Yakima County Flood Control Zone District

Activities and Projects

Water Resources Division

Public Services Department

May 2022

~ This page intentionally left blank ~

Section 1
Purpose and Activities of the FCZD

The Yakima County Flood Control Zone District was established as county-wide and has all the powers, authorities and duties of RCW 86.15. The FCZD mission and activities were defined when it was formed:

"The purpose of the Flood Control Zone District will be to address flood management needs within the County. The activities of the district could include but are not limited to flood warning and emergency response, flood proofing and elevation of structures, property acquisition, implementation of consistent development regulations that recognize the impacts of flooding, basin wide flood planning, and the identification, engineering, and construction of capital projects to mitigate and/or address flooding problems."

In Washington State the use of State and federal loans and grants to augment local funds for flood projects requires the generation of Comprehensive Flood Hazard Management Plans adopted by the Department of Ecology and reviewed by the Department of Fish and Wildlife. Needed projects are also initiated outside the areas covered by completed CFHMPs.

Activities of the FCZD:

- *Complete Comprehensive Flood Hazard Management Plans for the primary flood prone areas of the county to establish needed requirements.*
- *Enhance our institutional preparedness for floods and flood response.*
- *Enhance our institutional knowledge of flooding problems to enable long term informed planning and consistent application of regulations by citizens, agencies and government.*
- *Carry out public educational activities about flooding problems, citizen flood preparedness, and proper floodplain management.*
- *Coordinate and collaborate with others and participate in related natural resource management projects and planning by other entities within Yakima County.*
- *Provide capital improvement projects (CIPs) for flood hazard reduction projects identified within completed CFHMPs that also benefit fish and wildlife resources.*
- *Provide county-wide hazard reduction projects (CIPs).*

The above efforts required the development of cooperative partnerships with our member cities and related Water Resources agencies within the basin.

In this document, activities have been divided by the following categories: Annual, Ongoing, Current (with projected completion dates) and Completed (with actual completion date) to reflect their timing and efforts. The table of contents, further divides the FCZD projects and activities by the above list of activities, then by geographic area and completion date.

Geographically, division is as follows: County-Wide (CW), Upper Naches (UN), Lower Naches (LN), Upper Yakima (UY), Lower Yakima (LY) and West Valley (WV), which includes Ahtanum Wide Hollow Basins. For these geographic divisions, new or recent FEMA flood maps were available or undertaken to facilitate planning and flood plans.

Yakima County Flood Control Zone District
Activities and Projects

Yakima County Flood Control Zone District
Activities and Projects

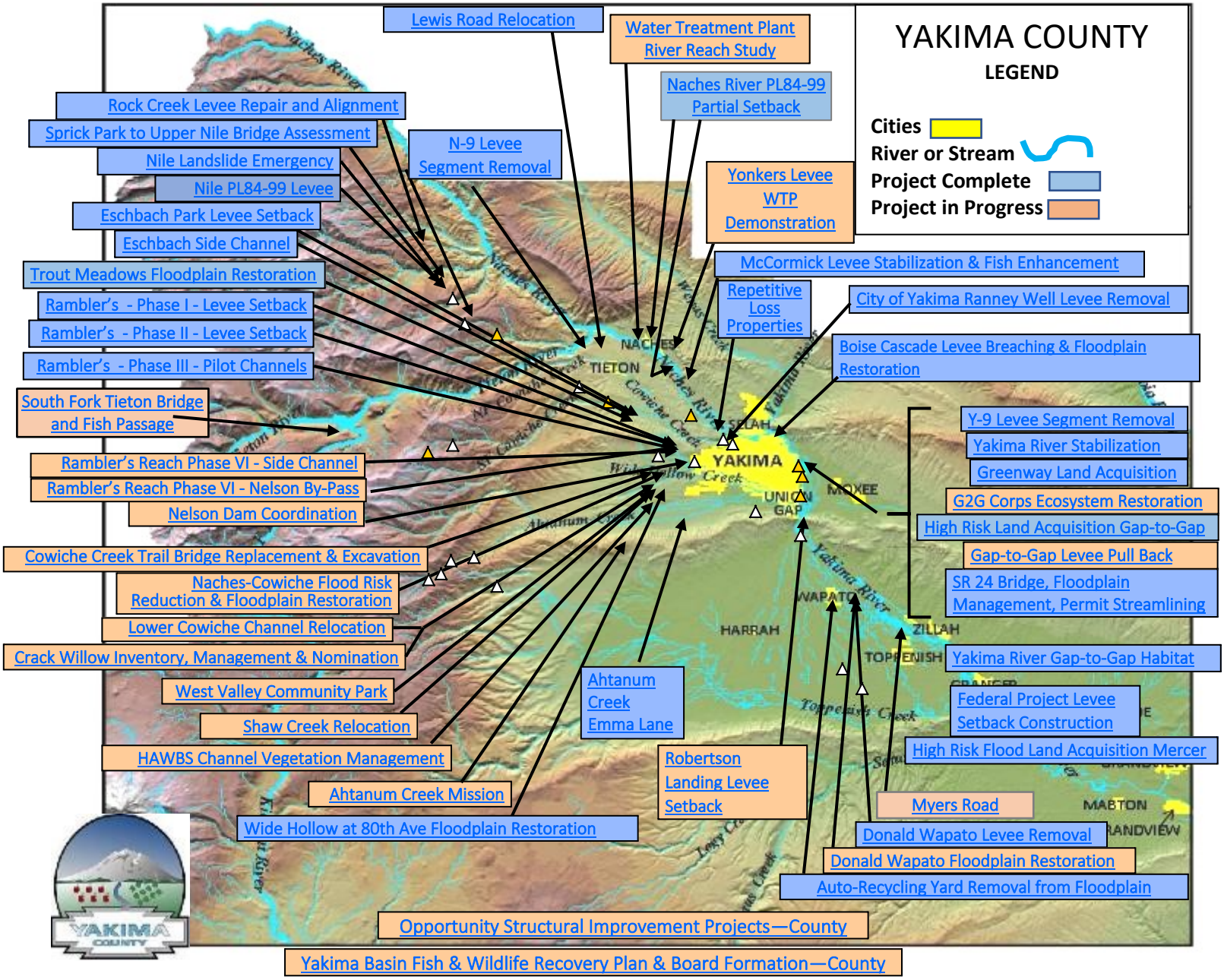
Yakima County Flood Control Zone District
Activities and Projects

