City of Chehalis Flood Storage Master Plan

Phase 2 - Preliminary Feasibility Report

June 2019

Chehalis, WA

Prepared by:

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Executive Summary

The Chehalis River has flooded 18 times in the last 20 years. Major floods occurred in 1990, 1996, 2007 and 2009. The State Legislature established a Framework for the Chehalis Basin Strategy in 2016. The purpose of the Chehalis Basin Strategy (CBS) is to reduce damages from catastrophic floods and restore degraded aquatic species habitat in the Chehalis River Basin within western Washington State. The State Legislature has appropriated funding for the Chehalis basin projects that implement the Chehalis Basin Strategy.

The City of Chehalis received funding from the Chehalis Basin Strategy program. The City intends to use the funding to construct a flood storage basin adjacent to the Chehalis River that will reduce the flood impacts near the City of Chehalis. This document is a preliminary Feasibility report to design a flood storage basin that will reduce flood damage and restore aquatic species habitat.

This feasibility report proposes a flood storage basin on a 150-acre site. A hydraulic model analysis of the preliminary design showed that the project has the potential to reduce flooding in areas both upstream and downstream of the project site during the 100-year flood. However, the hydraulic model of the proposed storage basin showed an increase in flood levels downstream of the project during smaller flood events, such as the 2-year flood. The primary emphasis of this Feasibility report was to provide a proof of concept to determine if a project on the 150 site had the potential to achieve the goals of the Chehalis Basin Strategy. The results described in this report indicate that with further refinement and modification of the project design a flood storage basin can be constructed that will comply with the CBS.

This feasibility report also included environmental screening to identify the permits that must be reviewed once the conceptual design of the project is determined. Possible environmental permits that could be triggered by the project design are listed and explained in this report. Some permits listed may not be required for the project. At this time, it is undetermined. Some permits are known to be required regardless of the final details of the project design.

Future phases of the project will include project level environmental review, restoration of aquatic species habitat and engagement of state agencies, tribes, and other parties.

Purpose of Project

A Scope of Work was provided to the City in June of 2018 for the development of a preliminary Flood Storage Master Plan to evaluate the potential flood storage volume of a 150-acre site adjacent to the east bank of the Chehalis River. The project site is between the Chehalis River and I-5, south of Airport Road and north of Highway 6 (See Figure 1). The Phase 1 preliminary work summarized herein was completed with early partial funding obtained by the City. The purpose of this early phase of work is to provide a proof of concept, showing the benefits of the flood storage, provide preliminary estimates of earthwork quantities as well as to look for fatal flaws, if any.

The purpose of the Flood Storage Master Plan is the City's desire to increase the available flood storage which would reduce the flood elevation in the Chehalis River and reduce the flood impacts. The project will also provide additional aquatic species and wildlife habitat, and will enhance recreational use of the site. The project will include removing the existing buildings and utilities within the project limits. Watershed Science & Engineering (WSE) used a RiverFlow 2D hydraulic model to simulate the proposed project design. The simulation will be used to evaluate potential flood benefits and hydraulic impacts during flood events of varying frequencies.

Project Description

Section 1 – Flood Storage Design Alternatives and Volume Calculations

Several proposed storage basin alternatives, described below, were analyzed to compare preliminary earthwork and storage volumes that could potentially be provided. One proposed basin surface alternative was selected. WSE ran a hydraulic model for the 100 year and 2-year flood event for the selected alternative. The purpose of the hydraulic analysis was to determine if the proposed storage would reduce flooding upstream and downstream of the project. Alternative C described below was selected because it was thought that this alternative would show the greatest impact on the reduction of the water surface elevation in the Chehalis River. If this alternative did not show a significant flood benefit impact then other design alternatives with a more constricted inlet or higher inlet elevation would certainly not show an impact either. The detailed results of the model run for Alternative C are described by WSE in Section 3 of this report.

Alternative A: Construction of a berm set at elevation approximately 1.5 feet above the highest 100-year flood elevation on the site was considered. This alternative would have a designed inlet and outlet to control the flow into and out of the proposed basin. The inlet and outlet would be designed to allow the passage of fish.

Alternative B: includes a berm that is set at elevation 179 feet (approximately 1.5 feet above the highest 2-year flood elevation on the site), has a bottom elevation of 160 ft NAVD 88), with 3:1 side slope.

Alternative Selected for Hydraulic Model Analysis

Alternative C: The proposed basin flowline from the inlet to the outlet was set at 167.0 and 162.0 respectively, to allow the flow to enter the basin at flows equal to or greater than the 6-month event water surface elevation. Exhibit II in Section 4 shows the proposed flowline through the basin. The river right bank is proposed to be designed to allow the channel water to overtop the right bank at flows greater than the 6-month flood event. The basin bottom is graded from the river right bank, and from the east edge of the basin towards the basin flowline. The basin flowline drains the basin at a mild slope of 0.0012 ft/ft from the basin inlet

to the outlet. This allows fish to enter the basin with channel backwater at high flows and drain out along the graded flowline at low flows. The design drawings for Alternative C are presented in Section 4.

The intent of Alternative C was to capture the flow volume entering the basin between the 6 month and 100-year flood events, perform a model run, and determine if the results showed a significant benefit by reducing the flooding area. See Section 4, Exhibit II which shows the water surface elevation for the 6-month, 2-year and 100-year events at the upstream and downstream points in the channel along the project. These elevations can be compared to the proposed Alternative C basin inlet and outlet elevation, 167.0 and 162.0 respectively to see the reason the elevations were selected.

The model results are shown in Table 1, Page 4, Section 3 - Hydraulic Analysis of Alternatives. The results from the 100-year event simulation show reductions in peak water surface elevations both upstream and downstream from the project (0.9 feet decrease upstream of project, and a decrease of less than 0.1 feet downstream of the project).

The results from the 2-year event simulation show reductions in peak water surface elevations upstream from the project but show increases in the range of 0.03 – 0.2 feet downstream from the project.

Further basin design and modeling of alternatives

The goal of the project is to show a **decrease** in the Chehalis River water surface elevation, upstream and/or downstream of the constructed project. The prediction of a downstream water surface rise will require additional modeling will be required in Phase 2 to find a balanced design that does not cause an increase in water surface elevation at any flood event. See page 10, Section 3 - Hydraulic Analysis of Alternatives, regarding recommendations for refinement of the basin design.

Once a balanced design has been developed in Phase 2 of the Flood Storage Master Plan, rough order of magnitude cost estimates will be prepared that include:

- Purchase of properties
- Permits
- Habitat restoration features
- Park features
- Abandonment of existing utilities
- Demolition of buildings and roads
- Excavation
- Construction of the basin Inlet and Outlet structures

Next Steps and Conclusion

In the next phase of the development of the Master Plan, additional hydrologic modeling will be completed. WSE will complete the modeling to determine the flood benefit impacts for the proposed basin design. Skillings Connolly will analyze the basin design, and will collaborate with WSE to select the alternative that will be modeled. This could be an iterative process. The potential flood mitigation benefits created by each alternative will be reviewed.

The next phase of the Master Planning process will also include preliminary park design and preliminary habitat restoration design.

A preliminary environmental screening was completed as part of this report, but additional environmental investigation will be needed when the design is refined and confirmed by the model simulation. In the future phases of the project, additional work will be completed to further identify environmental permits that will be needed for the project. This will include preliminary consultation meetings with the US Army Corp of Engineers, WA Department of Fish and Wildlife and others, to review the proposed project.

Section 2 - Preliminary Environmental Screening

June 2019

Introduction

The City of Chehalis (hereafter referred to as City) is proposing an approximated 150-acre flood storage project (hereafter referred to as the Project) along the east bank of the Chehalis River. The proposed Project is intended to lower the Chehalis River water elevation during flood events and provide flood mitigation benefits.

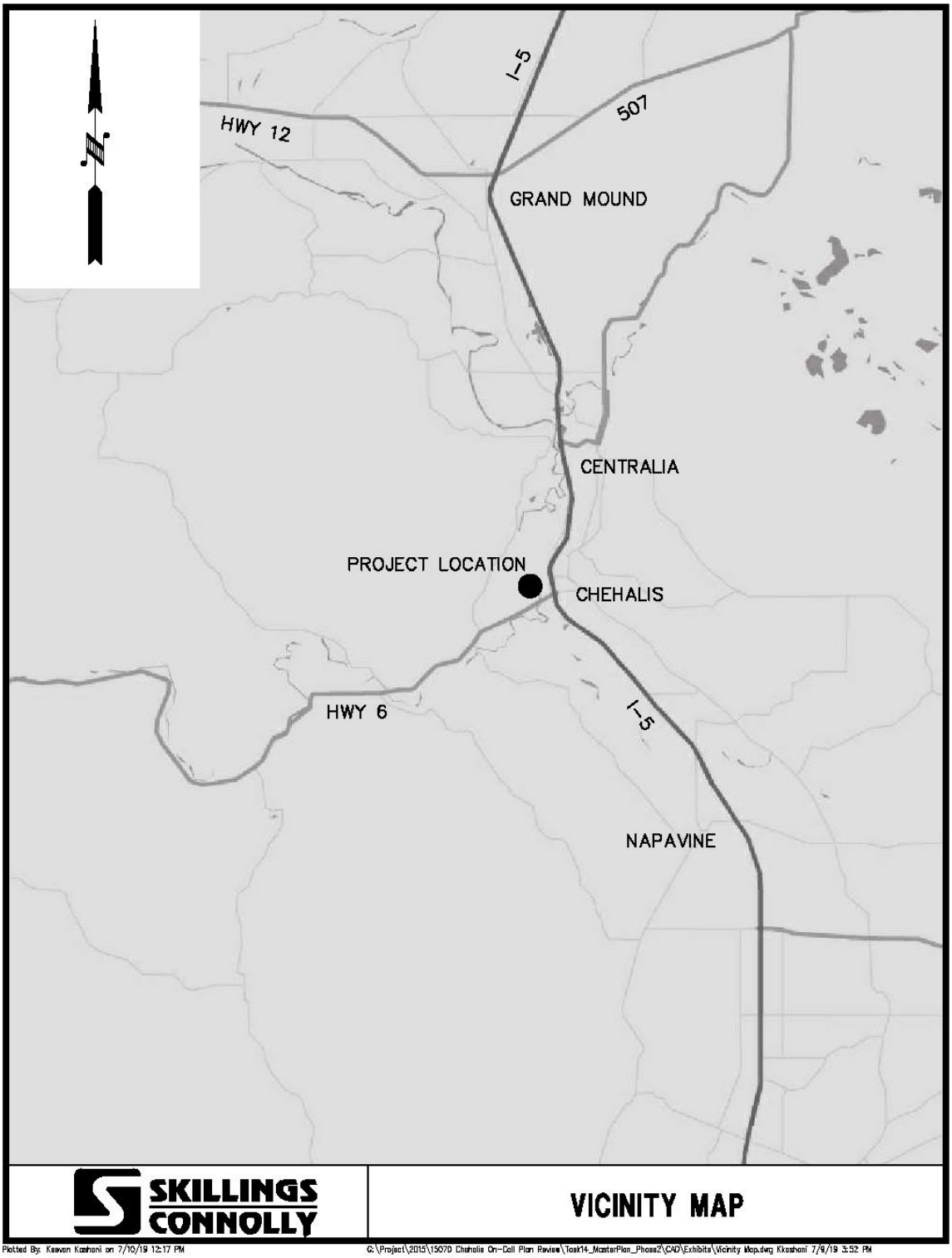
The proposed Project site would include the purchase of private and commercial properties (Figure 2) within the Project area (Figure 3). The razing and or relocation of existing structures, roads, utilities, grading, excavation, the addition of fill and the construction of an inlet and outlet are proposed in order to construct the flood mitigation for the storage basin.

The proposed Project Site would include approximately 80 parcels (Figure 2), including parcels owned by the City. Approximately half of these parcels would need to be purchased from private landowners within the Project Site. Property uses within the Project Site include agricultural land, developed and undeveloped residential land, commercial use, and City utilities (e.g., abandoned wastewater treatment plant). All parcels are zoned General Commercial and Utility.

Structures to be razed include a decommissioned wastewater treatment plant (WWTP), residential units (approximately 20), commercial structures (approximately 2) and impervious surfaces. Impervious surfaces to be removed include large portions of NW Florida Ave and NW Shoreline Dr and all of NW George Ave, NW Brace St., and NW Cedar St. Other impervious surfaces that will be removed include large areas of gravel, concrete or asphalt used for parking areas. Existing utilities (Figure 4) on Site include water services (e.g., potable and hydrants), sewer, stormwater, and telephone infrastructure (above and below the ground). The relocation of any utilities will be assessed by the City. All the structures on Site will be assessed for potential hazardous materials and industrial contaminants prior to razing. An assessment of these structures will be completed during further environmental review of the Project Site.

Outlined below is a preliminary environmental screening of the existing environmental characteristics of the Project area, proposed Project sequencing, and anticipated environmental permitting and documentation for the Project. This document is intended to assist in the design and permitting process for the proposed Project.

Figure 1. Vicinity Map.



Project Sequencing

Discussed below is a generalized project sequence for the Proposed Site listed by order of precedence.

State Environmental Policy Act (SEPA)

Under the State Environmental Policy Act (SEPA), local governments and state agencies use a SEPA checklist to help determine whether a proposal will have significant adverse environmental impacts. The information provided for the SEPA checklist helps to identify what measures can be taken to avoid, counter, or minimize likely impacts, and whether compensatory mitigation measures could be used to offset adverse effects. Agencies reviewing the SEPA also determine if an environmental impact statement will be needed to analyze a proposal. The lead agency for the Proposed project will be the City of Chehalis.

The City of Chehalis will review the Proposed Project SEPA Checklist and issue one of the following determinations:

1. A determination of non-significance (DNS)
    a. A determination of non-significance (DNS) is issued when the responsible agency has determined a proposal is unlikely to have a significant adverse environmental impact, or mitigation has been identified that will reduce impacts to a nonsignificant level. The DNS may or may not require a public comment periods and circulation to other agencies. Or
2. Mitigated DNS
    a. If significant impacts are identified that require an Environmental Impact Statement (EIS) to be prepared, the applicant can reduce the impacts by making changes to a proposal or an agency can require mitigation as a condition of approving the project. When changes to the proposal or mitigation measures are identified that will reduce the identified significant adverse impacts to a nonsignificant level, a “mitigated DNS” is issued in lieu of a Determination of Significance and an EIS.

Environmental Impact Statement

An EIS is prepared when the lead SEPA agency determines a proposal is likely to have significant adverse environmental impacts. For the proposed Project the City of Chehalis will be the lead SEPA agency. The EIS process is a tool for identifying and analyzing probable adverse environmental impacts, reasonable alternatives and possible mitigation. At this phase of the project it is undetermined what the Environmental Impacts of the project will be until the project design has progressed to about the 30% design stage.

The EIS process:

Provide opportunities for the public, local, state, and federal agencies, and tribal governments to participate in developing and analyzing information. This input helps identify a proposal's significant adverse environmental impacts, reasonable alternatives, possible mitigation measures, and methods for analyzing the EIS. Public participation during all process phases increases understanding of the proposal and garners trust.

Improves proposals from an environmental perspective. Proposals are improved by identifying adverse environmental impacts, reasonable alternatives and potential mitigation measures that meet the objectives of a proposal. Changes can made voluntarily by the proponent, or mitigated through SEPA substantive authority or other regulatory authority. The EIS process helps identify areas of controversy and other significant issues early when opportunities to consider a broad range of solutions are greatest.

Provides decision-makers with environmental information. An EIS provides decision-makers and the public with a complete and impartial discussion of the proposed project as well as existing site conditions, probable significant adverse environmental impacts, and reasonable alternatives and mitigation measures to avoid, minimize, or counter adverse impacts.

Provides necessary information for conditioning or denying a proposal. Based on information in the EIS and an agency's adopted SEPA policies, SEPA substantive authority allows an agency to: Deny a proposal when impacts cannot be reasonable mitigated; place conditions on the project to protect the environment; or approve the proposal without further mitigation.

The EIS process includes:

- **Conducting "scoping**," which initiates participation by the public, tribal governments, and other local, state and federal agencies to comment on a proposal's alternatives, impacts, and potential mitigation measures to be analyzed in the EIS.

- **Preparing the draft EIS**, which analyzes the probable impacts of a proposal and reasonable alternatives, and may include studies, modeling, and other information.

- **Issuing the draft EIS for review and comment** by the public, tribal governments, and other local, state, and federal agencies.

- **Preparing the final EIS**, which includes analyzing and responding to all comments received on the draft EIS, and may include additional studies and modeling to evaluate probable impacts.

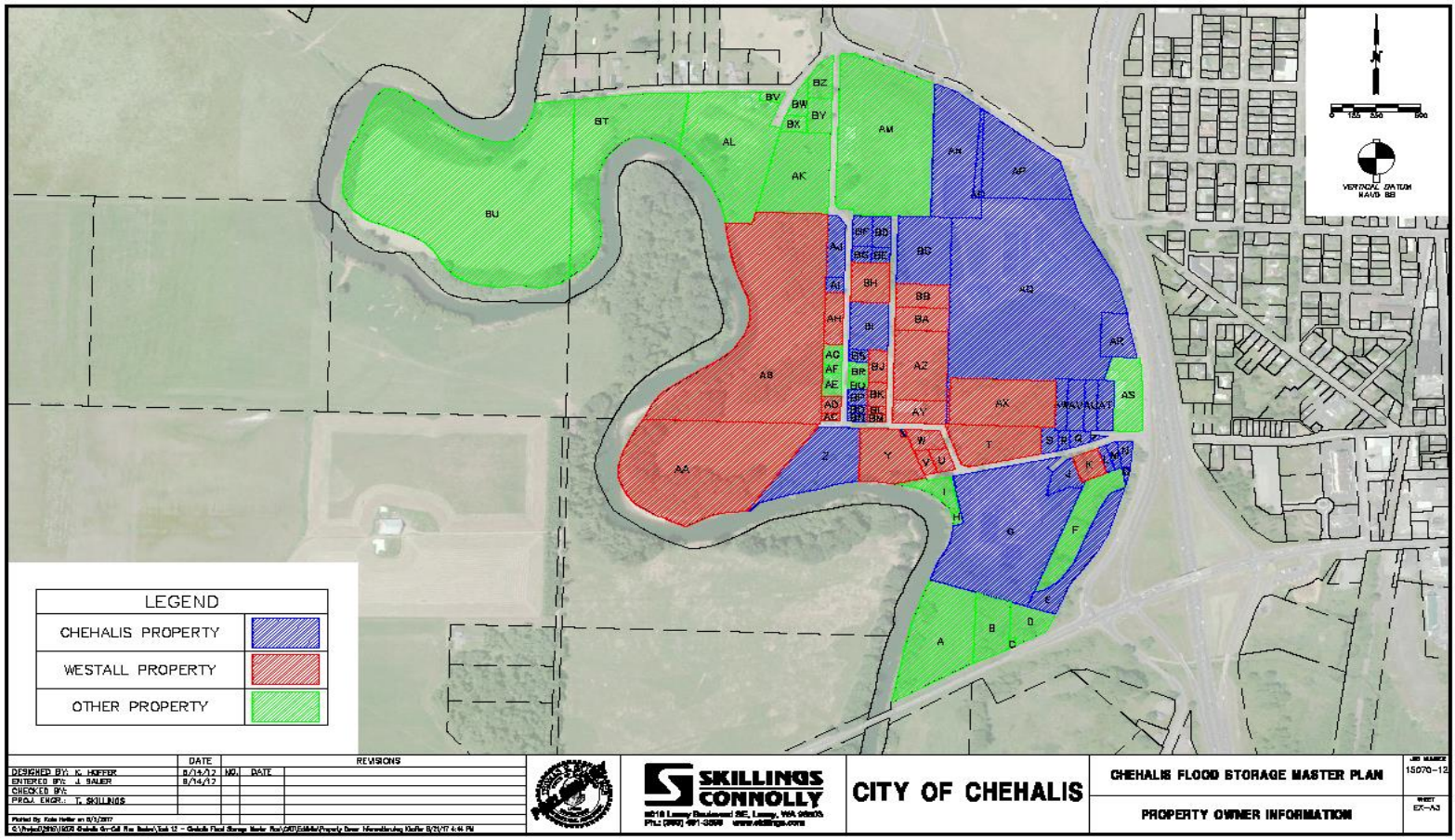
- **Issuing the final EIS** and using the information in decision-making.

Conduct a Phase I Site Assessment

A Phase I Environmental Site Assessment (ESA) of the underlying land and existing improvements at a project site is done to investigate any potential or existing environmental

contamination liabilities. For this Project Site this would include an investigation of potential hazardous materials (e.g., asbestos, lead paint, etc.) and will include an investigation of the WWTP for industrial hazardous materials or ground contamination (e.g., oil or chemical spills).

Figure 2. Property owner information for the Project Site.



Conduct a Phase II Environmental Site Assessment

A phase II ESA is generally required when a Recognized Environmental Condition (REC) is found during the Phase I ESA process. A phase II investigation consist of collecting soil sample to screen for chemical or metal contamination.

Conduct a Phase II Environmental Site Assessment

A Phase III ESA would be the contaminated site remediation phase of an ESA, aka the cleanup phase.

Figure 3. Project area of the Project Site approximately 131 acres.

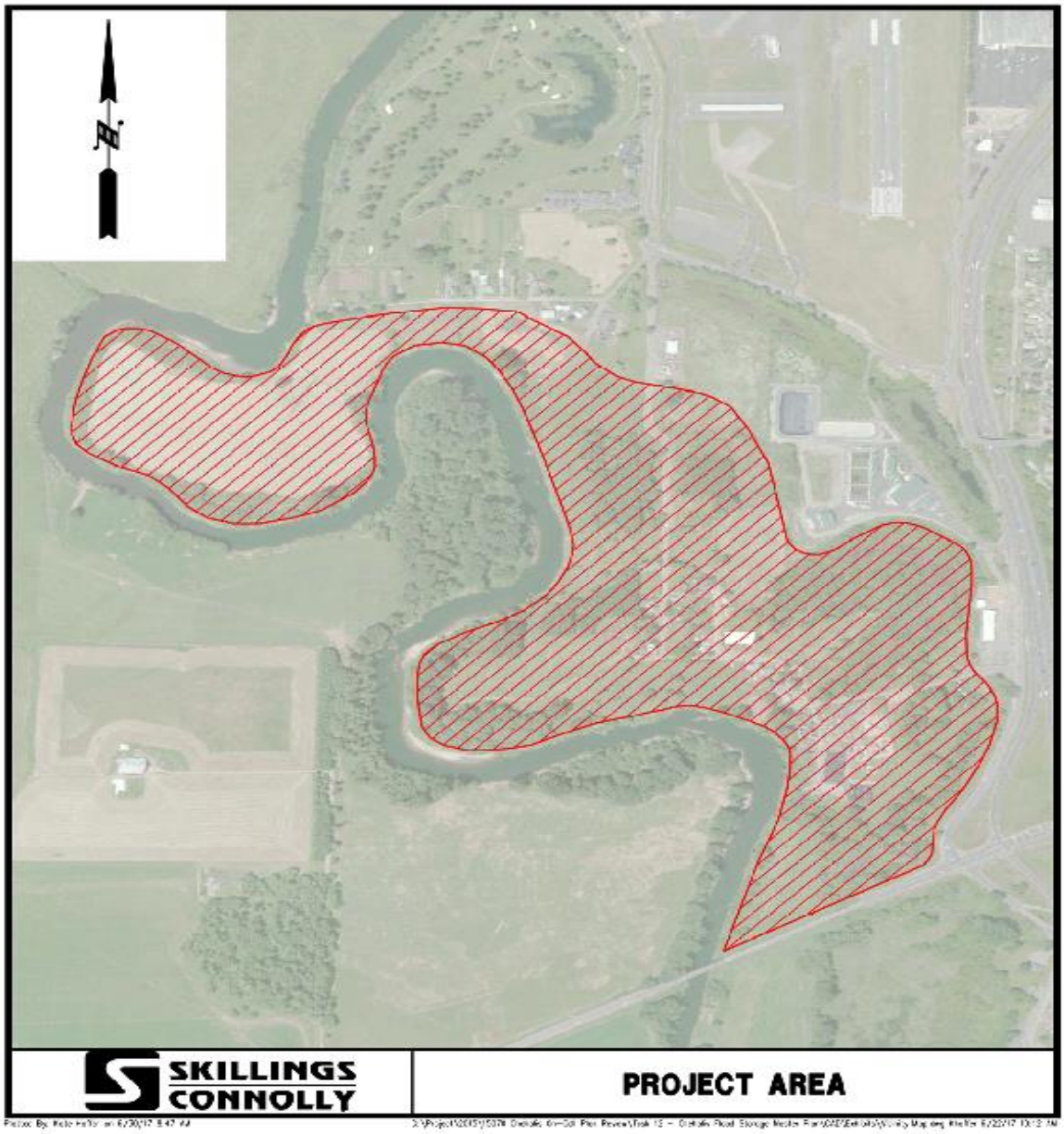
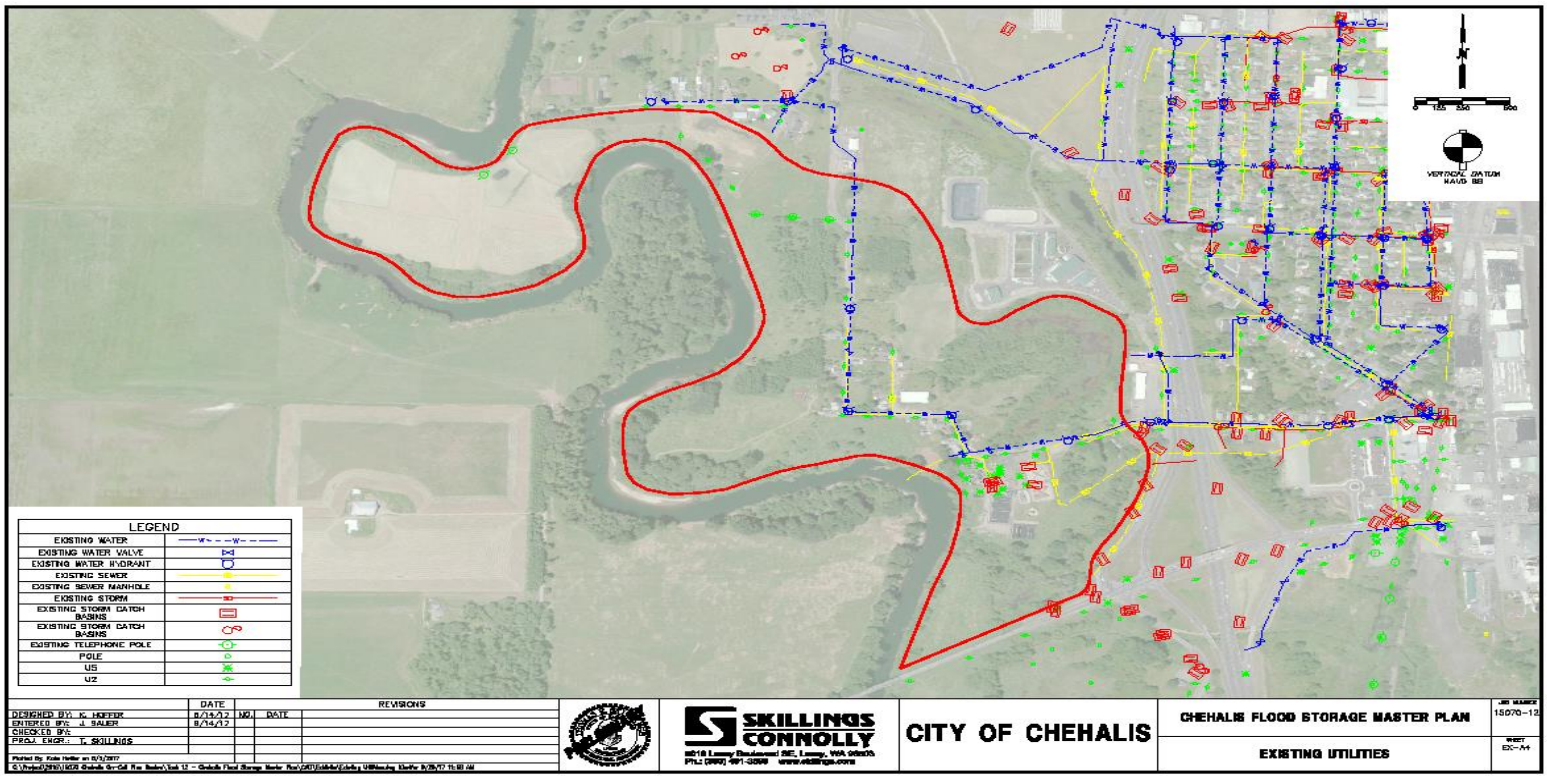


Figure 4. Project Site existing utilities.



Environmental Investigation and Documentation

The Project will require a number of environmental documents and investigations be completed prior to the submittal of any environmental permits for review by the regulatory agencies. It is anticipated, at a minimum, the following investigations would be required:

- Environmental Site Assessments (Phase I, II, and III)
- National Environmental Policy Act (NEPA)
- Section 106 National Historical Preservation Act (NHPA) evaluation
- Biological Assessment (BE) of the Site
- Identification and delineation of all wetlands with the vicinity of the Project Site
- An investigation and classification of any off-channel streams
- Geotechnical investigation
- Federal emergency Management Act (FEMA) floodplain mapping and review
- Critical area and habitat assessment and review
- Investigation of fish and wildlife habitat conservation areas
- Classification of fish and wildlife habitat
- Aquatic area assessment

- Critical aquifer review
- Hydrology Analysis
- Investigation of any hazardous areas: geologically, seismic, volcanic, mine, channels mitigation zones, and alluvial fans
- Mitigation report(s) for any impacted critical areas (wetlands, streams, wildlife habitat, buffer impacts, etc.)
- Monitoring plans for mitigation reports
- Restoration plans for impacted critical areas

Submission of Environmental Permits

Listed below are anticipated environmental permits for the Project Site organized by jurisdiction (federal, state, county, city). Each permit would require various permutations of the anticipated environmental documents and investigations listed above and a set of engineering design plan.

Federal Permits

Federal permits for this project will be based around the requirements of the Clean Water Act. We expect the following permit applications will be required with all the supporting environmental investigation reports and documentation. In general, this would include a biological evaluation, a wetland delineation report, a mitigation report for wetland or stream impacts and a set of engineered drawings.

- Section 404 Permit for discharge of dredge or fill materials into the waters of the US
  - For the US Army Corps of Engineers (USACE)
- Joint Aquatic Resources Permit Application (JARPA)

State Permits

State permits for this project would be based on the environmental regulations of the various natural resource departments: Washington State Department of Fish and Wildlife, the Department of Ecology (ECY), and the Department of Natural Resources (DNR). In general, we would expect to submit a Hydraulic Project Approval (HPA) for any in water work for waters of the state, submit a Section 401 Permit (part of the Clean Water Act) to ECY, and contact DNR for any stream typing that may be required.

- Hydraulic Project Approval (HPA)
  - Department of Fish and Wildlife (WDFW)
- Section 401 permit for water quality certification
  - For the Department of Ecology (ECY)
  - Submitted to ECY but is a federal requirement
- JARPA

County Permits

Environmental permits and documentation requirements for the Project fall under Title 17 (Land Use and Development Regulations), Chapters 38 (Critical Areas) and 25 (Shoreline Management) of the Lewis County Code.

Under Chapter 38 for Critical Areas we would anticipate the following permit applications:

- Critical Area Permit

Under Chapter 25 for Shoreline Management we would anticipate:

- Shoreline Substantial Development Permit
- Conditional use Permit
- JARPA

City of Chehalis Permits

- State Environmental Policy Act (SEPA) checklist
- JARPA
- Building Permit
- Comprehensive Plan
- Conditional Use
- Earthmoving Permit
- Right of Way Use Permit
- Variance Application

Construction Sequencing

Construction for the Project will be done in phases to comply with all the appropriate permits and associate environmental protocols (e.g., fish work windows, mitigation plans, etc.). A generalized construction sequence could be as follows:

- Utility removal, replacement or relocation within the Project Site
- Razing of residential homes
- Razing of WWTP
- Grading of proposed basin flow line
- Construction of inlet and outlets of the artificial channel
- Project construction complete
- Implementation of mitigation monitoring plans, if required

Environmental Screening Criteria

Skillings Connolly Inc. conducted a preliminary baseline environmental screening of the Site to assess potential environmental impacts of the proposed project. The environmental screening was limited to literature and database review. No agency consultations were initiated. The following assumptions and topics were made and reviewed in this evaluation:

- SEPA environmental documentation
- NEPA environmental documentation (if federal funds are anticipated)
- Interested/involved parties requiring environmental documentation for the proposed project may include:
    - Chehalis River Basin Flood Authority (CRBFA)
    - The Chehalis Tribe
    - US Army Corps of Engineers (USACE)
    - US Coast Guard (if the Chehalis River is considered navigable)
    - US Environmental Protection Agency (EPA for potential hazardous materials and soils)
    - US Fish and Wildlife Service (USFWS)
    - National Marine Fishery Service (NMFS) a division of the National Oceanic and Atmospheric Administration (NOAA)
    - Washington State Department of Archeology and Historical Preservation (DAHP)
    - Washington State Department of Ecology (ECY)
    - Washington State Department of Fish and Wildlife (WDFW)

The information presented in this report is meant to be used to support the permitting requirements for the proposed project.

ENVIRONMENTAL ANALYSIS

Mapped Characteristics

State and federal online resources were used to map and describe the existing environmental characteristics within the total Project area. Site visits will be performed in future phases to verify the listed results prior to any final Project designs. No site visits were conducted for this environmental screening.

Wetlands

Wetlands are delineated using the methods originally described in the 1987 Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) and supplemented with the regional guidance for Western Mountains, Valleys, and Coast regions (USACE, 2010) to classify and evaluate wetland indicators. There are three wetland indicators, when present together, identify a wetland: hydrophytic vegetation, hydric soils, and wetland hydrology. Identified wetlands were further classified using the Wetland Rating Manual for Western Washington-

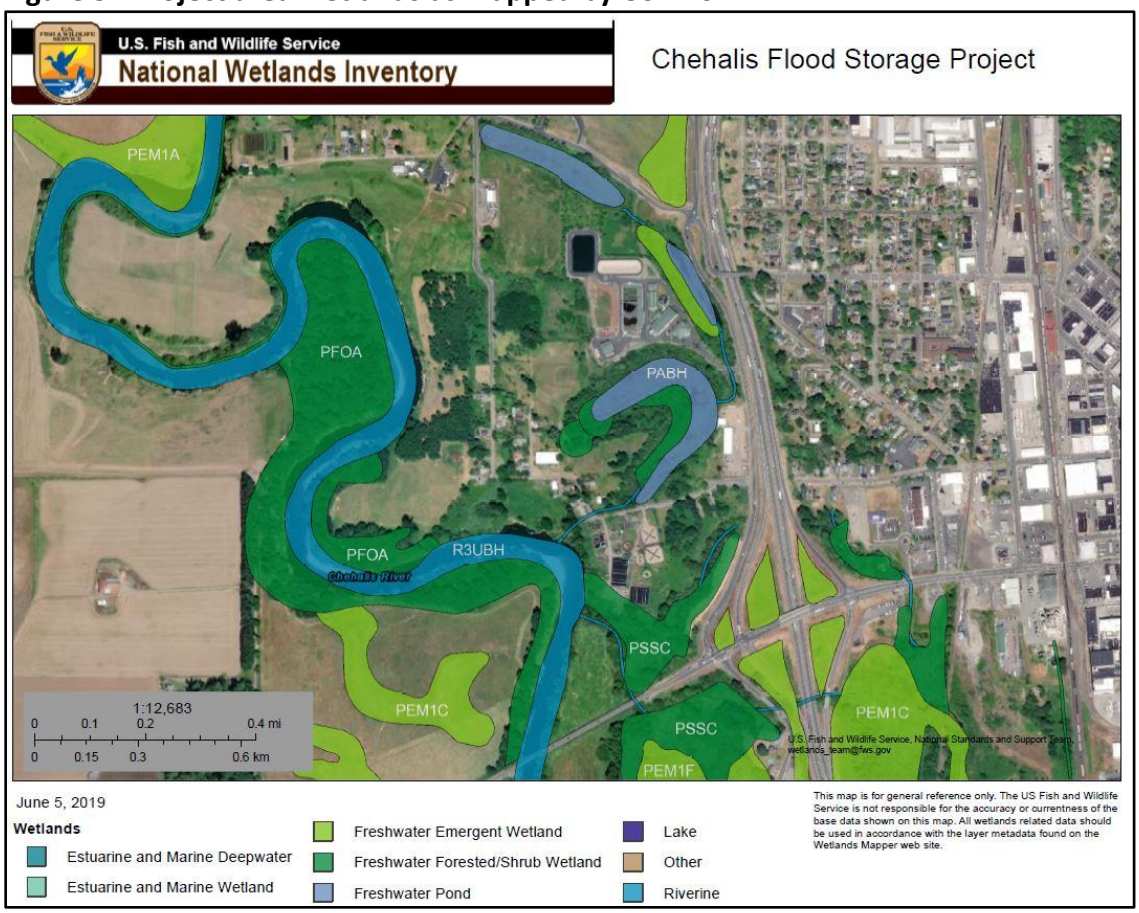
Revised (Hruby, 2014)

Wetland classification for delineations are based on the Cowardin classification system developed for U.S. Fish and Wildlife Services (USFWS), and the U.S. Department of the Interior (Cowardin et al., 1979). The Cowardin classification system includes five main types of wetlands: Marine, estuarine, riverine, lacustrine and palustrine. Palustrine wetlands are freshwater wetlands not associated with a river or lake and are generally defined as an inland wetland that lacks flowing water, contains ocean-derived salts in concentrations of less than 0.5 parts per thousand, and is non-tidal. Common palustrine wetlands would include inland marshes, swamps, bogs, fens, tundra, and floodplains. The USFWS National Wetland Inventory (NWI) Cowardin classification system includes a system (palustrine), class (e.g., Scrub-Shrub, Forested, etc.), subclass (e.g., deciduous, evergreen, etc.), and modifier (e.g., water regium, water chemistry, etc.) nomenclature for wetland classification system. All the wetlands within the Project Site are classified as palustrine (P) with either a Scrub-Shrub (SS), Emergent (EM), or Aquatic Bed classes (AB). A field reconnaissance of the proposed site will be performed in future phases to confirm the classifications. Listed below are the three different classes of wetland types located within the Project Site including the water regiment modifiers, Seasonally Flooded (C), Temporarily Flooded (A), Semipermanently Flooded (F), and Permanently flooded (H):

- Freshwater Forested/Shrub Wetlands are defined as dark green in Figure 5 (Appendix VI Project Area Wetlands):
    - Wetland Classifications
        - PSSC Wetland: Palustrine (P) Scrub-Shrub (SS) Seasonally Flooded (C)
        - PFOA: Palustrine (P) Forested (FO) Temporally Flooded (A)

- Freshwater Emergent Wetlands are defined as light green in Figure 5 (Appendix VI Project Area Wetlands):
    - Wetland Classifications
        - PEM1A: Palustrine (P) Emergent (EM) Persistent (1) Temporarily Flooded (A)
        - PEM1C: Palustrine (P) Emergent (EM) Persistent (1) Seasonally Flooded (C)
        - PEM1F: Palustrine (P) Emergent (EM) Persistent (1) Semipermanently (Flooded)
        - Freshwater Ponds are light blue and light green in Figure 5. (Appendix VI Project Area Wetlands):
        - Wetland Classification
        - PABH: Palustrine (P) Aquatic Bed (AB) Permanently Flooded (H)

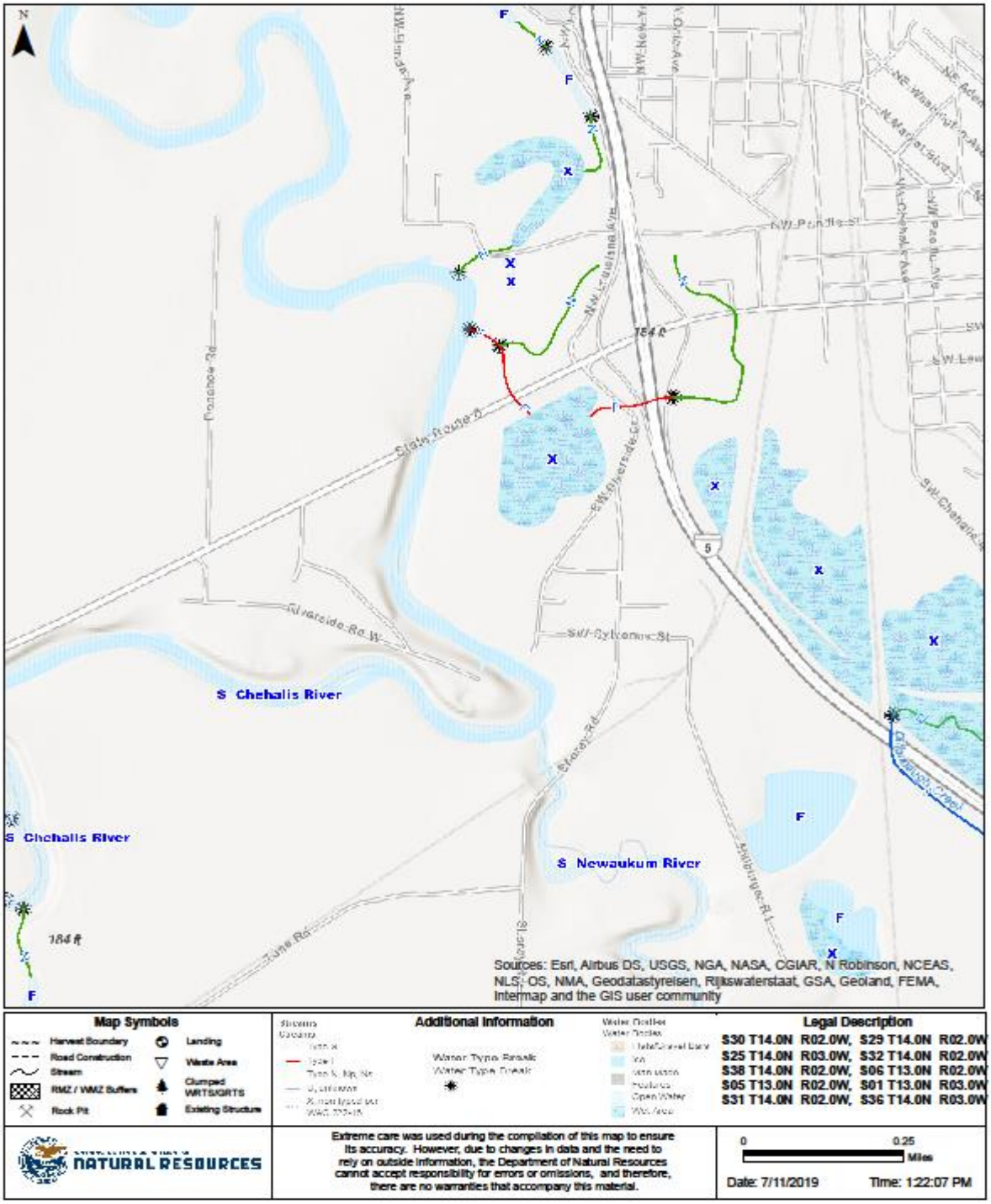
Figure 5. Project area wetlands as mapped by USFWS NWI.



