

Chehalis River Basin Flood Authority

*Reducing Flood Damage and
Restoring Aquatic Species*

City of Oakville

July 25, 2022

Scott Boettcher

Staff, Chehalis River Basin Flood Authority
360/480-6600 | scottb@sbgh-partners.com

Today's Presentation

- Describe the “Flood Authority”

- #1 -- Local Projects

- #2 -- Flood Warning System

- #3 – Role



- Touch on “Office of Chehalis Basin” and “Chehalis Basin Strategy”

- Allow time for discussion

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/>

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)



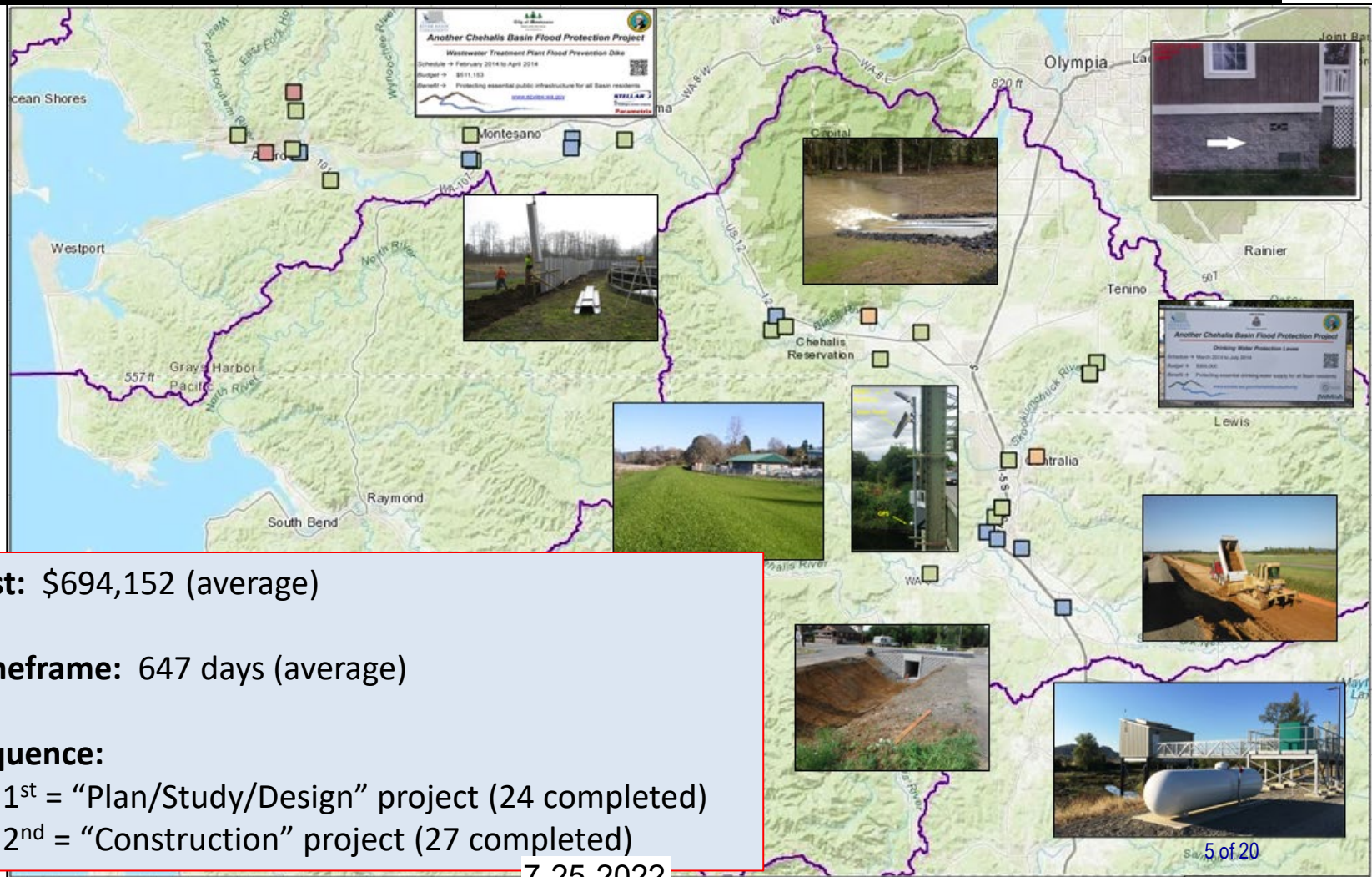
Local Projects (#1)

