of local-scale actions that approximate the Applicant's purpose through improving floodplain function, land use management actions, buying out at-risk properties or structures, improving flood emergency response actions, and increasing water storage from Pe Ell to Centralia. No flood retention facility or Airport Levee Changes would be constructed.

No Action

Under the No Action Alternative, no flood retention facility or Airport Levee Changes would be constructed. Basin-wide large and small scale efforts would continue as part of the Chehalis Basin Strategy work, and local flood damage reduction efforts would continue based on local planning and regulatory actions.

SUMMARY

This report describes the variety of public services and utilities present in the study area, serving area residents. Public services addressed in this document include law enforcement, fire and emergency response services and hospitals, emergency management, solid waste services, and public schools. Utilities addressed include water (including water supply), wastewater, electrical power, natural gas, and telecommunications.

This report also describes potential impacts to public services and utilities from the Proposed Action and alternatives (Local Actions Alternative and No Action Alternative). These impacts are summarized in Tables I-1 and I-2.

Table I-1

Summary of Public Services and Utilities Impacts from Proposed Action

IMPACT	IMPACT FINDING	MITIGATION PROPOSED (SUMMARIZED, SEE SECTION 3.2.4)	SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACT
PROPOSED ACTION (FRE FACILITY AND AIRPORT LEVEE CHANGES) – CONSTRUCTION			
A water supply line for the Town of Pe Ell's water system would be affected by the Flood Retention Facility (FRE) construction and temporary reservoir inundation, and the line could require relocation or improvement.	Significant	PSU-1: The Applicant will conduct a study with the Town of Pe Ell to determine if the Pe Ell water line at Lester Creek needs to be designed to ensure that the water line can withstand inundation within the temporary reservoir or needs to be relocated, and, if so, will develop a cost estimate and provide funding for this work.	No
Increased traffic on roadways from FRE facility and levee construction could cause some delay of emergency vehicles.	Minor	None	No
Construction of the Airport Levee Changes could result in some utility relocation, which may result in temporary disruption of service.	Minor	PSU-2: The Applicant and its contractors will develop construction sequence plans and coordinate schedules to minimize service disruptions and provide ample advance notice if service disruption is unavoidable, consistent with utility provider policies.	No

IMPACT	IMPACT FINDING	MITIGATION PROPOSED (SUMMARIZED, SEE SECTION 3.2.4)	SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACT
PROPOSED ACTION (FRE FACILITY AND AIRPORT LEVEE CHANGES) – OPERATIONS			
Increased energy use for FRE facility operation would result in less than 1% increase in overall electrical load for Lewis County Public Utility District.	Minor	None	No
Operation of the FRE facility would not increase demands on public services or utilities (except for Lewis County Public Utility District – see above).	No impact	None	No
Operation of the Airport Levee Changes would not increase demands on public services and utilities.	No impact	None	No

Table I-2
Summary of Public Services and Utility Impacts from Alternatives

IMPACT	IMPACT FINDING
LOCAL ACTIONS ALTERNATIVE	
Continued and unpredictable flooding of facilities and likely increased inundation in the future.	Continuing Substantial Flood Risk
Temporary utility disruption related to construction activities.	Moderate to minor
NO ACTION ALTERNATIVE	
Continued and unpredictable flooding of facilities and likely increased inundation in the future.	Continuing Substantial Flood Risk

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1 INTRODUCTION

1.1 Resource Description

Public services and utilities include those basic services (and facilities for those services) that support development and protect public health and safety. Public services addressed in this document include law enforcement, fire and emergency response services and hospitals, emergency management, solid waste services, and public schools. Utilities addressed include water (including water supply), wastewater, electrical power, natural gas, and telecommunications. Dam safety is addressed in the *Environmental Health and Safety Discipline Report* (ESA 2020a), and water rights considerations are addressed in the *Water Discipline Report* (ESA 2020b).

1.2 Regulatory Context

Table I-3 identifies the laws, plans, and policies relevant to public services and utilities in the study area.

Table I-3

Regulations, Statutes, and Guidelines for Public Services and Utilities

REGULATION, STATUTE, GUIDELINE	DESCRIPTION
FEDERAL	
No applicable federal regulations related to public services and utilities.	
STATE	
Title 80 Revised Code of Washington: Public Utilities	Compilation of laws applicable to public utilities in Washington State.
<i>Washington State Enhanced Hazard Mitigation Plan 2018</i>	Identifies hazards common to Washington and describes the locations, losses, and vulnerability to these hazards (Washington Emergency Management Division 2018).
LOCAL	
<i>Lewis County Multi-Jurisdictional Hazard Mitigation Plan</i>	Prepared jointly by many jurisdictions to identify policies, activities, and tools to implement mitigation actions to reduce or eliminate long-term risk to life and property from a hazard event (Lewis County Emergency Management 2016).
<i>City of Centralia, Washington Comprehensive Emergency Management Plan</i>	Establishes responsibilities for the City of Centralia, Lewis County Emergency Management, and other public and private organizations in the event the City requires aid due to an emergency or hazard (City of Centralia 2014).
<i>City of Centralia Comprehensive Flood Management and Natural Hazards Mitigation Plan</i>	Assesses risks and presents a mitigation strategy for the City to reduce exposure to future natural hazards by managing the location and characteristics of the existing and future built environment (City of Centralia 2008).

REGULATION, STATUTE, GUIDELINE	DESCRIPTION
<i>Lewis County Comprehensive Plan 2018; Chehalis Comprehensive Plan 2017; Centralia Comprehensive Plan 2018-2040</i>	Provide information regarding future land uses and the policy framework for development related to public utilities and management of public services (Lewis County 2018; City of Chehalis 2017; City of Centralia 2018).
<i>Lewis County 2010 Comprehensive Emergency Management Plan</i>	"... details authorities, functions, and responsibilities to ensure a mutually understood and coordinated plan of response action among all agencies and levels of government within the County during emergencies and disasters" (Lewis County 2010).
Lewis County Code Title 13 (Public Utilities); Centralia Municipal Code 13 (Public Utilities); Chehalis Municipal Code Title 13 (Public Services)	Provide the regulatory framework for development related to public utilities and management of public services.
<i>Grays Harbor County Comprehensive Flood Hazard Management Plan 2001</i>	Describes the planning process and identifies policies, activities, and preferred alternatives to reduce flood hazards in Grays Harbor County (Grays Harbor County 2001).

The Chehalis River Basin Flood Control Zone District (Applicant) is updating the *Chehalis Basin Comprehensive Flood Hazards Management Plan* for Lewis County and is expected to identify critical facilities. This plan will be considered in the Final EIS, if it is available.

2 METHODOLOGY

2.1 Study Area

The study area for public services and utilities consists of areas that could be directly or indirectly affected by construction or operation of the Proposed Action. The study area includes the following:

- The area associated with the Flood Retention Expandable (FRE) facility site construction and operations
- The maximum inundation area of the temporary reservoir
- The area associated with construction and resulting changes to the airport levee
- The area along the mainstem Chehalis River from the FRE facility at river mile (RM) 108 to RM 9.

A hydraulic model was used to identify the estimated limits of flooding along the mainstem Chehalis River. It modeled a catastrophic flood in the late-century from a storm originating in the Willapa Hills and includes climate change estimates. For the Skookumchuck River, South Fork Newaukum River, and South Fork Chehalis River, the study area extends an additional 1,500 feet upstream of the modeled limits.

