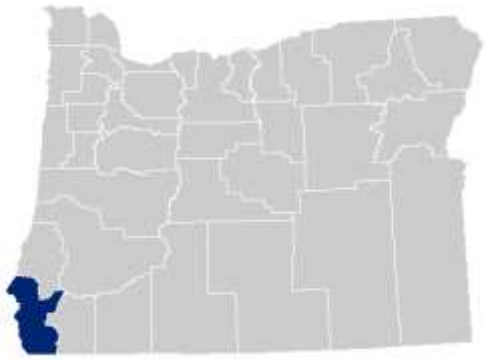
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2



CURRY COUNTY, OREGON

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
CITY OF BROOKINGS	**410053**
CITY OF GOLD BEACH	**410054**
CITY OF PORT ORFORD	**410272**
CURRY COUNTY UNINCORPORATED AREAS	**410052**

FEMA

REVISED PRELIMINARY:

August 12, 2016

FLOOD INSURANCE STUDY NUMBER
41015CV001B

Version Number 2.2.2.1

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Volume 2 (Date to be determined)

Exhibits

Flood Profiles	Panel
Chetco River	01-05 P
Elk River	06-19 P
Hunter Creek	20-25 P
Pistol River	26-30 P
Rogue River	31-39 P
Rogue River at Agness	40 P
Sixes River	41-42 P
Winchuck River	43-45 P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
CURRY COUNTY, OREGON

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is

later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Curry County, Oregon.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)
City of Brookings	410053	17100312	41015C1230F, 41015C1233F, 41015C1234F, 41015C1241F, 41015C1242F
City of Gold Beach	410054	17100306, 17100310, 17100312	41015C0766F, 41015C0767F, 41015C0768F, 41015C0906F, 41015C0907F
City of Port Orford	410272	17100306	41015C0170F, 41015C0190F, 41015C0357F, 41015C0380F

Table 1: Listing of NFIP Jurisdictions (Continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)
Curry County Unincorporated Areas	410052	17100306, 17100310, 17100311, 17100312, 18010101	41015C0050F, 41015C0075F, 41015C0160F, 41015C0170F, 41015C0175F, 41015C0180F, 41015C0185F, 41015C0190F, 41015C0195F, 41015C0357F, 41015C0380F, 41015C0385F, 41015C0400F, 41015C0475F, 41015C0585F, 41015C0595F, 41015C0625F, 41015C0650F, 41015C0655F, 41015C0660F, 41015C0665F, 41015C0670F, 41015C0758F, 41015C0760F, 41015C0766F, 41015C0767F, 41015C0768F, 41015C0780F, 41015C0785F, 41015C0805F, 41015C0850F, 41015C0906F, 41015C0907F, 41015C0910F, 41015C0920F, 41015C0930F, 41015C0940F, 41015C0945F, 41015C1060F, 41015C1100F, 41015C1120F, 41015C1125F, 41015C1230F, 141015C1233F, 41015C1234F, 41015C1241F, 141015C242F, 41015C1245F, 41015C1255F, 41015C1260F, 41015C1265F, 41015C1270F, 41015C1380F

*Panels not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

  It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Curry County became effective on September 25, 2009. Refer to Table 28 for information about subsequent revisions to the FIRMs.

- FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

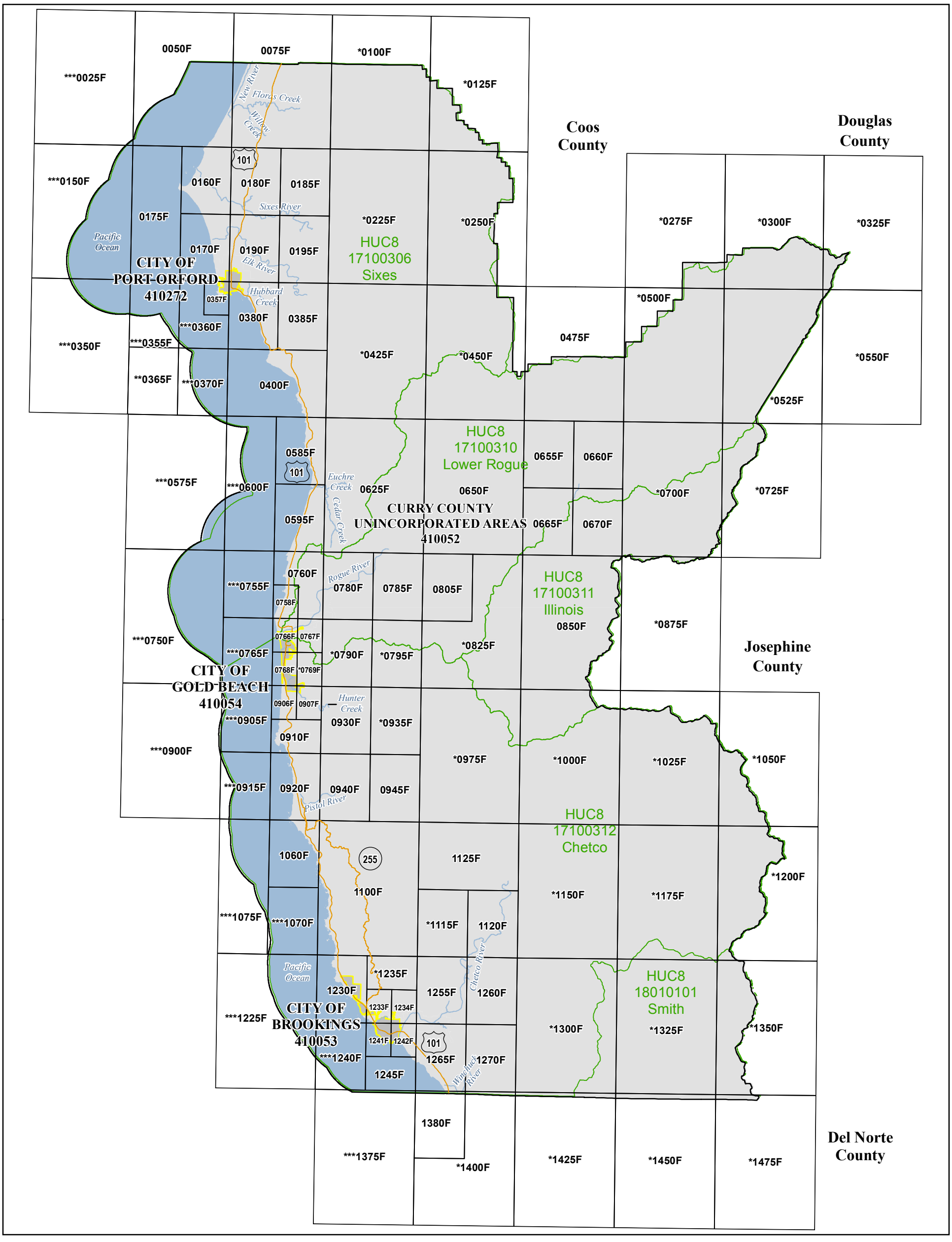
  The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at http://www.fema.gov or contact your appropriate FEMA Regional Office for more information about this program.

- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

  Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database. For all other levees, the user is encouraged to contact the appropriate local community.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at http://www.fema.gov.

Figure 1: Firm Panel Index



1 inch = 32,083 feet

N

Miles

0 3 6 12

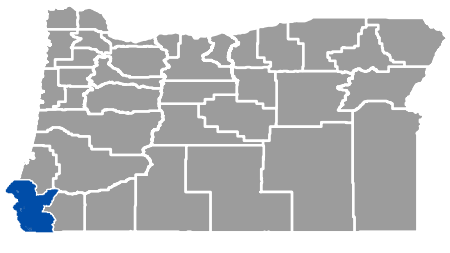
Map Projection:
Universal Transverse Mercator Zone 10 North;
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SEE FIS REPORT FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
** PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY
*** PANEL NOT PRINTED - OPEN WATER AREA



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

CURRY COUNTY, OREGON AND INCORPORATED AREAS

PANELS PRINTED:

0050, 0075, 0160, 0170, 0175, 0180, 0185, 0190, 0195, 0357, 0380, 0385, 0400, 0475, 0585, 0595, 0625, 0650, 0655, 0660, 0665, 0670, 0758, 0760, 0766, 0767, 0768, 0780, 0785, 0805, 0850, 0906, 0907, 0910, 0920, 0930, 0940, 0945, 1060, 1100, 1120, 1125, 1230, 1233, 1234, 1241, 1242, 1245, 1255, 1260, 1265, 1270, 1380

U.S. DEPARTMENT OF HOMELAND SECURITY

FEMA

MAP NUMBER
41015CIND0B

MAP REVISED
PRELIMINARY

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

Coastal Base Flood Elevations shown on the map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the FIS Report for this jurisdiction. 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 the FIRM.

FLOODWAY INFORMATION: 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 FIS Report for this jurisdiction.

Figure 2. FIRM Notes to Users (Continued)

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 10. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane 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.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988. 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 http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by the Oregon Department of Geology and Mineral Industries (DOGAMI). Data sources include DOGAMI, Oregon Lidar Consortium, U.S. Department of Agriculture, Oregon Department of Land Conservation and Development, Curry County, U.S. Army Corps of Engineers, U.S. Geological Survey, Bureau of Land Management, Oregon Department of Administrative Services, and the National Oceanic and Atmospheric Administration. Base map information was rectified to 3-foot resolution LiDAR topographic data acquired in 2008. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The 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 may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the 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 the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Figure 2. FIRM Notes to Users (Continued)

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Curry County, Oregon, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Curry County, Oregon**,** effective date **TBD.**

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in Zone VE.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. 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. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood 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.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.
	Regulatory Floodway determined in Zone AE.

Figure 3: Map Legend for FIRM (Continued)

OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible
NO SCREEN	Unshaded Zone X: Areas determined to be outside the 0.2% annual chance flood hazard
FLOOD HAZARD AND OTHER BOUNDARY LINES	
(ortho) (vector)	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
Aqueduct *Channel* *Culvert* *Storm Sewer*	Channel, Culvert, Aqueduct, or Storm Sewer
Dam *Jetty* *Weir*	Dam, Jetty, Weir
	Levee, Dike, or Floodwall accredited or provisionally accredited to reduce the flood risk from the 1% annual chance flood.
	Levee, Dike or Floodwall not accredited to reduce the flood risk from the 1% annual chance flood.
Bridge	Bridge

Figure 3: Map Legend for FIRM (Continued)

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.*	
CBRS AREA 09/30/2009	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
OTHERWISE PROTECTED AREA 09/30/2009	Otherwise Protected Area
REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
513	Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity

Figure 3: Map Legend for FIRM (Continued)

BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16’ 52.5”	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Curry County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, "Map Legend for FIRM", describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 3 indicates the flood zone designations for each flooding source and each community within Curry County, Oregon, respectively.

Table 2, "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

2.2 Floodways

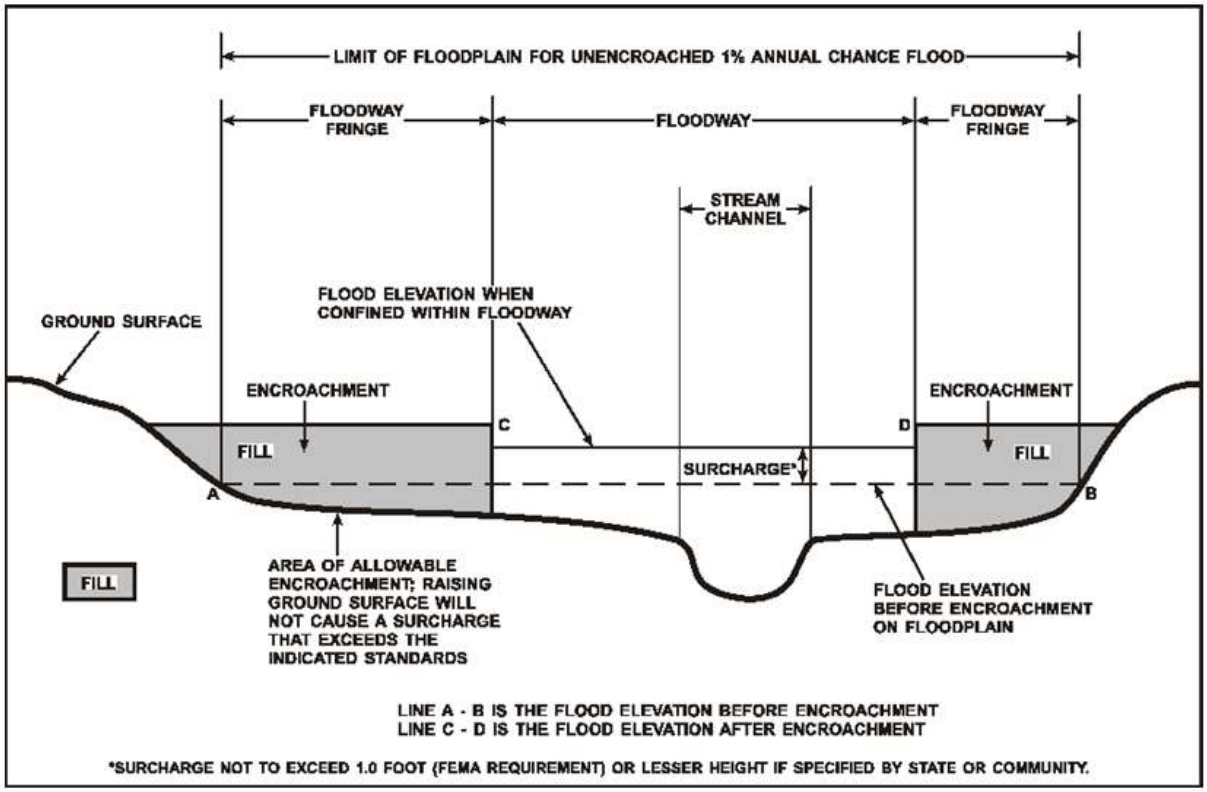
Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself.

One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections.

Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

All floodways that were developed for this FIS project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and l% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Boulder Creek	Curry County Unincorporated Areas	Confluence with Euchre Creek	0.3 miles upstream of confluence with Euchre Creek	17100306	0.3	*	N	A	April 2014
Cedar Creek	Curry County Unincorporated Areas	Confluence with Euchre Creek	Downstream of Onyx Street	17100306	4.7	*	N	A	April 2014
Chetco River (Lower, Approximate)	City of Brookings, Curry County Unincorporated Areas	Confluence with Pacific Ocean	100 feet downstream of U.S. Highway 101 Bridge	17100312	0.7	*	N	A	April 2014
Chetco River (Lower, Detailed)	City of Brookings, Curry County Unincorporated Areas	100 feet downstream of U.S. Highway 101 Bridge	0.2 miles upstream of North Bank Chetco River Road	17100312	9.9	*	Y	AE	1983
Chetco River (Middle, Approximate)	Curry County Unincorporated Areas	0.2 miles upstream of North Bank Chetco River Road	0.4 miles upstream of North Bank Chetco River Road	17100312	0.3	*	N	A	April 2014
Chetco River (Upper, Approximate)	Curry County Unincorporated Areas	0.1 miles downstream of First Creek	0.6 miles upstream of Panther Creek	17100312	3.3	*	N	A	April 2014
Crystal Creek	Curry County Unincorporated Areas	Confluence with Sixes River	0.7 miles upstream of Hereford Road	17100306	1.3	*	N	A	April 2014
Dry Creek (Chetco River Tributary)	Curry County Unincorporated Areas	Confluence with Chetco River	0.1 miles upstream of South Bank Chetco River Road	17100312	0.4	*	N	A	April 2014
Dry Creek (Sixes River Tributary)	Curry County Unincorporated Areas	Confluence with Sixes River	0.7 miles upstream of confluence with Sixes River	17100306	0.7	*	N	A	April 2014

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Elk River	Curry County Unincorporated Areas	Confluence with Pacific Ocean	Downstream of Anvil Creek	17100306	13	*	Y	AE	1983
Emily Creek	Curry County Unincorporated Areas	Confluence with Chetco River	0.5 miles upstream of confluence with Chetco River	17100312	0.5	*	N	A	April 2014
Euchre Creek	Curry County Unincorporated Areas	Confluence with Pacific Ocean	Upstream of Boulder Creek	17100306	3	*	N	A	April 2014
Floras Creek	Curry County Unincorporated Areas	Confluence with New River	0.7 miles upstream of Joe Cox Creek	17100306	6.4	*	N	A	April 2014
Floras Lake	Curry County Unincorporated Areas	Confluence with New River	N/A	17100306	*	0.6	N	A	April 2014
Garrison Lake	City of Port Orford, Curry County Unincorporated Areas	Confluence with Pacific Ocean	N/A	17100306	*	0.3	N	A	April 2014
Hubbard Creek	Curry County Unincorporated Areas	Confluence with Pacific Ocean	1.3 miles upstream of Hubbard Creek Road	17100306	2.7	*	N	A	April 2014
Hunter Creek	City of Gold Beach, Curry County Unincorporated Areas	Confluence with Pacific Ocean	0.3 miles upstream of Conn Creek	17100312	6.5	*	Y	AE	1983
Illinois River	Curry County Unincorporated Areas	Confluence with Rogue River	County Boundary	17100311	6.5	*	N	A	1977

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Jack Creek	Curry County Unincorporated Areas	Confluence with Chetco River	0.7 miles upstream of South Bank Chetco River Road	17100312	1.2	*	N	A	April 2014
Miller Creek	Curry County Unincorporated Areas	Confluence with Cedar Creek	0.5 miles upstream of confluence with Cedar Creek	17100306	0.6	*	N	A	April 2014
New River	Curry County Unincorporated Areas	Curry County northern boundary	3.3 miles upstream of County boundary	17100306	4.3	*	N	A	April 2014
North Fork Hubbard Creek	Curry County Unincorporated Areas	Confluence with Hubbard Creek	0.7 miles upstream of confluence with Hubbard Creek	17100306	0.8	*	N	A	April 2014
Pacific Ocean	City of Brookings, City of Gold Beach, City of Port Orford, Curry County Unincorporated Areas	Entire Curry County coastline	Entire Curry County coastline	NA	77	*	N	VE, AE, V	September 2014
Pistol River (Lower, Detailed)	Curry County Unincorporated Areas	Confluence with Pacific Ocean	1.5 miles downstream of Glade Creek	17100312	3.9	*	Y	AE	1983
Pistol River (Middle, Approximate)	Curry County Unincorporated Areas	1.5 miles downstream of Glade Creek	1.3 miles downstream of Glade Creek	17100312	0.2	*	N	A	April 2014
Pistol River (Upper, Approximate)	Curry County Unincorporated Areas	1.3 miles downstream of Glade Creek	2 miles upstream of Deep Creek	17100312	3.3	*	N	A	1977
Ransom Creek	City of Brookings	Confluence with Pacific Ocean	0.5 miles upstream of U.S Highway 101	17100312	0.6	*	N	A	April 2014

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Riley Creek	City of Gold Beach	Confluence with Pacific Ocean	Downstream of U.S. Highway 101	17100312	0.2	*	N	A	April 2014
Rogue River (Lower, Detailed)	City of Gold Beach, Curry County Unincorporated Areas	0.9 miles downstream of U.S. Highway 101	0.3 miles upstream of Abe Creek	17100310	10.2	*	Y	AE	1981
Rogue River (Lower, Approximate)	Curry County Unincorporated Areas	0.3 miles upstream of Abe Creek	0.2 miles upstream of Lobster Creek	17100310	1	*	N	A	April 2014
Rogue River (Middle, Approximate)	Curry County Unincorporated Areas	0.2 miles upstream of Lobster Creek	0.2 miles upstream of Illinois River	17100310	16	*	N	A	1977
Rogue River at Agnes	Curry County Unincorporated Areas	0.2 miles upstream of Illinois River	Upstream of Muleshoe Creek	17100310	1.2	*	Y	AE	1981
Rogue River (Upper, Approximate)	Curry County Unincorporated Areas	Upstream of Muleshoe Creek	0.2 miles upstream of Hicks Creek	17100310	8	*	N	A	1977
Rogue River Mouth	City of Gold Beach, Curry County Unincorporated Areas	Confluence with Pacific Ocean	0.9 miles downstream of U.S. Highway 101	17100310	*	0.06	N	AE	1981
Sixes River (Lower, Approximate)	Curry County Unincorporated Areas	Confluence with Pacific Ocean	0.8 miles downstream of U.S. Highway 101	17100306	4.4	*	N	A	April 2014
Sixes River (Middle, Detailed)	Curry County Unincorporated Areas	0.8 miles downstream of U.S. Highway 101	0.8 miles upstream of U.S. Highway 101	17100306	1.6	*	Y	AE	1981
Sixes River (Upper, Approximate)	Curry County Unincorporated Areas	0.8 miles upstream of U.S. Highway 101	0.6 miles upstream of Pipeline Creek	17100306	6.5	*	N	A	April 2014

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Unnamed Stream (Hubbard Creek)	Curry County Unincorporated Areas	Confluence with Hubbard Creek	Downstream of Hubbard Creek Road	17100306	0.8	*	N	A	April 2014
Willow Creek	Curry County Unincorporated Areas	Confluence with Floras Creek	0.4 miles upstream of U.S. Highway 101	17100306	2.6	*	N	A	April 2014
Winchuck River (Lower)	Curry County Unincorporated Areas	Confluence with Pacific Ocean	County Boundary	17100312	1.2	*	Y	AE	1983
Winchuck River (Upper)	Curry County Unincorporated Areas	County Boundary	1 mile downstream of Deer Creek	17100312	4.8	*	Y	AE	1983

* Not Calculated

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

This section is not applicable to this FIS project.

2.5 Coastal Flood Hazard Areas

For most areas along rivers, streams, and small lakes, BFEs and floodplain boundaries are based on the amount of water expected to enter the area during a 1% annual chance flood and the geometry of the floodplain. Floods in these areas are typically caused by storm events. However, for areas on or near ocean coasts, large rivers, or large bodies of water, BFE and floodplain boundaries may need to be based on additional components, including storm surges and waves. Communities on or near ocean coasts face flood hazards caused by offshore seismic events as well as storm events.

Coastal flooding sources that are included in this FIS project are shown in Table 2.

2.5.1 Water Elevations and the Effects of Waves

Specific terminology is used in coastal analyses to indicate which components have been included in evaluating flood hazards.

The stillwater elevation (SWEL or still water level) is the surface of the water resulting from astronomical tides, storm surge, and freshwater inputs, but excluding wave setup contribution or the effects of waves.

- *Astronomical tides* are periodic rises and falls in large bodies of water caused by the rotation of the earth and by the gravitational forces exerted by the earth, moon and sun.
- *Storm surge* is the additional water depth that occurs during large storm events. These events can bring air pressure changes and strong winds that force water up against the shore.
- *Freshwater inputs* include rainfall that falls directly on the body of water, runoff from surfaces and overland flow, and inputs from rivers.

The 1% annual chance stillwater elevation is the stillwater elevation that has been calculated for a

storm surge from a 1% annual chance storm. The 1% annual chance storm surge can be determined from analyses of tidal gage records, statistical study of regional historical storms, or other modeling approaches. Stillwater elevations for storms of other frequencies can be developed using similar approaches.

The total stillwater elevation (also referred to as the mean water level) is the stillwater elevation plus wave setup contribution but excluding the effects of waves.

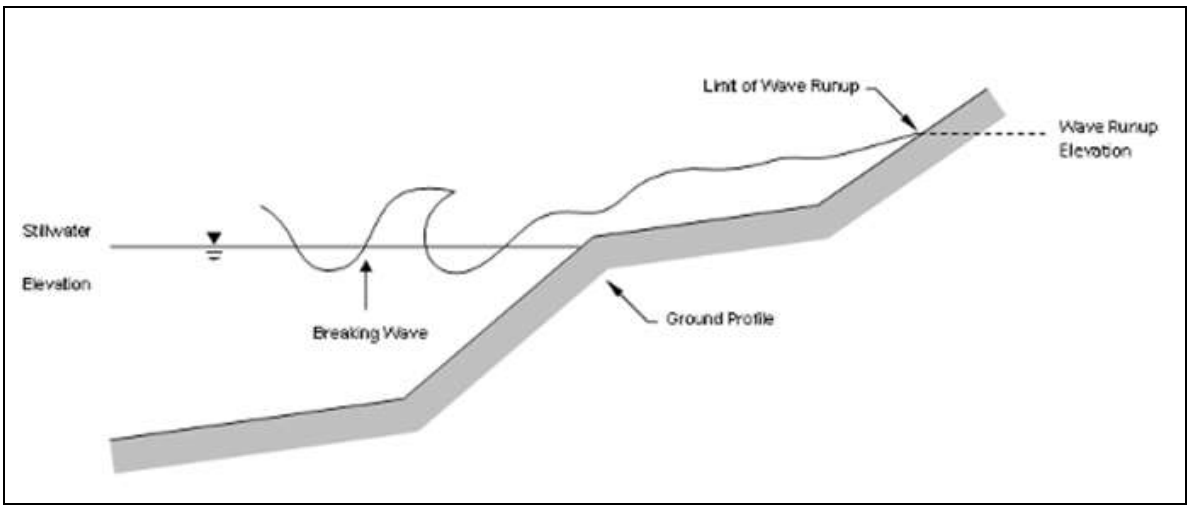
- *Wave setup* is the increase in stillwater elevation at the shoreline caused by the reduction of waves in shallow water. It occurs as breaking wave momentum is transferred to the water column.

Like the stillwater elevation, the total stillwater elevation is based on a storm of a particular frequency, such as the 1% annual chance storm. Wave setup is typically estimated using standard engineering practices or calculated using models, since tidal gages are often sited in areas sheltered from wave action and do not capture this information.

Coastal analyses may examine the effects of overland waves by analyzing storm-induced erosion, overland wave propagation, wave runup, and/or wave overtopping.

- *Storm-induced erosion* is the modification of existing topography by erosion caused by a specific storm event, as opposed to general erosion that occurs at a more constant rate.
- *Overland wave propagation* describes the combined effects of variation in ground elevation, vegetation, and physical features on wave characteristics as waves move onshore.
- *Wave runup* is the uprush of water from wave action on a shore barrier. It is a function of the roughness and geometry of the shoreline at the point where the stillwater elevation intersects the land.
- *Wave overtopping* refers to wave runup that occurs when waves pass over the crest of a barrier.

Figure 5: Wave Runup Transect Schematic



2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

For coastal communities along the Atlantic and Pacific Oceans, the Gulf of Mexico, the Great Lakes, and the Caribbean Sea, flood hazards must take into account how storm surges, waves, and extreme tides interact with factors such as topography and vegetation. Storm surge and waves must also be considered in assessing flood risk for certain communities on rivers or large inland bodies of water.

Beyond areas that are affected by waves and tides, coastal communities can also have riverine floodplains with designated floodways, as described in previous sections.

Floodplain Boundaries

In many coastal areas, storm surge is the principle component of flooding. The extent of the 1% annual chance floodplain in these areas is derived from the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm. The methods that were used for calculation of total stillwater elevations for coastal areas are described in Section 5.3 of this FIS Report. Location of total stillwater elevations for coastal areas are shown in Figure 8, "1% Annual Chance Total Stillwater Levels for Coastal Areas."

In some areas, the 1% annual chance floodplain is determined based on the limit of wave runup or wave overtopping for the 1% annual chance storm surge. The methods that were used for calculation of wave hazards are described in Section 5.3 of this FIS Report.

Table 15 presents the types of coastal analyses that were used in mapping the 1% annual chance floodplain in coastal areas.

Coastal BFEs

Coastal BFEs are calculated as the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm plus the additional flood hazard from overland wave effects (storm-induced erosion, overland wave propagation, wave runup and wave overtopping).

Where they apply, coastal BFEs are calculated along transects extending from offshore to the limit of coastal flooding onshore. Results of these analyses are accurate until local topography, vegetation, or development type and density within the community undergoes major changes.

Parameters that were included in calculating coastal BFEs for each transect included in this FIS Report are presented in Table 17, "Coastal Transect Parameters." The locations of transects are shown in Figure 6, "Transect Location Map." More detailed information about the methods used in coastal analyses and the results of intermediate steps in the coastal analyses are presented in Section 5.3 of this FIS Report. Additional information on specific mapping methods is provided in Section 6.4 of this FIS Report.