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, Cosmopolis, 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
	\$51.4M

Local Projects (Completed 2012-23)



7-25-2022

5 of 20

-
- Scale (in Feet)**
- 0 250 500 750 1000
- NORTH**
- LEGEND**
- BASIN BOUNDARY
 - RESERVOIR BASIN
 - EXISTING CULVERT
 - PREVIOUS FLOW ROUTE (ASSUMED)
 - EXISTING FLOW ROUTE
- GIBBS & OLSON**
CIVIL ENGINEERS • LAND SURVEYORS
www.gibbs-olson.com
- City of Oakville**
Oakville Drainage Evaluation
Map Figure 1-3
- U1: (2) 18-INCH CONC. CULVERTS
U2: (1) 12-INCH CONC. CULVERT
L3: (1) 24-INCH CONC. CULVERT
L4: (1) 24-INCH CONC. CULVERT
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An aerial photograph showing a residential area heavily inundated with floodwater. The water is a murky brown color, covering streets and yards. Several houses are visible, some partially submerged. The area is divided into sections by roads and green spaces. Labels in red text are overlaid on the image: 'Hams Creek' on the left, 'Basin 1' in the center, 'Basin 2' to the right of Basin 1, 'Basin 3' further right, and 'Avian Court' at the bottom center.

CHEHALIS RIVER BASIN LAND AUTHORITY

CITY OF ANACORTES

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

Another Chehalis Basin Flood Protection Project

Okanochi, GHC, WSDOT Flood Relief Analysis Project

Schedule → May 2016 to July 2017

Budget → \$55,000

Benefit → Improving emergency access and protecting community assets

www.crla-wa.gov/chehalis/floodauthority

G
DEEDS & CLISON

Local Projects (Boistfort Valley)

COMPLETED FLOOD – Boistfort Valley Water Pre-Sedimentation Pond

- ✓ Construct pre-sedimentation pond to settle-out flood-generated sediment before entering water treatment plant.
- ✓ Sediment choked-out treatment plant in 2007 for 6 months and drinking water had to be trucked in.
- ✓ \$332,350
- ✓ More prepared now.



7-25-2022

COMPLETED FLOOD – Chehalis-
Centralia Airport

Local Projects (Chehalis)



New Pump -- 2017



Old Pump – 1940s



Widening/Repairing

Levee – 2014

7-25-2022



January 2022

- ✓ New Pump Cost = \$1.1M
- ✓ Widening Levee = \$1.2M
- ✓ ROI = Substantial:
 - Jobs: 1,658
 - Labor income: \$68 million
 - Value added: \$115.3 million
 - Business revenues: \$186.4 million
 - Annual tax revenues (local, state): ~\$9M
- ✓ 1/2022 High-water event = Airport stayed operational

COMPLETED FLOOD AND FISH – China Creek

Local Projects (Centralia)

Our Views: China Creek an Example of Success in Chehalis Basin



China Creek is seen at near the Pine Street and Rock Street intersection in Centralia.
PETE CASTER / FILE PHOTO

Posted Friday, March 12, 2021 4:12 pm

March 12, 2021

By The Chronicle Editorial Board

Second Phase of China Creek Flood Mitigation and Fish Habitat Improvement Work Underway in Centralia

Dirt Work: Project Aims to Add More Water Storage, Reduce Flooding Downstream



Signage details the Chehalis Basin Strategy for China Creek flood and habitat protection seen Friday in Centralia.
JARED WENZELBURGER / JARED@CHRONLINE.COM

June 28, 2021

- ✓ Restore meander, incorporate storage ponds, construct flow-control weir.
- ✓ \$5 million (two phases)
- ✓ China Creek has been lengthened, floodplain increased, and riparian cover increased to reduce crippling peak flows into downtown Centralia.