Streams and Creeks

There are at least three named creeks and rivers within the vicinity of the Project Site: the Chehalis River, Dillenbaugh Creek, and the Newaukum River Figure 6 (Appendix VII – FPARS). A site assessment would have to be conducted to locate, verify and classify any unnamed water bodies in the vicinity of the Project Site to determine potential impacts from the Project. Furthermore, a site visit would have to confirm and identify the type of water breaks (Figure 6; * symbol) which are listed in the Department of Natural Resources (DNR) Forest Practices Application Mapping Tool (FPARS) database. Figure 6 shows six different water break locations within the Project Site vicinity. Water breaks are not defined in the FPARS database and thus in figure 6. However, some examples of a water type breaks could be anthropocentric structures such as a culvert or metal grating or a natural barrier such as a small waterfall between water body types (Figure 6, type N [green] or type F [red]). A site visit would be completed to classify the type of water break within the Project area and to determine potential environmental impacts of the proposed Project design.

Figure 6. ***Forest Practices Application Mapping Tool (FPARS) exhibit of the Project Site. The Chehalis and Newaukum Rivers are labeled in blue. Dillenbaugh Creek is red line in the middle of the exhibit.***



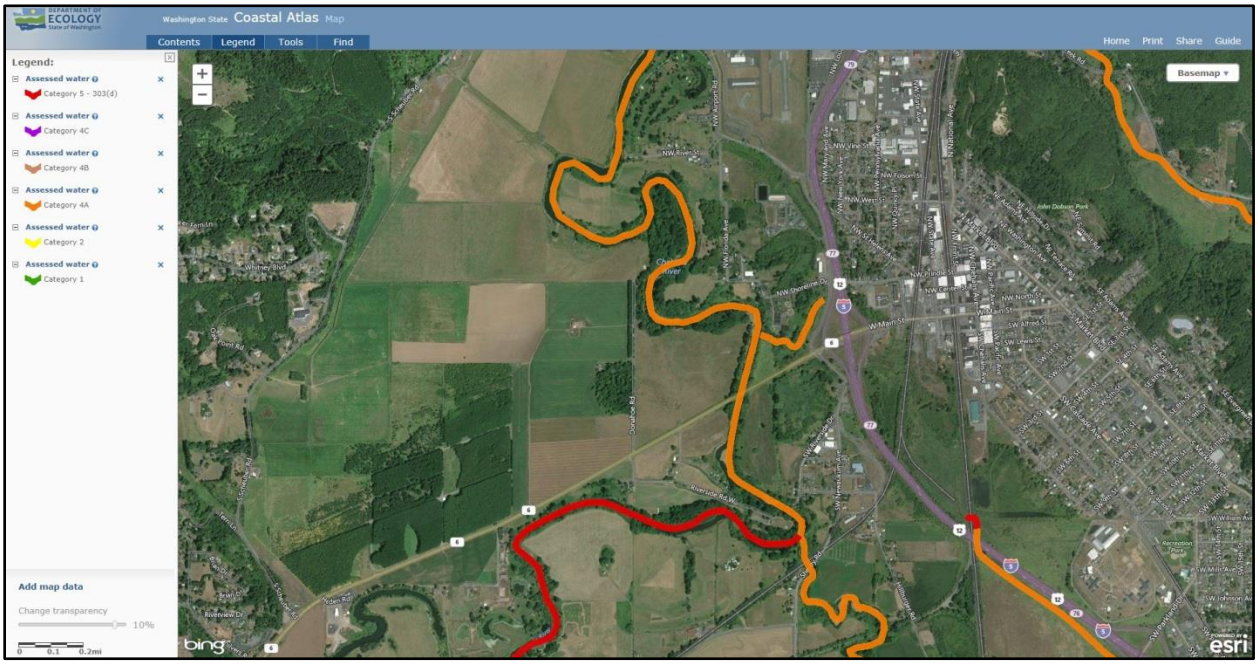
Chehalis River

WDFW's SalmonScape database lists six populations of fishes within the Chehalis River:

1. Rainbow Trout
2. Spring Chinook Salmon
3. Steelhead Trout (winter run)
4. Coho Salmon
5. Fall Chinook
6. Cutthroat Trout

ECY's Coastal Atlas database reviews water and sediment quality as Total Maximum Daily Load (TMDL). The Chehalis River sediment within the Project Site vicinity does not list any TMDL discrepancies for river sediments. However, the Chehalis River in the vicinity of the Project Site has been assessed as a category 4A (Figure 7; areas in orange) TMDL for dissolved oxygen and temperature and a category 2 for bacteria (Figure 8 and Appendix VIII -Water Quality Map) for water quality. The lower reaches of the Chehalis River south of the Newaukum River junction are listed on Washington state's 303(d) list (Figure 7; areas in red) for impaired and threatened waters of the state for high turbidity. Washington State is required under the federal Clean Water Act to restore their waters to be "fishable and swimmable". Section 303(d) of the Clean Water Act establishes a process to identify and clean up polluted waters of the state. This process includes water quality assessments by Washington States Department of Ecology (ECY) of surface waters. Surface waters includes all rivers, lakes, and marine waters. Water quality assessments include water and sediment testing of surface waters for TMDL's. TMDL's are classified into 5 category's ranging from 1 (nonpolluted; Figure 7 in green) to 5 (polluted; Figure 7 in red). If TMDL's are exceeded the water body is placed on the 303(d) list, which is maintained by ECY for review by the Environmental Protection Agency (EPA) every two years. None of the Project area is currently on the 303(d) list.

Figure 7. Water and sediment quality map of the Chehalis River, the Newaukum River, and Dillenbaugh Creek in the vicinity of the Project Site.



S. Newaukum River

The Newaukum River is not listed as navigable waterway by the US Coast Guard. This river is located to the south of the Project Site and flows into the Chehalis River approximately half a mile south of the Project's southern boundary.

WDFW's SalmonScape database lists six populations of fishes within the S. Newaukum River:

1. Rainbow Trout
2. Spring Chinook Salmon
3. Steelhead Trout (winter run)
4. Coho Salmon
5. Fall Chinook
6. Cutthroat Trout

Dillenbaugh Creek

Dillenbaugh Creek is a network of creeks separated by wetlands and water breaks (Figure 7 and Appendix VIII -Water Quality map). There are at least three water breaks in the system and three wetland types (PSSC, PFOA, and PEM1C). Only the lower reach of the creek entering the Chehalis River is listed as fish bearing. The headwater streams are listed as Type N's that are temporally flooded (A) and seasonally flooded (C) in their respective wetland units (PSSC and PFOA; Appendix VI: Project Area Wetlands).

WDFW's SalmonScape database lists four populations of fishes within Dillenbaugh Creek:

1. Residential Coastal Cutthroat Trout

2. Coho Salmon
3. Rainbow Trout

No sediment TMDL's are listed for Dillenbaugh Creek. Dillenbaugh Creek is not listed on the 303(d) list.

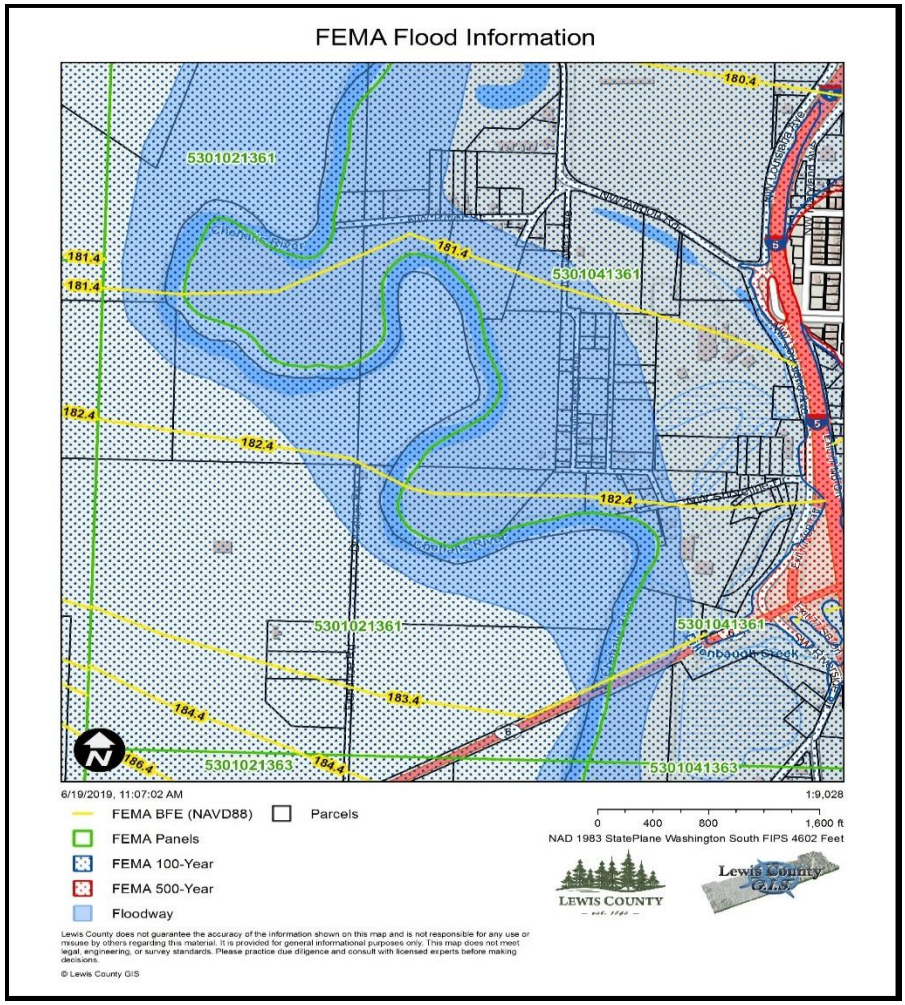
WRIA and Basins

- WRIA 23 Upper Chehalis
- Sub basin: Newaukum
- HUC: Dillenbaugh Creek Chehalis River HUC 171001030402

FEMA Flood Maps

The entire Project will be in FEMA flood areas. Lewis County has mapped the floodway (blue), FEMA-100-year (blue dots) and FEMA-500-Year (red dots and lines) in their FEMA geodatabase (Figure 8 and Appendix IX: FEMA Flood Information).

Figure 8. FEMA flood information for the Project vicinity.



High Ground Water

Lewis County has not mapped any areas of high ground water within the Project Site. However, there are currently seven monitoring wells in place to observe changes in ground water levels.

Hydrology

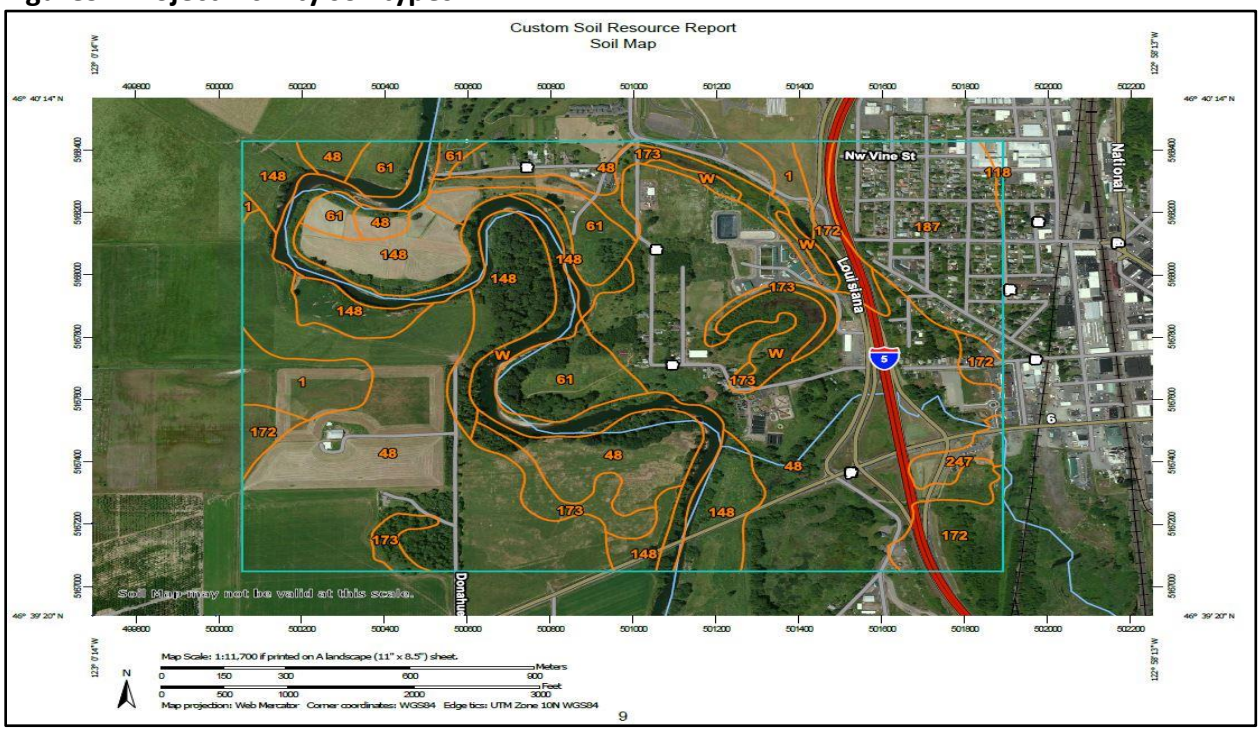
The hydrology of the Project is heavily influenced by the Chehalis River (Figure 8), the Newaukum River and Dillenbaugh Creek. Approximately eighty percent of the Project is within the FEMA designated Chehalis River floodway and the entire Project Site is within the 100-year FEMA floodplain designated area. In general, the Chehalis River is subject to seasonal flooding, but in the last 20 years flooding events have increased significantly with 18 events in the last 20 years, with “Major” floods occurring in 1990, 1996, 2007, and 2009.

Other hydrological influences into the Project area include limited sheet flow from the uplands to the east and Dillenbaugh Creek draining wetlands from the southeast. Ground water in the area is currently being monitored, but ground water levels are not anticipated to have a large impact on the local hydrology.

Soils

There is a mix of nine different silty clay loam soil types within the Project Site (Figure 9 and Appendix X: Soil Information). Approximately seventy percent of the soils are listed as well drained according to the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil mapping database. The remainder is listed as poorly drained. The dominant soil types for the Project Site are listed as Chehalis silty clay (51.8%; Map unit 48), Alvor silty clay loam (13.6%; Map Unit 1), and Newberg fine sandy loam (12.0%; Map Unit 148) by NRCS.

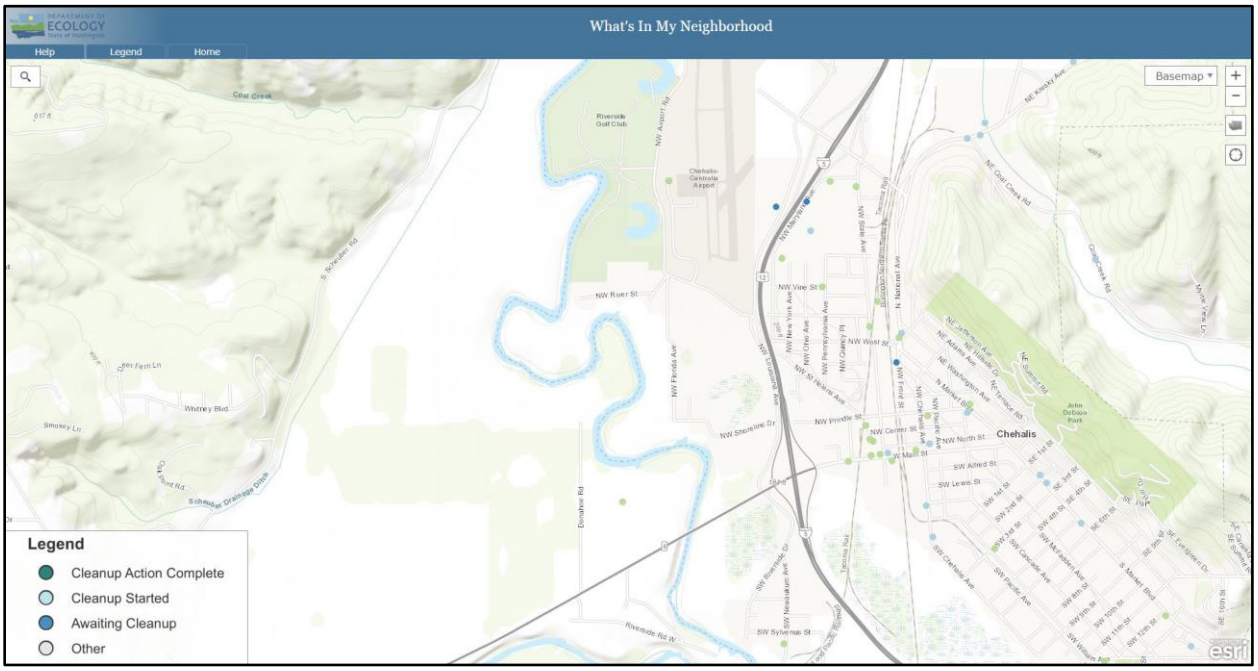
Figure9. Project vicinity soil types.



Contamination and Hazardous Materials

A review of the ECY database on cleanup sites for either contamination or hazardous materials at the Project site does not reveal any sites within the Project Site (Figure 10 and Appendix XI Contamination and Hazardous Materials Information). A Phase I ESA would be conducted to verify the ECY published results If there are any contaminants or hazardous materials located within the Project Site a Phase II (contamination investigation) and a Phase III (cleanup) will be required.

Figure 10. **Project vicinity contamination and hazardous material site.**



Underground Storage Tanks and Wells

A review of the ECY databases for underground storage tanks (UST) and wells, both active and deactivate, did not list any UST's or wells within the Project Site (Figure 11: Appendix XII UST and Well Information). A Phase I ESA would be conducted to verify the ECY published results. If any suspected UTS's are found, we recommend conducting a Ground Penetrating Survey to verify its location and depth. Any active wells within the Project area would have to be decommissioned.

Figure 11. Listed Underground Storage Tanks (LUST) sites for the Project vicinity.

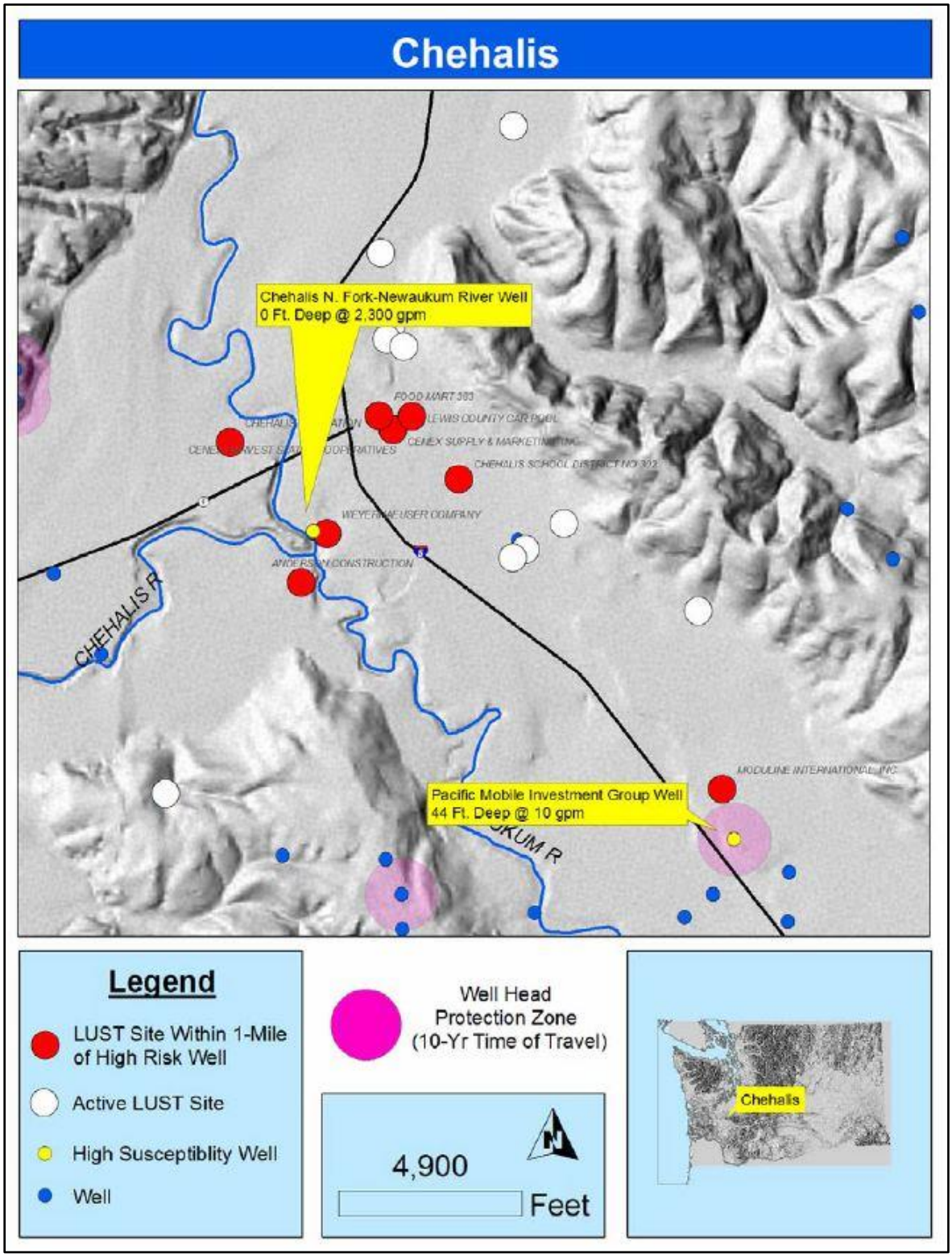
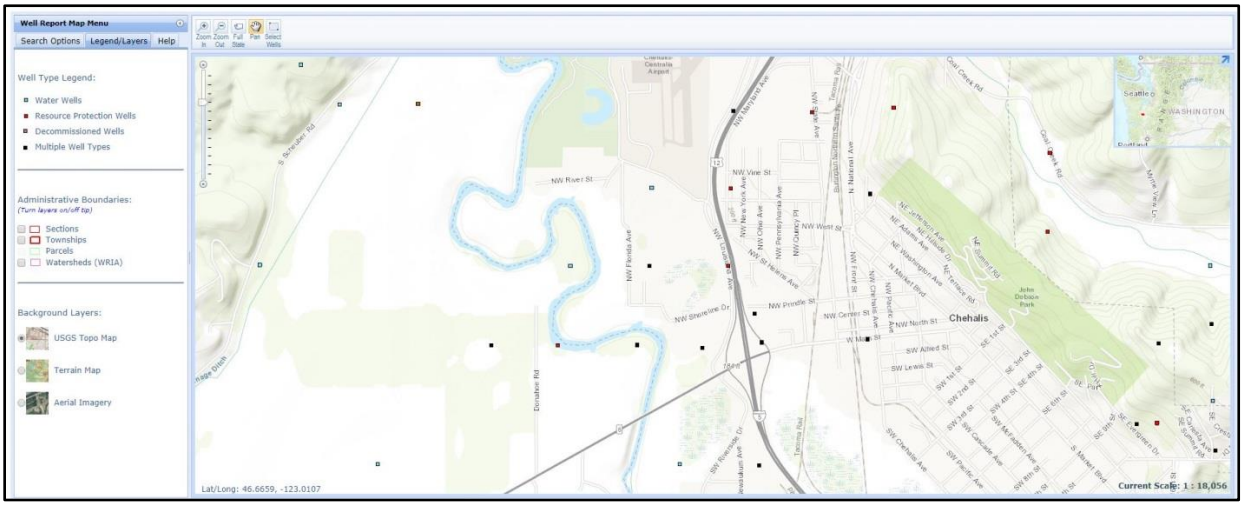


Figure 12. Listed well sites for the Project vicinity.



Federally and State Listed Species

Federally Listed Threatened and Endangered Species

USFWS interactive system for Endangered Species Act Consultation, IPaC (Information for Planning and Consultation) was reviewed to determine listed species that may utilize the Project Site (Appendix XIII IPAC).

The following listed species can potentially occur within the Project Site vicinity:

Mammals

- Gray Wolf (*Canis lupus*): Proposed Endangered - No critical habitat designated for this species.
- North American Wolverine (*Gulo gulo luscus*): Proposed Threatened - No critical habitat designated for this species.

Birds

- Marbled Murrelet *(Brachyramphus marmoratus): Threatened* - No critical habitat designated for this species.
- Streaked Horned Lark *(Eremophila alpestris strigata)*: Threatened - No critical habitat designated for this species.
- Yellow-billed Cuckoo *(Coccyzus americanus):* Threatened - No critical habitat designated for this species.

Fish

- Bull Trout (*Salvelinus confluentus*): Threatened – No critical habitat designated for this species:.

Flowering Plants

- Golden Paintbrush (*Castilleja levisecta*) – No critical habitat designated for this species: Threatened.
- Kincaid's Lupine (*Lupinus sulphureus spp. kincaidii*) – No critical habitat designated for this species: Threatened.
- Nelson's Checker-mallow (*Sidalcea nelsoniana*) – No critical habitat designated for this species: Threatened.

WDFW Priority Habitat and Species

WDFW Priority Habitat and Species (PHS) map was reviewed for the Project Site vicinity to determine what state listed species and habitats inhabit this area (Appendix XIV PHS Information), the following were identified:

Mammals

- Roosevelt Elk (*Cervus elaphus roosevelti*) occur in regular concentrations in the area.

Birds

- Cavity-nesting duck designated breeding and areas
- Regular concentrations of waterfowl occur regularly in the area

Fish

- Chinook Salmon (*Oncorhynchus tshawytscha*) are known to occur in the area. Including the Fall and Spring Chinook populations, which are documented as using this area as a breeding location. Both populations pass through this area when they migrate up and down river.
- Coho Salmon (*Oncorhynchus kisutch)* are known to reside and migrate through this area
- Cutthroat Trout (*Oncorhynchus clarki)* are known to occur, reside, and migrate through this area
- Rainbow and Steelhead populations (*Oncorhynchus mykiss)* are known to reside and migrate through this area. Including specifically the winter Steelhead population.

Habitats

- Freshwater Emergent wetlands
- Freshwater Forested/Shrub wetlands
- Freshwater Ponds
- Oak Woodland
- Riverine wetlands

Environmental Permitting

Listed below are anticipated environmental permits for the Project Site organized by agency.

The US Army Corps of Engineers

USACE will be consulted to determine the jurisdiction of the Project (i.e., project is within waters of the state or waters of the US or both). Generally, a project would require a USACE permit if discharge of dredge material or fill is part of the proposed project within USACE jurisdiction (Section 404 Nationwide Permit [NWP] or Individual Permit [IP]). This would include the filling, dredging, or other impacts to streams, rivers and wetlands. The construction of the inlet and outlet of the artificial channel would potentially require USACE to make a jurisdictional determination for a Section 404 permit (Appendix XV: Permit Flow Charts).

At a minimum it is anticipated that the following documents will be submitted to USACE for federal review for a Section 404 Permit:

- Joint Aquatic Resource Permit Application (JARPA)
- Biological Evaluation
- Wetland delineations
- Mitigation reports
- Engineering plans: design, grading, and site
- A copy of the State Environmental Policy Act (SEPA) checklist and supporting documents

The US Coast Guard

A brief review of the Chehalis River chart suggests the river is navigable just to the south of Chehalis and not within the Project Area. If in water work is to occur within navigable waters of the United States a federal permit would be required by the Department of Army, i.e. the US Army Corps of Engineers (USACE), under section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). USACE would require a Joint Aquatic Resource Permit Application (JARPA) for a Section 10 federal permit.

A Section 10 federal permit would be required if in water work included the placement of fixed and or floating aids to navigation. Aids to navigation must be approved by and installed in accordance with the requirements of the US Coast Guard (33 CFR 330.5(a)(1)).

US Fish and Wildlife Service

USWFS will be consulted to review listed species and critical habitat within the Project Site. USFWS will be consulted to mitigate any “take” of listed species or impacts to critical habitat within the Project Site. If there is any anticipated “take” or impacts to critical habitat or listed species, a habitat conservation plan may have to be submitted or an “incidental take” permit applied for.

We do not anticipate any take or impacts to listed mammals (Grey Wolf and North American Wolverine) or birds (Marbled Murrelet, Streaked Horned Lark, and Yellow-billed Cuckoo). Fish work windows would be used to mitigate any impacts to listed fishes (Bull Trout) within the Project Site. A site visit would be completed to identify any listed plant species (Golden paintbrush, Kincaid’s Lupine, and Nelson’s Checker-mallow).

National Marine Fishery Service

NMFS will be consulted if any impacts to listed fishes and marine mammals are anticipated. No impacts to marine mammals are anticipated for this Project. However, Bull Trout are listed for the Project site and therefore NMFS and WDFW will have to be consulted prior to construction phase of this project. We anticipate mitigating some impacts to Bull Trout by utilizing the appropriate fish work-windows. Additional mitigation for potential impacts to Bull Trout that we would consider is using construction methods that reduce noise into nearby rivers and considering construction sequences and methods that do not require in-water-work.

Anticipated permits: Hydraulic Project Approval (HPA) from WDFW the designated custodian of the federally listed Bull Trout in Washington State waters by NMFW. Consultation for listed species within the Project vicinity. A biological evaluation (BE) could be required for a consultation with NMFS.

Washington State Department of Ecology

The Department of Ecology is the designated custodian of 401 permits for the USACE (Appendix XV: Permit Flow Charts).

At a minimum we recommended the following documents be submitted to ECY for review for a Section 401 Permit:150

- JARPA
- BE
- Wetland delineations
- Mitigation reports
- Engineering plans: design, grading, and site
- SEPA checklist and supporting documents

Washington State Department of Fish and Wildlife

WDFW regulates construction projects in state marine and freshwater systems through the approval of Hydraulic Project Approval (HPA) to ensure projects are in compliance with Washington State law.

At a minimum we recommended the following documents be submitted to WDFW review for an HPA:

- JARPA
- BE
- Wetland delineations
- Mitigation reports
- Engineering plans: design, grading, and site
- SEPA checklist and supporting documents

Lewis County Critical Area Ordinance

Environmental permits and documentation requirements for the Project fall under Title 17 (Land Use and Development Regulations), Chapters 38 (Critical Areas) and 25 (Shoreline Management) of the Lewis County Code. Chapter 38 specifically covers wetlands (Article III; 17.38.200), Fish and Wildlife Habitat Conservation Areas (Article IV; 17.38.465), Geologically Hazardous Area (Article V; 17.38.600), Critical Aquifer Recharge Areas (Article VI; 17.38.800), and Frequency Flooded Areas (Article VII; 17.38.900). All of these articles apply to this Project except for critical aquifer recharge areas.

The Shoreline Management Act (SMA) was adapted by the Washington State Legislature in 1971 and adopted by voters in 1972. Its overall goal is "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The SMA applies to all 39 Washington counties and about 250 towns and cities with stream, river, lake or marine shorelines. The Shoreline Master Program (SMP) is a Washington Admirative Code (WAC;) requirement (WAC 173-26.030) for local governments with shorelines of the state within their boundaries to develop and administer a shoreline master program under the authority of the SMA Chapter 90.58 of the Revised Code of Washington (RCW). The SMP is modeled on SMA requirements and incorporates, in most cases including Lewis county, the Critical Area Ordinances (CAO) of the region. The Lewis County SMP was updated and adopted by the Board of County Commissioners on October 16, 2017 and applies to the following Shorelines of the State within the County:

A. Segments of streams or rivers where the mean annual flow is more than 20 cubic feet per second.
B. Lakes and reservoirs 20 acres and greater in area.
C. Shorelines adjacent to these waterbodies. These include:
    a. Lands extending landward for 200 feet in all directions as measured on a horizontal plan from the ordinary high-water mark (OHWM).
    b. Adopted Federal Emergency Management Agency (FEMA) floodways, or 2010 flood channel study areas and the SMP Flood Course, and contiguous floodplain areas landward 200 feet from such adopted FEMA floodways or 2010 flood channel study areas and the SMP Flood Course; and
    c. All wetlands and river deltas associated with the stream and lakes subject to the SMA.

Under these definitions of the SMP most of the Project area would be under the SMP jurisdiction, which is referenced in Title 17 of the Lewis County Code for Land Use and Development Regulations under Chapter 25.

The Project is within the City limits of Chehalis, but since the City has not completed their own SMP, all SMP regulations for the Project fall under the Counties SMP jurisdiction. The City is penning their own SMP, which should be ready for adoption within the next year or two ((personal communication from the Community Development Director of the City of Chehalis; June 20, 2019). Furthermore, the SMP regulations supersedes the CAO, but in most cases the

SMP references the CAO for specific buffer regulations, environmental documentation, and required permits.

At a minimum we anticipate the following documents be submitted to the County for review:

- Critical Areas Assessment Report/BE
- Mitigation Reports
- Restoration Plans
- Geotechnical Report
- Hydrological Study
- Critical Area Permit
- JARPA
- HPA
- Engineering Plans
- Shoreline Substantial Development Permit

City of Chehalis

The Project Site is within city limits of Chehalis and therefore the City will be directly involved in the permitting process. The City will be the lead for the State Environmental Policy Act (SEPA) checklist. The City will also be the recipient of all the various construction permits. However, since the City does not have its own SMP in place at this time they will have to defer to the Lewis County SMP for SMP permits and regulatory actions.

At a minimum we recommended the following documents be submitted to the City for review:

- SEPA
- Critical Areas Assessment Report/BE
- Mitigation Reports
- Restoration Plans
- Geotechnical Report
- Hydrological Study
- Critical Area Permit
- JARPA
- HPA
- Engineering Plans
- Shoreline Substantial Development Permit

Section 3 -Hydraulic Analysis of Alternatives

June 2019

Memorandum

To: Colleen Haerr, PE, Skillings Connolly

From: Chris Frei, PE; Tim Tschetter, EIT

Date: June 20, 2019

Re: DRAFT - Chehalis WWTP Flood Storage Preliminary Hydraulic Analysis

INTRODUCTION

Watershed Science and Engineering (WSE) updated an existing RiverFlow2D hydraulic model of the Chehalis River to evaluate hydraulic impacts and potential flood benefits of a project to increase flood storage at the City of Chehalis (City) Wastewater Treatment Plant (WWTP) property in Chehalis, WA. The WWTP property covers approximately 150 acres along the east bank of the Chehalis River between the Chehalis Airport and Highway 6 (see Figure 1). The proposed project would remove existing buildings and excavate approximately 1.8 million cubic yards of material to increase available on-site flood storage. This memo documents WSE's hydraulic investigation to support evaluation of project feasibility and alternative refinement including data sources, model development, and results.

WSE's analysis indicates that the proposed project design will reduce flood levels both upstream and downstream from the project site during the 100-year flood but will increase peak downstream flood levels during some smaller events including the 2-year flood. Downstream impacts are the result of increased conveyance through the project reach due to flow shortcutting a meander bend at the downstream end of the site. To support the refinement of an alternative design, we recommend additional modeling and analysis to evaluate the effect of potential project modifications at a range of discharges to reduce conveyance impacts and maximize the effectiveness of additional flood storage on the site.

HYDRAULIC MODEL DEVELOPMENT

To evaluate the proposed project, WSE updated an existing unsteady two-dimensional (2D) RiverFlow2D hydraulic model of the Chehalis River developed for the Chehalis River Basin Flood Authority (WSE, 2019). The model covers approximately 75 miles of the mainstem Chehalis River floodplain from Pe Ell to Porter, and several major tributaries including the Newaukum River and Dillenbaugh Creek which flow into the Chehalis River near the project site. Details of the model development can be found in WSE (2019).

WSE updated the existing conditions model terrain (Figure 2) to represent proposed grading at the project site (Figure 3) based on a grading plan and AutoCAD Civil3D surface provided by Skillings Connolly. Proposed elevations along the right bank were set to approximate the water surface elevation during a six-month recurrence interval flood event. The maximum depth of the proposed excavation is approximately 14 feet below the existing ground surface. The model was run to simulate 2-year and 100-year flood events for existing conditions (no project) and with project grading, a total of four model runs. Model results were compared to assess hydraulic impacts of the proposed project.

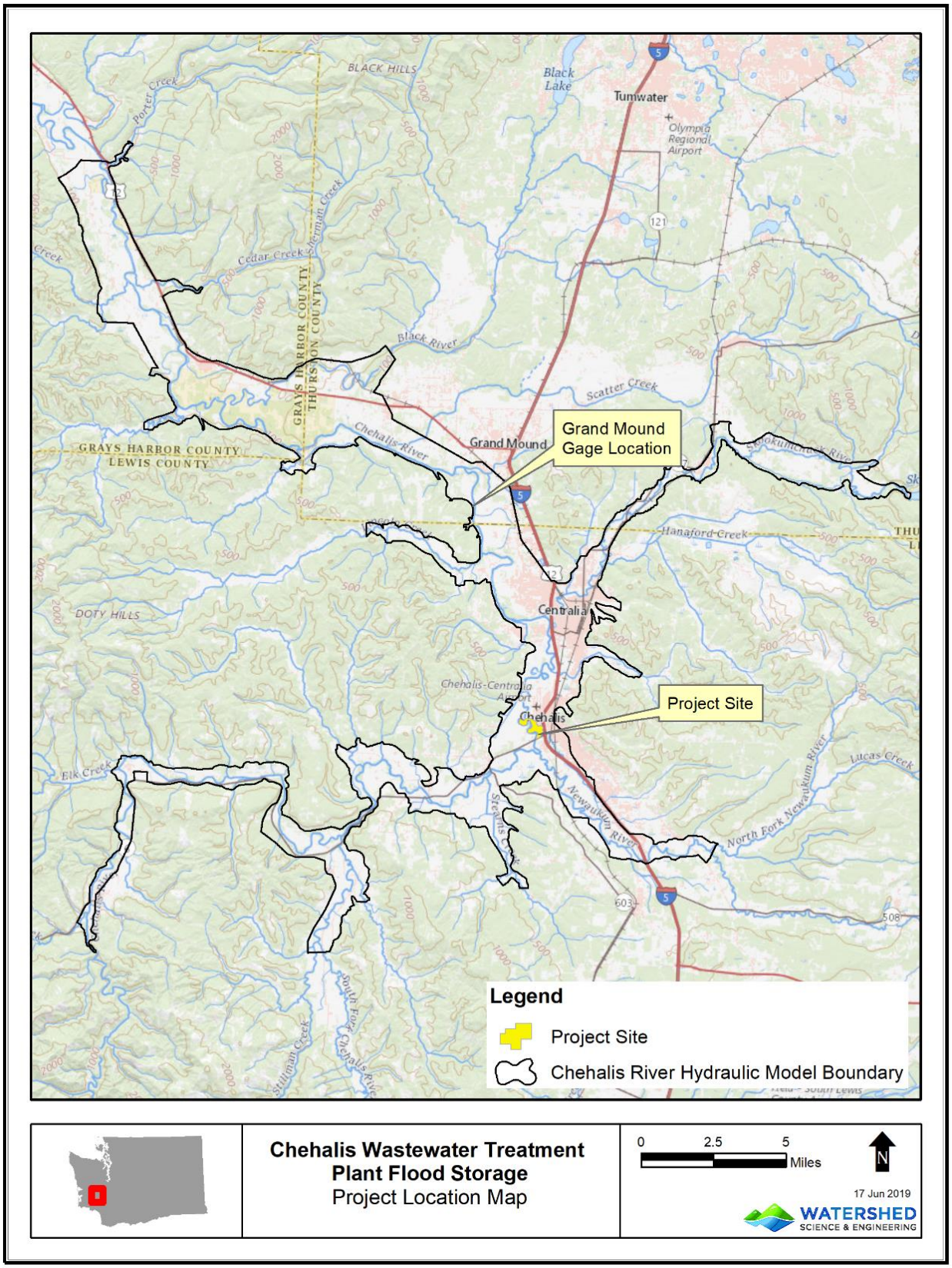


Figure 1. Project Location Map

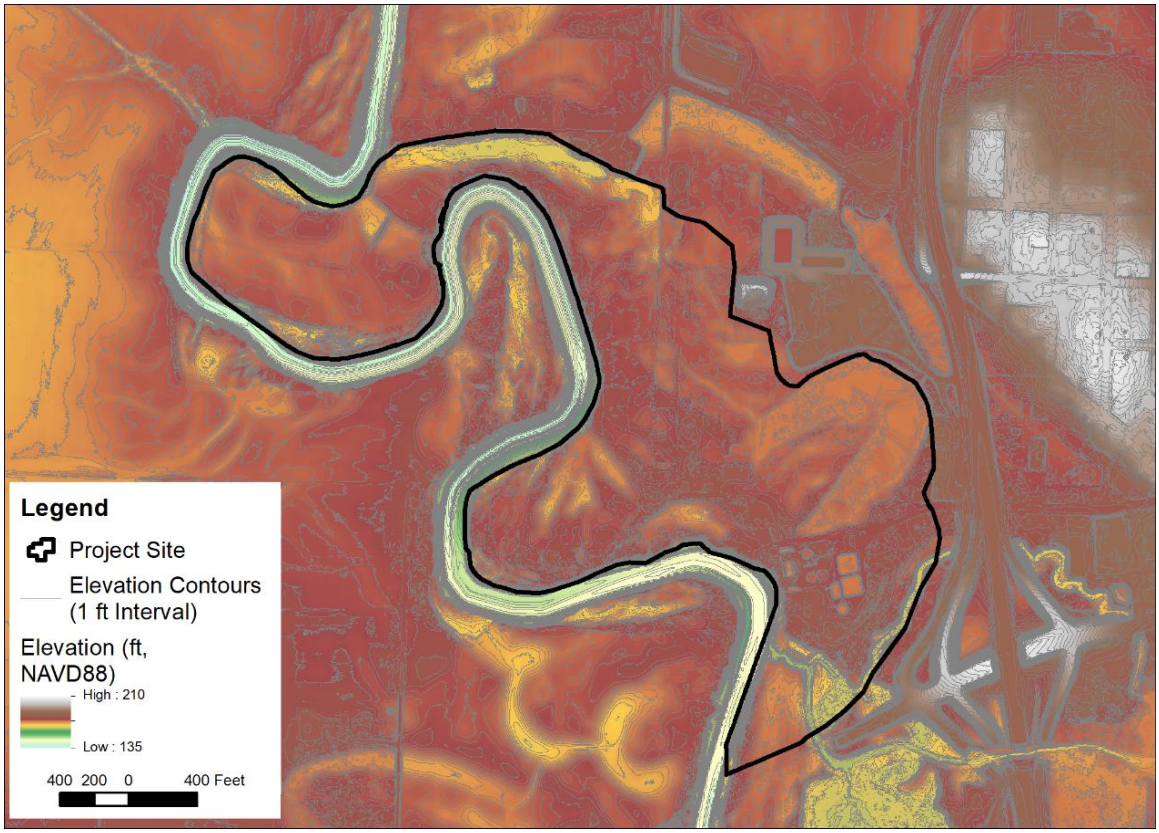


Figure 2. Existing Condition Ground Surface Terrain at the Project Site

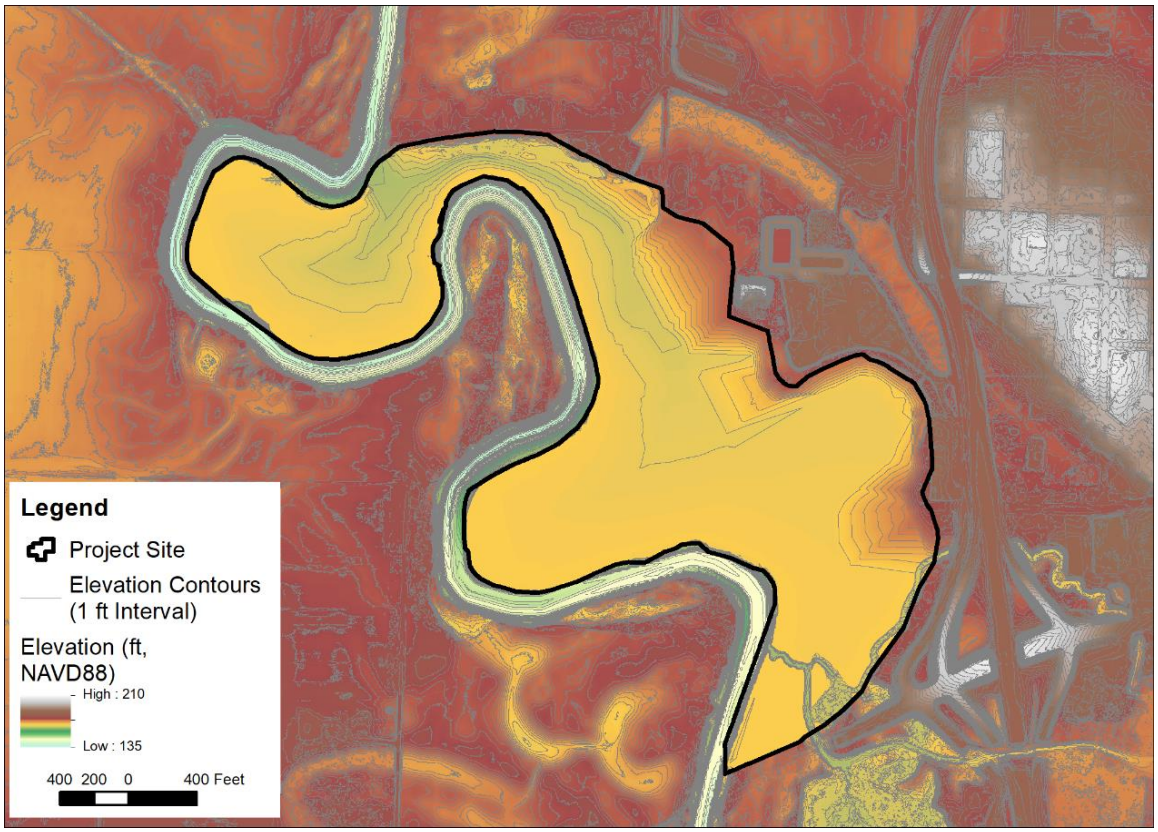


Figure 3. Proposed Ground Surface Terrain at the Project Site

HYDRAULIC MODEL RESULTS

Table 1 provides a summary of simulated flood benefits and impacts of the proposed project. Figure 4 and 5 show the change in peak water surface elevation relative to existing conditions for the 2-year event and 100-year event, respectively[1]. Results from the 2-year event simulations show reductions in peak water surface elevations upstream from the project but increases in peak discharge and water surface elevations downstream. Results from the 100-year event simulation show reductions in peak water surface elevations both upstream and downstream from the project.

