

**United States Department of the Interior
National Park Service****National Register of Historic Places Multiple Property Documentation Form**

This form is used for documenting property groups relating to one or several historic contexts. See instructions in National Register Bulletin *How to Complete the Multiple Property Documentation Form* (formerly 16B). Complete each item by entering the requested information.

New Submission Amended Submission

A. Name of Multiple Property Listing

Levees Along the Columbia River in Pacific and Wahkiakum Counties, Washington (1860–1980)

B. Associated Historic Contexts

(Name each associated historic context, identifying theme, geographical area, and chronological period for each.)

1. Indigenous Land Use on the North Shore of the Columbia River (Pre-1860)
2. Development on the North Shore of the Columbia River (1860–1940)
3. Landowners and Private Levees in Pacific and Wahkiakum Counties (1860–Present)
4. Federal Flood Management in the Lower Columbia River Basin (1917–1980)
5. Evolving Local Levee Systems in Pacific and Wahkiakum Counties (1895–1980)
6. The Changing Landscape in the Lower Columbia River Basin (1971–Present)

C. Form Prepared by:

name/title	Chrisanne Beckner, et al.		
organization	Historical Research Associates (HRA)		
street & number	9750 Third Ave. NE, Suite 102		
city or town	Seattle	state	Washington zip code 98115
e-mail	cbeckner@hrassoc.com		
telephone	206.343.0226	date	April 10, 2026

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR 60 and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.

Prepared for Bonneville Power Administration pursuant to the *Memorandum of Agreement Between Bonneville Power Administration and the Washington State Historic Preservation Officer Regarding the Steigerwald Restoration Project in Clark County, Washington*. This MPD **has not** been submitted to the Keeper of the National Register of Historic Places for a formal determination or listing.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Contents

A. Name of Multiple Property Listing 1

B. Associated Historic Contexts 1

C. Form Prepared by:..... 1

D. Certification 1

Table of Contents for Written Narrative 2

E. Statement of Historic Contexts..... 3

Introduction 3

Period of Significance (1860–1980) 3

Historic Contexts 4

Indigenous Land Use on the Northern Shore of the Columbia River (Pre-1850) 4

Development on the Northern Shore of the Columbia River (1860–1940) 5

Landowners and Private Levees in Pacific and Wahkiakum Counties (1860–Present) 13

Federal Flood Management Along the Lower Columbia River (1917–1980) 18

Evolving Local Levee Systems in Pacific and Wahkiakum Counties (1895–1980) 29

The Changing Landscape in the Lower Columbia River Basin (1971–Present) 33

Conclusion 36

F. Associated Property Types 37

Location Patterns 37

Boundaries 37

Levels of Significance 37

Registration Criteria 38

Significance 38

Minimum Eligibility Criteria by Property Type 40

Eligible Property Types 41

Ineligible and Noncontributing Property Types 44

Known Flood-Management Resources Within the Geographic Area 44

G. Geographical Data..... 46

H. Summary of Identification and Evaluation Methods 47

I. Major Bibliographical References..... 49

Figures Continuation Sheet..... 63

Photos Continuation Sheet..... 85

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

E. Statement of Historic Contexts

(If more than one historic context is documented, present them in sequential order.)

Introduction

This Multiple Property Documentation (MPD) for Levees along the Columbia River in Pacific and Wahkiakum Counties, Washington, provides a context for a relatively small number of flood-management structures constructed on the Washington side (northern bank) of the Columbia River at the mouths of six rivers and streams that flow into the Lower Columbia River: the Wallacut and Chinook Rivers on Bakers Bay in Pacific County, Washington; the Grays and Deep Rivers on Grays Bay in Wahkiakum County, Washington; and the Skamokawa and Elochoman Rivers in Wahkiakum County, Washington (Figures 1–3). These waterways and their tributaries traditionally formed floodplains and wetlands along the northern shore of the Lower Columbia River, supporting migrating salmon, birds, and other fish and wildlife. Beginning in the mid- to late nineteenth century, land-use practices developed in association with major trends in fishing, logging, and agricultural growth. These practices began to reshape the wetlands, channelizing waterways, armoring riverbanks, and raising levees and dikes to control the flow of floodwaters. Because of their location on the Columbia River, these waterways were dramatically altered in the twentieth century in association with government actions designed to manage flood damage, support commercial growth in the region, and maintain the valuable transportation routes that let goods flow from the developing region through the mouth of the Columbia River to the Pacific Ocean and beyond. Only with the rise in the conservation movement in the late twentieth and early twenty-first centuries did traditional flood-management efforts, including the maintenance of levees, dikes, floodgates, and revetments, begin to give way to restoration of wildlife habitat, an effort that has, in the early decades of the twenty-first century, begun to remove flood-management resources from the regional landscape.

This MPD provides historic contexts for phases of private flood management, economic growth, formal government flood-management actions, and recent changes in flood-management practice. It identifies the temporal and geographical boundaries of associated flood-management structures and introduces the private, local, state, and federal agencies that participated in flood management in the region. Finally, this MPD briefly defines the types of flood-management structures that are still extant, documents their locations within the geographic boundaries of the MPD, and provides guidance on how such structures may qualify for listing in the National Register of Historic Places (NRHP) under the MPD. The document includes general and specific registration criteria for identified resource types, and includes recommendations for additional research, where appropriate.

Period of Significance (1860–1980)

Archival research suggests that while Indigenous peoples may have constructed flood-management structures along the northern bank of the Columbia River, few if any of these structures are likely to still exist, as the region has been heavily altered by generations of fishing, logging, farming, and ranching. Archival and field research suggest that some privately developed levees and dikes dating from the late nineteenth century and early twentieth centuries may be extant, although few are well documented. Most documented flood-management structures are associated with government actions that date from the early decades of the twentieth century. Therefore, while some privately developed levees and dikes may be extant, many structures likely to qualify under the MPD were altered or improved in association with significant government actions that took place into the 1970s.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

As such, the period of significance for resources eligible for listing in the NRHP under the MPD dates from 1860. At that time, new residents, drawn by the Donation Land Claim Act or other immigration policies, began to develop the region in support of fishing, logging, and agriculture. The period of significance ends in 1980, capping the period of government-led levee development in the region. Beyond 1980, trends in environmental management shifted toward habitat restoration, initiating a period of levee and dam removal, wildland protection, and wetland restoration.

Levees or dikes constructed post-1980 may qualify as NRHP eligible if they possess exceptional significance under Criteria A, B, C, or D and achieved that significance within the last 50 years, as indicated by the National Park Service's (NPS) Criterion Consideration G.¹ However, the MPD does not include sufficient analysis of significant events, trends, or persons to provide a justification for resources constructed post-1980.

Historic Contexts

The region's waterways share a geographic and historic context. First used by Indigenous groups, they were later used by waves of Western migrants. Expanding populations significantly altered the floodplains via fishing, logging, and farming through the mid- to late nineteenth and early twentieth centuries. The region remained relatively rural, especially when compared to nearby cities like Portland, Oregon, but its flood-management structures tell the stories of riverfront communities who relied on levees, dikes, and other such structures to recapture wetlands and convert them to new uses.

Indigenous Land Use on the Northern Shore of the Columbia River (Pre-1850)

For millennia, Indigenous peoples have resided in today's Washington State and relied on its fertile lands and systems of waterways (Figure 4). The Lower Columbia River Basin, now part of Pacific and Wahkiakum Counties, "was home to one of the most numerous and richest Indigenous populations north of Mexico," and longhouses of cedar planks once lined the banks of the river.² According to historians, Indigenous peoples in Wahkiakum County (generally the Wahkiakum and Cathlamet) tied their livelihood to hunting and fishing for river salmon, while those on the Pacific Coast in today's Pacific County (the Clatsop and Lower Chinook) relied more heavily on shellfish than game.³

While villages were distinct, non-Indigenous explorers who traversed the region, beginning with American fur trader Robert Gray in 1792, grouped the villages under Americanized names of Tribal leaders, including "Wahkiakum," to refer to Chinookan-speaking Indigenous villages north of the Columbia and "Cathlamet" for those on the river's southern banks.⁴ Tribal groups north and south of the Columbia, including those from an ancient village site on Elochoman Slough in Wahkiakum County, would later establish a new village site opposite Puget Island and call it "Cathlamet."⁵ As of 2026, Cathlamet is the only incorporated town in Wahkiakum County.

The region was both an active trading site for Indigenous peoples and a location visited by early non-Indigenous explorers, including fur traders, who introduced "French-Canadian, Native Hawaiian, Cree, Iroquois, Metis, and

¹ National Park Service (NPS), "National Register Bulletin: How to Apply the National Register Criteria for Evaluation" (Washington, DC: National Park Service, 1997).

² Kit Oldham, "Wahkiakum County—Thumbnail History," HistoryLink Essay No. 8011, November 18, 2006, <https://www.historylink.org/File/8011>.

³ Irene Martin, *Beach of Heaven, A History of Wahkiakum County* (Pullman: Washington State University Press, 1997), 16.

⁴ Oldham, "Wahkiakum County."

⁵ Martin, *Beach of Heaven*, 14.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

other ethnicities to the river's mouth who worked under the oversight of a British (often ethnically Scottish) managerial class."⁶

European diseases like smallpox had already raged through Indigenous villages, devastating local populations, by the time Captains Meriwether Lewis and William Clark led their party west to the Pacific Ocean in 1805. While Indigenous communities shrank, non-Indigenous explorers arrived in greater numbers, hunting for furs and trading with remaining Indigenous groups throughout the early nineteenth century. Historians estimate that approximately 6,000 Indigenous people remained along the Columbia River in the Lower Columbia River Basin in the 1820s, as newly arrived fur traders established forts along the region's waterways. In 1824, the Hudson's Bay Company established Fort Vancouver on the northern bank of the Columbia River. Such efforts increased contact between Indigenous peoples and non-Indigenous people, which led to increasing waves of disease. In the 1830s, a series of severe outbreaks, believed to be malaria, took the lives of approximately ninety percent of remaining Indigenous communities, destroying the remaining villages on the Columbia.⁷

In the mid-1800s, the influx of White residents only increased, and European immigrants soon married into Indigenous families. In 1846, Scottish immigrant James Birnie brought his wife, Charlotte, whose parents were Kootenai and French Canadian, to open a trading post at what is now Cathlamet. The couple relied on the goods provided by Indigenous residents, who skillfully fished and hunted in the region. The Birnies were joined by others: James's sister Rose, Wahkiakum County's first schoolteacher; New Yorker William Strong, who became a territorial judge; and additional residents from Great Britain, Sweden, and Norway. By the early 1850s, farming families arrived, willing to do the arduous work of clearing trees, burning stumps, and preparing the land for cultivation. These included the Dray family from Ohio, Newell Bearss from New York, the Anderson family from Great Britain, Henri Breuer and Gustavus Krebs from Prussia, and others from Connecticut, North Carolina, and even Scotland. They were followed by more farmers from Scandinavia, who first worked in the growing fishing, logging, and farming industries before establishing their own farms.⁸

Immigrant groups were attracted not only by the natural abundance of the Northwest but also by the promise of free land. By 1855, 30,000 people had traveled to the West Coast to claim land under a series of territorial and federal laws including the Donation Land Claim Act, also known as the Oregon Land Law of 1850. The Act offered up to 640 acres to predominantly White couples in the Oregon Territory, which at the time included what would become Washington State. By 1855, newcomers claimed up to 2.5 million acres in Oregon and Washington. Indigenous peoples continued to live alongside them but suffered numerous disease outbreaks. Skamokawa, the leader of the Wahkiakum and possibly its last surviving male Tribal member, died of unknown causes ca. 1855 at his home in Cathlamet.⁹

Development on the Northern Shore of the Columbia River (1860–1940)

Types of growth in the region varied. While industrial development expanded in port cities like Portland, located at the confluence of the Willamette and Columbia Rivers, growth north of the Columbia was slower and generally focused on the Puget Sound. A thriving transportation and shipping industry grew on the Columbia, with water travel connecting the Pacific Ocean to Portland and farther east to the Inland Northwest, where miners discovered gold, silver, and other minerals in the 1850s and 1860s. With minimal overland travel,

⁶ Douglas Deur, *Empires of the Turning Tide: A History of Lewis and Clark National and State Historical Parks and the Columbia-Pacific Region* (Washington, DC: U.S. Government Printing Office, 2016), Foreword, iii.

⁷ Oldham, "Wahkiakum County."

⁸ Martin, *Beach of Heaven*, 25–36.

⁹ Martin, *Beach of Heaven*, 23.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

extracted minerals flowed through the region's waterways, much of it on the sternwheel steamers operated by the Oregon Steam Navigation Company in the late nineteenth century:

The gateway to this tremendous source of wealth was Portland and Astoria, with the Columbia River serving as the transportation artery. The treasure shipments of gold bullion and raw ore passing through Portland from June 25 to December 5, 1861 amounted to \$2,503,656.00. Wells Fargo moved \$21,401,000 in gold from 1864 until 1867. This was all downstream. In addition, during the year 1867, \$2,462,793 in merchandise moved upstream to supply the gold hunters.¹⁰

Through the late 1860s, approximately twenty Oregon Stream Navigation Company steamers made runs on the Columbia River. As overland travel expanded and loggers began constructing logging railroads to haul timber out of old growth forests, the Oregon Steam Navigation Company was absorbed by the Oregon Railroad and Steam Navigation Company, incorporated in 1879.¹¹

The region's history of development is tied closely to the extraction economy that brought hunters, fishers, and loggers to the region to trade with Indigenous groups and supply populations around the world with the pelts, fish, and timber the region provided. Though fur trappers arrived first, over-trapping to limit competition depleted the beaver population, and the popularity of furs soon waned. The region's timber, fish, and agricultural markets followed, and capitalists from the eastern United States recruited immigrant labor to grow them. Some would stay, establish communities, and begin to populate the lands north of the Columbia River:

Some recruited immigrants from southern China, mostly male, who served as laborers in the region's canneries and early farms. Indeed, for a time the Chinese population rivalled that of the native-born American population in the Columbia-Pacific region. Some also recruited Scandinavian immigrants—Norwegians, Swedes, and Finns, in particular—who moved to the region as families. They helped build the early logging industry, worked in canneries and fishing boats, and eventually founded their own businesses and small farms.¹²

As the population grew in the late nineteenth century, specific industries, particularly those that could make use of the region's natural resources and send their goods down the Columbia River, the region's highway, began to shape the wetlands and floodplains of the Lower Columbia River Basin (Figure 5). As noted by historian Irene Martin, most early arrivals in Wahkiakum came from Great Britain or the eastern United States, but soon immigrants from across Europe arrived:

In the early 1870s, the first wave of Scandinavian immigrants began to arrive from Sweden and Norway. Driven out of their own countries by famine, overpopulation, and lack of employment, they came by sailing ship around Cape Horn to the west coast, or crossed the country by rail after arriving on the east coast. Some migrated first to the Great Lakes, and then westward to the Columbia. Once here, they took donation land claims, and sent for families, brides, and neighbors from their home towns. Similar patterns occurred among Finnish immigrants and those from the Dalmation coast in the 1870s and later. The latter settled primarily in fishing communities, in order to follow their traditional occupation. The Finns, Norwegians, and Swedes

¹⁰ Carlton E. Appelo, *Cottardi Station, Wahkiakum County, Washington* (Deep River, WA: n.p., 1980), 20.

¹¹ John W. Lundin and Stephen J. Lundin, "Stagecoach and Steamboat Travel in Washington's Early Days," HistoryLink Essay No. 10250, November 21, 2012, <https://historylink.org/File/10250>.

¹² Deur, *Empires of the Turning Tide*, Foreword, iii.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

seem to have followed the traditional occupations of their homelands—fishing, farming, and logging.¹³

Fishing

While early fishing operations were relatively modest, by the 1850s, fishermen from other regions were bringing their skills to the Pacific Northwest and encountering, for the first time, the region's legendary salmon runs. Canneries thrived along the northern bank of the Columbia beginning in the late 1860s. First sailboats and later engine-powered boats fished the Columbia with nets, traps, and seines. In the Pacific Ocean, off the west coast of Pacific County, fishers used trollers to haul in their catches.¹⁴

In 1866, George W. Hume arrived from California, looking for a place to launch a Columbia River cannery. With the help of his brothers, mother, and local fishers, the Hume Brothers canned 4,000 cases, each filled with forty-eight cans of salmon, in their first year at their Eagle Cliff cannery, approximately eight miles upriver from Cathlamet.¹⁵ It was the beginning of a powerful industry that would ship Northwest salmon, prized as nutritious and inexpensive, to working families around the world. By 1877, the news of tremendous profits had spread, and there were twenty-nine canneries and approximately 1,000 fishing boats operating on the Columbia River. By 1881, the industry had grown to thirty-five canneries.¹⁶ Immigrant laborers, many of whom were Chinese or Japanese, did much of the work by hand. They made and labeled cans and used handmade linen nets. Fish, either caught in the Columbia or in Alaska, were sometimes so plentiful that they were given away or even left to rot.¹⁷ By 1880, 551 Chinese people, mostly male cannery workers, made up a third of the population of Wahkiakum County—a situation that would soon change with the Chinese Exclusion Act of 1882.¹⁸ In 1883, production on the Columbia River peaked, with thirty-nine canneries producing 629,400 cases of salmon worth \$3.14 million.¹⁹ As noted by historian Irene Martin, “one of the biological features that enabled [local salmon’s] success was their propensity to spawn near the tidal reaches of streams such as the Elochoman, Grays River . . . and Skamokawa Creek. Wahkiakum’s proximity to the Columbia River estuary, which chum use to acclimate themselves to the ocean, was also significant.”²⁰

Fishing, which had been foundational for Indigenous peoples, eventually led to overfishing to meet cannery demands. Industrialization of the region's rivers, including alterations made by loggers, farmers, and the U.S. Army Corps of Engineers (USACE), reclaimed wetlands from the annual cycle of flooding and draining, altering the conditions that supported annual salmon runs. Dredged soils from channelization made sand dunes of former wetlands, and silt built up in the spawning beds: “Creeks that once meandered along the valley floors were straightened in the early twentieth century, in a misguided attempt to reduce flooding. The increased water velocity, however, adversely affected the streams’ aquatic life.”²¹

Logging

Portland, at the confluence of two major rivers, became the regional center of commercial and industrial development in the mid-1800s, while smaller communities along the northern bank of the Columbia River

¹³ Martin, *Beach of Heaven*, 34.

¹⁴ Carlton E. Appelo, *Pillar Rock, Wahkiakum County, Washington* (Deep River, WA: n.p., 1969), 26–28.

¹⁵ Appelo, *Pillar Rock*, 26–28.

¹⁶ Appelo, *Pillar Rock*, 26–31.

¹⁷ Appelo, *Pillar Rock*, 26–31.

¹⁸ Kit Oldham, “The First Salmon Cannery on the Columbia River opens at Eagle Cliff, Wahkiakum County, in 1866,” HistoryLink Essay No. 8036, December 20, 2006, <https://historylink.org/File/8036>.

¹⁹ Appelo, *Pillar Rock*, 28.

²⁰ Martin, *Beach of Heaven*, 87–88.

²¹ Martin, *Beach of Heaven*, 88–89.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

benefitted from the increasing transportation network. Those attracted by the Donation Land Claim Act arrived to find dense forests and wide floodplains. They cleared the land with the help of pack animals and day laborers, who downed trees and sent them down a network of skid roads and rivers and streams. Those feeding the hungry lumber industry floated their logs to mills or to steamers bound for the Pacific Ocean. Because the mouth of the Columbia River was treacherous and full of shifting bars, southwestern Washington was logged later than the lands around Washington's Puget Sound. First, loggers felled trees within close distance to the shoreline, using oxen, horses, or other pack animals to drag logs down skid roads to sawmills or shipping corridors. Logging companies then began to construct small logging railroads through the region, and logging increased. It increased again once pack animals were replaced by steam donkeys, and other innovations sped up the cutting of trees.²²

While logging companies sought out old growth trees in southwestern Washington for profit, farmers who came to convert the land to agricultural uses saw the trees mainly as impediments. The abundance of timber turned new residents into both loggers and farmers. As noted by historian Irene Martin, "the transition between pioneer land clearing and logging is blurred. There is no precise date regarding the start of logging, which undoubtedly existed side by side with land-clearing activities; and no distinction between amateur and professional loggers."²³

As the lands closest to the rivers were logged, logging moved inland, and residents like John Baptiste (J. B.) Yeon, who later oversaw the construction of the Columbia River Highway and fathered noted Northwest regional architect, John Yeon, established logging camps for their teams. As they moved felled trees to waterways for transport, these teams of loggers began to shape the rivers and streams to their own uses.²⁴ As a 1901 description of J. B. Yeon's "model" logging camp made clear, a team of thirty-five people could drop 70,000 feet of logs into the Elochoman River per day:

Except in the winter times when the freshets are on, the Elokommin [*sic*] is a shallow stream about 130 feet wide at the point. In order to secure water for a pond, Mr. Yeon built a dam one-quarter of a mile below the chute. This dam backs up the river sufficiently to float the logs when they are dumped into the river from the chute. Just enough water is allowed to escape through this dam to make a current, which takes the logs down to the boom above the dam and keeps the river clear of logs at the end of the chute. The noted big dam of Mr. Yeon is located a mile up stream from the camp. The dam itself is made of massive timbers which were hauled into place by a steam donkey, and then heavily planked . . . Mr. Yeon sluices the logs through the lower dam every few days. When the logs are nearly all through the sluice way, the donkey engine gives a warning whistle and the big dam is then opened wide. In short time the water reaches the lower dam, when all the plank of this dam are tripped and the full head of water goes roaring through forming billows below the dam of from between 10 to 15 feet in height, the waters flooding the stream from bank to bank, sweeping the logs before it and carrying them to tidewater, some eight miles below.²⁵

Such processes were so popular that Washington's Supreme Court issued a ruling regarding the Elochoman River in 1901: "The stream is of such a character that its use as a public highway is restricted to one purpose,

²² Steve Olson, "Logging, Lumbering, and Forestry in Southwest Washington," HistoryLink Essay No. 23258, April 16, 2025, <https://historylink.org/File/23258>.

²³ Martin, *Beach of Heaven*, 41–42.

²⁴ Randy Gragg, "John Yeon (1910–1994)", Oregon Encyclopedia, 2024, https://www.oregonencyclopedia.org/articles/john_yeon/.

²⁵ "An Up to Date Logging Camp," *Skamokawa (WA) Eagle*, August 9, 1900.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

viz. that of floating logs or timbers, and we think a distinction must be drawn between such streams and those which are highways for general trade or commerce.”²⁶

Logging would continue to reduce forests to clearcuts deep into the twentieth century, when Washington was the nation’s leading producer of lumber.²⁷ As noted by an analysis of census numbers, there were 8,290 wage-earners working as loggers and rafters in Washington in 1900. By 1910, that number increased to 21,949. Between 1900 and 1910, wage-earners in Washington sawmills increased from 5,936 to 23,171. Agricultural laborers also increased in this period, rising from 17,455 to 34,658 between 1900 and 1910. These numbers would increase, but by much smaller margins, between 1920 and 1930. In 1938, Oregon would surpass Washington as the nation’s leading producer of lumber. While other forms of development and industry would reign in the mid-twentieth century, the rise of plywood mills in the 1960s led to additional logging and milling.²⁸ By the 1960s, almost fifteen percent of Washington jobs were in the logging and lumber industries.²⁹

One example of a successful logging operation that shaped population and land use in Wahkiakum County was the Deep River Logging Company, founded by Simon Benson, who bought more than 4,000 acres of fir, spruce, hemlock, and cedar near Cathlamet from Ordway & Weidler at the turn of the twentieth century. As with much land in the region, these lands were initially part of the grant to the Northern Pacific Railroad, which considered a southwestern Washington route for a transcontinental line. When the route was finalized to the north, bypassing the area, the Northern Pacific divided the land and sold it to growing companies like Frederick Weyerhaeuser’s Coast Lumber Company or to homesteaders—who themselves sold it to logging companies for harvesting some of the best timber in the country.³⁰ Benson began logging with oxen, but by the 1890s, he and his son Amos had replaced pack animals with a steam donkey and locomotive. In 1900, the *Timberman* reported that Benson had formed the Deep River Logging Company with partners from the Olson family. Their logging camp at Deep River attracted Swedish and Finnish fishermen who built a tight, if remote, community, traveling by foot, by water, or on the logging company’s railroads. As became typical, the families of the loggers established one-room schoolhouses, built a small church, and farmed their own land for subsistence.³¹

Companies like Deep River built numerous railroad spurs and new logging camps as they logged Wahkiakum and Pacific Counties, brought in new and more powerful engines, tunneled through rock to lower their railroad grades, and brought timber to market at lower costs. The company would change hands and partners but would continue logging into the 1930s. By 1940, trucking had fully replaced the logging railroads, eliminating grade issues and ending an era of floating logs down river. Between the years of 1900 and 1931, the company floated “a billion feet of logs,” according to the company’s president, Willard Evenson.³²

Farming

As noted above, in the Lower Columbia River Basin, the lands to be logged first were those closest to the riverbanks. This simplified transportation and left easily irrigable lands open for development. These newly cleared lands and natural marshes along local waterways were attractive to farmers and particularly to new immigrants bringing farming practices from Scandinavian and other northern European countries. In

²⁶ Martin, *Beach of Heaven*, 42.

²⁷ Steve Olson, “Logging, Lumbering, and Forestry in Southwest Washington.”

²⁸ Carlos Arnaldo Schwantes, *The Pacific Northwest: An Interpretive History* (Lincoln: University of Nebraska Press, 1996), 331.

²⁹ Steve Olson, “Logging, Lumbering, and Forestry in Southwest Washington.”

³⁰ Deur, *Empires of the Turning Tide*, 164.

³¹ Carlton E. Appelo, *A Pioneer Scrapbook of the Columbia River North-Shore Communities, Wahkiakum and Pacific Counties, Washington, 1900–1985* (Ilwaco, WA: Pacific Printing Co., 1986), 15–19.

³² Appelo, *A Pioneer Scrapbook of the Columbia River North-Shore Communities*, 100.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Washington, such farmers began reclaiming marshlands in the Skagit Valley in the 1860s, when Michael H. Sullivan and Samuel Calhoun worked to impound their claims, using shovels and wheelbarrows during low tide to raise dikes. A typical example was 8' wide at the base and 4' wide at the ridge. "Behind it a trench and sluice boxes under the levee helped to drain water from the fields."³³

Many Scandinavian and northern European immigrants were drawn to Washington State. The landscape and climate were familiar, traditional farming practices transferred well, and they had experience reclaiming marshlands. As noted by early twentieth-century historians, by the 1880s, Snohomish County in northern Washington was growing with farmers from Europe:

. . . every steamer brought a crowd of strangers from abroad, who came to gain a knowledge of the resources of the country and to look for homes. A large percentage of these people were so pleased with the country that they remained and helped to develop it. A particularly earnest and progressive class of immigrants was a colony of Scandinavians who had settled some years previously on the Stillaguamish River at and near the town of Stanwood. They were all steady and industrious people and had already made themselves comfortable homes out of the forest. They had churches and schools and were altogether a very desirable class of citizen.³⁴

Due to the Northwest's rainy climate, available lands were often partly covered in wetlands, flooded by freshets caused by warming snow melt, and traversed by rivers that changed course in response to extreme weather (Figures 6–10). As farms developed on claimed lands in Pacific and Wahkiakum Counties, early non-Indigenous residents in the area recognized the benefit of working cooperatively to support successful farming. They formed organizations like the Grays River Grange (1902) to promote education, "mutual protection," and "friendly relations" in their communities.³⁵ A 1927 history of the Grays River Grange defined the organization's goals: "reduce our expenses both individual and corporate, to buy less and produce more in order to make our farms self-sustaining, to diversify our crops, and crop no more than we can cultivate, to condense the weight of our exports selling less in the bushel and more on hoof and in fleece; less in lint and more in warp and woof."³⁶

Dairying families were also attracted to the floodplains north of the Columbia, as their animals required open grassland and were vulnerable to animal attack in the region's forested areas. Dairy farmers preferred estuaries "where grassy salt marshes lined the middle to higher tidal zone . . . In these places, homesteaders sometimes filled the deep, muddy, and intermittently inundated channels, or built impromptu bridges over such channels. In time, with the aid of horse teams, they began to build dikes, augmenting and reconstructing these features with time to expand and repair the soil berms around individual fields."³⁷ By doing so, farmers increased their grazing land and minimized flooding but also "replaced biologically productive marshlands with damp but passable grazing lands, often containing nutritious grasses that proved elusive in other parts of the coastal landscape."³⁸ While these early efforts at diking during the late nineteenth century are not well documented in historic-period records, farming remained the primary land use in the region covered by the MPD throughout the early to late twentieth century; it is likely that some of the earliest structures that defined the courses of

³³ Nick Rousso, "Farming in the Skagit Valley," HistoryLink Essay 21283, September 24, 2021, <https://historylink.org/File/21283>.