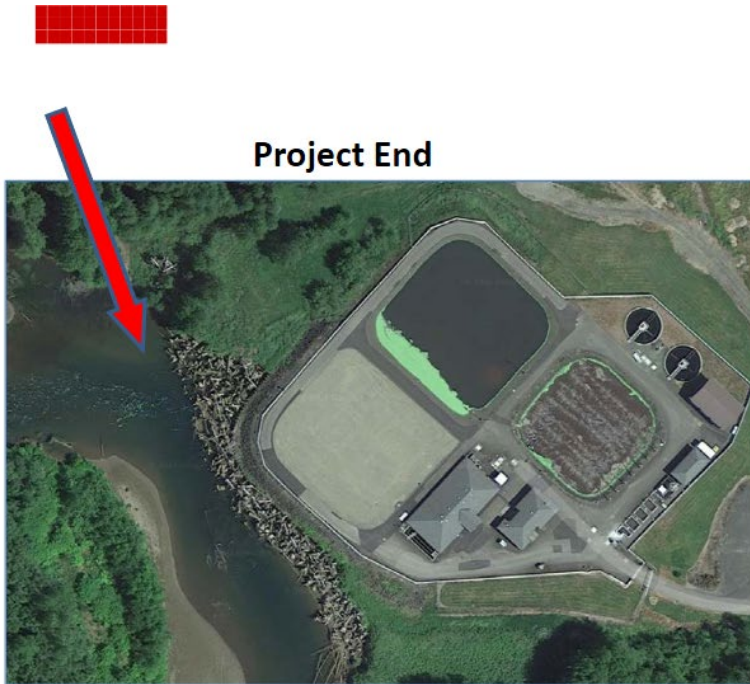


7-11-2022

COMPLETED FLOOD AND FISH –
Montesano WWTP Protection Project

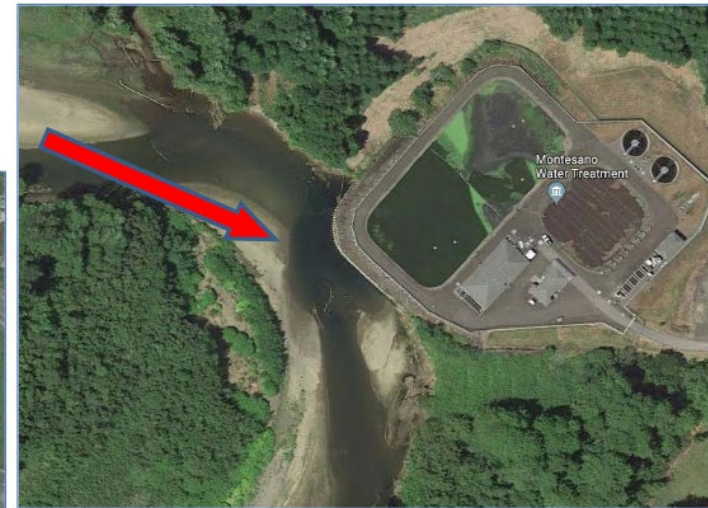
Local Projects (Montesano)

- ✓ 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

COMPLETED FLOOD AND FISH –
Cloquallam Creek Erosion Pilot (36 Lower
Falls Creek Rd)

Local Projects (Grays Harbor County)

Land owner Help?



Tuttle, Megan E (DFW)

To ● Scott Boettcher; ○ Anthony Waldrop

9/15/2021

You forwarded this message on 9/22/2021 1:41 PM.

Hi Scott and Anthony,

I hope this week finds you well. I wanted to reach out for a Landowner on the Cloquallum (36 Lower Falls Creek rd) that is experiencing highly erosive banks and is about 36 ft from their home and 15ft from their septic drain field. The pervious land

Request -- 9-15-2021

- ✓ Highly-collaborative emergency project to protect property and septic drain field
- ✓ Property and drain field saved, environmental contamination and clean-up avoided.