Table 1. Summary of Project Flood Benefits/Impacts to Peak Water Surface Elevation

2-year Flood Event	• Peak water surface elevation *decrease* by maximum of 1.5 ft immediately upstream of project (near SR-6 Bridge) • *Rise* of 0.1 - 0.2 feet downstream to north end of Airport Levee • *Rise* of approximately 0.05 feet in Centralia • R*ise* of less than 0.03 feet to downstream end of model domain
100-year Flood Event	• Peak water surface elevation *decrease* by maximum of 0.9 ft immediately upstream of project (near SR-6 Bridge) • *Decrease* of less than 0.1 feet in Centralia • D*ecrease* of less than 0.05 feet to downstream end of model domain

[1] Basin scale figures showing change in 2-year and 100-year maximum water surface elevation results are also provided at the end of this report (Figures A-1 and A-2).

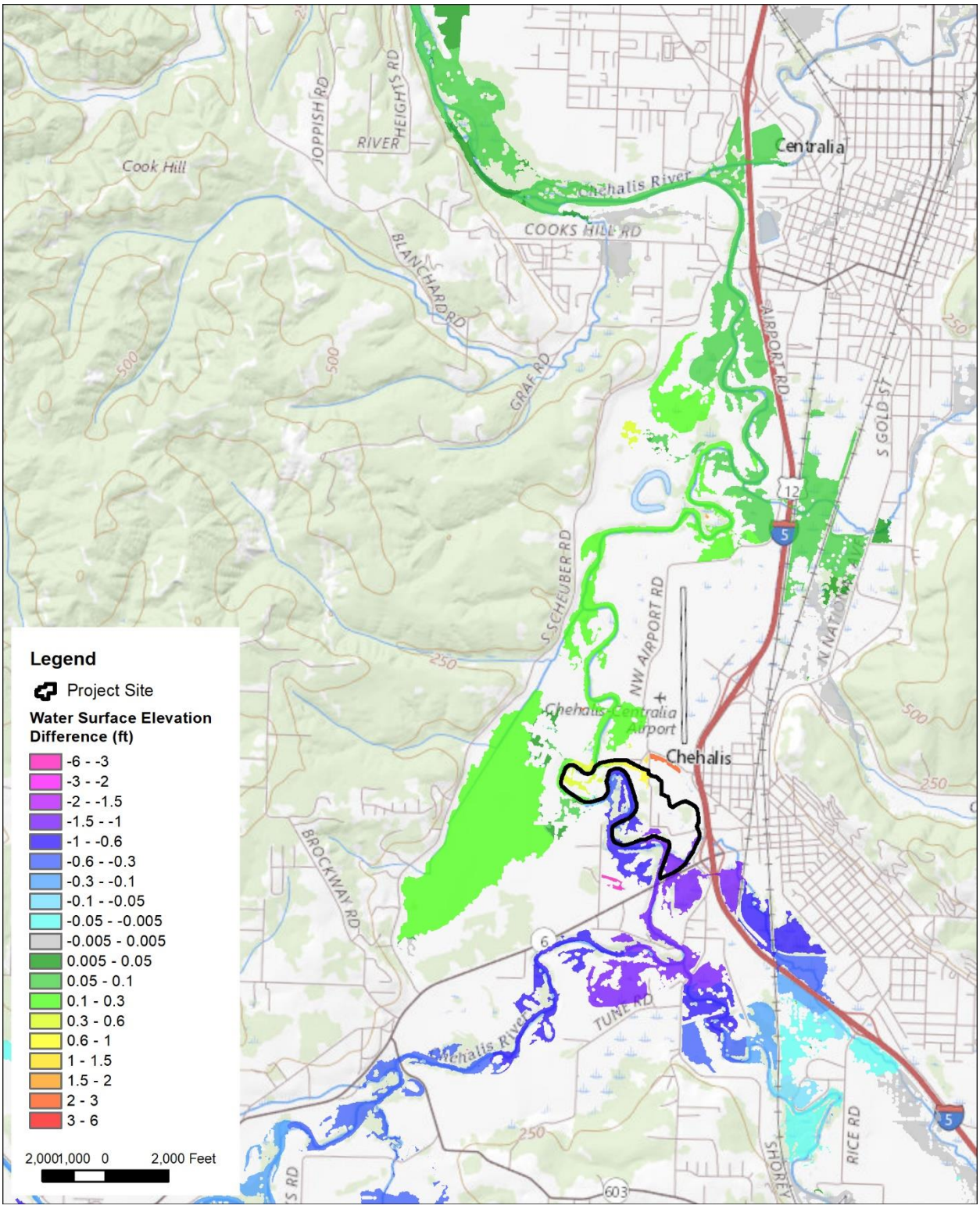


Figure 4. 2-year event change in peak water surface elevation (proposed minus existing) near project site.

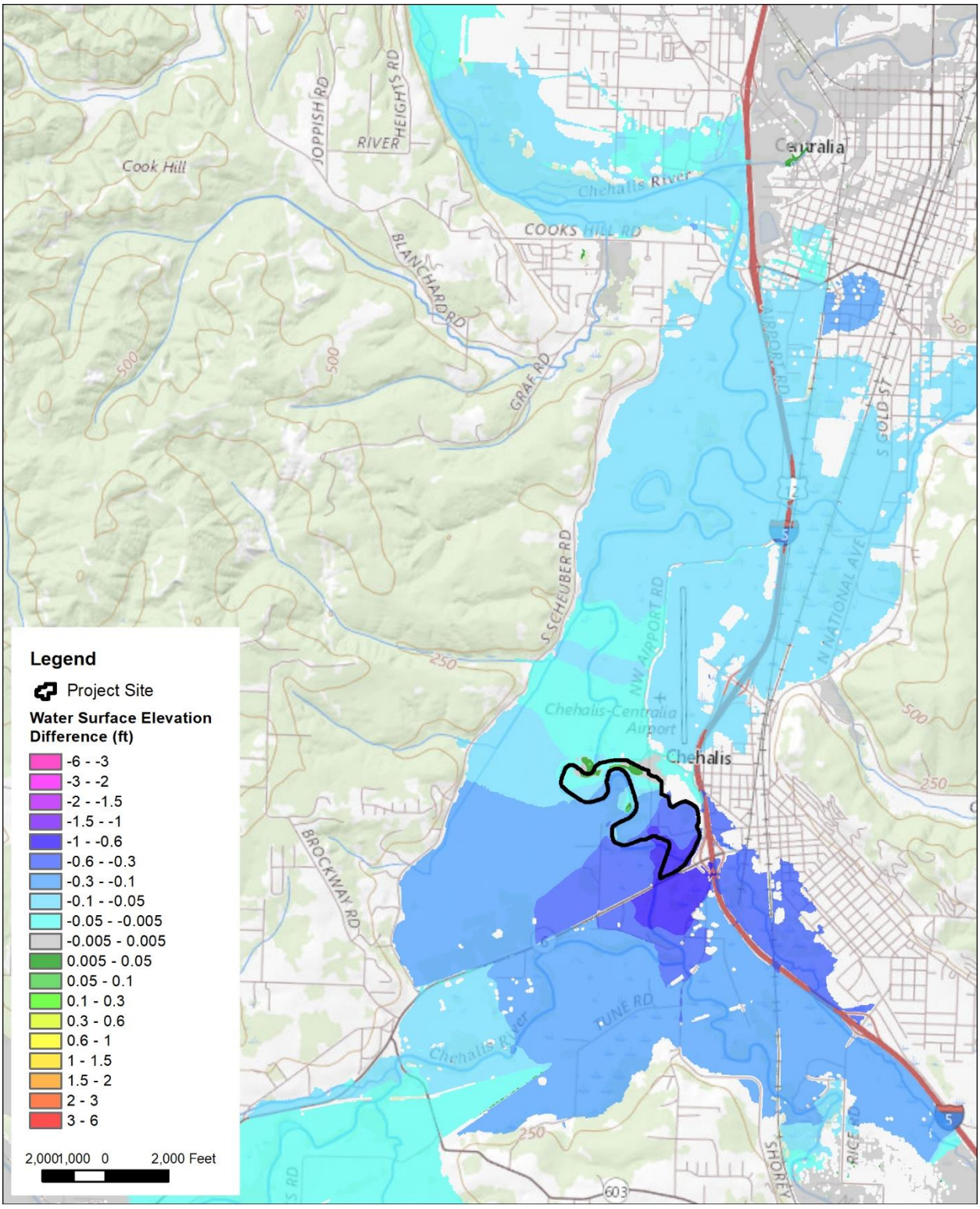


Figure 5. 100-year event change in peak water surface elevation (proposed minus existing) near project site.

DISCUSSION OF RESULTS

Hydraulic modeling shows that during the 2-year flood event the proposed flood storage project reduces peak water surface elevation upstream of the project site but increases peak water surface elevation downstream of the project site. During the 100-year flood event the proposed flood storage project reduces peak water surface elevation upstream and downstream of the project site. The project's benefits and impacts vary by discharge are the result of the following two factors:

1. **Increased floodplain storage at the project site** – The proposed excavation at the WWTP site creates additional floodplain storage. As flow is stored on the project site downstream flows are reduced. The relationship between flood storage and downstream discharge varies with flow rate, with the greatest reductions seen during larger floods when more of the floodplain storage created by the project is utilized.
2. **Increased flow conveyance through the project reach**– The proposed excavation increases flow conveyance through the site and allows flow to shortcut the meander bend at the downstream end of the project site (see Figure 6). This reduces head losses across the project site, which results in a decrease in upstream water surface elevations in both the 2- and 100-year events.

Flood benefits and impacts of the project vary with flow rate. The increased conveyance through the project reach at the peak of the 2-year event results in increased downstream discharges. The increased conveyance during the 100-year event is more than offset by the increased storage described above, resulting in reduced downstream discharges and water levels. At the peak of the 2-year event, the potential downstream benefits of additional storage are outweighed by increased flow conveyance, which results in an increase in downstream discharge and water levels.

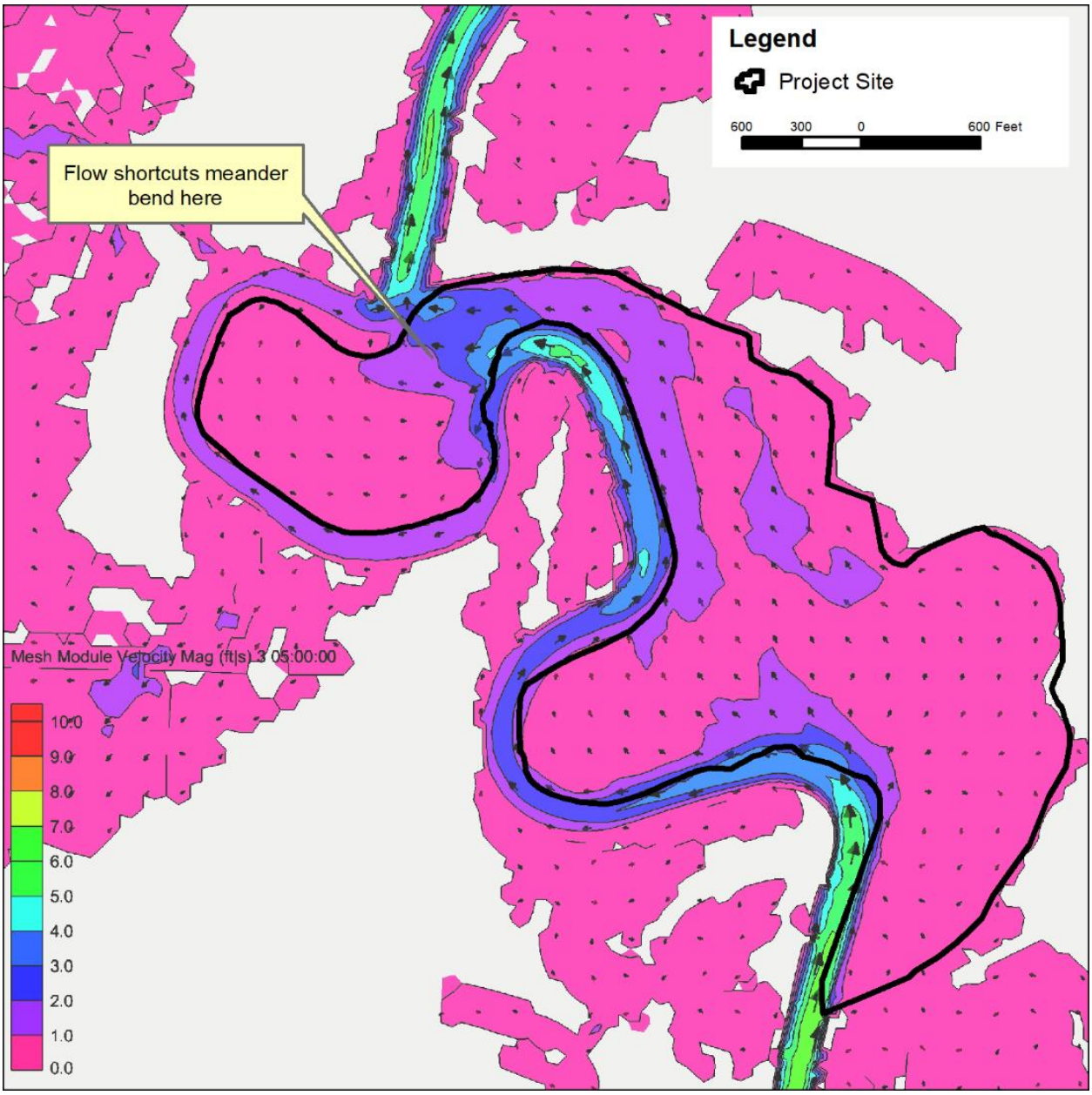


Figure 6. Proposed 2-year event modeled flow velocity (ft/s) with direction vectors

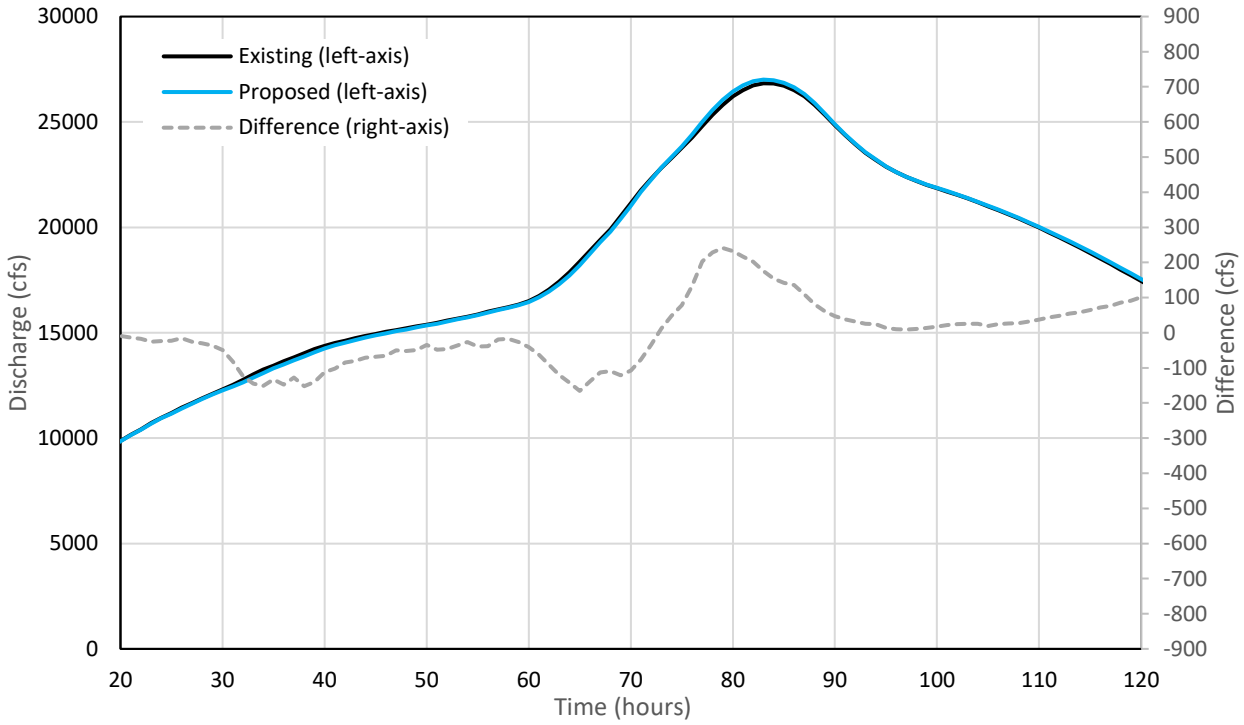


Figure 7. 2-year event modeled discharge hydrograph at Grand Mound Gage Location

Figure 7 shows existing and proposed condition discharge hydrographs for the simulated 2-year flood event at the Grand Mound gage location (approximately 14 miles downstream from the project site). The 2-year peak discharge is increased by 176 cubic feet per second (cfs) at Grand Mound under the proposed condition, which results in a corresponding increase of 0.02 feet in the water surface elevation at the gage location.

Figure 8 shows the simulated existing and proposed condition discharge hydrographs for the 100-year event at the Grand Mound gage. The 100-year peak discharge is reduced by 466 cfs under proposed conditions. Figure 8 also shows that the discharge at Grand Mound is higher under the proposed condition at flows between approximately 20,000 to 50,000 cfs. Above 50,000 cfs up to the 100-year flood peak, the proposed condition discharge is lower than the existing condition discharge due to project storage benefits outweighing the increased conveyance impacts. During different magnitude flood events than the 100-year event, the transition from negative to positive downstream impacts will occur at different discharges due to tributary inflow between the project site and the Grand Mound gage location. Additional modeling would be required to determine the benefits and impacts at any given flow between the 2-year and 100-year event.

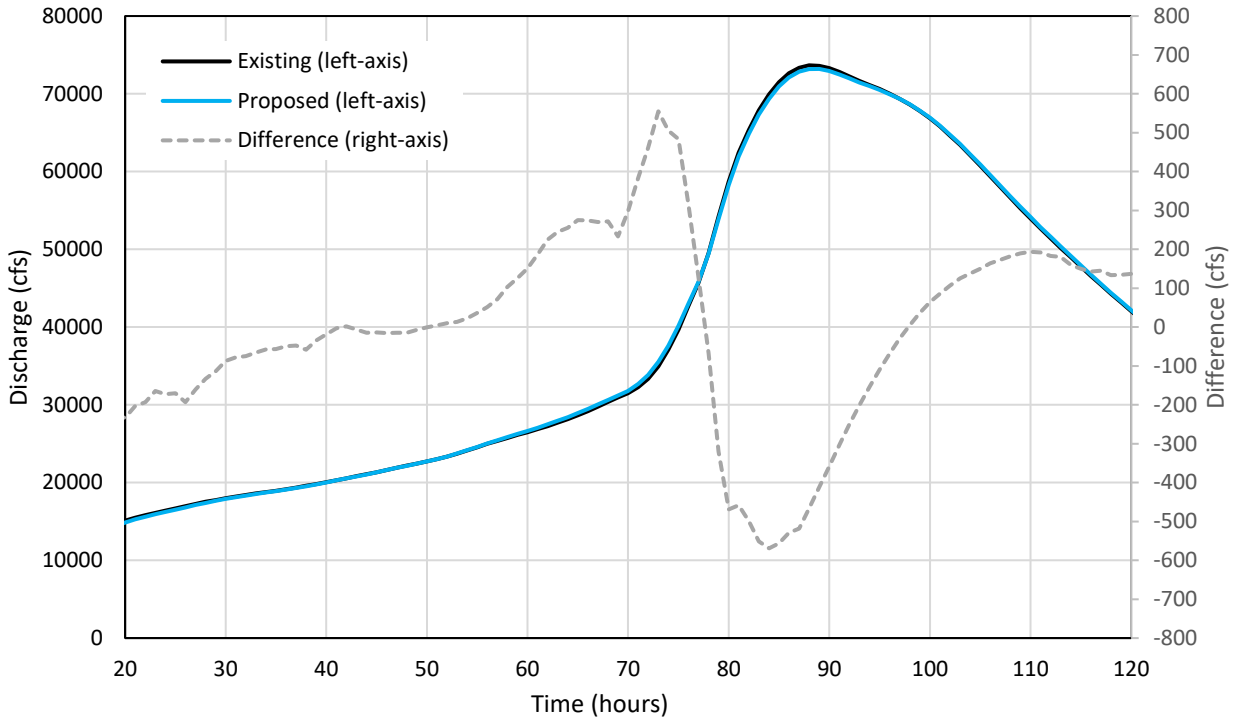


Figure 8. 100-year event modeled discharge hydrograph at Grand Mound Gage Location

RECOMMENDATIONS

WSE's analysis indicates that the proposed project has the potential to reduce flooding in areas both upstream and downstream of the project site during the 100-year flood but will increase flood levels downstream during smaller flood events, such as the 2-year flood. The primary reason for downstream water level increases is increased flood conveyance through the project site. The project design could be modified to reduce this conveyance impact, but the changes may reduce the flood benefits that were simulated for the current proposed design.

To support refinement of an alternative, WSE recommends additional model simulations to test the potential for modifications to reduce conveyance impacts and maximize the effectiveness of onsite flood storage. Modifications may include reducing the size and shape of the excavated area to limit shortcutting of the meander bend, or modifying the storage area to include features such as higher banks, berms, or inlet and outlet structures to limit conveyance increases and allow targeted use of floodplain storage to maximize flood benefits.

REFERENCES

WSE, 2019. Chehalis River Existing Conditions RiverFlow2D Model Development and Calibration. Memorandum prepared by Bob Elliot, Tim Tschetter, and Larry Karpack of WSE, to Bob Montgomery of Anchor QEA, February 28, 2019.

APPENDIX – ADDITIONAL FIGURES

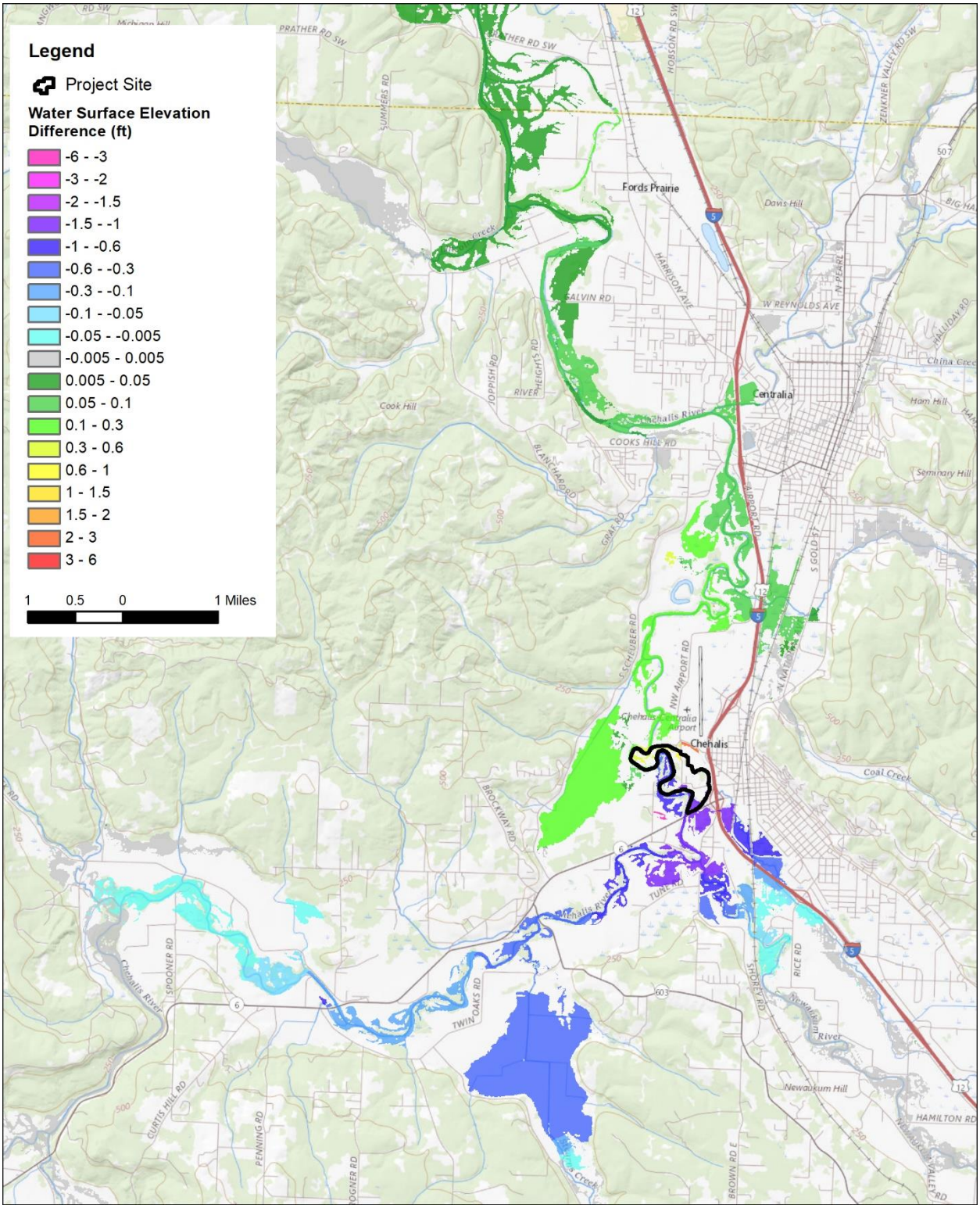


Figure A-1. 2-year Event Change in Peak Water Surface Elevation in feet (proposed minus existing)

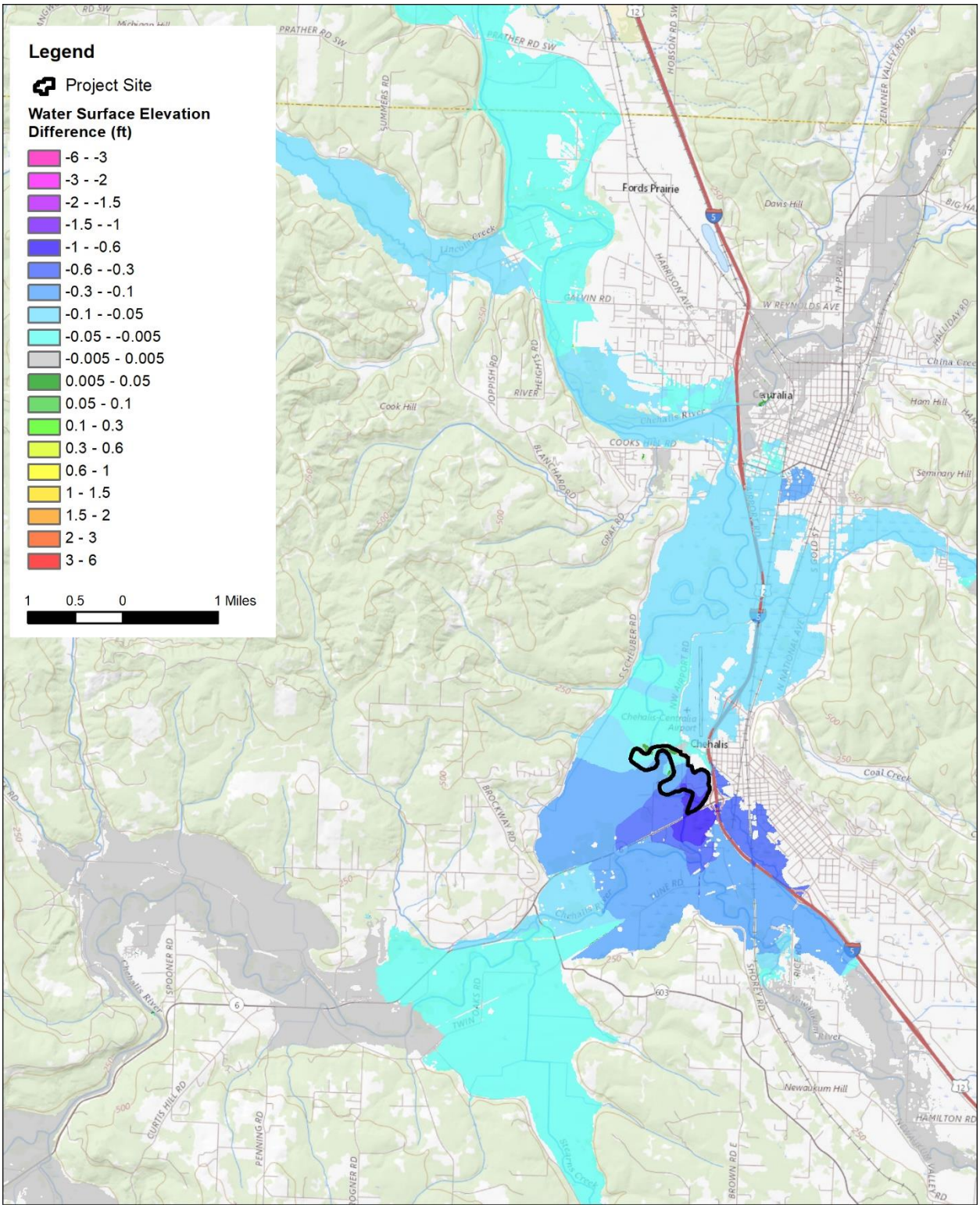


Figure A-2. 100-year Event Change in Peak Water Surface Elevation in feet (proposed minus existing)

Section 4 - Exhibits

June 2019

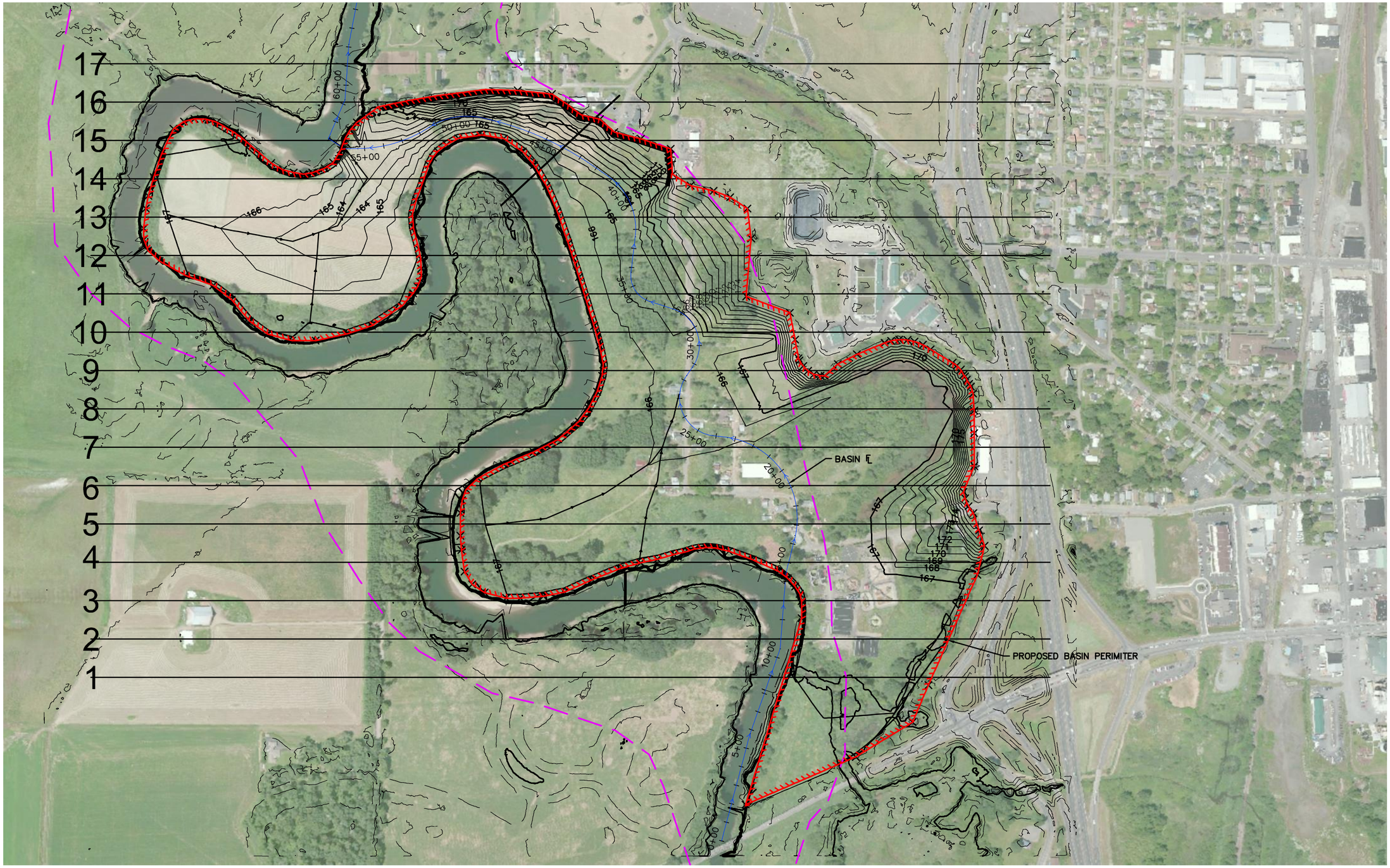


EXHIBIT I

	DATE
DESIGNED BY: C. HAERR	7/11/19
ENTERED BY: D. TELLERS	7/11/19
CHECKED BY: C. HAERR	7/11/19
PROJ. ENGR.: T. SKILLINGS	7/11/19
Plotted By: Keevan Kashani on 7/11/19 3:09 PM	
Saved By: Kkashani on 7/11/19 2:45 PM	
G:\Project\2015\15070 Chehalis On-Call Plan Review\Task14_MasterPlan_Phase2\CAD\Exhibits\15070_3D_AL_FS.dwg	

REVISIONS		
NO.	DATE	

SKILLINGS CONNOLLY
5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 (800) 454-7545 Fax (360) 491-3857

City of Chehalis
Where Heart and History Shape Our Future
Chehalis Wa

CHEHALIS FLOOD STORAGE MASTER PLAN

PLAN VIEW ALT C

JOB NUMBER

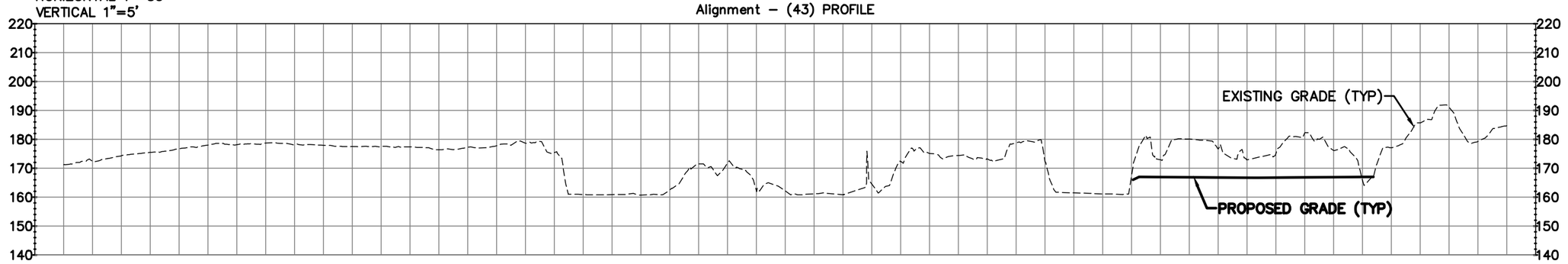
SHEET
EX-1
OF

SHEETS

3

SCALE (FULL SIZE 22x34)
HORIZONTAL 1"=50'
VERTICAL 1"=5'

Alignment – (43) PROFILE



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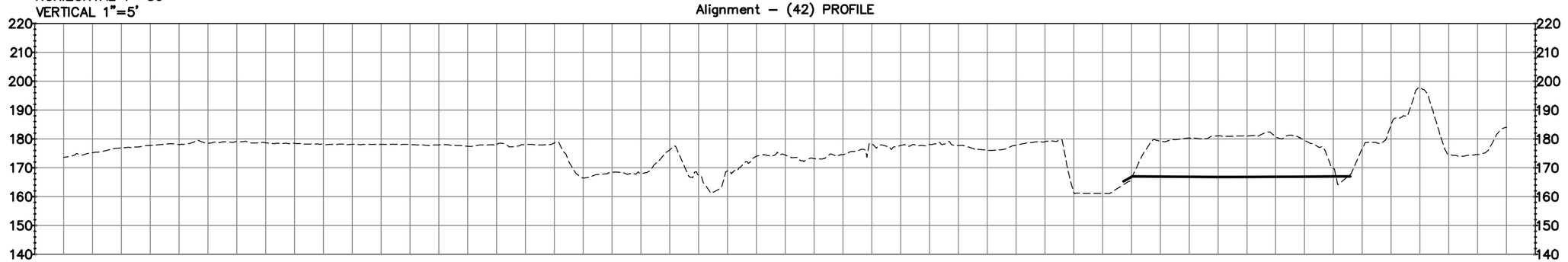

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SCALE (FULL SIZE 22x34)
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Alignment – (41) PROFILE

ALTERNATIVE C
X-SECTIONS

6

SCALE (FULL SIZE 22x34)
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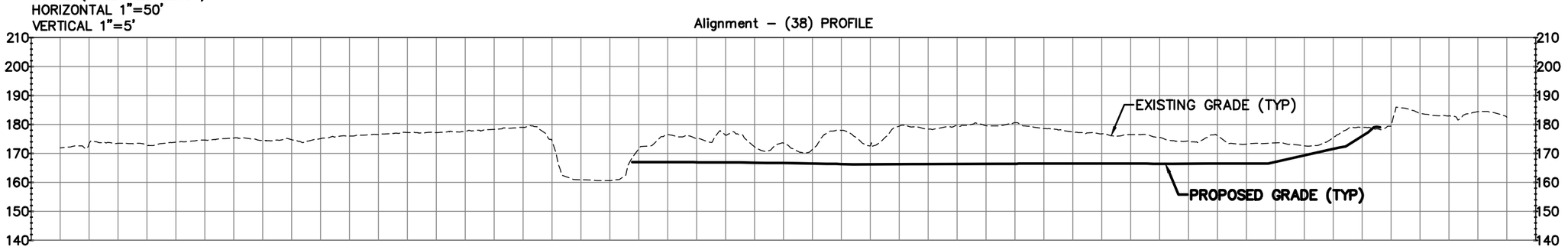
VERTICAL 1"=5'



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SCALE (FULL SIZE 22x34)
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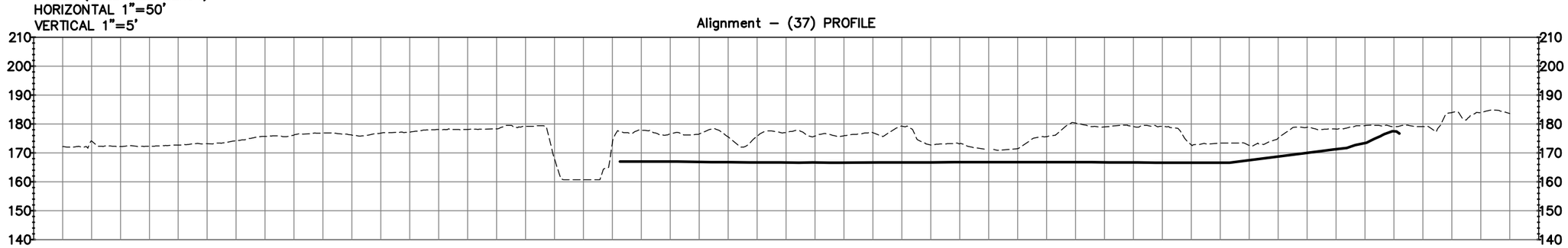
VERTICAL 1"=5'