2.2 Affected Environment

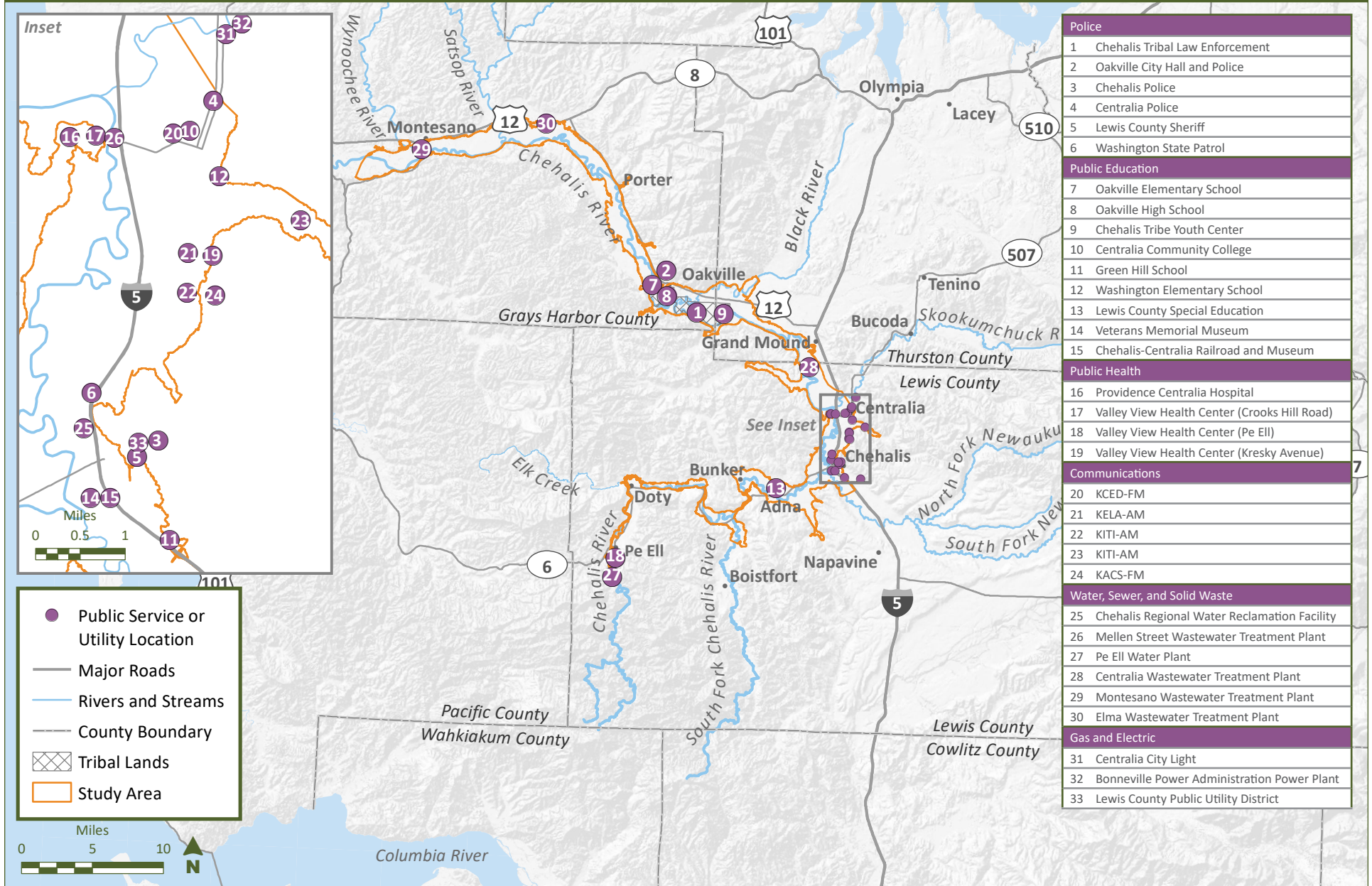
Within the study area, public services and utilities include public service districts, facilities, and utilities in Lewis County and a small portion of Grays Harbor County and Thurston County, as well as Centralia, Chehalis, Napavine, and Oakville (Figure I-1). Information on public services and utilities was extracted from area maps, county and city plans and websites, and geographic information system (GIS) data. Many of these services are considered to be critical facilities by communities in the study area and identified in the comprehensive flood hazard management plans identified in Table I-3. Critical facilities include facilities that, if damaged by floodwaters, could have consequential impacts on special populations and emergency response. Critical facilities include, but are not limited to, schools, hospitals, police, fire, and emergency response installations.

2.2.1 Public Services

Public services in the region are provided by federal, tribal, state, county, and local governments as well as volunteer fire departments and other volunteer groups. This report focuses on the public services provided within the study area with the greatest potential to be affected by flooding. The locations of public services in the study area are identified in Figure I-1.

