

# Chehalis River Basin Flood Authority

*Reducing Flood Damage and  
Restoring Aquatic Species*

City of Cosmopolis

November 20, 2024

# 2007 Storm

- \$938M Basin-wide damage, \$300M lost economic activity (WA).



**Exit 77 (I-5) in Chehalis**  
STEVE RINGMAN / SEATTLE TIMES



**City of Centralia**  
STEVE RINGMAN / SEATTLE TIMES



↑  
← **Photos Source:** LEWIS COUNTY,  
DIVISION OF EMERGENCY  
MANAGEMENT

2 of 27



**State Route 6,  
West of Adna**  
MIKE  
SALSBURY /  
AP

# Today's Presentation



**CHEHALIS  
RIVER BASIN**  
FLOOD CONTROL  
ZONE DISTRICT



Office of  
Chehalis Basin

Chehalis Basin  
Board

<https://chehalisbasinstrategy.com/>

# Chehalis River Basin Flood Authority

- **Formed** in 2008
- **Focused on** flood hazard mitigation
- **Decision-making**
  - ❑ informed by science
  - ❑ protective of Basin residents/communities
  - ❑ environmentally appropriate
- **Jurisdictions** represented (see [inter-local agreement](#))
  - Grays Harbor County (2008)
    - City of Aberdeen (2008)
    - City of Cosmopolis (2011)
    - City of Hoquiam (2017)
    - City of Montesano (2008)
    - City of Oakville (2008)
  - Lewis County (2008)
    - City of Centralia (2008)
    - City of Chehalis (2008)
    - City of Napavine (2011)
    - Town of Pe Ell (2008)



- Thurston County (2008)
  - Town of Bucoda (2008)

***Help local communities identify, develop, implement  
local flood hazard reduction solutions.***

# Local Projects (#1)

1. Reduce flood damage.
2. Protect people, property, infrastructure.
3. Improve readiness, response, resiliency.
  - *Drinking Water* (Boistfort, Bucoda).
  - *Wastewater* (Montesano, Pe Ell).
  - *Emergency Response* (Grays Harbor County, Chehalis-Centralia Airport).
  - *Regional Economic Infrastructure* (Montesano, Port of Chehalis, Port of Grays Harbor).
  - *Community Protection* (Aberdeen, Adna, Bucoda, Centralia, Chehalis, Chehalis Tribe, Hoquiam, Oakville).
  - *Flood Warning* (Basin-wide).

## State Capital Budget:

2012-13 -- \$ 5.0M

2013-15 -- \$10.7M

2015-17 -- \$15.7M

2017-19 -- \$ 9.6M

2019-21 -- \$ 6.3M

2021-23 -- \$ 4.1M

2023-25 -- \$ 3.6M

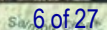
**\$55.0M**

**2025-27 -- \$ 3.0M**

**to**

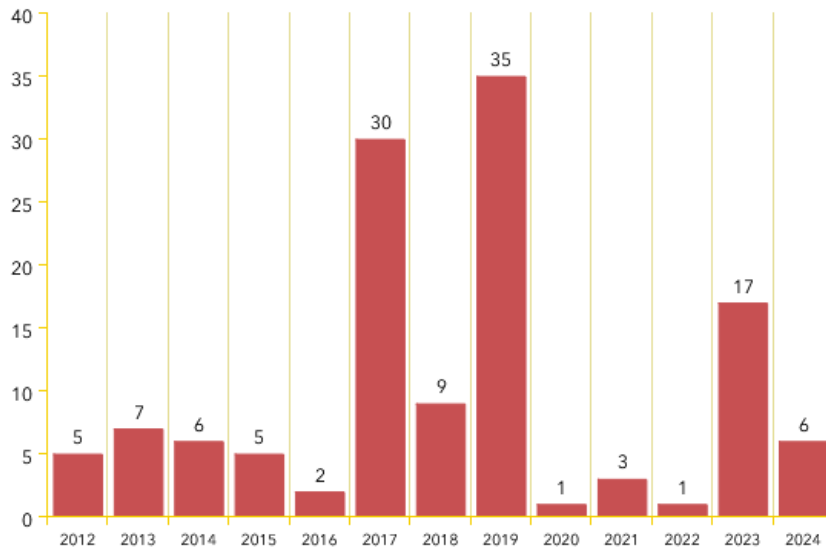
**\$13.0M**



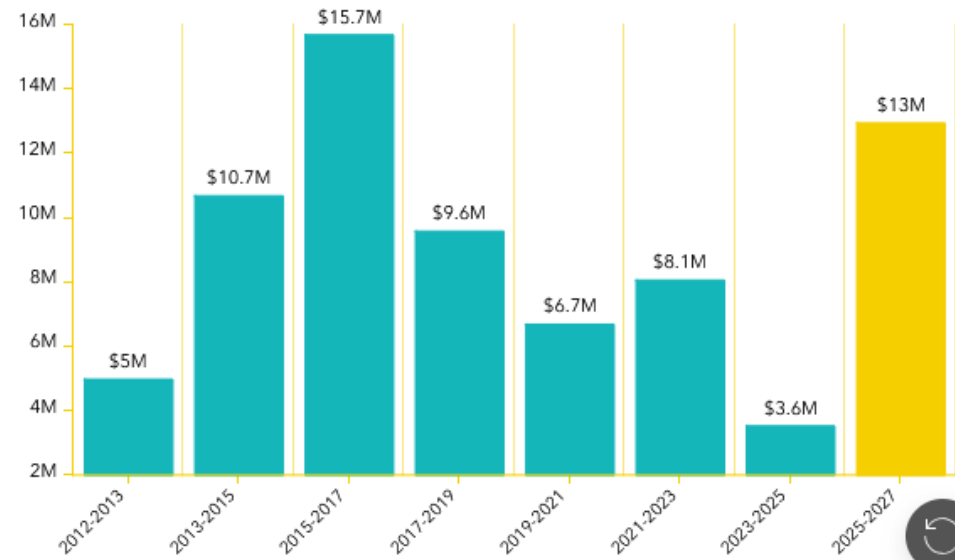


# Local Projects (100+ Projects Completed 2012-23)

Projects Completed by Year



Funding by Biennium (Two-Year Periods)