2.5.3 Coastal High Hazard Areas

Certain areas along the open coast and other areas may have higher risk of experiencing structural damage caused by wave action and/or high-velocity water during the 1% annual chance flood. These areas will be identified on the FIRM as Coastal High Hazard Areas.

- *Coastal High Hazard Area (CHHA)* is a SFHA extending from offshore to the inland limit of the primary frontal dune (PFD) or any other area subject to damages caused by wave action and/or high-velocity water during the 1% annual chance flood.
- *Primary Frontal Dune (PFD)* is a continuous or nearly continuous mound or ridge of sand with relatively steep slopes immediately landward and adjacent to the beach. The PFD is subject to erosion and overtopping from high tides and waves during major coastal storms.

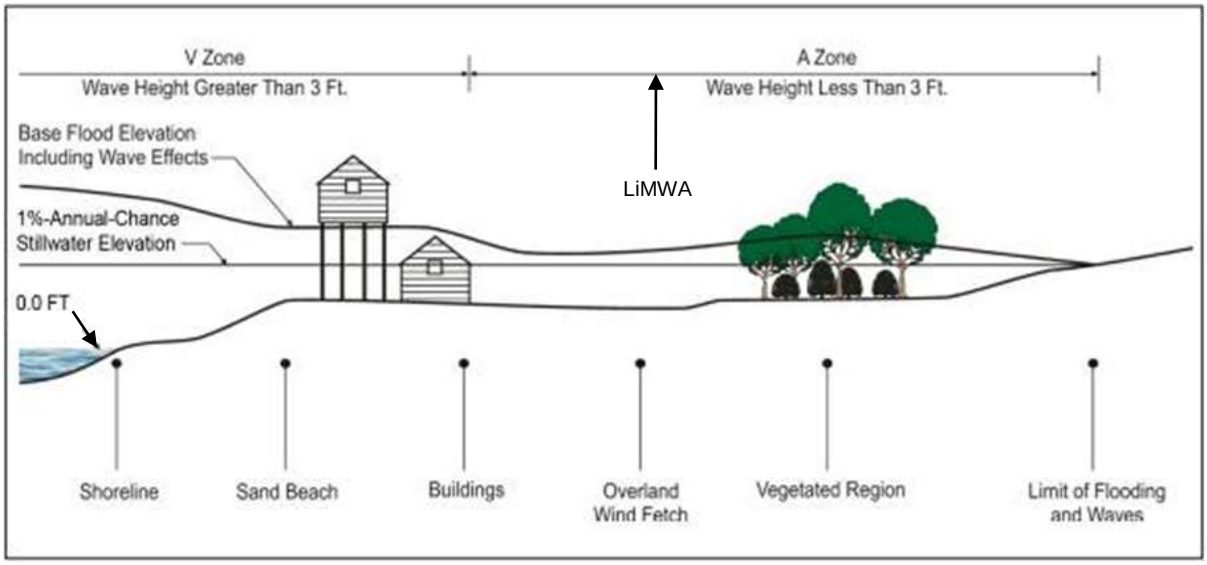
CHHAs are designated as "V" zones (for "velocity wave zones") and are subject to more stringent regulatory requirements and a different flood insurance rate structure. The areas of greatest risk are shown as VE on the FIRM. Zone VE is further subdivided into elevation zones and shown with BFEs on the FIRM.

The landward limit of the PFD occurs at a point where there is a distinct change from a relatively steep slope to a relatively mild slope; this point represents the landward extension of Zone VE. Areas of lower risk in the CHHA are designated with Zone V on the FIRM. More detailed information about the identification and designation of Zone VE is presented in Section 6.4 of this FIS Report.

Areas that are not within the CHHA but are SFHAs may still be impacted by coastal flooding and damaging waves; these areas are shown as "A" zones on the FIRM.

Figure 6, "Coastal Transect Schematic," illustrates the relationship between the base flood elevation, the 1% annual chance stillwater elevation, and the ground profile as well as the location of the Zone VE and Zone AE areas in an area without a PFD subject to overland wave propagation. This figure also illustrates energy dissipation and regeneration of a wave as it moves inland.

Figure 6: Coastal Transect Schematic



Methods used in coastal analyses in this FIS project are presented in Section 5.3 and mapping methods are provided in Section 6.4 of this FIS Report.

Coastal floodplains are shown on the FIRM using the symbology described in Figure 3, "Map Legend for FIRM." In many cases, the BFE on the FIRM is higher than the stillwater elevations shown in Table 15 due to the presence of wave effects. The higher elevation should be used for construction and/or floodplain management purposes.

2.5.4 Limit of Moderate Wave Action

Laboratory tests and field investigations have shown that wave heights as little as 1.5 feet can cause damage to and failure of typical Zone AE building construction. Wood-frame, light gage steel, and masonry walls on shallow footings or slabs are subject to damage when exposed to waves less than 3 feet in height. Other flood hazards associated with coastal waves (floating debris, high velocity flow, erosion, and scour) can also damage Zone AE construction.

Therefore, a LiMWA boundary may be shown on the FIRM as an informational layer to assist coastal communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The location of the LiMWA relative to Zone VE and AE is shown in Figure 6.

The effects of wave hazards in Zone AE between Zone VE (or the shoreline where Zone VE is not identified) and the limit of the LiMWA boundary are similar to, but less severe than, those in Zone VE where 3-foot or greater breaking waves are projected to occur during the 1% annual chance flooding event. Communities are therefore encouraged to adopt and enforce more stringent floodplain management requirements than the minimum NFIP requirements for LiMWA. The NFIP Community Rating System provides credits for these actions.

Where wave runup elevations dominate over wave heights, there is no evidence to date of significant damage to residential structures by runup depths less than 3 feet. Examples of these areas include areas with steeply sloped beaches, bluffs, or flood protection structures that lie parallel to the shore. In these areas, the FIRM shows the LiMWA immediately landward of the VE/AE boundary. Similarly, in areas where the Zone VE designation is based on the presence of a primary frontal dune or wave overtopping, the LiMWA is delineated immediately landward of the Zone VE/AE boundary.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in the unincorporated and incorporated areas of Curry County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
City of Brookings	A, AE, VE, X
City of Gold Beach	A, AE, VE, X
City of Port Orford	A, AE, V, VE, X
Curry County (Unincorporated Areas)	A, AE, V, VE, X

3.2 Coastal Barrier Resources System

The Coastal Barrier Resources Act (CBRA) of 1982 was established by Congress to create areas along the Atlantic and Gulf coasts and the Great Lakes, where restrictions for Federal financial assistance including flood insurance are prohibited. In 1990, Congress passed the Coastal Barrier Improvement Act (CBIA), which increased the extent of areas established by the CBRA and added "Otherwise Protected Areas" (OPA) to the system. These areas are collectively referred to as the John. H Chafee Coastal Barrier Resources System (CBRS). The CBRS boundaries that have been identified in the project area are in Table 4, "Coastal Barrier Resource System Information."

Table 4: Coastal Barrier Resources System Information

[Not Applicable to this FIS Project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Sixes	17100306	Sixes River	This watershed encompasses much of the northern half of the county, with its headwaters in the Coastal Range	752
Lower Rogue	17100310	Rogue River	This watershed contains the Rogue River with its headwaters reaching towards the Cascade Range	906
Illinois	17100311	Illinois River	This watershed contains the Illinois River, with its headwaters in the Coastal Range	989
Chetco	17100312	Chetco River	This watershed encompasses much of the southern half of the county, with its headwaters in the Coastal Range	775

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Curry County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems[1]
All sources	Riverine flooding in Curry County usually occurs during the months of November through February. Minor flooding occurs annually in some areas, but produces very little damage. The major damaging floods are the result of winter storms producing a sustained intense rainfall which, when combined with higher than normal tides, increase the damaging effects in the lower reaches of the rivers.
Chetco River	Due to the steep terrain in the Chetco River watershed, the water can rise rapidly. The flood duration is relatively short, usually less than two days. Occasionally, during an intense, long duration rainfall, the flood duration will be longer. The highest discharge floods are usually associated with frozen ground, an accumulation of snow at higher elevations, and a warming trend in rainstorms. The largest flood of recent record on the Chetco occurred in December 1964. The peak discharge was 85,400 cfs with an estimated interval of 150 years. Damages resulting from this storm were approximately

Table 6: Principal Flood Problems (Continued)

Flooding Source	Description of Flood Problems[1]
	$1.5 million.
Elk River	The largest flood of recent record on the Elk River occurred in December 1964. Extensive flooding resulted from several days of rainfall, but there were no reports of residences being flooded.
Hunter Creek	On Hunter Creek, the flood of record was the December 1964 flood. Several areas experienced extremely deep flooding, but very little damage was reported.
Pistol River	The largest flood of recent record on the Pistol River occurred in December 1964. Extensive flooding resulted from several days of rainfall, but there were no reports of residences being flooded.
Rogue River	In the Rogue River Basin, severe flooding occurs at about 10-year intervals, usually resulting from several days of sustained heavy rainfall and is sometimes augmented by snowmelt in the Cascade Mountains. Flooding lasts for 2 to 3 days with peak stages lasting for only a few hours. The flood of December 1964 on the Rogue River equaled or exceeded the historic floods of record of the 1800's. The USACE estimated the peak flow of the Rogue River at Gold Beach during this flood to be 500,000 cubic feet per second (cfs). The estimated peak flow was revised to 550,000 cfs, with a return period of approximately 130 years. In the vicinity of Gold Beach, 24 commercial enterprises were heavily damaged, some with complete loss of structures.
Winchuck River	The December 1964 flood was the largest of recent record on the Winchuck River, but there were no damage reports.
Pacific Ocean	Ocean flooding is the result of higher than normal sea levels resulting from storms or a seismic disturbance on the ocean floor. Storms during the months of November through February produce storm surge and wind generated waves which combine with astronomical tide to cause the most frequent and serious flooding. Seismic sea waves, or tsunamis, which can occur at any time during the year, are the most destructive type of ocean flooding. Physical characteristics of continental shelf and shoreline affect all types of waves, focusing wave energy at some locations and dissipating energy in other areas.

[1]From Curry County FIS Report published on September 25, 2009 (FEMA 2009)

Table 7 contains information about historic flood elevations in the communities within Curry County.

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak[1]	Event Date	Approximate Recurrence Interval (years)	Source of Data
Rogue River	Rogue River near Agness, Oregon	68.03	12/23/1964	NA	USGS Gage 14372300
Chetco River	Chetco River near Brookings, Oregon	28.56	11/19/1996	NA	USGS Gage 14400000

[1]In feet relative to gage datum

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Curry County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Chetco River	N/A	Jetty	Port of Brookings	Protects against the 1%-annual-chance event
Pacific Ocean	N/A	Revetments	Numerous locations along the Curry County coast.	Rip-rap along the Curry County coastline
Pacific Ocean	N/A	Seawalls	Port Orford	Seawalls surrounding the dry dock at Port Orford
Rogue River	N/A	Jetty	Gold Beach	Protects against the 1%-annual-chance event

4.4 Levees

This section is not applicable to this FIS project.

Table 9: Levees

[Not Applicable to this FIS Project]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, "Incorporated Letters of Map Change", which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, "FIRM Revisions."

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 11. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 15.) Stream gage information is provided in Table 12.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)			
			10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Chetco River	Mouth at Pacific Ocean	352.0	61,400	84,100	94,500	118,100
	Upstream of Jack Creek	336.0	59,600	81,600	91,700	114,600
	Upstream of North Fork Chetco River	296.0	54,200	74,200	83,400	104,300
	Upstream of Big Emily Creek	275.0	51,700	70,800	79,600	99,500
Elk River	Mouth on Pacific Ocean	88.6	15,800	22,100	25,100	31,900
	Upstream of River Mile 5.1	81.1	15,400	21,500	24,400	31,000
	Upstream River Mile 10.5	74.1	14,900	20,900	23,700	30,100
Hunter Creek	Mouth on Pacific Ocean	43.9	14,200	18,200	20,200	24,900
	Upstream of Swinging Bridge Road	39.7	13,300	17,100	19,000	23,400
Pistol River	Mouth on Pacific Ocean	103.7	27,800	35,300	39,700	47,600
	Upstream of Crook Creek	101.3	27,300	34,700	39,000	46,800
	Upstream of River Mile 2.9	98.3	27,000	34,300	38,500	46,200
	Upstream of River Mile 4.1	96.6	26,600	33,800	38,000	45,600
Rogue River	Mouth of Pacific Ocean	5,171.0	286,200	448,400	521,200	695,000
	Downstream of Lobster Creek	5,130.0	284,100	445,200	517,500	690,000
Rogue River at Agness	Downstream of Illinois River	4,974.0	276,300	433,000	503,300	671,100
	Rogue River near Agness (Gage No. 14372300)	3,939.0	224,000	351,000	408,000	544,000
Sixes River	Downstream of Crystal Creek	127.0	20,600	26,700	29,100	35,200
	Downstream of Highway 101	116.0	18,300	23,800	26,200	31,400

Table 10: Summary of Discharges (Continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)			
			10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Winchuck River	Mouth on Pacific Ocean	71.3	19,700	28,000	31,800	41,700
	Upstream of South Fork Winchuck River	60.5	17,600	25,000	28,400	37,200
	Upstream of Moser Creek	57.3	16,800	23,800	27,100	35,500
	Upstream of Deer Creek	54.1	16,200	23,100	26,200	34,300

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to this FIS Project]

Table 11: Summary of Non-Coastal Stillwater Elevations

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Elk River Spit	Curry County	10.2	10.6	10.9	11.1	11.7
Garrison Lake	City of Port Orford, Curry County	*	*	*	16	*
	City of Port Orford, Curry County	*	*	*	17	*
	City of Port Orford	*	*	*	25	*
Pistol River Lagoon	Curry County	10.2	10.6	10.9	11.1	11.7
Rogue River	City of Gold Beach, Curry County	12.6	*	14.9	16	20.8

*Not calculated for this FIS project

Table 12: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Chetco River	14400000	USGS	Chetco River near Brookings, Oregon	271	10/1/1969	9/9/2013
Rogue River	14372300	USGS	Rogue River near Agness, Oregon	3,939	10/1/1960	9/9/2013

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, “Floodway Data.”