Figure I-1

Public Services and Utilities Study Area



2.2.1.1 Fire and Emergency Management Services

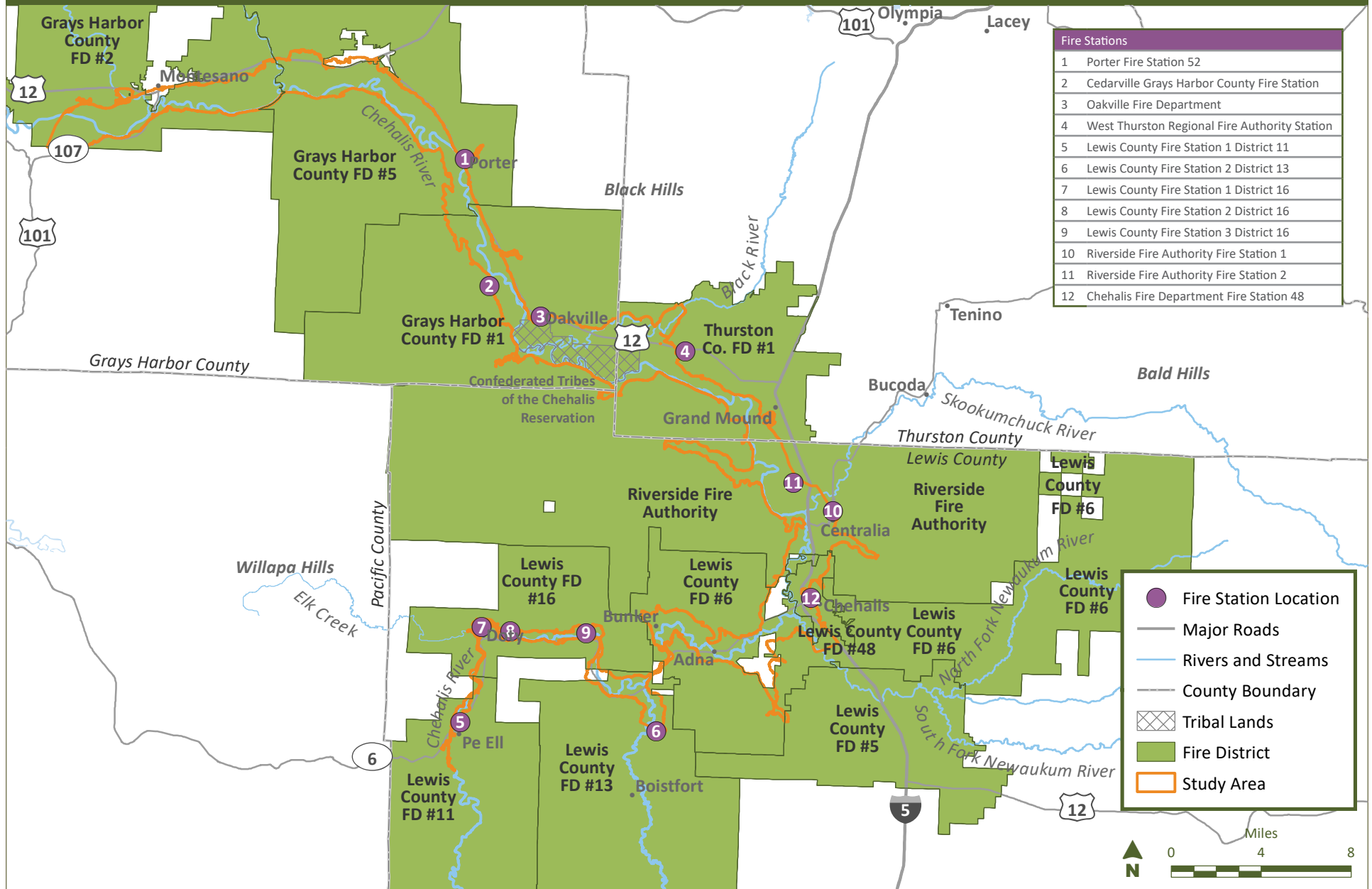
Emergency response organizations in the study area are associated with Chehalis Basin cities, Lewis County, Washington Department of Natural Resources, U.S. Forest Service, and the Confederated Tribes of the Chehalis Reservation (Chehalis Tribe). Although each jurisdiction maintains the primary responsibility for providing services within its boundaries, mutual agreements often exist among different fire districts, through which they consent to assist each other in the event one district is unable to contain an emergency situation using existing resources and personnel (Washington State Fire Marshal's Office 2018). In Lewis County, mutual aid agreements exist among all Lewis County fire departments, most eastern Grays Harbor County stations, and southern Thurston County stations (City of Centralia 2014).

As shown in Figure I-2, 10 fire districts serve the study area, and 12 fire stations are located within the study area boundary (Lewis County 2017; Thurston County 2019; Grays Harbor County 2019). Most of the local fire control organizations consist of professional and volunteer firefighters that are trained to provide the following services:

- Emergency medical response (basic and advanced life support)
- Fire suppression
- Emergency ambulance transport
- Hazardous materials initial response
- Fire prevention and code enforcement
- Non-emergency ambulance transport
- Interfacility ambulance transport
- Community service programs and public education

The Bureau of Indian Affairs (BIA) is responsible for protecting tribal lands, such as reservations. The BIA provides fire protection with its own personnel and equipment or through various cooperative agreements with local fire jurisdictions (Washington State Fire Marshal's Office 2018). Fire and emergency management services facilities within the study area are shown in Figure I-1. Some of these facilities were previously damaged during a major flood in December 2007, including the four fire districts in the upper Chehalis Basin.

Figure I-2
Fire District Boundaries



2.2.1.2 Police

Six law enforcement agencies have at least a portion of their jurisdiction within the study area. Of these agencies, three police stations are located in the study area, including the Centralia Police, the Chehalis Tribal Law Enforcement, and the Chehalis Washington State Patrol. The Oakville City Hall and Police and the Chehalis Police station are just outside the study area boundary; however, the jurisdictions of the Oakville and Chehalis police extend over the portions of the study area within their city limits.

County sheriffs are responsible for maintaining the peace within their respective counties (Revised Code of Washington [RCW] 36.28.010) and filing complaints for violations of criminal law within their jurisdictions (RCW 36.28.011). The Lewis County Sheriff's office is located just outside the study area, but has jurisdiction over all portions of the study area in Lewis County. The Grays Harbor and Thurston County sheriff departments also have jurisdictions that extend over portions of the study area, but do not have stations in or near the study area. The Washington State Patrol has jurisdiction over state roadways within the study area (Interstate 5 [I-5], U.S. Route [US] 12, State Route [SR] 6, SR 109, and SR 507).

2.2.1.3 Public Education

Eleven school districts serve the study area. These school districts range in size from small rural school districts that consist of one school (e.g., Boistfort and Pe Ell) to larger school districts, such as Chehalis and Centralia, which have five and eight schools, respectively. One college and vocational/technical school (Centralia Community College) and two museums (Veterans Memorial Museum and the Chehalis-Centralia Railroad and Museum) are located in the study area, in addition to educational facilities provided by the Chehalis Tribe. The Chehalis Tribe Youth Center is in the study area; it lies outside and above the floodplain and does not have a history of being inundated during floods. During past floods in the study area, schools have been used as local shelters. Therefore, it is important that access to schools during floods be maintained (Ruckelshaus Center 2012). Schools are considered critical facilities when school is in session and are used by the American Red Cross as temporary shelters during floods (Lewis County 2010). Public education facilities in the Chehalis River floodplain are listed in Figure I-1.

2.2.1.4 Public Health

During natural hazard events, hospitals are critical infrastructure. Regardless of the nature and severity of damage, flooded hospitals are typically not functional while cleanup and repairs are undertaken (FEMA 2007). In addition, access roads that extend across floodprone areas could be damaged by erosion, washout of drainage culverts, failure of fill and bedding materials, and loss of road surface (FEMA 2007). This could prevent uninterrupted access to a facility, and thus impair the functionality of the hospital.

Valley View Health Center has facility locations in Chehalis, Centralia, and Pe Ell. The Valley View Health Center in Chehalis is the only facility in the study area. Providence Centralia Hospital is just outside the study area; however, during past floods in the Chehalis Basin, access to the Providence Centralia

Hospital has been restricted for days at a time (Ruckelshaus Center 2012). Public health facilities are listed in Figure I-1.

2.2.2 Utilities

Utilities are vital components of the emergency response effort after a flood. Having adequate provisions of drinkable water, heat, and electricity is essential during a flood—particularly at critical facilities such as hospitals—and having workable means of communication is also critical. Public utilities in the study area are provided by county, city, tribal, and private suppliers. In general, the provision of utility infrastructure correlates to the size of the population it serves. As a result, population levels, coupled with any topographic or other constraints on where utilities can be provided, often dictate how well a community is served by public systems. Utilities are listed in Figure I-1.

2.2.2.1 Communication

Public announcements and natural hazard warnings are often distributed via local radio stations, cell phones, and email notifications. Internet and phone services in the Chehalis Basin are typically provided by private companies; however, Grays Harbor Public Utility District (PUD) offers wholesale telecommunication facilities and services to qualifying, state-certified, third-party service providers to deliver connectivity to customers. The Lewis County emergency alert system, Lewis County Alert, is an emergency alert and notification system that sends allows subscribers to receive alerts and information pertaining to police, fire, severe weather, health, and safety.