\$ 15,000 Landowner
\$ 75,000 OCB Erosion Program
\$112,500 Flood Authority
\$205,500 Total



Construction -- 11-23-2021



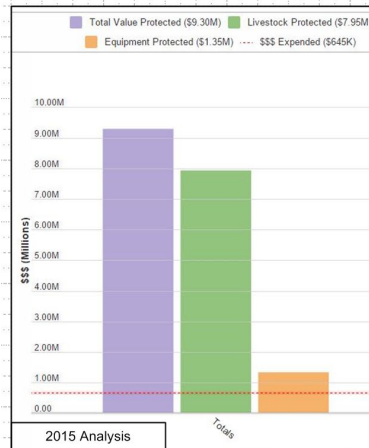
Post-Construction -- 12-01-2021

COMPLETED – Farm Pads (Lewis and Grays Harbor counties)

Local Projects (Farm Pads)

January 2022 Flood Event (Bob Amrine, Lewis CD):

- Farm pads worked for those who used their pads (animals did not drown like in 2007 and equipment was saved).
- Farmers were grateful that their livelihoods could continue, and their animals were out of harm's way (though in some cases they wish they had larger pads for more equipment).



1. Save lives, livelihoods.
2. Protects people, animals, equipment.
3. 26 locations throughout Basin.
4. <2 years to design, permit, construct.
5. 14:1 return-on-investment.
6. Benefit whole basin.
7. Reusable.
8. Testimonials → <http://arcg.is/2b632Ai>.

★ → Complete
★ → Underway

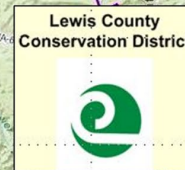


Farm Pads, Evacuation Routes (2012-19)

www.ezview.wa.gov/chehalisfloodauthority

Contact: Scott Boettcher; Staff, Chehalis River Basin Flood Authority; 360/480-6600; scottb@sbgp-partners.com

7-25-2022



Animal/Equipment Now Protected:

• Beef	4
• Bulls	3
• Calves	210
• Cows	2,480
• Goats	118
• Heifers	645
• Horses	77
• Sheep	165
• Yearlings	9
• Tractors	36
• Pieces	42



10/17/2019

12 of 20



Chehalis River Basin
Flood Warning System
www.chehalisriverflood.com

Click icon to sign-up
for email gage alerts.

Flood Warning System (#2)



www.chehalisriverflood.com

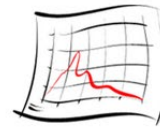
[Home](#) [Map](#) [Sites](#) [News](#) [Dashboards](#)



Weather Forecast



Rainfall Forecast



River Forecast



Flood Maps



Plot Gage Data



Gage Data Maps



Landslide



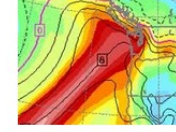
Radar Rainfall



Road Conditions



USGS Gages

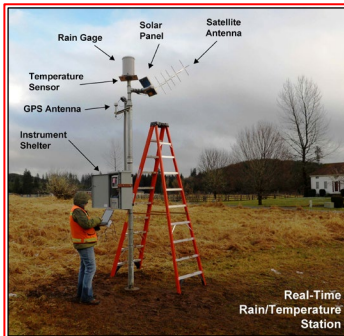
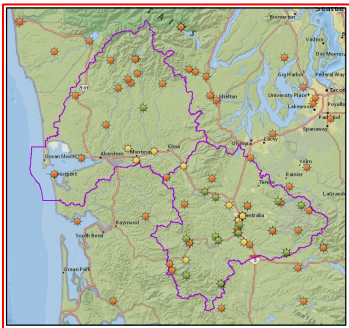


Atmospheric Rivers



Chehalis Basin Gage
Height Conversion
Project

Photo Credit:
www.chehalisbasinstrategy.com



Looking at downstream face of Heron St. bridge

Wishkah River at Aberdeen, WA



2022-06-13 08:32:53

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

7-25-2022



Chehalis River Basin
Flood Warning System
www.chehalisriverflood.com

Click icon to sign-up
for email gage alerts.