³⁴ Interstate Publishing Company, *An Illustrated History of Skagit and Snohomish Counties, Their People, Their Commerce, and Their Resources* (n.p.: Interstate Publishing Company, 1906), 270.

³⁵ Appelo, *A Pioneer Scrapbook of the Columbia River North-Shore Communities*, 37–47.

³⁶ Appelo, *A Pioneer Scrapbook of the Columbia River North-Shore Communities*, 37–47.

³⁷ Deur, *Empires of the Turning Tide*, 106.

³⁸ Deur, *Empires of the Turning Tide*, 106.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

rivers and streams in the region influenced the landscape in ways that are still visible in extant flood-management structures.

This evolution of land use, particularly as associated with farming, was summarized in a 1972 report by the USACE, the agency that would take over flood-management activities from private landowners and local governments in the early to mid-twentieth century:

In the early 1900's, it was realized that use of the flood plain for any agricultural activity other than intermittent grazing would require levees to protect the land from annual floods. Most of the levees and other flood protective facilities in the area were constructed prior to 1925. Within the protected areas, farming, of varying degrees of intensity, has developed. At present, most of the farms are relatively small. Many are operated as part-time farms, the owner or operator working in the lumber or fishing industry. As a result of the farming activities, most of the land in the leveed areas has been cleared of trees and brush. The brushy areas inside the levees usually are located along the sloughs or ditches that drain the farmland. Land in the flood plain and outside the levee protection has not been developed extensively. Cleared areas are being used for intermittent pasture, but much of the low land is covered with small trees and brush.³⁹

Transportation Networks North of the Columbia River

Early development in southwestern Washington relied on steamers, railroads, and wagon roads for overland travel. By the early twentieth century, efforts like the Good Roads Movement and the rising popularity of individual automobiles led to the establishment of a statewide highway system (Figures 11–13). A connected network would crisscross Washington in the early twentieth century, leading to the construction of bridges, culverts, and levees to allow travel over rivers and streams. While the roadways themselves were not constructed as flood-management structures, they were often placed on top of levees designed to protect lands on the banks of the region's rivers. As such, they required the same kinds of construction techniques that were used for flood management.

In 1905, Washington's new State Highway Board held its first meeting, and by 1911, the state's first highway act would put the earliest roadways under state control. By 1916, the establishment of a nationwide network was a priority, particularly for the management of troops and supplies during the First World War. President Woodrow Wilson signed the Federal Aid Road Act into law in 1916, and in 1921, the federal Division of Highways was placed under the control of the new Department of Public Works.⁴⁰

These early governmental efforts led to the construction of roadways like the Pacific Highway, also known as Highway 99, a West Coast route that stretched from Mexico to Canada and was completely paved in 1923. Roadways running between Pacific and Wahkiakum Counties were later to develop. The full Olympia Loop Highway, or U.S. 101, was completed in 1931, aligning over the Astoria Bridge to Ilwaco in Pacific County and up through western Washington.⁴¹

³⁹ U.S. Army Corps of Engineers (USACE), "Final Environmental Statement: Lower Columbia River Bank Protection Project, Oregon and Washington," August 31, 1972, <https://usace.contentdm.oclc.org/digital/>.

⁴⁰ Walt Crowley and Kit Oldham, "Transportation Chronology: Moving Washington for a Century — 100 Years in the History of the Washington State Department of Transportation (WSDOT)," HistoryLink Essay No. 7273, March 10, 2005, <https://www.historylink.org/File/7273>.

⁴¹ Crowley and Oldham, "Transportation Chronology."

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Highway 4, or the Ocean Beach Highway, was constructed in pieces, aligning southeast from U.S. 101 and forming a scenic route through Pacific, Wahkiakum, and Cowlitz Counties to Kelso, Washington. It hugs the Columbia's northern riverbank in sections, connecting small towns like Ilwaco and Chinook in Pacific County to Deep River, Skamokawa, and Cathlamet in Wahkiakum County. Although the roadway appeared on state highway maps as early as 1915, it was still in development, with some sections built either by Pacific or Cowlitz County with the help of state funds, not yet "open to travel."⁴²

As road networks expanded, news of their construction appeared in regional newspapers, as in 1926, when Spokane's *Spokesman-Review* reported that people in Pacific County were anxious for a dike to be constructed across the mouth of the Chinook River "following announcement that the project had been sanctioned by the war department."⁴³ The new dike was reportedly 1,000' long and designed to carry the highway across the river's mouth and, at the same time, reclaiming thousands of acres of tideland. The work was paid for jointly by the State and protected landowners.⁴⁴ Brookfield Quarry and Towage Company won the Washington State Highway Commission's contract for constructing the levee in 1927. According to the Washington State bridge inventory, it remains the oldest river crossing within the MPD's geographic boundary.⁴⁵

This dike will provide the right of way for the Ocean Beach Highway, materially reducing the distance between Ilwaco and Chinook, and at the same time, nearly 2,000 acres of valuable tideland will be reclaimed. The contract price for the work is \$31,770. The dike will be 120 feet thick at the base and 40 feet wide on top. The Gilpin Construction company has completed the construction of the big concrete tidegates by which the Chinook River will pass through the dike, while John Slotte and Company of Astoria are now working on a contract for grading the highway to connect with the dike road.⁴⁶

Even as late as 1931, Highway 4, or the Ocean Beach Highway, remained primarily graveled, with some sections in Wahkiakum County not yet open, including east and west of Grays River.⁴⁷ By 1933, the route was entirely open, with the section west of Skamokawa graveled and the eastern section paved. By 1939, Public Works Administration (PWA) funding had helped construct the Cathlamet Bridge between Cathlamet and Puget Island.⁴⁸ By that time, U.S. 101 in Pacific County was fully paved, and a section of gravel roadway now known as Highway 401 connected the northern bank of the Columbia River near Chinook with U.S. 101 to the north.⁴⁹ The whole of Interstate 5 would not be completed until 1969, when it would take traffic off smaller rural highways.⁵⁰

⁴² James Allen, *State of Washington Showing State Highways Authorized by Legislative Acts of 1915*, James Allen, *State Highway Commissioner*, 1915, https://www.sos.wa.gov/legacy/maps/maps_detail.aspx?m=27.

⁴³ "Approve Chinook River Dike," *Spokesman-Review* (Spokane, WA), April 9, 1926.

⁴⁴ "Approve Chinook River Dike."

⁴⁵ WSDOT, "All Bridge and Tunnel Inventory (State and Local)," accessed January 5, 2026, <https://geo.wa.gov/datasets/WSDOT::wsdot-all-bridge-and-tunnel-inventory-state-local/explore?location=46.293821%2C-123.756596%2C11.00>.

⁴⁶ "Contract Let for Chinook River Dike," *Astoria (OR) Evening Budget*, February 17, 1927.

⁴⁷ Samuel J. Humes, *Highway Map, State of Washington*, Samuel J. Humes, *Director of Highways*, January 1931, https://www.sos.wa.gov/legacy/maps/maps_detail.aspx?m=34.

⁴⁸ The NRHP-eligible Cathlamet Bridge is also known as the Columbia River Puget Island Bridge, the Julia Butler Hansen Bridge, and Bridge No. 409/10. Craig Holstine, "Julia Butler Hansen Bridge," Historic Property Inventory Form, 2016, <https://wisaard.dahp.wa.gov/>.

⁴⁹ Murrow, L.V. *Highway Map, State of Washington*, L.V. Murrow, *Director of Highways, Revised to April 1, 1933*, https://www.sos.wa.gov/legacy/maps/maps_detail.aspx?m=70.

⁵⁰ Crowley and Oldham, "Transportation Chronology."

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Landowners and Private Levees in Pacific and Wahkiakum Counties (1860–Present)

As noted above, by the 1860s, the region's first permanent non-Indigenous residents were establishing farms, homes, and businesses on the northern bank of the Columbia River. Although few historic-period accounts detail construction of the first dikes and levees in the region, early government surveys recorded them: "The first settlers utilized the marshes as pasture, by grazing cattle on the marsh vegetation at mid and low tide. By the time of the 1868-73 survey, the first dikes were already in place, low structures built to protect local areas of high marsh from regular inundation."⁵¹

As communities coalesced along the banks of the region's rivers, the need for everything from tanners to physicians became clear. The call for new residents was often couched in boosterism, as in the *Skamokawa Eagle* in 1891:

With a water front unsurpassed by any harbor on the river, covering as it does some three miles, and with a depth of water ranging from 25 feet to 60 feet at low tide, is it any wonder that Skamokawa people are sanguine that at no distant day they are to have a big, commercial city here. With the main ship channel of the great Columbia passing within a "stones throw" of her wharf and with a direct rout up river and down, why should she not be a point of embarkation for the many ships which are in time to make the Columbia river their point for loading and unloading of rich cargoes. Railroads have surveyed to this point and it is only a question of a short time when the whistle of the locomotive will echo up the valleys of the Skamokawa. The finest point on the river for a dry dock is here and a ship yard is already here and boats are being built every year. The lumber to build vessels with is manufactured not 100 feet distance from the ways from which they are launched.⁵²

Much of the appeal of the region was in its relationship to the water routes that carried goods and people, but the character of the soils was also a draw. In 1891, the *Seattle Post-Intelligencer* published an article on the marsh lands of Washington, estimating that a third of western Washington was river bottom or alluvial soils, most of which were fresh water, but about twenty percent of which were tidal. Both types required diking or levees to protect them: "On rivers where dikes are made against freshets, one portion of the dike may protect fresh water marsh or ordinary river bottom land against river overflow only, while a mile or two farther down the continuation of the same levee may protect strictly tide marsh land from tidal or salt water overflow."⁵³ The article boasted that 1,885 acres of land along the Puget Sound had been diked, with 150 miles of levees in Skagit County, 37 miles in Snohomish County, and 15 miles elsewhere in the state. The article claimed that the levees evolved from the work of "a few venturesome settlers" in Snohomish and Skagit Counties in the 1860s: "The difficulties were many and the progress slow for five or ten years, but as soon as the era of experiment was passed the progress to wealth was steady and rapid. In the older regions dikes are constantly being improved, made higher, wider, and stronger . . . some of the recent dikes are immense levees, many miles long, wide and thick enough to form solid wagon roads."⁵⁴

While the article focused on communities north of Puget Sound, it also provided a summary of lands in Pacific County, where there were an estimated 1,650 acres of tidal marshes along the Wallacut River and 1,475 acres along the Chinook River ready to be enclosed and cultivated for a relatively low cost:

⁵¹ Duncan W. Thomas, "Changes in Columbia River Estuary Habitat Types Over the Past Century," Columbia River Estuary Study Taskforce, Astoria, OR, July 1983.

⁵² "Rustling Skamokawa," *Skamokawa Eagle* (Cathlamet, WA), July 29, 1891.

⁵³ "Tide Marsh Lands Some of the Richest Agricultural Soil in the World," *Seattle (WA) Post-Intelligencer*, July 17, 1891.

⁵⁴ "Tide Marsh Lands Some of the Richest Agricultural Soil."

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

On the average it costs \$20 an acre to dike and drain an average tide marsh farm . . . Unimproved tide marsh lands are valuable for pasturage. When simply diked their value is greatly increased. When cultivated, the first thing raised usually is oats. Afterward, hay or grains, vegetables and fruits are produced . . . the most productive tide marsh land is that not right on salt water, but in the river deltas where salt and fresh water meet—about where open and brush marsh join. He who can secure this land anywhere in Washington secures a fortune.⁵⁵

As fishing and logging began to wane, the region focused its attention on its prime farmland. Of the 100,000 acres of tidelands in Washington, the *Skamokawa Eagle* estimated that those bordering the Columbia River were among the richest: “Those in this vicinity have been found very productive producing an immense yield of hay to the acre, and there is small wonder for such yields, as the soil is made up of decayed vegetable matter and is of unknown depth. If ever the day should come when the great fisheries of this river fail, the fishermen can go onto these lands and make a good living. They will rival the diked lands of Holland.”⁵⁶

While dikes in Pacific or Wahkiakum Counties may have been relatively informal by the 1890s, farmers who had arrived beginning in the 1870s and 1880s were looking to improve their way of life and make greater strides economically. A disastrous flood hit the region in 1892, damaging the cultivated lands they had worked to establish: “During this flood, the valley bottoms were completely covered with water, nearly ruining a number of meadows and pastures. Bridges were washed out, landslides occurred and roads were damaged.”⁵⁷ Under threat of additional damage, diking became not just an economic concern but also one of health and safety.

In Washington, beginning in 1895 with the passage of House Bill Nos. 401 and 402, Washington counties were authorized to establish diking and drainage districts and use bonds to construct associated structures, including dikes and levees.⁵⁸ Counties throughout Washington established districts, voted for county governing bodies, and began working to control the state’s wide floodplains, particularly those along the Puget Sound but also in eastern Washington. The state’s river valleys, including those at the foot of Mount Rainier, where snow melt was dramatic, were known to hold some of the state’s most important agricultural land. Diking and drainage districts provided a funding stream for constructing flood-management structures that could convert those valleys into more lucrative lands.

In southwestern Washington, farmers soon began following the trends of other river valleys. Newspapers began reporting on residents like Elias Grungstad, an independent landowner who was diking his own farm in Wahkiakum County by 1894: “it encloses about 20 acres and is as tight as a jug. The land enclosed is rich tideland and will produce fine crops of garden truck or hay.”⁵⁹ Such independent diking projects were constructed by the residents themselves, who gathered soil to form a berm above the high-water mark, reinforcing the riverbank and providing a higher barrier for overtopping, which protected the lands behind them from flooding. However, private landowners had little access to standards and engineering plans and did not always know what levees would fail, as some did in significant floods.

⁵⁵ “Tide Marsh Lands Some of the Richest Agricultural Soil.”

⁵⁶ “Rustling Skamokawa.”

⁵⁷ Irene Martin, *Skamokawa: Sad Years, Glad Years* (pub. by author, 1985).

⁵⁸ “It Adjourns Today: Other House Bills Passed,” *Spokesman Review* (Spokane, WA), March 14, 1895.

⁵⁹ “Skamokawa, Wash., Mar. 15, 1894,” *Skamokawa Eagle* (Cathlamet, WA), March 15, 1894.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

In the face of regular seasonal flooding, regional diking became a business venture for engineers in the early twentieth century. In 1907, W. G. Brown formed the Brown Diking Company, which would shape the riverbanks in Pacific and Wahkiakum Counties throughout the early decades of the twentieth century. Brown, a civil engineer from Lockport, Illinois, who moved to Oregon in 1883, served as the engineer in charge of government works at the Cascade Locks on the Columbia River from 1897 to 1903.⁶⁰ In 1907, he joined with W. N. Jones, G. B. Hegardt, and W. C. Brown to purchase a small, 1,600-acre island in the Columbia River known as Tenas Illahee for \$9 an acre.⁶¹ Located across from Skamokawa and Cathlamet, the island was adjacent to the larger Puget Island. By 1909, the partners, known as the Brown Diking Company, made Tenas Illahee into a demonstration in diking, building a scow or barge to dredge the river and fill in the variable tidelands. However, the “watery sand” they dredged was akin to quicksand and slipped away as soon as it was in place.⁶² In spite of the engineering concerns, the company constructed 6.5 miles of dikes around the island in eighteen months, showing how even within the notoriously challenging Columbia, lands could be reclaimed for farming and dairying: “The heaviest fill made was in a slough that was 375 feet across and 15 feet deep. The cost of making this fill was in the neighborhood of \$4,000. The expense of the entire diking project was about \$30,000 and 1500 acres of rich fertile land that is suitable for either farming or grazing proposes, has been reclaimed.”⁶³

By 1910, parts of Wahkiakum and Pacific Counties were still covered by dense forest, with many newly logged acres still undeveloped. The U.S. Department of Agriculture (USDA) estimated that clearing logged-off lands ranged from \$50 to \$150 an acre. The population was growing slowly, with only 200 to 400 people in the Wahkiakum County towns of Cathlamet and Skamokawa, as compared to South Bend and Raymond in Pacific County, with 2,500 to 3,000 inhabitants each.⁶⁴ “[In Wahkiakum,] settlement has taken place mainly along the alluvial valleys of the Columbia and other principal rivers, while in Pacific County it is confined almost wholly to the river valleys, the delta flats, and the region around Willapa Bay.”⁶⁵

While histories of the region’s small communities do not often focus on flood management, some local historians note that early towns often faced the rivers, developing around canneries, logging camps, or on docks and along river routes. As an example, Deep River, a busy town from which loggers would raft their logs to mills in Astoria or elsewhere, was built on marshland. Residents dealt with seasonal flooding by constructing a network of raised boardwalks between businesses to keep pedestrians moving freely through the area, even in times of flooding (see Figure 7). While these raised boardwalks supported public life, independent farmers were still pursuing their own flood-management measures, as in 1911, when local landowner Charles Rangila was independently diking around his Deep River farm “to keep the high tides off his farmland.”⁶⁶

George A. Nelson, Extension Agent

By 1911, as farmers sought to reclaim the region’s rich marshes and wetlands, Washington was experiencing a reignited interest in the nineteenth century grange movement. Whereas in 1900, Washington had 23 local

⁶⁰ Portland Chamber of Commerce, *Men of Oregon: A Gallery of Likenesses of Representative Men, Together with Brief Sketches of Their Lives* (Portland, OR: Chamber of Commerce Bulletin, 1911).

⁶¹ “Tenas Illihee Island Sold,” *Skamokawa Eagle* (Cathlamet, WA), September 19, 1907.

⁶² “Local and River Items,” *Skamokawa Eagle* (Cathlamet, WA), October 1, 1908.

⁶³ S. G. Williams, “E. A. Coe Returned Last Friday . . .” *Skamokawa Eagle* (Cathlamet, WA), May 20, 1909.

⁶⁴ U.S. Department of Agriculture (USDA), *Reconnaissance Survey of Southwestern Washington*, May 16, 1913, https://archive.org/stream/usda-reconnaissance-survey-of-southwestern-washington-1913/usda-reconnaissance-survey-of-southwestern-washington-1913_djvu.txt.

⁶⁵ USDA, *Reconnaissance Survey of Southwestern Washington*.

⁶⁶ Donna Gatens-Klint and the Appelo Archives, *Images of America: Naselle-Grays River Valley* (San Francisco, CA: Arcadia Publishing, 2009), 116.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

chapters with 656 members, by 1910, there were 260 chapters with approximately 13,000 members.⁶⁷ With an interest in increasing yields, the Grays River Grange appealed for, and retained, the first extension agent west of the Mississippi River, an envoy who brought to their local community the newest and best agricultural advice.

The Cooperative Extension System was the outgrowth of an early nineteenth century farming journal, *American Farmer*, which encouraged its readers to share their newest innovations and accomplishments. Seaman A. Knapp, the father of the extension system, worked for the USDA and tested a demonstration farm concept in Texas, where he was able to show how adjusting practices and favoring a different breed of cotton seed could reduce boll weevil loss. According to the USDA, “this work served as the foundation of USDA’s Farmers Cooperative Demonstration Work Program,” the precursor to the extension system.⁶⁸

County Agriculturalist George A. Nelson arrived in Wahkiakum County in November 1912, two years before the Smith-Lever Act of 1914 officially created the Agricultural Cooperative Extension Service, an endeavor between land grant colleges and the USDA designed to share practical agricultural information with the nation’s farmers.⁶⁹ “Wahkiakum area residents raised \$760 that first year and the federal Office of Farm Management put up an additional \$1,440. There were about 220 farms in the county at that time, with most of them located in small valleys leading from the Columbia. The main interest was on improving dairy farming.”⁷⁰

In 1912, Wahkiakum County farmers still transported all their produce to Portland by boat, as there were no reliable overland roads between settlements at Grays River, Skamokawa, and Elochoman. The county’s farms averaged twenty-six acres each, and dairying was the primary agricultural effort, with three creameries, including Skamokawa Farmers’ Creamery Association, the first cooperative creamery on the West Coast, producing 406,031 pounds of goods in 1912.⁷¹ Cooperative dairying, an approach borrowed from Scandinavia, would continue to grow, and by 1932, 100 farmers in the Farmers Cooperative Produce and Warehouse Association would produce more than 13,000 pounds of milk daily.⁷²

Nelson’s goal was specifically to increase the success of local farms, and he arrived during an era when successful farmers were pursuing new technologies and tools to improve yields. In the early years of farming and dairying, some private landowners constructed their own levees, dikes, revetments, and drainage systems as needed, but they could be hampered by the need to both protect their farmlands and pastures from the onslaught of annual freshets and to drain their lands of excess water to protect their crops. Nelson met the farmers where they lived, visited their lands, heard their concerns, and became instrumental in turning the wetlands of southwestern Washington into diked and drained farmland.⁷³

As an extension agent, Nelson shared published bulletins and other literature, answered direct questions on farming techniques like fruit tree pruning and pest management, and helped farmers choose crop varieties that could flourish in the Northwest, support good soil management, and feed their livestock. In his first year, he celebrated the construction of new grain silos, barns, and other farm buildings that he designed. He actively

⁶⁷ John Caldbick, “Washington State Grange,” HistoryLink Essay No. 10717, March 3, 2014, <https://www.historylink.org/File/10717>.

⁶⁸ USDA, “Cooperative Extension History,” accessed December 8, 2025, <https://www.nifa.usda.gov/about-nifa/what-we-do/extension/cooperative-extension-history>.

⁶⁹ Martin, *Beach of Heaven*, 59.

⁷⁰ Kevin Heimigner, “Wahkiakum Extension Program, 4-H To Be Cut from County’s Budget?,” *Chinook Observer* (Long Beach, WA), November 14, 2007.

⁷¹ Martin, *Beach of Heaven*, 59.

⁷² Martin, *Beach of Heaven*, 61.

⁷³ Martin, *Beach of Heaven*, 61.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

encouraged dairymen to keep good records to improve their stock. He helped them fight disease, work with the state veterinarian, and bring in registered cows for breeding. He also helped farmers organize some of the region's first diking districts.⁷⁴ Near the island of Tenas Illahee, which the Brown Diking Company had entirely encircled, Puget Island became an important test case for reclaiming agricultural land from annual flooding. Nelson recommended diking the island, and in his first annual report, published in the local newspaper in 1914, he noted:

I have assisted in getting one diking organization under way that affects some 4,000 acres of land on Puget Island. The work of securing signatures to the petition as the preliminary step has been successfully carried through. After securing the signatures of a majority of the resident property holders, the petition was filed with the county commissioners for their approval. The project is of prime importance to the people of this island and the county as a whole. If the island is successfully diked and brought under cultivation it will mean the advance of several thousand dollars in property values.⁷⁵

By April 1914, the Wahkiakum County Commissioners established Diking District 1, covering Puget Island, and installed three commissioners, Victor Lindquist, Iver Pederson, and John C. Peterson.⁷⁶ To clarify how important such work was, historians quote immigrants like George Canhan, who arrived in the region to find great potential on Puget Island:

They just diked it a few years [before I came] and the people were moving in there and clearing up ground. I bought all the rough ground, or leased all rough ground when I went in. I had an awful place where I put my house, big old logs laying, and brush and stuff, but I burnt it all out and put my house there and then I cleared . . . twenty three acres . . . Puget Island was one of the greatest farming countries there is.⁷⁷

Diking districts were soon considered throughout Wahkiakum County, as in Skamokawa, where farmers and property owners discussed protecting approximately 280 acres of valley land that flooded with high tides in 1914: "It would support about 150 cows easily, and Mr. George A. Nelson, the county agriculturalist, is of the opinion that it could be [diked] at a reasonable figure."⁷⁸

By 1915, Nelson reported that he had assisted in the establishment of three districts that had already drained approximately 1,000 acres of land.⁷⁹ He would go on to gather enough signatures to establish a diking district on Washington's mainland between the Skamokawa and Elochoman Rivers, including Hunting Island (an area now enclosed in the 6,000-acre wildlife area known as the Julia Butler Hansen Refuge for the Columbian White-Tailed Deer).⁸⁰

The local press regularly reported on Wahkiakum County's government contracts for diking lowlands, sometimes in association with road building, which included clearing, grubbing, grading, and drainage. In 1916, for instance, the *Skamokawa Eagle* reported that the Pacific Diking Company of Astoria proposed to dike "that

⁷⁴ George A. Nelson, "Wahkiakum County Agriculturalist's Report," *Skamokawa Eagle* (Cathlamet, WA), February 19, 1914.

⁷⁵ Nelson, "Wahkiakum County Agriculturalist's Report."

⁷⁶ "Wahkiakum County Commissioners' Proceedings," *Skamokawa Eagle* (Cathlamet, WA), April 2, 1914.

⁷⁷ Martin, *Beach of Heaven*, 63.

⁷⁸ "Land and River Notes, Skamokawa, Wash." *Wahkiakum County Eagle* (Cathlamet, WA), May 28, 1914.

⁷⁹ Martin, *Beach of Heaven*, 63.

⁸⁰ Martin, *Beach of Heaven*, 63.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

certain piece of county road known as the ‘Deep River Road from Svensen’s Landing to Deep River’” for \$11,943. The bid accepted, the money was authorized from the Wahkiakum County Road Bond Fund.⁸¹

These efforts continued to inspire local landowners. In June 1916, the *Skamokawa Eagle* reported that a small group of farmers in Wahkiakum County realized their farms could be more productive if diked. Collectively, Charles and Hilja Wirkkala, Charles and Mary Rankila, Alfred and Sonija Lamppa, and John Warila worked with the county on another agreement with the Pacific Diking Company to dike their privately owned lands. Under county contract, the Pacific Diking Company was obligated to “construct and complete in a good workmanlike manner a dike enclosing the said lands . . . in such manner as to shut off the flow of the waters of Deep River on said lands and premises.”⁸² The dike was to be constructed to a height of 7’ and a width left to the discretion of the builder. Property owners would pay for the work “proportionately according to the number of acres enclosed within said dike” at a cost of “six dollars per lineal rod.” Sluice boxes and tide gates were the responsibility of the landowners, but the Pacific Diking Company would place them where requested.⁸³

Work also continued to reclaim the many other islands within the Columbia River itself. By 1917, Puget Island diking was nearly complete, encompassing approximately 4,000 acres, and work was underway on 800 acres at Hunting Island and an additional 4,000 acres in “Wahkiakum Flats.”⁸⁴ Additional projects, like the Deep River dike, morphed into roadway projects when the dike became the right-of-way for the county’s Deep River Road, a project that remained a subject of discussion for County Commissioners from 1916 to 1918. Private development also continued, however, as when Archie Silverman had W. A. Houchen build “a substantial bulkhead one hundred feet long in front of his property, and the Brown Diking Company filled it with sand from the slough.”⁸⁵ The Brown Diking Company, which was also involved in dredging silted waterways like the Skamokawa, reportedly used dredged material to construct additional embankments throughout the 1920s.⁸⁶

Most of the diking work appeared to take place in Wahkiakum County, but Pacific County also constructed levees and dikes near the banks of the Columbia. Diking would become so significant to the economic stability of southwestern Washington that citizens running for election would base their case on how much support they would put into reclaiming wetlands, as in 1930, when L. D. Williams called himself the “father, founder and promoter of the Chinook River dike” in an article announcing his run for reelection as Pacific County Commissioner.⁸⁷

Federal Flood Management Along the Lower Columbia River (1917–1980)

Advancing Technology for Flood Management

As feats of engineering, levees require relatively simple technology, even in the twenty-first century. In general, soils, preferably sandy soils that can be packed to avoid slumping, are dredged from river bottoms or sourced from other locations to build up an embankment. Teams clear and grub the construction area (removing stumps, buried logs, and roots) and may dig exploratory trenches to avoid underground obstructions before preparing the foundation. Fill is added, sometimes in phases, sometimes while being drained. Soils are piled to create a berm with an appropriate slope on both the river and land sides to avoid damage during high-water conditions.