# Local Projects (Cosmopolis, 2015-2018)

## Mill Creek Multi-Objective Implementation Plan:

- ✓ Part I = Reconstruct Mill Creek Dam (done).
- ✓ Phase II project = Address 4,500' of Mill Creek flow, culverts, and flood water evacuation (under development).

Read 5-24-2024 news article [here](#)



CHEHALIS RIVER BASIN FLOOD AUTHORITY CITY OF COSMOPOLIS

**Another Chehalis Basin Flood Protection Project**

**Mill Creek Dam Improvement Project**

Schedule → October 2015 to July 2017

Budget → \$3,082,000

Benefit → Protecting and restoring essential Community flood control assets

[www.ezview.wa.gov/chehalisfloodauthority](http://www.ezview.wa.gov/chehalisfloodauthority)

QR code and HDR logo



City of Cosmopolis, Sep 29, 2018



**The Daily World**

AGAIN, Voted **BEST BANK** & BEST PLACE TO GET A LOAN

News Sports Life Opinion Weather Obituaries Print Editions Contests Classifieds All Sections

**NEWS**

**New Mill Creek Dam ribbon cutting Saturday in Cosmopolis**

September 28, 2018 7:00 pm

FILE PHOTO Cosmopolis Mayor Frank Chestnut (left) will officiate a ribbon cutting ceremony for the new Mill Creek Dam Saturday at noon.

<https://www.thedailyworld.com/news/new-mill-creek-dam-ribbon-cutting-saturday-in-cosmopolis/>



# Local Projects (Pe Ell, 2014)



- ✓ Project = Design/construct 900' dike (between Chehalis r. and WWTP).
- ✓ Cost = \$521,000.
- ✓ Photos = [https://www.ezview.wa.gov/site/alias\\_1492/35040/default.aspx#peell](https://www.ezview.wa.gov/site/alias_1492/35040/default.aspx#peell).
- ✓ Website = [https://www.ezview.wa.gov/site/alias\\_1782/34858/overview.aspx](https://www.ezview.wa.gov/site/alias_1782/34858/overview.aspx)

# Local Projects (Montesano, 2017-2020)

- ✓ Protect WWTP from on-coming Wynoochee river using 220+ “log-jacks.”
- ✓ \$2 million (for “log-jacks”).
- ✓ Small cost compared to WWTP relocation and environmental cleanup (in event of WWTP breaching).

**Project End**



<https://www.google.com/maps/@46.9678637,-123.6077821,197m/data=!3m1!1e3>



**Project Start**



Governor Inslee and Mayor Samuel stand overlooking the Wynoochee River.

July 7, 2022 →



## Local Projects (Bucoda, 2016)

**ELEVATION CERTIFICATE**  
U.S. DEPARTMENT OF HOMELAND SECURITY  
FEDERAL EMERGENCY MANAGEMENT AGENCY  
National Flood Insurance Program

OMB No. 1560-0008  
Expiration Date: July 31, 2015

**SECTION A - PROPERTY INFORMATION**

A1. Building Owner's Name: **Colleen M. Tee**

A2. Building Name: **Bucoda Christian Assembly**

A3. Building Address: **301 N. Market Street**

A4. City: **Bucoda** State: **WA**

A5. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.):  
Tax Parcel No. **6180030000**

A6. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.): **Residential**

A7. Building Description (e.g., **46.46 degrees 46.12.42" N**, **Long 122.42 degrees 51.53.66" W**, Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983

A8. Elevation (feet) of the building if the Certificate is being used to obtain flood insurance:  
a) Total net area of flood openings in A10: **312** sq ft  
b) Engineered flood openings? ☒ Yes ☐ No

**SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION**

B1. FIRM Community Name and Community Number: **BUCODA, WA 530100**

B2. FIRM Date: **10/16/2012**

B3. FIRM Edition: **AE**

B4. Map/Panel Number: **E**

B5. Date: **09/02/1981**

B6. FIRM Index Date: **10/16/2012**

B7. FIRM Flood Zone: **AE**

B8. Base Flood Elevation (Zone): **255.0'**

B9. Base Flood Elevation (Zone): **255.0'**

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in item B9:  
☒ FIRM ☐ Community Determined ☐ Other Source

B11. Indicate elevation datum used for BFE in item B9:  
☒ NAVD 1929 ☒ NAVD 1988 ☐ Other Source

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)?  
☐ Yes ☒ No

Designation Date: **09/02/1981** ☐ OPA

**SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)**

C1. Building elevations are based on:  
☐ Construction Drawings ☐ Building Under Construction ☒ Personal Construction

A Note: Elevation Certificate will be required when construction of the building is complete.