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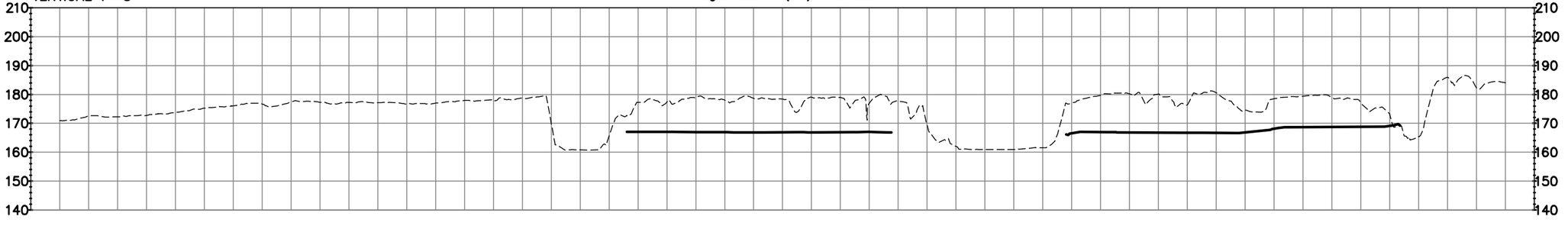

ALTERNATIVE C
X-SECTIONS

9

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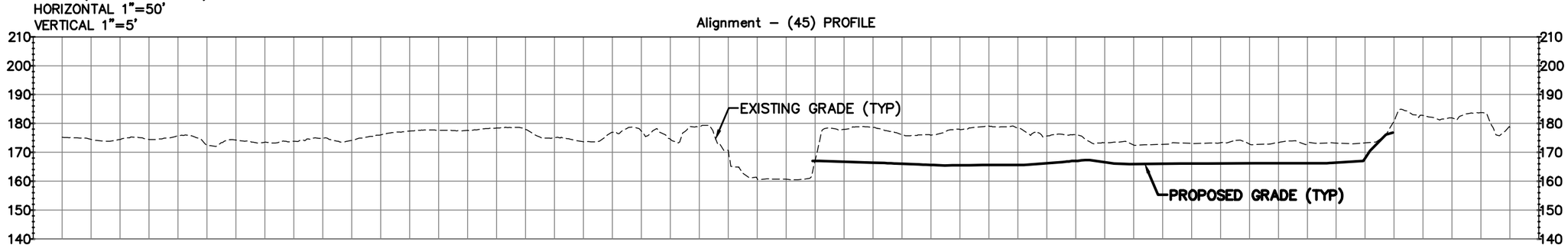

8

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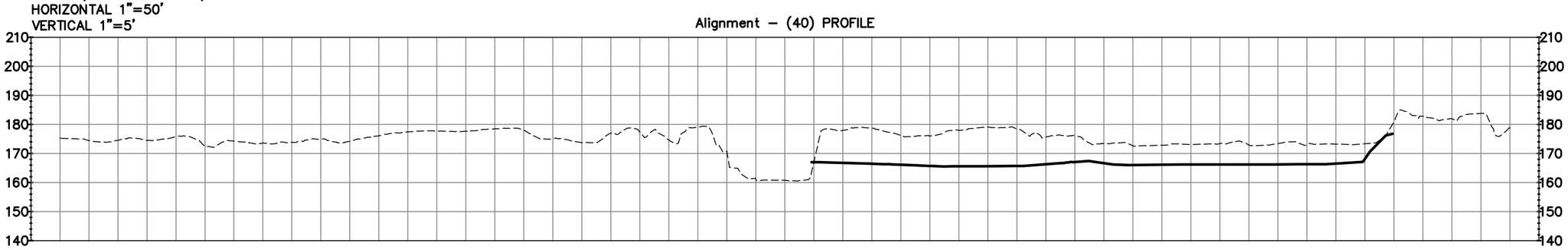

7

SCALE (FULL SIZE 22x34)
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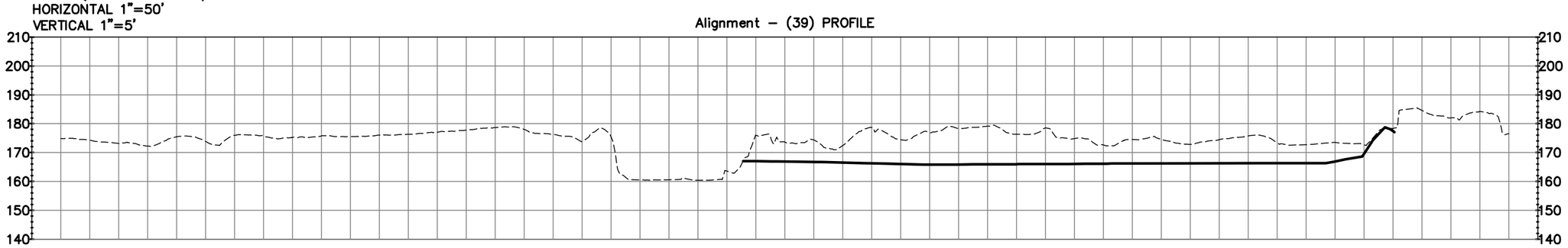
VERTICAL 1"=5'



ALTERNATIVE C
X-SECTIONS

12

SCALE (FULL SIZE 22x34)
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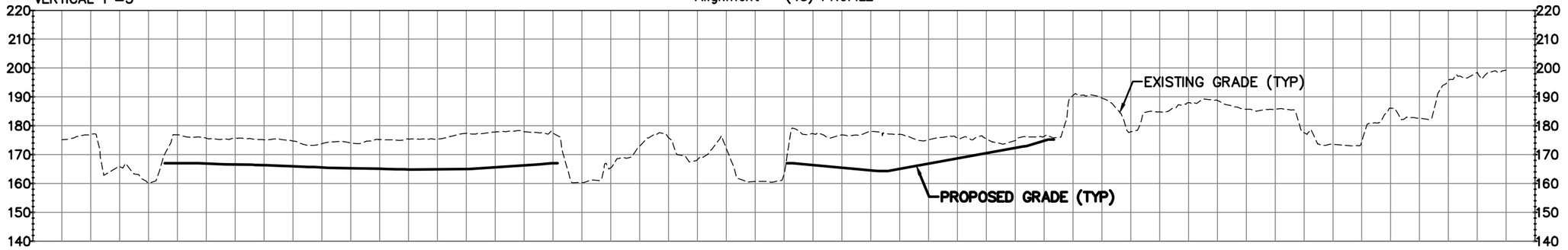
VERTICAL 1"=5'



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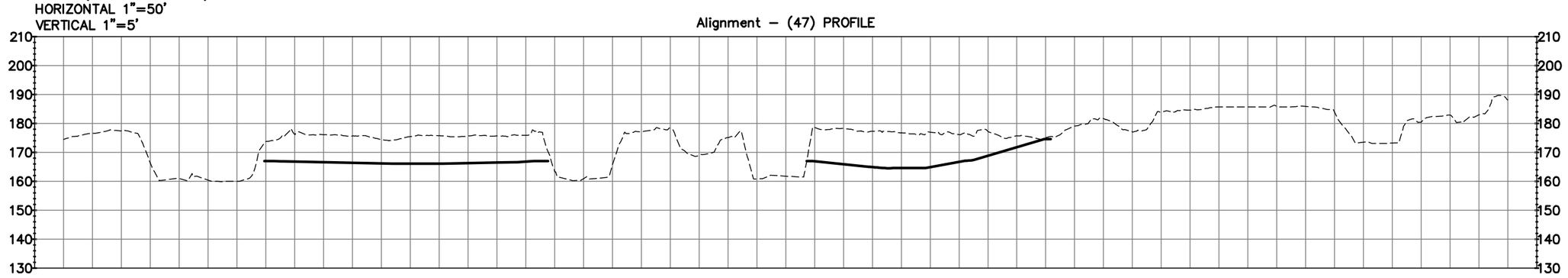
VERTICAL 1"=5'



10

SCALE (FULL SIZE 22x34)
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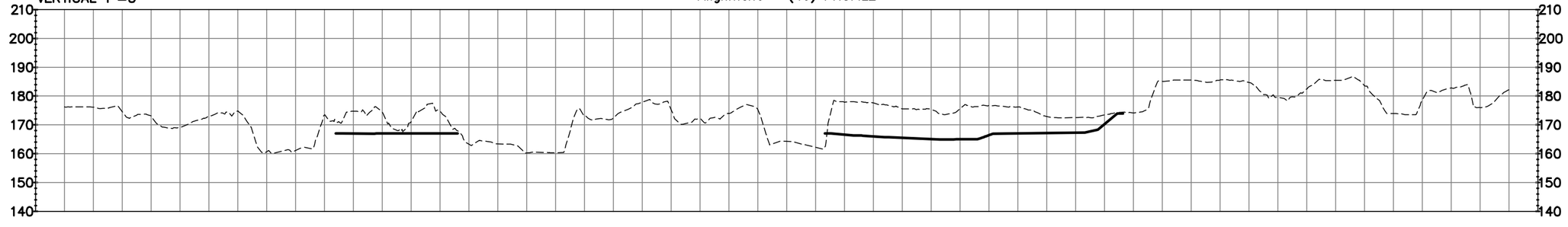

ALTERNATIVE C
X-SECTIONS

15

SCALE (FULL SIZE 22x34)
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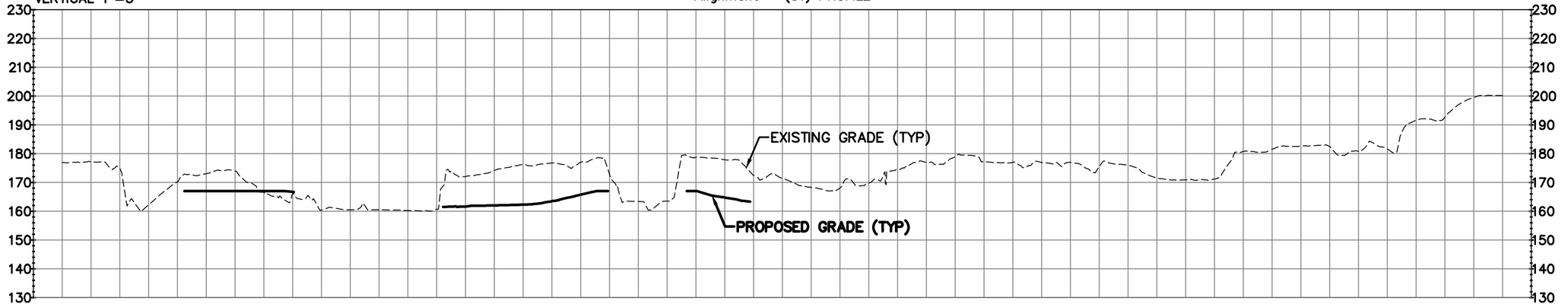
VERTICAL 1"=5'

Alignment – (51) PROFILE



14

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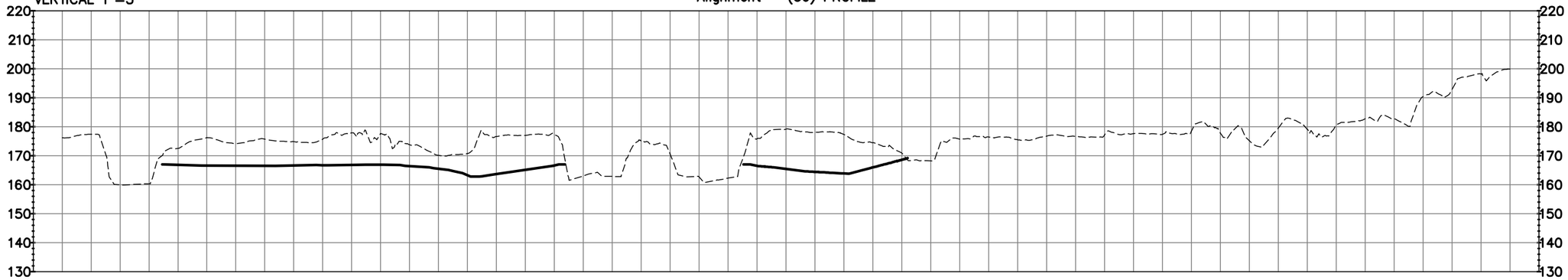
VERTICAL 1"=5'

Alignment – (50) PROFILE



13

SCALE (FULL SIZE 22x34)
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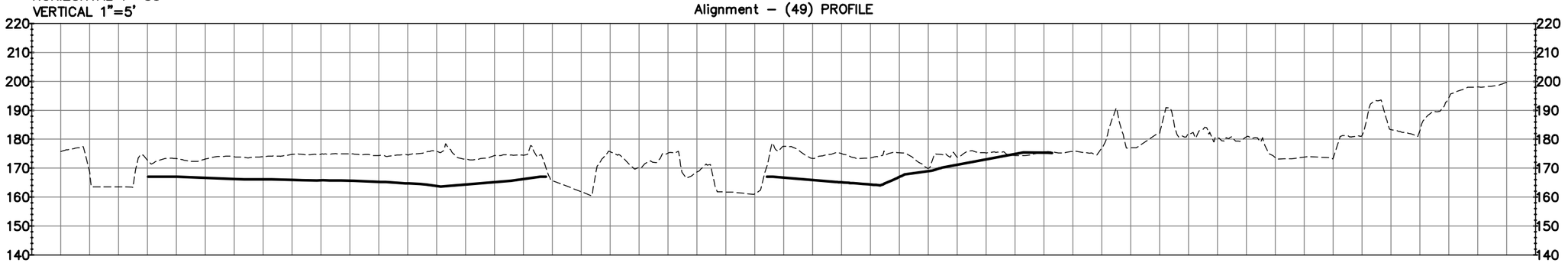
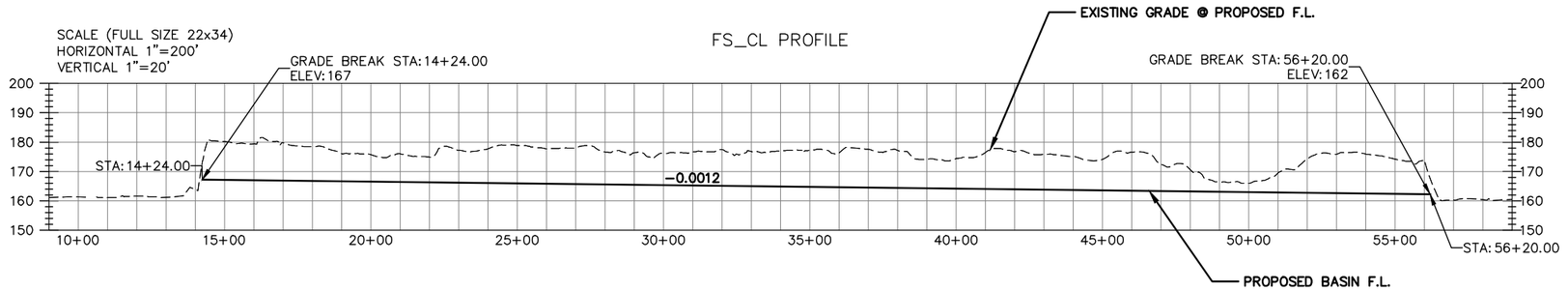
VERTICAL 1"=5'

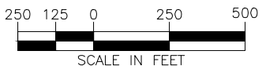
Alignment – (49) PROFILE



ALTERNATIVE C
X-SECTIONS

CHANNEL WATER SURFACE ELEVATION (NAVD 88)			
UP STREAM/DOWN STREAM	100 YR RETURN	2 YEAR RETURN	6 MONTH RETURN
STA 14+24	183.9' @ DILLAN BAUGH	177.5'	164.5'
STA 56+20	182.1' @ DOWN STREAM END	175.0'	162.7'





Cut/Fill Summary

Name	2d Area	Cut	Fill	Net
Surface13	5,689,316.69 Sq. Ft.	1,787,124.76 Cu. Yd.	12,561.03 Cu. Yd.	1,774,563.73 Cu. Yd.<Cut>
Totals	5,689,316.69 Sq. Ft.	1,787,124.76 Cu. Yd.	12,561.03 Cu. Yd.	**1,774,563.73 Cu. Yd.<Cut>**

Cut Factor	Fill Factor
1.00	1.00

1.8m Cu. Yd.<Cut>

NOTE:
F.L. = FLOW LINE

VERTICAL DATUM
NAVD 88

EXHIBIT II

	DATE
DESIGNED BY: C. HAERR	7/11/19
ENTERED BY: D. TELLERS	7/11/19
CHECKED BY: C. HAERR	7/11/19
PROJ. ENGR.: T. SKILLINGS	7/11/19
Plotted By: Keevan Kashani on 7/11/19 3:11 PM	
Saved By: Kkashani on 7/11/19 2:45 PM	
G:\Project\2015\15070 Chehalis On-Call Plan Review\Task14_MasterPlan_Phase2\CAD\Exhibits\15070_3D_AL_FS.dwg	

REVISIONS		
NO.	DATE	

SKILLINGS CONNOLLY
5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 (800) 454-7545 Fax (360) 491-3857

City of Chehalis
Where Heart and History Shape Our Future
Chehalis Wa

CHEHALIS FLOOD STORAGE MASTER PLAN

PROPOSED INLET & OUTLET ELEVATIONS ALT C

JOB NUMBER

SHEET
EX-2
OF

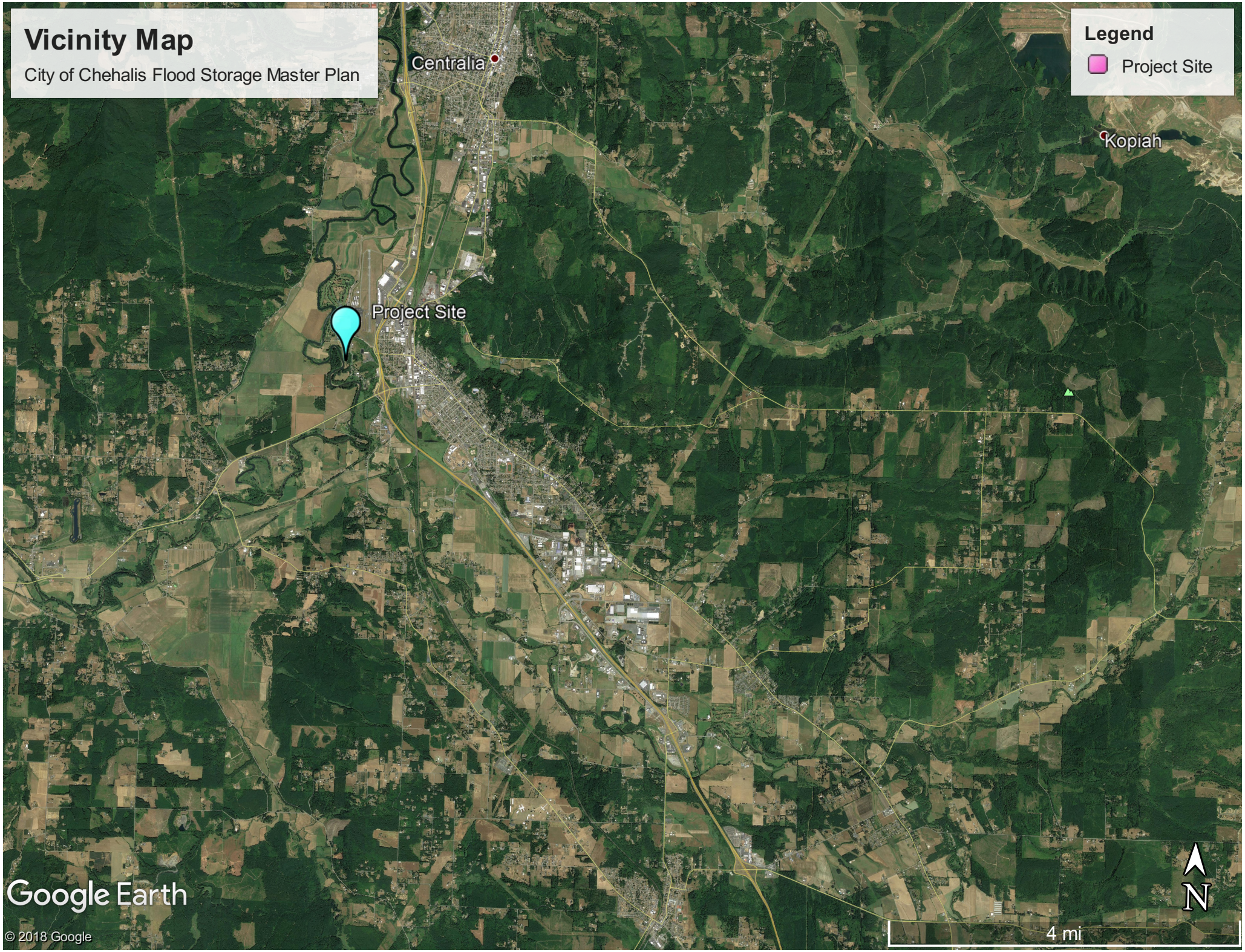
SHEETS

Section 5 - Appendix

June 2019

Appendix I

Vicinity Map


Vicinity Map
City of Chehalis Flood Storage Master Plan
Legend
Project Site
Centralia
Kopiah
Project Site
Google Earth
© 2018 Google
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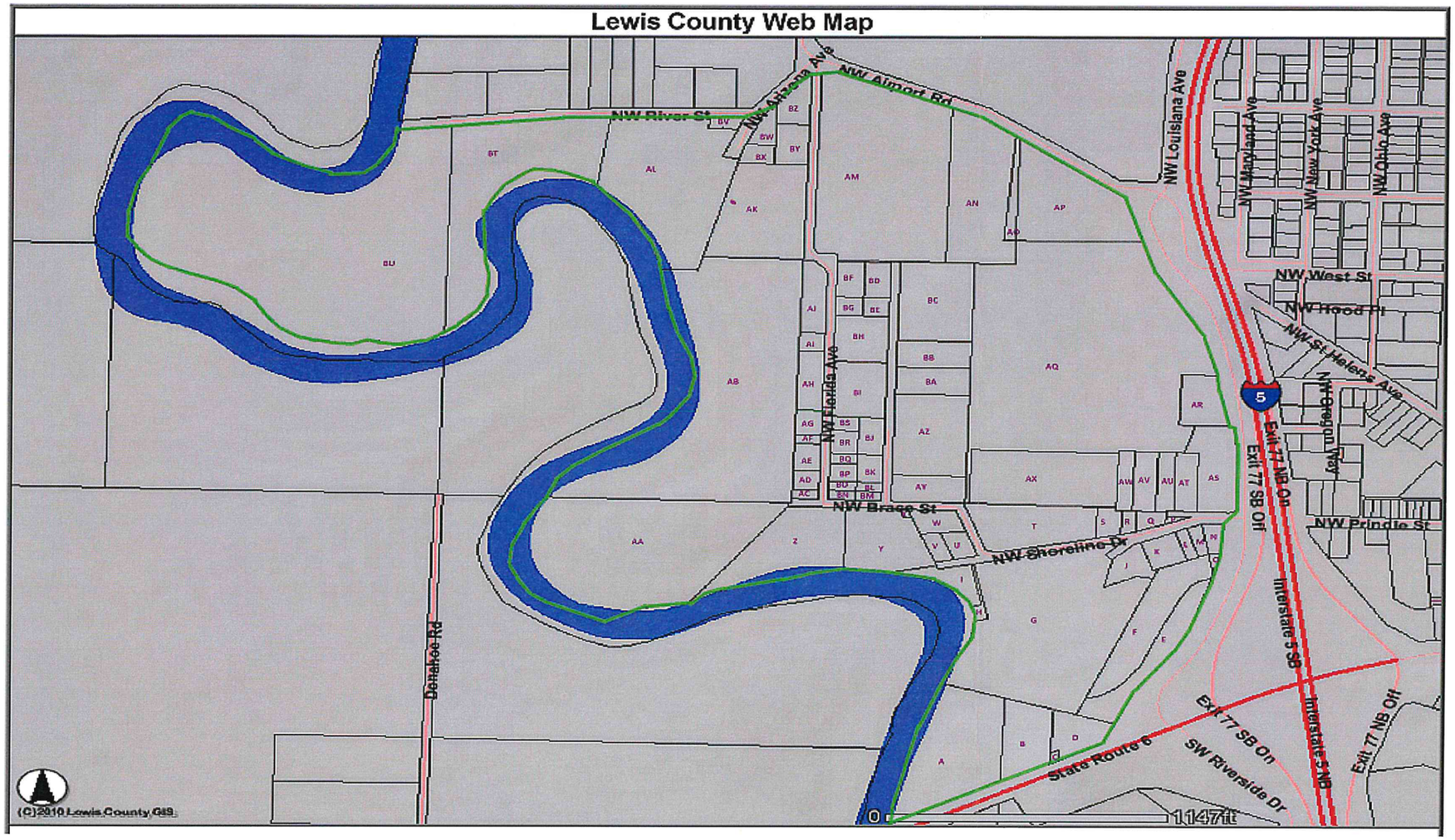
Appendix II

Property Information

Parcel #	Acreage	Map Location	Owner	Physical Address	Mailing Address	City	State	Zip	Land Value	Imp. Value	Total Value	2018 Assessed Value	Change In Value	% Take Land	% Take Imp.	Total Take Value
5825-0-0	16.06	A	Coffey Family Trust DTD 11/24/92	0 State Highway 6	37 Post Shadow Estate Dr	Spring	TX	77389	$ 41,600.00	$ -	$ 41,600.00	$ 33,100.00	$ (8,500.00)	100%	0%	$ 41,600.00
N/A	1.47	B	WSDOT HWY 6 ROW	N/A	N/A	Chehalis	WA	98532								
5823-1-0	1.04	D	Amondson-Muller, Linda C, Et Al	0 State Highway 6	102 Pine Drive	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5823-2-0	0.06	C	Amondson-Muller, Linda	0 State Highway 6	102 Pine Drive	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5794-1-0	9.29	G	City of Chehalis	1191 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 391,000.00	$ 7,900,000.00	$ 8,291,000.00	$ 202,300.00	$ (8,088,700.00)	0%	0%	$ -
5784-4-0	2.12	E	City of Chehalis	0 NW Louisiana Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 2,500.00	$ -	$ 2,500.00	$ 2,500.00	$ -	100%	0%	$ 2,500.00
5784-5-0	2.43	F	Vanderkolk, Dan & Nailla	0 NW Louisiana Avenue	1212 F Street	Centralia	WA	98531	$ 23,400.00	$ -	$ 23,400.00	$ 25,700.00	$ 2,300.00	100%	0%	$ 23,400.00
5795-0-0	0.13	H	Consolidated Dairy Products Co.	0 NW Shoreline Drive	PO Box 34377	Seattle	WA	98124	$ 3,900.00	$ -	$ 3,900.00	$ 4,200.00	$ 300.00	100%	0%	$ 3,900.00
5796-0-0	0.77	I	Callison & Sons Inc	1199 NW Shoreline Drive	2400 Callison Rd NE	Lacey	WA	98516	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5790-1-0	0.69	J	City of Chehalis	1165 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 29,300.00	$ -	$ 29,300.00	$ 24,000.00	$ (5,300.00)	100%	0%	$ 29,300.00
4784-4-0	0.55	K	Westall, John C & Donna I	1129 NW Shoreline Drive	325 NW Georgia Ave	Chehalis	WA	98532	$ 23,400.00	$ 83,300.00	$ 106,700.00	$ 145,600.00	$ 38,900.00	100%	100%	$ 106,700.00
4785-0-0	0.19	L	City of Chehalis	1127 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 17,600.00	$ -	$ 17,600.00	$ 18,000.00	$ 400.00	100%	0%	$ 17,600.00
4786-0-0	0.22	M	City of Chehalis	1121 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 17,600.00	$ -	$ 17,600.00	$ 18,000.00	$ 400.00	100%	0%	$ 17,600.00
4787-0-0	0.35	N	City of Chehalis	1117 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 17,600.00	$ -	$ 17,600.00	$ 18,000.00	$ 400.00	100%	0%	$ 17,600.00
5787-0-0	0.50	O	City of Chehalis	0 NW Louisiana Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5788-0-0	0.05	P	City of Chehalis	0 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5822-0-0	0.22	Q	City of Chehalis	1148 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 17,600.00	$ -	$ 17,600.00	$ 18,000.00	$ 400.00	100%	0%	$ 17,600.00
5821-0-0	0.15	R	City of Chehalis	1152 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 7,000.00	$ -	$ 7,000.00	$ 18,000.00	$ 11,000.00	100%	0%	$ 7,000.00
5499-0-0	0.26	S	City of Chehalis	1182 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 8,000.00	$ -	$ 8,000.00	$ 3,100.00	$ (4,900.00)	100%	0%	$ 8,000.00
5498-0-0	2.04	T	Westall, John C & Donna I	1190 NW Cedar Street	325 NW Georgia Ave	Chehalis	WA	98532	$ 39,800.00	$ 60,600.00	$ 100,400.00	$ 97,800.00	$ (2,600.00)	100%	100%	$ 100,400.00
5368-0-0	0.57	W	Westall, John C & Donna I	1131 NW Cedar Street	325 NW Georgia Ave	Chehalis	WA	98532	$ 16,400.00	$ 86,300.00	$ 102,700.00	$ 111,300.00	$ 8,600.00	100%	100%	$ 102,700.00
5369-0-0	0.30	U	Westall, John C & Donna I	1202 NW Cedar Street	325 NW Georgia Ave	Chehalis	WA	98532	$ 16,400.00	$ 115,500.00	$ 131,900.00	$ 138,100.00	$ 6,200.00	100%	100%	$ 131,900.00
5370-0-0	0.25	V	Westall, John C & Donna I	0 NW Shoreline Drive	325 NW Georgia Ave	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5371-2-0	0.04	X	City of Chehalis	0 NW Brace Street	1321 S Market Blvd	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5371-1-0	2.80	Y	Westall, John C & Donna I	0 NW Brace Street	325 NW Georgia Ave	Chehalis	WA	98532	$ 3,000.00	$ -	$ 3,000.00	$ 13,700.00	$ 10,700.00	100%	0%	$ 3,000.00
5372-0-0	3.55	Z	City of Chehalis	0 NW Brace Street	1321 S Market Blvd	Chehalis	WA	98532	$ 11,700.00	$ -	$ 11,700.00	$ 15,500.00	$ 3,800.00	100%	0%	$ 11,700.00
5373-0-0	11.84	AA	Westall, John C & Donna I	0 NW Brace Street	325 NW Georgia Ave	Chehalis	WA	98532	$ 14,100.00	$ -	$ 14,100.00	$ 28,400.00	$ 14,300.00	100%	0%	$ 14,100.00
5685-0-0	17.51	AB	Westall, John C & Donna I	0 NW Florida Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 28,100.00	$ -	$ 28,100.00	$ 51,000.00	$ 22,900.00	100%	0%	$ 28,100.00
5348-0-0	0.13	AC	Westall, John C & Donna I	305 NW Florida Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 16,400.00	$ 50,900.00	$ 67,300.00	$ 103,000.00	$ 35,700.00	100%	100%	$ 67,300.00
5347-0-0	0.26	AD	Westall, John C & Donna I	0 NW Florida Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 8,200.00	$ -	$ 8,200.00	$ 7,500.00	$ (700.00)	100%	0%	$ 8,200.00
5346-0-0	0.39	AE	Suarez, Isaias F & Flores, Yolanda M	347 NW Florida Avenue	347 NW Florida Ave	Chehalis	WA	98532	$ 16,400.00	$ 57,000.00	$ 73,400.00	$ 77,500.00	$ 4,100.00	100%	100%	$ 73,400.00
5345-1-0	0.13	AF	Suarez, Isaias F & Flores, Yolanda M	0 NW Florida Avenue	347 NW Florida Ave	Chehalis	WA	98532	$ 4,100.00	$ -	$ 4,100.00	$ 3,800.00	$ (300.00)	100%	0%	$ 4,100.00
5345-2-0	0.33	AG	Fields, Kevin A	0 NW Florida Avenue	342 NW Florida Ave	Chehalis	WA	98532	$ 8,200.00	$ -	$ 8,200.00	$ 7,500.00	$ (700.00)	100%	0%	$ 8,200.00
5344-0-0	0.82	AH	Westall, John C & Donna I	389 NW Florida Ave	325 NW Georgia Ave	Chehalis	WA	98532	$ 16,400.00	$ 75,800.00	$ 92,200.00	$ 98,500.00	$ 6,300.00	100%	100%	$ 92,200.00
5343-0-0	0.26	AI	City of Chehalis	0 NW Florida Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 8,200.00	$ -	$ 8,200.00	$ 8,200.00	$ -	100%	0%	$ 8,200.00
5338-1-0	1.00	AJ	City of Chehalis	0 NW Florida Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 11,700.00	$ -	$ 11,700.00	$ 8,000.00	$ (3,700.00)	100%	0%	$ 11,700.00
5680-1-0	3.84	AK	Waring, Rose	0 NW Florida Avenue	1380 NW Arizona Ave	Chehalis	WA	98532	$ 6,500.00	$ -	$ 6,500.00	$ 16,100.00	$ 9,600.00	100%	0%	$ 6,500.00
5682-1-0	7.68	AL	Waring, Rose	1380 NW Arizona Avenue	1380 NW Arizona Ave	Chehalis	WA	98532	$ 64,500.00	$ 39,000.00	$ 103,500.00	$ 74,200.00	$ (29,300.00)	80%	0%	$ 51,600.00
4066-1-0	1.90	AS	Whittington, Donald R	388 NW Louisiana Avenue	388 NW Louisiana Ave	Chehalis	WA	98532	$ 220,800.00	$ 335,000.00	$ 555,800.00	$ 545,700.00	$ (10,100.00)	0%	0%	$ -
5710-1-0	0.67	AT	City of Chehalis	1124 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 58,300.00	$ -	$ 58,300.00	$ 21,900.00	$ (36,400.00)	100%	0%	$ 58,300.00
5710-0-0	0.54	AU	City of Chehalis	1132 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 23,500.00	$ -	$ 23,500.00	$ 17,600.00	$ (5,900.00)	100%	0%	$ 23,500.00
5708-0-0	0.72	AV	City of Chehalis	1140 NW Shorelilne Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 35,000.00	$ -	$ 35,000.00	$ 23,500.00	$ (11,500.00)	100%	0%	$ 35,000.00
5709-0-0	0.48	AW	City of Chehalis	0 NW Shoreline Drive	1321 S Market Blvd	Chehalis	WA	98532	$ 500.00	$ -	$ 500.00	$ 5,200.00	$ 4,700.00	100%	0%	$ 500.00
5687-0-0	4.00	AX	Westall, John C & Donna I	0 NW Brace Street	325 NW Georgia Ave	Chehalis	WA	98532	$ 2,800.00	$ -	$ 2,800.00	$ 16,300.00	$ 13,500.00	100%	0%	$ 2,800.00
4065-0-0	1.10	AR	City of Chehalis	0 NW Snow St	1321 S Market Blvd	Chehalis	WA	98532	$ 95,800.00	$ -	$ 95,800.00	$ 95,800.00	$ -	50%	0%	$ 47,900.00
5676-2-0	22.32	AQ	City of Chehalis	420 NW Louisiana Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 664,300.00	$ 3,100,000.00	$ 3,764,300.00	$ 4,077,800.00	$ 313,500.00	50%	0%	$ 332,150.00
5676-3-0	4.01	AP	City of Chehalis	625 NW St Helens Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 35,000.00	$ -	$ 35,000.00	$ 36,100.00	$ 1,100.00	0%	0%	$ -
5677-2-0	0.39	AO	City of Chehalis	0 NW St Helens Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 17,000.00	$ -	$ 17,000.00	$ 3,400.00	$ (13,600.00)	0%	0%	$ -
5677-1-0	4.61	AN	City of Chehalis	0 NW St Helens Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 86,900.00	$ -	$ 86,900.00	$ 40,200.00	$ (46,700.00)	0%	0%	$ -
5679-1-0	11.65	AM	Hamilton, Ricky C	542 NW Floriday Avenue	1316 NW River St	Chehalis	WA	98532	$ 90,000.00	$ 25,000.00	$ 115,000.00	$ 110,100.00	$ (4,900.00)	20%	0%	$ 18,000.00
5493-0-0	3.00	BC	City of Chehalis	0 NW Georgia Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 83,700.00	$ -	$ 83,700.00	$ 50,400.00	$ (33,300.00)	100%	0%	$ 83,700.00
5494-0-0	1.00	BB	Westall, John C & Donna I	0 NW Georgia Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 2,800.00	$ -	$ 2,800.00	$ 2,800.00	$ -	100%	0%	$ 2,800.00
5495-0-0	1.00	BA	Westall, John C & Donna I	0 NW Georgia Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 2,800.00	$ -	$ 2,800.00	$ 2,800.00	$ -	100%	0%	$ 2,800.00
5496-0-0	3.00	AZ	Westall, John C & Donna I	0 NW Georgia Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 9,500.00	$ -	$ 9,500.00	$ 16,800.00	$ 7,300.00	100%	0%	$ 9,500.00
5496-1-0	1.00	AY	Westall, John C & Donna I	0 NW Georgia Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 8,200.00	$ 35,300.00	$ 43,500.00	$ 48,100.00	$ 4,600.00	100%	100%	$ 43,500.00
5361-1-0	0.12	BM	Westall, John C & Donna I	307 NW Georgia Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 16,400.00	$ 44,600.00	$ 61,000.00	$ 65,100.00	$ 4,100.00	100%	100%	$ 61,000.00
5681-0-0	0.31	BV	Rose Waring	1380 NW Arizona Avenue	1380 NW Arizona Ave	Chehalis	WA	98532	$ 23,400.00	$ 83,400.00	$ 106,800.00	$ 156,000.00	$ 49,200.00			
5680-3-0	0.32	BW	Daniel & Cheryl Brown	0 NW Arizona Avenue	1385 NW Arizoona Ave	Chehalis	WA	98532	$ 1,800.00	$ -	$ 1,800.00	$ 1,800.00	$ -			
5680-2-0	0.30	BX	Daniel & Cheryl Brown	1385 NW Arizona Avenue	1385 NW Arizoona Ave	Chehalis	WA	98532	$ 5,900.00	$ 84,600.00	$ 90,500.00	$ 137,600.00	$ 47,100.00			
5680-5-0	0.72	BY	Daniel & Cheryl Brown	0 NW Florida Avenue	1385 NW Arizoona Ave	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -			
5680-4-0	0.66	BZ	Daniel & Cheryl Brown	0 NW Arizona Avenue	1385 NW Arizoona Ave	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -			
5360-0-0	0.13	BN	City of Chehalis	1206 NW Brace Street	1321 S Market Blvd	Chehalis	WA	98532	$ 8,200.00	$ -	$ 8,200.00	$ 7,500.00	$ (700.00)	100%	0%	$ 8,200.00
5361-2-0	0.12	BL	Westall, John C & Donna I	315 NW Georgia Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 16,400.00	$ 42,100.00	$ 58,500.00	$ 48,600.00	$ (9,900.00)	100%	100%	$ 58,500.00

5359-0-0	0.13	BO	City of Chehalis	0 NW Florida Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 7,500.00	$ 5,600.00	100%	0%	$ 1,900.00
5361-3-0	0.36	BK	Westall, John C & Donna I	0 NW Georgia Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 8,500.00	$ 6,600.00	100%	0%	$ 1,900.00
5358-0-0	0.26	BP	City of Chehalis	366 NW Florida Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 8,200.00	$ -	$ 8,200.00	$ 7,500.00	$ (700.00)	100%	0%	$ 8,200.00
5357-0-0	0.13	BQ	Fields, Kevin A	342 NW Florida Avenue	342 NW Florida Ave	Chehalis	WA	98532	$ 16,400.00	$ 37,800.00	$ 54,200.00	$ 58,300.00	$ 4,100.00	100%	100%	$ 54,200.00
5362-0-0	0.48	BJ	Westall, John C & Donna I	325 NW Georgia Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 16,400.00	$ 101,800.00	$ 118,200.00	$ 139,700.00	$ 21,500.00	100%	100%	$ 118,200.00
5356-0-0	0.32	BR	Robinson, Alden & Tammra	354 NW Florida Avenue	2301 E "Q" Street	Tacoma	WA	98421	$ 16,400.00	$ 65,100.00	$ 81,500.00	$ 86,900.00	$ 5,400.00	100%	100%	$ 81,500.00
5355-0-0	0.19	BS	City of Chehalis	358 NW Florida Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 8,200.00	$ -	$ 8,200.00	$ 8,200.00	$ -	100%	0%	$ 8,200.00
5354-1-0	1.48	BI	City of Chehalis	370 NW Florida Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 25,800.00	$ -	$ 25,800.00	$ 10,500.00	$ (15,300.00)	100%	0%	$ 25,800.00
5351-1-0	1.24	BH	Westall, John C & Donna I	0 NW Florida Avenue	325 NW Georgia Ave	Chehalis	WA	98532	$ 3,700.00	$ -	$ 3,700.00	$ 9,400.00	$ 5,700.00	100%	0%	$ 3,700.00
5366-0-0	0.24	BE	City of Chehalis	0 NW Georgia Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5350-0-0	0.26	BG	City of Chehalis	0 NW Florida Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5367-0-0	0.45	BD	City of Chehalis	0 NW Georgia Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
5683-0-0	7.67	BT	Steven Emrich	0 NW River St	1358 NW River Street	Chehalis	WA	98532	$ 64,500.00	$ -	$ 64,500.00	$ 42,800.00	$ (21,700.00)	100%	0%	$ 64,500.00
5872-0-0	18.00	BU	Steven Emrich	0 NW River St	1358 NW River Street	Chehalis	WA	98532	$ 77,200.00	$ -	$ 77,200.00	$ 61,400.00	$ (15,800.00)	100%	0%	$ 77,200.00
5349-0-0	0.48	BF	City of Chehalis	448 NW Florida Avenue	1321 S Market Blvd	Chehalis	WA	98532	$ 1,900.00	$ -	$ 1,900.00	$ 1,900.00	$ -	100%	0%	$ 1,900.00
N/A	8.13		Chehalis ROW						$ 71,200.00	$ 1,480,000.00	$ 1,551,200.00			100%	100%	$ 1,551,200.00
Totals:	**194.18**								**$ 2,736,100.00**	**$ 13,903,100.00**	**$ 16,639,200.00**	**$ 7,387,100.00**	**$ (7,700,900.00)**			**$ 3,821,650.00**

Lewis County Web Map



N

0 125 250 500

VERTICAL DATUM
NAVD 88

LEGEND	
CHEHALIS PROPERTY	
WESTALL PROPERTY	
OTHER PROPERTY	

	DATE	REVISIONS		
DESIGNED BY: K. HOFFER	6/14/17	NO.	DATE	
ENTERED BY: J. SAUER	6/14/17			
CHECKED BY:				
PROJ. ENGR.: T. SKILLINGS				
Plotted By: Kate Hoffer on 6/5/2017				

G:\Project\2015\15070 Chehalis On-Call Plan Review\Task 12 - Chehalis Flood Storage Master Plan\CAD\Exhibits\Property Owner Information.dwg Khoffer 6/21/17 4:44 PM

THOMAS E. SKILLINGS STATE OF WASHINGTON 17952 REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY

SKILLINGS CONNOLLY
5016 Lacey Boulevard SE, Lacey, WA 98503
Ph.: (360) 491-3399 www.skillings.com