⁸¹ “Commissioner’s Adjourned Session, May 1st, 1916,” *Skamokawa Eagle* (Cathlamet, WA), May 11, 1916.

⁸² “Commissioner’s Adjourned Session, June 5th, 1916,” *Skamokawa Eagle* (Cathlamet, WA), June 15, 1916.

⁸³ “Commissioner’s Adjourned Session, June 5th, 1916.”

⁸⁴ “The work of surveying the new diking district . . .” *Skamokawa Eagle* (Cathlamet, WA), February 15, 1917.

⁸⁵ S. G. Williams, “Local and Personal Mention,” *Skamokawa Eagle* (Cathlamet, WA), March 12, 1925.

⁸⁶ “These Days Are Gone Forever: 10 Years Ago,” *Skamokawa Eagle* (Cathlamet, WA), August 11, 1932.

⁸⁷ “L.D. Williams is Candidate for County Commissioner,” *Chinook Observer* (Long Beach, WA), July 25, 1930.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Depending on the condition of the soils, more impervious materials may be added closer to the waterside than the landside or may be used to construct a more permeable core. Teams apply armoring, commonly riprap, to help the structure withstand erosion. If special conditions impact drainage, like nearby bridge abutments or gate structures, armoring materials may vary. Levees can also be planted with grasses or small brush, but trees are generally avoided, as their roots can burrow into the soil and weaken the structure. These embankments can be built between areas of higher grade, in sections, so that if one fails, other sections may still hold firm.⁸⁸

While relatively simple to design, levees can also cause unanticipated problems. They confine river courses, but they also block streams from flowing into rivers. They keep river water from flooding farmland, but they also keep flooded farmland from draining. In the face of these challenges, additional technologies have emerged, including culverts that allow water to flow under or through a levee or pumping systems that remove excess water from diked and leveed lands.⁸⁹ Levees were more challenging to construct in an era before standardization, and when constructed improperly, they could be counterproductive:

A levee raised up along a riverbank has the same basic job as a dam—to hold water back—but it labors under more difficult working conditions. When you build a dam, you can pick the best spot for it, where a strong foundation will support its weight; a levee has to be built on loose and soggy riverbottom soils. Furthermore, a relatively small dam can plug up an entire river channel, but levees have to extend along the course of the river for hundreds of miles. The placement of the levee is a tricky decision. If you build it too close to the river itself, there will be nowhere for the floodwater to go. On the other hand, if you move the levee back, you are sacrificing some of the land it was meant to protect.⁹⁰

Rural areas in Wahkiakum County could accommodate levees with wide bases (generally 60'). More populated areas or areas located closer to the ocean, as in parts of Pacific County, required creative flood management, including floodwalls, constructed as concrete partitions roughly one foot thick. Where the intent was to let fresh water flow through but to restrict the backflow of saltwater, hinged, one-way tide gates were installed at the ends of culverts throughout the region. They opened automatically when fresh water flowed toward the river and closed automatically when salt water provided enough pressure to create a backflow.⁹¹

These kinds of flood-protection efforts were less likely to be constructed by individual landowners or even county governments. They became the work of federal agencies like the USACE, which sought to protect large population centers, including the bustling city of Portland. As technologies improved, additional challenges became clear. All of these kinds of barriers protect land at the expense of other natural systems, including fish migration.⁹²

USACE Portland District

Many of the extant levees, dikes, and channels along the Columbia River and its tributaries date from a period of flood management authorized by federal policy. The U.S. government passed numerous laws, including

⁸⁸ USACE, *Design and Construction of Levees, Engineer Manual*, April 2010,

https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-1913.pdf.

⁸⁹ Brian Hayes, *Infrastructure: A Guide to the Industrial Landscape* (New York: W. W. Norton and Co., 2014), 71–73.

⁹⁰ Brian Hayes, *Infrastructure*, 71–73.

⁹¹ Brian Hayes, *Infrastructure*, 71–73.

⁹² Vaughn Collins, Northwest Hydraulic Consultants, “Tidegate Basics,” prepared for the ODFW Fish Passage Rule Revision Initiative Subcommittee Meeting, December 15, 2021,

<https://www.dfw.state.or.us/fish/passage/docs/ARRI/Tidegate%20Presentation%20%20-%20NHC%20Final%2012-14-2021.pdf>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Flood Control Acts and Rivers and Harbors Acts, throughout the early decades of the twentieth century. They continually expanded the USACE's authority over navigation, dams, reservoirs, and hydropower, as well as flood management, in the Lower Columbia River Basin.

The Columbia River has long anchored numerous communities at its confluences with other regional rivers, attracting associated infrastructure to its banks, including railroads and roadways connecting eastern and western Washington and supporting the free flow of goods: "Located as it is along such a thoroughfare, the area contains several centers of population, and agricultural lands have been brought into production to satisfy the needs of that population."⁹³ Major population centers were generally located on the southern banks of the river, and Portland became the most dynamic, sitting at the confluence of the Willamette and Columbia Rivers and growing into the regional port city for much of Oregon and southern Washington. As a significant transportation route, the Columbia was notoriously challenging to control. Much government effort went into channelizing its length, controlling silting, flooding, erosion, snags, and the movement of sandbars at the mouth. Throughout the nineteenth and twentieth centuries, the USACE Portland District was responsible for much of the engineering that attempted to control the Columbia and, thereby, the development of adjacent communities and industries.⁹⁴ While the USACE was first involved in development along the Columbia itself, it would also, particularly in the mid- to late twentieth century, support flood management on the Washington rivers that fed the Columbia, protecting the small enclaves that had grown up around fishing/canning, logging, and farming industries.

In 1802, Congress permanently reestablished the nation's corps of engineers, tasking them with both military and civic construction projects, most of which were located in the eastern United States.⁹⁵ During the early decades of the nineteenth century, most USACE work in the West was related to military efforts or to building the region's first wagon road to connect the Northwest by navigable route to the rest of the nation. The USACE's mission evolved with federal legislation. "With the establishment in 1866 of an engineering office under the authority, 'Rivers and Harbors of the Pacific Coast,' Army engineer activity in the Far West reached an equal footing with that in the rest of the nation."⁹⁶

Headquartered in San Francisco, the western office took responsibility for the entirety of the Northwest, working first to improve navigation on the Willamette and Columbia Rivers.⁹⁷ With the increase of grain production in the region and the Columbia's importance as a shipping channel, the USACE borrowed dredging equipment from the City of Portland and began removing barriers like hazardous snags that ripped apart the bottoms of boats or smoothing rapids to ease shipping up to the Snake River. This work further increased economic activity, and in 1868, Portland exported its first international shipment of wheat to Liverpool, England, establishing a trade route that would make it the primary wheat exporter in the West.⁹⁸ By 1871, with commercial activity still increasing, the USACE established an engineering office in Portland, by that time a town of roughly 10,000 people. Work on the Columbia increased, and by 1875, the USACE "had surveyed and

⁹³ USACE, "Final Environmental Statement: Lower Columbia River Bank Protection Project."

⁹⁴ For the USACE, each "district" within a "division" pursues its own mission based on its geographic location and proximity to major watersheds. The Portland District is within the Northwest Division of the USACE and manages public works and cultural resources along the Columbia River and throughout the Willamette Valley.

⁹⁵ USACE, "A Brief History: The Beginnings to 1815," accessed December 9, 2025, <https://www.usace.army.mil/About/History/Brief-History-of-the-Corps/Beginnings/>.

⁹⁶ William F. Willingham, *Army Engineers and the Development of Oregon: A History of the Portland District U.S. Army Corps of Engineers*, 1983, <https://usace.contentdm.oclc.org/digital/>.

⁹⁷ Willingham, *Army Engineers and the Development of Oregon*.

⁹⁸ Willingham, *Army Engineers and the Development of Oregon*.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

eliminated several bars and rapids and removed great numbers of dangerous snags and rocks. Banks had been improved, and fast current provided by wing-dam construction reduced shoaling.”⁹⁹

It was the beginning of an era of large projects on the Columbia, many of which focused on improving navigation at the mouth of the river, where shifting sands formed treacherous obstacles to shipping.¹⁰⁰ It would take the USACE ten years and just under \$2 million to complete the south jetty at the mouth of the Columbia, and when maintenance and expansion failed to eliminate hazards, another three years and approximately \$5 million more to complete the north jetty.¹⁰¹ “When completed, the jetties at the mouth of the Columbia River contained 9,000,000 tons of stone and were the largest in the world. This project, Colonel George A. Zinn reported in 1917, ‘made it possible for the largest vessels operating on the Pacific coast to enter and leave at all normal stages of tide and in any weather except during most severe storms.’”¹⁰²

While work at the mouth of the river was underway, the USACE continued to deepen and improve shipping channels within the river. At the turn of the twentieth century, the USACE convinced Congress to appropriate enough funds for a 25’ deep channel between Portland and the ocean, an effort considered critical not only to Portland’s growing population center but also to the entire agricultural region, which was increasing exports. In the 1902 River and Harbor Act, Congress appropriated \$225,000 for the Columbia channel, all of which went to dredging. Work would continue until a channel 330’ wide and 30’ deep was finally established in 1918, one year after completion of the north jetty at the river’s mouth.¹⁰³ While the USACE intended to support trade through Portland, small communities in western Washington and grain producers in eastern Washington also benefitted from improved access. Between 1919 and 1926, for instance, lumber exports saw a five-fold increase and up to fifty steam ships used the port at Portland.¹⁰⁴

While Portland grew, the small farming, logging, and fishing communities on the northern bank of the Columbia also pursued economic growth, which relied on a network of shipping, railroad, and, increasingly, highway development. The Commercial Club and Chamber of Commerce in Cathlamet rallied support for a deep river channel allowing oceangoing vessels to dock at Cathlamet, which they saw as the first step to attracting a new rail connection between eastern and western Washington: “Cathlamet, it is said, is the only good townsite on the lower Columbia River on the Washington side. It only wants shipping facilities to become a commercial port of some consequence.”¹⁰⁵ While the USACE did not agree to dredge a deepwater channel, it did note in 1912 that snags and shoals at the Elochoman River hindered the logging industry’s attempts to get their logs to market.¹⁰⁶ The USACE estimated that \$15 million in freight passed through the channel at Cathlamet annually. With the agency’s support, Congress appropriated money to clear the Cathlamet Channel in 1917.¹⁰⁷

The Flood Control Act of 1917

While the USACE worked to improve navigation on the Columbia, the nation’s population centers to the east were also developing along great rivers, many of which flooded regularly, threatening lives, livestock, and

⁹⁹ Willingham, *Army Engineers and the Development of Oregon*.

¹⁰⁰ Willingham, *Army Engineers and the Development of Oregon*.

¹⁰¹ Willingham, *Army Engineers and the Development of Oregon*.

¹⁰² Willingham, *Army Engineers and the Development of Oregon*.

¹⁰³ Willingham, *Army Engineers and the Development of Oregon*.

¹⁰⁴ Willingham, *Army Engineers and the Development of Oregon*.

¹⁰⁵ “Cathlamet Appeals to Commercial Club,” *Tacoma (WA) News Tribune*, November 16, 1911.

¹⁰⁶ Willingham, *Army Engineers and the Development of Oregon*.

¹⁰⁷ Willingham, *Army Engineers and the Development of Oregon*.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

livelihoods. While the USACE considered flood management when planning projects, it could not design construction around flood management in the early decades of the twentieth century, as there were serious constitutional challenges to federal flood-management policy reaching back through time. The framers of the Constitution “appeared to agree that the federal government should not be allowed to spend tax dollars to make improvements that benefited only a particular locality.”¹⁰⁸ This implied that federal dollars and federal agencies like the USACE could not focus their efforts on flood management in the Pacific Northwest, as it would only benefit local residents. Other large federal projects were authorized under an article known as the “Commerce Clause,” which allowed Congress to regulate commerce between states, a clause that could be interpreted to allow for interstate road and navigation projects, and eventually other river improvements. The debate over local flood control would continue in Congress into the 1930s.¹⁰⁹

Instead of focusing its own efforts on flood management, early USACE studies often included some recommendations to local governments for flood management. Local governments did undertake flood management, and in 1912, a study from the Pittsburgh Flood Commission identified numerous flood-management measures that could work in tandem. Not limited to the construction of barriers like dikes or levees, the report recommended “reservoirs, levees and floodwalls, and reforestation” as a multi-pronged approach.¹¹⁰ These potential solutions would later shape flood-management policy but not soon enough to avoid a number of catastrophic floods along some of the nation’s major rivers. In 1913, for instance, the Ohio and Miami Rivers flooded, submerging towns in up to 20’ of water and killing an estimated 1,000 people.¹¹¹

As floods drew more attention during the early decades of the twentieth century, Acts of Congress (with engineering plans from 1917 and later 1923 and 1928), authorized improvements on the Mississippi River—and, to a lesser extent, the Sacramento and Ohio Rivers—including “levees, floodwalls, flood ways, reservoirs, bank stabilization, and channel improvements”¹¹² Out of these efforts, the USACE would establish flood-management policies for the Columbia and its tributaries. The Flood Control Act of 1917, the first federal act that formally added flood management to the traditional navigational duties of the federal government, authorized construction of flood-management projects and softened policies requiring local interests to spend three dollars for every dollar of federal funding. After 1917, local interests were required to spend one dollar for every two dollars of federal funding but also to acquire rights-of-way and pay for maintenance of flood-control structures.¹¹³

While the United States was embroiled in World War I, progress on flood management stalled, but soon after, federal policy shifted further toward building reservoirs and dams on the nation’s major rivers. Not only could they impound potential flood waters, but they could also generate vast amounts of electricity. In 1920, Congress passed the Water Power Act, which created the Federal Power Commission (FPC). The FPC authorized the USACE’s survey of 180 rivers nationally, at a cost of \$7.3 million, under the Rivers and Harbors Act of 1927. This study was authorized during a year marred by another disastrous flood, the Great Mississippi Flood of 1927, which submerged nearby lands under 30’ of water after months of steady rain led to levee collapse. As

¹⁰⁸ Joseph L. Arnold, *The Evolution of the 1936 Flood Control Act* (Fort Belvoir, VA: Office of History, USACE, 1988) 4.

¹⁰⁹ Arnold, *The Evolution of the 1936 Flood Control Act*.

¹¹⁰ Arnold, *The Evolution of the 1936 Flood Control Act*.

¹¹¹ USACE, “Levee Basics: History of Levees,” National Levee Database, accessed December 30, 2025, <https://levees.sec.usace.army.mil/levee-basics/history-of-levees/>.

¹¹² Arnold, *The Evolution of the 1936 Flood Control Act*.

¹¹³ Arnold, *The Evolution of the 1936 Flood Control Act*.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

many as 250 people were killed, and the economic hardship was widespread but most keenly felt by Black residents along the river.¹¹⁴

In the Northwest, the USACE continued to improve navigation along the Columbia throughout the 1920s, noting that as many as thirty-seven ships were grounded in 1925 alone. Based on these conditions, District Engineer Major Richard Coiner recommended dredging and placing permeable dikes to establish a 35' by 500' channel from Portland to the sea. The USACE and the Port of Portland began the project in 1931 and completed it in 1933. The U.S. dredges *Multnomah*, *Wahkiakum*, and *Clatsop* carried out the Portland District's share of the initial work, and a total of 130 spur dikes stabilized the results.¹¹⁵

Concurrently, the USACE completed the surveys authorized by the Act of 1927. The Columbia River was determined to be uniquely situated to take advantage of the shift toward impounding rivers behind dams. While crowded with industrial and commercial shipping west of Portland, east of Portland, the river was comparatively quiet. The Portland and Seattle offices of the USACE surveyed the Columbia and its major tributaries and contributed to what became known as the "308 Reports," a series of surveys of the nation's rivers that helped solidify the federal shift toward developing hydropower.¹¹⁶ The future was in electricity.

As the USACE noted in its report:

The Columbia River and its tributaries are susceptible [to] being developed into the greatest system for water power to be found anywhere in the United States. The power can be developed at low cost. The sites determined by the Board of Engineers for Rivers and Harbors as most promising, all things considered, are at 10 localities . . . the structures contemplated in the scheme for power development are all on a large scale, some on a grand scale, and the conditions at some of them as to foundations and floor discharge over the dams are without precedent.¹¹⁷

Of flood control, the report noted, "there is a problem of flood control in the lower Columbia . . . it will be ameliorated somewhat by the large power installations if they are made with provisions for storage. It can be solved by local interests whenever the economics of the situation justify the building of better levees."¹¹⁸ The report further argued that while flood control "is a matter of concern to the owners and cultivators of the land of importance to the states of Oregon and Washington through affording means of augmenting the assets of those states, national interest justifying expenditure of funds of the general public in works for flood control or protection of these lands is not present."¹¹⁹ In other words, flood management along the lower banks of the Columbia could not be funded with federal taxpayer dollars. This was similar to the constitutional argument that had stalled flood management efforts since the 1800s.

The 308 Reports would shape future policy and eventually lead to the construction of all proposed dams on the Columbia River, but evolving economic conditions in the late 1920s, resulting in the Great Depression, would provide the impetus for the great size and scale of one of the largest dams on the Columbia:

¹¹⁴ USACE, "Levee Basics: History of Levees."

¹¹⁵ Willingham, *Army Engineers and the Development of Oregon*.

¹¹⁶ Willingham, *Army Engineers and the Development of Oregon*.

¹¹⁷ USACE, *Columbia River and Minor Tributaries*, Volume 1, 1932, <https://usace.contentdm.oclc.org/digital/>.

¹¹⁸ USACE, *Columbia River and Minor Tributaries*.

¹¹⁹ USACE, *Columbia River and Minor Tributaries*.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

As plans to harvest the power of the river for the generation of electricity progressed into the late 1920s, the Depression took hold, stalling commerce, throwing people out of work, and destroying livelihoods across the U.S. As a candidate for president, Franklin D. Roosevelt visited Portland and spoke in favor of building Bonneville [Dam], which was formally funded by Congress in 1935 . . . While the USACE had responsibility for building and operating the plant, a new agency under the Interior Department, Bonneville Power Administration [BPA], was formed to market and sell the resulting electricity.¹²⁰

The Flood Control Act of 1936

The proposal for the Bonneville Dam was massive. Spanning the Columbia between Washington and Oregon, its spillway was proposed at 1,450' long and 197' high.¹²¹ Projects the size of the Bonneville Dam could not be constructed by local interests. It took large federal action. Additional projects promoted by the USACE would also require extensive investment, and they could not be completed without the authority of the U.S. government.

By the mid-1930s, as the Depression deepened, the federal government prioritized infrastructure projects that could both serve communities and put people to work. In the Northwest, the need for hydropower was paired with a need for concentrated flood management. As populations continued to increase, encroaching further on watersheds, the potential for damage caused by floods also increased. Some of the greatest floods on the Columbia had occurred in the nineteenth century, including in 1862, 1876, 1880, and 1894, but the threat of additional damage was growing: "Property damage from these inundations totaled millions of dollars. Lives were lost from time to time, as in the horrifying Willow Creek flash flood of 1903 that killed 225 persons in the eastern Oregon town of Heppner. This sobering history, plus knowledge that greatly increased development of flood plain areas was inevitable, prompted passage of the 1936 Flood Control Act."¹²²

The Flood Control Act of 1936 firmly placed flood management in the hands of the federal government for the first time, stating that "destructive floods upon the rivers of the United States, upsetting orderly processes and causing loss of life and property, including the erosion of lands, and impairing and obstructing navigation, highways, railroads, and other channels of commerce between the States, constitute a menace to national welfare" and therefore acknowledging that "flood control on navigable waters or their tributaries is a proper activity of the Federal Government in cooperation with States, their political subdivisions, and localities thereof" and that "the Federal Government should improve or participate in the improvement of navigable waters or their tributaries, including watersheds thereof, for flood-control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected."¹²³ With the economy in mind, the act briefly exempted state and local governments from cost-sharing.¹²⁴

Some historians have argued that the new federal flood control policy, pushed by the Corps and its congressional supporters, sponsored narrow, single-purpose flood control projects at the

¹²⁰ Willingham, *Army Engineers and the Development of Oregon*.

¹²¹ David Wilma, "Bonneville Dam Officially Goes into Service on June 6, 1938," HistoryLink Essay No. 7823, July 3, 2006, <https://historylink.org/File/7823>.

¹²² Willingham, *Army Engineers and the Development of Oregon*.

¹²³ 33 U.S. Code § 701a – Declaration of Policy of 1936 Flood Control Act, accessed January 6, 2026, <https://www.law.cornell.edu/uscode/text/33/701a>.

¹²⁴ USACE, *Civil Works for the Public Good: U.S. Army Corps of Engineers and the New Deal, 1929–1941* (Alexandria, VA: USACE Office of History, 2024).

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

expense of broader, multipurpose river development. Moreover, the prevailing federal flood control approach promoted only structural solutions to flood-damage reduction. The basic engineering assumption held that levees, channel improvements, and reservoirs were the proper ways to prevent damages. Non-structural approaches to flood damage reduction were rarely considered in the 1930s. These issues would continue to be debated over succeeding decades as population densities in these flood zones increased. Nevertheless, Congress had finally established a national flood control policy and had given the primary responsibility for implementing it to the Corps of Engineers.¹²⁵

The USACE would continue to push for levee construction after the passage of the Flood Control Act of 1936, claiming that of the four most effective flood-control methods, “the construction of levees is the most direct and surest method . . . Works, such as reservoirs, constructed at localities distant from areas damaged by floods are not so determinate as to effects, and the benefits of reservoirs become smaller and smaller as distances from the reservoir sites increase.”¹²⁶ This point of view would quickly wane, as would be seen throughout the United States, where the USACE constructed more than 300 hundred reservoirs, primarily for flood management, over the next forty years.¹²⁷

The USACE in the Lower Columbia River Basin

While a shift in flood management was in process, work on the Columbia River continued through the 1930s. As part of its work to help keep the Columbia River navigable, the USACE constructed two projects at Baker Bay in Pacific County, both improving navigation and adding additional protection for the small bay near the mouth of the Columbia. First, in 1933, the USACE constructed a channel 10’ deep and 200’ wide from Ilwaco to east of Sand Island and then to the Columbia River Channel (see Figure 12). Next, they provided Baker Bay with a twenty-acre, curved basin with a breakwater for safe mooring. The USACE also began dredging another channel from Ilwaco to west of Sand Island and into the channel, but this work was not completed until the 1950s.¹²⁸ The USACE also worked to connect Baker Bay to Chinook, a small fishing village ten miles east of Ilwaco. In 1938, Congress authorized a channel from Sand Island to Chinook and reconstructed a privately built breakwater; the USACE completed the work in 1940 and continued to modify it through the early 1960s.¹²⁹ In 1939, approximately \$400,000 was spent on projects in Wahkiakum County, particularly on levee construction and improvements, providing approximately 400 workers with employment.¹³⁰

The USACE completed its primary flood-management work in Wahkiakum County in the early 1940s. At Deep River, the USACE constructed a series of projects to extend the existing levee system “by the construction of new levee, the reconstruction of a certain portion of existing levee, and construction of drainage facilities.”¹³¹ In the 1938 Chief of Engineers report, the USACE noted that the project, authorized under the Flood Control Act of 1936, would protect 425 acres against floods for the cost of \$63,900. The project’s primary components included:

¹²⁵ USACE, *Civil Works for the Public Good*.

¹²⁶ USACE, *Civil Works for the Public Good*.

¹²⁷ USACE, *Civil Works for the Public Good*.

¹²⁸ Willingham, *Army Engineers and the Development of Oregon*.

¹²⁹ Willingham, *Army Engineers and the Development of Oregon*.

¹³⁰ “\$647,300 Is Being Spent on Dikes,” *Longview (WA) Daily News*, August 9, 1939.

¹³¹ USACE, *Report of the Chief of Engineers, U.S. Army, 1940 in Two Parts, Part 1, Vol. 2* (Washington, DC: U.S. Government Printing Office, 1941).

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

enlarging and strengthening the existing levee from its northwesterly junction with high ground to junction with the new levee, approximately 3.1 miles above the mouth of Deep River; construction of about 1.4 miles of earth levee from the reconstructed existing levee south and east along Deep River to high ground at approximately mile 1.6; construction of about 1 mile of earth levee along Deep River from approximately mile 0.6 to mile 1.6 above its mouth; and improvement of drainage facilities by removal of an existing tide box, construction of 6 new tide boxes, and excavation of drainage ditches at the ends of the tide boxes.¹³²

Work was also proposed for the Grays River at this time, although most of it was proposed for river miles 5 through 16 and not at its confluence with the Columbia. The exception, however, was the plan to remove 470 pilings from Grays River, located between its mouth and the Rosburg Bridge. Apart from plans to clear the channel, removing snags and overhanging trees, the USACE also planned to excavate material from the river's channel and add stone revetments above river mile 6 as bank protection.¹³³

For the Skamokawa, work was similar to that proposed for the Deep River. The USACE planned to construct "a system of levees, diversion canals, stone revetment for bank protection, and drainage facilities."¹³⁴ The project, authorized under the Flood Control Act of 1936, would protect 939 acres for a cost of \$125,200. Not all work was proposed for the river itself, however, but also for the many tributaries that crossed the flood plain near its mouth, creating a system of controlled waterways:

Construction of earth levee for a distance of about 0.6 mile along the Skamokawa River, about 0.9 mile along West Valley Creek, about 2 miles along Grenn Slough diversion canal, about 0.5 mile along Middle Valley Creek, and about 1.1 miles along Skamokawa Creek; the construction of three diversion canals; the construction of approximately 0.2 mile of stone revetment on certain sections of the levee system; and the construction of drainage facilities.¹³⁵

Much of this work was completed by the mid-1940s, as indicated in the USACE's annual reports and the national levee database, in association with additional flood-control efforts on the Oregon side of the Columbia. However, flooding, it was found, could not be halted; it could only be lessened, and in some instances, catastrophes were still possible.

May–June 1948: Vanport Flood

While the USACE was active in flood management between the 1930s and 1950s (Figure 14), flooding events still caused tremendous damage. The work completed in Washington during the early 1940s was meant to protect against flooding comparable to what was seen from a flood in 1933, but that flood was not to be the worst the region would face, and even the extensive work completed by the USACE proved inadequate in 1948.

The Lower Columbia River Basin grew in response to increased economic activity and industrial growth in the ramp up to U.S. involvement in World War II. Portland had seen tremendous growth, and some of it had taken place in areas prone to flooding. This became clear during one especially brutal flood in 1948. By that time, sixty-one projects, including levees, flood walls, revetments, bulkheads, canals, ditches, pumps, and tide gates, had been constructed along the lower Columbia, providing greater protection to an estimated 73,000 people and

¹³² USACE, *Report of the Chief of Engineers . . . 1940*.

¹³³ USACE, *Report of the Chief of Engineers . . . 1940*.