Section	Content	Area	Former Section	Completed	Pg
8.	Rock Creek Levee Repair and Alignment (FC3325)	UN	7	2011	147-148
	Sprick Park to Upper Nile Bridge Assessment (FC3627)	UN	7	2018	149-150
	Nile (N-13) PL84-99 Levee (FC3384)	UN	7	2019	151-152
	Naches River Channel Migration Zone Hazard Mapping (FC2911)	LN	4	2007	153-154
	Lower Naches FEMA Flood Insurance Map Restudy (FC2911)	LN	4	2009	155-156
	Lower Naches Floodway Land Acquisition (FC3254)	LN	5	2010	157-158
	Yakima County Water Gaps Study (FC3312)	LN	5	2013	159-160
	McCormick Levee Stabilization &Fish Enhancement (FC2993)	LN	7	2004	161-162
	Lewis Road Relocation Project (FC3122)	LN	7	2009	163-164
	City of Yakima Ranney Well Levee Removal (FC3252)	LN	7	2010	165-166
	Rambler's Park Levee Setback Ph I (FC3465)	LN	7	2013	167-168
	Eschbach Park Levee Setback (FC3379)	LN	7	2014	169-170
	Rambler's Property Acquisition/Restoration Phase III (FC3492)	LN	7	2016	171-172
	N-9 Naches Levee Segment Removal (FC3543)	LN	7	2017	173-174
	Cowiche Creek Trail Bridge Replacement & Excavation	LN	7	2017	175-176
	Eschbach Side Channel Project (FC3621)	LN	7	2018	177-178
	N-1 Naches Levee Setback—Rambler's Ph II (FC3542)	LN	7	2018	179-180
	Naches River PL84-99 (N7 & N2) Partial Setback (FC3647)	LN	7	2018	181-182
	Trout Meadows Floodplain Restoration (FC3526, FC3588)	LN	7	2019	183-184
	SR24 Bridge Support, Permit Streamlining	UY	5	2007	185-186
	Greenway Land Acquisition (FC3156)	UY	7	2005	187-188
	Yakima River Stabilization Project below Terrace Heights Bridge	UY	7	2011	189-190
	Boise Cascade Levee Breaching & Floodplain Restore (FC3355)	UY	7	2011	191-192
	High Risk Flood Land Acquisition Mercer (FC3416)	UY	7	2011	193-194
	Federal Project Levee Set Back Construction (FC3449)	UY	7	2012	195-196
	Yakima River Gap-to-Gap Habitat Enhancement (FC3493)	UY	7	2015	197-198
	Gap-to-Gap Levee Pull Back Sediment Studies (FC3280)	UY	7	2016	199-200
	Y-9 Yakima Levee Segment Removal (FC3544)	UY	7	2018	201-202
	High Risk Land Acquisition Gap-to-Gap (FC3416)	UY	7	2019	203-204
	Wapato Reach Assessment (FC3352)	LY	6	2012	205-206
	Auto-Recycling Yard Removal from Floodplains Project (FC3064)	LY	7	2009	207-208
	Donald Wapato Levee Removal Project (FC3251)	LY	7	2012	209-210
	Cowiche Creek FEMA Flood Mapping and RiskMAP (FC3350)	LN		2022	211-212
	Wide Hollow Creek FEMA Flood Mapping Restudy (FC3290)	WV	4	2012	213-214

Yakima County Flood Control Zone District
Activities and Projects

Section	Content	Area	Former Section	Completed	Pg
8.	Ahtanum Creek FEMA Flood Mapping RiskMAP (FC3110)	WV	4	2016	215-216
	Wide Hollow Floodplain Restoration at 80th Av - (FC3326)	WV	5	2012	217-218
	Ahtanum Watershed, Pine Hollow Reservoir Assessment (FC3066)	WV	6	2005	219-220
	Ahtanum Creek Emma Lane Project (FC3149)	WV	7	2014	221-222