Cell phone and internet service is unavailable in some areas of the study area, particularly in unpopulated areas or areas where provision of such utilities is unsupportable or geographically prohibited. As a result, radio transmissions tend to be a more viable option for informing the community during natural hazard events. Most of the radio stations in Lewis County are in the greater Chehalis-Centralia area, including KCED-FM, KITI-AM, and KELA-AM, which are located in the study area (Radio-Locator 2019). Many of the towers associated with these stations are along the I-5 corridor, making them more prone to flood risk. Many radio towers in the Chehalis Basin are within the floodplain, and some have been flooded in the past.

2.2.2.2 Water, Sewer, and Solid Waste

The larger municipalities of Lewis County, such as Centralia and Chehalis, have city-provided water systems. The main sources of drinking water for the Chehalis-Centralia area are the Chehalis and Newaukum rivers. Domestic water supply for Chehalis comes from the North Fork Newaukum River and the Chehalis River, while Centralia draws from several groundwater wells. In Lewis County, water services are provided by three public systems: Lewis County Water Districts, Boistfort Valley Water (a community, non-profit water distribution system), and Thurston County PUD (a private owner and manager of 33 small water systems in the county; Brown and Caldwell 2008). Within Grays Harbor County, the larger municipalities, such as Elma and Montesano, have city-provided water systems.

The Boistfort Valley Water provides drinking water to unincorporated areas of Boistfort, Curtis, Adna, and Claquato. They operate two filtration plants within its distribution system, serving an area of roughly 25 square miles. Boistfort Valley Water's primary water source is a surface intake on Little Mill Creek. The second source of water comes from the Chehalis River. This source is typically only operational during summer high usage months. In more rural areas, domestic water supply is primarily provided from individual wells (Boistfort Valley Water 2019).

The primary water source for Pe Ell is Lester Creek, which flows into Crim Creek just upstream of its confluence with the Chehalis River, upstream of the proposed FRE facility at approximately RM 108.5 (Figure I-3). The primary water supply system, which serves more than 1,000 residents, includes the water intake and reservoir system on Lester Creek, more than 10,000 linear feet of 8-inch water line, a pump station, a treatment facility, and a distribution system (Figure I-3). During low-flow periods, Pe Ell uses the Chehalis River as a secondary (backup) water intake, but its use is limited.

The Chehalis River intake is approximately 2,500 feet south of and approximately 180 feet lower in elevation than the water treatment facility. The 2007 flood damaged the existing facilities at both the Lester Creek and Chehalis River water facility locations. From mid-December 2007 to mid-March 2008, Pe Ell had to pump its drinking water from a seasonal, spring-fed creek. A subsequent storm in 2009 damaged the new intake screens at the intake on the Chehalis River. Since that time, the pump station has been rebuilt on higher ground, and the intake screens have been replaced (Gray & Osborne Inc. 2015).

Wastewater and solid waste utilities are typically provided by counties and cities. In rural communities, however, wastewater is primarily treated through private septic systems. Three wastewater treatment plants are located within the study area: the Centralia Wastewater Treatment Plant, the Chehalis Regional Water Reclamation Facility, and the Montesano Wastewater Treatment Plant. The Elma Wastewater Treatment Plant is located just outside of the study area. The Centralia Wastewater Treatment Plant, on Goodrich Road, serves Centralia and the associated service area. The former Mellen Street Wastewater Treatment Plant has been largely demolished and is no longer functioning. The Centralia Police Department currently uses the site for public training, safety training, support services, and emergency management. The remaining structures on the site are used for storage (The Chronicle 2018). The Chehalis Regional Water Reclamation Facility, on NW Louisiana Avenue, serves Chehalis, Napavine, Lewis County Water and Sewer District No. 4, and associated service areas. The Montesano Wastewater Treatment Plant, on State Route 107, serves Montesano and associated service areas. There are no solid waste facilities in the study area.

2.2.2.3 Gas and Electric

Three PUDs provide electricity to the study area: Grays Harbor, Lewis County, and Thurston County. Power is transmitted and distributed by these PUDs, local municipalities (Centralia City Light), and Puget Sound Energy (PSE). Overhead and underground transmission and distribution lines, as well as substations, are located throughout the study area. Lewis County PUD's service area includes the portion of the

study area where the FRE facility is proposed. In 2014, the total energy load for the utility was 941,885 mega-watt hours (Lewis County 2018).

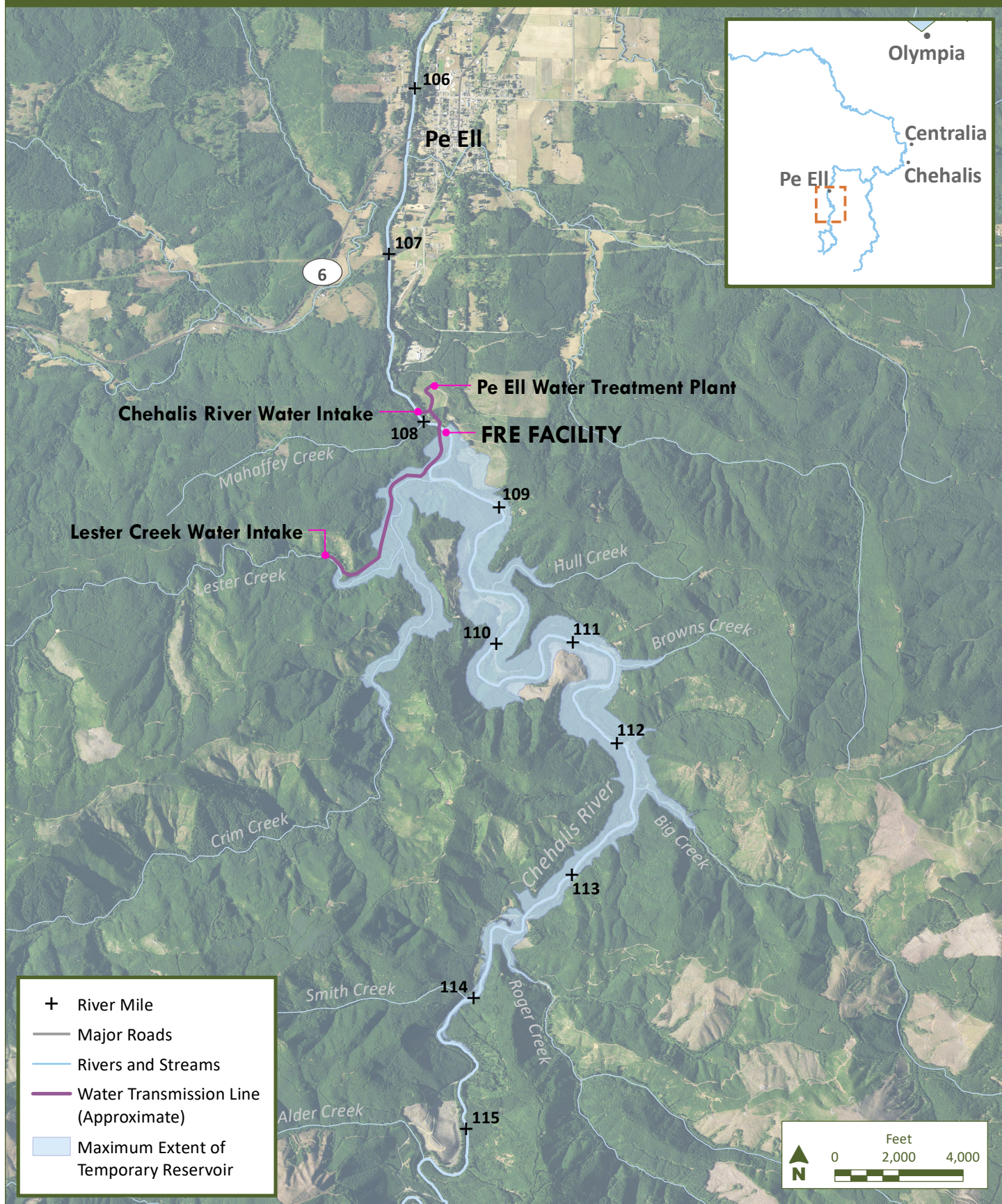
The region is served by major natural gas pipelines operated by PSE and Cascade Natural Gas that traverse the Chehalis Basin, crossing through the study area in multiple locations (NPMS 2019). PSE is the natural gas provider for Thurston County, Centralia, and Chehalis, while Cascade Natural Gas Corporation distributes natural gas in most of Grays Harbor County (Greater Grays Harbor Inc. 2019). The Williams Gas Pipeline also traverses the study area, providing petroleum to Thurston County.