Flood Warning System (2022 Flood Event)

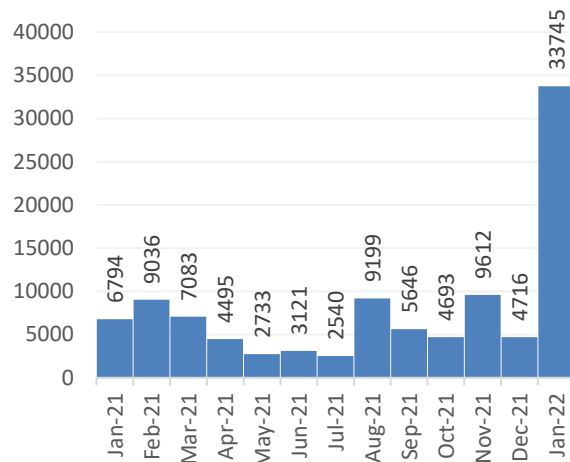
Flood Warning System Works!

The Flood Authority's flood warning system website was incredibly active during the January flood. Nearly **25,000 individual user logins** were recorded and the flood inundation maps received almost **75,000 hits**, providing vital information to the community during the flood emergency. *Dave Curtis, West Consultants, 2/01/2022*

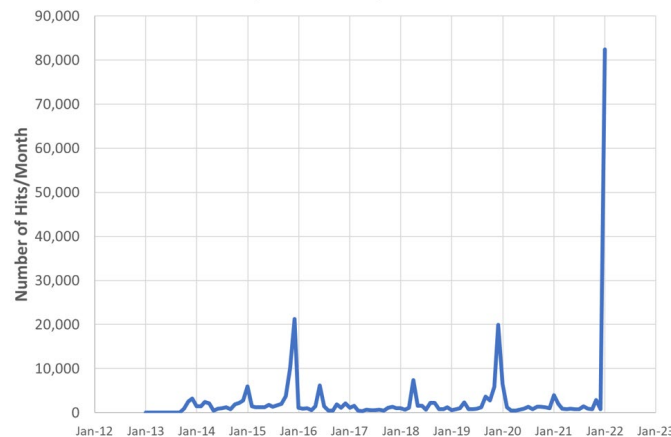
Unknown contact said:

"Our house flooded in '96 and '07--we like to be prepared The gauges and alerts give us more peace of mind. **Info=peace of mind**" *Survey Respondent, 2/01/2022*

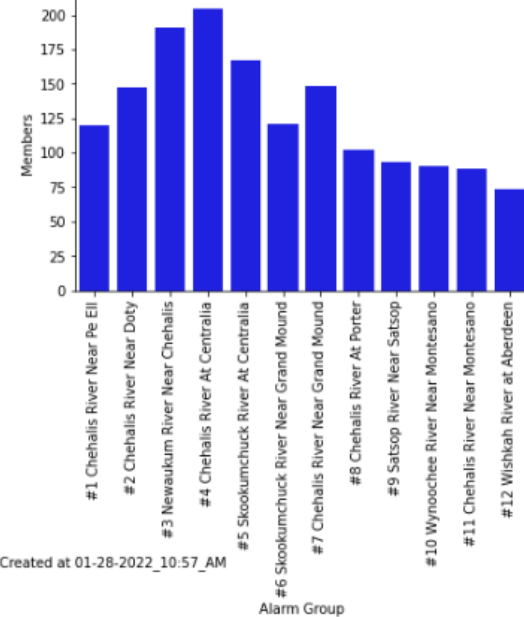
Chehalis FA Website Visits



Chehalis River Basin Flood Authority Flood Warning System
Monthly Inundation Map Website Hits



Total Gage Signups: 1544



Created at 01-28-2022_10:57_AM

Alarm Group

Flood Authority Role (#3)