¹³⁴ USACE, *Report of the Chief of Engineers . . . 1940*.

¹³⁵ USACE, *Report of the Chief of Engineers . . . 1940*.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

97,000 acres. As Portland was at the confluence of two major rivers, work on the Willamette, including a massive flood wall on its western bank, had also been completed.¹³⁶ These projects, in spite of massive financial investment, still failed to protect the city of Vanport on Memorial Day (May 30) in 1948, when a levee breach flooded the community:

The flood of June 1948 was the greatest single disaster in the history of the Columbia River Basin. The 20-day flood took the lives of 32 people in the Portland District; seven others were never found. The high water completely destroyed a city with a population of over 18,000. At least 50,000 people fled their homes and nearly 5,000 dwellings were destroyed. Suffering, hardship, social and economic dislocation, disease and waste lay in the path of the powerful flood. High water also eroded 100,000 acres of intensively developed agricultural land and submerged 15,000 acres of highly developed commercial, industrial, or urban areas, including 650 blocks of Portland. After careful flood damage appraisal, the Corps of Engineers declared that measurable economic loss exceeded \$100 million. Rehabilitation of flood management works in the Portland District cost the government over \$2 million.¹³⁷

The flood severely impacted Vanport, an integrated community with a large population of Black residents that was at the time the second largest city in Oregon. Constructed to support the growing shipping industry of World War II, it was not meant to be permanent, with homes constructed of prefabricated parts without concrete foundations. When the shipping industry stalled after the war, many people stayed, including the 18,500 people who lived in Vanport in 1948. Told by the Housing Authority that the dikes protecting the city would hold, residents were unprepared when one collapsed, and Vanport was inundated within two hours.¹³⁸ “Destruction of the community of Vanport at Portland, Oreg., left nearly 19,000 persons homeless and took the lives of at least 16 . . . Because the area was surrounded by dikes it became a placid lake after it filled with water. Houses that had not been demolished by the first onrushing wave floated in 10 to 15 feet of water.”¹³⁹ While the 1948 flood damage was greatest on the southern bank of the Columbia, levees throughout the region failed. The Puget Island levee broke on the upstream end, flooding the island. “Land inundated by the flood included about 250,000 acres of farmland, on which the growing crops were destroyed. More than 20,000 acres of land was damaged or destroyed by erosion.”¹⁴⁰

The USACE repaired the break at Puget Island and reinforced the levee first constructed in the early twentieth century. In 1951, diking districts on Puget Island consolidated, and the Wahkiakum County Soil and Water Conservation District added pumping stations soon after, also strengthening flood management by dredging sloughs and ditches to improve drainage. The USACE would continue to add riprap and manage dredging and soil placement into the 1970s, eventually replacing the county pumping system, removing tide boxes, and further strengthening levees on Puget Island.¹⁴¹

A comprehensive update of the USACE’s 308 Reports followed the Vanport flood. Document 531 reprioritized new dams that could support power generation and containment on the upper Columbia River, new levee

¹³⁶ Willingham, *Army Engineers and the Development of Oregon*.

¹³⁷ Willingham, *Army Engineers and the Development of Oregon*.

¹³⁸ Nadine Jelsing, “The Oregon Experience: Story of Vanport,” Oregon Public Media, Portland, accessed January 5, 2025, <https://www.opb.org/television/programs/oregon-experience/article/vanport-2/>.

¹³⁹ C. G. Paulsen, *Floods of May-June 1948 in Columbia River Basin*, Geological Survey Water-Supply Paper 1080 (Washington, DC: Government Printing Office, 1949).

¹⁴⁰ Paulsen, *Floods of May-June 1948 in Columbia River Basin*.

¹⁴¹ Puget Island Diking District, “History,” accessed January 6, 2026, <https://pidikedist.org/history/>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

construction on the Lower Columbia River, and redesigned levees that could temporarily protect the area as work continued on the larger projects. These projects, only about half of which were funded at the time, became the basis for the Flood Control Acts of 1950.¹⁴² Authorized under the act were \$1,269,000 in flood management for Wahkiakum Diking Districts numbers 1 and 3; \$100,000 for “Tenasillahe” Island Diking District; and an additional \$400,000 for Wahkiakum Diking District number 4.¹⁴³

USACE Flood Management After the Vanport Flood

The USACE pursued multiple goals on the Columbia, improving the economic viability of small Washington communities, maintaining navigable channels, protecting riverside lands, and managing the disastrous loss of life and income associated with damaging floods, including not just the Vanport flood but also a series of additional flood events. By 1955, a summary of the USACE’s work described all navigation, channelization, and flood management conducted in Washington by that time under the authority of Flood Control Acts and various public laws. It reported that more than \$2.5 million in bank protection was authorized along the Lower Columbia River Basin in the 1950 Flood Control Act, which included substantial investment in Wahkiakum County diking districts.¹⁴⁴

Still, flooding remained a challenge. Subsequent studies conducted in 1958 identified ninety-six areas where erosion was underway, and more than sixty of these were deemed “critical” based on the damage that would result from a serious flood and subsequent levee failures. In 1972, the USACE reported that an average of \$402,090 was spent on bank protection in the Lower Columbia River Basin: “Through FY 1971, appropriations totaling \$4,423,463 have been made for the project, and 81,705 linear feet of dumped-stone revetments and 651 linear feet of pile dikes have been constructed at 42 locations at an average cost of about \$54 per linear foot.”¹⁴⁵ Work completed and proposed by that time equaled 175 acres of levees, designed to protect 46,348 acres of land and prevent levee breaches in fourteen drainage, diking, and dike-improvement districts. This work intentionally built on the levee and dike work completed by private interests in the early decades of the twentieth century, adding more than thirty-seven miles of “hand-placed and dumped stone” revetments between 1938 and 1944: “Areas revetted under the Flood Control Acts on lower Columbia River thus total approximately 60 miles, or very roughly ten percent of the total shoreline.”¹⁴⁶

The USACE later provided a summary of its approach to constructing bank protection, noting that as of 1972, it was incorporating revegetation, in association with property owners and landscape architects, into its plan “to restore scenic value and wildlife habitat.”¹⁴⁷

On-site construction activities involved in placing the revetment include clearing the work area, excavating and filling the bank to provide the required slope, and placing bedding materials and quarried stone riprap. Off-site activities include disposing of excavated materials, obtaining the riprap stone from nearby quarries, and digging the bedding and embankment material from borrow pits . . . Bedding materials used include gravel, sand, and crushed rock from quarries . . . Stone revetments typically become covered with silt deposited during high flows. Grass, vines,

¹⁴² Willingham, *Army Engineers and the Development of Oregon*.

¹⁴³ 33 U.S. Code §§ 701-709, Title II, Flood Control Act of 1950, accessed January 6, 2026, <https://uscode.house.gov/statviewer.htm?volume=64&page=170>.

¹⁴⁴ USACE, North Pacific Division, *Water Resources Development by the Corps of Engineers in Washington* (Portland, OR: U.S. Army Corps of Engineers, North Pacific Division, 1955), <https://babel.hathitrust.org/cgi/pt?id=mdp.39015028280314&seq=3>.

¹⁴⁵ USACE, “Final Environmental Statement: Lower Columbia River Bank Protection Project.”

¹⁴⁶ USACE. “Final Environmental Statement: Lower Columbia River Bank Protection Project.”

¹⁴⁷ USACE. “Final Environmental Statement: Lower Columbia River Bank Protection Project.”

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

willows, cottonwoods, and other vegetation may grow on the revetment. The larger woody plants are removed periodically because they may weaken the revetment and interfere with inspection. Cutting, burning, and spraying with herbicides are typical removal methods. All such routine maintenance is conducted by local project sponsors.¹⁴⁸

While the USACE took responsibility for flood protection, their projects were constructed in a region crossed by diking and drainage districts and on lands owned and maintained by private interests. The participation and partial funding from local interests was required by federal Flood Control Acts, paused briefly during the Depression, and reestablished in 1950, after which local interests were beholden to maintain new levees and repair damage. With these partnerships in place, the USACE's work was designed to provide a profitable benefit-to-cost ratio; reduce flood damage; protect residential, commercial, and industrial users; and avoid interruptions in service or production.¹⁴⁹ The USACE also continued to pursue its original mission of keeping the Columbia and its tributaries navigable. In future decades, the USACE's work along the northern bank of the Columbia in Pacific and Wahkiakum Counties would focus on keeping channels and moorage basins like Baker Bay dredged at the mouths of rivers like the Deep and Grays.

Federal flood-management policy continued to evolve. After decades of loss and damage, by the 1960s, agencies realized that while major floods could not be eliminated, their impacts could be mitigated. In 1968, Congress enacted the National Flood Insurance Act, which allowed the voluntary purchase of flood insurance. When few opted in, the program evolved to require property owners to hold flood insurance for federally backed mortgages if they lived in flood hazard areas, generally defined as areas subject to a one percent chance of flooding annually. Managed by the Federal Emergency Management Agency (FEMA), the program made special exemptions for lands behind accredited levees, which grew national interest in an accreditation program that could lower the costs of flood management for many communities.¹⁵⁰

Evolving Local Levee Systems in Pacific and Wahkiakum Counties (1895–1980)

As noted above, much work on the levees was first done by private interests. Diking districts managed the later phases of levee construction. Additionally, the USACE contributed to flood-management systems using federal funds. Summaries of expenditures and levee-repair projects suggest that the USACE built on existing systems, sometimes building new levees but often improving on or strengthening the early levees and dikes that created farmable land out of the wetlands traditionally located at the mouths of Washington's rivers.

Federal levee construction appears to have followed precedents set in other parts of the country, particularly in states along the Mississippi River, which was prone to disastrous flooding in the nineteenth century. The Mississippi, was, by 1931, bound by 1,830 miles of levees and was under the management of the Mississippi River Commission, which "standardized Federal levee practice."¹⁵¹ The sizes and shapes of levees, the width of their crests, and the angles of their slopes varied by location, and construction generally evolved with the power of machinery. A history of federal levee policy on the Mississippi traced this evolution, beginning with day laborers paid by the yard for the earth they moved to build the levees:

¹⁴⁸ USACE. "Final Environmental Statement: Lower Columbia River Bank Protection Project."

¹⁴⁹ USACE. "Final Environmental Statement: Lower Columbia River Bank Protection Project."

¹⁵⁰ USACE, "Levee Basics: History of Levees."

¹⁵¹ D. O. Elliott, *The Improvement of the Lower Mississippi River for Flood Control and Navigation*, Vol. 2 (Vicksburg, MS: U.S. Waterways Experiment Station, May 1, 1932).

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

The most primitive method of levee construction is digging and placement by man power . . . wheelbarrows being used for the transportation of dirt. The levees were small; labor was plentiful; and the outlay for equipment was small . . . plank runways supported by three-legged timber supports extended on approximately even grades from the borrow pit to the lower section. Borrow pits were on the riverside, the landside, or on both sides, as convenience dictated . . . scrapers and wagons then appeared . . . In operation a snatch team and a plow (with a team) were provided for every four or five scrapers. The plows turned over the surface of the levee foundation and loosened the dirt in the borrow pit. Snatch teams were needed for loading the scrapers and for heavy pulling . . . In construction by dump wagon, elevating graders were generally employed for loading. With the development of mechanical propulsion the use of animal drawn wagons has declined¹⁵²

Nineteenth-century attempts to build specific machines that could construct levees failed, but by 1907, a “levee machine similar to a revolving crane was built and successfully operated.”¹⁵³ In the early twentieth century, flooding grew increasingly dangerous as population and development in floodplains expanded. In response, levees grew in size, requiring newer and more powerful machines to build them. “Draglines” and “tower machines” excavated borrow pits with buckets on cables. The buckets “dragged” through the borrow pits, lifted soil, and were moved into place to deposit material onto the growing levees. Some examples have been documented in this region, including the Steamboat Slough Levee constructed in 1926 at river mile 35 on the Columbia in Cathlamet, where “the levee was built in the typical manner for this location and time, using a drag line with a bucket that was used to pull dirt from the toe on either side of the levee up onto the top. After the levee was constructed, the land behind it was logged.”¹⁵⁴

By the 1930s, levee builders and dredgers in locations with loose soils could also use other types of machinery, including pipeline dredges (Figure 15) and “clamshell dredges” that were lowered into the water to scoop up soils with a jaw-like bucket that could open and close around soils. It became common for more than one machine to be used on a single levee project: “One dragline operates on the berm and places material in the levee section. Machines in the pit place material for the first machine to rehandle.”¹⁵⁵ Methods also kept evolving:

Sand is the material best adapted to hydraulic levee construction but loam and clay soils can also be used. Before hydraulic levee construction begins, the muck ditch must be excavated and two parallel retaining side dikes must be built at or near the toes of the levee. This is all done by dry-land methods. The fill between the side dikes is made by the hydraulic method. After all material has been placed, the structure is permitted to settle and dry when necessary. When sufficiently dry, it is shaped to grade and section by dry-land methods.¹⁵⁶

¹⁵² Elliott, *Improvement of the Lower Mississippi*.

¹⁵³ Elliott, *Improvement of the Lower Mississippi*.

¹⁵⁴ Leslie O'Rourke, “Property ID 671073, Steamboat Slough Levee, Columbia River Mile 35,” Historic Property Inventory Form, 2013. <https://wisaard.dahp.wa.gov/Resource/617815/PropertyInventory/1559978>.

¹⁵⁵ Elliott, *Improvement of the Lower Mississippi*.

¹⁵⁶ Elliott, *Improvement of the Lower Mississippi*.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Pacific County Levees

In Pacific County, there are only three identified levees in the Washington State Department of Ecology Levee Inventory (only two of which appear in the national levee inventory).¹⁵⁷ The first, noted only in the state database, is located east of the Chinook River and is a small levee along U.S. 101; no additional information on this levee is recorded in either state or federal databases.¹⁵⁸ The two documented in the national levee inventory are located along the southern and western boundaries of the Port of Ilwaco Airport, located at 360 Stringtown Rd. on Baker Bay between the Wallacut River to the west and the Chinook River to the east. The levees flank the airport, completed for the Port in 1931.¹⁵⁹ While news of floods that might impact the airport are rare, in 1969, fall storms closed the airport road and brought water in Baker Bay to within a couple of feet of the embankment that encloses it.¹⁶⁰ While these may not be the only flood-management structures remaining on the Wallacut or Chinook Rivers, they are the only ones recorded by state or federal agencies.

The two embankments are under the management of Pacific County Diking District No. 1. The embankments shelter 150 buildings, 238 people, and 4.4 acres of farmland.¹⁶¹ Pacific County Diking District No. 1 was formed as a consolidation of previous diking districts protecting the Long Beach peninsula from the Wallacut River.¹⁶² Wallacut Diking District No. 1 was established in 1910:

This was followed a few years later by the formation of Drainage Districts No. 2 and 3. The formation of Flood Control District No. 1 in 1961 included the Long Beach Peninsula as well as a separate zone near Chinook. During the 1960s and 1970s, several modifications to the zone boundaries and designations occurred and various existing diking and drainage districts were dissolved or consolidated. In 1985, a Surface Water Management Citizens Advisory Committee was formed by the Board of County Commissioners, which, following significant study and public involvement, made recommendations to the Board of County Commissioners to form a Flood Control Zone District. On May 5, 1986, the Board of County Commissioners recognized and established Flood Control Zone District No. 1 of Pacific County.¹⁶³

The District is governed by the Board of Commissioners and its mission is to “plan, fund, construct, operate, and maintain improvements within the District necessary to control, conserve, and dispose of excess flood and storm waters.”¹⁶⁴

Other forms of flood management are also visible on the landscape. These include the raised berms or embankments on which important roadways are constructed, including U.S. 101 and Chinook Valley Road, both of which run near the bank of the Columbia. While these are not primarily flood-management structures, they provide a layer of protection for the farm lands behind them and make it possible to travel even if floods have inundated nearby areas. The raised roadways were constructed in the 1930s and appear on topographic maps as early as 1938, when the Columbia’s northern bank near the Chinook and Wallacut Rivers was home to

¹⁵⁷ Washington State Department of Ecology, “Washington Levee inventory,” accessed January 12, 2026, <https://geo.wa.gov/datasets/waecy::levee-inventory/explore>.

¹⁵⁸ Washington State Department of Ecology, “Washington Levee inventory.”

¹⁵⁹ “Ilwaco Airport Inspected,” *Oregonian* (Portland, OR), February 7, 1931.

¹⁶⁰ Wilma Bonsanti, “Area Shakes Off Most Severe Storm of Fall,” *Daily Astorian* (OR), December 12, 1969.

¹⁶¹ USACE, “National Levee Database,” accessed December 31, 2025, <https://levees.sec.usace.army.mil/>.

¹⁶² Pacific County Flood Control Zone District No. 1, “History of the District,” accessed December 16, 2025, <https://www.co.pacific.wa.us/flood-control/index.htm>.

¹⁶³ Pacific County Flood Control Zone District No. 1, “History of the District.”

¹⁶⁴ Pacific County Flood Control Zone District No. 1, “History of the District.”

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

private operations including the Gile, M. D. Goulter, Rosendall, and J Goulter Ranches.¹⁶⁵ Some of these farmers and ranchers held lands across the region and appeared regularly in the news, as when the Gile Ranch was the location of the first Chinook schoolhouse in 1892, acquired the first cream separator in 1894,¹⁶⁶ and planted the first crop of peas for Chinook's new pea cannery in 1936.¹⁶⁷ It was also news when A. L. and Nell Gile retired from farming in 1966.¹⁶⁸ Members of the Goulter family had numerous ranch lands in the region and appeared in the news regularly, as when their ranch was opened to pheasant hunters in the 1930s.¹⁶⁹ While farming may have succeeded in the region without flood management, the addition of structures like dikes and levees allowed residents to capture vast amounts of acreage and convert it from inundated floodplains to productive farm and grazing land, increasing the economic growth of the region and growing the farms that shared their crops across the region and beyond.

Wahkiakum County Levees

While Pacific County's official levees are designed to protect significant infrastructure like the Port of Ilwaco Airport, Wahkiakum County's levees are generally designed to protect private property (farms, logging land, and wildlife areas) along the banks of the four rivers that flow toward the Columbia: the Deep and Grays River system and the Skamokawa and Elochoman River system. In the 1940s, this included, for instance, the Johnson Ranch between the Deep and Grays Rivers, logging interests like the Brix Logging Company that owned land near the mouth of the Deep River, and small communities like Oneida, Deep River, and Rosburg, which grew up alongside the Deep and Grays Rivers. Crown Zellerbach, the paper company, also owned lands near the mouth of the Elochoman. At that time, the Elochoman Slough separated the northern bank of the Columbia River from two connected islands that had been diked and drained in the 1920s. They were known collectively as "Hunting Island."¹⁷⁰

Levees were apparently constructed in segments. While much of the Deep and Grays riverbanks were protected by levees or dikes in 2025, as late as 1940, levees were minimally developed, disconnected, and likely added and maintained by private property owners or property owners supported by county diking or drainage districts. Some riverbanks were lined with roads, which often sat atop early levees constructed by Washington State.¹⁷¹ By the late 1950s, after a period of construction by the USACE, many of the extant levees on the Deep River were in place, and riprap, stone revetments, and gravel dikes had been added on the Grays (Figures 16–18). Twenty tide gates had also been added.¹⁷²

According to the 2024 Wahkiakum County Flood Control Plan, flooding has been a regular occurrence in the county as high tides and high river flows regularly eroded and topped riverbanks, although traditional flooding patterns were altered by the addition of dams along the Columbia. In all the major flood plains, levees and diking structures were constructed by diking districts in cooperation with the USACE in the 1940s and 1950s. Pile dikes further guided high flows into navigation channels. Once managed by diking districts, some structures have become the responsibility of new land users, as when the Grays River Habitat District took over

¹⁶⁵ U.S. Geological Survey (USGS), *Brookfield Quadrangle, Washington*, 1938, <https://ngmdb.usgs.gov/topoview/viewer/#13/46.2483/-123.5191>.

¹⁶⁶ Har Plumb, "Chinook, Historically Two Towns," *Chinook Observer* (Long Beach, WA), January 1, 1981.

¹⁶⁷ "Pea Planting Delayed During Week's Heavy Rains," *Chinook Observer* (Long Beach, WA), June 19, 1936.

¹⁶⁸ "So You Think You Got Trouble," *Chinook Observer* (Long Beach, WA), April 29, 1966.

¹⁶⁹ "Pheasant Hunters Do Fairly Good," *Chinook Observer* (Long Beach, WA), October 18, 1935.

¹⁷⁰ USGS, *Cathlamet Quadrangle, Washington*, 1941, <https://ngmdb.usgs.gov/topoview/viewer/#13/46.2136/-123.3816>.

¹⁷¹ USGS, *Brookfield Quadrangle, Washington*, 1940, <https://ngmdb.usgs.gov/topoview/viewer/#14/46.3246/-123.6849>.

¹⁷² Wahkiakum County, "Wahkiakum County Flood Hazard Management Plan, Chapter IV: Identification of Flood Issues—Past and Present," 2024, <https://www.co.wahkiakum.wa.us/DocumentCenter/View/280/Chapter-4-PDF>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

management of flood-management structures formerly under the Upper Grays River Diking District, an indication of how goals for flood management have changed, prioritizing not just land and property but also the environmentally sensitive use of the wetlands as habitat.¹⁷³

In the past, local districts implemented conventional flood control measures to protect private property and public structures from flood risk. These measures included dike construction, riprap replacement, pumping stations, and tidegate installations. Under the Flood Control Act of 1937, flood control districts were set up for the “investigation, planning, construction, improvement, replacement, repair or acquisition of dams, dikes, levees, ditches, channels, canals, banks, revetments, and other works, appliances, machinery and equipment and property and rights connected therewith or incidental thereto, convenient and necessary to control floods and lessen their danger and damages.”¹⁷⁴

On the Skamokawa and Elochoman Rivers, few levees were present by 1941, except on Hunting Island northwest of the town of Cathlamet (see Figure 11). Roadways, however, hugged the riverbanks and were likely constructed atop levees that are still extant.¹⁷⁵ By 1953, levees had been added along the lower Skamokawa River and its western fork.¹⁷⁶ Some flood-management structures were further supported by pump stations, added as late as 1977 along Brooks Slough, but these pump stations are aging and require maintenance and repair, and tide gates are inhibiting drainage. According to the County, “dikes are failing or sloughing, increasing the level of risk for County citizens.”¹⁷⁷

As the character of the area began to change, and industrial and commercial development waned, the small communities located behind the region’s dikes became endangered. In the 1970s, local historians watched as the river-based agricultural system of Wahkiakum and Pacific Counties increasingly developed, gaining highway access, centralized commercial districts, fewer small farms, and fewer small farming families. Historian Irene Martin partnered with Ruth Hall to list the Skamokawa Historic District in the NRHP. The nomination, accepted by the Keeper of the NRHP in 1976, described the town of Wahkiakum as “platted in relationship to a system of meandering creeks and sloughs that join Skamokawa Creek at its confluence with the Columbia somewhat like the branches of a tree.”¹⁷⁸ No mention was made of the massive earthwork and channel work that defined the profitable diked lands within the community, although the district followed the Skamokawa and Elochoman Rivers and documented the development that remained along their banks.

The Changing Landscape in the Lower Columbia River Basin (1971–Present)

By the late twentieth century, commercial fishing, canning, and logging had waned. Fewer farming families were producing commercial crops, and the few small communities that were developing grew up along the region’s highways rather than along its waterways. Also, governments were responding to a rise in environmental sensitivity, noting that levees, while historically integral to flood management, disrupt the natural flow of water in tidelands and limit habitat for wetland species. Public opinion began to trend towards habitat protection and restoration, which began to change water-management policy at local, state, and federal levels.

¹⁷³ Wahkiakum County, “Wahkiakum County Flood Hazard Management Plan, Chapter IV.”

¹⁷⁴ Wahkiakum County, “Wahkiakum County Flood Hazard Management Plan, Chapter V: Alternative Flood Hazard Management Measures,” 2024, <https://www.co.wahkiakum.wa.us/DocumentCenter/View/281/Chapter-5-PDF>.

¹⁷⁵ USGS, *Skamokawa Quadrangle, Washington*, 1941, <https://ngmdb.usgs.gov/topoview/viewer/#14/46.2963/-123.6906>.

¹⁷⁶ USGS, *Skamokawa Quadrangle, Washington*, 1953, <https://ngmdb.usgs.gov/topoview/viewer/#14/46.2963/-123.6906>.

¹⁷⁷ Wahkiakum County, “Wahkiakum County Flood Hazard Management Plan, Chapter IV.”

¹⁷⁸ Irene Martin and Ruth Hall, “National Register of Historic Places nomination for the Skamokawa Historic District,” 1976, on file with the Department of Archaeology and Historic Preservation, Olympia, WA.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

As an example, Hunting Island, once diked on the advice of Nelson, was converted into a wildlife preserve, the Columbian White-Tailed Deer National Wildlife Refuge.¹⁷⁹ Founded in 1971 and soon expanded, the 6,000-acre preserve was located on the once diked and drained island and adjacent former farmlands on the Columbia's northern bank. The refuge was designed to protect a species of deer listed as endangered in 1968, and to provide habitat to migratory birds, elk, otter, and other wildlife. By 1985, the refuge was renamed for Julia Butler Hansen, who grew up in the area and served in the Washington State House of Representatives from 1938 to 1960, after which she became the second woman from Washington to serve in the U.S. Congress (1960–1974). The refuge is now known as the Julia Butler Hansen Refuge for the Columbian White-Tailed Deer.¹⁸⁰ It is one of many areas that have reverted to a less controlled condition in recent decades with the support of both private and governmental interests.

By the 1990s, the degraded health of the Columbia and its tributaries led to a partnership between the governors of Oregon and Washington, along with the Environmental Protection Agency (EPA), which found that up to fifty percent of the former wetlands alongside the Lower Columbia had been lost, with approximately 84,000 acres converted to agricultural, urban, or industrial uses. Some of the same flood-management measures that had allowed the region to develop, including levees, dikes, and tide gates, had altered typical wildlife cycles on the river. To help shape future habitat restoration, in 1995, the Lower Columbia River Basin was designated an Estuary of National Significance, one of twenty-eight nationwide. Despite its rich ecology, decades of management, industrial development, and pollution have impacted its health.¹⁸¹

At the turn of the twenty-first century, efforts were underway to acquire land along the northern bank of the Columbia and to use tools like conservation easements to control what kind of land use was possible. In 2001, the Columbia Land Trust used part of a grant from the U.S. Fish and Wildlife service to acquire 871 acres along the Chinook River near Ilwaco. The land had historically been farmed, then offered to Washington State University as a gift. The university farmed cottonwood trees until a conservation easement ended the practice, limiting the land to its residential value alone. The Columbia Land Trust acquired the land and donated it to the Washington Department of Fish and Wildlife, which restored the estuary to support salmon populations. As noted in the *Columbian*, the most dramatic restoration activity was the removal of a tide gate below a U.S. 101 overpass east of Ilwaco.¹⁸² Additional acquisition and restoration in the 2010s has reclaimed lands west of the Ilwaco Airport along the Wallacut River and led to changes in the management of the Chinook River, where tide gates are now opened more often along the river's narrow mouth to allow for reestablishment of tidal marshlands.¹⁸³ Similar restoration activities are taking place in Wahkiakum County, where fish-passage culverts are being installed under levees supporting roads, sometimes replacing tide gates; dikes that enclosed formerly farmed lands are being intentionally breached; and wildlife areas like the Julia Butler Hansen Refuge are being restored to tidal wetlands through dike and levee removal.¹⁸⁴ The extent of these alterations is evident in the EPA's National Estuary Program database¹⁸⁵ and in the Lower Columbia Estuary Partnership's Lower

¹⁷⁹ USGS, *Astoria, Oregon Quadrangle*, 1981, <https://ngmdb.usgs.gov/topoview/viewer/#13/46.2136/-123.3816>.