2.3 Studies and Reports Referenced/Used

The following studies and reports were used to evaluate public service and utility impacts:

- *Chehalis Basin Strategy Programmatic Environmental Impact Statement* (Ecology 2017)
- *Lewis County Comprehensive Flood Hazard Management Plan* (Brown and Caldwell 2008)
- *Lewis County Multi-Jurisdictional Hazard Mitigation Plan* (Lewis County Emergency Management 2016)
- *City of Centralia, Washington Comprehensive Emergency Management Plan* (City of Centralia 2014)
- *Lewis County Comprehensive Emergency Management Plan* (Lewis County 2010)
- *Washington State Enhanced Hazard Mitigation Plan* (Washington Emergency Management Division 2018)
- *Lewis County Comprehensive Plan 2018* (Lewis County 2018)
- *Centralia Comprehensive Plan 2018–2040* (City of Centralia 2018)
- *Chehalis Comprehensive Plan 2017* (City of Chehalis 2017)
- *City of Centralia Comprehensive Flood Management and Natural Hazards Mitigation Plan* (City of Centralia 2008)
- *General Sewer Plan* (City of Centralia 2015)
- *Washington State Fire Services Resource Mobilization Plan* (Washington State Fire Marshal's Office 2018)
- PSE service area territory map (PSE 2019)
- *Chehalis Basin Flood Hazard Mitigation Alternatives Report* (Ruckelshaus Center 2012)
- *Risk Management Series Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds* (FEMA 2007)
- *Town of Pe Ell Water System Plan* (Gray & Osborne Inc. 2015)

Figure I-3
Pe Ell Water System Diagram



2.4 Technical Approach

To examine the probable environmental impacts on public services and utilities, existing public services and public utilities in the study area were identified. Information was obtained from mapped sources, public websites, and personal communications, then added to a study area map. Impacts from construction and operation were qualitatively analyzed. Factors considered for the analysis of construction effects included access to public services, potential for proposed construction activities to conflict with utilities, and temporary service outages as a result of construction. Factors considered for the analysis of operational effects included increased demands on public services and utilities, impaired access to public services and utilities, and potential risks to public services and utilities posed by the alternatives.

To identify the probable impacts related to flood inundation, a GIS map of inundation levels under the Proposed Action and No Action Alternative for several flood scenarios was reviewed. Other discipline reports were also reviewed to identify impacts on water rights, transportation, and dam safety as they relate to public services and utilities.

3 TECHNICAL ANALYSIS AND RESULTS

3.1 Overview

This section describes the probable impacts on public services and utilities from the Proposed Action (Section 3.2), Local Actions Alternative (Section 3.3), and No Action Alternative (Section 3.4). The section also evaluates required permit conditions and planning document requirements that could address the impacts identified (Section 3.2.3). When probable significant adverse environmental impacts remain after considering these, the EIS identifies mitigation measures that could avoid, minimize, or reduce the identified impact below the level of significance (Section 3.2.4).

3.2 Proposed Action

3.2.1 Impacts from Construction

The elements of Proposed Action construction that could affect public services and utilities include: truck traffic, construction of new electrical lines for the FRE facility, construction of the FRE facility and temporary reservoir, and construction of levee changes. Construction of the FRE facility is estimated to occur over 5 years and construction of the Airport Levee Changes over 1 year.

3.2.1.1 Direct

3.2.1.1.1 Flood Retention Expandable Facility

The FRE facility would be in a remote area accessible only by a private road. Construction equipment and materials would be delivered to the site by truck. As described in the *Transportation Discipline Report* (ESA 2020c), construction-related traffic would increase near the FRE facility and Pe Ell. These increases would be localized and temporary and would result in minimal change in access to services or emergency response times. Therefore, construction would have **minor** adverse impacts on access to public services or emergency service response times.

A new low-voltage power line would be necessary for construction of the FRE facility to provide power for pumps, gates, instruments, and other facilities. Construction would include a new transformer and electrical right-of-way to transmit electricity from local transmission lines to the FRE facility. Overhead lines would be installed within the first 6 months of FRE facility construction. Electrical power for construction could also be provided by on-site diesel-powered generators, or by a combination of generators and power lines. The Proposed Action description states new power lines would be located along existing road alignments and areas cleared for the FRE facility construction. Through the application process for establishing the new service, Lewis County PUD (the electric service provider) would determine how to design and place the new electrical infrastructure in a way that best avoids or minimizes any impacts on existing utilities. Interruptions to existing public services or utilities are not anticipated during installation of the transmission line.

Based on their location in relation to anticipated construction areas, Pe Ell's water treatment facility and intake at Lester Creek would not be affected by construction.

A water line for the Town of Pe Ell's water treatment facility from Lester Creek may need to be improved or relocated because of conflicts with construction activities of the FRE facility, and to ensure that the water line can withstand inundation during FRE facility operations. Some short-term disruptions in water service may occur during water line replacement resulting from switching to the new water line service. If the new line is constructed and in operation prior to disconnection of the existing lines, or if the Town of Pe Ell chooses to withdraw water from a backup intake on the Chehalis River (downstream of the FRE facility), any disruptions to service would be minimal during the reconnection process to the new line. Relocation plans and service disruptions would be reviewed and approved by the Town of Pe Ell before construction begins. Water line relocation may result in the need to renegotiate some or all of the water line easements.

The water line from Lester Creek to the water treatment facility is approximately 8,000 feet long. In accordance with Washington Administrative Code 197-11-440(6)(e) to identify the cost of public service effects, if the entire line requires replacement, the estimated cost is \$1,200,000. If the water line requires improvement or relocation, and the Applicant does not provide funding for this work, this would be a **significant** adverse impact to Pe Ell's water service. While the costs associated with the water supply line replacement may be included in the FRE facility construction budget, this is not certain. Therefore, mitigation is proposed for the Applicant to work with the Town of Pe Ell to conduct a study to determine if the water line needs to be improved or relocated and, if so, to develop a cost estimate and provide funding for this work.