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Boulder Creek	Confluence with Euchre Creek	0.3 miles upstream of confluence with Euchre Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Cedar Creek	Confluence with Euchre Creek	Downstream of Onyx Street	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Chetco River (Lower, Approximate)	Confluence with Pacific Ocean	100 feet downstream of U.S. Highway 101 Bridge	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Chetco River (Lower, Detailed)	100 feet downstream of U.S. Highway 101 Bridge	0.2 miles upstream of North Bank Chetco River Road	SCS TR-20 Flood Routing Computer Program[3]	WSP-2[4]	1983	AE	Detailed study including bathymetric field survey, land use roughness considerations, and hydraulic structure dimensions.
Chetco River (Middle, Approximate)	0.2 miles upstream of North Bank Chetco River Road	0.4 miles upstream of North Bank Chetco River Road	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Chetco River (Upper, Approximate)	0.1 miles downstream of First Creek	0.6 miles upstream of Panther Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.

Table 13: Summary of Hydrologic and Hydraulic Analyses (Continued)

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Crystal Creek	Confluence with Sixes River	0.7 miles upstream of Hereford Road	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Dry Creek (Chetco River Tributary)	Confluence with Chetco River	0.1 miles upstream of South Bank Chetco River Road	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Dry Creek (Sixes River Tributary)	Confluence with Sixes River	0.7 miles upstream of confluence with Sixes River	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Elk River	Confluence with Pacific Ocean	Downstream of Anvil Creek	SCS TR-20 Flood Routing Computer Program[3]	WSP-2[4]	1983	AE	Detailed study including bathymetric field survey, land use roughness considerations, and hydraulic structure dimensions.
Emily Creek	Confluence with Chetco River	0.5 miles upstream of confluence with Chetco River	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Euchre Creek	Confluence with Pacific Ocean	Upstream of Boulder Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.

Table 13: Summary of Hydrologic and Hydraulic Analyses (Continued)

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Floras Creek	Confluence with New River	0.7 miles upstream of Joe Cox Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Hubbard Creek	Confluence with Pacific Ocean	1.3 miles upstream of Hubbard Creek Road	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Hunter Creek	Confluence with Pacific Ocean	0.3 miles upstream of Conn Creek	SCS TR-20 Flood Routing Computer Program[3]	WSP-2[4]	1983	AE	Detailed study including bathymetric field survey, land use roughness considerations, and hydraulic structure dimensions.
Jack Creek	Confluence with Chetco River	0.7 miles upstream of South Bank Chetco River Road	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Miller Creek	Confluence with Cedar Creek	0.5 miles upstream of confluence with Cedar Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
New River	Curry County northern boundary	3.3 miles upstream of County boundary	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.

Table 13: Summary of Hydrologic and Hydraulic Analyses (Continued)

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
North Fork Hubbard Creek	Confluence with Hubbard Creek	0.7 miles upstream of confluence with Hubbard Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Pistol River (Lower, Detailed)	Confluence with Pacific Ocean	1.5 miles downstream of Glade Creek	SCS TR-20 Flood Routing Computer Program[3]	WSP-2[4]	1983	AE	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Pistol River (Middle, Approximate)	1.5 miles downstream of Glade Creek	1.3 miles downstream of Glade Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Ransom Creek	Confluence with Pacific Ocean	0.5 miles upstream of U.S Highway 101	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Riley Creek	Confluence with Pacific Ocean	Downstream of U.S. Highway 101	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Rogue River (Lower, Detailed)	0.9 miles downstream of U.S. Highway 101	0.3 miles upstream of Abe Creek	Log Pearson Type III Frequency Analysis[5]	HEC-2[7]	1981	AE	Detailed study including bathymetric field survey, land use roughness considerations, and hydraulic structure dimensions.

Table 13: Summary of Hydrologic and Hydraulic Analyses (Continued)

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Rogue River (Lower, Approximate)	0.3 miles upstream of Abe Creek	0.2 miles upstream of Lobster Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Rogue River at Agnes	0.2 miles upstream of Illinois River	Upstream of Muleshoe Creek	Log Pearson Type III Frequency Analysis[5]	HEC-2[7]	1981	AE	Detailed study including bathymetric field survey, land use roughness considerations, and hydraulic structure dimensions.
Sixes River (Lower, Approximate)	Confluence with Pacific Ocean	0.8 miles downstream of U.S. Highway 101	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Sixes River (Middle, Detailed)	0.8 miles downstream of U.S. Highway 101	0.8 miles upstream of U.S. Highway 101	USGS Open-File Report 79-553[6]	HEC-2[7]	1981	AE	Detailed study including bathymetric field survey, land use roughness considerations, and hydraulic structure dimensions.
Sixes River (Upper, Approximate)	0.8 miles upstream of U.S. Highway 101	0.6 miles upstream of Pipeline Creek	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Unnamed Stream (Hubbard Creek)	Confluence with Hubbard Creek	Downstream of Hubbard Creek Road	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.

Table 13: Summary of Hydrologic and Hydraulic Analyses (Continued)

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Willow Creek	Confluence with Floras Creek	0.4 miles upstream of U.S. Highway 101	USGS/OWRD Regional Regression Model for Western Oregon[1]	HEC-RAS 4.1.0[2]	April 2014	A	Approximate study based on LiDAR topographic data with generalized roughness and assumed hydraulic structure dimensions.
Winchuck River (Lower)	Confluence with Pacific Ocean	County Boundary	SCS TR-20 Flood Routing Computer Program[3]	WSP-2[4]	1983	AE	Detailed study including bathymetric field survey, land use roughness considerations, and hydraulic structure dimensions.
Winchuck River (Upper)	County Boundary	1 mile downstream of Deer Creek	SCS TR-20 Flood Routing Computer Program[3]	WSP-2[4]	1983	AE	Detailed study including bathymetric field survey, land use roughness considerations, and hydraulic structure dimensions.

[1]Cooper 2005
[2]USACE 2010
[3]SCS 1969
[4]SCS 1976
[5]WRC 1977
[6]USGS 1979
[7]USACE 1976

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Boulder Creek	0.04	0.04
Cedar Creek	0.04	0.04
Chetco River (Lower, Detailed)	0.020-0.062	0.026-0.138
Chetco River (Lower, Approximate)	0.04	0.04
Chetco River (Middle, Approximate)	0.04	0.04
Chetco River (Upper, Approximate)	0.04	0.04
Crystal Creek	0.04	0.04
Dry Creek (Chetco River Tributary)	0.04	0.04
Dry Creek (Sixes River Tributary)	0.04	0.04
Elk River	0.025-0.060	0.030-0.150
Emily Creek	0.04	0.04
Euchre Creek	0.04	0.04
Floras Creek	0.04	0.04
Hubbard Creek	0.04	0.04
Hunter Creek	0.020-0.036	0.026-0.110
Jack Creek	0.04	0.04
Miller Creek	0.04	0.04
New River	0.04	0.04
North Fork Hubbard Creek	0.04	0.04
Pistol River (Lower, Detailed)	0.026-0.039	0.026-0.098
Pistol River (Middle, Approximate)	0.04	0.04
Ransom Creek	0.04	0.04
Riley Creek	0.04	0.04
Rogue River (Lower, Detailed)	0.025-0.040	0.040-0.080
Rogue River (Lower, Approximate)	0.04	0.04
Rogue River at Agness	0.025-0.040	0.040-0.080
Sixes River (Lower, Approximate)	0.04	0.04
Sixes River (Middle, Detailed)	0.042-0.050	0.080-0.090
Sixes River (Upper, Approximate)	0.04	0.04
Unnamed Stream (Hubbard Creek)	0.04	0.04
Winchuck River	0.022-0.030	0.026-0.120

5.3 Coastal Analyses

For the areas of Curry County that are impacted by coastal flooding processes, coastal flood hazard analyses were performed to provide estimates of coastal BFEs. Coastal BFEs reflect the increase in water levels during a flood event due to extreme tides and storm surge as well as overland wave effects.

The following subsections provide summaries of how each coastal process was considered for this FIS Report. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation. Table 15 summarizes the methods and/or models used for the coastal analyses. Refer to Section 2.5.1 for descriptions of the terms used in this section.

Table 15: Summary of Coastal Analyses

Flooding Source	Study Limits		Hazard Evaluated	Model or Method Used	Date Analysis was Completed
	From	To			
Pacific Ocean	Entire coastline of Curry County	Entire coastline of Curry County	Storm Surge	Statistical analyses of non-tidal residuals derived from measured tides (40-year record)	December 2013
Pacific Ocean	Entire coastline of Curry County	Entire coastline of Curry County	Stillwater Levels	Statistical analyses of non-tidal residuals derived from measured tides (40-year record) with GEV/Peak-over-threshold statistical analysis	December 2013
Pacific Ocean	Entire coastline of Curry County	Entire coastline of Curry County	Dune Erosion Analysis	Komar et al. 1999 & Kriebel and Dean 1993	July 2014
Pacific Ocean	Entire coastline of Curry County	Entire coastline of Curry County	Wave Generation	Measured time series of waves derived from NDBC buoys – 30-year record	November 2013
Pacific Ocean	Entire coastline of Curry County	Entire coastline of Curry County	Wave Modeling	SWAN	November 2013

Table 15: Summary of Coastal Analyses (Continued)

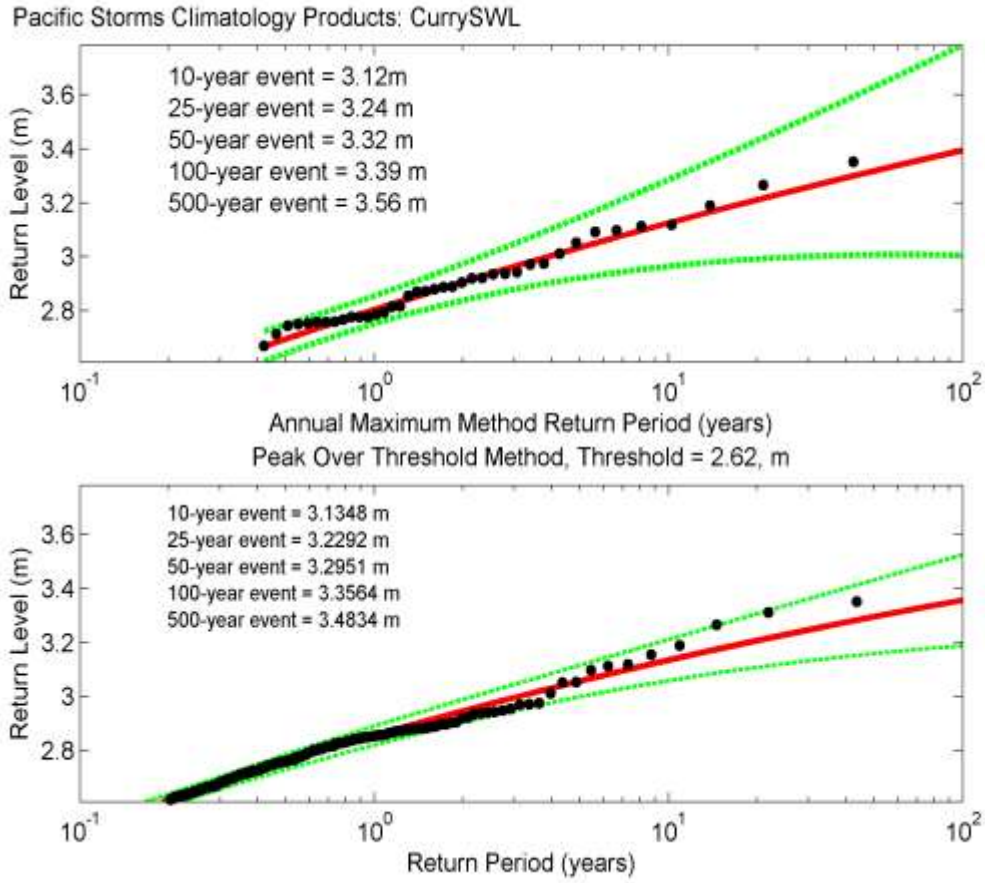
Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Pacific Ocean	Entire coastline of Curry County	Entire coastline of Curry County	Wave Setup	Integrated in the Stockdon et al. 2006 wave runup calculation. Can be calculated from equation #10 in Stockdon.	November 2013
Pacific Ocean	Entire coastline of Curry County	Entire coastline of Curry County	Wave Runup	Stockdon et al. 2006/TAW (van der Meer 2002) with GEV/Peak-over-threshold statistical analysis	July 2014

5.3.1 Total Stillwater Elevations

The total stillwater elevations (stillwater including storm surge plus wave setup) for the 1% annual chance flood were determined for areas subject to coastal flooding. The models and methods that were used to determine storm surge and wave setup are listed in Table 15. The stillwater elevation that was used for each transect in coastal analyses is shown in Table 17, "Coastal Transect Parameters."

Figure 8 shows the total stillwater elevations for the 1% annual chance flood that was determined for this coastal analysis.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas



Astronomical Tide

Astronomical tidal statistics were generated directly from the measured tides using the harmonic analysis method of least squares approach (Boon 2004) to estimate the amplitude and phase for any set of tidal constituents in Matlab. This approach was used to define the predicted tides, which were then subtracted from the measured tides to yield non-tidal residuals used to assess the frequency and magnitudes of storms surges on the Oregon coast.

Storm Surge Statistics

Storm surge is modeled based on characteristics of actual storms responsible for significant coastal flooding. The characteristics of these storms are typically determined by statistical study of the regional historical record of storms or by statistical study of tidal gages.

Tidal gages can be used instead of historic records of storms when the available tidal gage record for the area represents both the astronomical tide component and the storm surge component. Table 16 provides the gage name, managing agency, gage type, gage identifier, start date, end date, and statistical methodology applied to each gage used to determine the stillwater elevations.

Table 16: Tide Gage Analysis Specifics

Gage Name	Managing Agency of Tide Gage Record	Gage Type	Start Date	End Date	Statistical Methodology
9435380	NOAA	Tide	1967	2013	Peak-Over-Threshold
9432780	NOAA	Tide	1970	2013	Peak-Over-Threshold
9431647	NOAA	Tide	1978	2013	Peak-Over-Threshold

Wave Setup Analysis

Wave setup was computed during the storm surge modeling through the methods and models listed in Table 15 and included in the frequency analysis for the determination of the total stillwater elevations. In all cases Stockdon et al., (2006) was used to derive calculations of the wave runup and ultimately the total water level for dune-backed beaches. For beaches backed with structures or bluffs, Stockdon was used to initially calculate the 2% water level at the structure or bluff toe and subsequently the bore height. TAW was used with the local structure slope to calculate the wave runup on the structure or bluff face.