¹⁸⁰ Julia Butler Hansen Refuge for the Columbian White-Tailed Deer, "About Us," accessed December 19, 2025, <https://www.fws.gov/refuge/julia-butler-hansen-columbian-white-tailed-deer/about-us>.

¹⁸¹ U.S. Environmental Protection Agency (EPA), "Overview of the National Estuary Program," accessed January 5, 2026, <https://www.epa.gov/nep/overview-national-estuary-program>.

¹⁸² Erik Robinson, "Land Trust Buys Vital Salmon Habitat, *Columbian* (Vancouver, WA), January 26, 2001.

¹⁸³ EPA, "National Estuary Program Dashboard," accessed January 14, 2026, <https://experience.arcgis.com/experience/21d284ac2563413d879d295668d38369?org=EPA>.

¹⁸⁴ EPA, "National Estuary Program Dashboard."

¹⁸⁵ EPA, "National Estuary Program Dashboard."

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Columbia Habitat Restoration Inventory Online database.¹⁸⁶ These databases document places where culverts and tide gates have been removed or modified, generally in support of fish habitat. Establishing the Julia Butler Hansen Refuge alone led to tide gate modifications affecting more than six miles of rivers and streams. Partners at local, state, and federal levels, including the USACE and BPA, often in partnership with the Washington Department of Fish and Wildlife, continue this work.¹⁸⁷

Recently completed projects have created new refuges east of the region covered by the MPD, as with the extensive restoration of a 965-acre wetland at Steigerwald Lake National Wildlife Refuge in Washougal, which reconnected the floodplain to the Columbia, reducing flood risk, creating 115 acres of wetlands, and adding 700,000 native shrubs and trees.¹⁸⁸ Other projects include the removal of levees along the eastern bank of the Wallacut River in what is known as the Wallacut Confluence Estuary. In 2016, BPA and the USACE removed 2,000' of levees, restored historical channels, and dug new channels to support the restoration of fish and wildlife habitat on a 109-acre parcel owned by the Columbia Land Trust. Additionally, the Columbia Land Trust continues to acquire and manage lands, restore habitat, reforest floodplains, and add to diversity of plant species within previously farmed lands, particularly in the Elochoman River floodplain.¹⁸⁹ As of 2021, the Columbia Land Trust, one of a number of such organizations, claimed to have conserved more than 20,000 acres in the Pacific Northwest, approximately a third of which is located in the Lower Columbia River Basin.¹⁹⁰

Flood-Management Structures as Historic Properties

In an attempt to track, manage, and understand the levees on the Columbia and its tributaries, particularly as many of them were constructed first by private interests and later improved with the help of various local, state, and federal agencies, the USACE, FEMA, and the State of Washington built databases to inventory these resources.¹⁹¹ Additionally, cultural resources survey and inventory projects have added a small number of them to the Washington Information System for Architectural and Archaeological Records Data (WISAARD).¹⁹²

Only a few of the levees, dikes, and other flood-management resources in Pacific and Wahkiakum Counties have been evaluated for listing in the NRHP as of 2025. Those recorded in WISAARD were generally recommended or determined not NRHP eligible, likely because the region remained minimally populated, and the dikes and levees that allowed for development and economic growth supported relatively small, rural communities. The Seal Slough Levee (Pacific County), Steamboat Slough Levee (Wahkiakum County), Nelson Creek Levee (Wahkiakum County), and the pile dikes at Skamokawa (Wahkiakum County) were all recommended and/or determined not eligible for listing in the NRHP by 2025, although BPA determined the Skamokawa River Diversion Channel, constructed by the USACE to aid flood management on the Skamokawa River, NRHP eligible in 2014.¹⁹³

¹⁸⁶ Lower Columbia Estuary Partnership, "Lower Columbia Habitat Restoration Inventory Online," 2025, <https://www.estuarypartnership.org/our-work/habitat-restoration/lower-columbia-regional-habitat-restoration-inventory>.

¹⁸⁷ Lower Columbia Estuary Partnership, "Lower Columbia Habitat Restoration Inventory Online."

¹⁸⁸ Lower Columbia Estuary Partnership, "Comprehensive Conservation and Management Plan 2025 Update," 2025, https://www.estuarypartnership.org/sites/default/files/202510/FINAL_2025%20Update_LCEP%20CCMP_approved%2010.21.25.pdf.

¹⁸⁹ Columbia Land Trust, "Conservation and Restoration Report," 2016–2017, https://www.columbialandtrust.org/wp-content/uploads/2017/03/Felburn-2016-2017_web_low-1.pdf.

¹⁹⁰ Columbia Land Trust, "Conservation Report," 2021, <https://www.columbialandtrust.org/wp-content/uploads/2021/05/2021-Conservation-Report-Web-Version.pdf>.

¹⁹¹ See <https://geo.wa.gov/datasets/waecy::levee-inventory/explore> for the Washington State Levee Inventory and <https://levees.sec.usace.army.mil/> for the USACE's National Levee Database.

¹⁹² Washington Department of Archaeology and Historic Preservation (DAHP), "Washington Information System for Architectural and Archaeological Records Database (WISAARD)," accessed December 31, 2025, <https://dahp.wa.gov/find-a-historic-place>.

¹⁹³ DAHP, "WISAARD."

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Historians have noted that the flood-management structures of the mid- to late twentieth century have not only been overlooked but have also been a subject of increasing debate, as both their impact on wildlife and their efficacy has been questioned:

By the post–World War II period, the widespread availability of heavy equipment brought a burst of new dike construction and the consolidation of numerous small diking districts, allowing tideland farmers to expand their coordinated diking efforts like never before. By the mid-20th century, some 65 percent of the tidally influenced Columbia River floodplain and roughly 40 percent of the salt marshes of Willapa Bay had been reclaimed through diking (Proctor et al. 1980). In recent decades dike breaching had become popular as a mechanism of wetland and salmon habitat enhancement along the estuaries of the Columbia-Pacific region. Dikes are now being removed with almost the same zeal and speed as they were being added to the landscape 100 years ago.¹⁹⁴

Arguments against the efficacy of levees appear in recent statewide documents as well, including a report by the Washington Department of Ecology, which noted in its 2010 levee inventory study that while levees provide some protection from floods, “levees also can overtop or fail. The result is severe flooding that can have serious impacts on an unsuspecting population. Unlike a natural flood, flooding from levee failures is often rapid, occurs with little or no warning, and is extremely damaging.”¹⁹⁵ For that reason, the levees and dikes constructed in Pacific and Wahkiakum Counties may be some of the last of their type. “The trend in Washington – as well as nationally – is moving away from building new levees that allow new development to expand into flood hazard areas. In the long term, levees attaining this degree of protection can actually increase flood risks by encouraging more growth in floodplains.”¹⁹⁶

The same point of view is echoed in county documents that acknowledge that dikes both played a critical role in Wahkiakum County’s cultural history and agricultural economy but also disconnected wetlands from their floodplains, “which would otherwise provide additional flood storage capacity, fish habitat, and other ecological functions. In this regard, despite their effectiveness, dikes can increase flood risks in areas they don’t protect, create the illusion that they protect adjacent areas from all flooding, and impair ecological functions.”¹⁹⁷

Conclusion

Local landowners, government agencies, and private companies constructed levees, dikes, and other structures designed to control flooding in southwestern Washington from the late nineteenth through the late twentieth centuries. These structures supported early development in the region, allowing residents including local fishers and loggers to shape the landscape to their use and turn the rivers into transportation routes. Those most reliant on these structures were the agriculturalists who reclaimed marshlands in the late nineteenth and early twentieth centuries and converted them to farms and ranches, draining excess water and controlling flooding while growing hay or managing dairies. The economic value of the agricultural industry was a driving force in the development of the region and in the development of state law that supported and funded diking and drainage

¹⁹⁴ Deur, *Empires of the Turning Tide*, 116.

¹⁹⁵ Washington State Department of Ecology, “Statewide Levee Inventory and Flood Protection Study: Report on Certification and Accreditation,” Publication No. 10-06-029, November 2010, <https://apps.ecology.wa.gov/publications/documents/1006029.pdf>.

¹⁹⁶ Washington State Department of Ecology, “Statewide Levee Inventory and Flood Protection Study.”

¹⁹⁷ Wahkiakum County, “Draft Wahkiakum County Comprehensive Flood Hazard Mitigation Plan,” April 2024, <https://www.co.wahkiakum.wa.us/DocumentCenter/View/2885/CFHMP-April-11-2024-Draft>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

districts, making reclaimed lands more habitable and safer for development. However, some early economic drivers like logging and fishing waned with the loss of healthy salmon runs and forested lands. Farming also decreased in the mid-twentieth century as transportation evolved. The USACE took greater responsibility for flood management in the region, and transportation routes, including highways, were built along scenic riverfronts. Soon after, the conservation movement emerged and took interest in the natural history of the Columbia River, working to protect and restore local ecosystem and biological diversity. In recent years, as conservation along the Columbia River and its tributaries has grown, flood-management structures have been breached, altered, or removed to allow for ecological restoration. Those that remain represent a former period of economic growth and lost patterns of land use that no longer define the region or its economy.

F. Associated Property Types

(Provide description, significance, and registration requirements.)

Introduction

Based on the context and themes identified above, a framework for analysis and evaluation of significance and integrity has been developed for resources that may qualify for listing in the NRHP under this MPD. Below, the document introduces specific resource types and subtypes, describes how and when they were constructed, and summarizes their physical attributes and specific registration requirements. Additional considerations, including how to identify potential eligible resources by their location, boundaries, and condition, are addressed below.

Location Patterns

Resources that may qualify for listing under the MPD are located in a limited region on the north shore of the Columbia River in Washington state. Confined to the lower three miles of floodplain along six rivers that flow from southwestern Washington into the Columbia, the MPD covers resources that share a similar context and similar periods and areas of significance. Resources may be located in either Pacific or Wahkiakum Counties but are limited to the tide-influenced lands on either the Wallacut or Chinook Rivers on Bakers Bay, along the Grays and Deep Rivers on Grays Bay, or along the Skamokawa and Elochoman Rivers at the town of Cathlamet. Although Pacific and Wahkiakum Counties are bound by the Columbia River Channel and, in the case of Pacific County, the Pacific Ocean, flood-management structures on either the Columbia River Channel or the ocean are excluded from eligibility under the MPD, as they are outside the geographic boundaries established for the document.

Boundaries

Specific flood-management resources that may qualify for listing under the MPD are generally bound by their construction footprints. Levees and dikes are defined by their wide foundations and include all foundation materials, fill, aggregate, riprap, crests, ditches, and vegetated or otherwise armored slopes. They are confined by their end points or termination points, which are generally the areas of high ground that anchor the levees and border the lowlands that require protection. Roadways placed atop levees are excluded from eligibility under the MPD, as they are associated with different areas of significance not covered by the MPD (i.e., transportation) and are not constructed primarily for flood management. For example, while Nelson Creek Road was built atop the Nelson Creek Levee, it would be noncontributing to the levee itself, were the levee eligible for listing in the NRHP. While levees and dikes provide flood protection to large areas behind them, these protected areas are not included within the boundaries.

Levels of Significance

The MPD is specifically designed to support evaluation of those flood-management structures located on tributaries of the Columbia and most closely associated with industrial, agricultural, and commercial activity in

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

southwestern Washington. Even when relying on state or federal funding, federal construction, or federal management, structures covered under the MPD are not likely to possess nationwide or statewide significance. Under the MPD, those resources most likely to qualify for listing in the NRHP will be significant at the local level.

Any resource significant under the MPD will have a specific period of significance tied to its associations under one or more NRHP criteria (A–D). The period of significance begins with the resource’s date of construction and continues through the period in which the resource held its significant association under one or more NRHP criteria. If, for instance, a levee was constructed in 1937 and significant for its associations with a farming operation that ended in 1957, the resource’s period of significance would run from 1937 to 1957.

Registration Criteria

As noted by the NPS, for a resource to qualify for listing in the NRHP, it must be 1) significant under a historic context (defined above for resources eligible under the MPD), 2) meet one of the four criteria for significance discussed below (Criteria A–D), and 3) retain sufficient integrity from its period of significance to convey its significance discussed below.¹⁹⁸

Additionally, a resource must meet the definition of one or more of the property types and subtypes identified below. Furthermore, the resource must have been constructed and/or gained historic significance within the period of significance for the MPD (1860–1980).

Significance

The significance of a resource within its historic context must relate to one or more of the following:

Criterion A. A resource may be eligible if it is associated with events that have made a significant contribution to the broad patterns of our history. Under the MPD, a resource may be eligible if it is associated with significant events and themes defined above, including Indigenous land use (although such resources are unlikely to be extant), resource extraction or agricultural use (i.e., fishing and canning, logging, or farming and dairying), private land management, federal flood management, local flood management, or evolving policies in land use associated with habitat restoration.

Criterion B. Resources may be eligible if they are associated with the lives of persons significant in our past (i.e., persons whose activities are demonstrably important within a local, state, or national context). Under the MPD, few resources will be eligible for their associations with significant individuals, unless individually constructed by, or in association with, a person with documented significance at the local level. In general, flood-management structures were constructed first by private landowners but were often reconstructed or strengthened with the help of local, state, or federal assistance. Such structures are generally not indicative of a single person’s achievements, but represent the work of many, including local government agencies, private companies, engineers, laborers, and federal agency representatives. Even if individually constructed resources remain, their primary significance will come from their associations with events and themes of significance to the region. As such, they will not gain their primary significance for their association with a single individual. At best, significant associations with individuals may represent a secondary area of significance for a resource primarily eligible under Criterion A.

¹⁹⁸ NPS), “How to Apply the National Register Criteria for Evaluation.”

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Criterion C. Resources may be eligible if they embody the distinctive characteristics of a type, period, or method of construction; represent the works of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction (i.e., contribute to a historic district). Under the MPD, few resources are likely to be significant under Criterion C unless they possess evidence of hand-crafted workmanship or are unique in design. Most flood-management structures are landscape features that blend into the surrounding region and are most evident as a change in topography. Relatively modest in design and utilitarian by nature, they possess few visual character-defining features that distinguish type, period, or method of construction. Research did not reveal that any known levees in the geographic area covered by the MPD were significant as feats of engineering or as the works of a master. Should evidence of exceptional craftsmanship be evident, or should a resource exhibit unique associations with a significant engineer, designer, or builder emerge, a resource may be found significant under Criterion C: Engineering.

Criterion D. Resources may be eligible if they have yielded, or may be likely to yield, information important in history or prehistory. Under the MPD, few resources are likely to qualify under Criterion D, unless, for instance, they are found, through additional research, to possess significant associations with Indigenous land use prior to the 1850s. Flood-control structures from the nineteenth and twentieth centuries are unlikely to yield information important to history or prehistory.

Integrity

Under the MPD, while condition is not a prerequisite for NRHP eligibility, resources must generally be of sufficient condition to maintain their original character-defining features, location, and alignment and retain their relationship with the river, stream, or slough they were built to contain. They will remain active as flood-management structures and will retain their original function, protecting the lands (i.e., farms, infrastructure, residences, or wetlands) they originally protected. Should their condition be so deteriorated that they are no longer recognizable as flood-management structures and/or can no longer be used as such, they will not qualify for listing under the MPD, as they would fail to retain sufficient integrity to convey their significance (discussed below). For instance, those flood-management structures that have been demolished by flood events and not repaired will not be considered eligible under the MPD.

The evaluation of integrity is grounded in an understanding of a property's physical features and how they relate to its significance. To retain integrity, a property will always possess several, and usually most, of the seven aspects of integrity, which include:

Location: the place where the resource was constructed or the place where the historic event occurred. Under the MPD, a resource must retain integrity of location from its period of significance to qualify for listing.

Design: the combination of elements that create the form, plan, space, structure, and style of a property. Many flood-management structures no longer retain integrity of design from their period of *construction*. Flood management evolved substantially during the MPD's period of significance. Levees were raised, flood gates and pumping stations were added, and in some cases, levees were completely reconstructed after failure. Under the MPD, a resource should retain most of its character-defining features from its period of *significance*, which allows for some diminished integrity of design from the period of *construction*.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Setting: the physical environment of a historic property. Under the MPD, integrity of setting defines the context and significance of flood-management resources. A resource must retain its relationship to the waterway it was meant to contain and should retain a relationship with the lands it was constructed to protect.

Materials: the physical elements that were combined or deposited during a particular period and in a particular pattern or configuration to form a historic property. Most flood-management structures within the geographic area covered by the MPD are a combination of the natural and humanmade materials. Generally composed of local soils, stone, and sometimes concrete or metal, levees are utilitarian in type and design, with associated features like tide gates and/or pump equipment (Figure 19). Under the MPD, a resource's integrity of materials may have been diminished by phases of improvement. If material alterations or additions (including revegetation or road surfacing) have not dismantled the original structure or limited its function, they will not generally diminish a resource's integrity.

Workmanship: the physical evidence of crafts of a particular culture or people during any given period in history or prehistory. Flood-management structures like levees are generally constructed using heavy machinery. Some additions, like tide gates or pumping equipment, may be made of mass-produced parts. Because levees are utilitarian landscape features, they may exhibit little evidence of artistry or craft. For utilitarian structures like these, integrity of workmanship will be maintained if they retain materials and function from their period of significance.

Feeling: the property's expression of the aesthetic or historic sense of a particular period. Under the MPD, integrity of feeling is integral to the significance of the resource. A flood-management structure like a levee or dike must be part of a landscape that substantially retains its historic character to convey integrity of feeling. Levees or dikes that have been obscured by new construction or that no longer maintain their original function will not qualify for listing under the MPD.

Association: the direct link between an important historic event or person and a historic property.¹⁹⁹ Under the MPD, integrity of association is integral to the significance of the resource. For a flood-management structure to qualify, it must retain its original associations with historic events and trends, which is likely to be evident in its continued function as a flood-management structure. If a resource no longer retains an association with its original builder, as in the case of levees constructed by the USACE but managed by a county, it may remain eligible. However, if it no longer retains associations with its original function, it will no longer qualify for listing under the MPD.

Minimum Eligibility Criteria by Property Type

As noted above, all resources eligible for listing in the NRHP must possess significance and integrity. Additionally, for a resource to qualify for listing in the NRHP under the MPD, it must meet be significant within the defined historic context, period of significance, boundaries, and meet the following minimum eligibility criteria, as defined by resource type. Following is a list of flood-management structures within the geographic area covered by the MPD, as well as their character-defining features and minimum registration criteria.

¹⁹⁹ NPS, "How to Apply the National Register Criteria for Evaluation."

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Eligible Property Types

Resources eligible under the MPD are generally defined as *structures* built for the benefit of flood management. The following resource types, as defined below, are most likely to qualify under the MPD. It is important to note that the names of some structures vary throughout primary and secondary sources. For instance, although most construction documented in the early twentieth century referred to all earthen flood barriers as *dikes*, which were often constructed and managed by *diking districts*, no formal distinction was made between these structures and *levees*, and the terms appeared somewhat interchangeable. As the function of both dikes and levees are similar (they were constructed to restrain flooding and keep river flows within their channels), and both were used to lift roadways out of floodplains, to protect adjacent land uses, and to direct the flow of flood waters, the difference might be one of scale. A *dike* was generally a smaller structure developed by a private owner or county to reclaim wetlands and keep them from reflooding, while a *levee* was often constructed by a larger agency, like the USACE, to reinforce the banks of the region's rivers and are more likely to be part of larger systems of flood management. For the MPD, the distinctions between the two resource types are minor and should not affect their eligibility.

Contributing/Noncontributing Resources

While most eligible resources will meet the definition of an individual flood-management *structure* (as defined below), groups of resources may be recognized as systems with more than one individual component. When best understood as a system (for instance, a series of associated levees, revetments, culverts, and tide gates), it is appropriate to consider the system as a potential historic district. Historic districts, like individually eligible resources, must meet the general criteria for listing, although not all components of the district must meet all registration criteria. Should a potential historic district include, for instance, a tide gate that was constructed after the period of significance for the MPD, the district may be eligible despite noncontributing resources like the ineligible tide gate.

The following categories refer to the types of resources that support flood management in Pacific and Wahkiakum Counties, as defined either by the USACE, which inventories levees across the United States; the State of Washington, which inventories these resources statewide; or Wahkiakum or Pacific Counties, which generally manage the flood-management structures within their boundaries.

Levees

The word "levee" refers specifically to "a humanmade barrier with the primary purpose of reducing the frequency of flooding to a portion of the floodplain, sometimes referred to as a levee system."²⁰⁰ While all levees share the goal of defending against high water, they can vary in construction and materials. While most are earthen and made of local soils, others may include flood walls of concrete, or varying amounts of other materials designed to make the levee water-tight and resistant to erosion. Unlike dams, levees generally follow the course of a waterway, rather than cross it, and will often be tied to higher ground on either end, which may mean that what appears to be a single levee along miles of riverbank may in fact have been constructed in pieces between higher-elevation landforms.²⁰¹

The most important character-defining features of a levee are its component parts: the **foundation** on which it was constructed, which may be of soil, concrete, or rock; **slopes** on both the **waterside** and the **landside** of the

²⁰⁰ USACE, "Levee Basics: What is a levee?" National Levee Database, accessed December 30, 2025, <https://levees.sec.usace.army.mil/levee-basics/what-is-a-levee/>.

²⁰¹ USACE, "Levee Basics: How Levees Work," National Levee Database, accessed December 30, 2025, <https://levees.sec.usace.army.mil/levee-basics/how-levees-work/>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

levee; the **crest**, the levee's highest part, which is generally flat and may support a roadway or a vegetated landscape; the **embankment**, an earthen barrier or floodwall on the waterside slope; any associated **revetments** or armoring; and the **toe**, the waterside foot of the levee, located where it meets land. Levees may be supported by pumps, wells, or other drainage systems designed to remove water that has pooled on the landside of the levee (Figure 20).

Subtype, Setback Levee: Setback levees are stepped back from the river or stream channel, allowing riverbanks and wetlands to flood but still protect a more limited and often developed area, like a field of crops or residential development. Setback levees “may be designed to leave aquatic/wetland/ riparian habitats intact, provide for recreational use of the floodplain, and accommodate channel migration.”²⁰² The most important character-defining features of setback levees mirror those of the larger levee type, but setback levees are defined by their relationship to the wider floodplain. In order to be eligible for listing under the MPD, setback levees must retain their character-defining features, including their relationship to the waterway and the associated undeveloped floodplain.

Significance: The levees covered by the MPD were constructed specifically to limit river flooding and may also serve a second purpose (i.e., draining adjacent lands when flooding could not be avoided). Levees constructed during the MPD's period of significance shaped the courses of the region's rivers and increased the economic and productive value of protected lands. They are significant for their associations with growth in agricultural development, population, or the size and stability of fishing and logging communities and, in more recent years, with the protection of lands converted to wildlife refuge and other protected habitats (Criterion A). Some levees are also associated with government efforts at the local, state, and federal level to control the loss of economic activity, health, and welfare due to consistent flooding.

Minimum Registration Requirements for Levees:

1. Levees must meet the general requirements established for listing in the NRHP, as defined in this MPD.
2. Levees must be historically significant in association with important events or trends, most likely in the area of Agriculture, Community Planning and Development, or Conservation and, in some instances, if they represent the work of a specific ethnic group (i.e., Scandinavian farmers), Ethnic Heritage (Criterion A), either individually or as part of a larger flood-management system (historic district). Few levees are likely to qualify under Criteria B, C, or D.
3. As levees are utilitarian structures, they must retain their original use to retain sufficient integrity to convey their significance. Levees that have been permanently breached, purposefully or through lack of maintenance; have been partially removed; or no longer connect their original end points (the high land or structures that border the floodplain) no longer possess sufficient integrity to convey their significance. Levees that have been raised, topped by a roadway or revegetation, improved with tide gates and/or pumping stations, or otherwise altered to improve their function may retain sufficient integrity to qualify—as long as those alterations do not greatly diminish integrity. If, for instance, a former levee was raised, armored with concrete, and topped by a highway, while the adjacent farm was converted to suburban development, the levee may no longer retain sufficient integrity of setting, design, materials, feeling, or association to qualify for listing. If, on the other hand, a levee that once held an informal gravel drive is now topped by a paved drive, the levee may yet retain sufficient integrity to qualify. If a levee was constructed

²⁰² Wahkiakum County, “Draft Wahkiakum County Comprehensive Flood Hazard Mitigation Plan.”

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

without a pumping station in the 1920s, and was raised and improved with a pumping station by the USACE in the 1940s, it may retain sufficient integrity to qualify if those alterations have gained significance in their own right, and integrity of setting, materials, feeling, and/or association may remain.

Earthen Dikes

Most primary and secondary sources refer to dikes and levees almost interchangeably. While levees are more closely associated with the management of flooding on regional rivers, dikes are more closely associated with the reclamation and protection of wetlands that would flood regularly if not diked. They may, in some cases, represent a more vernacular version of a levee. For this MPD, dikes are, as described by Wahkiakum County, “structures that limit stream flows to the stream channel. They protect areas adjacent to the dike from flooding when flood levels are lower than the top of the dike.”²⁰³

The most significant character-defining features of earthen dikes are similar to those for levees: the **foundation**, river and landside **slopes, revetment or other armoring** on the waterside slope, the **crest**, and the **toe**, if present, potentially augmented by a pump or other water-management infrastructure designed to help manage drainage (Figure 20).

Significance: The earthen dikes covered by the MPD are most likely to be significant for their association with protected land use. Those constructed during the MPD’s period of significance shaped the courses of the region’s farms, ranches, and dairies and, like levees, increased the economic and productive value of reclaimed wetlands. Like levees, they may be significant for their associations with growth in agricultural development, population, or the size and stability of fishing and logging communities and, in more recent years, with the protection of lands converted to wildlife refuge and other protected habitat. Like levees, they may gain some significance from their associations with governmental action, generally at the county level.

Minimum Registration Requirements for Earthen Dikes:

1. Earthen dikes must meet the general requirements established for listing in the NRHP, as defined in this MPD.
2. Dikes must be historically significant in association with important events or trends, most likely in the area of Agriculture, Community Planning and Development, or Conservation and, in some instances, if they represent the work of a specific ethnic group (i.e., Scandinavian farmers), Ethnic Heritage (Criterion A), either individually or as part of a larger system (historic district). Few earthen dikes are likely to qualify under Criteria B, C, or D.
3. As earthen dikes are utilitarian structures, they must retain their original use to retain sufficient integrity to convey their significance. Dikes that have been permanently breached, purposefully or through lack of maintenance; have been partially removed; or no longer protect adjoining wetlands no longer possess sufficient integrity to convey their significance. Earthen dikes that have been raised, topped by a roadway or revegetation, or otherwise improved to improve their function may retain sufficient integrity to qualify.

Character-Defining Features of Eligible Resources

As parts of levee or diking systems, structures like *revetments* (stone or concrete armoring lining slopes and riverbanks, stabilizing them to avoid erosion), *gabions* (stones wrapped and squared by wire enclosures to be

²⁰³ Wahkiakum County, “Draft Wahkiakum County Comprehensive Flood Hazard Mitigation Plan.”

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

stacked like heavy building blocks), and *deflectors* (hard barriers, either natural or humanmade, that deflect the force of a river through a channel, forcing the water into a particular course, generally at its mouth) are not individually significant. However, if constructed as part of a levee or dike or added during the period of significance, they may have played a role in historic-period flood management. Additionally, *culverts* (open channels through the bases of levees and dikes) and *tide gates* (pipes with gates that are opened or closed based on water pressure) are sometimes built into levees and dikes to allow water to drain from flooded lands protected by flood-management structures that have been overtopped or inundated by excessive rain (Figure 19). *Pumping Stations* help pump accumulated water to an outflow. Like revetments, gabions, and deflectors, these resources will not be individually significant but may support additional flood-management infrastructure and be defined as character-defining features of eligible resources.