3.2.1.1.2 *Airport Levee Changes*

Construction of the Airport Levee Changes may potentially affect existing above- and belowground utilities, such as overhead power lines, and buried water or sewer pipelines; however, the locations and extent of possible conflicts are unknown at this conceptual design stage. During the design and permitting process conducted prior to construction, the locations and depths of existing utilities would be verified with utility providers. Specific construction methods and best management practices would be developed in consultation with the City of Chehalis and the utility providers to provide protection measures and minimize any temporary utility conflicts.

If utility relocations or replacements are required, the Applicant and its contractors would be required to develop construction sequence plans and coordinate schedules to minimize service disruptions and provide ample advance notice if service disruption is unavoidable, consistent with the utility owner's policies. Relocation plans and service disruptions would be reviewed and approved by the utility provider before construction begins. Any disruptions to service would be short term, if relocations were required, and utility service would be fully restored following construction activities. Therefore, adverse impacts would be **minor**. Mitigation is proposed for the Applicant and its contractors to develop

construction sequence plans and coordinate schedules to minimize service disruptions and provide ample advance notice if service disruption is unavoidable, consistent with utility provider policies.

Construction could increase congestion along nearby roadways and along the haul routes. This could temporarily affect access and response times for public service providers. Implementation of measures to control traffic, described in the *Transportation Discipline Report* would ensure that adverse impacts on response times would be **minor**.

3.2.1.2 Indirect

3.2.1.2.1 Flood Retention Expandable Facility

No indirect adverse impacts on public services or utilities from the construction of the FRE facility are anticipated.

3.2.1.2.2 Airport Levee Changes

No indirect adverse impacts on public services or utilities associated with the construction of the Airport Levee Changes are anticipated.

3.2.2 Impacts from Operation

Operation of the Proposed Action that could affect public services and utility resources include operation of the FRE facility and temporary reservoir.

3.2.2.1 Direct

3.2.2.1.1 Flood Retention Expandable Facility

The Lester Creek gravity water supply intake is at 640 feet elevation (mean sea level; Gray & Osborne Inc. 2015). The intake elevation is above the maximum design extent for the flood pool elevation (628 feet elevation) for the temporary reservoir and therefore is not anticipated to be inundated as a result of operation of the FRE facility. The water treatment facility and pump station are outside of the area of modeled inundation, and are therefore not anticipated to be affected by the Proposed Action. However, a water line for the water treatment facility from Lester Creek is located within the area of modeled inundation and may need to be improved or relocated because of conflicts with construction activities and operations. As described in mitigation measure PSU-1, during construction, the relocation of Pe Ell's water line from Lester Creek would be designed to ensure that the water line can withstand inundation within the temporary reservoir or relocated. With this mitigation measure, there would be **no adverse impact** on Pe Ell's water supply from FRE operations.

Electrical power would be needed to operate the facility, with fish passage requiring the most. Planning estimates for electricity needs are approximately 38,600 kilowatt hours per year (resulting in an annual operating cost of approximately \$4,000). This would result in a small increase (less than 1%) to the overall electricity load for Lewis County PUD. Coordination with the PUD would occur during the design

and permitting process to ensure that the FRE facility has adequate electrical supply. As a result, there would be a **minor** impact on Lewis County PUD, the electrical utility provider, and **no adverse impact** on other utilities.

The Washington Department of Ecology (Ecology) Dam Safety Office (DSO) will require the Applicant to develop an Emergency Action Plan (EAP). The EAP will be shared with local emergency management agencies responsible for developing community emergency response plans. The EAP will include inundation maps identifying high-water areas downstream of the FRE facility in the event of a catastrophic structure failure. Local jurisdictions would need to review the EAP and the inundation maps and develop evacuation plans for areas downstream of the FRE facility, to prepare in the event of a catastrophic failure of the structure. To assist local officials in improving emergency response, mitigation measures are proposed for the Applicant to develop and implement a breach warning system and to provide training of local emergency response officials for dam breach scenarios. The *Environmental Health and Safety Discipline Report* (ESA 2020a) analyzed the potential for failure of the FRE facility and found that while the probability of a facility breach occurring is extremely low, the probable impacts would be significant and unavoidable.

3.2.2.1.2 Airport Levee Changes

No direct adverse impacts on public services and utilities from implementation of the Airport Levee Changes are anticipated.

3.2.2.1.3 Changes in Inundation

Implementation of the Proposed Action would reduce the flood levels in portions of the Chehalis Basin during major and catastrophic floods, and therefore would reduce corresponding flood depths and durations on public services and utilities in the study area. Inundation of public services and utilities during floods can result in service outages if a facility is inundated and becomes inoperable. The durations of such outages vary depending on the depth of floodwater, duration of inundation, and geographic extent of the floodwaters. Emergency service responder access is often restricted by flooded roadways, and response times can be longer than during non-flood conditions.

With implementation of the Proposed Action, flood levels would be reduced, though the amount of decrease would vary throughout the study area. Most of the reduction would occur in the Chehalis-Centralia area where public services and utilities are concentrated. Lowering the depth and duration of floodwater would also reduce the amount of time emergency responder access would be limited by floodwaters.

Table I-4 shows the projected flood elevations under the No Action Alternative and Proposed Action using various scenarios at 13 public service and utility facilities represented in Figures I-1 and I-2. These 13 facilities were determined to be potentially affected by modeled floods under the alternatives and scenarios included in this EIS analysis.

Other public services and facilities shown in Figure I-1 are not affected by projected floods from storms originating in the Willapa Hills and are not included in this analysis, although they may still experience flooding from other storms. Only major facilities are included in Table I-4, Figure I-1, and Figure I-2 and in the following descriptions; other utility transmission, distribution, conveyance, and associated facilities would also be subject to a change in inundation levels based on water levels as described in the *Water Discipline Report* (ESA 2020b). The flood inundation levels described in this section are typical of the changes that would occur at other facilities.

Based on modeling, multiple facilities would potentially be affected by flooding in the study area. These include the following:

- **The Centralia Police Station** would not be inundated during a mid- or late-century major flood or a mid-century catastrophic flood under the No Action Alternative or Proposed Action. It would be inundated 0.23 foot during a late-century catastrophic flood under the No Action Alternative; the Proposed Action would not change this water level.
- **The Washington State Patrol** would not be inundated during a mid- or late-century major flood or a mid-century catastrophic flood under the No Action Alternative or Proposed Action. Under the No Action Alternative, it would be inundated 2.26 feet during a mid-century catastrophic flood and 3.79 feet during a late-century catastrophic flood. The Proposed Action would reduce the water level to zero in both scenarios.
- **Fire Station 3 District 16** would not be inundated during a mid- or late-century major flood or a mid-century catastrophic flood under the No Action Alternative or Proposed Action. Under the No Action Alternative, it would be inundated 2.52 feet during a mid-century catastrophic flood and 4.57 feet during a late-century catastrophic flood. The Proposed Action would reduce the water level to zero in both catastrophic flood scenarios.
- **Fire Station 1 Riverside Fire Authority** would be inundated during both the mid- and late-century major and catastrophic floods under the No Action Alternative and the Proposed Action; it would not see a reduction in inundation levels under the Proposed Action.
- **The Oakville Elementary/High School** would not be inundated during a mid- or late-century major flood or a mid-century catastrophic flood under the No Action Alternative or Proposed Action. It would be inundated 0.93 foot during a late-century catastrophic flood under the No Action Alternative, which would be reduced to zero under the Proposed Action.
- **The Washington Elementary School** would be inundated 0.46 foot during a mid-century major flood and 0.72 foot during a late-century major flood under the No Action Alternative. The Proposed Action would not change or would only minimally reduce these inundation levels. During a mid-century catastrophic flood, the school would be inundated 2.98 feet under the No Action Alternative. The Proposed Action would reduce the water level to 1.94 feet. During a late-century catastrophic flood, the school would be inundated 4.39 feet under the No Action Alternative. The Proposed Action would reduce the water level to 2.14 feet.