Local Resolutions Favoring Basin-Wide Solution

File Name▲	File Size	Category	Date Added
Aberdeen -- 2020-07-29 -- 2020-14.pdf	84 KB	2020	08/05/20 01:25 PM
Aberdeen -- 2021-01-27 -- 2021-05.pdf	1.3 MB	2021	03/18/21 05:27 AM
Bucoda -- 2020-06-09 -- 2020-04.pdf	610 KB	2020	07/15/20 10:38 AM
Bucoda -- 2021-02-08 -- 2021-01.pdf	862.3 KB	2021	03/18/21 05:11 AM
Centralia -- 2016-11-08 -- 2652.pdf	76 KB	2016	07/15/20 10:38 AM
Centralia -- 2020-05-26 -- 2718.pdf	809.8 KB	2020	07/15/20 10:39 AM
Centralia -- 2021-02-09 -- 2733.pdf	1 MB	2021	03/18/21 09:11 AM
Chehalis -- 2010-02-22 -- 5-2010.pdf	40.8 KB	2010	07/15/20 10:39 AM
Chehalis -- 2016-10-24 -- 19-2016.pdf	40.2 KB	2016	07/15/20 10:39 AM
Chehalis -- 2020-04-27 -- 6-2020.pdf	239 KB	2020	07/15/20 10:39 AM
Chehalis -- 2021-02-08 -- 2-2021.pdf	553.8 KB	2021	03/18/21 05:10 AM
Cosmopolis -- 2020-05-20 -- 2020-01.pdf	122 KB	2020	07/15/20 10:40 AM
CRBFA -- 2021-01-21 -- Resolution.pdf	130.3 KB	2021	03/18/21 05:09 AM
CRBFA Letter Re NEPA DEIS 11-13-2020 (additional 11-19-2020).pdf	252.7 KB	2020	02/01/21 09:12 AM
CRBFA Letter Re NEPA DEIS 11-13-2020.pdf	3.5 MB	2020	02/01/21 09:12 AM
Final CRBFA Letter Re DEIS 4-21-2020.pdf	293 KB	2020	02/01/21 09:11 AM
Grays Harbor County -- 2016-11-14 -- 2016-129.pdf	98.6 KB	2016	07/15/20 10:40 AM
Grays Harbor County -- 2020-05-19 -- 2020-054.pdf	92.8 KB	2020	07/15/20 10:40 AM
Grays Harbor County -- 2021-04-06 -- 2021-031.pdf	126.2 KB	2021	04/07/21 10:19 AM
Hoquiam -- 2021-04-12 -- 2021-12.pdf	110.1 KB	2021	04/16/21 10:14 AM
Hoquiam -- 2020-08-10 -- 2020-12.pdf	88.8 KB	2020	08/14/20 03:52 PM
Lewis County -- 2016-10-24 -- 16-287.pdf	71.7 KB	2016	07/15/20 10:40 AM
Lewis County -- 2020-05-11 -- 20-154.pdf	651 KB	2020	07/15/20 10:40 AM
Lewis County -- 2021-02-01 -- 21-046.pdf	1.2 MB	2021	03/18/21 05:10 AM
Montesano -- 2020-06-10 -- 959.pdf	503.2 KB	2020	07/15/20 10:41 AM
Napavine -- 2020-07-28 -- 20-07-110.pdf.pdf	463.1 KB	2020	07/29/20 11:25 AM
Oakville -- 2020-07-20 -- 424.pdf.pdf	288.5 KB	2020	07/21/20 12:06 PM
Pe Ell -- 2010-04-06 -- 184.pdf	56.9 KB	2010	07/15/20 10:41 AM
Pe Ell -- 2010-12-28 -- 192.pdf	56.4 KB	2010	07/15/20 10:41 AM
Pe Ell -- 2012-09-18 -- 201.pdf	55.4 KB	2012	07/15/20 10:41 AM
Pe Ell -- 2016-11-15 -- 232.pdf	76.7 KB	2016	07/15/20 10:42 AM
Pe Ell -- 2020-06-01 -- 251.pdf	134 KB	2020	07/15/20 10:42 AM
Pe Ell -- 2021-03-02 -- 260.pdf	134 KB	2021	03/18/21 05:11 AM

7-25-2022

- ✓ **Help** local communities identify, develop, implement local flood hazard solutions.
- ✓ **Appoint** 3 of 7 members to Chehalis Basin Board (current appointees are Vickie Raines, Edna Fund, Jay Gordon).
- ✓ **Provide** local perspective to Basin-Wide solution discussions.
- ✓ **Advocate** for balanced basin-wide fish and flood solutions (see local resolutions library [here](#)).
- ✓ **Work** as a team.