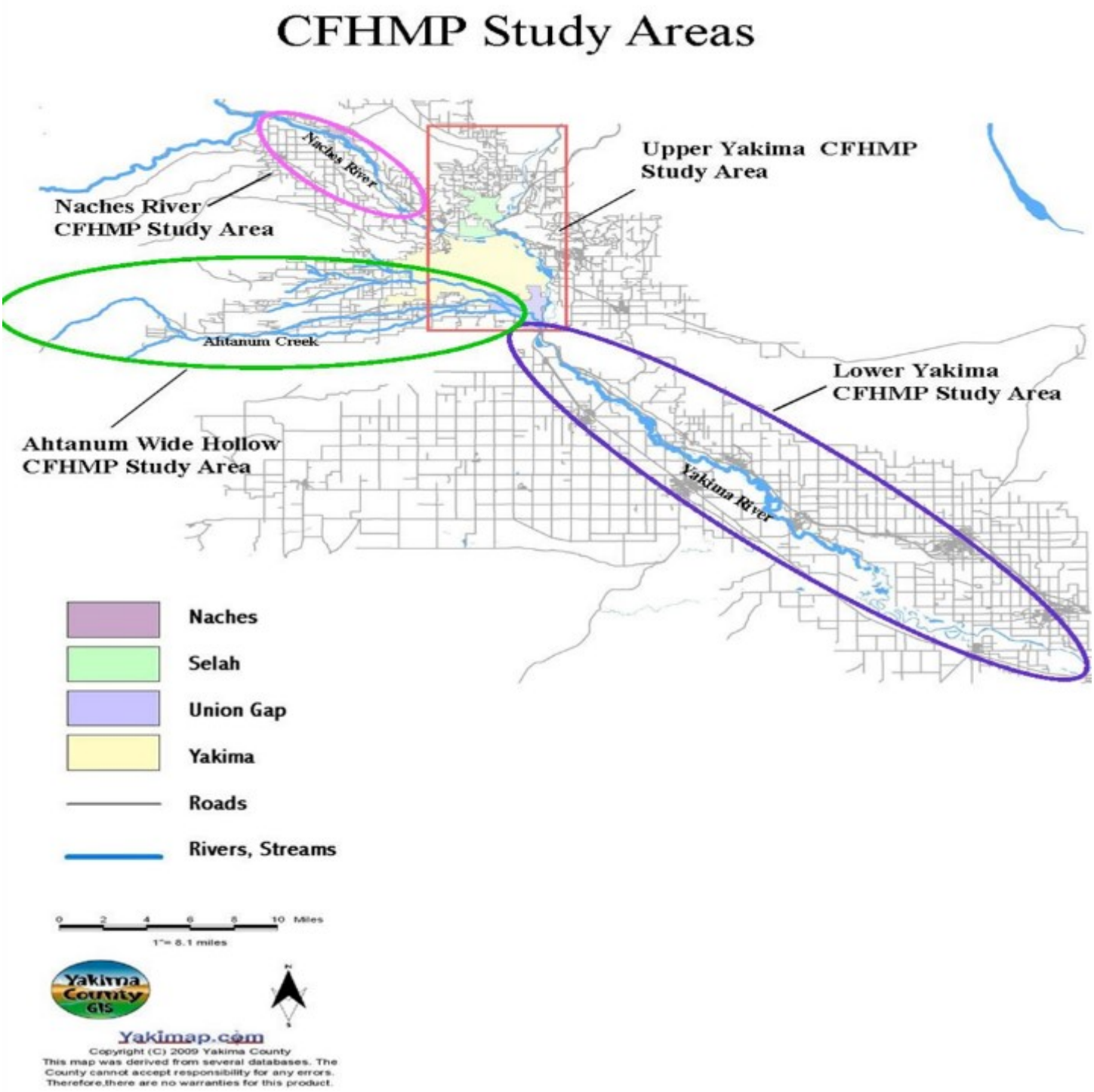
CIP Status


YAKIMA COUNTY
LEGEND
Cities
River or Stream
Project Complete
Project in Progress
Lewis Road Relocation
Water Treatment Plant River Reach Study
Naches River PL84-99 Partial Setback
Rock Creek Levee Repair and Alignment
Sprick Park to Upper Nile Bridge Assessment
Nile Landslide Emergency
Nile PL84-99 Levee
Eschbach Park Levee Setback
Eschbach Side Channel
N-9 Levee Segment Removal
Yonkers Levee WTP Demonstration
Trout Meadows Floodplain Restoration
Rambler's - Phase I - Levee Setback
Rambler's - Phase II - Levee Setback
Rambler's - Phase III - Pilot Channels
McCormick Levee Stabilization & Fish Enhancement
Repetitive Loss Properties
City of Yakima Ranney Well Levee Removal
Boise Cascade Levee Breaching & Floodplain Restoration
South Fork Tieton Bridge and Fish Passage
Y-9 Levee Segment Removal
Yakima River Stabilization
Greenway Land Acquisition
Rambler's Reach Phase VI - Side Channel
Rambler's Reach Phase VI - Nelson By-Pass
Nelson Dam Coordination
G2G Corps Ecosystem Restoration
High Risk Land Acquisition Gap-to-Gap
Gap-to-Gap Levee Pull Back
SR 24 Bridge, Floodplain Management, Permit Streamlining
Cowiche Creek Trail Bridge Replacement & Excavation
Naches-Cowiche Flood Risk Reduction & Floodplain Restoration
Lower Cowiche Channel Relocation
Crack Willow Inventory, Management & Nomination
Yakima River Gap-to-Gap Habitat
West Valley Community Park
Ahtanum Creek Emma Lane
Federal Project Levee Setback Construction
Shaw Creek Relocation
High Risk Flood Land Acquisition Mercer
HAWBS Channel Vegetation Management
Robertson Landing Levee Setback
Myers Road
Ahtanum Creek Mission
Donald Wapato Levee Removal
Wide Hollow at 80th Ave Floodplain Restoration
Donald Wapato Floodplain Restoration
Auto-Recycling Yard Removal from Floodplain
Opportunity Structural Improvement Projects—County
Yakima Basin Fish & Wildlife Recovery Plan & Board Formation—County
NACHES
TIETON
YAKIMA
UNION GAP
MOXEE
WAPATO
HARRAH
ZILLAH
TOPPENISH
MABTON
Naches River
Cowiche Creek
Wide Hollow Creek
Ahtanum Creek
Yakima River
Toppenish Creek

~ This page intentionally left blank ~

Section 2

Comprehensive Flood Hazard Management Plans (CFHMP)

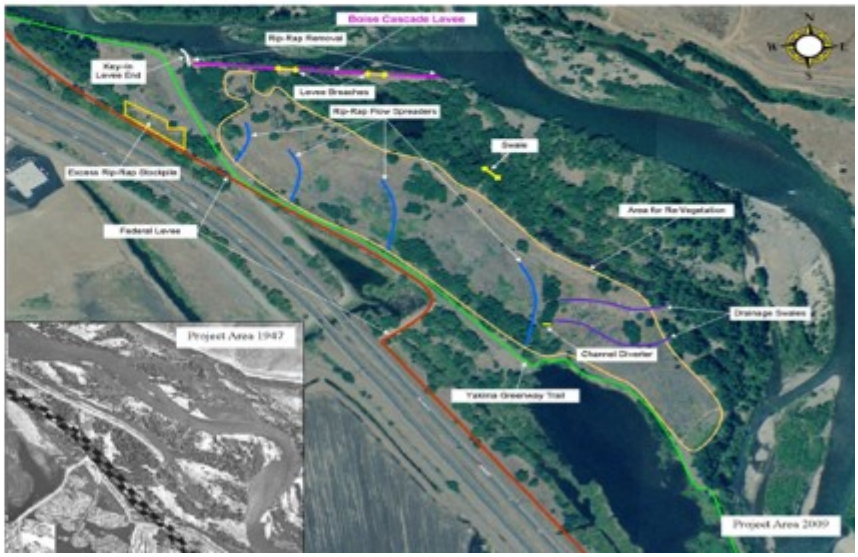


Grant Application and Management

Shaw Creek Relocation Project (FEMA)

Ahtanum Creek Relocation Project (FEMA)

Boise Cascade Levee Removal (RCO)



FCZD Project Status
May 2022

Ongoing Planning Project **County-Wide**

A. Project Title: Grant Application and Management (FC3374) T.H.

B. FCZD Role: Lead

Cooperators: FCAAP, FbD, Ecology, FEMA (HMGP, BRIC), SRFB, RCO, NOAA, USCOE (CAP), YBIP, USFWS

C. Brief Project Description:

Need: Opportunistically acquire grants with cooperators as they become available. Assist cities in applying for flood mitigation grants.