C2. Elevations - Zones AE, AH, AL, A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A175, A176, A177, A178, A179, 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# Local Projects (Hoquiam, 2016-2018)

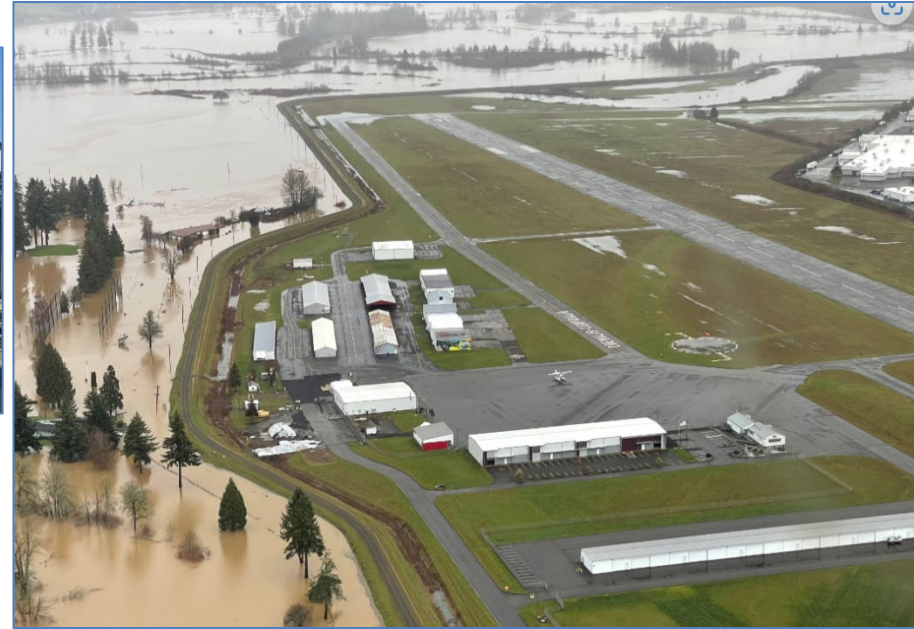
- ✓ Completed -- February 2018.
- ✓ Cost -- \$1.3M.
- ✓ January 2022 Flood Event – Ramer basin stayed dry  
(51M gallons pumped over 30 hours)
- ✓ ROI (2024) -- \$72M in assets protected.
  - ~200 homes
  - Lincoln Elementary School
  - Commercial yacht builder
  - 8 acres of prime development property
  - Large low-income residential neighborhood
  - Coastal Harvest food distribution center



Read More -- [Here](#).



# Local Projects (Chehalis-Centralia Airport, 2017)



- ✓ Completed -- Fall 2017.
- ✓ Cost -- \$1.14M.
- ✓ January 2022 Flood Event – Pumped 518.4M gallons over many days to keep levee dry.
- ✓ ROI (2018) -- Protects \$45M in assets, ensures \$9M in annual tax revenue.
- ✓ Read More -- [Here](#).

# NEW! -- 10th Street Stormwater Pump Station

## Local Projects (Sneak Preview -- Hoquiam, 2025)

**PUMP STATION FENCING WITH PRIVACY SLATS**



**PUMP STATION FENCING AND DISCHARGE PIPES INSTALLED**



**PROPELLER PUMP MOTORS INSTALLED**



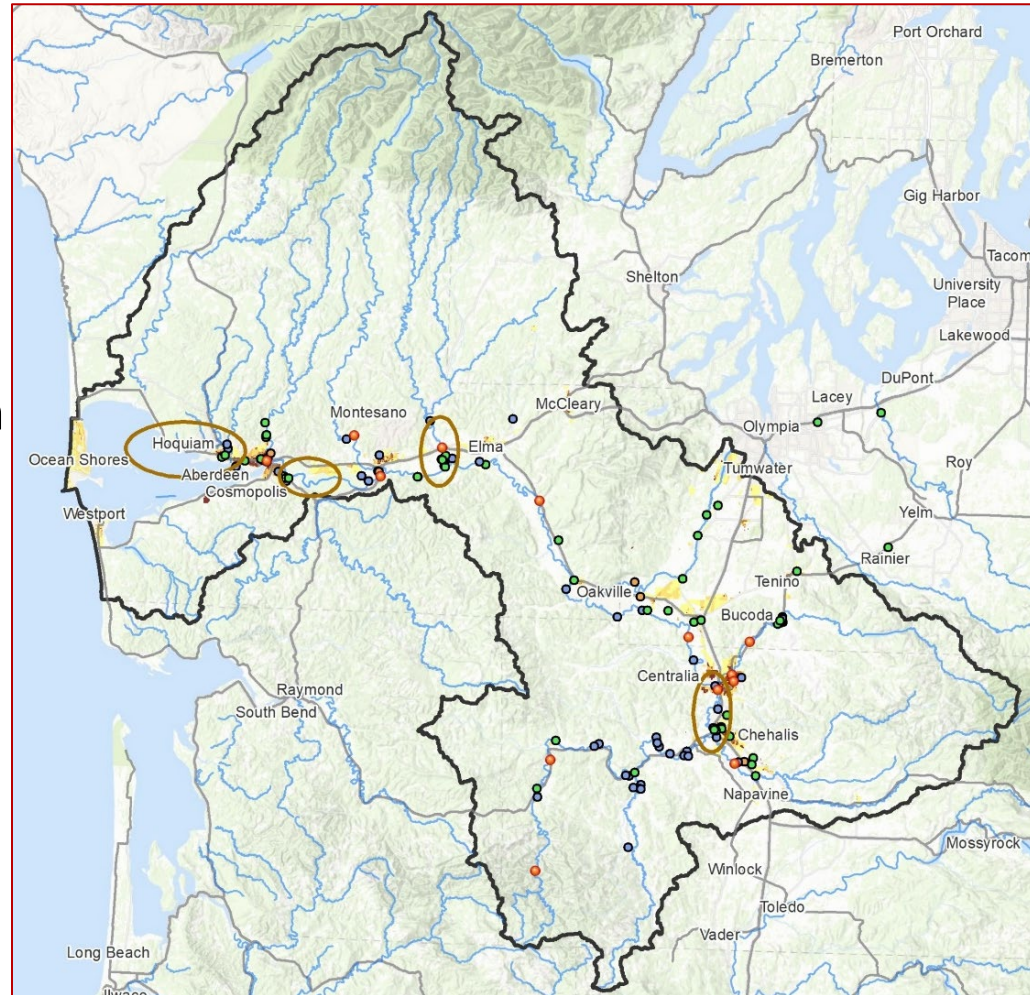
**PUMPS AND DISCHARGE PIPE FLEX COUPLERS**