Chehalis Basin Strategy



Office of Chehalis
Basin

Chehalis Basin
Board

<https://chehalisbasinstrategy.com/>

Chehalis Basin Board

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

appoints 3
member



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

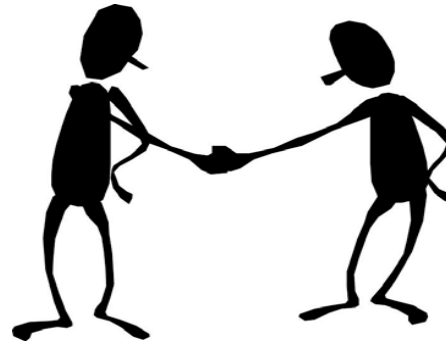
“Network of Partners”



Office of Chehalis
Basin

Chehalis Basin
Board

<https://chehalisbasinstrategy.com/>



Chehalis Lead Entity



WASHINGTON STATE DEPARTMENT OF
Natural Resources

TOWN of BUCODA



7-25-2022

Looking Ahead

- ✓ **Proposed Flood Retention Facility** – DRAFT EISs were issued February 2020 (SEPA) and September 2020 (NEPA). Chehalis River Basin Flood Control Zone District (project proponent) working diligently to provide refinements and clarifications for FINAL EIS. Final EISs are currently scheduled for release in late 2022/early 2023.
- ✓ **Local Projects** – 2023-25 call for local projects issued June 30, 2022 (due 8/03/2022).
https://www.ezview.wa.gov/site/alias_1492/37773/2023-25-local-projects-recruitment-process.aspx
- ✓ **Sign-Up For Email Gage Alerts** – www.chehalisriverflood.com



Click icon to sign-up
for email gage alerts.

Key Contacts

Vickie Raines, Grays Harbor County Representative

Chair, Chehalis River Basin Flood Authority

Chair, Chehalis Basin Board

360/249-3731

vraines@co.grays-harbor.wa.us

Edna Fund, Lewis County Representative

Vice-Chair, Chehalis River Basin Flood Authority

Member, Chehalis Basin Board

360/269-7514

dutch@localaccess.com

Richard Armstrong, Oakville Representative

Member, Chehalis River Basin Flood Authority

360/791-8772

oakvillepublicworks@gmail.com

Scott Boettcher

Staff, Chehalis River Basin Flood Authority

360/480-6600

scottb@sbgh-partners.com



Thank You!

This Presentation:

Available at “Chehalis River Basin Flood Authority” Website at
https://www.ezview.wa.gov/site/alias__1492/34490/outreach__education.aspx

Email Distribution Lists:

Megan Sathre (Flood Authority)
megan.sathre@lewiscountywa.gov

Cindy Bradley (Office of Chehalis Basin)
Cindy.Bradley@ecy.wa.gov

Also -- Key Links

Key Organizations:

1. Chehalis River Basin Flood Authority -- www.ezview.wa.gov/chehalisfloodauthority
2. Office of Chehalis Basin -- <https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Office-of-Chehalis-Basin>
3. Chehalis Basin Board -- https://www.ezview.wa.gov/site/alias_1962/37068/chehalis_basin_board.aspx

Key Activity Areas:

1. Local Projects -- https://www.ezview.wa.gov/site/alias_1492/34489/local_projects.aspx
2. Flood Warning System -- www.chehalisriverflood.com
3. Chehalis Basin Strategy -- www.chehalisbasinstrategy.com
 - ASRP -- <https://chehalisbasinstrategy.com/asrp/>
 - CFAR -- <https://chehalisbasinstrategy.com/cfar/>
 - Proposed Retention Project -- <https://chehalisbasinstrategy.com/proposed-project/>
 - Chehalis River Basin Flood Control Zone District -- <https://www.chehalisriverbasinfczd.com/>
 - State EIS (SEPA) -- <https://chehalisbasinstrategy.com/sepa-process/>
 - Federal EIS (NEPA) -- <https://chehalisbasinstrategy.com/federal-envl-review/>
 - Flood Retention Facility (visualization) -- <https://www.youtube.com/watch?app=desktop&v=cKTejUE3WsU>
 - Skookumchuck Dam -- <https://chehalisbasinstrategy.com/skookumchuck-dam-study/>
 - LAND -- <https://chehalisbasinstrategy.com/local-actions-non-dam-alternative/>