Ineligible and Noncontributing Property Types

Associated resources that are unlikely to qualify under the MPD include other features of flood-management infrastructure that support development, transportation, and channelization in the region but are not specifically defined as flood-management structures. These may include:

Bridges and Roadways: Bridges and associated roadways, unlike levees, cross the region’s rivers and floodplains but are not flood-management structures, although they may be associated with features including floodgates, diking, and other flood-management infrastructure. As the known bridges and roadways within the region were not constructed for flood management and are more appropriately aligned with contexts that focus on Transportation as an area of significance, they are not considered eligible resource types under the MPD and they are noncontributing to the larger flood-management system.

Pile Dikes: Pile dikes are constructed of timber piles linked by horizontal spreaders. The USACE constructed numerous pile dikes between 1885 and 1996, primarily in the Columbia River, where they support channelization and navigation, protect riverbanks, and reduce the need for future dredging.²⁰⁴ A small number of pile dikes may be present in Pacific and Wahkiakum Counties but are exempted from eligibility under the MPD, as they are primarily associated with navigation and channelization, as opposed to flood management.²⁰⁵

Known Flood-Management Resources Within the Geographic Area

Dikes, levees, and other flood-management infrastructure covered by the MPD are generally managed by county diking districts or under authorities established by FEMA or the USACE. Although the data on these resources can be sparse and hard to verify, the best available sources are state and federal databases. Known levees and dikes within the MPD’s geographic area are included in Table 1 below, along with their descriptions, and the names of the organizations responsible for overseeing the levees and ensuring they are maintained.²⁰⁶ Additionally, corresponding numbers on Figures 1–3 identify their locations. Additional levees, as identified by BPA, are depicted on Figures 1–3 and topped by regional roadways but not covered in state and federal databases. Although not formally documented as “levees,” they are similar in size and type to typical levees and dikes in the region and may share similar attributes. While the roadways themselves are excluded from eligibility, the levees they rest upon may qualify if they meet the criteria established above.

²⁰⁴ USACE, “About Our Pile Dikes,” accessed December 30, 2025, <https://www.nwp.usace.army.mil/Missions/Navigation/Pile-dikes/>.

²⁰⁵ For additional information on pile dikes and navigation, see Jackie Gonzales and Natalie K. Perrin, *Historic Context of the Lower Columbia River Federal Navigation Channel System* (Portland, OR: U.S. Army Corps of Engineers, Portland District, 2021).

²⁰⁶ USACE, “National Levee Database.”

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Table 1. Levees Within Pacific and Wahkiakum Counties, as Identified by the USACE National Levee Database (December 2025).

	Name	Oversight Organization	Known Construction Details	Description
1	Pacific County Diking District No. 1	USACE, Portland District	1.108 miles long	Protects 150 buildings and 238 people at the Port of Ilwaco Airport located on Baker Bay between the Ilwaco and Chinook Rivers.
2	Deep River Levee 1	USACE, Portland District	1942; 0.961 miles long	Protects one building, four people, and 0.2 acres of farmland along the western bank of the Deep River at its mouth.
3	Deep River Levee 2	Unknown	1942; 0.151 miles long	Protects land along a tight bend on the western bank of Deep River at Svensens Landing along Oneida Road.
4	Deep River Levee 4	USACE, Portland District	1942; 1.76 miles long	Protects four buildings, five people, and 0.2 acres of farmland along two tight bends on the eastern bank of the Deep River; floodplain includes sections of Waranka Road.
5	Deep River Levee 5	USACE, Portland District	1942; 1.294 miles long	Protects land along a tight bend in the river north of Svensens Landing; floodplain is bound to the west by Oneida Road.
6	Deep River System	USACE, Portland District	0.616 miles long	Protects 0.4 acres of farmland north of Svensens Landing; floodplain includes section of Oneida Road.
7	Deep River Levee 7	Unknown	1942; 2.2 miles long	Protects 11 buildings, 12 people, and 2.2 acres of farmland on the eastern bank of the Deep River south of the town of Deep River; floodplain includes section of State Route 4 West.
8	Deep River Levee 8	Unknown	1942; 1.36 miles long	Protects two buildings, two people, and 0.9 acres of farmland west of the Deep River and south of the town of Deep River.
9	Lower Grays River Area A	Unknown	0.83 miles long	Protects one building, four people, and 0.2 acres of farmland on the western bank of the Grays River; floodplain includes sections of Kandoll Road.
10	Lower Grays River Area B1	Unknown	0.442 miles long	Protects one building, two people, and 0.9 acres of farmland on the western bank of the Grays River west of Kandoll Road.
11	Lower Grays River Area B2	Unknown	0.074 miles long	Protects 0.4 acres of farmland west of Grays River and generally along Seal Slough and sections of Highway 4 West, which is inside the floodplain.
12	Lower Grays River Area B3	Unknown	0.696 miles long	Protects lands with unspecified uses west of Seal Slough and Grays River.
13	Lower Grays River Area B4	Unknown	0.11 miles long	Protects lands with unspecified uses north of a tight bend in Seal Slough west of Grays River.
14	Lower Grays River Area C	Unknown	1.57 miles long	Protects six buildings, eight people, and 0.2 acres of farmland on the eastern bank of the Grays River.
15	Lower Grays River Area C1	Unknown	0.55 miles long	Protects one building and one person on the eastern bank of Grays River north of Area C.
16	Lower Grays River Area D	Unknown	0.705 miles long	Protects lands with unspecified uses east of Grays River.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Table 1. Levees Within Pacific and Wahkiakum Counties, as Identified by the USACE National Levee Database (December 2025).

	Name	Oversight Organization	Known Construction Details	Description
17	Lower Grays River Area E	Unknown	2.214 miles long	Protects one building, seven people, and 0.4 acres of farmland on the eastern bank of the Grays River near its mouth.
18	Lower Grays River Area F	Unknown	0.78 miles long	Protects one building and one person along Crooked Creek near its mouth.
19	Wahkiakum Co. Diking Imp. Dist. No. 4 North	Unknown	No data	Protects lands with unspecified uses north of Brooks Slough and south of Highway 4 West within the Julia Butler Hansen Refuge for the Columbian White-Tailed Deer.
20	Wahkiakum Co. Diking Imp. Dist. No. 4 South	USACE, Portland District	8.478 miles long	Protects six buildings, 14 people, and 8.0 acres of farmland between Steamboat Slough and between the Skamokawa and Elochoman Rivers at their mouths. The area is now the Julia Butler Hansen Refuge for the Columbian White-Tailed Deer. A section of Highway 4 West is within the floodplain.
21	Wahkiakum Co. Diking Imp. Dist. No. 5 North	USACE, Portland District	2.354 miles long	Protects nine buildings, 12 people, and 8.2 acres of farmland east of Skamokawa Creek.
22	Wahkiakum Co. Diking Imp. Dist. No. 5 South	USACE, Portland District	2.602 miles long	Protects 26 buildings, 49 people, and 4.9 acres of farmland southeast of Skamokawa Creek; a portion of East Valley Road runs through the floodplain, which includes the Skamokawa East Valley Airport.

G. Geographical Data

The resources eligible for listing under the MPD will be located along the lower reaches of the Wallacut and Chinook Rivers in Pacific County or the lower reaches of the Deep, Grays, Skamokawa, and Elochoman Rivers in Wahkiakum County. While Pacific County includes coastal flood-management structures along both the Columbia River and Pacific Coast, these resources are not within the area identified as the mouths of the rivers in the MPD and are therefore excluded from consideration.

The exact boundaries of the MPD are as follows: the MPD is limited to the floodplain of the Wallacut River to the west, the bank of Columbia River to the south, and the floodplain of the Elochoman River to the east. The northern boundary is less distinct but generally ends approximately three river miles north of the Columbia River, as that is the uppermost boundary for most flood-management structures that define the mouth of each river. Within these boundaries, private developers; local, state, and federal government agencies; and conservation groups have shaped the landscape with flood-management structures that share a geographic, temporal, and historic context. The MPD does not encompass flood-management structures outside these boundaries, including, for instance, pile dikes that define navigation channels within the Columbia River itself or structures located within the state of Oregon. Each of the six rivers within the geographic boundaries of the MPD is described briefly below, introduced from west to east (see Figures 1–3).

Wallacut River: In Pacific County, the Wallacut River flows into Baker Bay on the Columbia River between the Port of Ilwaco Airport and the town of Ilwaco, Washington. As Pacific County is a coastal

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

county, a tide gate installed near the river's mouth helps control flooding associated with the combination of high tides and excessive rainfall. Few levees remain in this region, as conservation groups have recently reclaimed some of the wetlands near the river's mouth. Remaining levees are located on the southern and western boundaries of the airport.²⁰⁷

Chinook River: In Pacific County, east of the Wallacut River, the Chinook River flows into Baker Bay. It is located east of the Port of Ilwaco Airport and is crossed by U.S. 101, the primary roadway within the MPD's boundaries. Like the Wallacut, the Chinook River includes a tide gate near its mouth to manage flooding. The only other documented flood-management structures associated with the Chinook River are those that raise U.S. 101 and other local roadways along the Columbia River's northern bank.²⁰⁸

Deep River: At the western edge of Wahkiakum County, the Deep River flows into Grays Bay after a series of tight bends, each of which is supported by a series of levees and setback levees. Residences and farmlands continue to occupy the eastern and western banks, and Highway 4 crosses the river running east-west.²⁰⁹ According to Wahkiakum County, more than twenty tide gates are installed along the Deep and Grays Rivers.²¹⁰

Grays River: In Wahkiakum County, the Grays River includes the region's largest watershed. However, the Grays River extends over three different counties, with only forty-five percent of its watershed in Wahkiakum County. As it flows south near the county's western edge, it meanders through various channels supported by a series of levees and setback levees and then widens into a flood plain at its mouth. As noted above, more than twenty tide gates are installed along the Deep and Grays Rivers.²¹¹

Skamokawa River: Located in the central valley of Wahkiakum County, the Skamokawa drains approximately 14,100 acres. Its various watersheds cover twenty percent of the county. Levees line the eastern and western banks of the river. Pump stations installed in the 1970s and a canal, along with tide gates, help manage flooding.²¹²

Elochoman River: The Elochoman River's drainage covers approximately twenty-seven percent of Wahkiakum County, draining 42,000 acres into a tidal plain at the river's mouth.²¹³ Its floodplain is crossed by Highway 4, which is constructed atop a levee. Additionally, much of the floodplain has been preserved as the Julia Butler Hansen Refuge for the Columbian White-Tailed Deer.

H. Summary of Identification and Evaluation Methods

Beginning in August 2025, HRA architectural historians Libby Provost, MS; Alex Martz, MS; and Chrisanne Beckner, MS, conducted background and field research on the history of flood management in southwestern Washington. Provost and Martz conducted field research, documenting in photographs and field notes the locations, patterns, and characteristics of levees, dikes, bridges, roadways, and associated structures located within the lower river miles of the two rivers in Pacific County and the four rivers in Wahkiakum County that

²⁰⁷ Jackson Blalock, et al., *Baker Bay and Grays Bay: 2024 Sea Level Rise Resiliency Strategy* (2024),

https://wacoastalnetwork.com/wp-content/uploads/2024/07/Baker-Grays-Bays-2024-SLR-Resilience-Strategy_Main-Report.pdf.

²⁰⁸ Blalock, et al., *Baker Bay and Grays Bay*.

²⁰⁹ Blalock, et al., *Baker Bay and Grays Bay*.

²¹⁰ Wahkiakum County, "Wahkiakum County Flood Hazard Management Plan," 2024, <https://www.co.wahkiakum.wa.us/605/Flood-Management-Flood-Comprehensive-Pla>.

²¹¹ Wahkiakum County, "Wahkiakum County Flood Hazard Management Plan."

²¹² Wahkiakum County, "Wahkiakum County Flood Hazard Management Plan."

²¹³ Wahkiakum County, "Wahkiakum County Flood Hazard Management Plan."

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

flow into the Columbia River. Simultaneously, Beckner conducted archival research into the history of land management, early phases of Indigenous and immigrant settlement, and nineteenth and twentieth century commercial activity, as well as the local, state, and federal policies and laws that guided government-related flood management in the region. Beckner relied on archival materials provided by BPA, as well as the digital and archival collections of government agencies including the USACE, FEMA, EPA, Washington Department of Transportation, Washington Department of Ecology, Washington Department of Fish and Wildlife, and Washington Department of Archaeology and Historic Preservation. State and federal inventories of levees and flood-management districts helped define the locations and distributions of extant levee systems. A review of digital collections, including those held in historical newspaper archives, university archives, historical photographic collections, and collections of maps and aerials helped establish a chronology of flood-management activities for the region. Published works held by the Washington State Library were particularly informative, providing histories of southwestern Washington communities and their agricultural and industrial development. Additionally, Beckner relied on HRA's library of published sources for additional information regarding the history of the USACE in the Pacific Northwest. The results of field and archival research allowed Beckner to analyze the physical, associative, and geographic attributes of resources associated with trends in flood management and identify those that qualify for listing in the NRHP under the specific historic contexts defined herein.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

I. Major Bibliographical References

(List major written works and primary location of additional documentation: State Historic Preservation Office, other State agency, Federal agency, local government, university, or other, specifying repository.)

“\$647,300 Is Being Spent on Dikes.” *Longview (WA) Daily News*, August 9, 1939.

Allen, James. *Tenth Biennial Report of the State Highway Engineer for the Period October 1, 1922, to September 30, 1924*. Olympia, WA: Frank M. Lamborn, Public Printer, 1924.

Allen, James. *State of Washington Showing State Highways Authorized by Legislative Acts of 1915, James Allen, State Highway Commissioner*. 1915. https://www.sos.wa.gov/legacy/maps/maps_detail.aspx?m=27.

Appelo, Carlton E. *Altoona, Wahkiakum, Washington*. Deep River, WA: n.p., 1972. On file at the Washington State Library, Tumwater.

Appelo, Carlton E. *Cottardi Station, Wahkiakum County, Washington*. Deep River, WA: n.p., 1980. On file at the Washington State Library, Tumwater.

Appelo, Carlton E. *Deep River: The C. Arthur Appelo Story, Wahkiakum County, Washington*. Wahkiakum County, WA: n.p. 1978. On file at the Washington State Library, Tumwater.

Appelo, Carlton E. *Pillar Rock, Wahkiakum County, Washington*. Deep River, WA: n.p., 1969. On file at the Washington State Library, Tumwater.

Appelo, Carlton E. *A Pioneer Scrapbook of the Columbia River North-Shore Communities, Wahkiakum and Pacific Counties, Washington, 1900–1985*. Ilwaco, WA: Pacific Printing Co., 1986.

“Approve Chinook River Dike.” *Spokesman-Review* (Spokane, WA), April 9, 1926.

“Army Corps Plans to Build Dike in Deer Reserve.” *Oregonian* (Portland, OR), October 23, 2013.

Arnold, Joseph L. *The Evolution of the 1936 Flood Control Act*. Fort Belvoir, VA: Office of History, U.S. Army Corps of Engineers, 1988.

“At the Latest Meeting of the County Commissioners of Pacific County.” *Astoria (OR) Evening Budget*, February 21, 1918.

Austin, Stephen. “Property ID: 55974, Skamokawa Creek Bridge (4/120).” Historic Property Inventory Form. 2017. <https://wisaard.dahp.wa.gov/>.

“Autoists to Find Many Improvements on Roads of North Shore in 1928.” *Astoria (OR) Evening Budget*, October 15, 1927.

Becker, Paula. “Ilwaco—Thumbnail History.” HistoryLink Essay No. 10055. March 28, 2012. <https://historylink.org/File/10055>.

“Bids for the Improvement of Two Sections of Highway.” *Journal of the San Juan Islands* (Friday Harbor, WA), September 9, 1926.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- Blalock, Jackson, Keith Marcoe, Chandler Countryman, Sanpisa Sritrairat, Catherine Corbett, and Ian Miller. *Baker Bay and Grays Bay: 2024 Sea Level Rise Resiliency Strategy*. 2024. https://wacoastalnetwork.com/wp-content/uploads/2024/07/Baker-Grays-Bays-2024-SLR-Resilience-Strategy_Main-Report.pdf.
- Blaser, Andrea. "Property ID: 71749, Clark County Diking Improvement District No. 14 – South – Columbia River Levee." Historic Property Inventory Form. 2018. <https://wisaard.dahp.wa.gov/>.
- Bommer, Annie. "Property ID: 729944, Levee." Historic Property Inventory Form. 2023. <https://wisaard.dahp.wa.gov/>.
- Bonsanti, Wilma. "Area Shakes Off Most Severe Storm of Fall." *Daily Astorian* (Astoria, OR), December 12, 1969.
- Brettman, Allan. "Group Wants Corps to Flood 900-Acre Field Near Chinook." *Longview (WA) Daily News*, November 7, 1999.
- Brooks, James Eugene. "Wahkiakum County, Washington: A Case Study in the Geography of the Coast Range Portions of the Lower Columbia River Valley." Master's thesis, University of Washington, Seattle, 1952. On file at the Washington State Library, Tumwater.
- Caldbick, John. "Washington State Grange." HistoryLink Essay No. 10717. March 3, 2014. <https://www.historylink.org/File/10717>.
- Cashman, Benjamin H. *Grays Bay Landslide Hazard Zonation Project, Wahkiakum and Pacific Counties, Washington*. Olympia: Washington Department of Natural Resources, 2006.
- "Cathlamet Appeals to Commercial Club." *Tacoma (WA) News Tribune*, November 16, 1911.
- "Chinook Dam to Replace Bridge." *Spokesman-Review* (Spokane, WA), July 14, 1925.
- Clarke, Chuck. *Background Information for Water Resources Planning in the Lower Columbia Basins*. Olympia, WA: Office of Water Programs, 1975. <https://babel.hathitrust.org/cgi/pt?id=uiug.30112088446650&seq=9>.
- Collins, Vaughn, Northwest Hydraulic Consultants. "Tidegate Basics." Prepared for the ODFW Fish Passage Rule Revision Initiative Subcommittee Meeting, December 15, 2021. <https://www.dfw.state.or.us/fish/passage/docs/ARRI/Tidegate%20Presentation%20%20-%20NHC%20Final%2012-14-2021.pdf>.
- Columbia Land Trust. "Conservation Report." 2021. <https://www.columbialandtrust.org/wp-content/uploads/2021/05/2021-Conservation-Report-Web-Version.pdf>.
- Columbia Land Trust. "Conservation and Restoration Report." 2016–2017. https://www.columbialandtrust.org/wp-content/uploads/2017/03/Felburn-2016-2017_web_low-1.pdf.
- "Commissioner's Adjourned Session, May 1st, 1916." *Skamokawa Eagle* (Cathlamet, WA), May 11, 1916.
- "Commissioner's Adjourned Session, June 5th, 1916." *Skamokawa Eagle* (Cathlamet, WA), June 15, 1916.
- "Contract Let for Chinook River Dike." *Astoria (OR) Evening Budget*, February 17, 1927.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- Crowley, Walt and Kit Oldham. "Transportation Chronology: Moving Washington for a Century — 100 Years in the History of the Washington State Department of Transportation (WSDOT)." HistoryLink Essay No. 7273. March 10, 2005. <https://www.historylink.org/File/7273>.
- Danielson, Robert M. *A Newspaper Chronology of the Ocean Beach Highway Construction 1906–1934. A Supplement to "Connecting with the Outside World."* Calgary, Alberta, Canada: n.p., 2017.
- Department of Archaeology and Historic Preservation. "Washington Information System for Architectural and Archaeological Records Data (WISAARD)." Accessed November 21, 2025. <https://dahp.wa.gov/about-us/geographic-information-system-information-technology-program>.
- Deur, Douglas. *Empires of the Turning Tide: A History of Lewis and Clark National and State Historical Parks and the Columbia-Pacific Region.* Washington, DC: U.S. Government Printing Office, 2016.
- Donovan-Boyd, Adrienne. "Property ID: 724598, Nelson Creek Levee." Historic Property Inventory Form. 2021. <https://wisaard.dahp.wa.gov>.
- Elliott, D. O. *The Improvement of the Lower Mississippi River for Flood Control and Navigation.* Volume 2. Vicksburg, MS: U.S. Waterways Experiment Station, May 1, 1932.
- Fadich, Ray. *Last of the Riverman.* n.p.: n.p., 1993.
- Federal Emergency Management Agency. *Flood Insurance Study, Wahkiakum County, Washington, Unincorporated Areas.* n.p.: Federal Emergency Management Agency, 1990. On file at the Washington State Library, Tumwater.
- Figueroa, Jennifer. "WDFW Proposed Restoration Project Would Flood 98 Acres." *Wahkiakum County Eagle* (Cathlamet, WA), May 15, 2025.
- Gatens-Klint, Donna, and the Appelo Archives. *Images of America: Naselle-Grays River Valley.* San Francisco, CA: Arcadia Publishing, 2009.
- Gillespie, Glenn. "Peninsula People: Hartwick Remembers a Different Origin of Stringtown Road." *Chinook Observer* (Long Beach, WA), October 12, 2009.
- Gonzales, Jackie, and Natalie K. Perrin. *Historic Context of the Lower Columbia River Federal Navigation Channel System.* Portland, OR: U.S. Army Corps of Engineers, Portland District, 2021.
- Gragg, Randy. "John Yeon (1910—1994)." Oregon Encyclopedia, 2024, https://www.oregonencyclopedia.org/articles/john_yeon/.
- Hayes, Brian. *Infrastructure: A Guide to the Industrial Landscape.* New York: W. W. Norton and Co. 2014.
- Hazeltine, Jean. *The Historical and Regional Geography of the Willapa Bay Area, Washington.* n.p.: n.p., 1956. <https://hdl.handle.net/2027/nyp.33433102027301>.
- Heimbigner, Kevin. "Wahkiakum Extension Program, 4-H To Be Cut from County's Budget?" *Chinook Observer* (Long Beach, WA), November 14, 2007.
- Historical Research Associates, Inc. *Lower Columbia River Channel Management Project.* Portland, OR: Historical Research Associates, Inc., 2020.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- HistoryLink Staff. "Washington's Public Ports: A List with Founding Dates." HistoryLink Essay No. 9809. April 29, 2011. <https://www.historylink.org/File/9809>.
- "Hold Hearing on Chinook Project: Meet with War Department Engineer to Discuss River Dam." *Tacoma (WA) Daily Ledger*, March 14, 1926.
- Holstine, Craig. "Property ID 853: Julia Butler Hansen Bridge." Historic Property Inventory Form. 2016. <https://wisaard.dahp.wa.gov/>.
- Hoover, J. W. *Eleventh Biennial Report of the State Highway Engineer for the Period October 1, 1924, to September 30, 1926*. Olympia, WA: Jay Thomas, Public Printer, 1926.
- Humes, Samuel J. *Twelfth Biennial Report of the State Highway Engineer for the Period October 1, 1926, to September 30, 1928*. Olympia, WA: Jay Thomas, Public Printer, 1928.
- Humes, Samuel J. *Highway Map, State of Washington, Samuel J. Humes, Director of Highways*. January 1931. https://www.sos.wa.gov/legacy/maps/maps_detail.aspx?m=34.
- "Ilwaco Airport Inspected." *Oregonian* (Portland, OR), February 7, 1931.
- Interstate Publishing Company. *An Illustrated History of Skagit and Snohomish Counties, Their People, Their Commerce, and Their Resources*. n.p.: Interstate Publishing Company. 1906.
- "It Adjourns Today: Other House Bills Passed." *Spokesman Review* (Spokane, WA), March 14, 1895.
- Jelsing, Nadine. *The Oregon Experience: Story of Vanport*. Portland: Oregon Public Media, 2016. <https://www.opb.org/television/programs/oregon-experience/article/vanport-2/>.
- Julia Butler Hansen Refuge for the Columbian White-Tailed Deer. "About Us." Accessed December 19, 2025. <https://www.fws.gov/refuge/julia-butler-hansen-columbian-white-tailed-deer/about-us>.
- Kramer, Becky. "Town of No Tomorrow." *Washington State Magazine*, Winter 2024. <https://magazine.wsu.edu/2024/10/31/town-of-no-tomorrow/>.
- "Land and River Notes, Skamokawa, Wash." *Wahkiakum County Eagle* (Cathlamet, WA), May 28, 1914.
- "L.D. Williams is Candidate for County Commissioner." *Chinook Observer* (Long Beach, WA), July 25, 1930.
- "Local and River Items." *Skamokawa Eagle* (Cathlamet, WA), October 1, 1908.
- Lower Columbia Estuary Partnership. "Comprehensive Conservation and Management Plan 2025 Update." Accessed December 30, 2025. https://www.estuarypartnership.org/sites/default/files/202510/FINAL_2025%20Update_LCEP%20CCMP_approved%2010.21.25.pdf.
- Lower Columbia Estuary Partnership. "Lower Columbia Habitat Restoration Inventory Online." Accessed December 30, 2025. <https://www.estuarypartnership.org/our-work/habitat-restoration/lower-columbia-regional-habitat-restoration-inventory>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- Lundin, John W and Stephen J. "Stagecoach and Steamboat Travel in Washington's Early Days." HistoryLink Essay No. 10250. November 21, 2012. <https://historylink.org/File/10250>.
- Martin, Irene. *Beach of Heaven, A History of Wahkiakum County*. Pullman: Washington State University Press, 1997.
- Martin, Irene. *Skamokawa: Sad Years, Glad Years*. n.p.: n.p., 1985.
- Martin, Irene, and Ruth Hall. "National Register of Historic Places Inventory—Nomination Form, Skamokawa Historic District." 1974. On file at the Department of Archaeology and Historic Preservation, Olympia, WA. <https://wisaard.dahp.wa.gov/>.
- McDonald, Lucile. *Coast Country: A History of Southwest Washington*. Long Beach, WA: Midway Printery, 1989.
- McLean, Mildred Evans. *Recollections of Deep River*. Portland, OR: Guthrie Printing, 1979.
- Metsker Maps. *Township 9 North, Range 8 West and 6 West, Wahkiakum County*. 1969. <https://historicmapworks.com>.
- Metsker Maps. *Township 9 North and 10 North, Pacific County*. 1950. <https://historicmapworks.com>.
- Minor, Rick, and Robert R. Musil. *Cultural Resource Reconnaissance for the Columbia River Channel Deepening Feasibility Study, Oregon and Washington*. Eugene, OR: Heritage Research Associates, Inc., June 30, 1998.
- Murrow, L.V. *Highway Map, State of Washington, L.V. Murrow, Director of Highways, Revised to April 1, 1933*. https://www.sos.wa.gov/legacy/maps/maps_detail.aspx?m=70.
- National Park Service. *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*. Washington, DC: National Park Service, 1997.
- Nelson, George A. "Wahkiakum County Agriculturalist's Report." *Skamokawa Eagle* (Cathlamet, WA), February 19, 1914.
- Nelson, S. B. "Another Forward Step in Agriculture." *Tenth Annual Report, Cooperative Extension Work—State of Washington*. Extension Service, State College of Washington, Pullman, November 1924.
- Nelson, S. B. *Sixth Annual Report of the Extension Service of The State College of Washington, Pullman, Washington*. Bulletin No. 67. January 1921.
- "Notice to Contractors." *Tacoma (WA) Daily Ledger*, August 24, 1926.
- "Notice to Contractors." *Tacoma (WA) Daily Ledger*, February 11, 1927.
- Oldham, Kit. "County Grange Sponsors Meeting on May 2, 1966, to Promote Formation of Wahkiakum County's Second Port Precinct." HistoryLink Essay No. 9741. February 24, 2011. <https://www.historylink.org/File/9741>.
- Oldham, Kit. "Ferry Service Across the Columbia River via Puget Island (Wahkiakum County) Begins on June 25, 1925." HistoryLink Essay No. 8029. June 16, 2025. <https://www.historylink.org/File/8029>.
- Oldham, Kit. "The First Salmon Cannery on the Columbia River Opens at Eagle Cliff, Wahkiakum County, in 1866." HistoryLink Essay No. 8036. December 20, 2006. <https://historylink.org/File/8036>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- Oldham, Kit. "Rehabilitation of the Historic Grays River Covered Bridge is Celebrated at a Rededication on September 30, 1989." HistoryLink Essay No. 8044. December 29, 2006. <https://www.historylink.org/File/8044>.
- Oldham, Kit. "Wahkiakum County—Thumbnail History." HistoryLink Essay No. 8011. November 18, 2006. <https://www.historylink.org/File/8011>.
- Oldham, Kit. "Wahkiakum County's First Port District Holds Its Inaugural Commission Meeting on November 21, 1958." HistoryLink Essay No. 9755. February 28, 2011. <https://www.historylink.org/File/9755>.
- Olson, Steve. "Logging, Lumbering, and Forestry in Southwest Washington." HistoryLink Essay No. 23258. April 16, 2025. <https://historylink.org/File/23258>.
- O'Rourke, Leslie. "Property ID: 671073, Steamboat Slough Levee, Columbia River Mile 35." Historic Property Inventory Form. 2013. <https://wisaard.dahp.wa.gov/>.
- Ott, Jennifer. "Voters Approve the Formation of Port of Ilwaco on March 4, 1928." HistoryLink Essay No. 9396. May 26, 2010. <https://www.historylink.org/File/9396>.
- Ouellette, L. P. *Map of Wahkiakum County*. Compiled from original records by L. P. Ouellette, C.E. 1898. On file at the Washington State Library, Tumwater.
- Pacific County Flood Control Zone District No. 1. "History of the District." Accessed December 16, 2025. <https://www.co.pacific.wa.us/flood-control/index.htm>.
- Pacific County. *Pacific County Comprehensive Plan Update 2010–2030*. South Bend, WA: Pacific County, March 2010.
- Pacific County. "Pacific County, Washington: Flood Control Historic No. 1 Ordinance No. 1. Land Alteration and Drainage." 1997. On file with Pacific County, South Bend, WA.
- Paulsen, C. G. *Floods of May-June 1948 in Columbia River Basin*. Geological Survey Water-Supply Paper 1080. Washington, DC: Government Printing Office, 1949.
- "Pea Planting Delayed During Week's Heavy Rains." *Chinook Observer* (Long Beach, WA), June 19, 1936.
- Perrin, Natalie. "Property ID: 710291, Columbia River Levee at Steigerwald Lake National Wildlife Refuge." Historic Property Inventory Form. 2017. <https://wisaard.dahp.wa.gov>.
- "Pheasant Hunters Do Fairly Good." *Chinook Observer* (Long Beach, WA), October 18, 1935.
- Plumb, Har. "Chinook, Historically Two Towns." *Chinook Observer* (Long Beach, WA), January 1, 1981.
- Portland Chamber of Commerce. *Men of Oregon: A Gallery of Likenesses of Representative Men, Together with Brief Sketches of Their Lives*. Portland, OR: Chamber of Commerce Bulletin, 1911.
- Puget Island Diking District. "History." Accessed January 6, 2026. <https://pidikedist.org/history/>.
- Ramsey, Guy Reed. *Postmarked Washington: Pacific and Wahkiakum Counties*. Lake Oswego, OR: Raven Press, 1987.
- "Receding Waters Reveal Damage Beyond Worst Fears." *Sunday Oregonian* (Portland, OR), July 11, 1948.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- Rega, Rita. "Ilwaco Residents Hear Flood Insurance Report." *Longview (WA) Daily News*, October 13, 1977.
- Reinikka, Merle A. *Deep River and Its Finns, Wahkiakum County, Washington*. Pioneer Series Vol. 24, No. 1. Portland, OR: Finnish-American Historical Society of the West, 1997.
- Robinson, Erik. "Land Trust Buys Vital Salmon Habitat." *Columbian* (Vancouver, WA), January 26, 2001.
- Rousso, Nick. "Farming in the Skagit Valley." HistoryLink Essay 21283. September 24, 2021.
<https://historylink.org/File/21283>.
- Roy, William R. *Report of the State Highway Department of Washington for the Period October 1, 1912, to October 1, 1914*. Olympia, WA: n.p., 1914.
- "Rustling Skamokawa." *Skamokawa Eagle* (Cathlamet, WA), July 29, 1891.
- Schoettler, Robert J. *Stream Clearing – Chinook River to Cowlitz River*. Project No. 852-W-SI-4, Contract 16fw-13021. Washington Department of Fisheries, Seattle. 1952.
- Schwab, Leslie. "Property ID: 50096, Chinook River Bridge #101/5c." Historic Property Inventory Form. 2006.
<https://wisaard.dahp.wa.gov/>.
- Schwantes, Carlos Arnaldo. *The Pacific Northwest: An Interpretive History*. Lincoln: University of Nebraska Press, Lincoln, 1996.
- "Skamokawa, Wash. Mar. 15, 1894." *Skamokawa Eagle* (Cathlamet, WA), March 15, 1894.
- Snow, Joseph M. *First Biennial Report of the Highway Commissioner for the Period Ending November 15, 1906*. Olympia, WA: G. W. Gorham, Public Printer, 1906.
- "So You Think You Got Trouble." *Chinook Observer* (Long Beach, WA), April 29, 1966.
- Spilsbury, Dawn, Alexandra Plumb, and Al Wald. "Spatial Analysis of Sea Level Rise-Related Flooding in Pacific County. Sea Level Rise Assessment for Pacific County – Phase 2." June 2025.
- Steiner, B. Smith, and Craig Holstine. "Property ID: 33243, SR 14, State Road No. 8, North Bank Highway." Historic Property Inventory Form. 2003. <https://wisaard.dahp.wa.gov/>.
- Stepankowsky, Andre. "Dike Being Built Near Deer Refuge." *Peninsula Daily News* (Port Angeles, WA), October 18, 2013.
- Story, Virginia, and HistoryLink Staff. "Pacific County—Thumbnail History." HistoryLink Essay No. 7914. October 26, 2006. <https://www.historylink.org/File/7914>.
- Symons, Thomas William. *Map of the Department of the Columbia / projected and compiled at the Engineer Office, Department of the Columbia, by Lieut. Thomas W. Symons, Corps of Engineers; assisted by Alfred Downing and C. C. Manning, topographical assistants, U.S. Army*. Washington, DC: U.S. Army Corps of Engineers, 1881. On file at the Washington State Library, Olympia. <https://www.sos.wa.gov/about-office/from-our-corner/general/washington-state-library-digital-collections-historical-maps-0>.
- "Tenas Illihee Island Sold." *Skamokawa Eagle* (Cathlamet, WA), September 19, 1907.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