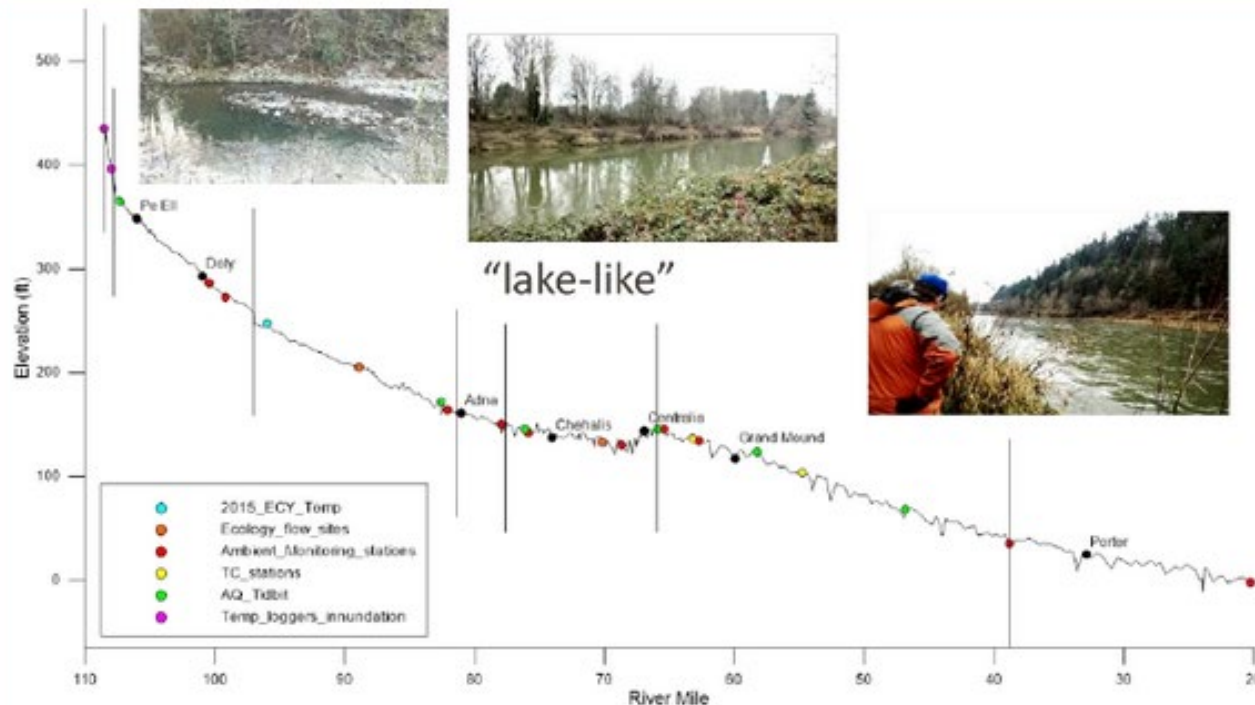


# Local Projects (Moving to Geographically-Based)

Identify future local projects through geographically-based, coordinated local investment planning.



# Local Projects (Moving to Geographically-Based)



## Basin Geography

- ☐ Upper = Steep, narrow, fast flowing.
- ☐ Middle = Flat, “lake like”, slow to drain.
- ☒ Lower = Flat, coastal, difficult to drain.