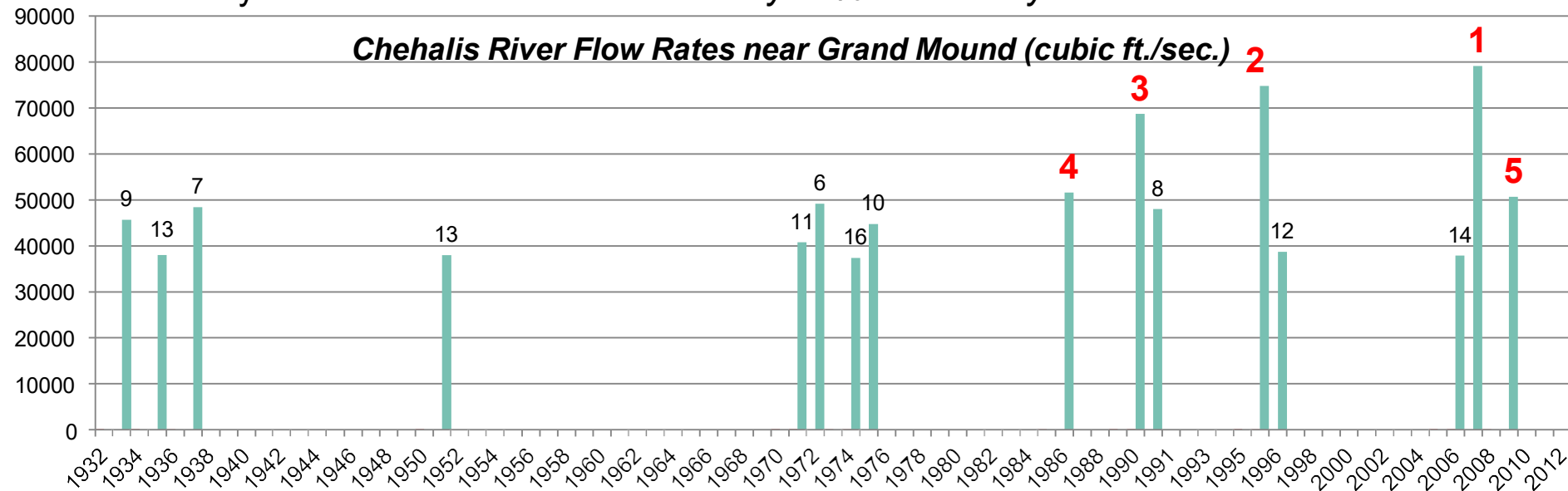
Also → Sign-Up for Email Gage Alerts – <https://chehalis.onerain.com/upload/files/6a9bf8e2-f04b-4165-8a9f-ce031d5db6b4.pdf>

Also -- Background

■ Ranked high flow events (1932 - 2012) . . .

- ❑ I-5 closed 1990, 1996, 2007, 2009.
- ❑ Five largest events since 1986 -- *Frequent floods are getting worse and damage is increasing . . .*
- ❑ 100 year flood estimate -- *Increased by 33% in last 30 years.*

Chehalis River Flow Rates near Grand Mound (cubic ft./sec.)



Also -- Background

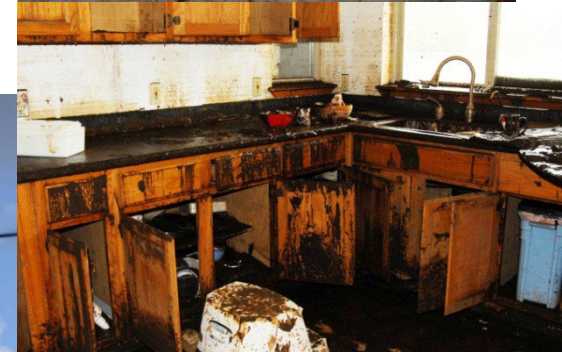
- 2007 Storm -- \$938M Basin-wide damage, \$300M lost economic activity (WA).



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

23 of 20



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



7-25-2022