5.3.2 Waves

SWAN (Simulating WAves Nearshore) version number 40.81, a third generation wave model developed at the Technical University of Delft in the Netherlands (Booij et al. 1999; Ris et al. 1999), was used in this study. The model solves the spectral action balance equation using finite differences for a spectral or parametric input specified along the boundaries. The SWAN runs were executed in stationary mode and included physics that account for shoaling, refraction, and breaking. A matrix of SWAN runs were executed in order to assist with the development of a

lookup table for transforming waves offshore from Curry County.

5.3.3 Coastal Erosion

A single storm episode can cause extensive erosion in coastal areas. Storm-induced erosion was evaluated to determine the modification to existing topography that is expected to be associated with flooding events. Erosion was evaluated using the methods listed in Table 15. The post-event eroded profile was used for the subsequent transect-based onshore wave hazard analyses.

5.3.4 Wave Hazard Analyses

Overland wave hazards were evaluated to determine the combined effects of ground elevation, vegetation, and physical features on overland wave propagation and wave runup. These analyses were performed at representative transects along all shorelines for which waves were expected to be present during the floods of the selected recurrence intervals. The results of these analyses were used to determine elevations for the 1% annual chance flood.

Transect locations were chosen with consideration given to the physical land characteristics as well as development type and density so that they would closely represent conditions in their locality. Additional consideration was given to changes in the total stillwater elevation. Transects were spaced close together in areas of complex topography and dense development or where total stillwater elevations varied. In areas having more uniform characteristics, transects were spaced at larger intervals. Transects shown in Figure 9, “Transect Location Map,” are also depicted on the FIRM. Table 17 provides the location, stillwater elevations, and starting wave conditions for each transect evaluated for overland wave hazards. In this table, “starting” indicates the parameter value at the beginning of the transect.

Wave Height Analysis

Wave height analyses were performed to determine wave heights and corresponding wave crest elevations for the areas inundated by coastal flooding and subject to overland wave propagation hazards. Refer to Figure 6 for a schematic of a coastal transect evaluated for overland wave propagation hazards.

Wave heights and wave crest elevations were modeled using the methods and models listed in Table 15, “Summary of Coastal Analyses”.

Wave Runup Analysis

Wave runup analyses were performed to determine the height and extent of runup beyond the limit of stillwater inundation for the 1% annual chance flood. Wave runup elevations were modeled using the methods and models listed in Table 15.

Table 17: Coastal Transect Parameters

Flood Source	Coastal Transect	Total Water Levels T_{wl} (ft NAVD88)				Stillwater Elevations S_{wl} (ft NAVD88)	
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pacific Ocean	1	24.6	26.4	27.2	28.8	11.1	11.7
Pacific Ocean	2	32.7	27.1	27.3	27.6	11.1	11.7
Pacific Ocean	3	24.7	26.4	27.1	28.6	11.1	11.7
Pacific Ocean	4	21.8	22.9	23.2	23.9	11.1	11.7
Pacific Ocean	5	25.0	26.3	26.7	27.5	11.1	11.7
Pacific Ocean	6	30.7	32.5	33.1	34.3	11.1	11.7
Pacific Ocean	7	32.0	33.7	34.3	35.3	11.1	11.7
Pacific Ocean	8	33.1	35.6	36.5	38.1	11.1	11.7
Pacific Ocean	9	30.6	33.5	34.7	37.5	11.1	11.7
Pacific Ocean	10	28.6	31.5	33.1	37.9	11.1	11.7
Pacific Ocean	11	33.1	34.3	34.5	34.8	11.1	11.7
Pacific Ocean	12	31.8	32.8	33.0	33.2	11.1	11.7
Pacific Ocean	13	31.8	37.5	40.1	46.6	11.1	11.7
Pacific Ocean	14	29.2	32.1	33.4	36.3	11.1	11.7
Pacific Ocean	15	29.8	32.0	32.8	34.5	11.1	11.7
Pacific Ocean	16	30.8	33.7	34.8	37.5	11.1	11.7
Pacific Ocean	17	30.8	32.4	32.9	33.6	11.1	11.7

Table 17: Coastal Transect Parameters (Continued)

Flood Source	Coastal Transect	Total Water Levels T_{wl} (ft NAVD88)				Stillwater Elevations S_{wl} (ft NAVD88)	
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pacific Ocean	18	28.9	32.7	34.2	37.8	11.1	11.7
Pacific Ocean	19	27.6	30.4	31.3	32.8	11.1	11.7
Pacific Ocean	20	25.5	28.9	30.4	34.0	11.1	11.7
Pacific Ocean	21	27.7	30.3	31.4	33.7	11.1	11.7
Pacific Ocean	22	26.7	29.0	29.9	31.8	11.1	11.7
Pacific Ocean	23	27.9	29.6	30.1	31.1	11.1	11.7
Pacific Ocean	24	35.1	36.9	37.4	38.0	11.1	11.7
Pacific Ocean	25	35.1	37.7	38.4	39.5	11.1	11.7
Pacific Ocean	26	29.6	32.7	33.7	35.3	11.1	11.7
Pacific Ocean	27	22.1	23.5	24.1	25.1	11.1	11.7
Pacific Ocean	28	23.1	25.4	26.3	28.1	11.1	11.7
Pacific Ocean	29	32.0	33.1	33.4	33.7	11.1	11.7
Pacific Ocean	30	30.1	32.9	34.2	37.3	11.1	11.7
Pacific Ocean	31	46.7	48.7	49.3	50.1	11.1	11.7
Pacific Ocean	32	41.1	42.1	42.3	42.5	11.1	11.7
Pacific Ocean	33	30.7	32.1	32.5	33.0	11.1	11.7
Pacific Ocean	34	23.6	25.4	26.2	28.0	11.1	11.7

Table 17: Coastal Transect Parameters (Continued)

Flood Source	Coastal Transect	Total Water Levels T_{wl} (ft NAVD88)				Stillwater Elevations S_{wl} (ft NAVD88)	
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pacific Ocean	35	23.7	25.5	26.1	27.2	11.1	11.7
Pacific Ocean	36	30.6	32.0	32.4	33.0	11.1	11.7
Pacific Ocean	37	24.6	26.3	26.8	27.6	11.1	11.7
Pacific Ocean	38	24.9	26.6	27.1	27.9	11.1	11.7
Pacific Ocean	39	35.6	36.8	37.0	37.3	11.1	11.7
Pacific Ocean	40	31.7	32.9	33.2	33.6	11.1	11.7
Pacific Ocean	41	27.3	28.8	29.2	29.9	11.1	11.7
Pacific Ocean	42	23.0	24.0	24.3	24.8	11.1	11.7
Pacific Ocean	43	22.2	24.1	24.8	26.1	11.1	11.7
Pacific Ocean	44	29.7	30.7	31.0	31.4	11.1	11.7
Pacific Ocean	45	27.2	28.8	29.3	30.3	11.1	11.7
Pacific Ocean	46	30.2	31.5	31.9	32.6	11.1	11.7
Pacific Ocean	47	28.3	29.3	29.6	30.0	11.1	11.7
Pacific Ocean	48	23.9	24.6	24.8	25.1	11.1	11.7
Pacific Ocean	49	23.6	24.2	24.4	24.6	11.1	11.7
Pacific Ocean	50	24.4	25.2	25.4	25.8	11.1	11.7
Pacific Ocean	51	25.1	26.0	26.2	26.7	11.1	11.7

Table 17: Coastal Transect Parameters (Continued)

Flood Source	Coastal Transect	Total Water Levels T_{wl} (ft NAVD88)				Stillwater Elevations S_{wl} (ft NAVD88)	
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pacific Ocean	52	24.7	25.7	26.0	26.5	11.1	11.7
Pacific Ocean	53	24.6	25.9	26.3	27.1	11.1	11.7
Pacific Ocean	54	25.5	26.9	27.4	28.3	11.1	11.7
Pacific Ocean	55	24.6	25.6	25.9	26.4	11.1	11.7
Pacific Ocean	56	27.0	28.2	28.6	29.2	11.1	11.7
Pacific Ocean	57	26.2	27.7	28.1	29.0	11.1	11.7
Pacific Ocean	58	30.6	32.5	33.2	34.5	11.1	11.7
Pacific Ocean	59	24.1	26.1	27.0	28.9	11.1	11.7
Pacific Ocean	60	22.6	23.7	24.0	24.7	11.1	11.7
Pacific Ocean	61	26.8	28.7	29.5	31.1	11.1	11.7
Pacific Ocean	62	24.1	25.8	26.4	27.8	11.1	11.7
Pacific Ocean	63	22.9	24.1	24.6	25.3	11.1	11.7
Pacific Ocean	64	21.5	22.6	23.0	23.8	11.1	11.7
Pacific Ocean	65	22.0	23.3	23.8	24.8	11.1	11.7
Pacific Ocean	66	21.3	23.1	23.8	25.2	11.1	11.7
Pacific Ocean	67	21.9	24.2	25.2	27.5	11.1	11.7
Pacific Ocean	68	21.9	23.9	24.7	26.5	11.1	11.7

Table 17: Coastal Transect Parameters (Continued)

Flood Source	Coastal Transect	Total Water Levels T_{wl} (ft NAVD88)				Stillwater Elevations S_{wl} (ft NAVD88)	
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pacific Ocean	69	22.3	23.9	24.5	25.7	11.1	11.7
Pacific Ocean	70	20.4	21.2	21.4	21.8	11.1	11.7
Pacific Ocean	71	19.9	20.9	21.3	22.0	11.1	11.7
Pacific Ocean	72	38.3	40.4	40.9	41.7	11.1	11.7
Pacific Ocean	73	30.0	32.2	32.8	33.8	11.1	11.7
Pacific Ocean	74	34.2	36.5	37.2	38.2	11.1	11.7
Pacific Ocean	75	31.0	32.6	32.9	33.4	11.1	11.7
Pacific Ocean	76	38.6	39.7	40.0	40.2	11.1	11.7
Pacific Ocean	77	38.6	40.7	41.3	42.1	11.1	11.7
Pacific Ocean	78	36.0	39.2	40.2	41.9	11.1	11.7
Pacific Ocean	79	37.3	39.7	40.3	41.3	11.1	11.7
Pacific Ocean	80	27.8	32.0	33.7	37.7	11.1	11.7
Pacific Ocean	81	33.3	36.6	37.7	39.7	11.1	11.7
Pacific Ocean	82	37.3	38.8	39.2	39.6	11.1	11.7
Pacific Ocean	83	26.7	27.4	27.5	27.8	11.1	11.7
Pacific Ocean	84	24.5	25.5	25.8	26.2	11.1	11.7
Pacific Ocean	85	27.9	29.6	30.2	31.5	11.1	11.7

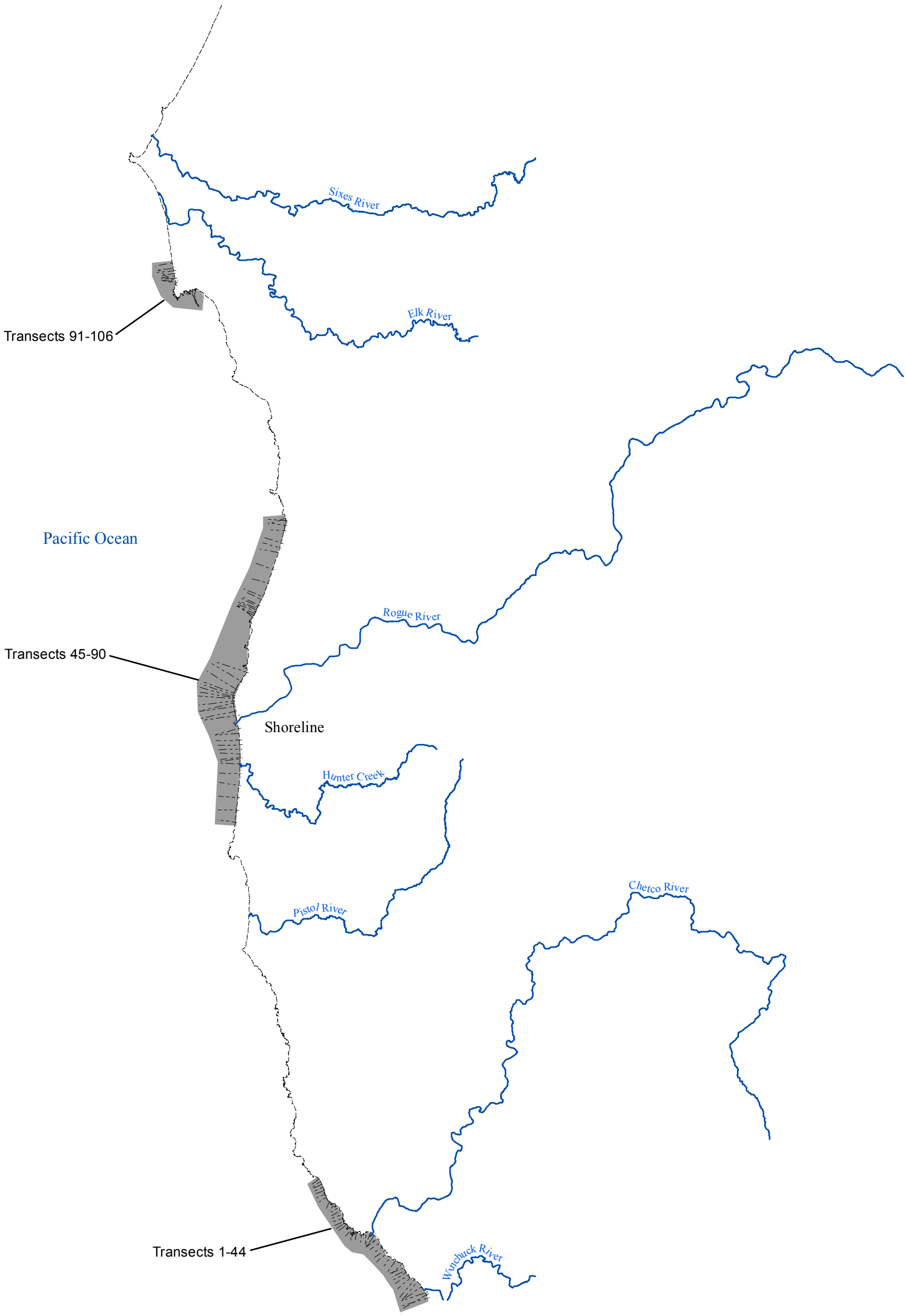
Table 17: Coastal Transect Parameters (Continued)