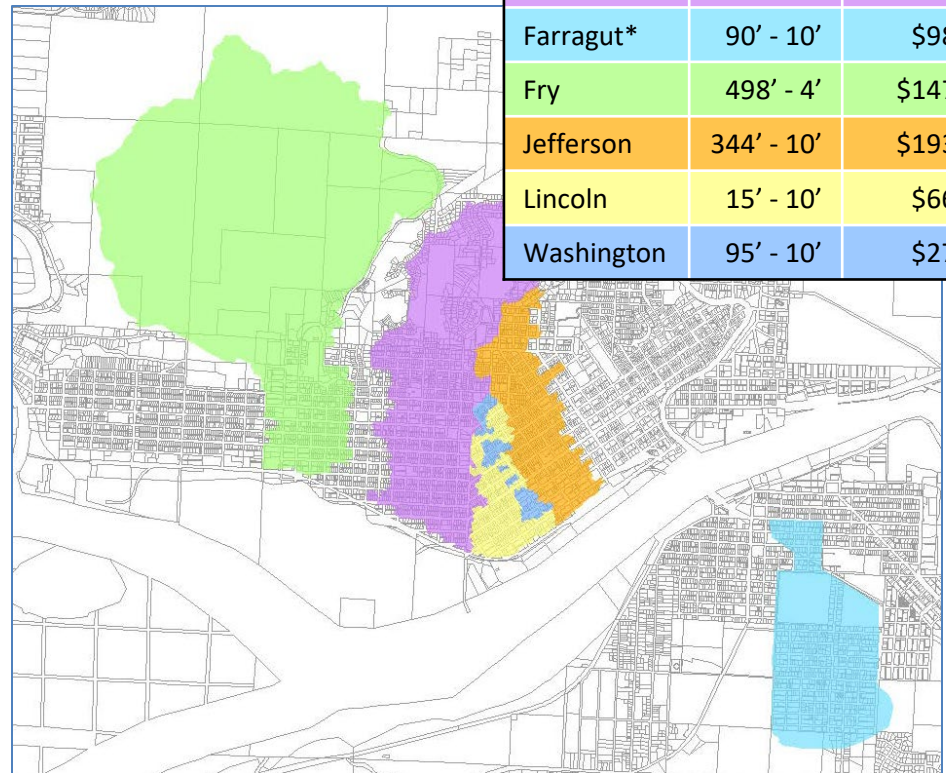
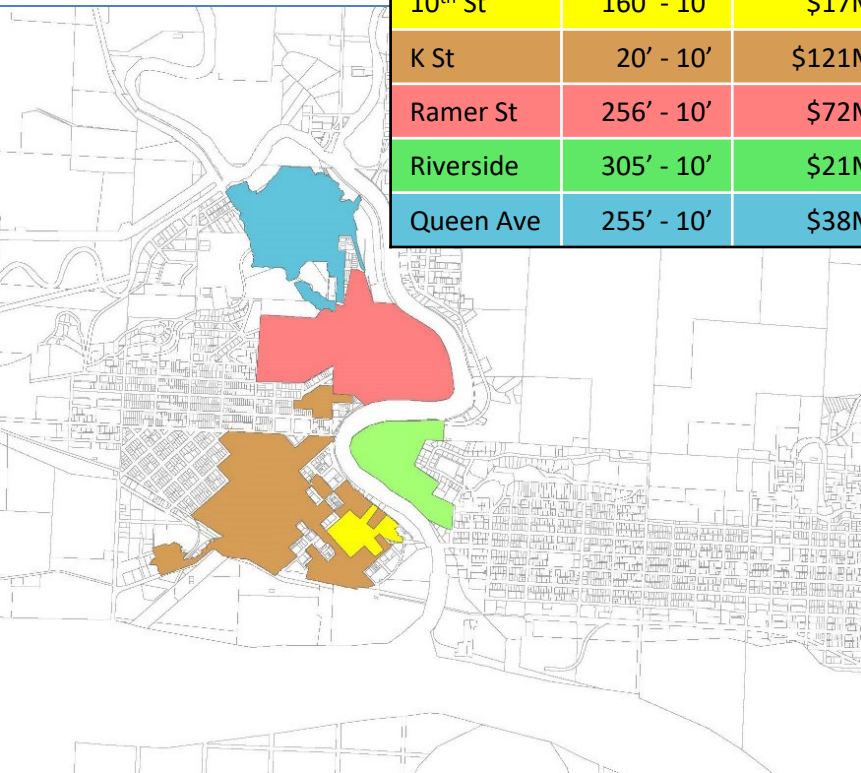
Shah, Mohammad. (2021). inland water-dynamics and ecology. [10.5772/intechopen.87463](https://doi.org/10.5772/intechopen.87463).



# Local Projects (Moving to Geographically-Based)

Sub-Basin	Elevation	Assessed
10 <sup>th</sup> St	160' - 10'	\$17M
K St	20' - 10'	\$121M
Ramer St	256' - 10'	\$72M
Riverside	305' - 10'	\$21M
Queen Ave	255' - 10'	\$38M

Sub-Basin	Elevation	Assessed
Division	345' - 10'	\$300M
Farragut*	90' - 10'	\$98M
Fry	498' - 4'	\$147M
Jefferson	344' - 10'	\$193M
Lincoln	15' - 10'	\$66M
Washington	95' - 10'	\$27M



11 urbanized low elevation sub-basins + Adverse meteorologic conditions -- high tides, heavy rain, bankfull rivers, saturated soils, SW winds = **Very difficult to drain!**  
(\$1.1B assessed value at risk)

# Local Projects (Pumps are Key to the Solution)

- ☐ 2,735 acres
- ☐ 4,583 parcels
- ☐ 232 businesses
- ☐ \$1.1B assessed value

Read Fall 2022 [Joint Resolution](#) on Pumps  
(Hoquiam, Aberdeen, Cosmopolis)

Previously Funded (2017-2025)	Funding Requested (2025-27)	Future Funding (TBD)	Total Cost	Flood Season
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18%

24%

		Construction				
Aberdeen	Division	\$547,000	\$3,500,000	\$0	\$4,047,000	2026/27
	Related Division Improvements (Jeff., Lin., Wa.)	\$0	\$0	\$7,000,000	\$7,000,000	tbd
	Farragut	\$1,023,518	\$5,000,000	\$0	\$6,023,518	2026/27
Hoquiam	K	\$340,000	\$3,100,000	\$0	\$3,440,000	2026/27

58%

		Pre-Construction				
Hoquiam	Riverside	\$0	\$395,000	\$2,105,000	\$2,500,000	tbd
Hoquiam	Queen UNDER CONSTRUCTION	\$1,953,850	\$0	\$0	\$1,953,850	2025/26
	10 <sup>TH</sup> UNDER CONSTRUCTION	\$3,269,942	\$0	\$0	\$3,269,942	2024/25
Aberdeen	Fry Creek CONSTRUCTED	\$20,715,466	\$0	\$0	\$20,715,466	2024/25
Hoquiam	Ramer CONSTRUCTED	\$1,300,000	\$0	\$0	\$1,300,000	2018/19

\$29,149,776	\$11,995,000	\$9,105,000	\$50,249,776
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# Flood Warning System (#2)

- ✓ **Developed** with State Capital Budget \$.
- ✓ **Maintained** with local \$.