Goals: Fund flood mitigation projects that meet Yakima County Flood Control District's and cooperator's missions, funding requirements, and CFHMP priorities and recommendations.

Benefits: Fund economic projects and programs beyond the FCZD levy.

D. Project Status

D1. Recent Project Work: Submission of Floodplains by Design, RCO (trail) and USCOE Section 1135 grant applications. Assistance to City to provide FEMA PDM grant application. Assistance to WSDOT to submit Ecological Project, Assistance to YBIP to define projects including the Lower Valley, and Congressional Appropriations, as grants become available and as they fit project needs in Yakima County.

D2. Near Term Work: Applications, quarterly reports and management for acquired Grants.

D3. Major Milestones & Dates:

Annual or bi-annual applications– As applicable grant cycles are announced - FCAAP, FbD, HMGP, BRIC, RCO, etc.

CFHMP Coordination and Implementation

FCZD Project Status
May 2022

Current Planning Project **County-Wide**

A. Project Title: CFHMP Coordination and Implementation (FC3433-100-G) T.H.

B. FCZD Role: Lead
Cooperators: Town of Naches, Cities of Yakima and Union Gap, Yakama Nation

C. Brief Project Description:

Need: To prioritize funding and coordinate implementation of Yakima County CFHMP recommendations.

Goals: Provide a long-term projects strategy to maximize the benefits of the short and long-term implementation of CHFMP recommendations within the budgetary constraints. Identify flood risk for other basin entities and infrastructure owners.

Benefits: Integrated county-wide floodplain management, flood response, data collection, monitoring and mitigation. Coordination with other entities, particularly around infrastructure replacement.

D. Project Status

D1. Recent Project Work: Multiple projects have been implemented from the three CFHMPs over the last year. A long-term County overview, based on potential damages for all mapped floodplains, has been provided by the HAZUS Study.

D2. Near Term Work: Prioritize implementation of the remaining recommendations across the three CFHMP, identify Lower Yakima flood risks, and communicate flood reduction opportunities.

D3. Major Milestones & Dates:

1998 - Upper Yakima CFHMP adopted by County.
1999 - Lower Yakima CFHMP deferred pending Tribal agreement.
2006 - Naches River CFHMP adopted by County, Town of Naches, and Ecology.
2007 - Upper Yakima CFHMP Update adopted by County, Yakima, Selah, Union Gap, and Ecology.
2011 - Ahtanum-Wide Hollow CFHMP released to communities.
2012 - Ahtanum-Wide Hollow CFHMP adopted by Yakima County.
2013 - Ahtanum-Wide Hollow CFHMP adopted by Union Gap, Yakima and Ecology.
2014 - Completed HAZUS Study providing economic damage overview for entire County to establish economic priority basis.
2016 - Produced 20-year Flood CIP (all agencies) including Lower Valley.
2017 - Begin Amendment of 2007 Upper Yakima CFHMP to include Addendum for Cowiche Creek.
2018 - Completed and adopted (City, County) 2018 Upper Yakima CFHMP Cowiche Addendum.
2020 - Lower Yakima CFHMP discussions with Yakama Nation.

HAZUS Update to County Flood Hazard Plans

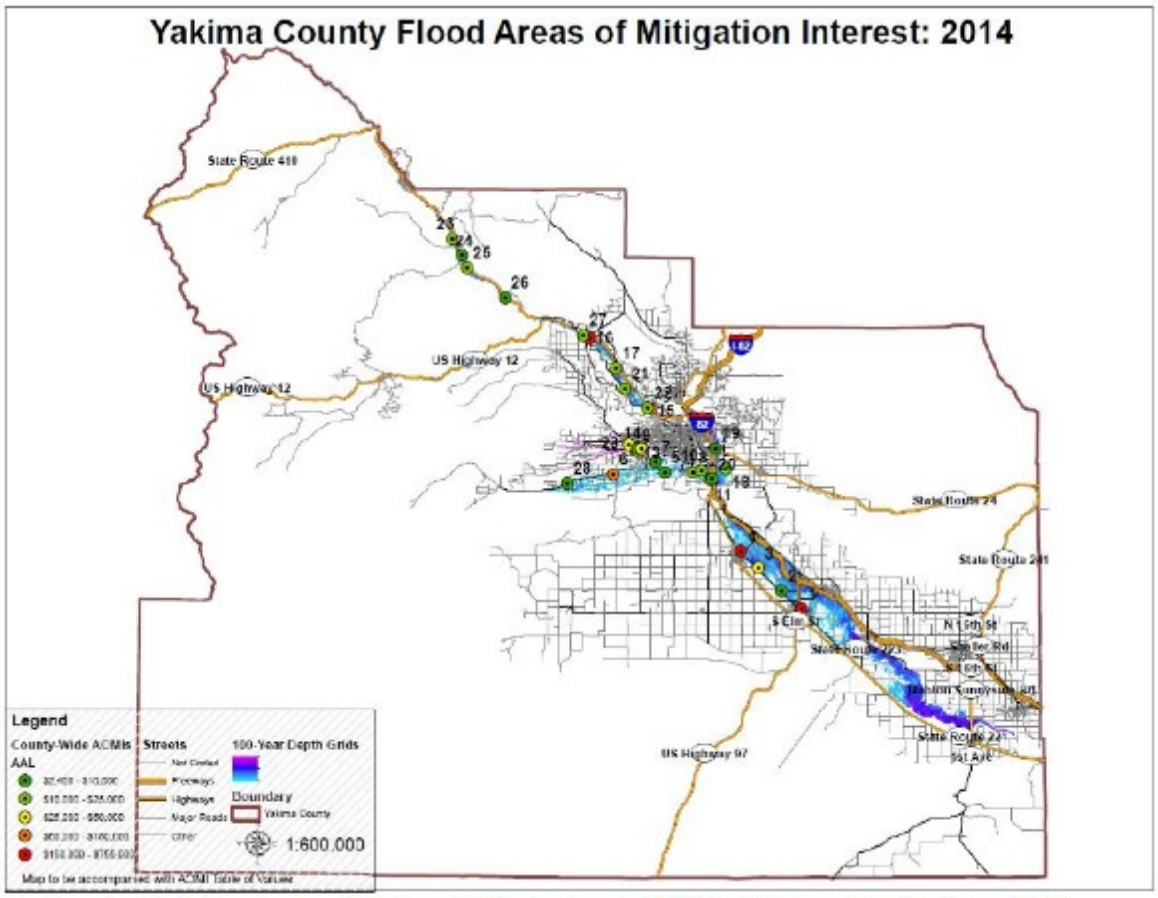


Table 1: County-wide Hazus Level 2 Risk Assessment - 2014 Areas of Mitigation Interest (AOMIs) and Average Annualized Losses (AALs)