- **The Veterans Memorial Museum** would not be inundated during a mid-century major flood under the No Action Alternative or Proposed Action. The facility would be inundated by 0.04 foot of water during a late-century major flood under the No Action Alternative. The Proposed Action would reduce flood levels to zero. During a mid-century catastrophic flood, inundation levels would be 0.76 foot under the No Action Alternative, and the Proposed Action would reduce the level to 0.17 foot. For a late-century catastrophic flood, inundation levels would be 1.21 feet under the No Action Alternative. The Proposed Action would reduce this to 0.35 foot.
- **The Chehalis-Centralia Railroad and Museum** would not be inundated during a major flood in the mid- or late-century under the No Action Alternative or Proposed Action. The facility would be inundated by 0.58 foot of water during a mid-century catastrophic flood under the No Action Alternative. The Proposed Action would reduce flood levels to zero. During a late-century catastrophic flood, inundation levels would be 1.03 feet under the No Action Alternative; the Proposed Action would reduce the level to 0.17 foot.
- **The Valley View Health Center** on Kresky Avenue in Chehalis would not be inundated during a mid- or late-century major flood under the No Action Alternative or Proposed Action. The facility would be inundated by 1.94 feet of water during a mid-century catastrophic flood. The Proposed Action would reduce flood levels to zero. During a late-century catastrophic flood, inundation would be 3.29 feet under the No Action Alternative, and the Proposed Action would reduce the depth to 0.14 foot.
- **KCED-FM** would not be affected by mid- and late-century major floods under the No Action Alternative or Proposed Action. During both a mid- and late-century catastrophic flood, inundation levels would be 0.24 and 0.93 foot, respectively, under the No Action Alternative, and would be reduced to zero under the Proposed Action.
- **KITI-AM** would be inundated by 2.44 feet during a mid-century major flood under the No Action Alternative and Proposed Action. During a late-century major flood, inundation levels would be 2.63 feet under the No Action Alternative and reduced to 2.59 feet under the Proposed Action. Inundation during a mid-century catastrophic flood would be 6.19 feet under the No Action Alternative, and reduced to 3.84 feet under the Proposed Action. Inundation at the facility during a late-century catastrophic flood would be 7.53 feet under the No Action Alternative, reduced to 4.61 feet under the Proposed Action.
- **KELA-AM** would not experience inundation during a mid-century major flood under the No Action Alternative or Proposed Action. During a late-century major flood, inundation levels would be 2.34 feet under the No Action Alternative and reduced to zero under the Proposed Action. Inundation at the facility during a mid-century catastrophic flood would be 6.95 feet under the No Action Alternative, and reduced to 4.3 feet under the Proposed Action. Inundation at the facility during a late-century catastrophic flood would be 8.29 feet under the No Action Alternative, reduced to 5.15 feet under the Proposed Action.

- **The Montesano WWTP** would not experience inundation during a mid-century or late-century major flood under the No Action or Proposed Action Alternative. During a mid-century catastrophic flood, the treatment plant would be inundated 2.58 feet under the No Action Alternative. The Proposed Action would reduce the water level to zero during this event. During a late-century catastrophic flood, the treatment plant would be inundated approximately 3.9 feet under the No Action Alternative. The Proposed Action would reduce the water level to 2.9 feet.

During a recurring flood scenario, most public service and utility facilities in the study area would flood to some degree 3 years in a row. While the Proposed Action would reduce the flood elevations of each major or catastrophic flood at the public service and utility facilities potentially affected by modeled floods, most would still be inundated to some degree. This frequency of flooding would continue to be disruptive or damaging to these facilities, as a single year often is not long enough to repair flood damages. Therefore, a recurring flood scenario would cause disruption and damage that would remain difficult to repair even with the Proposed Action in place.

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Table I-4
Predicted Inundation Depths (in Feet)¹ from a Major or Catastrophic Flood on Selected Public Services and Utilities

FACILITY	MAJOR FLOOD						CATASTROPHIC FLOOD					
	MID-CENTURY			LATE-CENTURY			MID-CENTURY			LATE-CENTURY		
	NO ACTION	PROPOSED ACTION	DIFFERENCE	NO ACTION	PROPOSED ACTION	DIFFERENCE	NO ACTION	PROPOSED ACTION	DIFFERENCE	NO ACTION	PROPOSED ACTION	DIFFERENCE
Centralia Police Station	0	0	0	0	0	0	0	0	0	0.23	0.23	0
Washington State Patrol	0	0	0	0	0	0	2.26	0	-2.26	3.79	0	-3.79
Fire Station 3 District 16	0	0	0	0	0	0	2.52	0	-2.52	4.57	0	-4.57
Fire Station 1 Riverside Fire Authority	0.07	0.07	0	0.07	0.07	0	0.33	0.33	0	1.03	1.03	0
Oakville Elementary/High School	0	0	0	0	0	0	0	0	0	0.93	0	-0.93
Washington Elementary School	0.46	0.45	-0.01	0.72	0.72	0	2.98	1.94	-1.04	4.39	2.14	-2.25
Veterans Memorial Museum	0	0	0	0.04	0	-0.04	0.76	0.17	-0.59	1.21	0.35	-0.86
Chehalis-Centralia Railroad and Museum	0	0	0	0	0	0	0.58	0	-0.58	1.03	0.17	-0.86
Valley View Health Center (Kresky Avenue)	0	0	0	0	0	0	1.94	0	-1.94	3.29	0.14	-3.15
KCED-FM	0	0	0	0	0	0	0.24	0	-0.24	0.93	0	-0.93
KITI-AM	2.44	2.44	0	2.63	2.59	-0.04	6.19	3.84	-2.35	7.53	4.61	-2.92
KELA-AM	0	0	0	2.34	0	-2.34	6.95	4.3	-2.65	8.29	5.15	-3.14
Montesano Wastewater Treatment Plant	0	0	0	0	0	0	2.58	0	-2.58	3.89	2.87	-1.02

¹ Inundation depths are taken at one point at the facility location. Inundation depths may vary at other locations on the facility sites.

Bold and **shading** indicates locations where the flood depth is reduced to zero under the Proposed Action.

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3.2.2.2 Indirect

3.2.2.2.1 Flood Retention Expandable Facility

Because the FRE facility would generally reduce the inundation depths throughout the study area, it could potentially reduce flood-related contamination in private wells in the study area. During floods, individual wells that are not sealed properly can be contaminated by floodwater if inundated. Reductions in flood water surface elevations are unlikely to substantially reduce flood-related contamination in private wells since they would likely be inundated to some degree by the evaluated flood scenarios regardless. Refer to the *Water Discipline Report* for discussion regarding water rights and uses, including wells.