CITY OF CHEHALIS

CHEHALIS FLOOD STORAGE MASTER PLAN

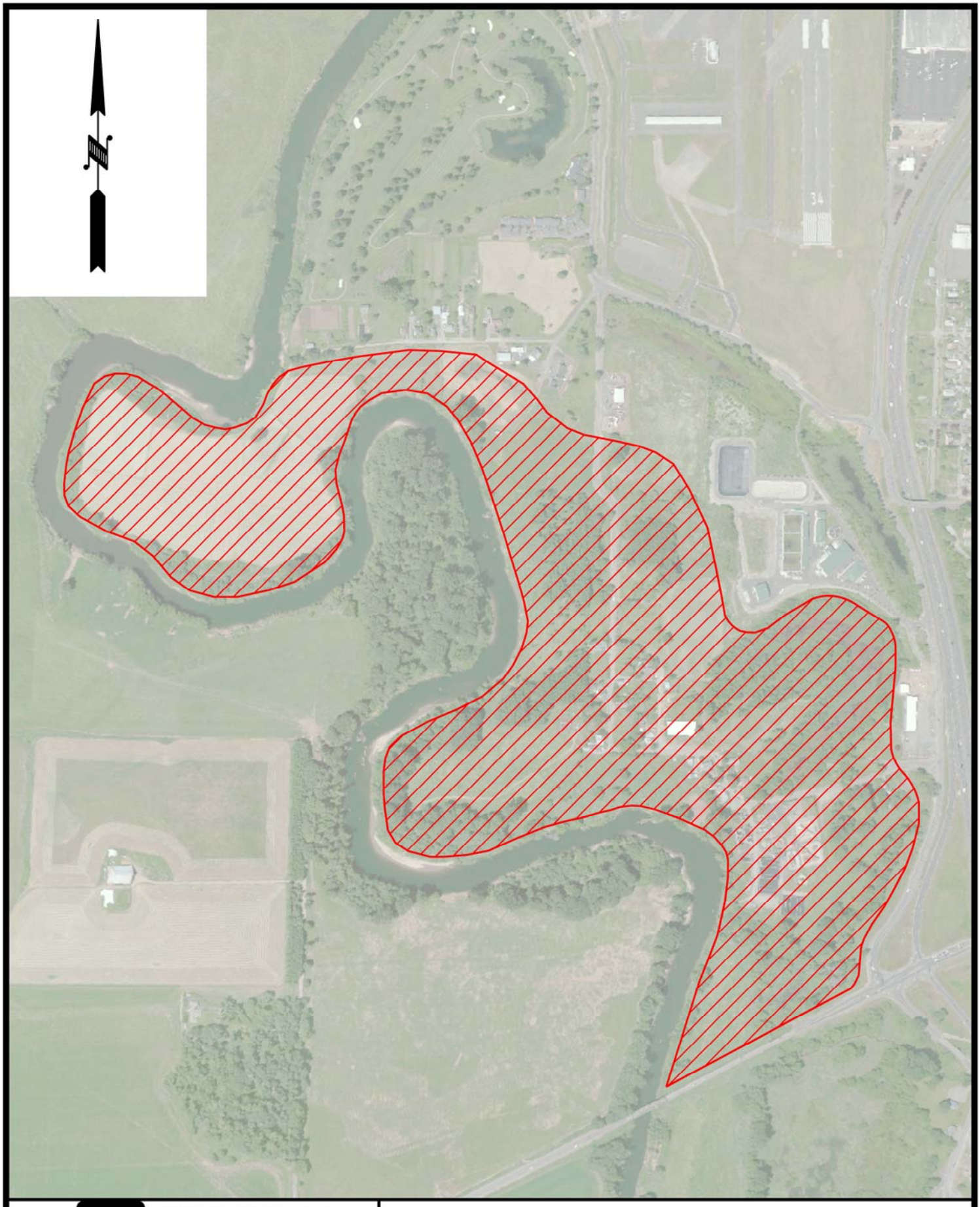
JOB NUMBER 15070-12

PROPERTY OWNER INFORMATION

SHEET EX-A3

Appendix III

Property Area



SKILLINGS CONNOLLY

PROJECT AREA

Plotted By: Kate Hoffer on 6/30/17 8:47 AM

G:\Project\2015\15070 Chehalis On-Call Plan Review\Task 12 - Chehalis Flood Storage Master Plan\CAD\Exhibits\Vicinity Map.dwg Khoffer 6/22/17 10:12 AM

	DATE
DESIGNED BY: K. HOFFER	6/14/17
ENTERED BY: J. SAUER	6/14/17
CHECKED BY:	
PROJ. ENGR.: T. SKILLINGS	
Plotted By: Kate Hoffer on 6/5/2017	

REVISIONS		
NO.	DATE	

G:\Project\2015\15070 Chehalis On-Call Plan Review\Task 12 - Chehalis Flood Storage Master Plan\CAD\Exhibits\Existing Topography.dwg Khoffer 6/26/17 1:11 PM

THOMAS E. SKILLINGS — STATE OF WASHINGTON — 17962 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY

SKILLINGS CONNOLLY
5016 Lacey Boulevard SE, Lacey, WA 98503
Ph.: (360) 491-3399 www.skillings.com

CITY OF CHEHALIS

CHEHALIS FLOOD STORAGE MASTER PLAN

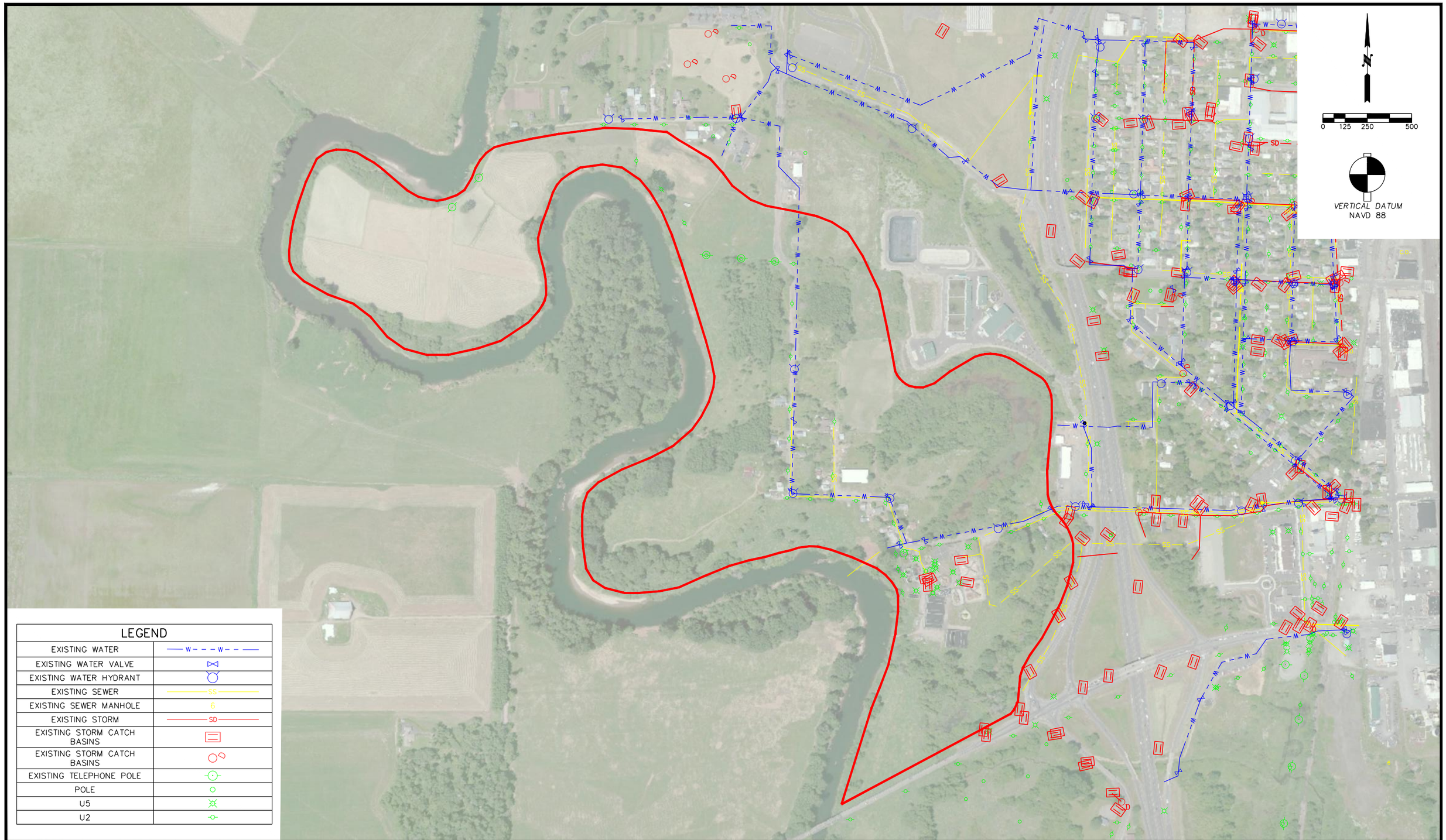
JOB NUMBER 15070-12

EXISTING TOPOGRAPHY

SHEET EX-A1

Appendix IV

Existing Utilities



LEGEND	
EXISTING WATER	W
EXISTING WATER VALVE	
EXISTING WATER HYDRANT	
EXISTING SEWER	SS
EXISTING SEWER MANHOLE	6
EXISTING STORM	SD
EXISTING STORM CATCH BASINS	
EXISTING STORM CATCH BASINS	
EXISTING TELEPHONE POLE	
POLE	
U5	
U2	

	DATE	REVISIONS		
DESIGNED BY: K. HOFFER	6/14/17	NO.	DATE	
ENTERED BY: J. SAUER	6/14/17			
CHECKED BY:				
PROJ. ENGR.: T. SKILLINGS				

Plotted By: Kate Hoffer on 6/5/2017

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THOMAS E. SKILLINGS — STATE OF WASHINGTON — 17952 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY

SKILLINGS CONNOLLY
5016 Lacey Boulevard SE, Lacey, WA 98503
Ph.: (360) 491-3399 www.skillings.com

CITY OF CHEHALIS

CHEHALIS FLOOD STORAGE MASTER PLAN

JOB NUMBER 15070-12

EXISTING UTILITIES

SHEET EX-A4

Appendix V

Engineering Drawings

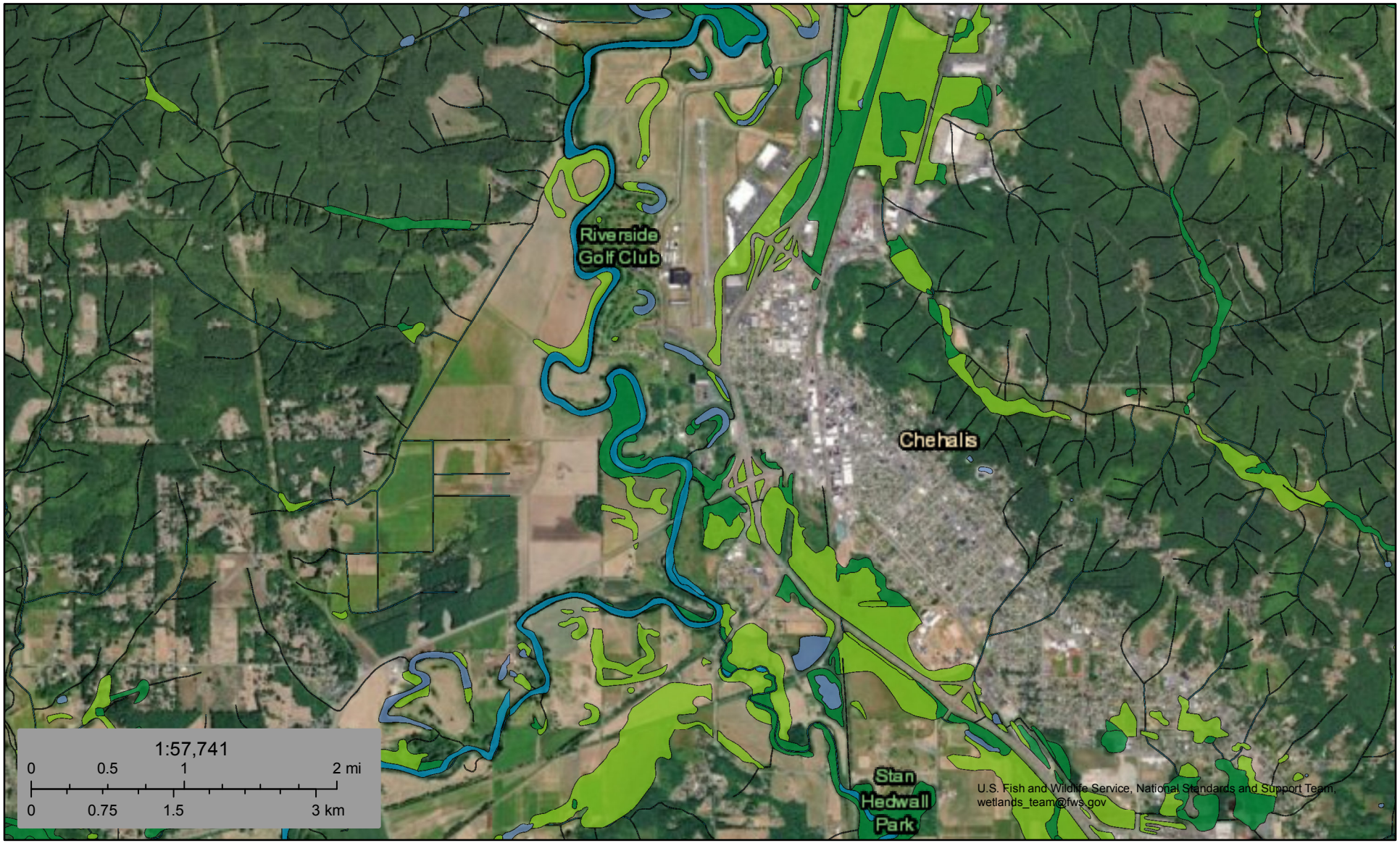
Appendix VI

Project Area Wetlands

U.S. Fish and Wildlife Service

National Wetlands Inventory

Chehalis Flood Storage Project



May 30, 2019

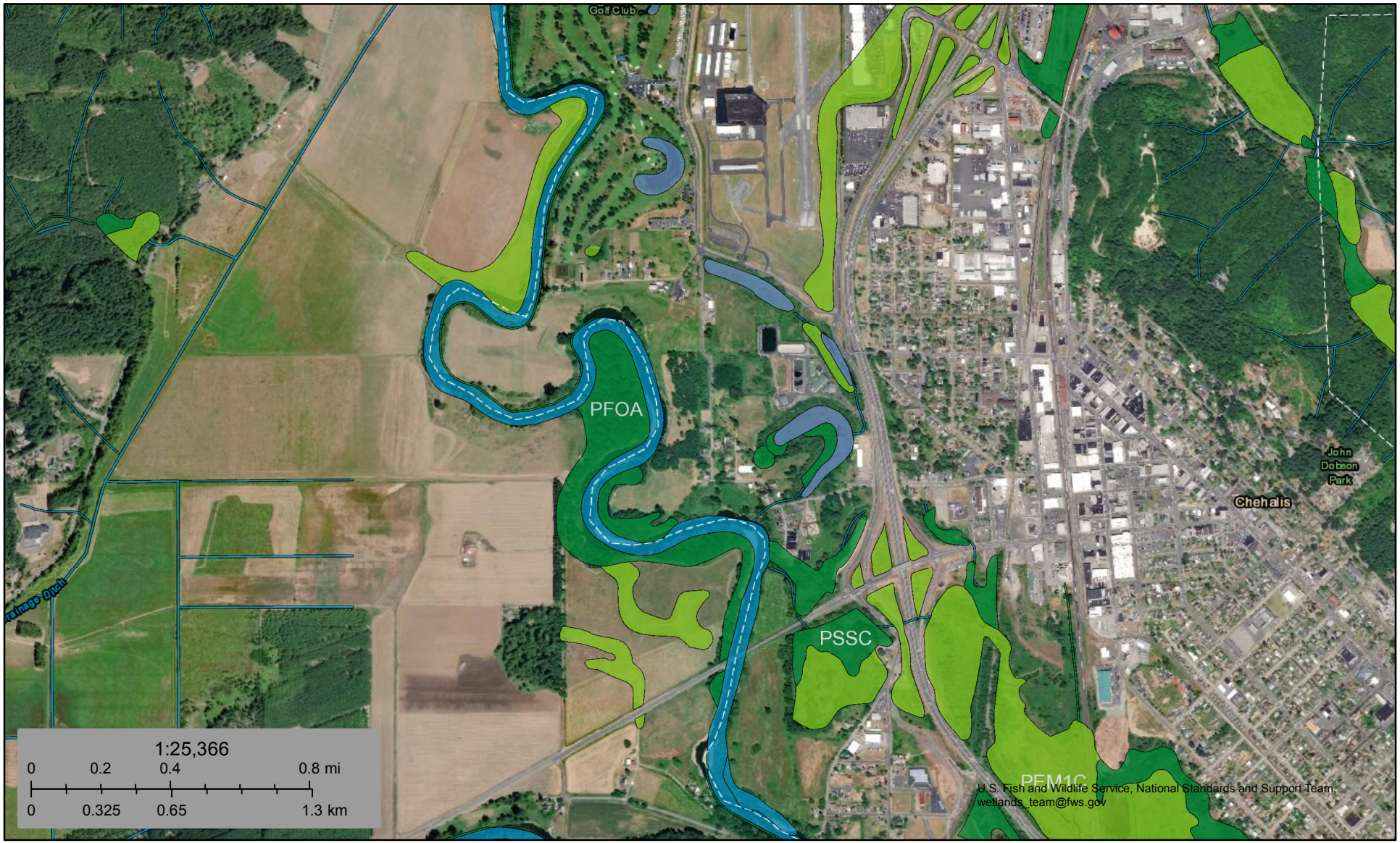
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

U.S. Fish and Wildlife Service

National Wetlands Inventory

Chehalis Flood Storage Project



June 5, 2019

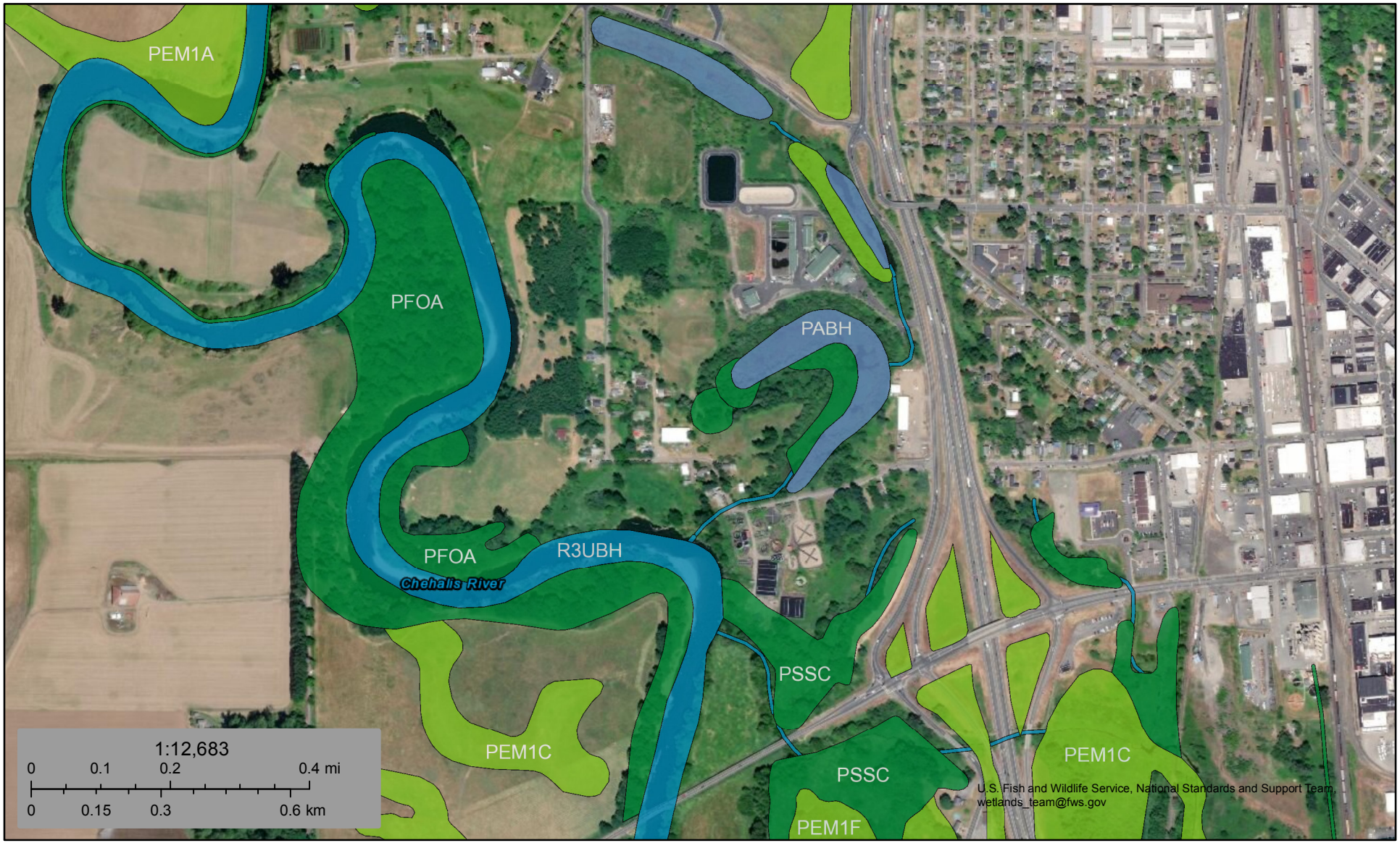
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

U.S. Fish and Wildlife Service
National Wetlands Inventory

Chehalis Flood Storage Project



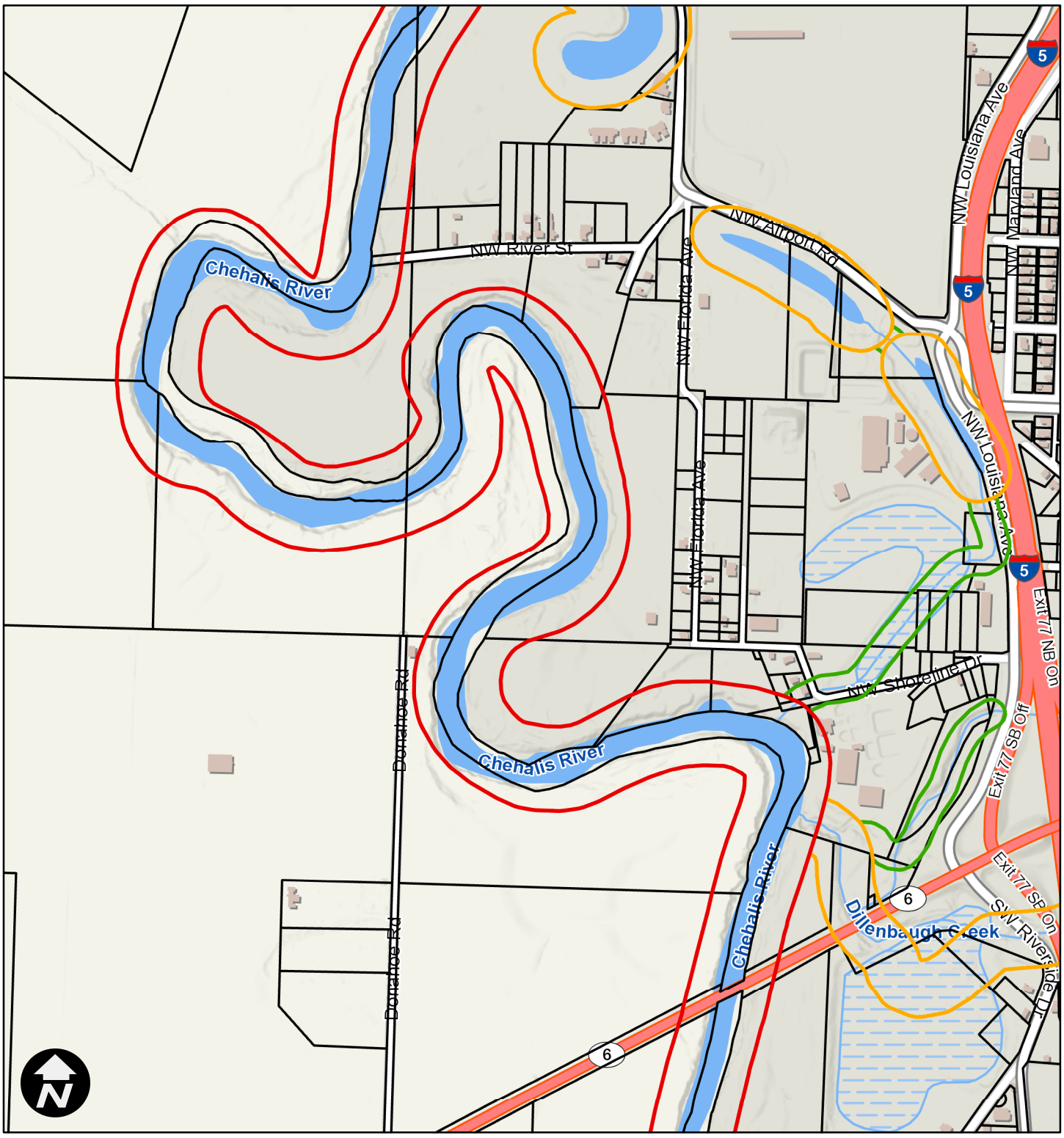
June 5, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Critical Area Buffers



6/19/2019, 11:01:48 AM

1:9,028

Stream Buffers

- Shoreline 150'
- Fish 150'
- Non-Fish 75'
- Parcels

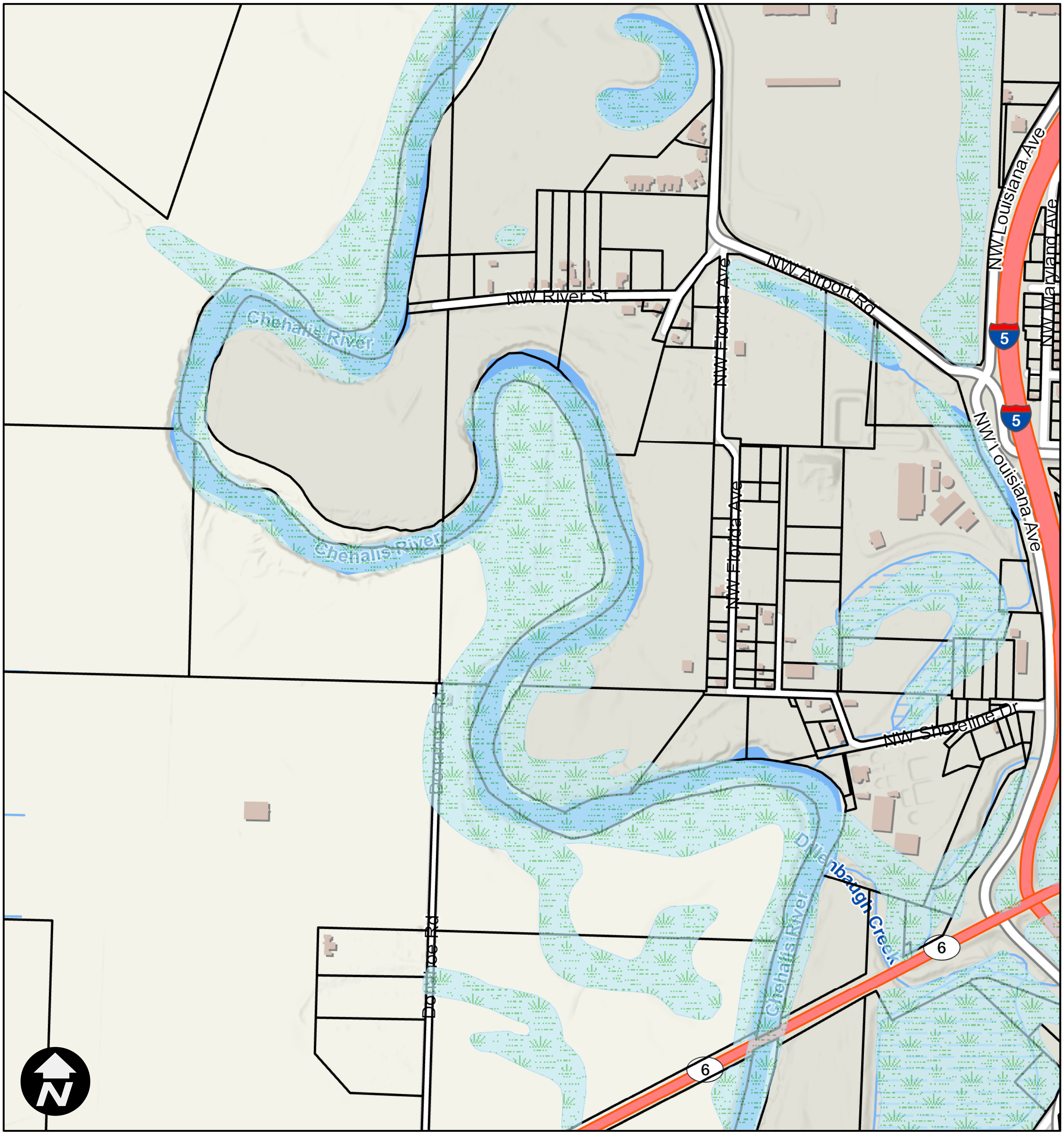
0 400 800 1,600 ft

NAD 1983 StatePlane Washington South FIPS 4602 Feet

LEWIS COUNTY
— est. 1845 —

Lewis County G.I.S.

Chehalis Flood Storage Project



6/19/2019, 1:21:21 PM

1:9,028

Wetlands

Parcels

0 400 800 1,600 ft

NAD 1983 StatePlane Washington South FIPS 4602 Feet

Lewis County does not guarantee the accuracy of the information shown on this map and is not responsible for any use or misuse by others regarding this material. It is provided for general informational purposes only. This map does not meet legal, engineering, or survey standards. Please practice due diligence and consult with licensed experts before making decisions.

Chehalis Flood Storage Project

6/5/2019, 8:21:01 AM

1:9,028

Wetlands

Parcels

0 400 800 1,600 ft

NAD 1983 StatePlane Washington South FIPS 4602 Feet

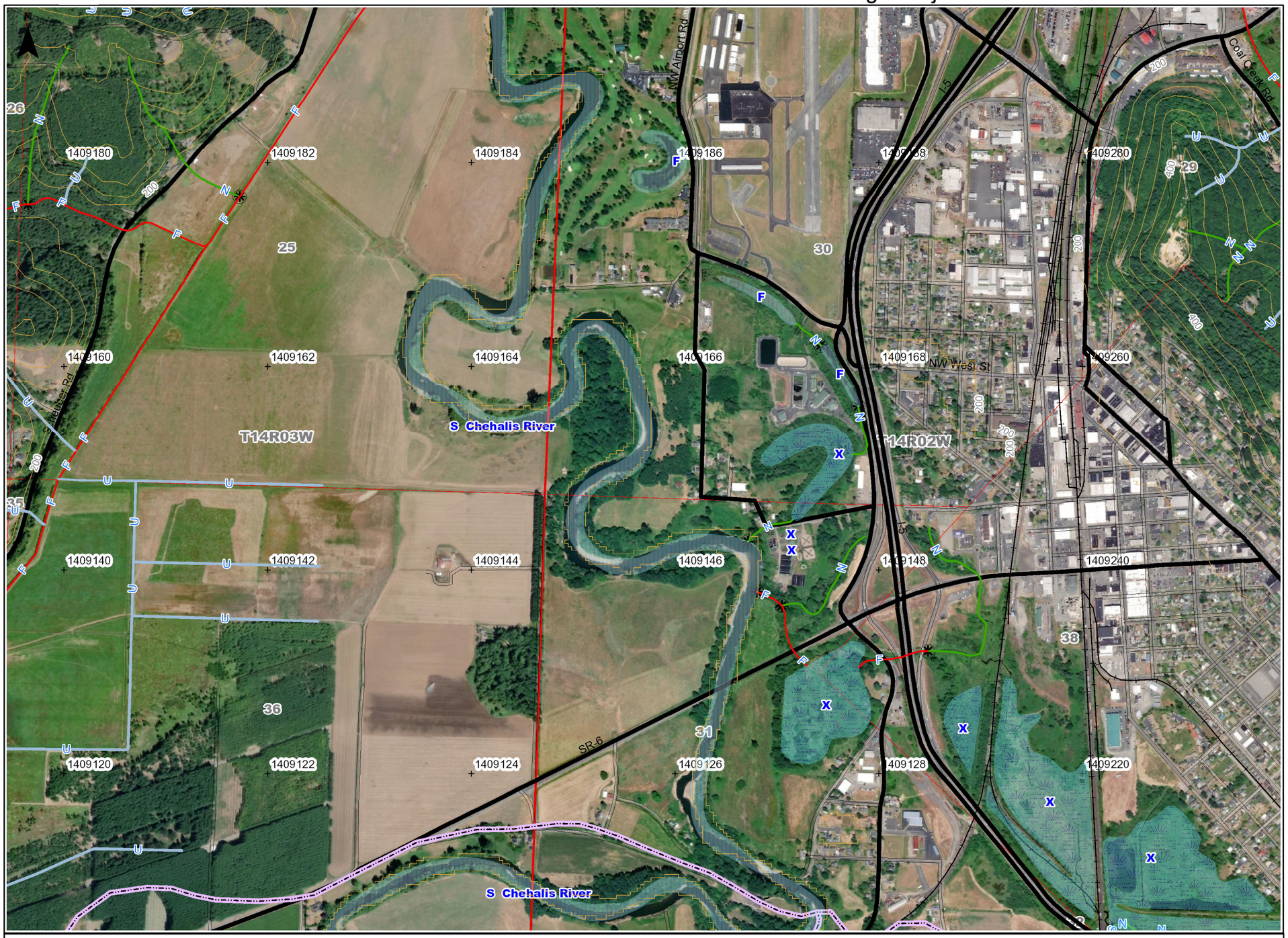
LEWIS COUNTY
— est. 1845 —

Lewis County G.I.S.

Appendix VII

FPARS Map

Chehalis Flood Storage Project



Legend

- County Boundary
- Tribal Cultural Resources Contacts
- Contours - 40ft. Interval

Streams

- Type S
- Type F
- Type N, Np, Ns
- U, unknown
- X, non-typed per WAC 222-16
- WRIA
- WAU
- Watershed Analysis

Trails and Railroads

- Trail
- Railroad
- Railroad Grade

Orphaned and Abandoned Roads

- 11
- 12

Roads

- Unpaved Road/Surface Unknown
- Paved Road
- Water Type Break
- Map Registration Tics
- Section Survey Lines

Approximate Scale : 1:12,000

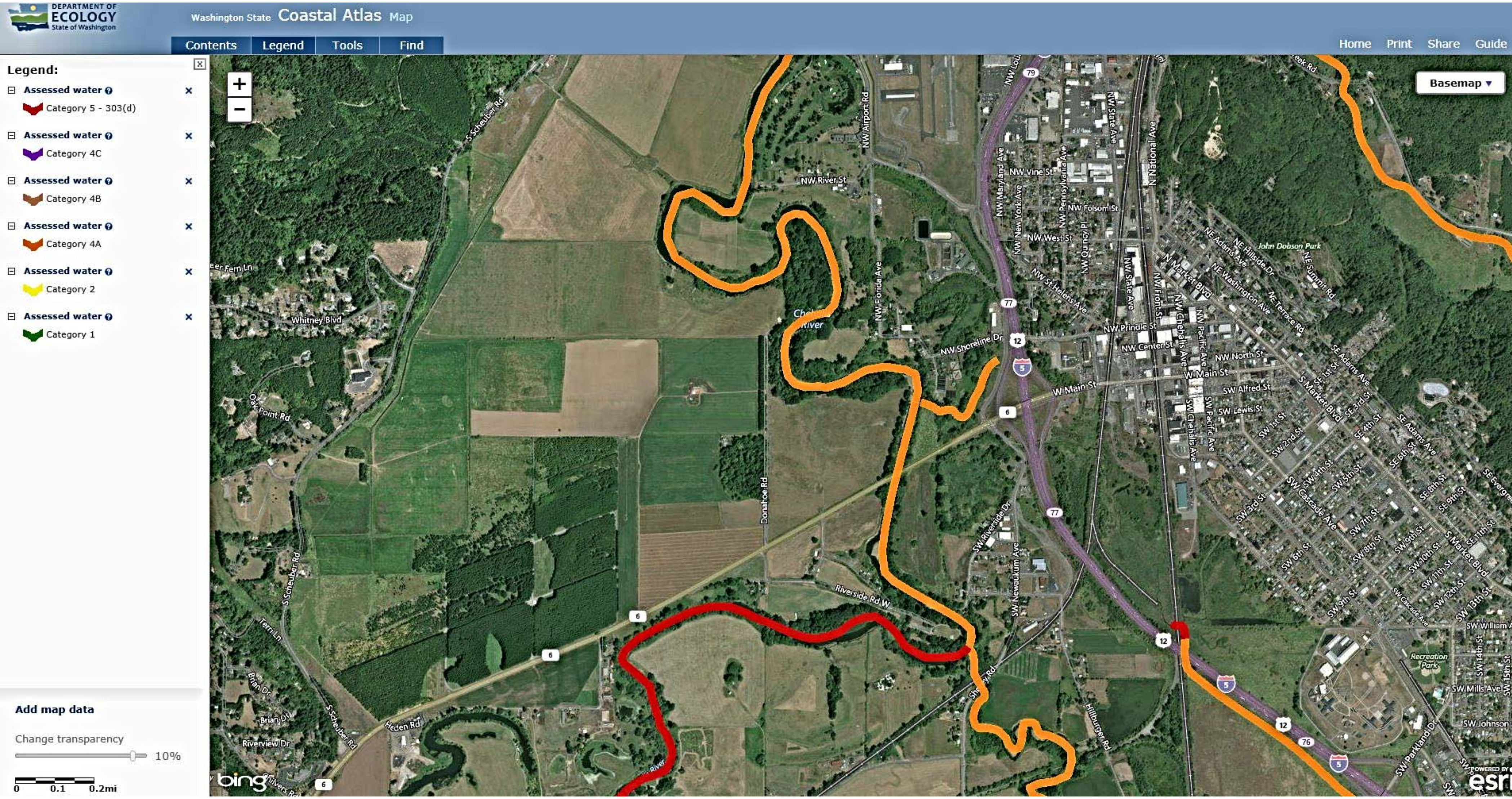
5/30/201910:02:27 AM

Coordinate System: NAD 1983 HARN StatePlane Washington South FIPS 4602 Feet

WASHINGTON STATE DEPT OF NATURAL RESOURCES

Appendix VIII

Water Quality Map


DEPARTMENT OF ECOLOGY State of Washington
Washington State Coastal Atlas Map
Contents
Legend
Tools
Find
Home
Print
Share
Guide
Legend:
Assessed water
Category 5 - 303(d)
Assessed water
Category 4C
Assessed water
Category 4B
Assessed water
Category 4A
Assessed water
Category 2
Assessed water
Category 1
Add map data
Change transparency
10%
0
0.1
0.2mi
Basemap
NW River St
NW Airport Rd
NW Vine St
NW Folsom St
NW West St
John Dobson Park
NW Shoreline Dr
NW Prindle St
NW Center St
NW North St
W Main St
SW Alfred St
SW Lewis St
Whitney Blvd
Oak Point Rd
Donahoe Rd
Riverside Rd W
S Scheuber Rd
Heden Rd
Riverview Dr
Brian Dr
Hillburger Rd
Recreation Park
SW William Ave
SW Mills Ave
SW Johnson Ave
bing
esri

Listing ID: 10411

Main Listing Information

Listing ID: 10411
Waterbody Name: CHEHALIS RIVER
Medium: Water
Parameter: Bacteria
WQI Project: Upper Chehalis River Bacteria TMDL
Designated Use: None Assigned

2014 Category: 2
2012 Category: 2
2008 Category: 2
2004 Category: 2
On 1998 303(d) List?: N
On 1996 303(d) List?: Y

Assessment Unit

Assessment Unit ID: 17100103000086

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-2W-30

Basis

Pickett, 1994. station Cheh-54 (Chehalis River (RM 72.5)) shows 1 single samples exceed the geometric mean criterion out of 2 samples collected during 1991.

Remarks

No Remarks Entered

EIM

No EIM Records Entered

Listing ID: 5878

Main Listing Information

Listing ID: 5878
Waterbody Name: CHEHALIS RIVER
Medium: Water
Parameter: Dissolved Oxygen
WQI Project: Upper Chehalis River Basin Dissolved Oxygen TMDL
Designated Use: None Assigned

2014 Category: 4A
2012 Category: 4A
2008 Category: 4A
2004 Category: 4A
On 1998 303(d) List?: N
On 1996 303(d) List?: N

Assessment Unit

Assessment Unit ID: 17100103000086

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-3W-25

Basis

Pickett, 1994a. 9 excursions beyond the criterion out of 17 samples (53%) at RM 73.6 between 1991 and 1992.

Remarks

Remark	Modified By	Modified On	Visibility
Part of Chehalis River TMDL. Approved 10/26/96.	Imported	6/11/2007	Public

EIM

No EIM Records Entered

Listing ID: 5871

Main Listing Information

Listing ID: 5871
Waterbody Name: CHEHALIS RIVER
Medium: Water
Parameter: Temperature
WQI Project: Upper Chehalis River Basin Temperature TMDL
Designated Use: None Assigned

2014 Category: 4A
2012 Category: 4A
2008 Category: 4A
2004 Category: 4A
On 1998 303(d) List?: Y
On 1996 303(d) List?: N

Assessment Unit

Assessment Unit ID: 17100103000086

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-3W-25

Basis

Pickett, 1994a. 9 excursions beyond the criterion out of 17 samples (53%) at RM 73.6 in 1991 and 1992.

Remarks

Remark	Modified By	Modified On	Visibility
Upper Chehalis temperature TMDL approved 4-Dec-01.	Imported	6/11/2007	Public

EIM

No EIM Records Entered

Listing ID: 6669

Main Listing Information

Listing ID: 6669
Waterbody Name: DILLENBAUGH CREEK
Medium: Water
Parameter: Bacteria
WQI Project: Upper Chehalis River Bacteria TMDL
Designated Use: None Assigned

2014 Category: 4A
2012 Category: 4A
2008 Category: 4A
2004 Category: 4A
On 1998 303(d) List?: Y
On 1996 303(d) List?: Y

Assessment Unit

Assessment Unit ID: 17100103027313

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-2W-31

Basis

Crawford, 1987. 2 excursions beyond the criterion between 5/86 and 6/86 at RM 0.1.

Pickett, 1994. station Cheh-60 (Dillenbaugh Creek (@Chehalis RM 74.5001)) shows a single sample exceeds the geometric mean criterion out of 1 samples collected during 1991.