“These Days Are Gone Forever: 10 Years Ago.” *Skamokawa Eagle* (Cathlamet, WA), August 11, 1932.

“The work of surveying the new diking district . . .” *Skamokawa Eagle* (Cathlamet, WA), February 15, 1917.

Thomas, Duncan W. “Changes in Columbia River Estuary Habitat Types Over the Past Century.” Columbia River Estuary Study Taskforce, Astoria, OR. July 1983.

“Tide Marsh Lands. Some of the Richest Agricultural Soil in the World.” *Seattle (WA) Post-Intelligencer*, July 17, 1891.

“To Improve Roads.” *Centralia (WA) Daily Chronicle*, June 11, 1955.

“A Trip to the Chinook Salmon Hatchery.” *Morning Astorian* (Astoria, OR), March 7, 1926.

Two Rivers Emergency Management, LLC. *Pacific County Hazard Mitigation Plan*. n.p.: Pacific County Emergency Management, 2022. On file with Pacific County, South Bend, WA.

U.S. Army Corps of Engineers (USACE). “About Our Pile Dikes.” Accessed December 30, 2025.
<https://www.nwp.usace.army.mil/Missions/Navigation/Pile-dikes/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 and 2, 1878*. Washington, DC: U.S. Government Printing Office, 1878. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 and 2, 1879*. Washington, DC: U.S. Government Printing Office, 1879. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1880*. Washington, DC: U.S. Government Printing Office, 1880. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1881*. Washington, DC: U.S. Government Printing Office, 1881. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1882*. Washington, DC: U.S. Government Printing Office, 1882. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1883*. Washington, DC: U.S. Government Printing Office, 1883. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1884*. Washington, DC: U.S. Government Printing Office, 1884. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1885*. Washington, DC: U.S. Government Printing Office, 1885. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1886*. Washington, DC: U.S. Government Printing Office, 1886. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1887*. Washington, DC: U.S. Government Printing Office, 1887. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1888*. Washington, DC: U.S. Government Printing Office, 1888. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 through 3, 1889*. Washington, DC: U.S. Government Printing Office, 1889. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 through 5, 1891*. Washington, DC: U.S. Government Printing Office, 1891. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 through 5, 1893*. Washington, DC: U.S. Government Printing Office, 1893. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 through 5, 1896*. Washington, DC: U.S. Government Printing Office, 1896. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 through 5, 1899*. Washington, DC: U.S. Government Printing Office, 1899. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 and 2, 1930*. Washington, DC: U.S. Government Printing Office, 1930. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 and 2, 1931*. Washington, DC: U.S. Government Printing Office, 1931. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 and 2, 1939*. Washington, DC: U.S. Government Printing Office, 1939. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 and 2, 1940*. Washington, DC: U.S. Government Printing Office, 1940. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 and 2, 1941*. Washington, DC: U.S. Government Printing Office, 1941. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Annual Report of the Chief of Engineers, Parts 1 and 2, 1944*. Washington, DC: U.S. Government Printing Office, 1944. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "A Brief History: The Beginnings to 1815." Accessed December 9, 2025.
<https://www.usace.army.mil/About/History/Brief-History-of-the-Corps/Beginnings/>.
- USACE. *Civil Works for the Public Good: U.S. Army Corps of Engineers and the New Deal, 1929–1941*. Alexandria, VA: USACE Office of History, 2024.
- USACE. "Columbia River Dike Construction Record." July 30, 1986.
- USACE. *Columbia River and Minor Tributaries*, Volume 1. 1932. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. *Design and Construction of Levees, Engineer Manual*. April 2010.
https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-1913.pdf.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- USACE. *Evaluation, Design, and Construction of Levees. DRAFT Engineer Manual*. Washington, DC: U.S. Army, 2002.
- USACE. "Federal Navigation Channel Operations and Maintenance Dredging, Baker Bay, Chinook Channel, Elochoman Slough, Lake River, Environmental Assessment Draft." March 2021. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Final Environmental Statement: Lower Columbia River Bank Protection Project, Oregon and Washington." August 31, 1972. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Levee Basics: History of Levees," National Levee Database. Accessed December 30, 2025. <https://levees.sec.usace.army.mil/levee-basics/history-of-levees/>.
- USACE. "Levee Basics: How Levees Work." National Levee Database. Accessed December 30, 2025. <https://levees.sec.usace.army.mil/levee-basics/how-levees-work/>.
- USACE. "Levee Basics: What is a levee?" National Levee Database. Accessed December 30, 2025. <https://levees.sec.usace.army.mil/levee-basics/what-is-a-levee/>.
- USACE. "National Levee Database." Accessed December 31, 2025. <https://levees.sec.usace.army.mil/>.
- USACE. *National Shoreline Study: Inventory Report Columbia-North Pacific Region, Washington and Oregon*. Portland, OR: U.S. Army Corps of Engineers, Port Pacific Division, 1971.
- USACE. *North Pacific Water Resources Development by the U.S. Army Corps of Engineers in Washington*. Portland, OR: U.S. Army Corps of Engineers, 1979.
- USACE. "Pacific County Diking District No. 1." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1969*. Washington, DC: U.S. Government Printing Office, 1969. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Pacific County Diking District No. 1." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1970*. Washington, DC: U.S. Government Printing Office, 1970. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Pacific County Diking District No. 1." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1971*. Washington, DC: U.S. Government Printing Office, 1971. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Pacific County Diking District No. 1." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1972*. Washington, DC: U.S. Government Printing Office, 1972. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1952*. Washington, DC: U.S. Government Printing Office, 1952. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1953*. Washington, DC: U.S. Government Printing Office, 1953. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1954*. Washington, DC: U.S. Government Printing Office, 1954. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1955*. Washington, DC: U.S. Government Printing Office, 1955. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1956*. Washington, DC: U.S. Government Printing Office, 1956. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1957*. Washington, DC: U.S. Government Printing Office, 1957. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1958*. Washington, DC: U.S. Government Printing Office, 1958. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1959*. Washington, DC: U.S. Government Printing Office, 1959. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1960*. Washington, DC: U.S. Government Printing Office, 1960. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1961*. Washington, DC: U.S. Government Printing Office, 1961. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1962*. Washington, DC: U.S. Government Printing Office, 1962. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1963*. Washington, DC: U.S. Government Printing Office, 1963. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1964*. Washington, DC: U.S. Government Printing Office, 1964. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1965*. Washington, DC: U.S. Government Printing Office, 1965. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1966*. Washington, DC: U.S. Government Printing Office, 1966. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1967*. Washington, DC: U.S. Government Printing Office, 1967. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE. "Wahkiakum County." In *Annual Report of the Chief of Engineers, Parts 1 and 2, 1968*. Washington, DC: U.S. Government Printing Office, 1968. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.
- USACE, North Pacific Division. *Water Resources Development by the Corps of Engineers in Washington*. Portland, OR: U.S. Army Corps of Engineers, North Pacific Division, 1955. <https://babel.hathitrust.org/cgi/pt?id=mdp.39015028280314&seq=3>.
- U.S. Bureau of Sport Fisheries and Wildlife, Department of the Interior. "Proposed Additions to and Operation of the Columbian White-Tailed Deer National Wildlife Refuge, Oregon and Washington." 1972. https://www.google.com/books/edition/Columbian_White_tailed_Deer/XnI5AQAAMAAJ?hl=en&gbpv=1&pg=PA7&printsec=frontcover.
- U.S. Congress. *An Act Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control, and For Other Purposes*. 74th Cong., 2nd sess., June 22, 1936. Chapter 688: 1570.
- U.S. Department of Agriculture (USDA). "Cooperative Extension History." Accessed December 8, 2025. <https://www.nifa.usda.gov/about-nifa/what-we-do/extension/cooperative-extension-history>.
- USDA. "Reconnaissance Survey of Southwestern Washington." May 16, 1913. https://archive.org/stream/usda-reconnaissance-survey-of-southwestern-washington-1913/usda-reconnaissance-survey-of-southwestern-washington-1913_djvu.txt.
- U.S. Department of State. "The Columbia River Treaty: Past, Present, and Future." 2018. <https://www.state.gov/wp-content/uploads/2018/12/The-Columbia-River-Treaty-Past-Present-and-Future.pdf>.
- U.S. Environmental Protection Agency (EPA). "National Estuary Program Dashboard." Accessed January 14, 2026. <https://experience.arcgis.com/experience/21d284ac2563413d879d295668d38369?org=EPA>.
- U.S. EPA. "Overview of the National Estuary Program." Accessed January 5, 2026. <https://www.epa.gov/nep/overview-national-estuary-program>.
- U.S. Geological Survey (USGS). *Astoria, Oregon Quadrangle*. 1981. <https://ngmdb.usgs.gov/topoview/viewer/#13/46.2136/-123.3816>.
- USGS. *Brookfield Quadrangle, Washington*. 1940. <https://ngmdb.usgs.gov/topoview/viewer/#13/46.2483/-123.5191>.
- USGS. *Brookfield Quadrangle, Washington*. 1940. <https://ngmdb.usgs.gov/topoview/viewer/#14/46.3246/-123.6849>.
- USGS. *Cathlamet Quadrangle, Washington*. 1941. <https://ngmdb.usgs.gov/topoview/viewer/#14/46.2624/-123.4425>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

- USGS. *Fort Columbia Washington-Oregon*. 1938. https://ngmdb.usgs.gov/htbin/tv_browse.pl?id=0fac44e461f106425f647c15c447acea.
- USGS. *Skamokawa Quadrangle, Washington*. 1941. <https://ngmdb.usgs.gov/topoview/viewer/#14/46.2963/-123.6906>.
- USGS. *Skamokawa Quadrangle, Washington*. 1953. <https://ngmdb.usgs.gov/topoview/viewer/#14/46.2963/-123.6906>.
- “An Up to Date Logging Camp.” *Skamokawa Eagle* (Cathlamet, WA), August 9, 1900.
- “Wahkiakum County Commissioners’ Proceedings.” *Skamokawa Eagle* (Cathlamet, WA), April 2, 1914.
- Wahkiakum County. “Draft Wahkiakum County Comprehensive Flood Hazard Mitigation Plan.” April 2024. On file at the Wahkiakum County Planning Commission, Cathlamet, WA. <https://www.co.wahkiakum.wa.us/DocumentCenter/View/2885/CFHMP-April-11-2024-Draft>.
- Washington State Department of Ecology. “Washington Spatial Data. Levee Inventory.” 2025. <https://geo.wa.gov/datasets/waacy::levee-inventory/explore?location=47.201245%2C-120.534400%2C7.52>.
- Washington State Department of Ecology. “Statewide Levee Inventory and Flood Protection Study: Report on Certification and Accreditation.” Publication No. 10-06-029. November 2010. <https://apps.ecology.wa.gov/publications/documents/1006029.pdf>.
- Washington Department of Fisheries. “Lower Columbia River Fisheries Program, Closing Report, Stream Clearing—Chinook River to Cowlitz River.” 1952. On file at the Washington State Library, Tumwater.
- Washington State Department of Highways. “Point Ellice to Skamokawa, Pacific and Wahkiakum Counties.” Prepared for the Joint Committee on Highways, Olympia, WA, 1970. On file at the Washington State Department of Transportation, Olympia.
- Washington State Department of Transportation (WSDOT). “All Bridge and Tunnel Inventory (State and Local).” Accessed January 5, 2026. <https://geo.wa.gov/datasets/WSDOT::wsdot-all-bridge-and-tunnel-inventory-state-local/explore?location=46.293821%2C-123.756596%2C11.00>.
- WSDOT. “History of Roads and Highways in the State of Washington.” n.d. On file at the Washington State Department of Transportation, Olympia.
- Washington State Highway Commission. *City Map, Long Beach—Ilwaco, Pacific County*. Olympia: Washington State Highway Commission, 1977. On file at the Federal Highway Administration, Washington, DC.
- Washington State Highway Commission. *Reconnaissance Survey, Grays River to Pe Ell, Wahkiakum, Lewis and Pacific Counties. Report to the 1957 Legislature*. Olympia, WA: Department of Highways, 1956. On file at the Washington State Department of Transportation, Olympia.
- Williams, S. G. “E. A. Coe Returned Last Friday . . .” *Skamokawa Eagle* (Cathlamet, WA), May 20, 1909.
- Williams, S. G. “Local and Personal Mention.” *Skamokawa Eagle* (Cathlamet, WA), March 12, 1925.
- Willingham, William F. *Army Engineers and the Development of Oregon: A History of the Portland District U.S. Army Corps of Engineers*. Washington, DC: U.S. Government Printing Office, 1983. On file in the USACE Digital Library, <https://usace.contentdm.oclc.org/digital/>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Wilma, David. "Bonneville Dam Officially Goes into Service on June 6, 1938." HistoryLink Essay No. 7823. July 3, 2006. <https://historylink.org/File/7823>.

Zimmerman, Diana. "Diking District Strives to Keep the Island Dry." *Wahkiakum County Eagle* (Cathlamet, WA), April 14, 2022.

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.). We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

Estimated Burden Statement: Public reporting burden for each response using this form is estimated to be between the Tier 1 and Tier 4 levels with the estimate of the time for each tier as follows:

Tier 1: 60-100 hours (generally existing multiple property submissions by paid consultants and by Maine State Historic Preservation staff for in-house, individual nomination preparation)

Tier 2: 120 hours (generally individual nominations by paid consultants)

Tier 3: 230 hours (generally new district nominations by paid consultants)

Tier 4: 280 hours (generally newly proposed MPS cover documents by paid consultants).

The above estimates include time for reviewing instructions, gathering and maintaining data, and preparing and transmitting reports. Send comments regarding these estimates or any other aspect of the requirement(s) to the Service Information Information Collection Clearance Officer, National Park Service, 1201 Oakridge Drive Fort Collins, CO 80525.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Figures Continuation Sheet

Figure 1. Levees identified along the Wallacut River/Chinook River levee systems in Pacific County, Washington..... 65

Figure 2. Levees identified along the Deep River/Grays River levee systems in Wahkiakum County, Washington..... 66

Figure 3. Levees identified along the Skamokawa River/Elochoman River levee systems in Wahkiakum County, Washington. 67

Figure 4. “A map of the tribes of the lower Columbia River, from the Cascade Range to the sea, from the first published edition of the Lewis and Clark journals.” From P. Allen, N. Biddle, W. Clark, and M. Lewis, Map of Lewis and Clark’s Track across the Western Portion of North America (London: Longman, Hurst, Rees, Orne & Brown, 1815). Excerpted from Douglas Deur, Empires of the Turning Tide: A History of Lewis and Clark National and State Historical Parks and the Columbia-Pacific Region (Washington, DC: U.S. Government Printing Office, 2016). Image courtesy Wikimedia Commons. 68

Figure 5. Map of Pacific and Wahkiakum County, 1898. Courtesy of the Library of Congress. 69

Figure 6. “Grays River is known for its flooding. The flood in this picture was in 1909, when the town and the fields were underwater. Grays River has flooded its banks nearly every year known to modern man.” Donna Gatens-Klint and the Appelo Archives, Images of America: Naselle-Grays River Valley (San Francisco, CA: Arcadia Publishing, 2009), 101. 70

Figure 7. “Deep River is a swampy marsh area, and when the tide came in, the town was under water. Boardwalks were built to enable people to move freely.” Donna Gatens-Klint and the Appelo Archives, Images of America: Naselle-Grays River Valley (San Francisco, CA: Arcadia Publishing, 2009), 116..... 71

Figure 8. “Pictured here is old-time haymaking on the Frank Badger farm in Grays River about 1913.” Donna Gatens-Klint and the Appelo Archives, Images of America: Naselle-Grays River Valley (San Francisco, CA: Arcadia Publishing, 2009), 38. 72

Figure 9. Deep River Bridge, ca. 1920 with Community Hall at rear. Carlton E. Appelo, Deep River: The C. Arthur Appelo Story, Wahkiakum County, Washington (1978:84). 73

Figure 10. The “school boat” that took children to school in Deep River, ca. 1921. Carlton E. Appelo, Deep River: The C. Arthur Appelo Story, Wahkiakum County, Washington (1978). 74

Figure 11. Washington State Highway Department Map of Wahkiakum County, 1926. Courtesy of the Washington State Department of Transportation. 75

Figure 12. General Highway and Transportation Map, Pacific County, 1936. Courtesy of the Washington State Department of Transportation. 76

Figure 13. Bakers Bay, Columbia River, Washington, 1932. Patrick J. Hurley, Letter from the Secretary of War to Congress, 1933..... 77

Figure 14. USACE’s Lower Columbia River Basin Bank Protection Works, Oregon and Washington. Work authorized by the Flood Control Act of May 17, 1950, in Pacific and Wahkiakum Counties. Reproduced from USACE, Annual Report of the Chief of Engineers, Parts 1 and 2, 1972 (Washington, DC: U.S. Government Printing Office, 1972). 78

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Figure 15. Pipeline Dredge Multnomah Leaving Government Moorings for Columbia River Basin Flood Control Levee Construction, 1938. Courtesy of the U.S. Army Corps of Engineers. 79

Figure 16. Puget Island approach to the Cathlamet Bridge, 1945. Courtesy of the National Archives. 80

Figure 17. Cathlamet Bridge, 1945, view north from Puget Island. Courtesy of the National Archives..... 81

Figure 18. Cathlamet area, 1950. Courtesy of the National Archives..... 82

Figure 19. Deep River tide gate, ca. 1952. Robert J. Schoettler, Stream Clearing – Chinook River to Cowlitz River, Washington Department of Fisheries, Seattle, 1952..... 83

Figure 20. “Anatomy of a levee.” Adapted from a figure provided by the USACE. USACE, “Levee Basics: What is a Levee?,” National Levee Database, accessed December 30, 2025, <https://levees.sec.usace.army.mil/levee-basics/what-is-a-levee/>..... 84

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 1. Levees identified along the Wallacut River/Chinook River levee systems in Pacific County, Washington.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

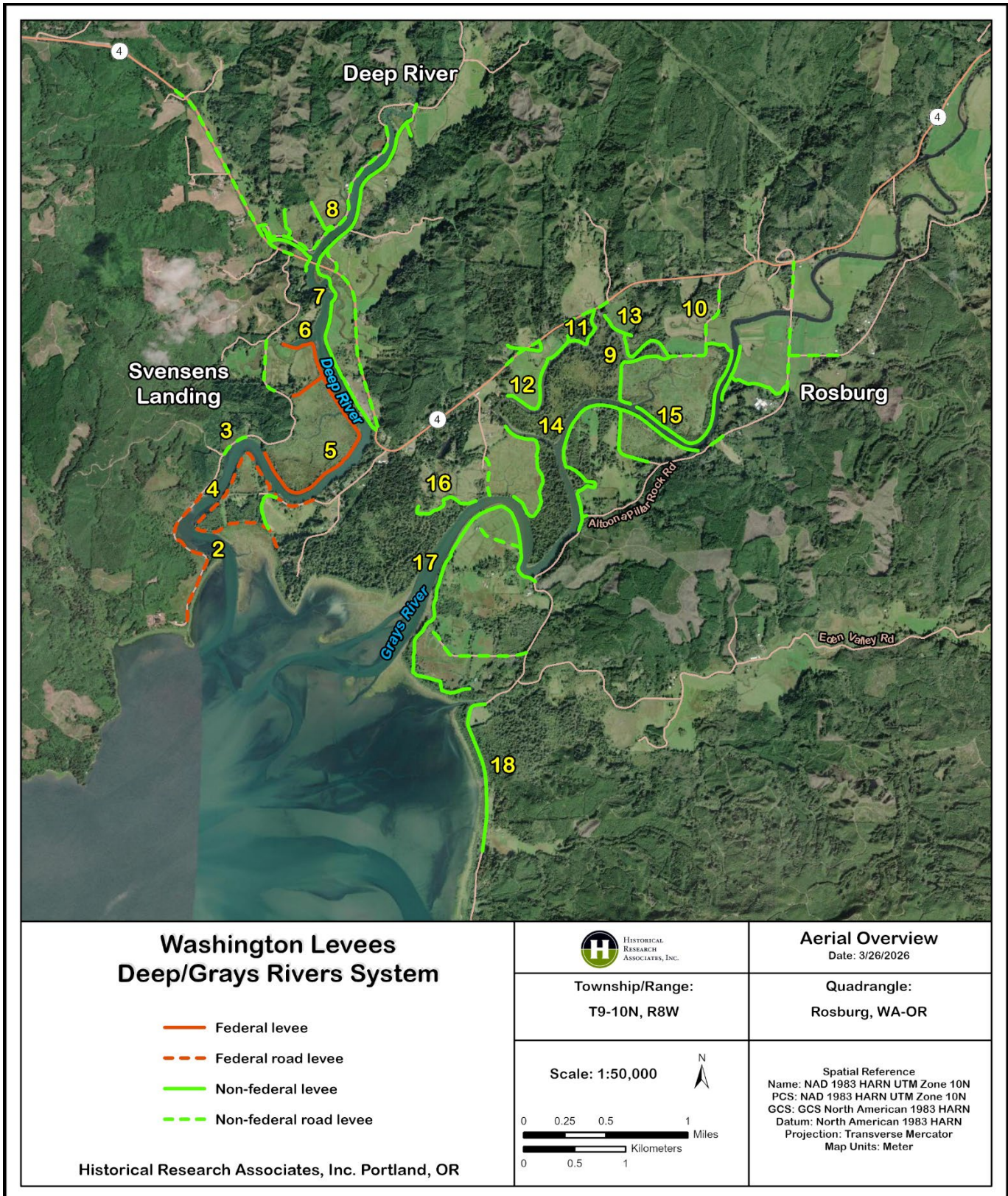


Figure 2. Levees identified along the Deep River/Grays River levee systems in Wahkiakum County, Washington.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