Flood Source	Coastal Transect	Total Water Levels T_{wl} (ft NAVD88)				Stillwater Elevations S_{wl} (ft NAVD88)	
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pacific Ocean	86	23.6	24.4	24.7	25.1	11.1	11.7
Pacific Ocean	87	25.5	27.2	27.9	29.3	11.1	11.7
Pacific Ocean	88	26.2	28.3	29.2	31.2	11.1	11.7
Pacific Ocean	89	27.8	29.5	30.1	31.2	11.1	11.7
Pacific Ocean	90	27.4	29.3	30.0	31.6	11.1	11.7
Pacific Ocean	91	27.8	29.6	30.1	30.9	11.1	11.7
Pacific Ocean	92	24.2	25.1	25.4	25.9	11.1	11.7
Pacific Ocean	93	25.2	26.1	26.4	26.9	11.1	11.7
Pacific Ocean	94	26.5	27.9	28.4	29.3	11.1	11.7
Pacific Ocean	95	41.0	41.8	42.0	42.2	11.1	11.7
Pacific Ocean	96	39.8	41.9	42.7	44.0	11.1	11.7
Pacific Ocean	97	31.9	34.3	35.3	37.2	11.1	11.7
Pacific Ocean	98	25.5	26.9	27.4	28.4	11.1	11.7
Pacific Ocean	99	24.4	25.8	26.2	27.1	11.1	11.7
Pacific Ocean	100	29.4	31.5	32.3	34.1	11.1	11.7
Pacific Ocean	101	29.7	31.9	32.8	34.8	11.1	11.7
Pacific Ocean	102	29.7	31.8	32.7	34.4	11.1	11.7

Table 17: Coastal Transect Parameters (Continued)

Flood Source	Coastal Transect	Total Water Levels T_{wl} (ft NAVD88)				Stillwater Elevations S_{wl} (ft NAVD88)	
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pacific Ocean	103	26.9	28.4	29.0	30.1	11.1	11.7
Pacific Ocean	104	30.5	33.2	34.4	37.2	11.1	11.7
Pacific Ocean	105	30.9	33.7	35.0	37.8	11.1	11.7
Pacific Ocean	106	30.8	32.8	33.5	34.8	11.1	11.7

Figure 9 - Transect Locator Map

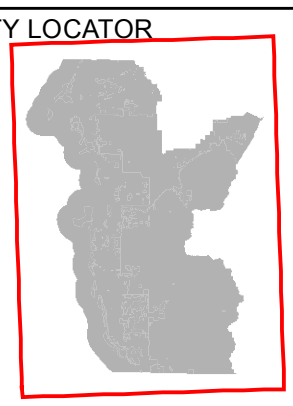


1 inch = 2,000 feet 1:24,000

N 0 8,750 17,500 35,000 52,500 70,000 Feet

Map Projection:
HARN Oregon Statewide Lambert (Intl Feet)
North American Datum 1983

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

Figure 9 - Transect Locator Map

PANELS WITH TRANSECTS

0170F, 0357F, 0380F, 0585F, 0595F, 0758F, 0760F
0766F, 0767F, 0768F, 0906F, 1230F, 1233F, 1241F
1242F, 1245F, 1265F, 1380F

FEMA

5.4 Alluvial Fan Analyses

This section is not applicable to this FIS project.

Table 18: Summary of Alluvial Fan Analyses

[Not Applicable to this FIS Project]

Table 19: Results of Alluvial Fan Analyses

[Not Applicable to this FIS Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Table 20: Countywide Vertical Datum Conversion

[Not Applicable to this FIS Project]

Table 21: Stream-by-Stream Vertical Datum Conversion

[Not Applicable to this FIS Project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Mapping Partners*, Appendix L.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Lidar collected in 2008	Oregon Department of Geology and Mineral Industries	2011	1:2,500	Hillshade and slope derivatives of 1-meter resolution LiDAR DEMs were used to create the base image.
Oregon statewide 1-meter 2011 NAIP orthoimagery	Oregon Department of Administrative Services, Geospatial Enterprise Office	2011	1:2,500	Where LiDAR was not available, these orthophotos were used to infill the base map.
Hydrography	Oregon Department of Geology and Mineral Industries	2012	1:2,500	Stream centerlines and water bodies digitized from LiDAR collected 2008.
National Hydrographic Dataset	U.S. Geological Survey	2012	1:24,000	Where LiDAR was not available, the National Hydrographic Dataset was incorporated and snapped to hydrography digitized by DOGAMI.

Table 22: Base Map Sources (Continued)

Data Type	Data Provider	Data Date	Data Scale	Data Description
Hydraulic structures	Oregon Department of Geology and Mineral Industries	2012	1:2,500	Hydraulic structures (mainly bridges and culverts) digitized from LiDAR collected 2008. Used Oregon Department of Transportation bridge layer and Oregon Department of Fish and Wildlife fish passage barrier layer to locate structures.
Dams	U.S. Army Corps of Engineers	2010	1:24,000	Dam locations within the county.
Roads	Curry County	2013	1:24,000	Transportation road features from Curry County.
Land ownership	Bureau of Land Management	2013	1:24,000	Land ownership downloaded from the Bureau of Land Management website.
City limits and urban growth boundaries	Curry County	2013	1:24,000	City limits and urban growth boundaries from Curry County.
Public land survey sections	Bureau of Land Management	2013	1:24,000	Public land survey sections downloaded from the Bureau of Land Management website.

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23. For each coastal flooding source studied as part of this FIS Report, the mapped floodplain boundaries on the FIRM have been delineated using the flood and wave elevations determined at each transect; between transects, boundaries were delineated using land use and land cover data, the topographic elevation data described in Table 23, and knowledge of coastal flood processes. In ponding areas, flood elevations were determined at each junction of the model; between junctions, boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain

boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 24 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

Certain flooding sources may have been studied that do not have published BFEs on the FIRMs, or for which there is a need to report the 1% annual chance flood elevations at selected cross sections because a published Flood Profile does not exist in this FIS Report. These streams may have also been studied using methods to determine non-encroachment zones rather than floodways. For these flooding sources, the 1% annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23. All topographic data used for modeling or mapping has been converted as necessary to NAVD 88. The 1% annual chance elevations for selected cross sections along these flooding sources, along with their non-encroachment widths, if calculated, are shown in Table 25, "Flood Hazard and Non-Encroachment Data for Selected Streams."

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Scale	Contour Interval	Citation
Curry County and Incorporated Areas	All flooding sources except for the upper Elk River, The Rogue River between cross sections U-Y, the upper Rogue River, Illinois River, and the upper Pistol River.	LiDAR	1:2,500	1 foot	OLC 2008

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
CHETCO RIVER								
A	4,494	0	10,068	9.4	17.6	16.8	17.8	1.0
B	5,829	500	9,168	10.3	18.0	18.0	19.0	1.0
C	6,736	0	6,442	10.0	18.7	18.7	19.7	1.0
D	7,177	0	12,186	7.8	19.4	19.4	20.4	1.0
E	8,533	466	9,710	9.7	20.0	20.0	21.0	1.0
F	10,015	426	9,465	10.0	20.9	20.9	21.9	1.0
G	12,073	0	10,708	8.8	22.8	22.8	23.8	1.0
H	13,385	0	4,930	19.2	22.8	22.8	23.8	1.0
I	14,841	0	11,383	8.3	27.4	27.4	28.4	1.0
J	15,886	0	4,941	19.1	27.4	27.4	28.4	1.0
K	17,179	473	10,197	9.3	31.9	31.9	32.9	1.0
L	18,655	399	9,249	10.2	32.8	32.8	33.8	1.0
M	20,399	342	7,690	12.3	33.8	33.8	34.8	1.0
N	21,744	466	10,045	9.1	35.6	35.6	36.6	1.0
O	23,021	402	9,056	10.1	35.9	35.9	36.9	1.0
P	24,557	463	9,973	9.2	37.3	37.3	38.3	1.0
Q	25,524	0	20,318	4.5	38.3	38.3	39.3	1.0
R	26,848	851	15,154	6.1	38.5	38.5	39.5	1.0
S	28,332	859	12,271	4.5	38.8	38.8	39.8	1.0
T	30,221	526	7,716	10.8	39.8	39.8	40.8	1.0
U	32,689	497	6,119	13.6	42.1	42.1	43.1	1.0
V	34,552	0	7,501	11.1	45.0	45.0	46.0	1.0
W	36,036	393	6,613	12.6	46.8	46.8	47.8	1.0
X	37,553	645	9,406	8.9	52.4	52.4	53.4	1.0

[1]Feet above confluence with Limit of Detailed Study. (Limit of Detailed Study located approximately 310 feet downstream of US Highway 101)
[2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CHETCO RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
CHETCO RIVER (CONTINUED)								
Y	39,135	620	10,210	8.2	53.3	53.3	54.3	1.0
Z	40,684	0	5,804	14.4	54.4	54.4	55.4	1.0
AA	41,724	0	8,303	10.0	56.8	56.8	57.8	1.0
AB	43,282	410	7,734	10.8	57.7	57.7	58.7	1.0
AC	44,777	277	5,876	14.2	58.0	58.0	59.0	1.0
AD	46,841	355	7,174	11.6	62.8	62.8	63.8	1.0
AE	49,101	322	6,422	12.4	65.7	65.7	66.7	1.0
AF	50,763	419	7,385	10.8	67.2	67.2	68.2	1.0
AG	52,230	458	8,115	9.8	68.6	68.6	69.6	1.0
AH	53,862	0	5,954	13.4	69.5	69.5	70.5	1.0
AI	55,221	269	4,909	16.1	70.6	70.6	71.6	1.0
AJ	55,394	0	4,947	16.0	73.6	73.6	74.6	1.0
AK	56,626	286	5,744	13.8	76.1	76.1	77.1	1.0

[1]Feet above confluence with Limit of Detailed Study. (Limit of Detailed Study located approximately 310 feet downstream of US Highway 101)
[2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CHETCO RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
ELK RIVER								
A-E[3]								
F	18,170	217	3,134	8.0	35.7	35.7	36.7	1.0
G	21,030	0	2,841	8.8	37.8	37.8	38.8	1.0
H	21,920	222	3,171	7.9	38.6	38.6	39.6	1.0
I	23,890	153	2,248	11.2	40.4	40.4	41.4	1.0
J	26,960	349	4,222	5.8	44.5	44.5	45.5	1.0
K	28,570	111	1,614	15.1	44.8	44.8	45.8	1.0
L	31,800	153	2,050	11.9	50.8	50.8	51.8	1.0
M	35,020	0	2,102	11.6	55.4	55.4	56.4	1.0
N	37,540	0	2,021	12.1	59.0	59.0	60.0	1.0
O	40,290	0	3,105	7.9	62.6	62.6	63.6	1.0
P	43,100	0	2,608	9.4	66.1	66.1	67.1	1.0
Q	46,430	267	2,472	9.9	70.8	70.8	71.8	1.0
R	47,850	203	2,115	11.5	73.4	73.4	74.4	1.0
S	50,020	191	2,462	9.9	76.9	76.9	77.9	1.0
T	53,640	206	2,595	9.4	82.7	82.7	83.7	1.0
U	55,490	394	3,604	6.6	85.7	85.7	86.7	1.0
V	58,320	217	2,171	10.9	90.5	90.5	91.5	1.0
W	61,190	0	1,877	13.6	97.2	97.2	98.2	1.0
X	63,170	0	2,695	8.8	101.0	101.0	102.0	1.0
Y	64,460	160	1,706	13.9	103.1	103.1	104.1	1.0
Z	69,930	0	2,180	10.9	117.3	117.3	118.3	1.0

[1]Feet above Pacific Ocean [2]Floodway width to zone break
[3]Floodway not developed for this cross section

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ELK RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
ELK RIVER (CONTINUED)								
AA	72,430	112	1,355	17.5	123.5	123.5	124.5	1.0
AB	72,600	133	1,893	12.5	126.0	126.0	127.0	1.0
AC	74,290	160	2,506	9.5	131.9	131.9	132.9	1.0
AD	75,320	153	2,018	11.7	132.4	132.4	133.4	1.0

[1]Feet above Pacific Ocean [2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ELK RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
HUNTER CREEK								
A	1,050	413	4,835	4.2	15.7	15.7	16.7	1.0
B	1,600	529	4,810	4.2	15.9	15.9	16.9	1.0
C	2,680	0	2,099	9.6	16.3	16.3	17.3	1.0
D	2,840	0	1,728	11.7	16.5	16.5	17.5	1.0
E	3,850	289	2,217	9.1	18.3	18.3	19.3	1.0
F	4,895	0	1,560	13.0	19.6	19.6	20.6	1.0
G	5,840	0	1,656	12.1	20.4	20.4	21.4	1.0
H	7,525	148	1,673	12.1	23.9	23.9	24.9	1.0
I	8,585	0	2,279	8.9	25.8	25.8	26.8	1.0
J	9,835	260	2,481	8.2	28.5	28.5	29.5	1.0
K	10,285	0	1,886	10.7	28.7	28.7	29.7	1.0
L	10,975	213	1,712	11.8	29.0	29.0	30.0	1.0
M	11,845	109	1,480	13.7	31.0	31.0	32.0	1.0
N	12,555	0	2,005	10.1	35.1	35.1	36.1	1.0
O	12,765	132	2,101	9.6	38.7	38.7	39.7	1.0
P	13,365	0	3,176	6.4	38.8	38.8	39.8	1.0
Q	14,715	291	3,855	5.3	40.4	40.4	41.4	1.0
R	15,780	184	2,090	9.7	40.6	40.6	41.6	1.0
S	16,990	211	2,293	8.8	42.3	42.3	43.3	1.0
T	17,840	0	1,523	13.3	43.4	43.4	44.4	1.0
U	18,560	152	2,386	8.0	45.5	45.5	46.5	1.0
V	18,735	135	1,527	12.4	45.5	45.5	46.5	1.0
W	20,215	227	2,203	8.6	48.6	48.6	49.6	1.0
X	21,065	0	1,599	11.9	49.4	49.4	50.4	1.0