No indirect adverse impacts on public services or utilities from the operation of the FRE facility are anticipated.

3.2.2.2.2 Airport Levee Changes

No indirect adverse impacts on public services or utilities from the operation of the proposed Airport Levee Changes are anticipated.

3.2.3 Required Permits

Lewis County PUD provides electrical service in the area of the FRE facility. Through the PUD's application process for establishing new service, Lewis County PUD would determine how to design and place the new electrical infrastructure in a way that best avoids or minimizes any impacts on existing utilities. Installation of the new utility connection is anticipated to require some or all the following permits from Lewis County:

- Building permit (Lewis County)
- Fill and grade permit (Lewis County)
- Critical areas review (Lewis County)
- Right-of-way Use Permit (Lewis County)

Any relocation of Pe Ell's water line associated with construction of the FRE facility would be conducted in compliance with permitting conditions from Lewis County and approvals from the Town of Pe Ell. Any relocations would be conducted in a way that best avoids and minimizes disruption to the water service. Because the water intake would not be affected, no permits would be needed from the Washington Department of Health. Relocation of the water line may result in the need to renegotiate some or all of the water line easement and is anticipated to require some or all the following permits from Lewis County:

- Lewis County Building permit
- Lewis County Fill and Grade permit
- Lewis County Right-of-way use permit
- Lewis County Critical areas review

Any relocation of underground utilities associated with construction of the Airport Levee Changes would be conducted in compliance with permitting conditions from the City of Chehalis and the applicable service provider. Any relocation would be conducted in a way that best avoids and minimizes disruption to the utility. Utility relocation may require the following permits:

- City of Chehalis Building Permit
- City of Chehalis Earthmoving Permit
- City of Chehalis Right of Way Use Permit

See also the *Earth Discipline Report* (Shannon & Wilson and Watershed Geodynamics 2020), *Land Use Discipline Report* (Anchor QEA 2020a), *Water Discipline Report* (ESA 2020b), *Wetlands Discipline Report* (Anchor QEA 2020b), and *Wildlife Species and Habitats Discipline Report* (Anchor QEA 2020c) for other permits that may be required.

3.2.4 Proposed Mitigation Measures

This section describes the mitigation measures that would reduce impacts on public services and utilities from construction and operation of the Proposed Action. These mitigation measures would be implemented in addition to project design measures, best management practices, and compliance with permits, plans, and authorizations.

The Applicant will implement the following measures to mitigate impacts on public services and utilities:

- **PSU-1:** To reduce potential impacts on Pe Ell's water supply system, mitigation is proposed for the Applicant to work with the Town of Pe Ell to conduct a study to determine if the Pe Ell water line at Lester Creek needs to be relocated or redesigned to ensure that it can withstand inundation within the temporary reservoir. If relocation or redesign is required, the Applicant will develop a cost estimate and provide funding for this work.
- **PSU-2:** Mitigation is proposed for the Applicant and its contractors to develop construction sequence plans and coordinate schedules to minimize service disruptions and provide ample advance notice if service disruption is unavoidable, consistent with utility provider policies.

In addition, the Applicant will implement the following environmental health and safety measures related to public services and utilities:

- **EHS-3:** To improve emergency response, mitigation is proposed for the Applicant to develop and implement a breach flood warning system for Pe Ell, Centralia, and Chehalis. The breach flood warning system would be a staged system, with alerts and responses becoming more urgent as the potential for a breach becomes more severe. The initial stage may begin with notifications to local officials, eventually proceeding to full-scale evacuations. For a fast-developing breach scenario, with little warning time, alert sirens may be an option. This system will be reviewed by Ecology's DSO and Lewis County emergency response agencies.

- **EHS-4:** To improve emergency response, mitigation is proposed for the Applicant to provide training to local emergency response organizations for breach scenarios as part of the EAP. This also includes providing educational outreach for downstream residents, schools, and critical facilities on how to respond to a rapidly developing breach.

3.2.5 Significant and Unavoidable Adverse Impacts

Compliance with laws and implementation of the measures described above would reduce impacts on public services and utilities. There would be **no significant and unavoidable adverse** environmental impacts on public services and utilities.

3.3 Local Actions Alternative

3.3.1 Impacts from Construction

This section analyzes the potential impacts from construction of local actions such as strategic floodproofing (elevating buildings, building berms or floodwalls), floodplain storage improvement (placing wood in rivers, restoring riparian areas, reforesting floodplain areas), and channel migration protection (placement of wood in rivers).

3.3.1.1 Direct

Construction activities for local actions could occur in proximity to public service or utility facilities such as buried utility lines. If this were the case, residents could experience temporary utility disruptions or service outages. Depending on the extent and duration of construction, emergency service response times could be delayed. Because construction would be short term, and would be conducted in compliance with each local jurisdiction's permit regulations, these adverse impacts would range from **moderate to minor**, depending on proximity to the facility and duration of construction.

3.3.1.2 Indirect

No indirect impacts on public services and utilities from the construction of the Local Actions Alternative are anticipated.

3.3.2 Impacts from Operation

This section analyzes the potential impacts from operation and implementation of local actions, such as adopting higher development and construction standards, strategic floodproofing, buy-out of at-risk properties or structures, floodplain storage improvement, channel migration protection, and early flood warning systems.

3.3.2.1 Direct

Land use management changes and buy-outs of high-risk properties or structures would not adversely affect public services and utilities. An enhanced early flood warning system could reduce the demand for emergency response following a flood.

If local actions such as floodproofing were applied to public services or utility providers, they could reduce flood damage to those facilities during floods. This could include installing permanent floodproofing measures at an individual location.

If floodplain storage improvements or channel migration protection were implemented, it could reduce the inundation depth and duration on area roads, which would reduce delays experienced by emergency response providers during floods. Under the Local Actions Alternative, public services and utilities throughout the study area would continue to be vulnerable to damage during both major and catastrophic floods. This alternative would result in some improved conditions, but floods would be

expected to continue to create service outages during floods, as well as delayed response times for emergency service providers, until floodwaters recede and services can be restored. Inundation at utility facilities and area roadways would increase over time due to climate change, resulting in potentially longer and more frequent service disruptions. Under the Local Actions Alternative, the study area would continue to experience **substantial flood risk**.

3.3.2.2 Indirect

No indirect adverse impacts on public services and utilities from the operation of the Local Actions Alternative are anticipated.

3.4 No Action Alternative

The No Action Alternative could result in some improved conditions as a result of implementation of flood damage reduction programs and projects that have been constructed or are funded and permitted, but flood damage reduction benefits on public services and utilities would likely be limited.

Under the No Action Alternative, public services and utilities throughout the study area would continue to be vulnerable to damage during both major and catastrophic floods (see Table I-4). Inundation at utility facilities and area roadways would increase over time due to climate change, resulting in potentially longer and more frequent service disruptions. Flood frequency and severity are predicted to increase in the future. Floods would continue to affect structures and facilities in the study area, and roads and bridges would remain at risk of being damaged by floodwaters, reducing the capacity for prompt emergency response and access to critical facilities. Under the No Action Alternative, the study area would continue to experience **substantial flood risk**.

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