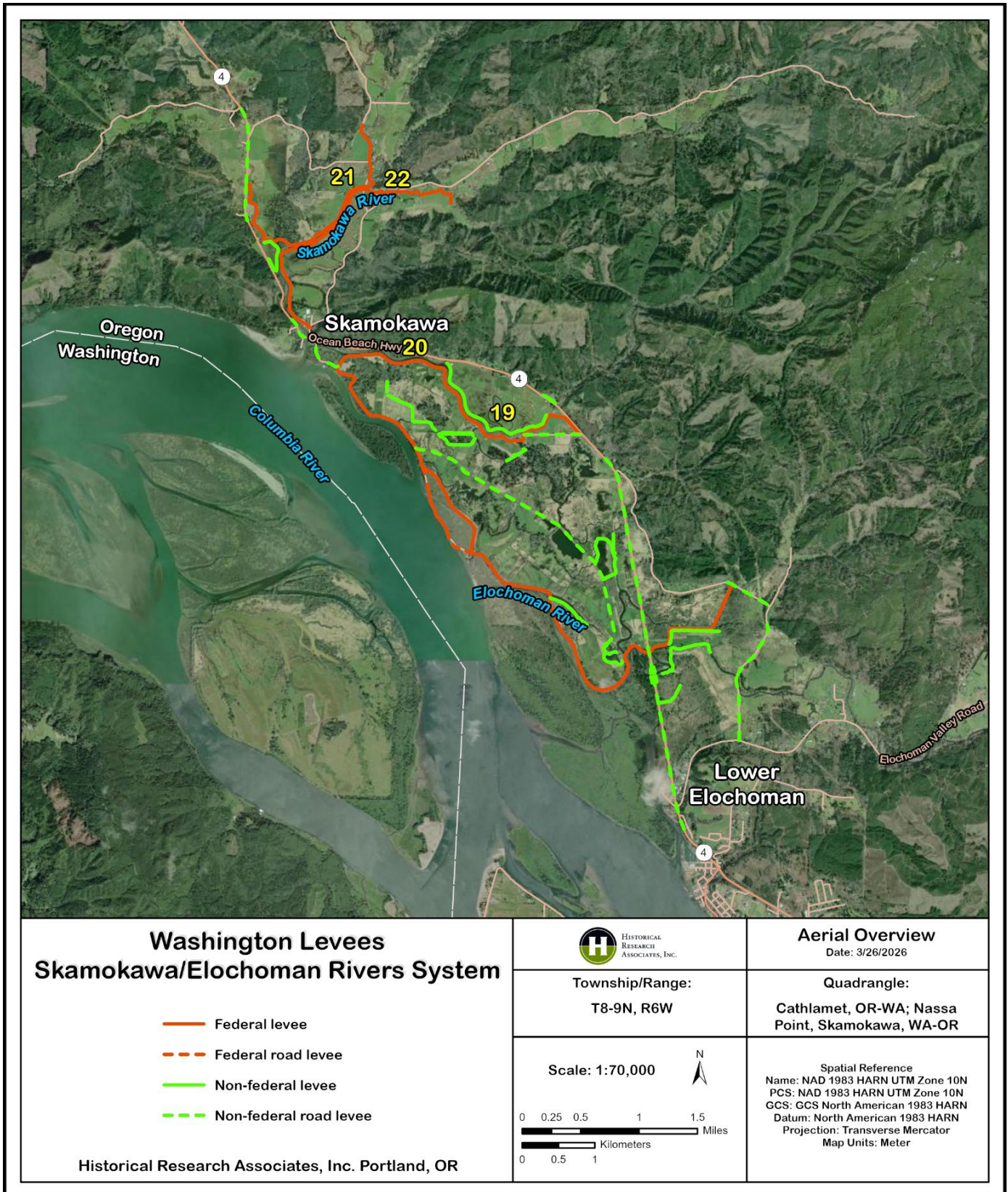


Figure 3. Levees identified along the Skamokawa River/Elochoman River levee systems in Wahkiakum County, Washington.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 4. “A map of the tribes of the lower Columbia River, from the Cascade Range to the sea, from the first published edition of the Lewis and Clark journals.” From P. Allen, N. Biddle, W. Clark, and M. Lewis, Map of Lewis and Clark’s Track across the Western Portion of North America (London: Longman, Hurst, Rees, Orne & Brown, 1815). Excerpted from Douglas Deur, Empires of the Turning Tide: A History of Lewis and Clark National and State Historical Parks and the Columbia-Pacific Region (Washington, DC: U.S. Government Printing Office, 2016). Image courtesy Wikimedia Commons.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

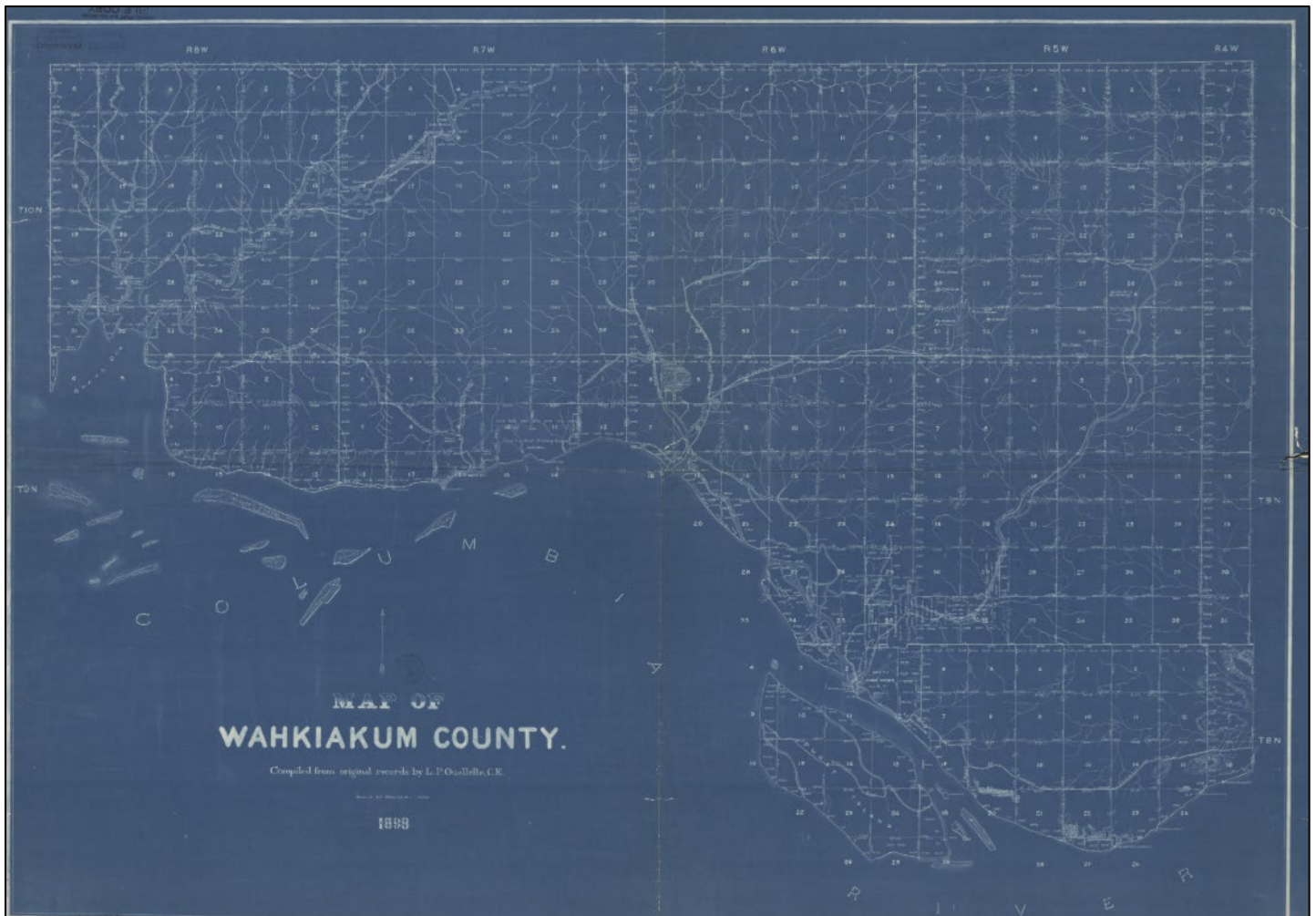


Figure 5. Map of Pacific and Wahkiakum County, 1898. Courtesy of the Library of Congress.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 6. “Grays River is known for its flooding. The flood in this picture was in 1909, when the town and the fields were underwater. Grays River has flooded its banks nearly every year known to modern man.” Donna Gatens-Klint and the Appelo Archives, *Images of America: Naselle-Grays River Valley* (San Francisco, CA: Arcadia Publishing, 2009), 101.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 7. “Deep River is a swampy marsh area, and when the tide came in, the town was under water. Boardwalks were built to enable people to move freely.” Donna Gatens-Klint and the Appelo Archives, *Images of America: Naselle-Grays River Valley* (San Francisco, CA: Arcadia Publishing, 2009), 116.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 8. “Pictured here is old-time haymaking on the Frank Badger farm in Grays River about 1913.” Donna Gatens-Klint and the Appelo Archives, *Images of America: Naselle-Grays River Valley* (San Francisco, CA: Arcadia Publishing, 2009), 38.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

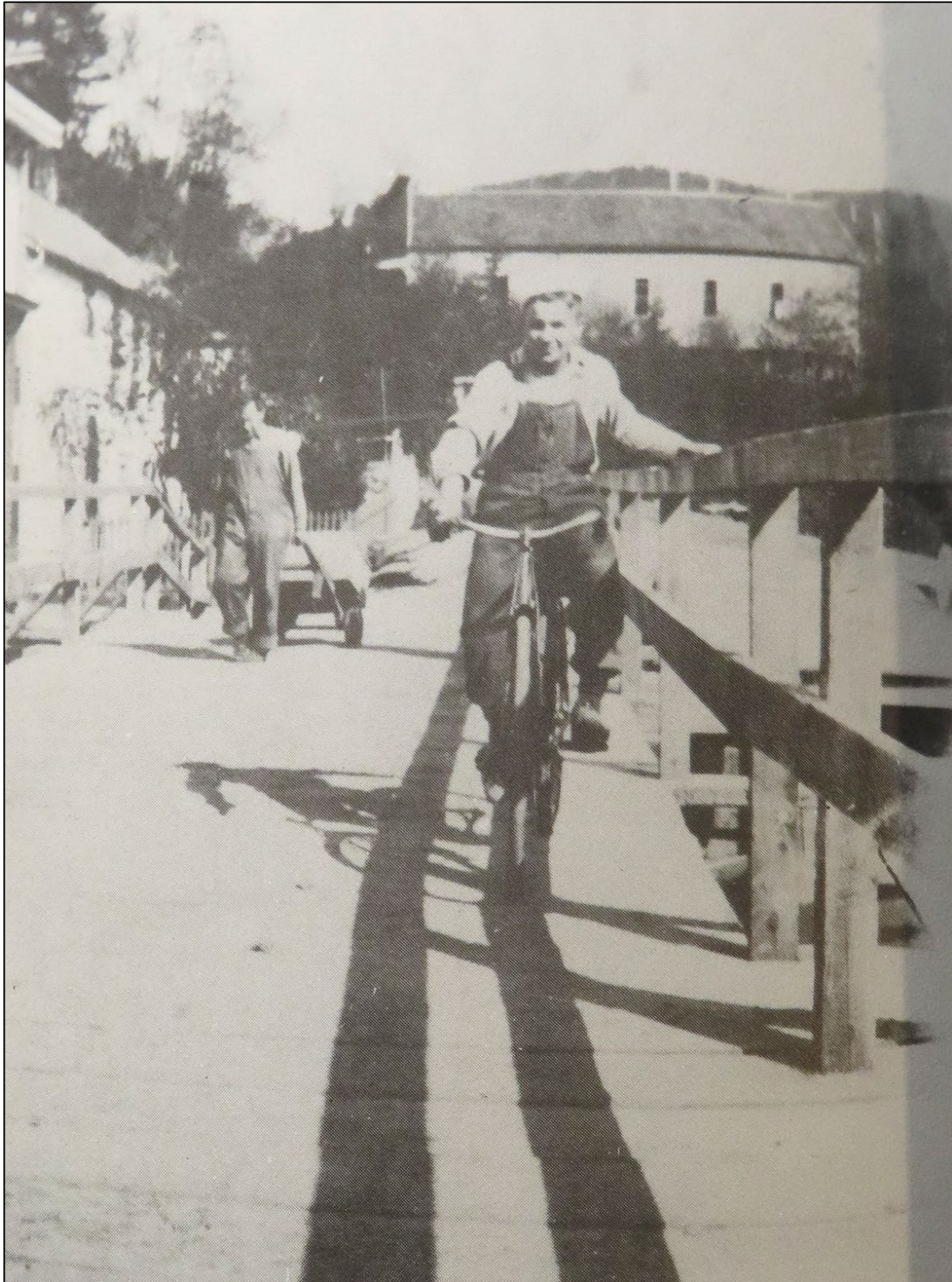


Figure 9. Deep River Bridge, ca. 1920 with Community Hall at rear. Carlton E. Appelo, Deep River: The C. Arthur Appelo Story, Wahkiakum County, Washington (1978:84).

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 10. The “school boat” that took children to school in Deep River, ca. 1921. Carlton E. Appelo, Deep River: The C. Arthur Appelo Story, Wahkiakum County, Washington (1978).

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

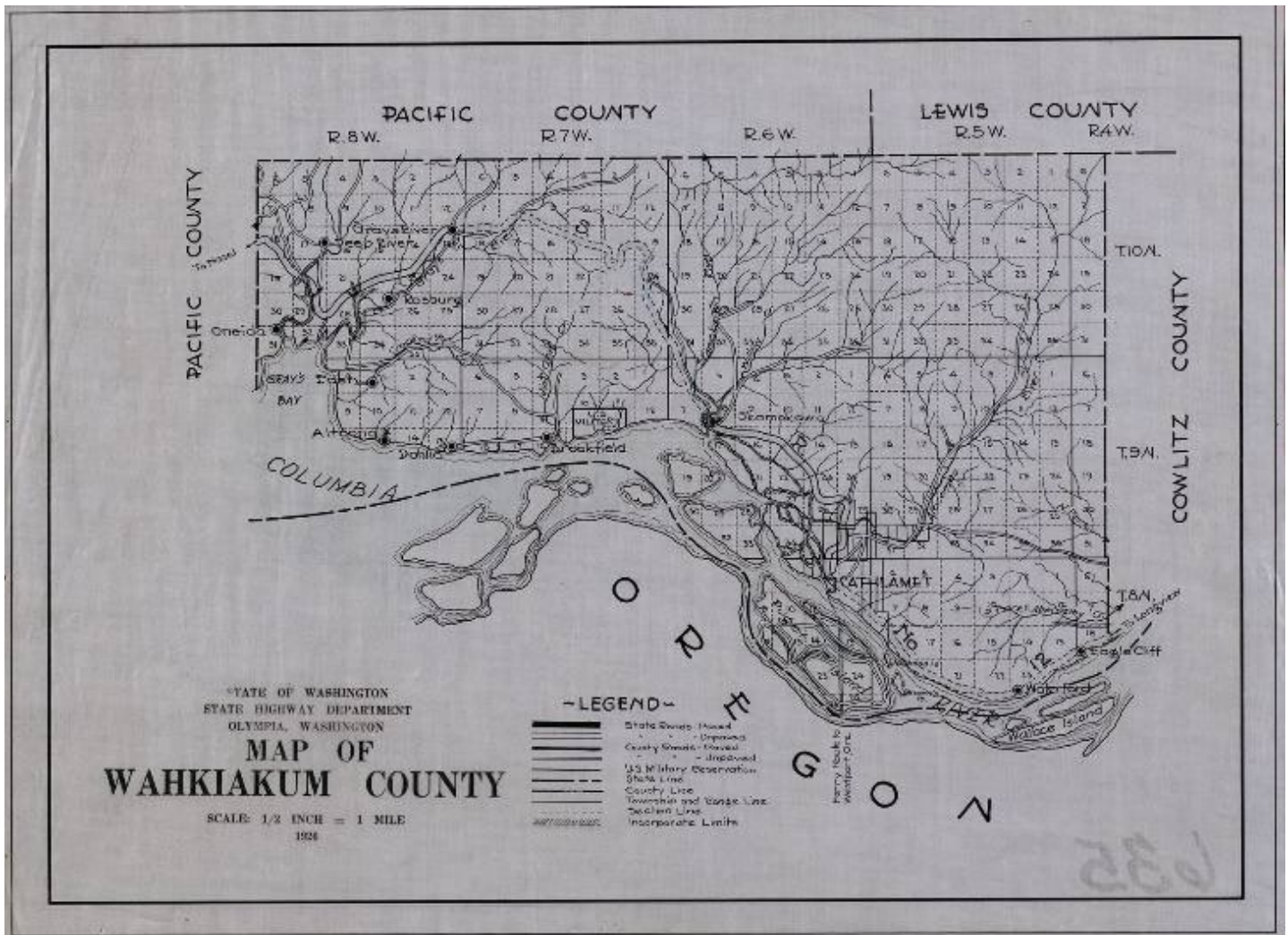


Figure 11. Washington State Highway Department Map of Wahkiakum County, 1926. Courtesy of the Washington State Department of Transportation.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 13. Bakers Bay, Columbia River, Washington, 1932. Patrick J. Hurley, Letter from the Secretary of War to Congress, 1933.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

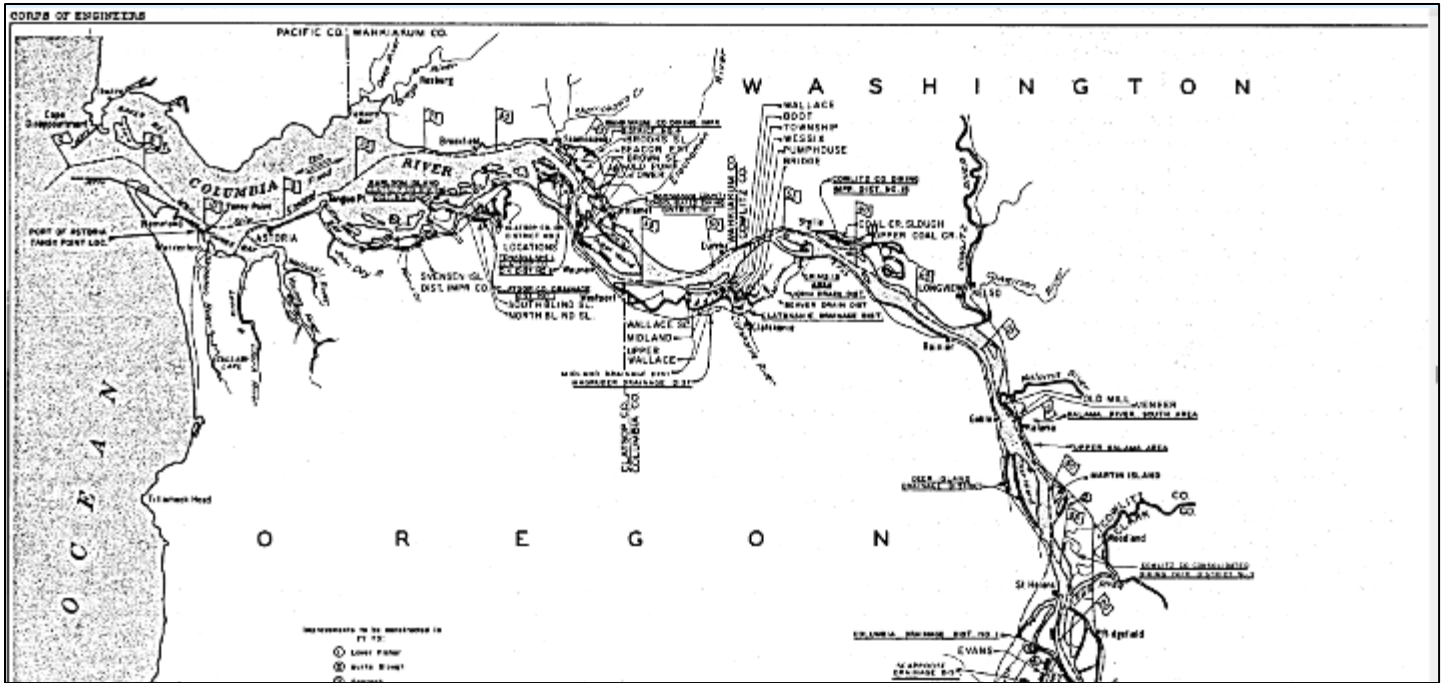


Figure 14. USACE’s Lower Columbia River Basin Bank Protection Works, Oregon and Washington. Work authorized by the Flood Control Act of May 17, 1950, in Pacific and Wahkiakum Counties. Reproduced from USACE, Annual Report of the Chief of Engineers, Parts 1 and 2, 1972 (Washington, DC: U.S. Government Printing Office, 1972).

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 15. Pipeline Dredge Multnomah Leaving Government Moorings for Columbia River Basin Flood Control Levee Construction, 1938. Courtesy of the U.S. Army Corps of Engineers.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 16. Puget Island approach to the Cathlamet Bridge, 1945. Courtesy of the National Archives.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 17. Cathlamet Bridge, 1945, view north from Puget Island. Courtesy of the National Archives.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 18. Cathlamet area, 1950. Courtesy of the National Archives.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Figure 19. Deep River tide gate, ca. 1952. Robert J. Schoettler, *Stream Clearing – Chinook River to Cowlitz River*, Washington Department of Fisheries, Seattle, 1952.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

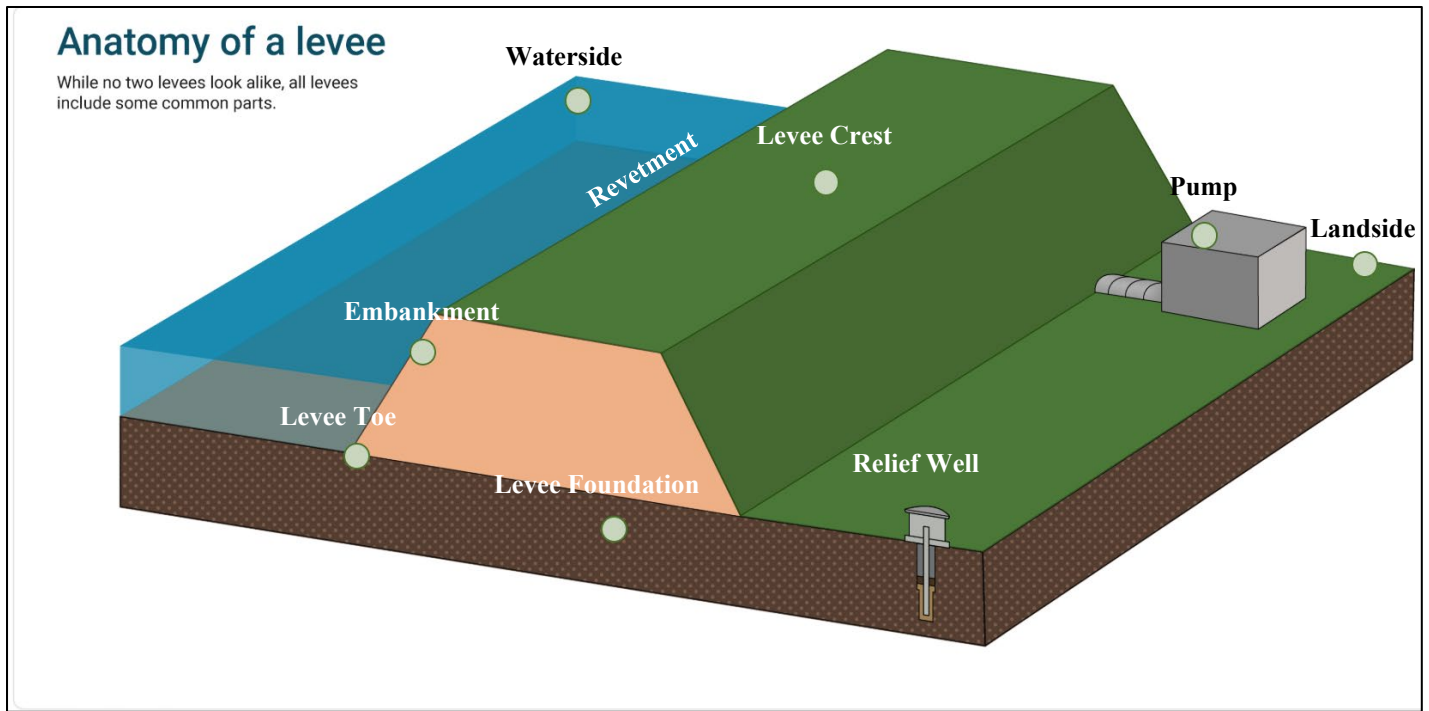


Figure 20. “Anatomy of a levee.” Adapted from a figure provided by the USACE. USACE, “Levee Basics: What is a Levee?,” National Levee Database, accessed December 30, 2025, <https://levees.sec.usace.army.mil/levee-basics/what-is-a-levee/>.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State

Photos Continuation Sheet

Photo 1. U.S. 101, a federal levee along the Columbia River in Pacific County, view north, 2025, HRA..... 86

Photo 2. Lingenfelter Road, a nonfederal levee, where it crosses the Chinook River in Pacific County, view east, 2025, HRA. 86

Photo 3. Stringtown Road, a nonfederal levee on the Columbia River in Pacific County, view southeast, 2025, HRA. 87

Photo 4. A view of the nonfederal levee on the eastern bank of the Deep River from Oneida Road, a federal levee on the western bank of the river, view east, 2025, HRA. 87

Photo 5. Oneida Road, a nonfederal levee west of the Deep River in Wahkiakum County, view south, 2025, HRA..... 88

Photo 6. West State Route 4, a nonfederal levee west of the Skamokawa River in Wahkiakum County, view northwest, 2025, HRA. 88

Photo 7. Steamboat Slough Road, a federal levee off the Columbia River east of the Elochoman River, view southeast, 2025, HRA. 89

Photo 8. Brooks Slough Road, a federal levee along the Elochoman River in Wahkiakum County, view southeast, 2025, HRA. 89

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Photo 1. U.S. 101, a federal levee along the Columbia River in Pacific County, view north, 2025, HRA.



Photo 2. Lingenfelter Road, a nonfederal levee, where it crosses the Chinook River in Pacific County, view east, 2025, HRA.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Photo 3. Stringtown Road, a nonfederal levee on the Columbia River in Pacific County, view southeast, 2025, HRA.



Photo 4. A view of the nonfederal levee on the eastern bank of the Deep River from Oneida Road, a federal levee on the western bank of the river, view east, 2025, HRA.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Photo 5. Oneida Road, a nonfederal levee west of the Deep River in Wahkiakum County, view south, 2025, HRA.



Photo 6. West State Route 4, a nonfederal levee west of the Skamokawa River in Wahkiakum County, view northwest, 2025, HRA.

United States Department of the Interior
National Park Service

Levees in Pacific and Wahkiakum Counties

Name of Multiple Property Listing

Washington

State



Photo 7. Steamboat Slough Road, a federal levee off the Columbia River east of the Elochoman River, view southeast, 2025, HRA.



Photo 8. Brooks Slough Road, a federal levee along the Elochoman River in Wahkiakum County, view southeast, 2025, HRA.