[www.chehalisriverflood.com](http://www.chehalisriverflood.com)

https://chehalis.rain.com 67%

**The Chehalis River Basin Flood Warning System**  
Be Aware, Be Prepared: Flood Season is here!

Sign Up Now to receive 2023-24 email high water alerts - The Chehalis Basin Flood Warning System sends automatic email alerts about rising floodwaters.

To sign up for email alerts, click the icon below:





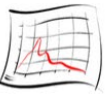

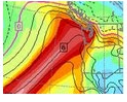




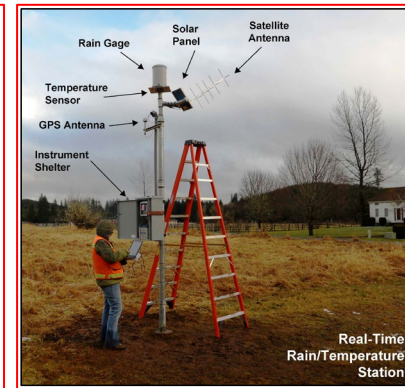
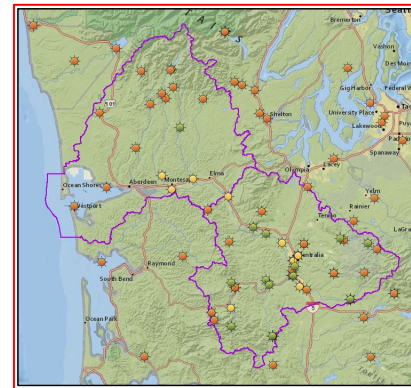
Questions?  
Contact Cheryl Vincent at cvincent@westconsultants.com and Jennifer McAdoo at jennifer.mcadoo@icf.com.

Para leer esta información en español, haga clic aquí

Click here on the image above to visit our Interactive ArcGIS Dashboard!

**Chehalis River Basin Forecasting Tools**

 Chehalis River (and tributaries) Dashboard	 Weather Forecast	 Rainfall Forecast	 Radar Rainfall	 River Forecast	 Flood Maps
 Atmospheric Rivers	 King Tides Calendar	 Seasonal Precipitation and Temperature Forecasts			