Modeled Area	AOMIs Expressed as AAL	Recommended AALs for AOMIs*	Location	Comments	Number of Structures	AAL/Structure	Recommended AAL/Structure*	AOMI Map Reference #
Naches River - Upper Reach	$11,213	$22,426	Elk Valley Lane	Right Bank of River	58	$193	$387	23
	$6,072	$12,144	Left Bank above DOT Levee	10 Structures	10	$607	$1,214	26
	$4,911	$9,822	Left Bank across from Nile Creek Ln	21 Structures	21	$234	$468	24
Naches River - Lower Reach	$132,126	$264,252	S. Naches Rd Bridge Near Town	Approximate 1/2 mile River Reach	101	$1,308	$2,616	16
	$67,805	$135,610	Pence Road	Suntides Mobile Home Area	88	$771	$1,541	15
	$23,500	$47,000	Low Road	City Water Treatment Plant and Kershaw	8	$2,938	$5,875	17
	$22,085	$44,170	Craig Road and Jennings Lane	Left and Right Banks	78	$283	$566	27
	$19,665	$39,330	S. Naches Road N. of Young Grade	NE and SW of South Naches Road	11	$1,788	$3,575	21
	$19,593	$39,186	Powerhouse Road	2 Wrecking Yards and a Few Adjacent Residential Structures	12	$1,633	$3,266	22
Yakima River - Gap to Gap Reach	$23,084	$46,168	Bell Rd. and Riverside Rd.	Currently Pursuing Mitigation	9	$2,565	$5,130	18
Yakima River - Lower Reach	$753,810	$1,507,620	Northeast Wapato	Wapato	470	$1,604	$3,208	4
	$264,413	$528,826	Northeast Toppenish	Toppenish	867	$305	$610	1
	$25,799	$51,598	Track Rd. and Phillip John Rd.	Relatively Dense Community for Area	13	$1,985	$3,969	3
Wide Hollow Creek	$15,400	$30,800	Union Gap Main Street near I-82	10 Structures	10	$1,540	$3,080	11
	$10,270	$20,540	Bay Street and Ahtanum Road	6 Structures	6	$1,712	$3,423	10
	$10,022	$20,044	S. 80th and Wide Hollow Road	6 Structures	6	$1,670	$3,341	9
	$7,677	$15,354	Holiday and Spring Ave - South Union Gap	7 Structures	7	$1,097	$2,193	20
Shaw Creek	$46,709	$93,418	72nd Ave. and Viola Ave. S. of Nob Hill Blvd.	Currently Pursuing Mitigation	54	$865	$1,730	14
	$30,964	$61,928	South of 88th Ave. and Tieton Dr.	Currently Pursuing Mitigation	39	$794	$1,588	12
	$6,317	$12,634	80th Ave. and Nob Hill Blvd.	Currently Pursuing Mitigation	71	$89	$178	13
Ahtanum Creek - Lower Reach	$9,989	$19,978	Emma Lane	Currently Pursuing Mitigation	15	$666	$1,332	5
	$7,510	$15,020	52nd Ave. and Washington St.	16 Structures	16	$469	$939	7

* - Recommended AAL values are twice the Hazus Level 2 generated values based on model calibration and verification in Yakima County.

Note: Risk Assessment was limited to FEMA mapped floodplains and floodways with available hydraulic models. The Yakima River above Selah gap, Cowiche Creek, Satus Creek, Toppenish Creek, Wenas Creek, Tieton River and the upper reach of the Ahtanum Creek were not included in the risk assessment. Cottonwood Creek was assessed however only $1 AAL was identified.

Note: Average Annualized Losses (AALs) include local depth grids and georeferenced building data such as footprint, location, type, replacement cost, etc. AALs include building and content losses computed for an annual average loss through risk assessments from 10-year, 25-year, 50-year, 100-year, and 500-year flooding events.

Note: Level 2 Risk Assessment AAL values were based on 2012 dollars.

Note: AOMIs 2, 6, 8, 19, and 25 have been removed due to prioritization

FCZD Project Status
May 2022

Completed Planning Project **County-Wide**

A. Project Title: HAZUS Risk Update to County Flood Hazard Plans (FC3450) T.H.

B. FCZD Role: Lead
Cooperators: Building officials of Yakima, Union Gap and the County, Yakima County GIS and Yakima Valley Office of Emergency Management

C. Brief Project Description:

Need: A Yakima County-wide economic basis for damage and risk assessment of previously identified flood hazards to enable prioritized mitigation actions.

Goals: Use established FEMA methodology contained in existing FEMA HAZUS and FEMA HEC-RAS computer programs and county GIS databases to compute damages from floods.
The approach would provide consistent and federally accepted basis for profiling and prioritization of projects with the hazard mitigation plan and grant application.