Pickett, 1994. station Cheh-60 (Dillenbaugh Creek (@Chehalis RM 74.5001)) shows no single sample exceeds the geometric mean criterion out of 1 samples collected during 1992.

Pickett, 1994. station Cheh-61 (Dilenbaugh Creek (@Chehalis RM 74.5002)) shows no single sample exceeds the geometric mean criterion out of 1 samples collected during 1992.

Remarks

Remark	Modified By	Modified On	Visibility
Part of the Upper Chehalis Fecal Coliform Bacteria TMDL approved by EPA 07/22/04. -kk	Imported	6/11/2007	Public

EIM

No EIM Records Entered

Listing ID: 7754

Main Listing Information

Listing ID: 7754
Waterbody Name: DILLENBAUGH CREEK
Medium: Water
Parameter: Dissolved Oxygen
WQI Project: Upper Chehalis River Basin Dissolved Oxygen TMDL
Designated Use: None Assigned

2014 Category: 4A
2012 Category: 4A
2008 Category: 4A
2004 Category: 4A
On 1998 303(d) List?: N
On 1996 303(d) List?: N

Assessment Unit

Assessment Unit ID: 17100103027313

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-2W-31

Basis

Pickett, 1994a. 5 excursions beyond the criterion out of 5 samples (100%) near the mouth during 1991 and 1992.

Crawford, 1987. 5 excursions beyond the criterion out of 5 samples (100%) at RM 0.1 during 1986.

Remarks

Remark	Modified By	Modified On	Visibility
Part of Chehalis River TMDL. Approved 10/26/96.	Imported	6/11/2007	Public

EIM

No EIM Records Entered

Listing ID: 7755

Main Listing Information

Listing ID: 7755
Waterbody Name: DILLENBAUGH CREEK
Medium: Water
Parameter: Temperature
WQI Project: Upper Chehalis River Basin Temperature TMDL
Designated Use: None Assigned

2014 Category: 4A
2012 Category: 4A
2008 Category: 4A
2004 Category: 4A
On 1998 303(d) List?: Y
On 1996 303(d) List?: N

Assessment Unit

Assessment Unit ID: 17100103027313

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-2W-31

Basis

Pickett, 1994a. 1 excursion beyond the criterion out of 5 samples (20%) near the mouth during 1991 and 1992.

Crawford, 1987. 2 excursions beyond the criterion out of 5 samples (40%) at RM 0.1 during 1986.

Remarks

Remark	Modified By	Modified On	Visibility
Part of the Upper Chehalis River TMDL. Approved 12/4/01.	Imported	6/11/2007	Public

EIM

No EIM Records Entered

Listing ID: 16758

Main Listing Information

Listing ID: 16758
Waterbody Name: NEWAUKUM RIVER
Medium: Water
Parameter: Bacteria
WQI Project: Upper Chehalis River Bacteria TMDL
Designated Use: None Assigned

2014 Category: 4A
2012 Category: 4A
2008 Category: 4A
2004 Category: 4A
On 1998 303(d) List?: Y
On 1996 303(d) List?: Y

Assessment Unit

Assessment Unit ID: 17100103000226

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-2W-31

Basis

Location ID: [G07001161211] -- In water year 2009, 0 of 8 sample values (0%) showed an excursion of the % criterion for this waterbody (200 cfu/100mL). The geometric mean of 5.5 does not exceed the geometric mean criterion (100 cfu/100mL).

Location ID: [G07001161211] -- In water year 2008, 0 of 9 sample values (0%) showed an excursion of the % criterion for this waterbody (200 cfu/100mL). The geometric mean of 5.2 does not exceed the geometric mean criterion (100 cfu/100mL).

Location ID: [G07001161211] -- In water year 2007, 2 of 12 sample values (17%) showed an excursion of the % criterion for this waterbody (200 cfu/100mL). The geometric mean of 28.7 does not exceed the geometric mean criterion (100 cfu/100mL).

Hallock (2001) Dept. of Ecology Ambient Monitoring Station 23B070 (Newaukum R. near Chehalis) shows a geometric mean of 86 does not exceed the criterion and that 11% of the samples exceeds the percentile criterion from 9 samples collected during 1997, with only 1 sample that exceeds the percentile criterion.

Hallock (2001) Dept. of Ecology Ambient Monitoring Station 23B070 (Newaukum R. near Chehalis) shows a geometric mean of 143 exceeds the criterion and that 33% of the samples exceeds the percentile criterion from 3 samples collected during 1996.

Hallock (2001) Dept. of Ecology Ambient Monitoring Station 23B050 (Newaukum R. at Chehalis) shows a geometric mean of 54 does not exceed the criterion and that 11% of the samples exceeds the percentile criterion from 9 samples collected during 1993, with only 1 sample that exceeds the percentile criterion.

Pickett, 1994. station Cheh-69 (Newaukum River (@ Chehalis RM 75.20015)) shows 0 single samples exceed the geometric mean criterion out of 2 samples collected during 1992. Pickett, 1994. station Cheh-69 (Newaukum River (@ Chehalis RM 75.20015)) shows 0 single samples exceed the geometric mean criterion out of 3 samples collected during 1991.

Remarks

Remark	Modified By	Modified On	Visibility

Combined Listing: Listing ID 16759 was rolled into this listing	Chad Brown	9/24/2015	Public
Impairment was determined by exceedance of the percent criterion in water year(s) 2007.	Jessica Archer	10/1/2014	Public
Policy 1-11 was revised in July 2012 to specify that bacteria is assessed according to water year (Oct 1-Sept 30) from the previous assessment period of calendar year. The water year assessment is only applied to newly assessed data. Therefore, this listing contains data assessed by both water year and calendar year.	Jessica Archer	10/1/2014	Public
Part of the Upper Chehalis Fecal Coliform Bacteria TMDL approved by EPA 07/22/04. -kk	Jessica Archer	10/1/2014	Public

EIM

User Study ID:	User Location ID:
G0700116	G07001161211

Listing ID: 11003

Main Listing Information

Listing ID: 11003
Waterbody Name: NEWAUKUM RIVER
Medium: Water
Parameter: Dissolved Oxygen
WQI Project: Upper Chehalis River Basin Dissolved Oxygen TMDL
Designated Use: None Assigned

2014 Category: 4A
2012 Category: 3
2008 Category: 3
2004 Category: 1
On 1998 303(d) List?: N
On 1996 303(d) List?: N

Assessment Unit

Assessment Unit ID: 17100103000226

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-2W-31

Basis

Location ID: [G07001161211] -- In 2009, 3 of 6 sample values (50%) showed an excursion of the criterion (9.5 mg/L) for this waterbody;

Location ID: [G07001161211] -- In 2008, 2 of 9 sample values (22%) showed an excursion of the criterion (9.5 mg/L) for this waterbody;

Location ID: [G07001161211] -- In 2007, 1 of 10 sample values (10%) showed an excursion of the criterion (9.5 mg/L) for this waterbody;

Location ID: [G07001161211] -- In 2006, 0 of 2 sample values (0%) showed an excursion of the criterion (9.5 mg/L) for this waterbody;

Hallock (2001) Dept. of Ecology Ambient Monitoring Station 23B050 (Newaukum @ Mouth) shows 0 excursions beyond the criterion out of 9 samples collected between 1993 - 2001
Hallock (2001) Dept. of Ecology Ambient Monitoring Station 23B070 (Newaukum R nr Chehalis) shows 0 excursions beyond the criterion out of 12 samples collected between 1993 - 2001

Remarks

Remark	Modified By	Modified On	Visibility
Combined Listing: Listing ID 11005 was rolled into this listing	Chad Brown	9/24/2015	Public
SWRO confirmed that this listing is covered by a TMDL. This nonpoint TMDL requires BMP implementation in the entire TMDL footprint. This segment is associated with the TMDL allocations and implementation and can be moved to Category 4a.	Susan Braley	1/22/2015	Private
Part of the Upper Chehalis River D.O. TMDL.	Susan Braley	1/22/2015	Public
Ten percent or more of the samples collected in a single year were excursions of the criterion, and at least 3 excursions exist from all data considered.	Jessica Archer	10/3/2014	Public

EIM

User Study ID:	User Location ID:
G0700116	G07001161211

Listing ID: 7770

Main Listing Information

Listing ID: 7770
Waterbody Name: NEWAUKUM RIVER
Medium: Water
Parameter: Temperature
WQI Project: Upper Chehalis River Basin Temperature TMDL
Designated Use: None Assigned

2014 Category: 4A
2012 Category: 4A
2008 Category: 4A
2004 Category: 4A
On 1998 303(d) List?: Y
On 1996 303(d) List?: N

Assessment Unit

Assessment Unit ID: 17100103000226

Location Identification

Counties: Lewis
WRIA: 23 - Upper Chehalis
Waterbody ID (WBID): None Assigned
Waterbody Class: RA
Town/Range/Section (Legacy): 14N-2W-31

Basis

{Supplemental Spawning Period}: Location ID: G07001161211 -- In 2009, 1 of 6 sample values (17%) showed an excursion of the criteria (13°C) for this waterbody;

Location ID: G07001161211 -- In 2008, 2 of 2 sample values (100%) showed an excursion of the criteria (16°C) for this waterbody;

{Supplemental Spawning Period}: Location ID: G07001161211 -- In 2008, 1 of 7 sample values (14%) showed an excursion of the criteria (13°C) for this waterbody;

Location ID: G07001161211 -- In 2007, 2 of 2 sample values (100%) showed an excursion of the criteria (16°C) for this waterbody;

{Supplemental Spawning Period}: Location ID: G07001161211 -- In 2007, 2 of 9 sample values (22%) showed an excursion of the criteria (13°C) for this waterbody;

{Supplemental Spawning Period}: Location ID: G07001161211 -- In 2006, 0 of 3 sample values (0%) showed an excursion of the criteria (13°C) for this waterbody;

Sargeant (2001) show excursions beyond the criterion from continuous measurements collected in 1995 and 1997-2000.

Hallock (2001) Dept. of Ecology Ambient Monitoring Station 23B050 (Newaukum @ Mouth) shows 0 excursions beyond the criterion out of 9 samples collected between 1993 - 2001

Hallock (2001) Dept. of Ecology Ambient Monitoring Station 23B070 (Newaukum R nr Chehalis) shows 1 excursions beyond the criterion out of 12 samples collected between 1993 - 2001 measured on these dates: 97/07/30,

Pickett, 1994a. 3 excursions beyond the criterion out of 6 samples (50%) near the mouth during 1991 and 1992.

Remarks

Remark	Modified By	Modified On	Visibility
Combined Listing: Listing IDs 35938, 11008 were rolled into this listing	Chad Brown	9/24/2015	Public
Historical Remarks: Part of the Upper Chehalis River TMDL. Approved 12/4/01.	Nicholas Groebner	4/24/2014	Public
Supplemental Criteria apply from Sep 15 - Jul 1	Nicholas Groebner	4/24/2014	Public

EIM

User Study ID:	User Location ID:
G0700116	G07001161211

Appendix VIX

FEMA Flood Information

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFEs) shown on this map apply only landward of 0.0' National Geodetic Vertical Datum (NGVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Tranverse Mercator (UTM) zone 10. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the Lewis County Department of Public Works.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

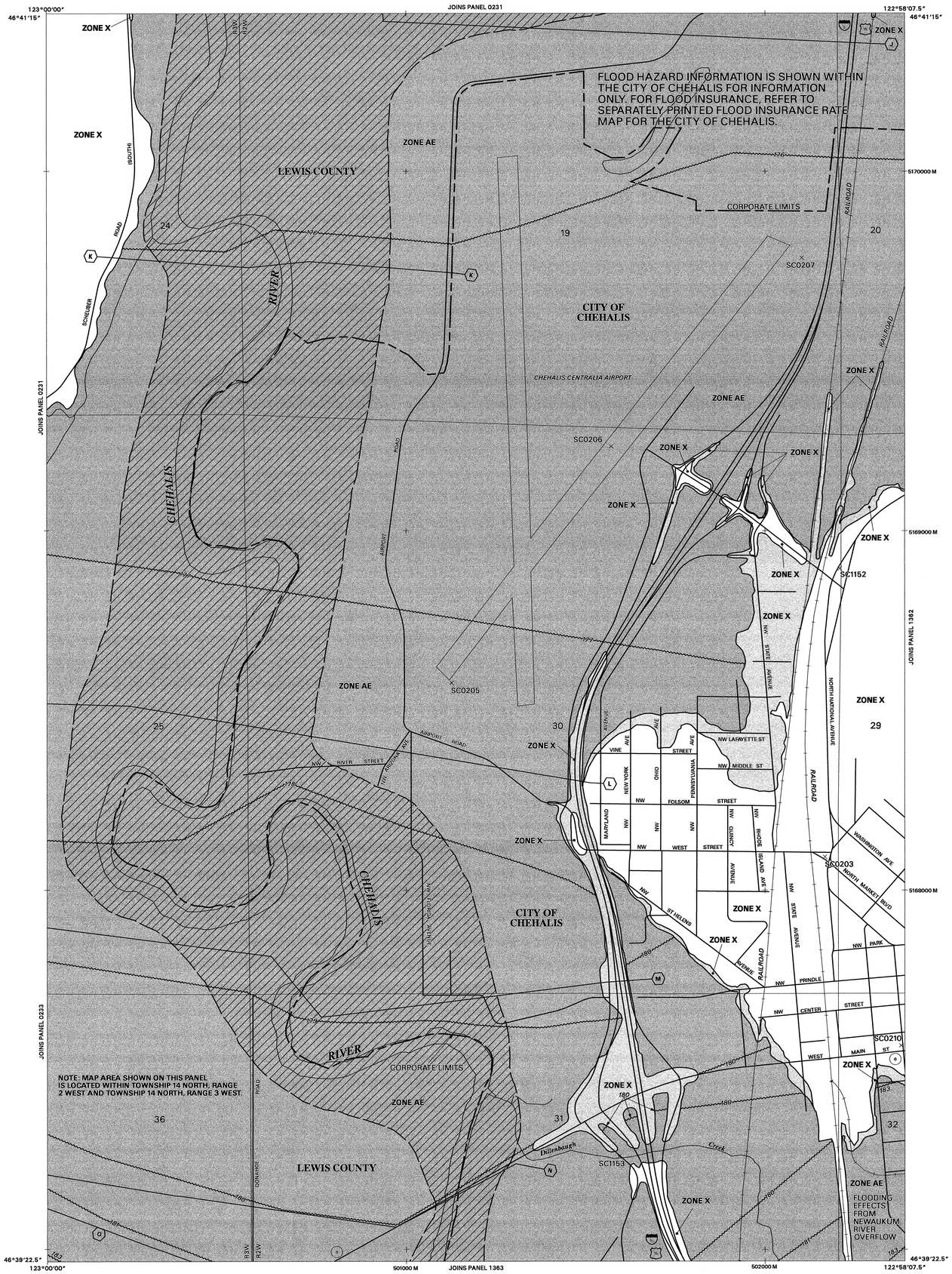
Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for infomation on all related products available from FEMA;

Phone: 800-358-9616
FAX: 800-358-9620
www.fema.gov/msc

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.

ZONE A99 Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

- A — A — Cross Section Line
- 23 — 23 — Transect Line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000M — 1000-meter Universal Transverse Mercator grid values, zone 10
- 600000 FT — 5000-foot grid ticks
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel).
- M1.5 — River Mile

MAP REPOSITORY

Division of Public Services, 350 North Market Boulevard, Chehalis, WA 98532-2626 (Maps available for reference only, not for distribution.)

INITIAL IDENTIFICATION
NOVEMBER 29, 1974
FLOOD HAZARD BOUNDARY MAP REVISIONS
NOVEMBER 29, 1977
FLOOD INSURANCE RATE MAP EFFECTIVE
DECEMBER 15, 1981
FLOOD INSURANCE RATE MAP REVISIONS

July 17, 2006: to change base flood elevations, to change zone designations, to update map format, to add roads and road names, to reflect updated topographic information, and to change floodway.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1361C

FIRM
FLOOD INSURANCE RATE MAP

LEWIS COUNTY, WASHINGTON (UNINCORPORATED AREAS)

PANEL 1361 OF 2500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEWIS COUNTY, UNINCORPORATED AREAS	530102	1361	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 5301021361C

MAP REVISED: JULY 17, 2006

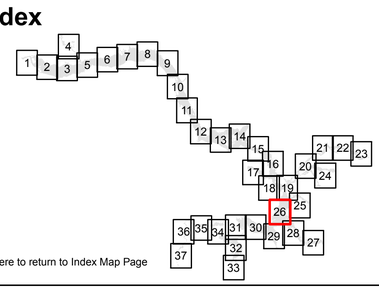
Federal Emergency Management Agency

Legend

- Structures in Structure Survey Database (WSE 2014)
- Roads
- Corporate Boundary
- Rivers and Streams
- 100-year Base Flood Elevation (ft, NAVD88)
- 100-Year Floodplain

Orthophoto source: USDA-APFO NAIP 2013

Index



Click here to return to Index Map Page

N

1 inch = 500 feet

0 250 500 1,000 Feet

Coordinate System: NAD 1983 HARN
StatePlane Washington South FIPS 4602 Feet

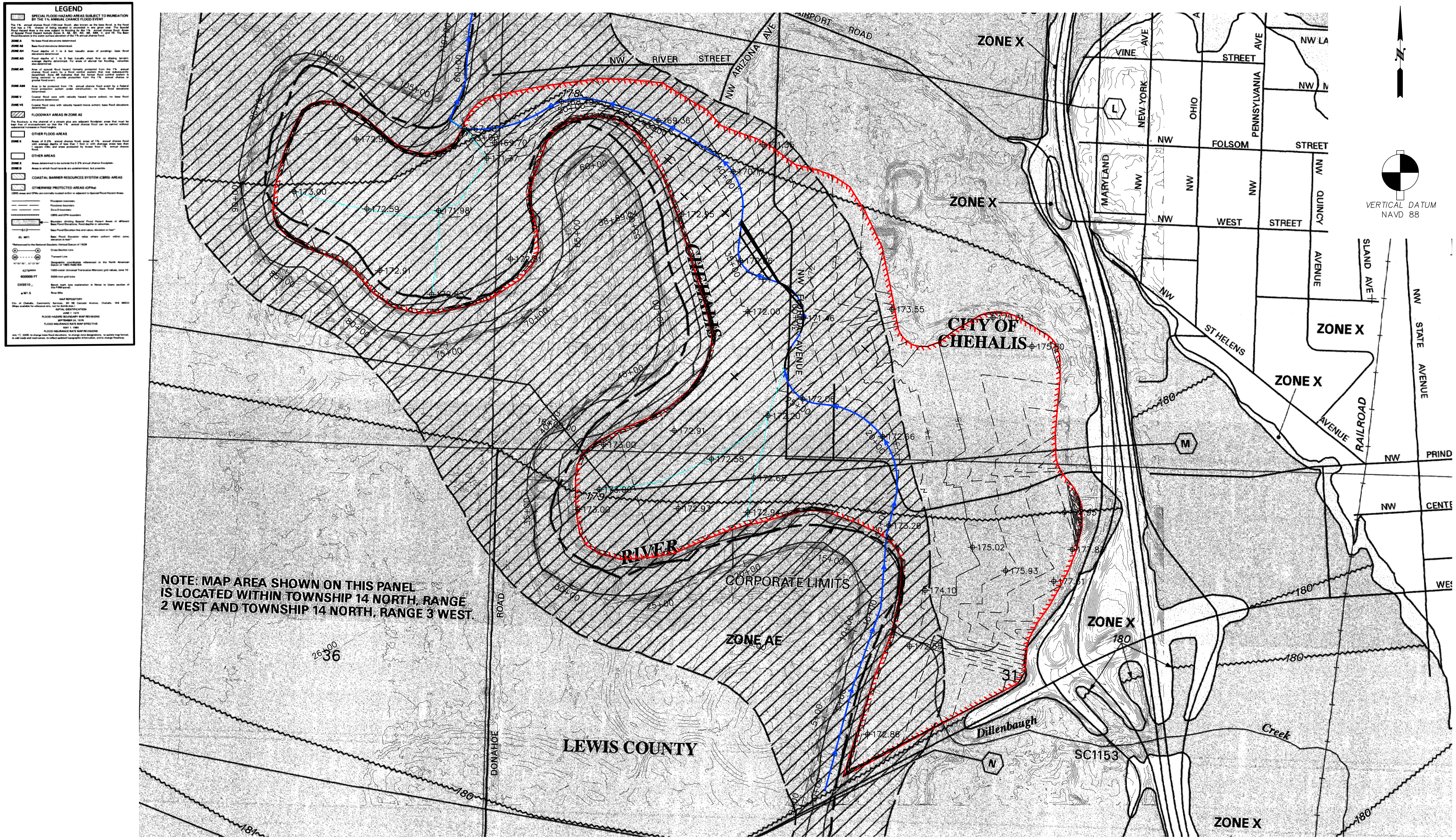
Chehalis River Basin Inundation Map

WATERSHED SCIENCE & ENGINEERING

100 - Year Flood

Plate 26

Date: 11/4/2015



	DATE	REVISIONS	
DESIGNED BY: C. HAERR	4/18/19	NO.	DATE
ENTERED BY: D. TELLERS	4/18/19		
CHECKED BY: C. HAERR	4/18/19		
PROJ. ENGR.: T. SKILLINGS	4/18/19		

Plotted By: Duncan Tellers on 4/18/19 4:40 PM
Saved By: DTellers on 4/18/19 4:39 PM
G:\Project\2015\15070 Chehalis On-Call Plan Review\Task14_MasterPlan_Phase2\CAD\Exhibits\15070_3D_AL_FS.dwg

SKILLINGS CONNOLLY
5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 (800) 454-7545 Fax (360) 491-3857

City of Chehalis
Where Heart and History Shape Our Future
Chehalis Wa

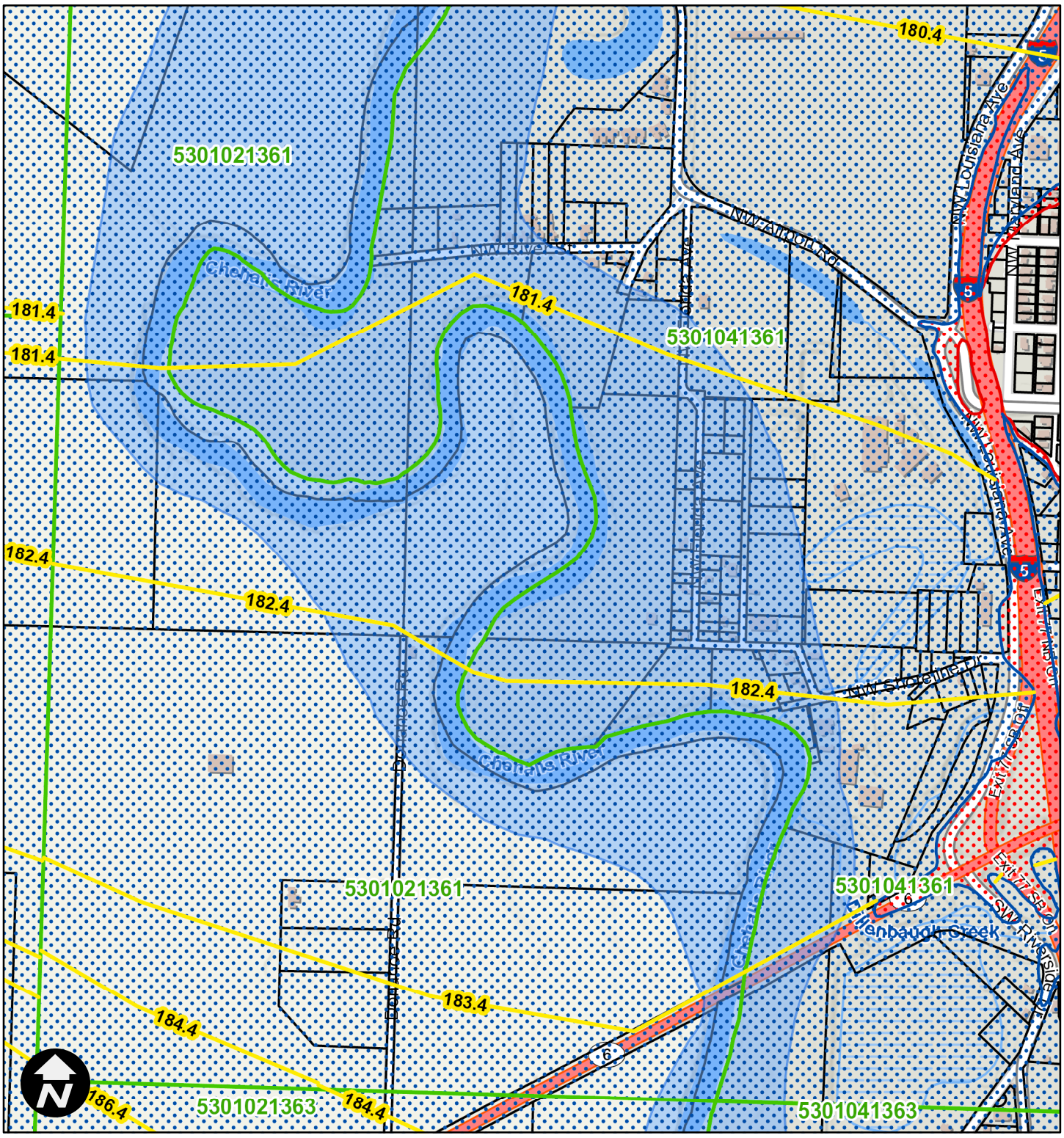
CHEHALIS FLOOD STORAGE MASTER PLAN

PLAN VIEW FEMA

JOB NUMBER ----

SHEET EX-4 OF ---- SHEETS

FEMA Flood Information



6/19/2019, 11:07:40 AM

1:9,028

FEMA BFE (NAVD88)

Parcels

FEMA Panels

FEMA 100-Year

FEMA 500-Year

Floodway

0 400 800 1,600 ft

NAD 1983 StatePlane Washington South FIPS 4602 Feet

LEWIS COUNTY
— est. 1845 —

Lewis County G.I.S.

Appendix X

Soil Information

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lewis County Area, Washington

June 16, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:11,700 if printed on A landscape (11" x 8.5") sheet.

N

0 150 300 600 900 Meters

0 500 1000 2000 3000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lewis County Area, Washington
Survey Area Data: Version 14, Sep 9, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 8, 2010—Jul 9, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Lewis County Area, Washington (WA641)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
1	Alvor silty clay loam	19.5	3.1%
48	Chehalis silty clay	316.9	50.3%
61	Cloquato silt loam	40.6	6.4%
118	Lacamas silt loam, 0 to 3 percent slopes	1.4	0.2%
148	Newberg fine sandy loam	78.8	12.5%
172	Reed silty clay loam	31.7	5.0%
173	Reed silty clay loam, channeled	31.7	5.0%
187	Salkum silty clay loam, 0 to 5 percent slopes	51.2	8.1%
247	Xerorthents, spoils	5.6	0.9%
W	Water	52.1	8.3%
Totals for Area of Interest		**629.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lewis County Area, Washington

1—Alvor silty clay loam

Map Unit Setting

National map unit symbol: 2h7x
Elevation: 100 to 350 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Alvor, drained, and similar soils: 80 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alvor, Drained

Setting

Landform: Terraces, flood plains
Parent material: Alluvium

Typical profile

H1 - 0 to 7 inches: silty clay loam
H2 - 7 to 25 inches: silty clay loam
H3 - 25 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C
Other vegetative classification: Seasonally Wet Soils (G002XV202WA)
Hydric soil rating: Yes

Minor Components

Reed

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Chehalis

Percent of map unit: 5 percent

Hydric soil rating: No

48—Chehalis silty clay

Map Unit Setting

National map unit symbol: 2hgb
Elevation: 30 to 600 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chehalis and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chehalis

Setting

Landform: Flood plains, terraces
Parent material: Alluvium

Typical profile

H1 - 0 to 17 inches: silty clay
H2 - 17 to 44 inches: silty clay loam
H3 - 44 to 60 inches: stratified fine sandy loam to silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Other vegetative classification: Soils with Few Limitations (G002XV502WA)
Hydric soil rating: No

Minor Components

Alvor

Percent of map unit: 5 percent
Landform: Terraces

Hydric soil rating: Yes

Reed

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

61—Cloquato silt loam

Map Unit Setting

National map unit symbol: 2hgt
Elevation: 30 to 800 feet
Mean annual precipitation: 38 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cloquato and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cloquato

Setting

Landform: Flood plains, terraces

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Other vegetative classification: Seasonally Wet Soils (G002XV202WA)
Hydric soil rating: No

Minor Components

Alvor
Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

Puget
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Reed
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

118—Lacamas silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2h8l
Elevation: 250 to 1,200 feet
Mean annual precipitation: 40 to 70 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Lacamas, drained, and similar soils: 60 percent
Lacamas, undrained, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lacamas, Drained

Setting
Landform: Flood plains, terraces

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 17 inches: silt loam
H3 - 17 to 27 inches: silty clay
H4 - 27 to 60 inches: clay

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Other vegetative classification: Seasonally Wet Soils (G002XV202WA)
Hydric soil rating: Yes

Description of Lacamas, Undrained

Setting
Landform: Flood plains, terraces

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 17 inches: silt loam
H3 - 17 to 27 inches: silty clay
H4 - 27 to 60 inches: clay

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Other vegetative classification: Seasonally Wet Soils (G002XV202WA)
Hydric soil rating: Yes

Minor Components

Klaber
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Prather
Percent of map unit: 3 percent
Hydric soil rating: No

Scamman
Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: Yes

148—Newberg fine sandy loam

Map Unit Setting

National map unit symbol: 2h9p
Elevation: 10 to 1,500 feet
Mean annual precipitation: 18 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Newberg and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newberg

Setting

Landform: Flood plains, terraces

Typical profile

H1 - 0 to 7 inches: fine sandy loam
H2 - 7 to 17 inches: fine sandy loam
H3 - 17 to 60 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Other vegetative classification: Soils with Few Limitations (G002XV502WA)
Hydric soil rating: No

Minor Components

Alvor

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

Puget

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Reed

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

172—Reed silty clay loam

Map Unit Setting

National map unit symbol: 2hbk
Elevation: 30 to 500 feet
Mean annual precipitation: 40 to 80 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Reed, drained, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Reed, Drained

Setting

Landform: Flood plains, terraces

Typical profile

H1 - 0 to 6 inches: silty clay loam
H2 - 6 to 14 inches: silty clay loam
H3 - 14 to 60 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D

Other vegetative classification: Wet Soils (G002XV102WA)
Hydric soil rating: Yes

Minor Components

Chehalis
Percent of map unit: 4 percent
Hydric soil rating: No

Alvor
Percent of map unit: 1 percent
Landform: Terraces
Hydric soil rating: Yes

173—Reed silty clay loam, channeled

Map Unit Setting
National map unit symbol: 2hbl
Elevation: 30 to 500 feet
Mean annual precipitation: 40 to 80 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition
Reed and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Reed

Setting
Landform: Flood plains, terraces

Typical profile
H1 - 0 to 6 inches: silty clay loam
H2 - 6 to 14 inches: silty clay loam
H3 - 14 to 60 inches: clay

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Other vegetative classification: Wet Soils (G002XV102WA)
Hydric soil rating: Yes

Minor Components

Alvor

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

Chehalis

Percent of map unit: 5 percent
Hydric soil rating: No

187—Salkum silty clay loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2hc2
Elevation: 200 to 1,000 feet
Mean annual precipitation: 40 to 70 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 150 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Salkum and similar soils: 90 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Salkum

Setting

Landform: Terraces
Parent material: Glacial drift

Typical profile

H1 - 0 to 14 inches: silty clay loam
H2 - 14 to 52 inches: silty clay
H3 - 52 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Other vegetative classification: Soils with Few Limitations (G002XV502WA)
Hydric soil rating: No

Minor Components

Lacamas

Percent of map unit: 3 percent
Landform: Terraces
Hydric soil rating: Yes

Scamman

Percent of map unit: 1 percent
Landform: Terraces
Hydric soil rating: Yes

247—Xerorthents, spoils

Map Unit Setting

National map unit symbol: 2hf7
Elevation: 100 to 690 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Xerorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Xerorthents

Setting

Landform: Hills

Typical profile

H1 - 0 to 6 inches: silty clay loam
H2 - 6 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 20 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Alluvial cones

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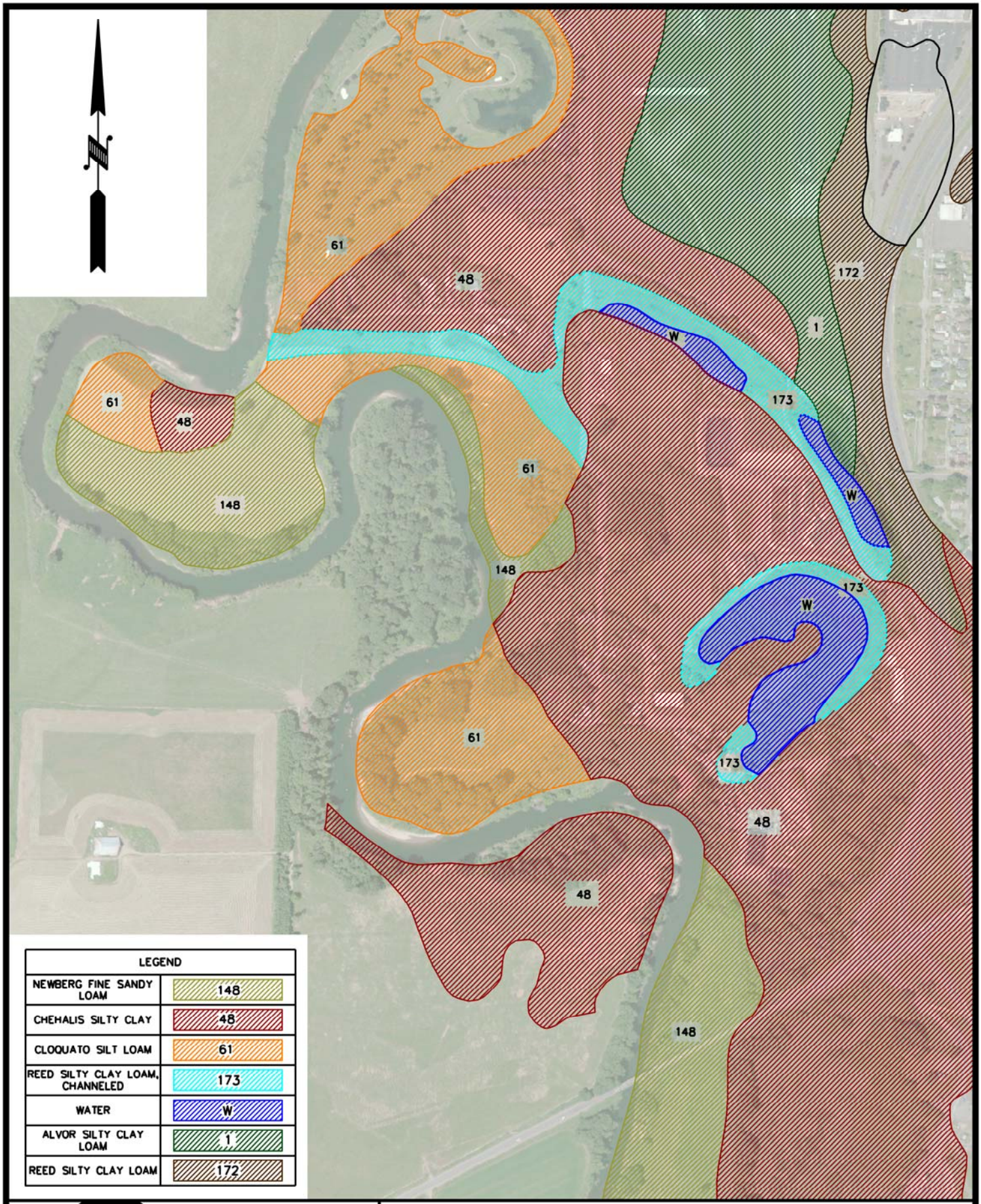


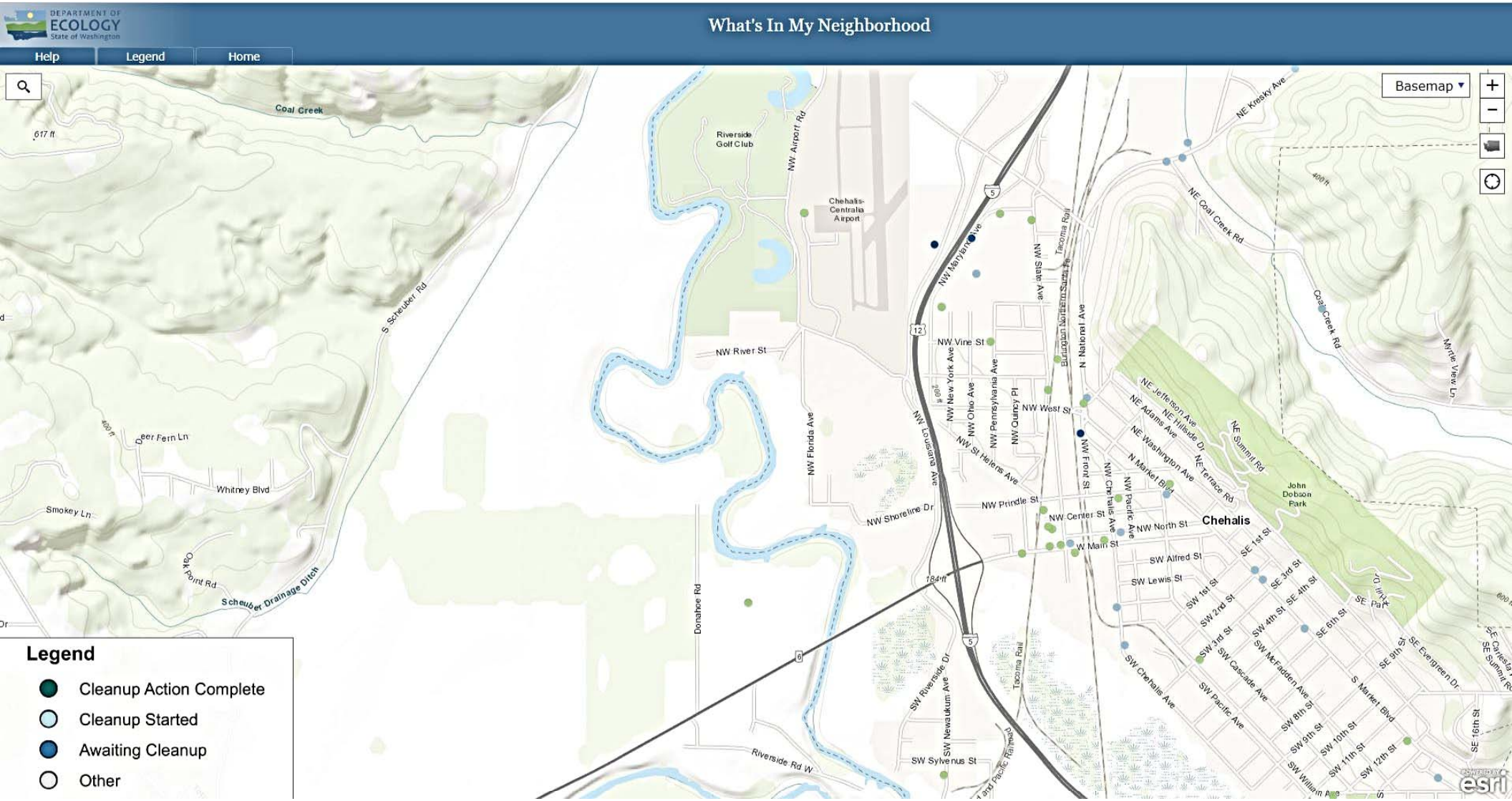
LEGEND	
NEWBERG FINE SANDY LOAM	148
CHEHALIS SILTY CLAY	48
CLOQUATO SILT LOAM	61
REED SILTY CLAY LOAM, CHANNELED	173
WATER	W
ALVOR SILTY CLAY LOAM	1
REED SILTY CLAY LOAM	172

SKILLINGS CONNOLLY

EXISTING SOIL TYPES

Appendix XI

Contamination and Hazardous Materials


DEPARTMENT OF ECOLOGY
State of Washington
What's In My Neighborhood
Help
Legend
Home
Basemap
Coal Creek
617 ft
Riverside Golf Club
NW Airport Rd
Chehalis-Centralia Airport
S Scheuber Rd
NW River St
NW Florida Ave
NW Louisiana Ave
NW Shoreline Dr
Donahoe Rd
Deer Fern Ln
Whitney Blvd
Smokey Ln
Oak Point Rd
Scheubet Drainage Ditch
Riverside Rd W
SW Riverside Dr
SW Newaukum Ave
SW Sylvenus St
Tacoma Rail
NW Maryland Ave
NW State Ave
N National Ave
NW Vine St
NW New York Ave
NW Ohio Ave
NW Pennsylvania Ave
NW Quincy Pl
NW West St
NW St Helens Ave
NW Front St
NW Pacific Ave
NW Prindle St
NW Center St
NW North St
W Main St
Chehalis
NE Kresky Ave
NE Coal Creek Rd
Coal Creek Rd
Myrtle View Ln
NE Jefferson Ave
NE Adams Ave
NE Hillside Dr
NE Terrace Rd
NE Summit Rd
NE Washington Ave
N Market Blvd
John Dobson Park
SW Alfred St
SW Lewis St
SW 1st St
SW 2nd St
SW 3rd St
SW 4th St
SW McFadden Ave
SW Cascade Ave
SW Pacific Ave
SW Chehalis Ave
SE 1st St
SE 3rd St
SE 4th St
SE 6th St
SE 9th St
SE Evergreen Dr
S Market Blvd
SW 8th St
SW 9th St
SW 10th St
SW 11th St
SW 12th St
SE 16th St
Legend
Cleanup Action Complete
Cleanup Started
Awaiting Cleanup
Other
esri

Cleanup Site Details

Cleanup Site ID: 10019

Cleanup Site ID: 10019 **Facility/Site ID:** 64648972 **UST ID:** 2856 Site Page Site Documents View Map

Cleanup Site Name: BONNEVILLE POWER AD Glossary

Alternate Names: BONNEVILLE POWER AD, BPA CHEHALIS SUBSTATION, CHEHALIS SUBSTATION, US DOE BPA Chehalis Substation

LOCATION

Address: 1140 STATE HWY 630 **City:** CHEHALIS **Zip Code:** 98532 **County:** Lewis

Latitude: 46.65925 **Longitude:** -122.98974 **WRIA:** 23 **Legislative District:** 20 **Congressional District:** 3 **TRS:** 14N 2W 31

DETAIL

Status: Cleanup Started **NFA Received?** No **Is PSI site?** No

Statute: MTCA **NFA Date:** N/A **Current VCP?** No **Past VCP?** No

Site Rank: N/A **NFA Reason:** N/A **Brownfield?** No

Site Manager: Headquarters **Responsible Unit:** Headquarters **Active Institutional Control?** No

CLEANUP UNITS

Cleanup Unit Name	Unit Type	Unit Status	Resp Unit	Unit Manager	Current Process
BONNEVILLE POWER AD	Upland	Cleanup Started	HQ	Headquarters	Independent Action

ACTIVE INSTITUTIONAL CONTROLS

Instrument Type	Restriction Media	Restrictions/Requirements	Date	Recording Number	Recording County	Tax Parcel
There are no current Institutional Controls in effect for this site.						