Looking at downstream face of Heron St. bridge

Wishkah River at Aberdeen, WA



2022-09-21 13:05:04

Looking at Wishkah River staff gage

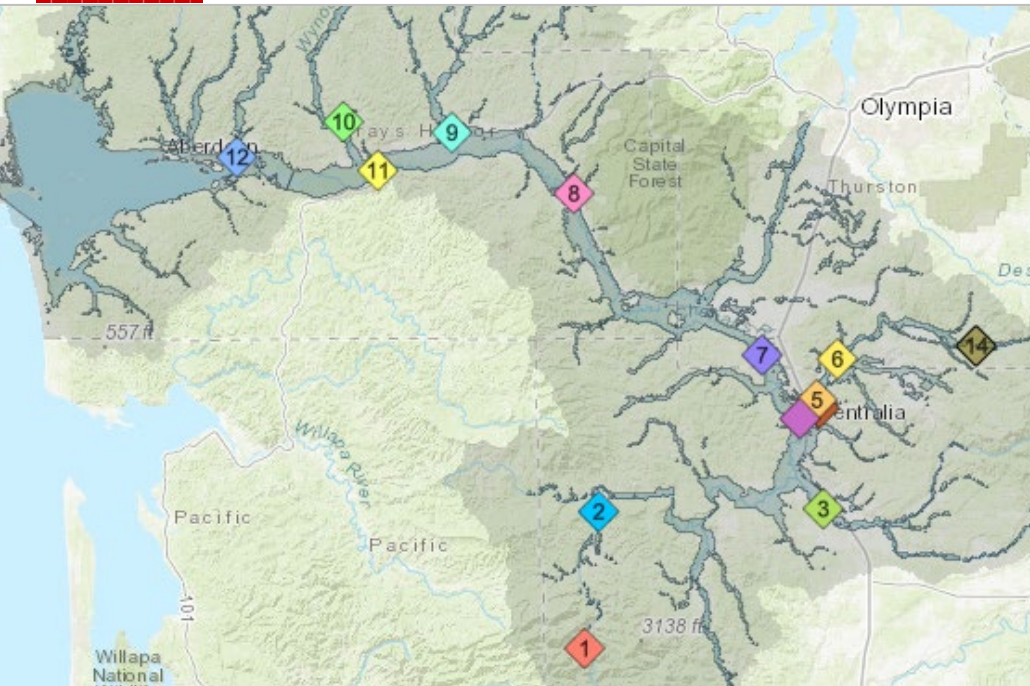
Wishkah River at Aberdeen, WA - zoomed



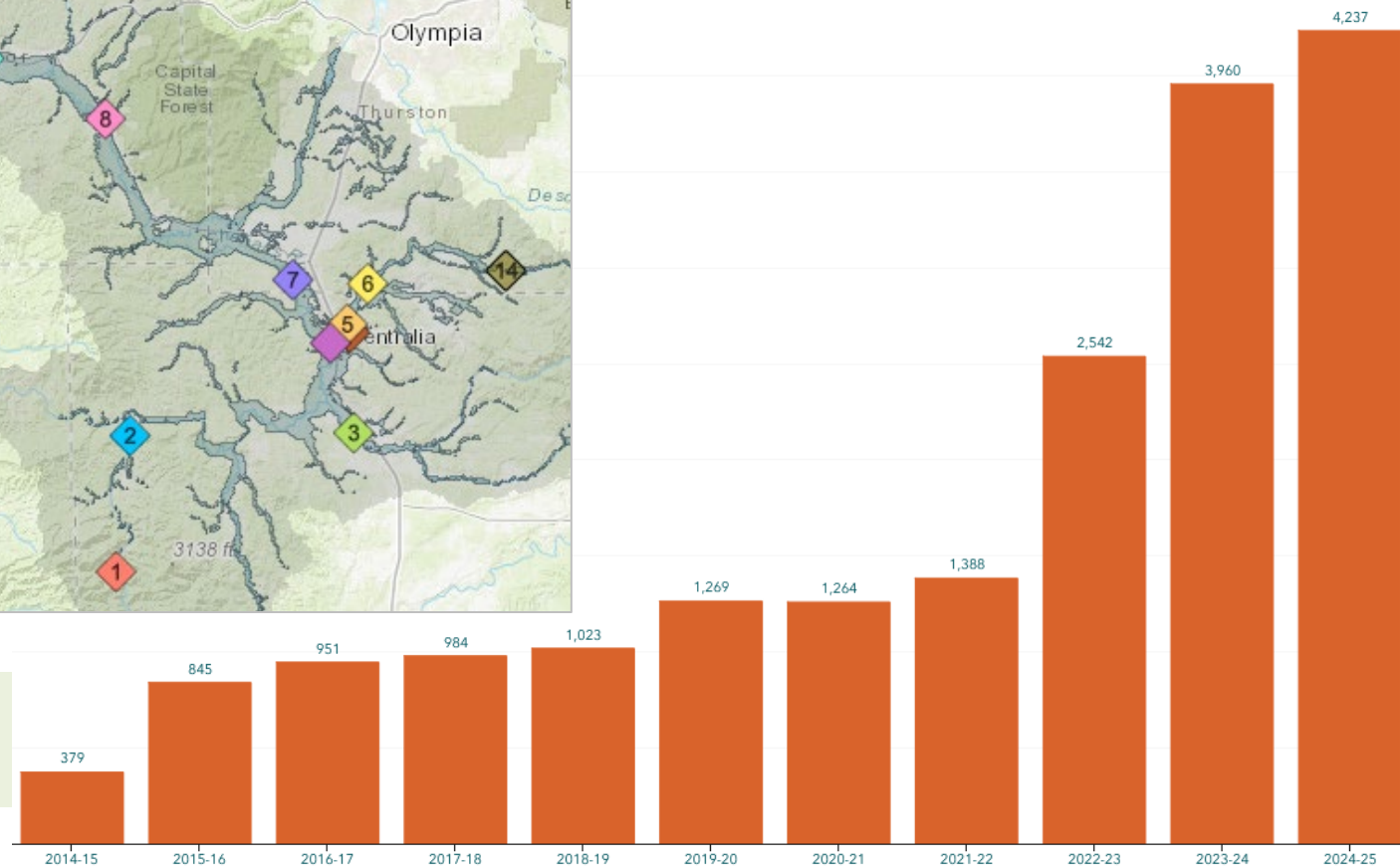
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# Flood Warning System (Alert Sign-Ups)



Sign-up for email high water alerts [here](#).