[1]Feet above Pacific Ocean
[2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: HUNTER CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
HUNTER CREEK (CONTINUED)								
Y	22,123	0	1,195	15.9	52.0	52.0	53.0	1.0
Z	22,383	0	2,023	9.4	58.2	58.2	59.2	1.0
AA	23,091	185	2,646	7.2	59.3	59.3	60.3	1.0
AB	23,751	0	2,068	9.2	60.1	60.1	61.1	1.0
AC	23,841	117	1,590	12.0	60.5	60.5	61.5	1.0
AD	24,046	0	2,667	7.1	60.9	60.9	61.9	1.0
AE	24,836	0	2,854	6.7	61.6	61.6	62.6	1.0
AF	25,776	0	1,699	11.2	63.0	63.0	64.0	1.0
AG	26,936	0	2,050	9.3	65.1	65.1	66.1	1.0
AH	27,536	0	1,687	11.3	65.5	65.5	66.5	1.0
AI	28,601	0	1,470	12.9	68.9	68.9	69.9	1.0
AJ	29,881	0	2,584	7.4	72.9[3]	73.2	74.2	1.0
AK	31,011	271	2,374	8.0	74.8	74.8	75.8	1.0
AL	31,351	170	1,699	11.2	76.0	76.0	77.0	1.0
AM	31,511	0	1,633	11.6	77.4	77.4	78.4	1.0
AN	32,151	0	3,319	5.7	79.6	79.6	80.6	1.0
AO	32,936	523	3,792	5.0	80.6	80.6	81.6	1.0
AP	34,136	177	1,195	15.9	83.8	83.8	84.8	1.0
AQ	35,596	0	2,115	9.0	87.8	87.8	88.8	1.0

[1]Feet above Pacific Ocean
[2]Floodway width to zone break
[3]Elevation adjusted to match profile

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: HUNTER CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
PISTOL RIVER								
A	2,785	363	3,394	10.1	14.5	14.5	15.5	1.0
B	3,395	0	7,169	5.5	16.2	16.2	17.2	1.0
C	4,710	1,008	7,961	5.0	17.0	17.0	18.0	1.0
D	5,455	1,285	9,667	4.1	17.4	17.4	18.4	1.0
E	6,115	0	4,751	8.2	17.4	17.4	18.4	1.0
F	6,552	800	6,567	5.9	19.0	19.0	20.0	1.0
G	7,480	567	5,725	6.8	19.7	19.7	20.7	1.0
H	8,945	668	6,706	5.8	21.2	21.2	22.2	1.0
I	10,840	543	6,240	6.2	22.9	22.9	23.9	1.0
J	11,885	611	6,424	6.1	24.0	24.0	25.0	1.0
K	13,303	441	4,725	8.2	26.1	26.1	27.1	1.0
L	14,320	0	3,792	10.3	27.9	27.9	28.9	1.0
M	15,250	0	4,679	8.3	29.5	29.5	30.5	1.0
N	16,305	450	5,020	7.7	31.5	31.5	32.5	1.0
O	16,902	319	4,820	8.0	32.2	32.2	33.2	1.0
P	17,980	263	3,559	10.8	32.6	32.6	33.6	1.0
Q	18,840	225	3,017	12.8	34.0	34.0	35.0	1.0
R	19,649	356	4,612	8.4	36.5	36.5	37.5	1.0
S	20,540	0	3,823	10.1	36.9	36.9	37.9	1.0
T	21,395	0	2,875	13.2	37.1	37.1	38.1	1.0
U	22,395	0	4,085	9.3	40.4	40.4	41.4	1.0
V	23,095	0	3,258	11.7	41.1	41.1	42.1	1.0
W	23,475	0	3,203	11.9	41.1	41.1	42.1	1.0

[1]Feet above Pacific Ocean
[2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PISTOL RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
ROGUE RIVER								
A-B[3,4]								
C	5,930	0	38,475	13.5	23.4	23.4	23.4	0.0
D	6,560	0	47,399	11.0	25.3	25.3	25.3	0.0
E	8,020	1,664	44,609	11.7	26.5	26.5	26.5	0.0
F	8,780	1,760	45,963	11.3	27.3	27.3	27.3	0.0
G	9,820	0	46,038	9.3	28.7	28.7	28.8	0.1
H	11,240	2,724	64,652	8.1	29.7	29.7	29.7	0.0
I	12,660	3,247	78,302	6.7	30.3	30.3	30.4	0.1
J	14,610	3,620	71,217	7.3	30.6	30.6	30.7	0.1
K	16,560	3,005	57,761	9.0	30.9	30.9	31.0	0.1
L	18,230	2,531	59,991	8.7	31.9	31.9	32.4	0.5
M	19,350	2,853	58,559	8.9	32.2	32.2	32.7	0.5
N	20,750	3,049	58,537	8.9	32.9	32.9	33.4	0.5
O	22,500	3,310	55,457	9.4	33.7	33.7	34.2	0.5
P	23,780	3,786	74,033	7.0	34.9	34.9	35.3	0.4
Q	25,580	3,186	54,701	9.5	35.3	35.3	35.5	0.2
R	27,310	1,935	44,506	11.7	35.7	35.7	36.1	0.4
S	29,310	0	35,192	14.8	38.9	38.9	39.2	0.3
T	31,950	0	39,307	13.3	43.6	43.6	43.8	0.2
U	33,450	2,082	49,373	10.6	46.5	46.5	46.6	0.1
V	35,270	2,013	49,937	10.4	48.2	48.2	48.3	0.1
W	36,950	990	29,795	17.5	49.3	49.3	49.4	0.1
X	38,450	1,031	35,708	14.6	53.1	53.1	53.1	0.0
Y	40,450	964	36,332	14.3	55.0	55.0	55.3	0.3

[1]Feet above Pacific Ocean [2]Floodway width to zone break
[3]Floodway not developed for this cross section
[4] Feet above North Jetty

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ROGUE RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
ROGUE RIVER (CONTINUED)								
Z	42,190	930	29,511	17.7	56.7	56.7	56.9	0.2
AA	43,940	828	28,662	18.2	59.4	59.4	59.6	0.2
AB	45,320	0	30,142	17.3	61.3	61.3	61.6	0.3
AC	47,380	0	37,069	14.1	65.0	65.0	65.1	0.1
AD	49,245	1,124	43,459	12.0	66.8	66.8	67.2	0.4
AE	51,065	0	37,913	13.7	67.2	67.2	67.6	0.4
AF	53,285	985	39,571	13.2	68.8	68.8	69.2	0.4
AG	55,145	619	26,952	19.3	69.3	69.3	69.7	0.4

[1]Feet above Pacific Ocean
[2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ROGUE RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
ROGUE RIVER AT AGNESS								
A	1,220	563	36,242	11.3	180.5	180.5	181.4	0.9
B	3,060	721	43,521	9.4	181.3	181.3	182.2	0.9
C	4,190	643	40,970	10.0	181.5	181.5	182.4	0.9
D	6,050	494	30,968	13.2	181.5	181.5	182.5	1.0
E	7,300	621	37,701	10.8	182.8	182.8	183.7	0.9

[1]Feet above the Illinois River
[2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ROGUE RIVER AT AGNESS

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
SIXES RIVER								
A	24,350	2,528	22,984	1.3	33.9	33.9	34.9	1.0
B	25,770	1,445	11,380	2.6	34.2	34.2	35.2	1.0
C	27,250	514	5,341	4.9	35.4	35.4	36.4	1.0
D	28,470	0	4,132	6.3	37.2	37.2	38.1	0.9
E	28,560	0	4,133	6.3	37.2	37.2	38.1	0.9
F	28,980	373	4,160	6.3	38.3	38.3	38.7	0.4
G	30,960	0	4,833	5.4	39.8	39.8	40.7	0.9
H	32,520	0	3,202	8.2	40.9	40.9	41.8	0.9

[1]Feet above Pacific Ocean
[2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SIXES RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
WINCHUCK RIVER								
A	1,727	0	5,372	5.9	17.4	17.4	18.4	1.0
B	2,724	281	3,339	9.5	17.5	17.5	18.5	1.0
C	3,279	296	3,295	9.7	17.5	17.5	18.5	1.0
D	4,134	0	6,515	4.9	19.1	19.1	20.1	1.0
E	5,634	800	5,403	5.9	19.4	19.4	20.4	1.0
F	7,709	469 / 430[3]	4,490	7.1	22.4	22.4	23.4	1.0
G	8,849	350	2,061	13.8	22.5	22.5	23.5	1.0
H	11,009	411	3,778	7.5	27.8	27.8	28.8	1.0
I	12,065	175	2,184	13.0	28.6	28.6	29.6	1.0
J	12,297	168	2,114	13.4	30.5	30.5	31.5	1.0
K	13,121	0	2,680	10.6	32.3	32.3	33.3	1.0
L	13,902	139	2,516	11.3	32.9	32.9	33.9	1.0
M	14,309	186	1,909	14.9	32.9	32.9	33.9	1.0
N	15,022	413	5,111	5.6	36.2	36.2	37.2	1.0
O	16,363	454	3,904	7.3	36.8	36.8	37.8	1.0
P	17,398	191	2,141	13.3	38.5	38.5	39.5	1.0
Q	18,031	218	2,377	12.0	40.2	40.2	41.2	1.0
R	19,214	0	2,842	9.5	42.6	42.6	43.6	1.0
S	20,397	350	3,894	7.0	45.5	45.5	46.5	1.0
T	21,432	511	5,244	5.2	47.6	47.6	48.6	1.0
U	22,218	0	3,456	7.8	48.2	48.2	49.2	1.0
V	23,153	160	1,707	15.9	49.7	49.7	50.7	1.0
W	24,304	189	2,274	11.9	53.2	53.2	54.2	1.0
X	25,444	0	1,368	19.8	56.0	56.0	57.0	1.0

[1]Feet above Pacific Ocean
[2]Floodway width to zone break
[3]Total width / Width within Curry County

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WINCHUCK RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
WINCHUCK RIVER (CONTINUED)								
Y	27,012	763	6,581	4.1	60.8	60.8	61.8	1.0
Z	28,248	329	3,485	7.8	62.6	62.6	63.6	1.0
AA	29,346	150	1,764	15.4	65.0	65.0	66.0	1.0
AB	31,321	265	2,685	10.1	71.8	71.8	72.8	1.0
AC	33,180	133	1,768	15.3	75.9	75.9	76.9	1.0

[1]Feet above Pacific Ocean
[2]Floodway width to zone break

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRY COUNTY, OR

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WINCHUCK RIVER

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this FIS Project]

6.4 Coastal Flood Hazard Mapping

Flood insurance zones and BFEs including the wave effects were identified on each transect based on the results from the onshore wave hazard analyses. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and knowledge of coastal flood processes to determine the aerial extent of flooding. Sources for topographic data are shown in Table 23.

Zone VE is subdivided into elevation zones and BFEs are provided on the FIRM.

The limit of Zone VE shown on the FIRM is defined as the farthest inland extent of any of these criteria (determined for the 1% annual chance flood condition):

- The *primary frontal dune zone* is defined in 44 CFR Section 59.1 of the NFIP regulations. The primary frontal dune represents a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes that occur immediately landward and adjacent to the beach. The primary frontal dune zone is subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune zone occurs at the point where there is a distinct change from a relatively steep slope to a relatively mild slope.

- The *wave runup zone* occurs where the (eroded) ground profile is 3.0 feet or more below the 2-percent wave runup elevation.

- The *wave overtopping splash zone* is the area landward of the crest of an overtopped barrier, in cases where the potential 2-percent wave runup exceeds the barrier crest elevation by 3.0 feet or more.

- The *breaking wave height zone* occurs where 3-foot or greater wave heights could occur (this is the area where the wave crest profile is 2.1 feet or more above the total stillwater elevation).

- The *high-velocity flow zone* is landward of the overtopping splash zone (or area on a sloping beach or other shore type), where the product of depth of flow times the flow velocity squared (hv^2) is greater than or equal to 200 ft^3/sec^2. This zone may only be used on the Pacific Coast.

The SFHA boundary indicates the limit of SFHAs shown on the FIRM as either “V” zones or “A” zones.

Table 26 indicates the coastal analyses used for floodplain mapping and the criteria used to determine the inland limit of the open-coast Zone VE and the SFHA boundary at each transect.