Benefits: Update Flood Hazard Mitigation and Flood Response plans, compilation of damage data, prioritize recommended projects and increase coordination across county of data collection and archiving. The project would also serve to identify gaps in and improvements to data collection and data collection procedures

D. Project Status

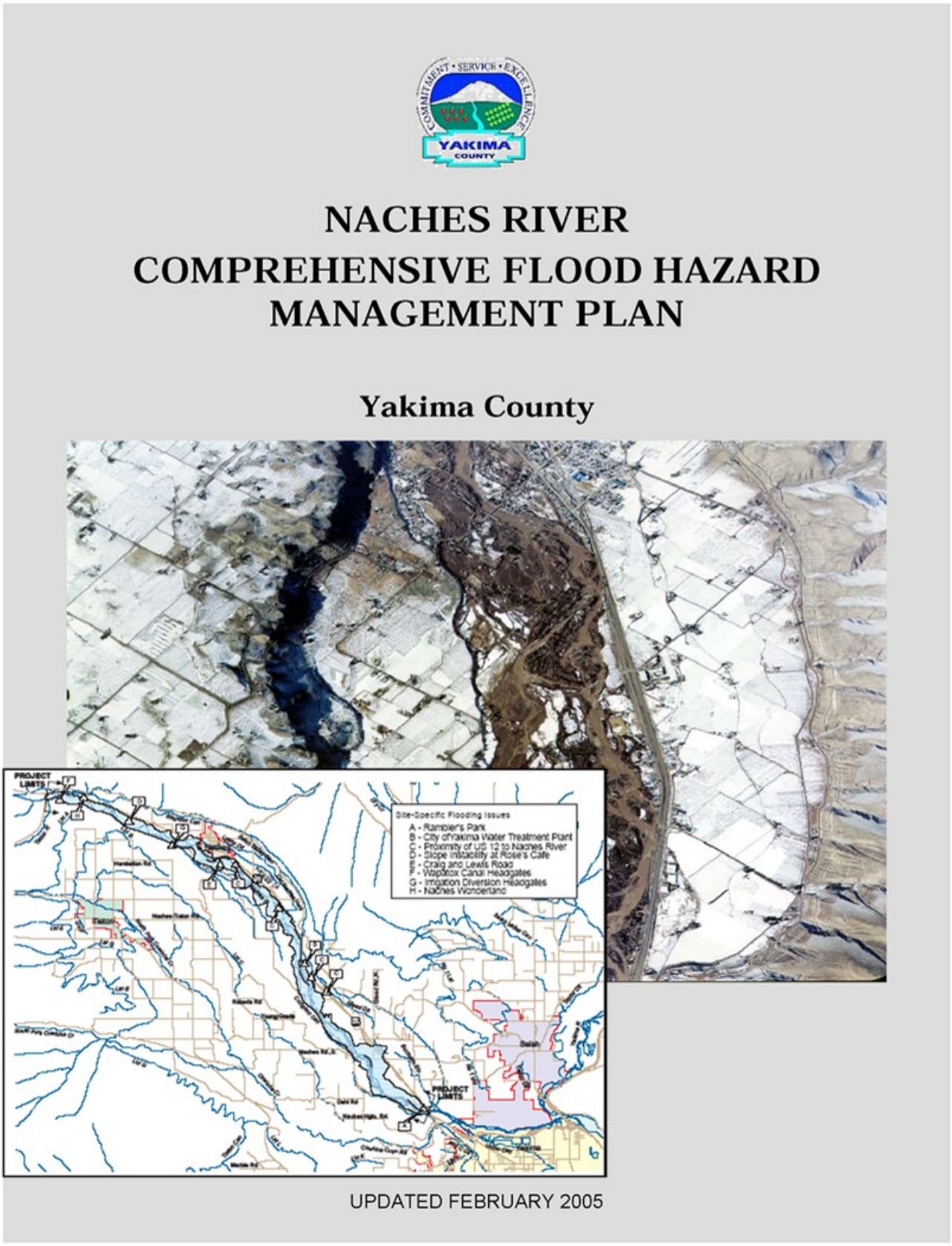
D1. Recent Project Work: Yakima County was awarded a FMA grant from FEMA in December 2011. The grant portion is $50,000, including a match of $12,000.

D2. Near Term Work: Upgraded County HAZUS to level two data. Compiled existing data to assess and confirm risk in flood hazard areas. Map future land use, infrastructure, and critical facilities within the flood hazard area to establish vulnerability and priorities for Flood Hazard Mitigation Planning. Incorporated flood depth grids for various return period floods from programs such as HEC-RAS assessment of flood hazard risk through HAZUS. Included the 1996 damage inventory to calibrate HAZUS application. Use of the HAZUS output costs and benefits to identify Hazard Mitigation priorities for County jurisdictions for the projects and actions.

D3. Major Milestones & Dates:

2012-2013 – Data collection.
2014 - Identify county-wide residential average annual losses from floods.
2014 - Identify Hazard Mitigation priorities for future collection thereby improving overall hazard management, including NFIP. Identify gaps in proposed projects. Provide a means to identify priorities and needs for first hazard responders. Coordination and collaboration between jurisdictions and agencies that contribute to flood hazard management. Update FEMA Flood Hazard Mitigation Plan.
2014 - Grant project closeout documents sent to EMD and FEMA.
2015 - FEMA issued grant project closeout letter. Grant and project requirements complete.
2015 - Provided as input to Natural Hazards element of County Comprehensive Plan Update and to Grants.
2022 - Provide as input to Yakima County Multi-Jurisdictional Hazard Mitigation Plan with YVEM.

Naches River CFHMP



FCZD Project Status
May 2022

Completed Planning Project (CFHMP) **Lower Naches**

A. Project Title: Naches River CFHMP (FC2911) T.H.

B. FCZD Role: Lead
Cooperators: Town of Naches, Department of Ecology, Department of Fish and Wildlife

C. Brief Project Description:

Need: Develop a Comprehensive Flood Hazard Management Plan for the flood-prone, high hazard and highly mobile Naches River between the SR12 crossings at Powerhouse Road to just above the Tieton River. The management plan contains long-term, broad-based recommendations to address flood risks in the reach for citizens, communities and infrastructure important to the County.

Goals: Identify and evaluate flooding problems in the study area to develop cost-effective structural alternatives for the mitigation of these problems. The plan will collect information from public agencies, citizens and interested groups in order to address their concerns.

Benefits: The plan will be used as a long-term guide for flood hazard management and flood risk education in the lower Naches River area. The plan facilitates funding opportunities for the identified projects, permits replacement after floods of outdated flood control features with those in the plan.