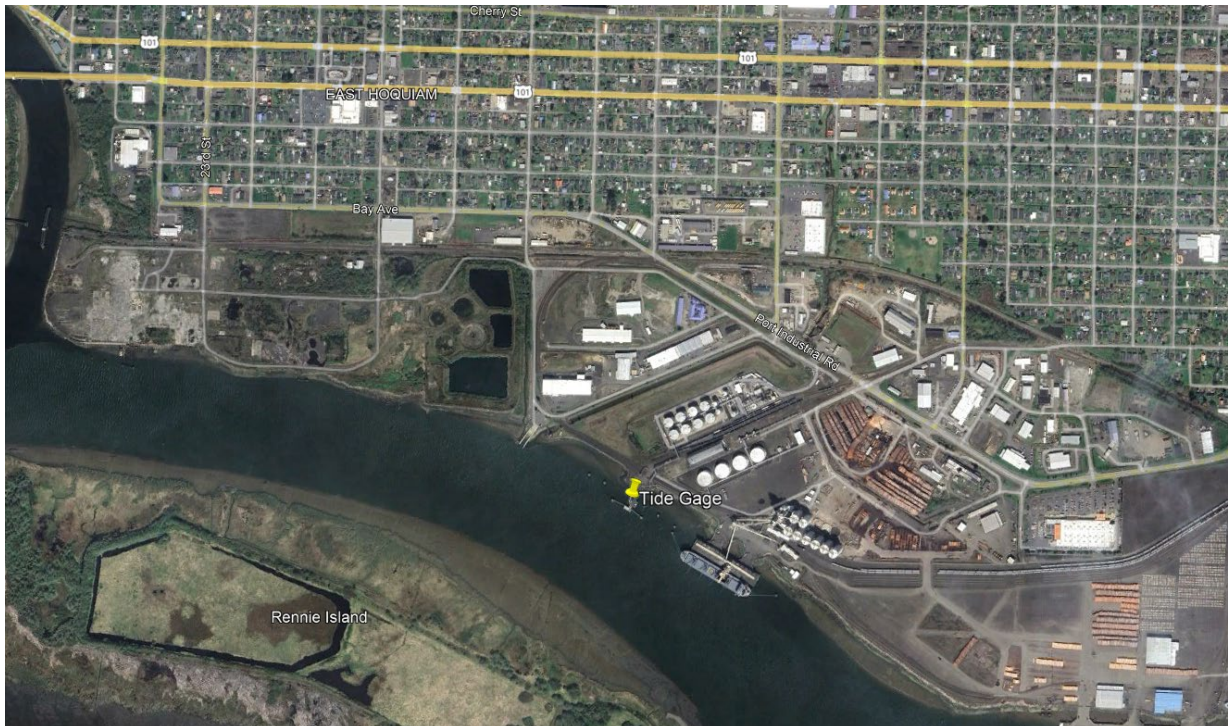




# Flood Warning System (New Tide Gage)

Chehalis Basin Board provided funding for new Tide gage.

- ✓ Working with NWS on lower Chehalis river forecast.
- ✓ Data could help Aberdeen/Hoquiam manage North Shore Levee.



# Proposed Flow-through Dam for Flood Control (#3)

## ABOUT THE DISTRICT

The Chehalis River Basin Flood Control Zone District works to make the basin a safer place for communities impacted by flooding. The District's goals are to:



Reduce the risk associated with flooding and preserve life



Prevent damage to property



Protect, preserve, and conserve natural resources

The District is proposing a flow-through dam for flood control as a flood risk solution that serves the needs of fish, preserves the riverine ecosystem, and protects communities.



Event Calendar

**CHEHALIS  
RIVER BASIN  
FLOOD CONTROL  
ZONE DISTRICT**

[www.chehalisriverbasinfczd.com](http://www.chehalisriverbasinfczd.com)

## Upcoming Events



**OCTOBER 10**

**Chehalis River Basin  
FCZD Advisory  
Committee meeting**

**Oct 10, 2024, 8:00 AM –  
9:00 AM**

Commissioners' Hearing  
Room 351 NW North St.  
Chehalis, WA 98532



**OCTOBER 15**

**Chehalis River Basin  
FCZD Supervisor  
meeting**

**Oct 15, 2024, 11:00 AM –  
12:00 PM**

Commissioners' Hearing  
Room 351 NW North St.  
Chehalis, WA 98532



**NOVEMBER 14**

**Chehalis River Basin  
FCZD Advisory  
Committee meeting**

**Nov 14, 2024, 8:00 AM –  
9:00 AM**

Commissioners' Hearing  
Room 351 NW North St.  
Chehalis, WA 98532

# Proposed Flow-Through Dam for Flood Control (#3)

1. Move through unobstructed
  - ✓ Water
  - ✓ Fish
  - ✓ Sediment
2. Delivers top-to-bottom benefit, Pe Ell to Cosmopolis.
3. See recent presentation [here](#).



# Chehalis Basin Strategy

## State Law

“The primary purpose of the office is to aggressively pursue implementation of an integrated strategy and administer funding for long-term flood damage reduction and aquatic species restoration in the Chehalis river basin.” ([RCW 43.21A.730](#))



Office of Chehalis  
Basin

Chehalis Basin  
Board

<https://chehalisbasinstrategy.com/>

appoints 3  
member



## Chehalis Basin Board

Community leaders, Chehalis and  
Quinault tribal representatives,  
local and state government liaisons

## Office of Chehalis Basin

Small team within the WA  
Department of Ecology

## “Network of Partners”

Organizations and local  
entities who turn ideas into  
shovel-ready reality



# Chehalis Basin Strategy (Network of Partners)



# Today vs 2007

**Today, we are substantially more aware, better prepared for catastrophic flooding than ever before.**

- ✓ We have a state-of-the art flood warning system.
- ✓ We've completed many cost-efficient local projects and habitat projects.
- ✓ We're serving people, local governments, emergency responders, agriculture, fish, and habitat alike
- ✓ We have a governance, administrative, and funding structure that's delivering results, and is committed to a balanced basin-wide flood and fish solution (see Local Resolution Library).



<https://chehalisbasinstrategy.com/office-of-chehalis-basin/>

# Key Contacts

**Vickie Raines, Grays Harbor County Representative**

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*Chair*, Chehalis Basin Board

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**Edna Fund, Lewis County Representative**

*Vice-Chair*, Chehalis River Basin Flood Authority

*Chair*, Chehalis River Basin Flood Control Zone District Advisory Board

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**Scott Boettcher**

*Staff*, Chehalis River Basin Flood Authority

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# Extra . . .

Hoquiam December 1933



Since the 1960's  
Grays Harbor has  
had 14 federally  
declared disaster  
flood events

Aberdeen January 2022



Hoquiam January 2015



Cosmopolis January 2022



Aberdeen January 2015



- 9-05-2024 -- Lower Basin Flooding; Drivers and Solutions ([here](#)).
- 9-2022 -- Joint Resolution; Aberdeen, Hoquiam, Cosmopolis ([here](#)).
- RCO 22-2277 -- Joint Surface Water Management Comprehensive Plan ([here](#)).