AFFECTED MEDIA & CONTAMINANTS

	MEDIA					
Contaminant	**Soil**	**Groundwater**	**Surface Water**	**Sediment**	**Air**	**Bedrock**
Petroleum-Other	C	C				

Key:
B - Below Cleanup Level
S - Suspected
C - Confirmed Above Cleanup Level
R - Remediated
RA - Remediated-Above
RB - Remediated-Below

SITE ACTIVITIES

Activity	Status	Start Date	End Date/ Completion Date
LUST - Notification	Completed		9/23/1991
LUST - Report Received	Completed		1/20/1992
LUST - Report Received	Completed		7/28/1992
LUST - Report Received	Completed		9/6/1995
LUST - Report Received	Completed		3/4/1996
LUST - Site Characterization Report	Completed		3/4/1996
LUST - Report Received	Completed		6/11/1996
LUST - Report Received	Completed		8/25/1996
LUST - Report Received	Completed		11/18/1996
LUST - Report Received	Completed		1/14/1997

Cleanup Site Details

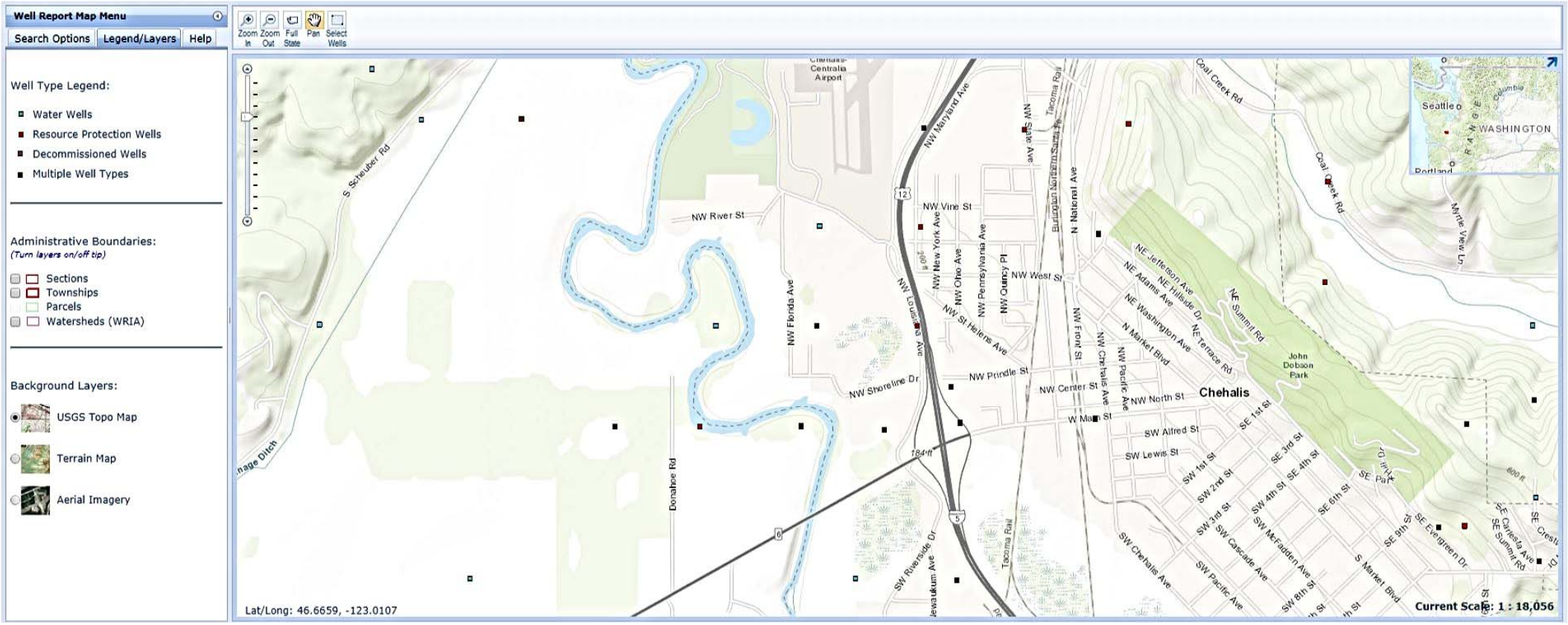
Cleanup Site ID: 10019

SITE ACTIVITIES

Activity	Status	Start Date	End Date/ Completion Date
LUST - Report Received	Completed		4/14/1997
LUST - Report Received	Completed		7/11/1997
LUST - Report Received	Completed		12/24/1997
LUST - Report Received	Completed		7/17/1998
LUST - Report Received	Completed		7/15/1999
LUST - Report Received	Completed		7/13/2000
LUST - Report Received	Completed		7/23/2001
LUST - Report Received	Completed		6/12/2002
LUST - Report Received	Completed		7/7/2003
LUST - Report Received	Completed		6/25/2004
LUST - Report Received	Completed		7/21/2005
LUST - Report Received	Completed		8/17/2006
LUST - Report Received	Completed		10/8/2007
LUST - Report Received	Completed		8/25/2009

Appendix XII

UST and Well Information


Well Report Map Menu
Search Options
Legend/Layers
Help
Well Type Legend:
Water Wells
Resource Protection Wells
Decommissioned Wells
Multiple Well Types
Administrative Boundaries:
(Turn layers on/off tip)
Sections
Townships
Parcels
Watersheds (WRIA)
Background Layers:
USGS Topo Map
Terrain Map
Aerial Imagery
Zoom In
Zoom Out
Full State
Pan
Select Wells
Chehalis-Centralia Airport
NW Maryland Ave
NW Main Ave
Tacoma Rail
Burlington Northern Santa Fe
N National Ave
Coal Creek Rd
Myrtle View Ln
Seattle
WASHINGTON
Portland
Columbia
RANGE
S Scheuber Rd
NW River St
NW Vine St
NW New York Ave
NW Ohio Ave
NW Pennsylvania Ave
NW Quincy Pl
NW West St
NW Florida Ave
NW Louisiana Ave
NW St Helens Ave
NW Front St
NW Chehalis Ave
NW Pacific Ave
N Market Blvd
NE Jefferson Ave
NE Adams Ave
NE Washington Ave
NE Hillside Dr
NE Terrace Rd
N Summit Rd
John Dobson Park
NW Shoreline Dr
NW Prindle St
NW Center St
NW North St
Chehalis
W Main St
SW Alfred St
SW Lewis St
SE 1st St
SE 3rd St
SE 4th St
SE 6th St
SE Park Dr
SW 1st St
SW 2nd St
SW 3rd St
SW 4th St
SW Cascade Ave
SW McFadden Ave
SW 8th St
SW Chehalis Ave
SW Pacific Ave
S Market Blvd
SE 8th St
SE Evergreen Dr
SE Cresta Ave
SE Summit Rd
SE Cresta
Donahoe Rd
SW Riverside Dr
Tacoma Rail
184 ft
600 ft
Lat/Long: 46.6659, -123.0107
Current Scale: 1 : 18,056

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. A67858

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☑ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* S22358

256913

Type of Well *(select one)*

☐ Resource Protection

☑ Geotech Soil Boring

Consulting Firm SQUIER

Unique Ecology Well ID
Tag No. CPT 1

Property Owner CITY OF CHEHALIS

Site Address 850 NW LOUISIANA AVE

City CHEHALIS **County** LEWIS

Location NE 1/4-1/4 NW 1/4 Sec 31 Twn 14 R 2 Select One ☒ EWM ☐ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

☑ Driller ☐ Engineer ☐ Trainee Name (Print) WARREN MCCANN

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2460

Cased or Uncased Diameter 2 **Static Level** N/A

Work/Decommission Start Date 7/18/03

Work/Decommission Completed Date 7/18/03

If trainee, licensed driller's Signature and License No. 2460

Construction/Design	Well Data	Formation Description
	BACKFILLED WITH BENTONIETE GROUT FROM 45 FEET TO 0 FEET	SILTY SAND TO CLAYEY SILT
		SAND TO SILTY SAND
		TERMINATED AT 45 FEET

RECEIVED

MAR 22 2007

DEPARTMENT OF ECOLOGY

SCALE: 1"= 20

ECY 050-12 (Rev. 2/03)

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. A67858

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☑ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* S22358

2569/2

Type of Well *(select one)*

☐ Resource Protection

☑ Geotech Soil Boring

Consulting Firm SQUIER

Unique Ecology Well ID Tag No. CPT 2

Property Owner CITY OF CHEHALIS

Site Address 850 NW LOUISIANA AVE

City CHEHALIS **County** LEWIS

Location NE 1/4-1/4 NW 1/4 Sec 31 Twn 14 R 2 Select One ☒ EWM ☐ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

☑ Driller ☐ Engineer ☐ Trainee Name (Print) WARREN MCCANN

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2460

Tax Parcel No. _____

Cased or Uncased Diameter 2 **Static Level** N/A

Work/Decommission Start Date 7/18/03

Work/Decommission Completed Date 7/18/03

If trainee, licensed driller's Signature and License No. 2460

Construction/Design	Well Data	Formation Description
	BACKFILLED WITH BENTONIETE GROUT FROM 45 FEET TO 0 FEET	SILTY SAND TO CLAYEY SILT
		SAND TO SILTY SAND
		TERMINATED AT 45 FEET

RECEIVED

MAR 22 2007

DEPARTMENT OF ECOLOGY

SCALE: 1"= 20

ECY 050-12 (Rev. 2/03)

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. A67858

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*
- ☐ Construction
- ☑ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* S22358

230910

Type of Well *(select one)*
- ☐ Resource Protection
- ☑ Geotech Soil Boring

Consulting Firm SQUIER

Unique Ecology Well ID
Tag No. CPT 3

Property Owner CITY OF CHEHALIS

Site Address 850 NW LOUISIANA AVE

City CHEHALIS **County** LEWIS

Location NE 1/4-1/4 NW 1/4 Sec 31 Twn 14 R 2 Select One ☒ EWM ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter 2 **Static Level** N/A

Work/Decommission Start Date 7/18/03

Work/Decommission Completed Date 7/18/03

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☑ Driller ☐ Engineer ☐ Trainee Name (Print) WARREN MCCANN

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2460

If trainee, licensed driller's Signature and License No. 2460

Construction/Design	Well Data	Formation Description
	BACKFILLED WITH BENTONIETE GROUT FROM 45 FEET TO 0 FEET	SILTY SAND TO CLAYEY SILT
		SAND TO SILTY SAND
		TERMINATED AT 45 FEET

RECEIVED
MAR 22 2007
DEPARTMENT OF ECOLOGY

SCALE: 1"= 20

ECY 050-12 (Rev. 2/03)

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. A67858

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☑ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* S22358

2560908

Type of Well *(select one)*

☐ Resource Protection

☑ Geotech Soil Boring

Consulting Firm SQUIER

Unique Ecology Well ID

Tag No. CPT 4

Property Owner CITY OF CHEHALIS

Site Address 850 NW LOUISIANA AVE

City CHEHALIS County LEWIS

Location NE 1/4-1/4 NW 1/4 Sec 31 Twn 14 R 2 Select One ☒ EWM ☐ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

☑ Driller ☐ Engineer ☐ Trainee Name (Print) WARREN MCCANN

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 2460

Cased or Uncased Diameter 2 Static Level N/A

Work/Decommission Start Date 7/18/03

Work/Decommission Completed Date 7/18/03

If trainee, licensed driller's Signature and License No. 2460

Construction/Design	Well Data	Formation Description
	BACKFILLED WITH BENTONIETE GROUT FROM 45 FEET TO 0 FEET	SILTY SAND TO CLAYEY SILT
		SAND TO SILTY SAND
		TERMINATED AT 45 FEET

RECEIVED

MAR 22 2007

DEPARTMENT OF ECOLOGY

SCALE: 1"= 20

PAGE 1 OF 1

ECY 050-12 (Rev. 2/03)

Ecology is an Equal Opportunity Employer.

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. A67858

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☑ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* S22358

2506905

Type of Well *(select one)*

☐ Resource Protection

☑ Geotech Soil Boring

Consulting Firm SQUIER

Unique Ecology Well ID
Tag No. CPT 5

Property Owner CITY OF CHEHALIS

Site Address 850 NW LOUISIANA AVE

City CHEHALIS **County** LEWIS

Location NE 1/4-1/4 NW 1/4 Sec 31 Twn 14 R 2 Select One ☒ EWM ☐ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

☑ Driller ☐ Engineer ☐ Trainee Name (Print) WARREN MCCANN

Driller/Engineer /Trainee Signature Warren McCann

Driller or Trainee License No. 2460

If trainee, licensed driller's Signature and License No. 2460

Tax Parcel No. _____

Cased or Uncased Diameter 2 **Static Level** N/A

Work/Decommission Start Date 7/18/03

Work/Decommission Completed Date 7/18/03

Construction/Design	Well Data	Formation Description
	BACKFILLED WITH BENTONIETE GROUT FROM 45 FEET TO 0 FEET	SILTY SAND TO CLAYEY SILT
		SAND TO SILTY SAND
		TERMINATED AT 45 FEET

RECEIVED

MAR 22 2007

DEPARTMENT OF ECOLOGY

SCALE: 1"= 20

ECY 050-12 (Rev. 2/03)

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. A67858

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☑ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* S22358

256896

Consulting Firm SQUIER

Unique Ecology Well ID
Tag No. CPT 6

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☑ Driller ☐ Engineer ☐ Trainee Name (Print) WARREN MCCANN

Driller/Engineer /Trainee Signature [signature]

Driller or Trainee License No. 2460

If trainee, licensed driller's Signature and License No. 2460

Type of Well *(select one)*

☐ Resource Protection

☑ Geotech Soil Boring

Property Owner CITY OF CHEHALIS

Site Address 850 NW LOUISIANA AVE

City CHEHALIS County LEWIS

Location NE 1/4-1/4 NW 1/4 Sec 31 Twn 14 R 2 Select One ☒ EWM ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No.

Cased or Uncased Diameter 2 Static Level N/A

Work/Decommission Start Date 7/18/03

Work/Decommission Completed Date 7/18/03

Construction/Design	Well Data	Formation Description
0-45	BACKFILLED WITH BENTONIETE GROUT FROM 45 FEET TO 0 FEET	SILTY SAND TO CLAYEY SILT
		SAND TO SILTY SAND
		TERMINATED AT 45 FEET

RECEIVED

MAR 22 2007

DEPARTMENT OF ECOLOGY

SCALE: 1"= 20

PAGE 1 OF 1

ECY 050-12 (Rev. 2/03)

Ecology is an Equal Opportunity Employer.

HOLT DRILLING, INC.

Resource Protection Well Report

Project Name PSE/Chehalis HTD

Date 7-12-05

Well Identification # B-1

County Lewis, SE ¼ SW ¼

Drilling Method 4" HSA

Section 30 T. 14N R. 2W

Driller Michael Reynolds

Street Address NW Louisiana Ave. & NW Shoreline Dr.

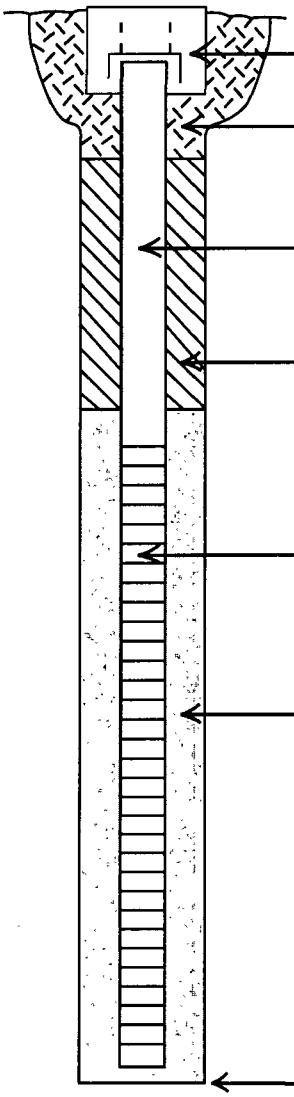
License # 2636

Start Card S24384

181330

Consulting Firm Golder

AS-BUILT



WELL DATA

MONUMENT TYPE:

CONCRETE SURFACE SEAL ft.

PVC BLANK "X '

BACKFILL ft.

TYPE:

PVC SCREEN "X '

SLOT SIZE:

TYPE:

GRAVEL PACK ft.

MATERIAL:

WELL DEPTH 59 ' 0 "

FORMATION DESCRIPTION

0 - .2 ft.
Asphalt

.2 - 5 ft.
Brn Silty Gravels

5 - 10 ft.
Dk Brn Silty w/ High % of Organics

10 - 45 ft.
Brn Fine-Med Silty Sand

45 - 50 ft
Gry Med Sand w/ Sm Gravels

50 - 59 ft.
Gry Sandstone

REMARKS Boring backfilled w/ Quikgrout + capped w/ Concrete

RECEIVED
OCT 18 2005
Washington State
Department of Ecology

Signature Michael J. Reynolds

VAV039.CDR

HOLT DRILLING, INC.

Resource Protection Well Report

Project Name PSE / Chehalis HDD

Date 7-15-05

Well Identification # B-2

County Lewis SE ¼ SW ¼

Drilling Method 4" HSA

Section 30 T. 14N R. 2W

Driller Michael Reynolds

Street Address NW Prindle St. @ I-5 Right of Way

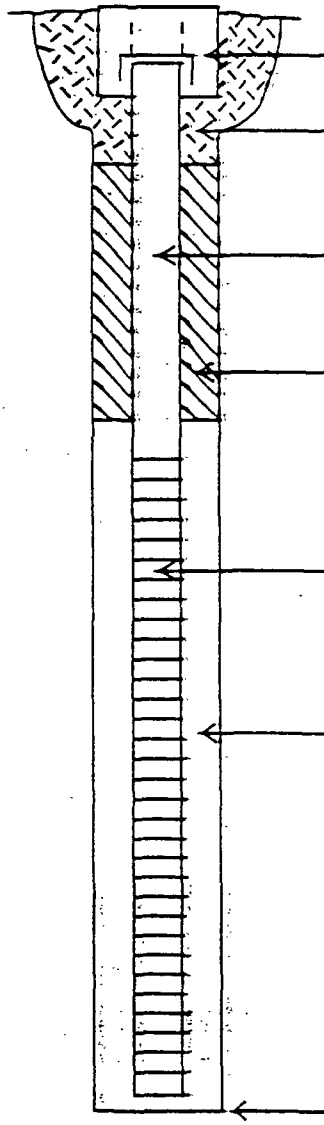
License # 2636

Start Card S24384

181329

Consulting Firm Golder

AS-BUILT | WELL DATA | FORMATION DESCRIPTION



MONUMENT TYPE:

CONCRETE SURFACE SEAL ft.

PVC BLANK "x "

BACKFILL ft.

TYPE:

PVC SCREEN "x "

SLOT SIZE:

TYPE:

GRAVEL PACK ft.

MATERIAL:

WELL DEPTH 59.—

0 - 1 ft.
Base Gravel

1 - 10 ft.
Brn Silty Sand

10 - 35 ft.
Gry Silt

35 - 59 ft.
Gry Silty Sand

- ft.

REMARKS Boring backfilled w/ ⅜" Holeplug + hydrated.

RECEIVED
OCT 18 2005
Washington State
Department of Ecology

Signature Michael J. Reynolds

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

FORM/041029.EPS

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

DEPARTMENT OF ECOLOGY State of Washington

Construction/Decommission *("x" in circle)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION*

Notice of Intent Number _____

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) _____

☐ New well ☐ Reconditioned *Method :* ☐ Dug ☐ Bored ☐ Driven ☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 2 inches, drilled 24 ft. Depth of completed well 24 ft.

CONSTRUCTION DETAILS

Casing Installed: ☐ Welded _____" Diam. from _____ ft. to _____ ft. ☐ Liner installed _____" Diam. from _____ ft. to _____ ft. ☐ Threaded _____" Diam. From _____ ft. to _____ ft.

Perforations: ☐ Yes ☐ No

Type of perforator used _____

SIZE of perfs ____in. by ____ in. and no. of perfs ____from ____ft. to ____ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location _____

Manufacturer's Name _____

Type _____ Model No. _____

Diam. _____Slot size _____ from _____ ft. to _____ ft.

Diam. _____Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand _____

Materials placed from _____ ft. to _____ ft.

Surface Seal: ☐ Yes ☐ No To what depth? _____ft.

Material used in seal _____

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.

Static level 12 ft. below top of well Date 8/27/18

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom? _____

Yield: _____gal./min. with ____ft. drawdown after _____hrs.

Yield: _____gal./min. with ____ft. drawdown after _____hrs.

Yield: _____gal./min. with ____ft. drawdown after _____hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____

Bailer test _____ gal./min. with ____ft. drawdown after ____hrs.

Airtest _____gal./min. with stem set at _____ft. for _____hrs.

Artesian flow _____g.p.m. Date _____

Temperature of water _____ Was a chemical analysis made? ☐ Yes ☐ No

CURRENT

Notice of Intent No. AE49459

Unique Ecology Well ID Tag No. AHL 010

Water Right Permit No. _____

Property Owner Name Darigold Inc

Well Street Address 0 Donahoe Rd

City Chehalis County Lewis

Location SW1/4-1/4 SE1/4 Sec 36 Twn 14N R 03 **(s, t, r Still REQUIRED)** EWM ☐ Or WWM ☒

Lat/Long Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

Tax Parcel No. (Required) 022431003000

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Decommisssioned per WAC	0	24
173-160-460. Filled the		
casing from bottom to land		
surface with bentonite chips		

Start Date 8/27/2018 Completed Date 8/27/2018

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Chris Jones

Driller/Engineer/Trainee Signature Chris Jones

Driller or trainee License No. 2253

IF TRAINEE: Driller's License No:

Driller's Signature:

Drilling Company Moerke & Sons Pump and Drilling

Address 1162 NW State Ave

City, State, Zip Chehalis , WA, 98532

Contractor's Registration No. MOERKSP072N5 Date 8/27/2018

ECY 050-1-20 (Rev 02-2010) To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

DEPARTMENT OF ECOLOGY State of Washington

Construction/Decommission *("x" in circle)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION*

Notice of Intent Number _____

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) _____

☐ New well ☐ Reconditioned *Method:* ☐ Dug ☐ Bored ☐ Driven ☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 2 inches, drilled 30 ft. Depth of completed well 30 ft.

CONSTRUCTION DETAILS

Casing Installed: ☐ Welded _____" Diam. from _____ ft. to _____ ft. ☐ Liner installed _____" Diam. from _____ ft. to _____ft. ☐ Threaded _____" Diam. From _____ ft. to _____ ft.

Perforations: ☐ Yes ☐ No

Type of perforator used _____

SIZE of perfs ____in. by ____ in. and no. of perfs ____from ____ft. to ____ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location _____

Manufacturer's Name _____

Type _____ Model No. _____

Diam. _____Slot size _____ from _____ ft. to _____ ft.

Diam. _____Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand _____

Materials placed from _____ ft. to _____ ft.

Surface Seal: ☐ Yes ☐ No To what depth? _____ft.

Material used in seal _____

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.

Static level 12 ft. below top of well Date 8/27/18

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom? _____

Yield: _____gal./min. with ____ft. drawdown after _____hrs.

Yield: _____gal./min. with ____ft. drawdown after _____hrs.

Yield: _____gal./min. with ____ft. drawdown after _____hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____

Bailer test _____ gal./min. with ____ft. drawdown after ____hrs.

Airtest _____gal./min. with stem set at _____ft. for _____hrs.

Artesian flow _____g.p.m. Date _____

Temperature of water _____ Was a chemical analysis made? ☐ Yes ☐ No

CURRENT

Notice of Intent No. AE49459

Unique Ecology Well ID Tag No. AHL 008

Water Right Permit No. _____

Property Owner Name Darigold Inc

Well Street Address 0 Donahoe Rd

City Chehalis County Lewis

Location SW1/4-1/4 SE1/4 Sec 36 Twn 14N R 03 **(s, t, r Still REQUIRED)** EWM ☐ Or WWM ☒

Lat/Long Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

Tax Parcel No. (Required) 022431003000

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Decommisssioned per WAC	0	30
173-160-460. Filled the		
casing from bottom to land		
surface with bentonite chips		

Start Date 8/27/2018 Completed Date 8/27/2018

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Chris Jones	Drilling Company Moerke & Sons Pump and Drilling
Driller/Engineer/Trainee Signature Chris Jones	Address 1162 NW State Ave
Driller or trainee License No. 2253	City, State, Zip Chehalis , WA, 98532
IF TRAINEE: Driller's License No:	Contractor's
Driller's Signature:	Registration No. MOERKSP072N5 Date 8/27/2018

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

DEPARTMENT OF ECOLOGY State of Washington

Construction/Decommission *("x" in circle)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION*

Notice of Intent Number _____

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) ____

☐ New well ☐ Reconditioned *Method:* ☐ Dug ☐ Bored ☐ Driven ☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 2 inches, drilled 30 ft.
Depth of completed well 30 ft.

CONSTRUCTION DETAILS

Casing Installed: ☐ Welded ____" Diam. from ____ ft. to ____ ft.
☐ Liner installed ____" Diam. from ____ ft. to ____ ft.
☐ Threaded ____" Diam. From ____ ft. to ____ ft.

Perforations: ☐ Yes ☐ No

Type of perforator used _____

SIZE of perfs ____in. by ____ in. and no. of perfs ____from ____ft. to ____ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location _____

Manufacturer's Name _____

Type _____ Model No. _____

Diam. ____Slot size ____ from ____ ft. to ____ ft.

Diam. ____Slot size ____ from ____ ft. to ____ ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand ____

Materials placed from ____ ft. to ____ ft.

Surface Seal: ☐ Yes ☐ No To what depth? ____ft.

Material used in seal _____

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

PUMP: Manufacturer's Name _____

Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level ____ ft.

Static level 12 ft. below top of well Date 8/27/18

Artesian pressure ____ lbs. per square inch Date _____

Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom? _____

Yield: ____gal./min. with ____ft. drawdown after ____hrs.
Yield: ____gal./min. with ____ft. drawdown after ____hrs.
Yield: ____gal./min. with ____ft. drawdown after ____hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____

Bailer test ____ gal./min. with ____ft. drawdown after ____hrs.

Airtest ____gal./min. with stem set at ____ft. for ____hrs.

Artesian flow ____g.p.m. Date _____

Temperature of water ____ Was a chemical analysis made? ☐ Yes ☐ No

CURRENT

Notice of Intent No. AE49459

Unique Ecology Well ID Tag No. AHL 009

Water Right Permit No. _____

Property Owner Name Darigold Inc

Well Street Address 0 Donahoe Rd

City Chehalis County Lewis

Location SW1/4-1/4 SE1/4 Sec 36 Twn 14N R 03 **(s, t, r Still REQUIRED)** EWM ☐ Or WWM ☒

Lat/Long Lat Deg ____ Lat Min/Sec ____
Long Deg ____ Long Min/Sec ____

Tax Parcel No. (Required) 022431003000

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Decommisssioned per WAC	0	30
173-160-460. Filled the		
casing from bottom to land		
surface with bentonite chips		

Start Date 8/27/2018 Completed Date 8/27/2018

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Chris Jones

Driller/Engineer/Trainee Signature Chris Jones

Driller or trainee License No. 2253

IF TRAINEE: Driller's License No:

Driller's Signature:

Drilling Company Moerke & Sons Pump and Drilling

Address 1162 NW State Ave

City, State, Zip Chehalis , WA, 98532

Contractor's Registration No. MOERKSP072N5 Date 8/27/2018

98334

WATER WELL REPORT Sta # Card No. W134521
State of Washington Unique Well # AET-156

(1) OWNER: Dennis Tobin Address: 161 Tatzel Castle, Wa

(2) LOCATION OF WELL County: Lewis NE 1/4, S.W.1/4, Sec 30, T 14 N. R 2 W. WM.
(2a) STREET ADDRESS OF WELL (or nearest addressed): 161 Castle, Wa. 98501

(3) PROPOSED USE: Domestic

(4) TYPE OF WORK: New Owner's number of well (if more than one): Well 3, Alt victory

(5) DIMENSIONS: Diameter of well: 6 inches
Drilled 95 ft, Depth of completed well: 95 ft

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Dia. from +2 ft to 72 ft.
P.V.C. Casing 4 1/2 " Dia. from 71 ft to 91 ft.
" Dia. from ft. to ft.

Perforations: Yes
Type of perforator used: Sawed
Size of perforations: 1/4 in. by 6 in.
10 perforations from 71 ft. to 90 ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: No
Manufacturer's name:
Type: Model No.
Dia. slot size: from ft. to ft.
Dia. slot size: from ft. to ft.

Gravel packed: No Size of gravel:
Gravel placed from: ft. to ft.

Surface seal: Yes To what depth 24 Ft.
Material used in seal: Bentonite Hole Plug
Did any strata contain unusable water? No
Type of water: Depth of strata:
Method of sealing strata off:

PUMP: Manufacturer's name:
Type: Size: H.P.:

(7) WATER LEVELS: Land-surface elevation above mean sea level: ft.
Static level: 24 ft. below top of well Date: 4/11/01
Artesian pressure: lbs. per sq. in. Date:
Controlled by:

(8) WELL TESTS: Drawdown is amount water level is lowered below static water level
Was a pump test made? No If yes, by whom
Yield: GPM with ft. drawdown after hrs.
GPM with ft. drawdown after hrs.
Date of test: 4 /11 /01
Bailer test: GPM w/ ft. drawdown afte hrs.
Air test: 25 GPM w/stem set at 85 ft. for 2 hrs.
Artesian flow: GPM Temp: Chemical analyses: No

(10) WELL LOG

MATERIAL	FROM	TO
Topsoil	0	2
Clay, Brown, Yellow	2	22
Clay, Blue Stiff,	22	75
Sandstone, Blue	75	87
Sandstone, Blue W/1" - 3 Gravel W/Bearing	93	87
Clay, Yellow	87	9

Note: Recommend Pump To Be Set Between 65- 75 Ft.

RECEIVED
JUL 19 2001
Washington State Department of Ecology

Work Started: 4/10/01 Completed: 4/11/01

WELL CONSTRUCTOR CERTIFICATION.
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best of my knowledge and belief.

NAME: WILLIAMS WELL DRILLING, INC.
ADDRESS: 957 Jackson Hwy. So
Toledo, Wa. 98591 Phone: 864-2951

[Signed]
Kenneth Williams

License No. 1768 Date: 4/11/01
Cont. Reg. No. WILLIWD251R3

Please print, sign and return to the Department of Ecology

Water Well Report

Original – Ecology, 1st copy – owner, 2nd copy – driller

Construction/Decommission

☒ Construction
☐ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* 156622

Current
Notice of Intent No. W181235
Unique Ecology Well ID Tag No. AKR 914
Water Right Permit No. _____
Property Owner Name Gary Klein
Well Street Address 675 NW St. Helens Ave
City Chehalis County Lewis
Location SW 1/4-1/4 SW 1/4 Sec 30 Twn 14N R 2 EWM or WWM ☒ circle one
Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____
Long Deg _____ Long Min/Sec _____
Tax Parcel No. _____

PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) _____
☒ New well ☐ Reconditioned ☐ Deepened
Method: ☐ Dug ☐ Bored ☐ Driven ☐ Cable ☒ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 100 ft.
Depth of completed well 100 ft.

CONSTRUCTION DETAILS
Casing Installed: ☒ Welded ☒ Liner installed 4½" ☐ Threaded
Diam. from +8 ft. to 58 ft.
Diam. from 40 ft. to 100 ft.
Diam. _____ from _____ ft. to _____ ft.

Perforations: ☒ Yes ☐ No
Type of perforator used Saw
SIZE of perfs ¼ in. by ½ in. and no. of perfs 36 from 80 ft. to 100 ft.

Screens: ☐ Yes ☒ No ☐ K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand _____
Materials placed from _____ ft. to _____ ft.

Surface Seal: ☒ Yes ☐ No To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 4 ft. below top of well Date 8-2-04
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest 15 gal./min. with stem set at 100 ft. for 2 hrs.
Artesian flow _____ g p.m. Date _____
Temperature of water _____ Was a chemical analysis made? ☐ Yes ☒ No

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information indicate all water encountered. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Top Soil	0	1
Brown Clay	1	21
Brown Clay/gravel	21	46
Broken Shale	46	62
Shale	62	96
Shale/water	96	100

Start Date 8-2-04 Completed Date 8-2-04

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller/Engineer/Trainee Name (Print) Chris Town
Driller/Engineer/Trainee Signature Chris Town
Driller or trainee License No. 2558

Drilling Company Chehalis Well Drilling
Address 1905 Harrison Ave.
City, State, Zip Centralia, WA 98531
Contractor's Registration No. CHEHAWD123N4 Date 8-2-04

If TRAINEE,
Driller's Licensed No. _____
Driller's Signature _____

Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 2/03)

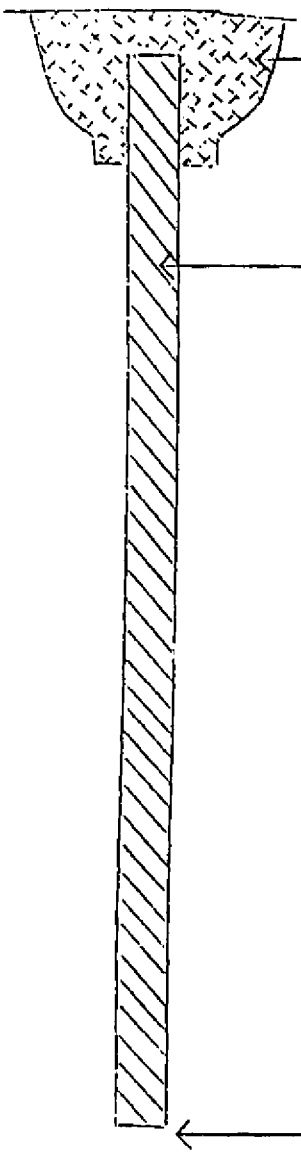
RESOURCE PROTECTION WELL REPORT

START CARD NO. R 28434

PROJECT NAME: J. PANESKO PROPERTY
WELL IDENTIFICATION NO. MW-1a
DRILLING METHOD: Probe / Water Sample
DRILLER: F. Lynn Goble
FIRM: Cascade Drilling, Inc.
SIGNATURE: Lynn Goble
CONSULTING FIRM: DLH Consultants
REPRESENTATIVE: Donna Hewitt

COUNTY: LEWIS
LOCATION: NW¼ NE¼ Sec 31 Twn 14N R 2W
STREET ADDRESS OF WELL: 711 Main St. - Chehalis
WATER LEVEL ELEVATION: N/A
GROUND SURFACE ELEVATION: N/A
INSTALLED: 7-10-97
DEVELOPED: N/A

7290

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	CONCRETE SURFACE SEAL	0 - 5 ft. Fill
	BACKFILL BENTONITE CHIP	5 - 16 ft. DARK BROWN/GRAY SILTY CLAY
		- ft.
	DEPTH OF BORING 16'0"	

RECEIVED
AUG 11 1997
DEPT OF ECOLOGY

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/09)

RESOURCE PROTECTION WELL REPORT

START CARD NO. A28452

PROJECT NAME: J. PANESKO PROPERTY
WELL IDENTIFICATION NO. n/a
DRILLING METHOD: Probe / Grab Sample
DRILLER: F. Lynn Gobble
FIRM: Cascade Drilling, Inc.
SIGNATURE: Lynn Gobble
CONSULTING FIRM: DLH Consultants
REPRESENTATIVE: Donna Hewitt

COUNTY: LEWIS
LOCATION: NW¼ NE¼ Sec 31 Twn 14 R 2W
STREET ADDRESS OF WELL:
711 MAIN ST. CHEHALIS
WATER LEVEL ELEVATION: N/A
GROUND SURFACE ELEVATION: N/A
INSTALLED: 7-10-97
DEVELOPED: N/A

7290

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	CONCRETE SURFACE SEAL	0 - 5 ft. FILL
	BACKFILL BENTONITE CHIP	5 - 9 ft. MED BROWN/RED SILTY CLAY
	DEPTH OF BORING 9'0"	- ft.

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ECY 050-12 (Rev. 11/09)

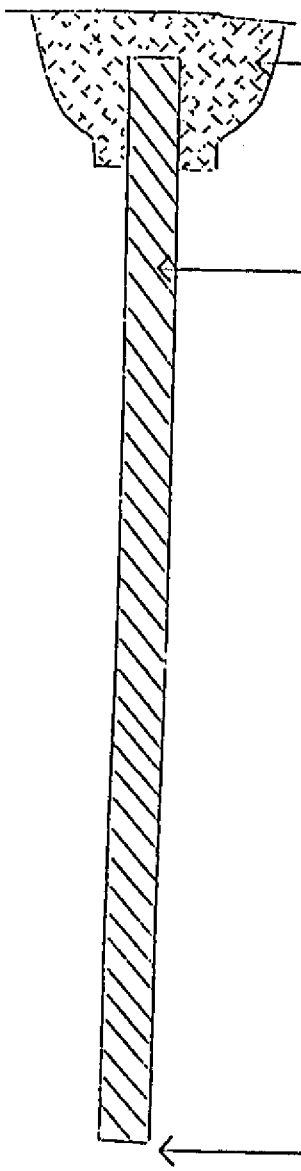
RESOURCE PROTECTION WELL REPORT

START CARD NO. A28452

PROJECT NAME: J. PANESKO PROPERTY
WELL IDENTIFICATION NO. n/a
DRILLING METHOD: Probe / Soil Sample
DRILLER: F. Lynn Goble
FIRM: Cascade Drilling, Inc.
SIGNATURE: Lynn Goble
CONSULTING FIRM: DLH Consultants
REPRESENTATIVE: Donna Hewitt

COUNTY: LEWIS
LOCATION: NW¼ NE¼ Sec 31 Twn 14 R 2W
STREET ADDRESS OF WELL:
711 MAIN ST. - CHEHALIS
WATER LEVEL ELEVATION: N/A
GROUND SURFACE ELEVATION: N/A
INSTALLED: 7-10-97
DEVELOPED: N/A

7290

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	CONCRETE SURFACE SEAL	0 - 10 ft. Fill - Pit Run Rock Sandy Gravel
	BACKFILL Bentonite Chip	10 - 12 ft. Dark Brown Silty Clay
		- ft.
	DEPTH OF BORING 12'0"	

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ECY 050-12 (Rev. 11/09)

RESOURCE PROTECTION WELL REPORT

START CARD NO. A28452

PROJECT NAME: J. PANESKO PROPERTY
WELL IDENTIFICATION NO. n/a
DRILLING METHOD: Probe / Soil Sample
DRILLER: F. Lynn Goble
FIRM: Cascade Drilling, Inc.
SIGNATURE: Lynn Goble
CONSULTING FIRM: DLH Consultants
REPRESENTATIVE: Donna Hewitt

COUNTY: LEWIS
LOCATION: NW¼ NE¼ Sec 31 Twn 14 R 2W
STREET ADDRESS OF WELL:
711 MAIN ST. CHEHALIS
WATER LEVEL ELEVATION: N/A
GROUND SURFACE ELEVATION: N/A
INSTALLED: 7-10-97
DEVELOPED: N/A

7290

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	CONCRETE SURFACE SEAL	0 - 4 ft. Fill - Pit Run Rock Sand & Gravel
	BACKFILL BENTONITE CHIP	- ft.
		- ft.
	DEPTH OF BORING 4'0"	

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SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/09)

RESOURCE PROTECTION WELL REPORT

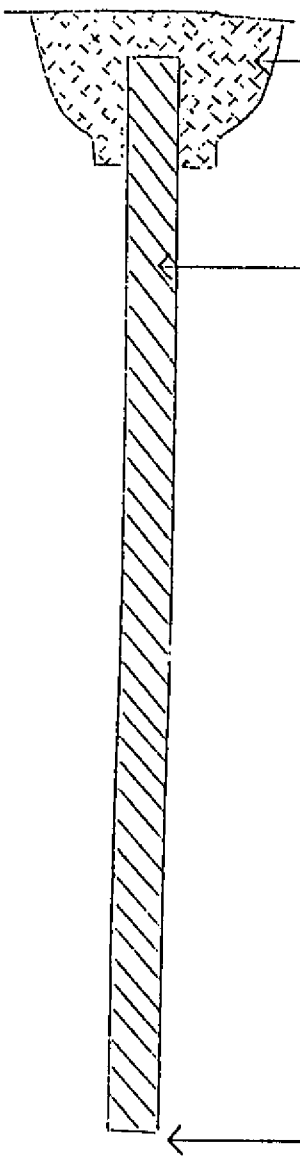
3-TOTAL

START CARD NO. A28452

PROJECT NAME: J. PANESKO PROPERTY
WELL IDENTIFICATION NO. n/a
DRILLING METHOD: Probe / Soil Sample
DRILLER: F. Lynn Goble
FIRM: Cascade Drilling, Inc.
SIGNATURE: Lynn Goble
CONSULTING FIRM: DLH Consultants
REPRESENTATIVE: Donna Hewitt

COUNTY: LEWIS
LOCATION: NW¼ NE¼ Sec 31 Twn 14 R 2W
STREET ADDRESS OF WELL:
711 MAIN ST. CHEHALIS
WATER LEVEL ELEVATION: N/A
GROUND SURFACE ELEVATION: N/A
INSTALLED: 7-10-97
DEVELOPED: N/A

7290

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	CONCRETE SURFACE SEAL	0 - 5 ft. Fill
	BACKFILL BENTONITE CHIP	5 - 16 ft. DARK BROWN/GRAY SILTY CLAY
		- ft.
	DEPTH OF BORING 16'0"	

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DEPT. OF ECOLOGY

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/09)

LOG OF TEST BORING

Washington State Department of Transportation

Start Card No.		A-19013	R-26632
County		Lewis	
Driller		Scott Tunison	
Company		Salisbury	
Inspector		David A. Nelson	1678
NW 1/4	NE 1/4 SW	Sec. 31	Twn. 14N R. 2 W.WM
Hole No.	H-11-97	Job No.	0L-2579
Project	Rush Rd. to Thurston County Line H.O.V.	S.R.	5
Station	2670+50 Offset 64.0 Lt. C	C.S.	2102
Equipment	Winki Casing BX x 50.0	Ground Elv.	56.83
Method of Drilling	WET ROTARY	W.T.	
Start Date	14-May-97 Completion Date 14-May-97	Sheet	1 of 3

Depth (ft.)	Profile	(N)	SPT Blows 6"	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
0.0								
1.0								
2.0								HOLE
			4		D-1	[MH][2.0 to 3.5] Elastic silt with gravel @ FILL		PLUG
3.0		8	4			medium stiff, yellowish-brown, wet, stratified. " roots"		
			4			rec.1.0		
4.0								
5.0								
			2		D-2	[ML][5.0 to 6.5] Silt @ FILL		
6.0		10	4			medium stiff, gray, wet, stratified.		
			6			rec.0.9		
7.0								
8.0			3		D-3	[MH][7.5 to 9.0] Elastic silt @ FILL		
		8	4			medium stiff, gray, wet, blocky		
9.0			4			rec0.7		
10.0								
			2		D-4	[MH][10.0 to11.5] Elastic silt		
11.0		7	3			medium stiff, gray, wet, blocky		
			4			rec0.7		
12.0								
13.0								
14.0								
15.0						@ ORIGINAL GROUND		
			1		D-5	[SP-SM][15.0 to+G8016.5] Poorly graded sand with silt		
16.0		2	1			very loose, greenish-gray, saturared, homogeneous		
			1			rec. 1.5		
17.0								
18.0								
19.0								HOLE
20.0								PLUG