D. Project Status

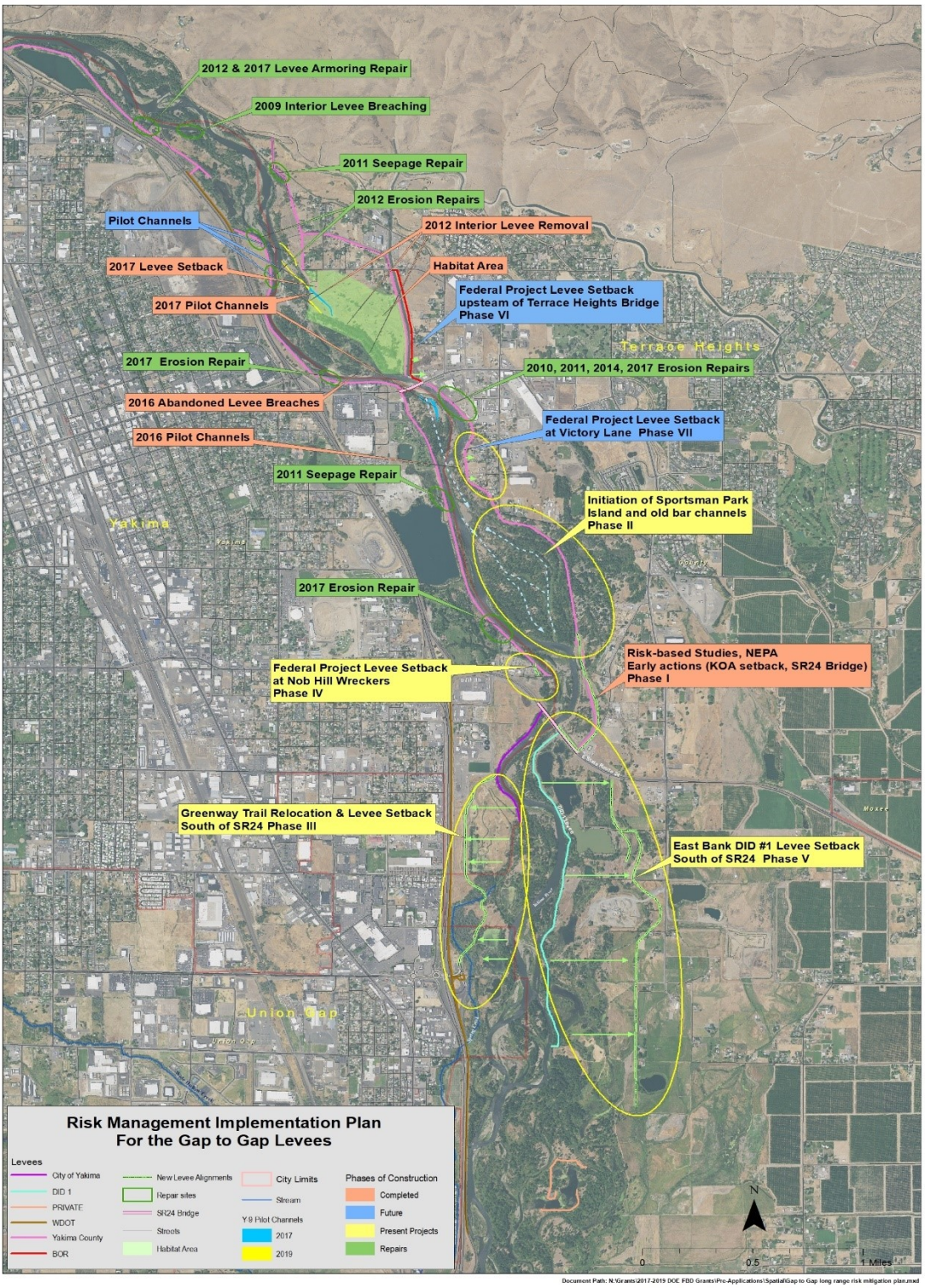
D1. Recent Project Work: Recommendation implementation continues, including Nelson Dam and Rambler's Park projects.

D2. Near Term Work: Implement CFHMP Projects and Recommendation: See Activities and Projects for Lower Naches.

D3. Major Milestones & Dates:

April 2005 - Yakima Board of County Commissioners Study Session.
October 2005 - SEPA process was completed with a final DNS.
2006 - Public Open house in Naches; Naches County Council Study Session; Hearing followed by County plan adoption; Hearing and adoption by Naches.
2006 - Study Session for the City of Yakima Council (adoption not required).
2008 - CFHMP Adopted by the Department of Ecology.
2013 - Naches levees setback plan and project grant funding from Floodplains by Design for N-9 and N-1.
2013 – Partial setback of N-1 completed.
2014 - HAZUS Study providing economic flood loss data for entire County.
2015 - Naches levee assessment and updated levee setbacks plan (FC3443).
2015 - Floodplains by Design Grant to assist Nelson Dam Project.
2017 - Completion of N-9 and Y-9 levee setbacks.
2017 – 2nd Floodplains by Design Grant to assist Nelson Dam Project.
2018 - Completion of N-1 levee setbacks.
2023 – Complete replacement of Nelson Dam Project.

Risk Management Implementation for Gap-to-Gap Levees



FCZD Project Status
May 2022

Ongoing Flood Hazard Planning **Upper Yakima**

A. Project Title: Risk Management Implementation for Gap-to-Gap Levees (FC3273) T.H.

B. FCZD Role: Lead
Cooperators: USCOE, FEMA

C. Brief Project Description:

Need: In 1948, USCOE constructed eight miles of levee authorized by the Flood Control Act of 1938 to protect the City of Yakima, Terrace Heights and the Town of Union Gap. The levee constrained the river and has resulted in expensive repairs to protect the resultant community development behind the levees. In many instances, pull back of the levee will reduce existing erosion and benefit endangered species and salmon holding reach in the basin.

Goals: Reduce the risk of levee failure and costs associated with infrastructure repairs both to the levees and bridge crossings. Maintain FEMA accreditation.

Benefits: Public safety of residents and businesses behind the levee, reduced costs for repairs and reduced community costs for insurance. Making space for the river also provides more habitat for fish.