Table 26: Summary of Coastal Transect Mapping Considerations

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
1	✓	VE 27	NA	PFD	PFD
2	✓	VE 27	NA	PFD	PFD
3	✓	NA	VE 27, AE 23	PFD	High Velocity Limit
4	✓	VE 23	NA	PFD	PFD
5		NA	VE 27, AE 18	High Velocity	High Velocity Limit
6		NA	VE 33, VE 18	High Velocity	High Velocity Limit
7		VE 34	NA	Runup	Runup
8		VE 36	NA	Runup	Runup
9		VE 35	NA	Runup	Runup
10		VE 33	NA	Runup	Runup
11		VE 35	NA	Runup	Runup
12		VE 33	NA	Runup	Runup
13		VE 40	NA	Runup	Runup
14		NA	VE 33	Splash Zone	Splash Zone
15		VE 33	NA	Runup	Runup
16		VE 35	NA	Runup	Runup
17		VE 33	NA	Runup	Runup
18		VE 34	NA	Runup	Runup
19		VE 31	NA	Runup	Runup
20		NA	VE 30, VE 20, AE 25	High Velocity	High Velocity Limit
21		NA	VE 31, AE 26	High Velocity	High Velocity Limit
22		NA	VE 30, AE 25, AE 20	High Velocity	High Velocity Limit
23		VE 30	NA	Runup	Runup
24		VE 37	NA	Runup	Runup
25		VE 38	NA	Runup	Runup
26		VE 34	NA	Runup	Runup
27		VE 24	NA	Runup	Runup

Table 26: Summary of Coastal Transect Mapping Considerations (Continued)

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
28		VE 26	NA	Runup	Runup
29		VE 33	NA	Runup	Runup
30		VE 34	NA	Runup	Runup
31		VE 49	NA	Runup	Runup
32		VE 42	NA	Runup	Runup
33		VE 32	NA	Runup	Runup
34		VE 26	NA	Runup	Runup
35		VE 26	NA	Runup	Runup
36		VE 32	NA	Runup	Runup
37		VE 27	NA	Runup	Runup
38		VE 27	NA	Runup	Runup
39		VE 37	NA	Runup	Runup
40		VE 33	NA	Runup	Runup
41		VE 29	NA	Runup	Runup
42		VE 24	NA	Runup	Runup
43		VE 25	NA	Runup	Runup
44		VE 31	NA	Runup	Runup
45		VE 29	NA	Runup	Runup
46	✓	VE 32	NA	PFD	PFD
47	✓	VE 30	NA	PFD	PFD
48	✓	VE 25	NA	PFD	PFD
49	✓	VE 24	NA	PFD	PFD
50		NA	VE 25, AE 18	High Velocity	High Velocity Limit
51		VE 26	NA	Runup	Runup
52	✓	VE 26	NA	Runup	Runup
53	✓	VE 26	NA	Runup	Runup
54	✓	VE 27	NA	Runup	Runup

Table 26: Summary of Coastal Transect Mapping Considerations (Continued)

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
55	✓	VE 26	NA	Runup	Runup
56	✓	NA	VE 29, VE 25, VE 21, VE 19, AE 23, AE 20, AE 18	High Velocity	High Velocity Limit
57	✓	VE 28	NA	PFD	PFD
58	✓	NA	VE 33, VE 25, VE 21, VE 20, AE 23, AE 20, AE 15	High Velocity	High Velocity Limit
59	✓	NA	VE 27, AE 17	PFD	High Velocity Limit
60	✓	NA	VE 24, AE 17	PFD	High Velocity Limit
61	✓	NA	VE 29, AE 19	PFD	High Velocity Limit
62	✓	NA	VE 26, AE 19	PFD	High Velocity Limit
63	✓	NA	VE 25, AE 20	PFD	High Velocity Limit
64	✓	NA	VE 23, AE 20	High Velocity	High Velocity Limit
65	✓	NA	VE 24	Splash Zone	Splash Zone
66	✓	VE 24	NA	PFD	PFD
67	✓	VE 25	NA	PFD	PFD
68	✓	VE 25	NA	PFD	PFD
69	✓	VE 24	NA	PFD	PFD
70	✓	VE 21	NA	PFD	PFD
71	✓	VE 21	NA	PFD	PFD
72		VE 41	NA	Runup	Runup
73		VE 33	NA	Runup	Runup
74		VE 37	NA	Runup	Runup
75		VE 33	NA	Runup	Runup
76		VE 40	NA	Runup	Runup
77		VE 41	NA	Runup	Runup

Table 26: Summary of Coastal Transect Mapping Considerations (Continued)

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
78		VE 40	NA	Runup	Runup
79		NA	VE 40, AE 36	High Velocity	High Velocity Limit
80		VE 34	NA	Runup	Runup
81		VE 38	NA	Runup	Runup
82		VE 39	NA	Runup	Runup
83	✓	VE 28	NA	PFD	PFD
84		VE 26	NA	Runup	Runup
85	✓	VE 30	NA	PFD	PFD
86		VE 25	NA	Runup	Runup
87		VE 28	NA	Runup	Runup
88		NA	VE 29, AE 24	High Velocity	High Velocity Limit
89		NA	VE 30, AE 22	High Velocity	High Velocity Limit
90		NA	VE 30, AE 22	High Velocity	High Velocity Limit
91		VE 30	NA	Runup	Runup
92	✓	VE 25	NA	PFD	PFD
93	✓	VE 26	NA	PFD	PFD
94	✓	VE 28	NA	PFD	PFD
95		NA	VE 42, VE 27, VE 26, AE 25	High Velocity	High Velocity Limit
96		NA	VE 43, VE 27, VE 26, AE 25	High Velocity	High Velocity Limit
97	✓	VE 35	NA	PFD	PFD
98	✓	NA	VE 27, AE 24	High Velocity	High Velocity Limit
99	✓	VE 26	NA	Runup	Runup
100	✓	VE 32	NA	PFD	PFD
101	✓	VE 33	NA	PFD	PFD
102	✓	VE 33	NA	PFD	PFD

Table 26: Summary of Coastal Transect Mapping Considerations (Continued)

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
103	✓	VE 29	NA	PFD	PFD
104	✓	NA	VE 34, AE 17	PFD	High Velocity Limit
105	✓	NA	VE 35, VE 27, AE 25	High Velocity	High Velocity Limit
106	✓	VE 33	NA	PFD	PFD

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions to FIS projects may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, "Map Repositories").

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit http://www.fema.gov and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill". Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting http://www.fema.gov for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit http://www.fema.gov and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Curry County FIRM are listed in Table 27.

Table 27: Incorporated Letters of Map Change

[Not Applicable to this FIS Project]

6.5.4 Physical Map Revisions

PMRs are an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit http://www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Curry County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community. This is the first effective date that is shown on the FIRM panel.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

Table 28: Community Map History

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
City of Brookings	5/31/1974	5/31/1974	9/26/75	9/18/1985	9/25/2009
Curry County, Unincorporated Areas	9/13/1974	9/13/1974	N/A	4/3/1978	3/18/1987 02/04/1998
City of Gold Beach	11/23/1973	11/23/1973	9/13/1974 7/30/1976	11/15/1985	3/2/1998 9/25/2009
City of Port Orford	4/30/1976	4/30/1976	8/23/1977	1/29/1980	9/25/2009

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Boulder Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Cedar Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Chetco River (Lower, Approximate)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	City of Brookings, Curry County Unincorporated Areas
Chetco River (Lower, Detailed)	9/18/1985	U.S. Soil Conservation Service	Unknown	1983	City of Brookings, Curry County Unincorporated Areas
Chetco River (Middle, Approximate)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report (Continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Chetco River (Upper, Approximate)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Crystal Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Dry Creek (Chetco)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Dry Creek (Sixes)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Elk River	9/18/1985	U.S. Soil Conservation Service	Unknown	1983	Curry County Unincorporated Areas
Emily Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Euchre Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Floras Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Hubbard Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Hubbard Creek (Unnamed)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Hunter Creek	11/15/1985	U.S. Soil Conservation Service	Unknown	1983	City of Gold Beach, Curry County Unincorporated Areas
Jack Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report (Continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Miller Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
New River	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
North Fork Hubbard Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Pacific Ocean	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	City of Brookings, City of Gold Beach, City of Port Orford, Curry County Unincorporated Areas
Pistol River (Lower, Detailed)	9/18/1985	U.S. Soil Conservation Service	Unknown	1983	Curry County Unincorporated Areas
Pistol River (Middle, Approximate)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Ransom Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	City of Brookings
Riley Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	City of Gold Beach
Rogue River (Lower, Detailed)	11/15/1985	CH2M Hill Northwest Inc.	EMW-C-0283	October 1981	City of Gold Beach, Curry County Unincorporated Areas
Rogue River (Lower, Approximate)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Rogue River at Agnes	9/18/1985	CH2M Hill Northwest Inc.	EMW-C-0283	October 1981	Curry County Unincorporated Areas
Sixes River (Lower, Approximate)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report (Continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Sixes River (Middle, Detailed)	9/18/1985	CH2M Hill Northwest Inc.	EMW-C-0283	October 1981	Curry County Unincorporated Areas
Sixes River (Upper, Approximate)	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Willow Creek	TBD	DOGAMI	EMS-2011-GR-0013	April 2014	Curry County Unincorporated Areas
Winchuck River (Lower)	9/18/1985	U.S. Soil Conservation Service	Unknown	1983	Curry County Unincorporated Areas
Winchuck River (Upper)	9/18/1985	U.S. Soil Conservation Service	Unknown	1983	Curry County Unincorporated Areas

7.2 Community Meetings

The dates of the community meetings held for this FIS project and any previous FIS projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Curry County and Incorporated Areas	TBD	8/14/2014	Flood Study Review	Curry County, City of Brookings, City of Gold Beach, FEMA and DOGAMI
	TBD	3/21/2013	Discovery	Curry County, City of Brookings, City of Gold Beach, DLCD, FEMA and DOGAMI
City of Brookings	TBD	9/25/2012	Stakeholder Coordination	City of Brookings, DOGAMI
Curry County and Incorporated Areas	TBD	9/26/2012	Stakeholder Coordination	Curry County, DOGAMI
City of Gold Beach	TBD	9/26/2012	Stakeholder Coordination	City of Gold Beach, DOGAMI
City of Port Orford	TBD	9/25/2012	Stakeholder Coordination	City of Port Orford, DOGAMI
City of Brookings	9/18/1985	5/1979	Initial CCO	FEMA, the community, and the study contractor
		8/27/1982	Interim CCO	
		7/19/1983	Final CCO	
Curry County Unincorporated Areas	4/3/1978	5/1979	Initial CCO	FEMA, the community, and the study contractor
		8/27/1982	Interim CCO	
		7/20/1983	Final CCO	
City of Gold Beach	11/15/1985	5/1979	Initial CCO	FEMA, the community, and the study contractor
		8/27/1982	Interim CCO	
		7/20/1983	Final CCO	

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see http://www.fema.gov.

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for Curry County and Incorporated Areas (FEMA 2009).

Table 31 is a list of the locations where FIRMs for Curry County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

Community	Address	City	State	Zip Code
City of Brookings	898 Elk Drive	Brookings	OR	97415
City of Gold Beach	29592 Ellensburg Avenue	Gold Beach	OR	97444
City of Port Orford	555 West 20th Street	Port Orford	OR	97465
Curry County Unincorporated Areas	94235 Moore Street	Gold Beach	OR	97444

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the state NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of state and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	http://www.fema.gov
NFIP website	http://www.fema.gov/business/nfip
NFHL Dataset	http://msc.fema.gov
FEMA Region X	Federal Regional Center, 130 228th Street SW, Bothell, WA 98021-9796 (425) 487-4657
Other Federal Agencies	
USGS website	http://www.usgs.gov
Hydraulic Engineering Center website	http://www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Christine Shirley Oregon Department of Land Conservation and Development 635 Capitol Street NE, Suite 150 Salem, Oregon 97301 503-934-0027 christine.shirley@state.or.us
State GIS Coordinator	Cy Smith Geospatial Enterprise Office Oregon Department of Administrative Services 155 Cottage Street NE, 4th Floor Salem, Oregon 97301 503-378-6066 cy.smith@state.or.us
State FEMA Cooperating Technical Partner	Jed Roberts Oregon Department of Geology and Mineral Industries 800 NE Oregon Street, Suite 965 Portland, Oregon 97232 971-673-1546 jed.roberts@dogami.state.or.us

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Booij et al. 1999	American Geophysical Union	*Journal of Geophysical Research, "A third-generation wave model for coastal regions, part 1: model description and validation," Volume 104, Number C4*	N. Booij, R.C. Ris, and L.H. Holthuijsen	Malden, Massachusetts, USA	April 1999	N/A
Boon 2004	Woodhead Publishing	*"Secrets of the tide: tide and tidal current analysis and applications, storms surges and sea level trends", CRC Marine Science*	J.D. Boon	Cambridge, UK	October 2004	N/A
Cooper 2005	U.S. Geological Survey, U.S. Department of the Interior	*U.S. Geological Survey Scientific Investigations Report 2005-5116, "Estimation of peak discharges for rural, unregulated streams in Western Oregon"*	R.M. Cooper	Washington, DC, USA	2005	N/A
FEMA 2009	U.S. Department of Homeland Security, Federal Emergency Management Agency	*"Flood insurance study for Curry County, Oregon and incorporated areas,"*	Federal Emergency Management Agency	Washington, DC, USA	September 2009	http://msc.fema.gov

Table 33: Bibliography and References (Continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Kriebel and Dean 1993	American Society of Civil Engineers	*Journal of Waterway, Port, Coastal, and Ocean Engineering, "Convolution method for time-dependent beach-profile response," Volume 119, Issue 2*	D.L. Kriebel and R.G. Dean	Reston, Virginia, USA	March 1993	N/A
Ris et al. 1999	American Geophysical Union	*Journal of Geophysical Research, "A third-generation wave model for coastal regions, part 2: verification," Volume 104, Number C4*	R.C. Ris, L.H. Holthuijsen, N. Booij	Malden, Massachusetts, USA	April 1999	N/A
SCS 1969	U.S. Department of Agriculture	*"Computer Program from Project Formulation Hydrology," Technical Release No. 20*	Soil Conservation Service	Washington, DC, USA	March 1969	N/A
SCS 1976	U.S. Department of Agriculture	*"WSP-2 Computer Program," Technical Release No. 61*	Soil Conservation Service	Washington, DC, USA	May 1976	N/A
Stockdon et al. 2006	World Scientific	*Coastal Engineering, "Empirical parameterization of setup, swash, and runup," Volume 53, Issue 7*	H.F. Stockdon, R.A. Holman, P.A. Howd, and A.H. Sellenger Jr.	Hackensack, New Jersey, USA	May 2006	N/A

Table 33: Bibliography and References (Continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
van der Meer 2002	Technical Advisory Committee on Flood Defence, The Netherlands	*"Technical report: wave run-up and overtopping at dikes"*	J.W. van der Meer	Delft, Netherlands	May 2002	N/A
WRC 1977	U.S. Department of the Interior	*"Guidelines for Determining Flood Flow Frequencies," Bulletin #17A*	Water Resources Council, Hydrology Committee	Washington, DC, USA	June 1977	N/A
USACE 2010	U.S. Army Corps of Engineers	*"HEC-RAS Version 4.1.0"*	Hydrologic Engineering Center	Davis, California, USA	January 2010	N/A
USACE 1976	U.S. Army Corps of Engineers	*"Computer Program 723-X6-L202A, HEC-2 Water Surface Profiles*	Hydrologic Engineering Center	Davis, California, USA	November 1976	N/A
USGS 1979	U.S Department of the Interior	*"Magnitude and Frequency of Floods in Western Oregon," Open-File report 79-553*	Geological Survey	Portland, Oregon, USA	1979	N/A