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Hole No. H-11-97 Job No. 0L-2579

Project Rush Rd. to Thurston County Line H.O.V. Sheet 2 of 3

Depth (ft.)	Profile	(N)	SPT Blows 6 "	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
20.0								
			1		D-6	[SP-SM][20.0 to21.5] Poorly graded sand with silt		
21.0		1	1			very loose, reddish-brown, saturared, homogeneous		
			0			rec. 0.6		
22.0								
23.0								
24.0								
25.0								
			1		D-7	[SP-SM][25.0 to 26.5] Poorly graded sand with silt		
26.0		1	0			very loose, reddish-brown, saturared, homogeneous		
			1			rec.1.0		
27.0								
28.0								
29.0								
30.0								
			1		D-8	[SP-SM][30.0 to 31.5] Poorly graded sand with silt		
31.0		2	1			very loose, greenish-gray, saturared, homogeneous		
			1			rec.1.0		
32.0								
33.0								
34.0								
35.0								
			1		D-9	[SP-SM][35.0 to 36.5] Poorly graded sand with silt		
36.0		2	1			very loose, greenish-gray, saturared, homogeneous		
			1			rec.1.0		
37.0								
38.0								
39.0								
40.0								

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Hole No. H-11-97 Job No. 0L-2579
Project Rush Rd. to Thurston County Line H.O.V. Sheet 3 of 3

Depth (ft.)	Profile	(N)	SPT Blows 6"	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
40.0								
			2		D-10	[ML][40.0 to 41.5] Silt with gravel "wood & charcoal "		SUMP
41.0		8	3			mediun stiff, bluish-gray, wet, homogeneous		
			5			rec. 0.8		FROM
42.0								
								40FT.
43.0								TO
								46FT.
44.0								
45.0								
			28		D-11	[GW-GM][45.0 to 46.0] Well graded gravel with silt"sub angular"		
46.0		50/0.5	50/0.5			very dense, greenish-gray, wet,homogeneous		
						rec. 1.0		H
47.0								O
								L
48.0								E
49.0								P
								L
50.0								U
			37		D-12	[GW-GM][45.0 to 46.0] Well graded gravel with silt"sub angular"		G
51.0		50/0.5	50/0.5			very dense, greenish-gray, wet,homogeneous		
						rec.0.7		
52.0								
						Stopped Test Boring at 51.0		
53.0						Installed piezo with 2.0 stick up.		
54.0								
55.0								
56.0								
57.0								
58.0								
59.0								
60.0								

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Start Card No.	A-19019 / R 17255
County	Lewis
Driller	Scott Tunison
Company	Salisbury
Inspector	David A. Nelson 1678
Location	NE 1/4 NW 1/4 Sec. 31 Twn. 14N R. 2 W.WM
Hole No.	H-23-97
Job No.	0L-2579
Project	Rush Rd. to Thurston County Line H.O.V..
S.R.	5
Station	0+250
Offset	10 m Rt.
C.S.	2104
Equipment	Winki
Casing	BX x 61.0
Ground Elv.	94 m
Method of Drilling	WET ROTARY
W.T.	dry
Start Date	20-May-97
Completion Date	20-May-97
Sheet	1 of 4

Depth (ft.)	Profile	(N)	SPT Blows 6"	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
0.0						0.0 to1.0 overburden		CEMENT
1.0		CR	100%		C-1	[1.0 to 6.0] Sandstone ,brownish-gray, fine grained,slightly weathered		
2.0		RQD	66%			slightly fractured		
		FF	3					
3.0								
4.0								
5.0								
6.0		CR	100%		C-2	[6.0 to 11.0] Sandstone ,brownish-gray, fine grained,slightly weathered		
7.0		RQD	50%			slightly fractured		
		FF	3					
8.0								
9.0								
10.0								
11.0		CR	100%		C-3	[11.0 to 16.0] Sandstone ,gray, fine grained fresh		
12.0		RQD	46%			slightly fractured		
		FF	2					
13.0								ADO
14.0								
15.0								1020
16.0		CR	100%		C-4	[16.0 to 21.0] Sandstone ,gray, fine grained fresh		SAND
17.0		RQD	66%			slightly fractured		
		FF	1					
18.0								
19.0								
20.0								

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Hole No. H-23-97 **Job No.** 0L-2579
Project Rush Rd. to Thurston County Line H.O.V. **Sheet** 2 **of** 4

Depth (ft.)	Profile	(N)	SPT Blows 6 "	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
20.0								
								C
21.0								O
		CR	100%		C-5	[21.0 to 26.0] Sandstone ,gray, fine grained fresh		L
22.0		RQD	18%			highly fractured		O
		FF	4					R
23.0								A
								D
24.0								O
25.0								1020
26.0								S
		CR	100%		C-6	[26.0 to 31.0] Sandstone ,gray, fine grained fresh		A
27.0		RQD	20%			highly fractured		N
		FF	4					D
28.0								
29.0								
30.0								
31.0								
		CR	100%		C-7	[31.0 to 36.0] Sandstone ,gray, fine grained fresh		
32.0		RQD	0%			highly fractured		
		FF	6					
33.0								
34.0								
35.0								
36.0								
		CR	100%		C-8	[36.0 to 41.0] Sandstone ,gray, fine grained fresh		
37.0		RQD	50%			moderately fractured		
		FF	3					
38.0								
39.0								
40.0								

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Hole No. H-23-97 **Job No.** 0L-2579
Project Rush Rd. to Thurston County Line H.O.V. **Sheet** 3 **of** 4

Depth (ft.)	Profile	(N)	SPT Blows 6 "	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
40.0								C
								O
41.0								L
		CR	100%		C-9	[41.0 to 46.0] Sandstone ,gray, fine grained fresh		O
42.0		RQD	40%			highly fractured		R
		FF	4					A
43.0								D
								O
44.0								
								1020
45.0								
								S
46.0								A
		CR	100%		C-10	[46.0 to51.0] Sandstone ,gray, fine grained fresh		N
47.0		RQD	15%			highly fractured		D
		FF	5					
48.0								
49.0								
50.0								
51.0								
		CR	100%		C-11	[51.0 to 56.0] Sandstone ,gray, fine grained fresh		
52.0		RQD	15%			highly fractured		
		FF	5					
53.0								
54.0								
55.0								
56.0								
		CR	100%		C-12	[56.0 to 61.0] Sandstone ,gray, fine grained fresh		
57.0		RQD	18%			highly fractured		
		FF	6					
58.0								
59.0								
60.0								

WELL SCREEN

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Hole No. H-23-97 **Job No.** 0L-2579
Project Rush Rd. to Thurston County Line H.O.V. **Sheet** 4 **of** 4

Depth (ft.)	Profile	SPT (N) Blows 6 "	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
60.0					Stopped Test Boring at 61.0 Installed Piezo to 61.0 with a 10.0 well screen to 51.0 backed fill with sand to 10.0, hole plug to 2.0,cement, monument		
61.0							
62.0							
63.0							
64.0							
65.0							
66.0							
67.0							
68.0							
69.0							
70.0							
71.0							
72.0							
73.0							
74.0							
75.0							
76.0							
77.0							
78.0							
79.0							
80.0							

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Start Card No. A-19019 / R 17255
County Lewis
Driller Scott Tunison
Company Salisbury
Inspector David A. Nelson 1678

Location NE 1/4 NW 1/4 Sec. 31 Twn. 14N R. 2 W.WM
Hole No. H-23-97 Job No. 0L-2579
Project Rush Rd. to Thurston County Line H.O.V.. S.R. 5
Station 0+250 Offset 10 m Rt. C.S. 2104
Equipment Winki Casing BX x 61.0 Ground Elv. 94 m
Method of Drilling WET ROTARY W.T. dry
Start Date 20-May-97 Completion Date 20-May-97 Sheet 1 of 4

Depth (ft.)	Profile	(N)	SPT Blows 6 "	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
0.0						0.0 to1.0 overburden		CEMENT
1.0		CR	100%		C-1	[1.0 to 6.0] Sandstone ,brownish-gray, fine grained,slightly weathered		
2.0		RQD	66%			slightly fractured		
		FF	3					
3.0								
4.0								
5.0								
6.0								
		CR	100%		C-2	[6.0 to 11.0] Sandstone ,brownish-gray, fine grained,slightly weathered		
7.0		RQD	50%			slightly fractured		
		FF	3					
8.0								
9.0								
10.0								
11.0								COLORADO
		CR	100%		C-3	[11.0 to 16.0] Sandstone ,gray, fine grained fresh		
12.0		RQD	46%			slightly fractured		
		FF	2					
13.0								
14.0								
15.0								1020
16.0								SAND
		CR	100%		C-4	[16.0 to 21.0] Sandstone ,gray, fine grained fresh		
17.0		RQD	66%			slightly fractured		
		FF	1					
18.0								
19.0								
20.0								

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Hole No. H-23-97 Job No. 0L-2579

Project Rush Rd. to Thurston County Line H.O.V. Sheet 2 of 4

Depth (ft.)	Profile	(N)	SPT Blows 6 "	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
20.0								
								C
21.0								O
		CR	100%		C-5	[21.0 to 26.0] Sandstone ,gray, fine grained fresh		L
22.0		RQD	18%			highly fractured		O
		FF	4					R
23.0								A
								D
24.0								O
25.0								1020
26.0								S
		CR	100%		C-6	[26.0 to 31.0] Sandstone ,gray, fine grained fresh		A
27.0		RQD	20%			highly fractured		N
		FF	4					D
28.0								
29.0								
30.0								
31.0								
		CR	100%		C-7	[31.0 to 36.0] Sandstone ,gray, fine grained fresh		
32.0		RQD	0%			highly fractured		
		FF	6					
33.0								
34.0								
35.0								
36.0								
		CR	100%		C-8	[36.0 to 41.0] Sandstone ,gray, fine grained fresh		
37.0		RQD	50%			moderately fractured		
		FF	3					
38.0								
39.0								
40.0								

LOG OF TEST BORING

Washington State Department of Transportation

Hole No. H-23-97 Job No. 0L-2579
Project Rush Rd. to Thurston County Line H.O.V. Sheet 3 of 4

Depth (ft.)	Profile	(N)	SPT Blows 6 "	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
40.0								COLORADO 1020 SAND WELL SCREEN
41.0								
		CR	100%		C-9	[41.0 to 46.0] Sandstone ,gray, fine grained fresh highly fractured		
42.0		RQD	40%					
		FF	4					
43.0								
44.0								
45.0								
46.0								
		CR	100%		C-10	[46.0 to51.0] Sandstone ,gray, fine grained fresh highly fractured		
47.0		RQD	15%					
		FF	5					
48.0								
49.0								
50.0								
51.0								
		CR	100%		C-11	[51.0 to 56.0] Sandstone ,gray, fine grained fresh highly fractured		
52.0		RQD	15%					
		FF	5					
53.0								
54.0								
55.0								
56.0								
		CR	100%		C-12	[56.0 to 61.0] Sandstone ,gray, fine grained fresh highly fractured		
57.0		RQD	18%					
		FF	6					
58.0								
59.0								
60.0								

DOT: Form WM
Revised 5/96 1/97

LOG OF TEST BORING

Washington State Department of Transportation

Hole No. H-23-97 Job No. 0L-2579
Project Rush Rd. to Thurston County Line H.O.V. Sheet 4 of 4

Depth (ft.)	Profile	(N)	SPT Blows 6 "	Sample Type	Sample No.	Description of Material	Ground Water	Instrument
60.0								
61.0						Stopped Test Boring at 61.0 Installed Piezo to 61.0 with a 10.0 well screen to 51.0 backed fill with sand to 10.0, hole plug to 2.0,cement, monument		
62.0								
63.0								
64.0								
65.0								
66.0								
67.0								
68.0								
69.0								
70.0								
71.0								
72.0								
73.0								
74.0								
75.0								
76.0								
77.0								
78.0								
79.0								
80.0								

DOT: Form WM
Revised 5/96 1/97

RECEIVED
NOV 22 1993

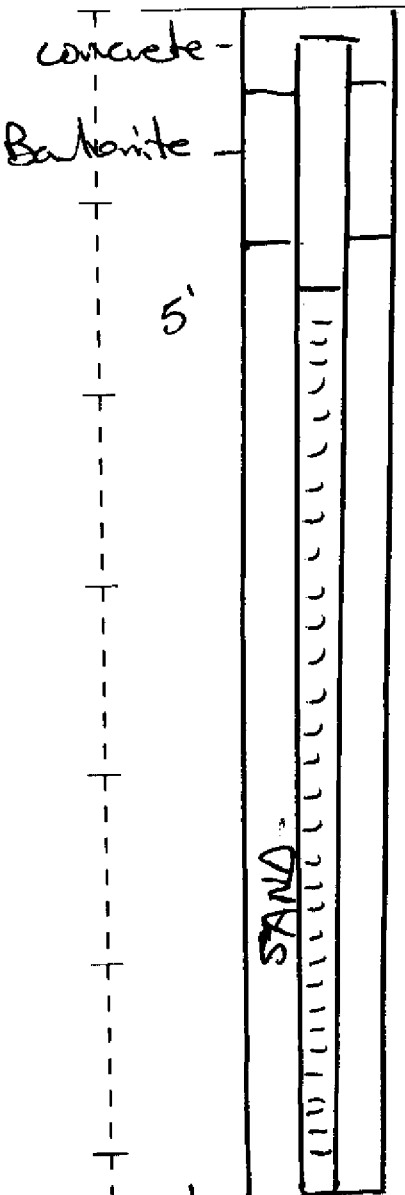
RESOURCE PROTECTION WELL REPORT

DEPT. OF ECOLOGY
START CARD NO: 61650

PROJECT NAME: Time Oil
WELL IDENTIFICATION NO. MW-1-5
DRILLING METHOD: HSA
DRILLER: Ken McLaughlin
FIRM: McGarrett Drilling Inc
SIGNATURE: Ken McLaughlin
CONSULTING FIRM: ESE
REPRESENTATIVE: John Day

COUNTY: Lewis
LOCATION: NW¼ NW¼ Sec 31 Twn 14N R 2W
STREET ADDRESS OF WELL: 2737 Commodore Way Chehalis
WATER LEVEL ELEVATION: 14'
GROUND SURFACE ELEVATION: 19
INSTALLED: 8-9 - 8-11 93
DEVELOPED:

AS-BUILT



WELL DATA

flush mount monument
.0-2 concrete
2-4 Bentonite chip
2-25 Colorado ~~Sand~~ silica sand 10-20
.5-5 pvc schl 40 blank
5-25 pvc schl 40 screen .010

FORMATION DESCRIPTION

.5 asphalt
.5-3 fill dirt
3-14 heavy red clay
14-25 heavy blue gray clay lite cobbles

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)

AE 00974

Resource Protection Well Report

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT Notice of Intent No. AGT

Type of Well (*"x" in circle*)
- O Resource Protection
- O Geotech Soil Boring

Construction/Decommission (*"x" in circle*)
- O Construction
- O Decommission *ORGINAL INSTALLATION Notice of Intent Number* RO47991

167617

Consulting Firm Tapani Associates

Unique Ecology Well ID

Tag No: AGT 542

WELL CONTRUCTION CERTIFICATION: I constructed and/or accept for construction of this well, and it compliance with all Washington construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller☐ Engineer ☐Trainee Name (Print) Harry Inspiman

Driller/Engineer/Trainee Signature Harry Inspiman

Driller or Trainee License No. 2463

If trainee, licensed driller's Signature and License no.

Property Owner Tri WesCo

Site Address Louisiana Ave

City Chehalis County: Lewis

Location SE1/4 SE1/4 Sec 30 Twn 14 R 2 EWM or WWM

Lat/Long (s, t, r, still REQUIRED) Lat Deg _____ Lat Min/Sec _____

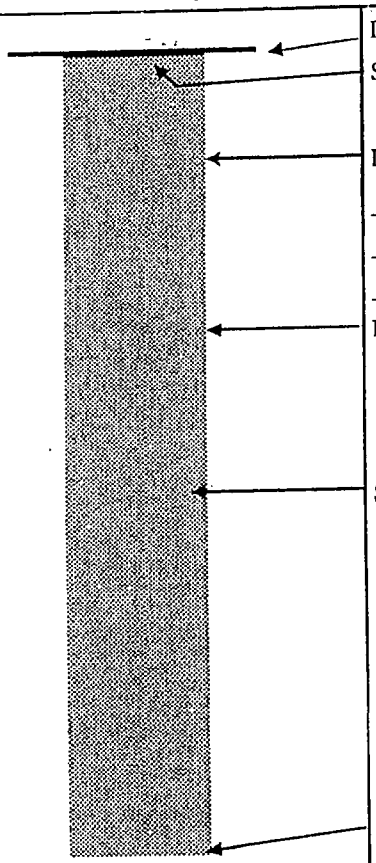
Lat Deg _____ Long Min/Sec _____

Tax Parcel No. ROW

Cased or Uncased Diameter N/A Static Level N.A.

Work/Decommission Start Date 7-22-04

Work/Decommission Completed Date 7-22-04

Construction/Design	Well Data	Formation Description
	Land Surface Surface Seal Drilling Method _____Hollow-Stem Auger _____Air Rotary _____Push Probe _____Mud Rotary __X__Other Grout in place Borehole Diameter _____ in From N/A ft. To _____ ft. Seal From 0 ft. To 25 ft. Material Bentonite Amount 37 lbs Grout Weight _____ Completed Depth 25 ft.	0 ft. to _____ ft. Pulled monument and backfilled _____ ft. to _____ ft. with bentonite _____ ft. to _____ ft. RECEIVED _____ ft. to _____ ft. AUG 2 4 2004 DEPARTMENT OF ECOLOGY WELL DRILLING UNIT _____ ft. to _____ ft. _____ ft. to _____ ft.

Scale 1"=_____

Page _____ of _____

AE 00974

Resource Protection Well Report

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. AGT

Type of Well (*"x" in circle*)
O Resource Protection
O Geotech Soil Boring

Construction/Decommission (*"x" in circle*)
O Construction
O Decommission *ORGINAL INSTALLATION Notice of Intent Number* R04799

167618

Consulting Firm Tcapani Associates
Unique Ecology Well ID
Tag No: AGT 168

WELL CONTRUCTION CERTIFICATION: I constructed and/or accept for construction of this well, and it compliance with all Washington construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller☐ Engineer ☐Trainee Name (Print) Larry Inselman

Driller/Engineer/Trainee Signature Larry Inselman

Driller or Trainee License No. 2463

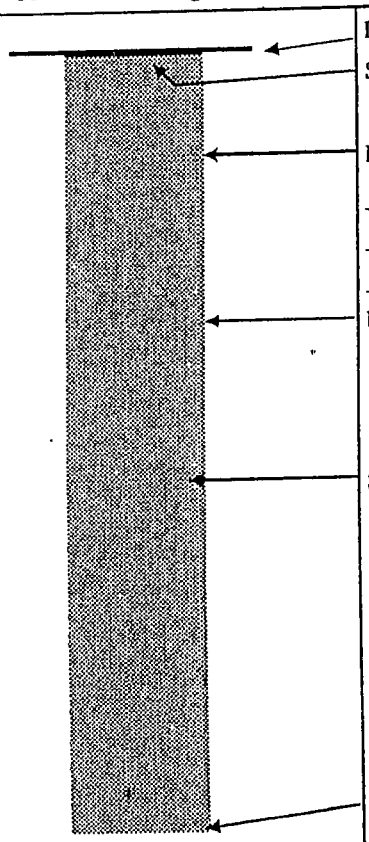
If trainee, licensed driller's Signature and License no.

Property Owner Tri WesCo
Site Address Louisiana Ave
City Chehalis County: Lewis
Location SE1/4 SE1/4 Sec 30 Twn 14 R 2 EWM or (WWM)

Lat/Long (s, t, r, still REQUIRED) Lat Deg _____ Lat Min/Sec _____
Lat Deg _____ Long Min/Sec _____

Tax Parcel No. Road
Cased or Uncased Diameter N/A Static Level N.A.
Work/Decommission Start Date 7-22-04
Work/Decommission Completed Date 7-22-04

Construction/Design | **Well Data** | **Formation Description**



Land Surface
Surface Seal
Drilling Method
____Hollow-Stem Auger ____Air Rotary
____Push Probe ____Mud Rotary
__X__Other Grout in place
Borehole Diameter
N/A in
From N/A ft. To _____ ft.
Seal
From 0 ft. To 25 ft.
Material Bentonite
Amount 37 lbs
Grout Weight _____
Completed Depth 25 ft.

0 ft. to _____ ft.
Pulled monument and backfilled
_____ ft. to _____ ft.
with bentonite
_____ ft. to _____ ft.
_____ ft. to _____ ft.
_____ ft. to _____ ft.
_____ ft. to _____ ft.

Scale 1"= _____

Page _____ of _____

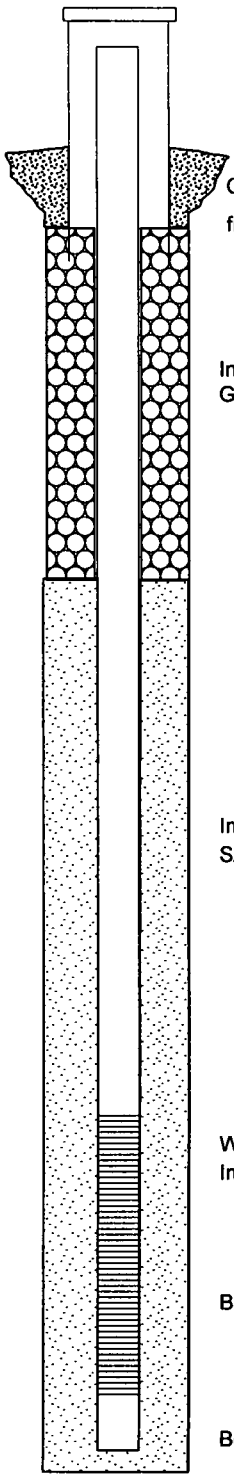
RESOURCE PROTECTION WELL REPORT

Job No.: XL-3224
Decomission card #: A-136728
Project: I-5 Blakeslee Jct. to Grand Mound
County: Lewis
Hole#: H-23P-97 Well ID#: NONE
Location: NE1/4 of NW1/4 Sec: 31 Twn: 14 Range: 2 WWM
Method: Wet Rotary
Street Address of Well: Vicinity of MP85.3 I-5 Northbound
Driller: Robert Shepherd Lic #: 2710
Water Table Depth: 28.3'
Company:
Ground Surface Elevation: 266.3
Signature:
Installed: 5/20/1997 Decommissioned: April 13, 2010
Cased Hole: 1"

372209

Casing BX to 61'

Filled pipe with Bentonite slurry.
Cut of 2ft below ground and sealed top of hole.



Protective Casing,
Stick-up 2ft

Instrument Pipe'
stick-up 1 1/2ft

Ground Surface

Cement Surface Seal
from 0.0 ft. to 2.0 ft.

Instrument Pipe in
Granular Bentonite, from ft. to ft.

Instrument Pipe in
SAND, from 10.0 ft. to 51.0 ft.

Well Screen
In Clean Sand, from 51.0 ft. to 61.0 ft

Bottom Seal, from ft. to ft

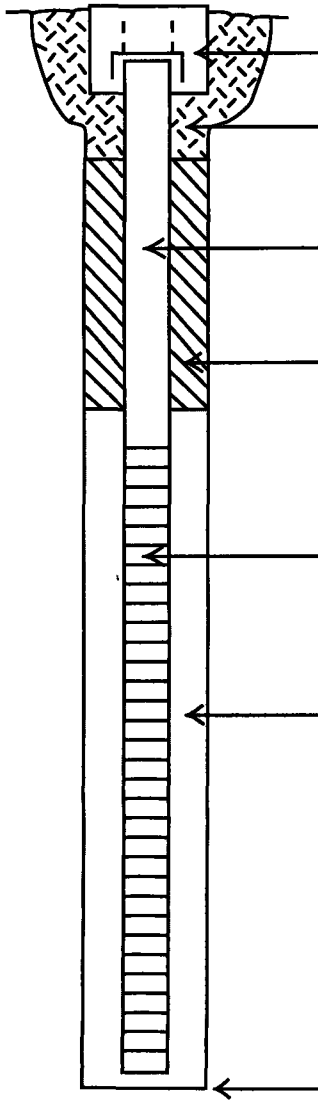
Bottom of Hole 61.0 ft.

HOLT DRILLING, INC.

Resource Protection Well Report

Project Name West Food Farms
Well Identification # AHL 008 AHL 009
Drilling Method HSA 4"
Driller Ray Kearns
License # 2506
128326, 128327

Date 9/16/02
County Lewis, NE ¼ NE ¼
Section 36 T. 14N R. 3W
Street Address Donahoe Rd Lot 6
Start Card # 574812
Consulting Firm HWA



AS-BUILT

WELL DATA

MONUMENT TYPE. stick up
CONCRETE SURFACE SEAL 3 ft.
PVC BLANK 2 "x 22'
BACKFILL 15 ft.
TYPE Bent. Chips
PVC SCREEN 2 "x 10'
SLOT SIZE. .020
TYPE: pvc
GRAVEL PACK 12 ft.
MATERIAL: 10/20 sand
WELL DEPTH 30' -"

FORMATION DESCRIPTION

0 - 2 ft. Top Soil
2 - 18 ft. silt
18 - 31½ ft. sand
- ft.
- ft.

REMARKS

RECEIVED
JAN 13 2003
Washington State Department of Ecology

Signature

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

D15332 FDB/D41029 EPS

HOLT DRILLING, INC.

Resource Protection Well Report

Project Name: West Food Farms

Well Identification #: AHL 008 (AHL 009)

Drilling Method: HSA 4"

Driller: Ray Kearns

License #: 2506

128326, 128327

Date: 9/16/02

County: Lewis, NE 1/4 NE 1/4

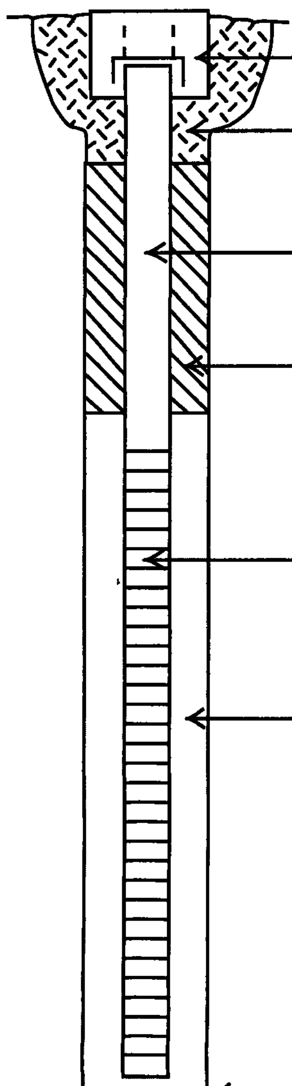
Section: 36 T. 14 N R. 3W

Street Address: Donahoe Rd exit 6

Start Card: R 54812

Consulting Firm: HWA

AS-BUILT



WELL DATA

MONUMENT TYPE: stick up

CONCRETE SURFACE SEAL: 3 ft.

PVC BLANK: 2 "x 22'

BACKFILL: 15 ft.

TYPE: Bent. Chips

PVC SCREEN: 2 "x 10'

SLOT SIZE: .020

TYPE: pvc

GRAVEL PACK: 12 ft.

MATERIAL: 10/20 sand

WELL DEPTH: 30' – "

FORMATION DESCRIPTION

0 - 2 ft.
Top soil

2 - 18 ft.
silt

18 - 31½ ft.
sand

- ft.

- ft.

REMARKS

RECEIVED
JAN 13 2003
Washington State
Department of Ecology

Signature: [signature]

D15332 FDB/D41029 EPS

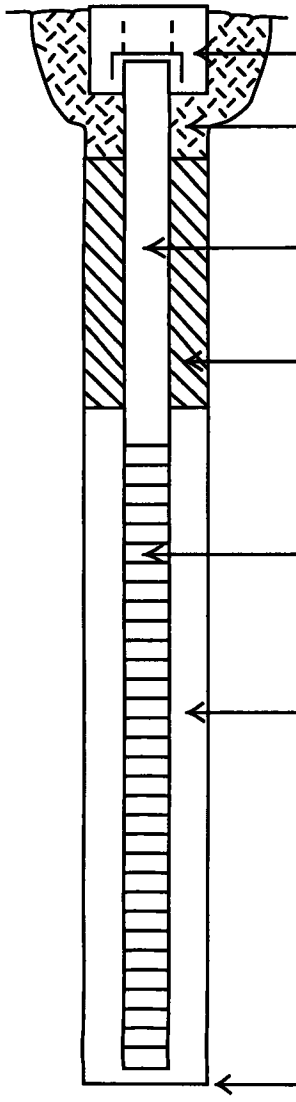
HOLT DRILLING, INC.

126081

Resource Protection Well Report

Project Name: West Food Farms
Well Identification #: AHL 010
Drilling Method: HSA 4"
Driller: Ray Kerns
License #: 2506

Date: 9/17/03
County: Lewis, NE ¼ NE ¼
Section: 36 T. 14N R. 5W
Street Address: Cowlitz Rd Hwy 6
Start Card: L 54812
Consulting Firm: HWA

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	MONUMENT TYPE: Steel lid CONCRETE SURFACE SEAL: 3 ft. PVC BLANK: 2 "x 17' BACKFILL: 10 ft. TYPE: Bent. Chips PVC SCREEN: 2 "x 10' SLOT SIZE: #20 TYPE: PVC GRAVEL PACK: 12 ft. MATERIAL: 10/20 sand WELL DEPTH: ' "	0 - 2 ft. Top soil 2 - 15 ft. silt 15 - 25½ ft. sand - ft. - ft.

REMARKS

RECEIVED
JAN 13 2003
Washington State
Department of Ecology

Signature:

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

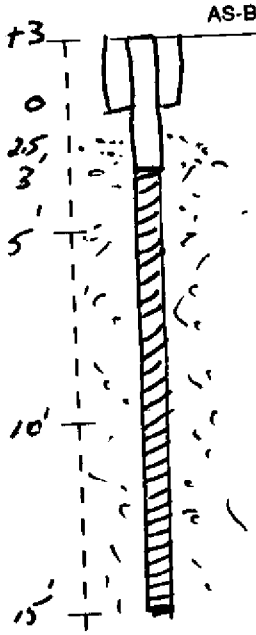
D15332 FDB/D41029 EPS

RESOURCE PROTECTION WELL REPORT

START CARD NO. 26476

PROJECT NAME: Weyerhauser
WELL IDENTIFICATION NO. mw 10, 11, 12, 13
DRILLING METHOD: Hollowstem auger
DRILLER: Robert J. Rogers
FIRM: Geotech Explorations
SIGNATURE:
CONSULTING FIRM: Emcon
REPRESENTATIVE: Tim Haderly

COUNTY: Lewis
LOCATION: NW¼ NE¼ Sec 31 Twn 14N R 2W
STREET ADDRESS OF WELL: 1100 SW Sylvenus St. Chehalis, Wa.
WATER LEVEL ELEVATION: 7'
GROUND SURFACE ELEVATION:
INSTALLED: 27 Oct 95
DEVELOPED:



WELL DATA

15' - 3' 020 slot screen sch40 pvc
3' - +2.5 sch40 pvc riser
2' to +3 above ground monument
15' - 2.5' 20/40 sand pack
2.5 - 0 Bent seal

FORMATION DESCRIPTION

0 - 4 Gravel fill
4 - 15' clay silt sand

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'95 NOV -9 P2:07
[illegible]
S.W. REGIONAL OFFICE

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)

Appendix XIII

IPaC Data

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405
http://www.fws.gov/wafwo/

In Reply Refer To:
Consultation Code: 01EWFW00-2019-SLI-1088
Event Code: 01EWFW00-2019-E-02201
Project Name: Chehalis Flood Storage

May 30, 2019

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated and proposed critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list is currently compiled at the county level. Additional information is available from the Washington Department of Fish and Wildlife, Priority Habitats and Species website: http://wdfw.wa.gov/mapping/phs/ or at our office website: http://www.fws.gov/wafwo/species_new.html. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether or not the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). You may visit our website at http://www.fws.gov/pacific/eagle/for information on disturbance or take of the species and information on how to get a permit and what current guidelines and regulations are. Some projects affecting these species may require development of an eagle conservation plan: (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Also be aware that all marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. The importation of marine mammals and marine mammal products into the U.S. is also prohibited. More information can be found on the MMPA website: http://www.nmfs.noaa.gov/pr/laws/mmpa/.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Related website:
National Marine Fisheries Service: http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

Project Summary

Consultation Code: 01EWFW00-2019-SLI-1088

Event Code: 01EWFW00-2019-E-02201

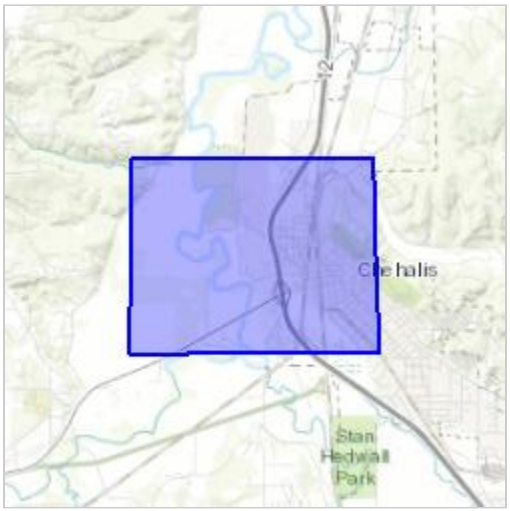
Project Name: Chehalis Flood Storage

Project Type: STREAM / WATERBODY / CANALS / LEVEES / DIKES

Project Description: Flooding mitigation and storage project

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/46.665134432081835N122.98380398142078W



Counties: Lewis, WA

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Wolf *Canis lupus* Population: Western Distinct Population Segment No critical habitat has been designated for this species.	Proposed Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Streaked Horned Lark *Eremophila alpestris strigata* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7268	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Bull Trout *Salvelinus confluentus* Population: U.S.A., conterminous, lower 48 states There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

Flowering Plants

NAME	STATUS
Golden Paintbrush *Castilleja levisecta* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7706	Threatened
Kincaid's Lupine *Lupinus sulphureus ssp. kincaidii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3747	Threatened
Nelson's Checker-mallow *Sidalcea nelsoniana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7340	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix XIV

PHS Information

WDFW Test Map

May 30, 2019

PHS Report Clip Area

PT

LN

POLY

AS MAPPED

SECTION

QTR-TWP

TOWNSHIP

1:29,247

0 0.25 0.5 1 mi

0 0.4 0.8 1.6 km

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPlusPublic Query ID: P190530094209
REPORT DATE: 05/30/2019 9.42

Common Name / Scientific Name / Notes	Site Name / Source Dataset / Source Record / Source Date	Priority Area / Occurrence Type / More Information (URL) / Mgmt Recommendations	Accuracy	Federal Status / State Status / PHS Listing Status	Sensitive Data / Resolution	Source Entity / Geometry Type
Cavity-nesting Ducks	CHEHALIS RIVER & PHSREGION 905309	Breeding Area Breeding occurrence http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Chinook Oncorhynchus tshawytscha	Chehalis River SASI 1435	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Chinook Oncorhynchus tshawytscha	Chehalis River SASI 1432	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Coho Oncorhynchus kisutch	Dillenbaugh Creek SWIFD 56279	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Coho Oncorhynchus kisutch	Chehalis River SWIFD 64577	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Coho Oncorhynchus kisutch	Dillenbaugh Creek SASI 3605	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Candidate N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Coho Oncorhynchus kisutch	Chehalis River SASI 3605	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Candidate N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Cutthroat Oncorhynchus clarki	Dillenbaugh Creek SASI 7580	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Candidate N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Cutthroat Oncorhynchus clarki	Chehalis River SASI 7580	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Candidate N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Fall Chinook Oncorhynchus tshawytscha	Chehalis River SWIFD 64567	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Fall Chinook Oncorhynchus tshawytscha	Chehalis River SWIFD 64568	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Emergent	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Freshwater Forested/Shrub	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Pond	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Pond	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Freshwater Pond	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Oak Woodland	LEWIS COUNTY OAK PHSREGION 902189	Terrestrial Habitat N/A http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Rainbow Trout Oncorhynchus mykiss	Dillenbaugh Creek SWIFD 56281	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Rainbow Trout Oncorhynchus mykiss	Scheuber Drainage Ditch SWIFD 56470	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines
Rainbow Trout Oncorhynchus mykiss	Chehalis River SWIFD 64583	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Resident Coastal Cutthroat Oncorhynchus clarki	Dillenbaugh Creek SWIFD 56278	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Resident Coastal Cutthroat Oncorhynchus clarki	Chehalis River SWIFD 64565	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Riverine	N/A NWIWetlands	Aquatic Habitat Aquatic habitat http://www.ecy.wa.	NA	N/A N/A PHS Listed	N AS MAPPED	US Fish and Wildlife Service Polygons
Roosevelt elk Cervus elaphus roosevelti	PHSREGION 918523	Regular Concentration Regular concentration http://wdfw.wa.gov/publications/pub.php?	General locality	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Spring Chinook Oncorhynchus tshawytscha	Chehalis River SWIFD 64572	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Spring Chinook Oncorhynchus tshawytscha	Chehalis River SWIFD 64573	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Steelhead Oncorhynchus mykiss	Chehalis River SASI 6574	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Steelhead Oncorhynchus mykiss	Chehalis River SASI 6609	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	Not Warranted N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines

Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Waterfowl Concentrations	CHEHALIS WETLANDS PHSREGION 902195	Regular Concentration Regular concentration http://wdfw.wa.gov/publications/pub.php?	1/4 mile (Quarter	N/A N/A PHS LISTED	N AS MAPPED	WA Dept. of Fish and Wildlife Polygons
Winter Steelhead Oncorhynchus mykiss	Chehalis River SWIFD 64586	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm http://wdfw.wa.gov/publications/pub.php?	NA	N/A N/A PHS LISTED	N AS MAPPED	 Lines

Appendix XV

Permit Flow Charts

Governor's Office for Regulatory Innovation and Assistance

401 Water Quality Certification

Applicant | **Department of Ecology (Ecology) and U.S. Army Corps of Engineers (Corps)** | **Public or other interested party**

Application Phase

Start

Applicant completes Joint Aquatic Resource Permit Application (JARPA), submits to U.S. Army Corps of Engineers and Ecology (A)

Applicant may be required to submit additional information such as wetland delineations, mitigation plans, best management practices, etc. to support application. (C)

Corps determines if the project qualifies for a Nationwide Permit (NWP) or an Individual Permit (IP). (B)

Nationwide (D)

Corps issues a letter notifying Ecology

NWPs 3, 6, 12, 13, 14, 16, 19, 23, 27, 29, 32, 33, 34, 35, 36, 38, 39, 40, 41, 42, 43, 45, 46, and 48 have been certified subject to conditions for 401 and may require Ecology review

NWPs 1, 2, 4, 5, 7, 9, 10, 11, 15, 18, 20, 22, 25, 28, 30, and 31 have been certified for 401 if State Conditions have been met and no further action is required.

Individual

NWPs 8, 17, 21, 37, 44, 49, 50, 51, and 52 have been denied and will require an Individual 401 Certification from Ecology.

Review and Issuance Phase

Applicant submits project information to Ecology.

Ecology reviews project information, may request additional information

Incomplete

Complete

Ecology determines that the project meets NWP and 401 requirements

Ecology determines that the project does not meet NWP and 401 requirements

Applicant may proceed with project, must meets terms and conditions of NWP

Ecology issues Letter of Verification

Corps or Ecology issues a Public Notice — Minimum 20 days

Public can submit comments on Public Notice

Corps and Ecology review JARPA, supporting documents (e.g. mitigation plan), and public comments

Applicant submits additional information to the Corps of Engineers and Ecology

Incomplete

Complete

Ecology makes decision on 401 Certification

Deny

Approve

Appeal Phase

Applicant can appeal decision to Washington Pollution Control Hearing Board (PCHB) — 30 days

401 Certification Denied

Ecology issues 401 Certification

Corps issues 404 Permit

Public can appeal decision to Washington Pollution Control Hearing Board (PCHB) — 30 days

For Corps Individual Permits, Ecology has 1 year from date of Joint Public Notice to issue 401 Water Quality Certification. For Corps Nationwide Permits, Ecology has 180 days from receipt of application materials and a copy of the Corps Nationwide Authorization letter to issue a 401 decision (LOV or 401 WQC).

Legend: (A) =Hyperlink → =Progression — → =Revision ⋯▸ =Optional

For more information on this or any permitting process visit http://www.oria.wa.gov or call the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043

Rev. 2014 04 03

Governor's Office for Regulatory Innovation and Assistance

Permit for Discharge of Dredge or Fill Material (Section 404)

Applicant | **US Army Corps of Engineers** | **Public or other interested party**

Application Phase

Start

Applicant reviews activities requiring a Permit under Section 404 of the Clean Water Act (CWA) — (A)

Corps makes jurisdictional determination

- **Corps has jurisdiction**
- **Corps does not have jurisdiction** → **Section 404 permit not required**

Pre-application Meeting (optional) — (B)

Puget Sound Dredge Disposal Analysis — (C)

Applicant submits Joint Aquatic Resource Permit Application (JARPA) to the Corps along with any required supplemental materials (wetland delineations, etc.) — (D)

Review and Issuance Phase

Corps project manager reviews application for completeness

- **Incomplete** → **Corps** requests additional information → **Applicant** submits additional information as requested
- **Complete**

Corps reviews activities to determine what kind of permit the project qualifies for: Regional, Nationwide, or Individual — (E) — 45 Days

- **Individual Permit Required**
- **Qualifies for a Nationwide Permit**

Corps issues Public Notice — 7-30 Days

Interested Parties submit comments to the Corps — 7-30 days

Corps evaluates comments and possible effects of the project

- **No Objections** — 30-90 days
- **Major Objections** — 90-120 days
- **Significant Environmental Impact**

Corps prepares an Environmental Impact Statement as required by NEPA — Up to 1 year or more

Corps notifies applicant whether or not a 401 Certification and/or Coastal Zone Management Certification (CZM) is required from the state

- **Required**
  - **Individual Permit**
  - **Nationwide Permit (NWP)**
- **Not Required**

Applicant coordinates with the Washington State Department of Ecology to obtain a 401 Water Quality Certification or a certification of compliance with CZM

Corps issues decision after state issues a decision on 401 certification and Coastal Consistency

Appeal Phase

Permit Denied

Permit Issued

Applicant may appeal decision to the Corps Division Office — (G) — Within 60 days of decision

Interested Parties may appeal the decision to the Corps Division Office — Within 60 days of decision

Legend: (A) =Hyperlink → =Progression — → =Revision ····▶ =Optional

For more information on this or any permitting process visit http://www.oria.wa.gov or call the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043

Rev. 2014 04 03