D. Project Status

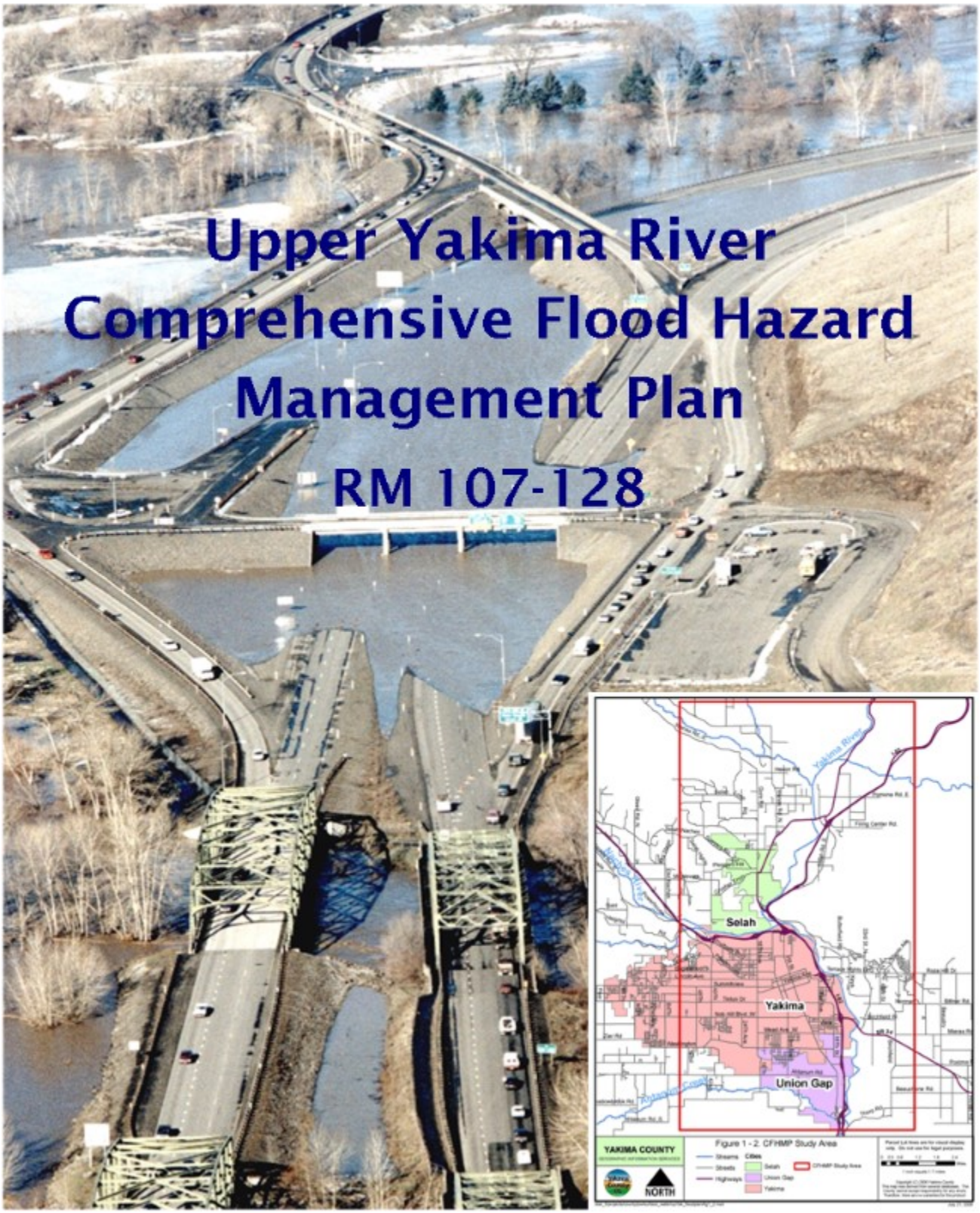
D1. Recent Project Work: Seventeen years of river and levee observations (since 1996 flood), levee revision planning (1998, 2004, 2007, 2012) and floodplain/levee remediation efforts (see map). Development in 2012 of a seven-phase long term plan to manage risk by implementing physical modifications to the levees and within the floodplain. Completion of Phase I, funding for Phases III and V pending.

D2. Near Term Work: Funding of Phases II and V projected in 2018.

D3. Major Milestones & Dates:

2004 - Chapter 8 of updated Upper Yakima CFHMP initiated redesign of SR24 crossing from 550 feet to 1,590 feet with construction in 2006.
2007 - Release of updated Upper Yakima CFHMP.
2009 - BOR purchase of KOA.
2011 - County purchase of Mercer property and flood damage at old SR24 bridge.
2012 - Phased Risk Management Implementation plan. Setback of levee upstream of SR24 and removal at completing Phase I.
2013 - City completes Phase III levee setback south of SR24, County obtains grants for Phases II and V, signs agreement with CPM to allow Phase V, discussion with County Roads and BOR regarding Phase V.
2014-2018 - USCOE Section 1135 Feasibility study for future funding of Phases II through V.
2019 - East-West Corridor design and construction dependent on cooperation with County Roads.
2019 - Funding for Phases II & V construction contracted on USCOE 1135 agreement (see FC3530). Phases III & IV funding contracted on FbD grant 2019-2021.
2022-2024 - Construction of funded phases II, III, IV, V

Upper Yakima CFHMP Update



FCZD Project Status
May 2022

Completed Planning Project (CFHMP) **Upper Yakima**

A. Project Title: Upper Yakima CFHMP Update (FC3111, Cowiche Addendum, FC3650) T.H.

B. FCZD Role: Lead
Cooperators: Cities of Yakima, Union Gap, Selah, WSDOT, BOR, WSFW, Ecology

C. Brief Project Description:

Need: The Comprehensive Flood Hazard Management Plan (CFHMP) for the Upper Yakima and Naches Rivers was adopted by the BOCC in 1998. The 2007 update was undertaken to incorporate significant changes within the intervening period identify short term risks to levees and provide an opportunity for specific community involvement and adoption. The 2018 amendment was established to address chronic Cowiche Creek flooding.

Goals: The 2007 updated plan added major infrastructures impacts, such as SR24 Highway Bridge and Wapato Dam that modify flood hazard over the long-term, assessed risk to the current levee system and updated the recommended actions to allow for major risk reduction projects. The 2018 amendment was specific to only Cowiche Creek downstream of Yakima Valley Canal siphon.

Benefits: Unified policy basis for flood risk management across local jurisdictions, increased access to Federal and State funding programs, improved project descriptions and easier implementation of projects. The plans have led to the formation of the Partnership Groups.

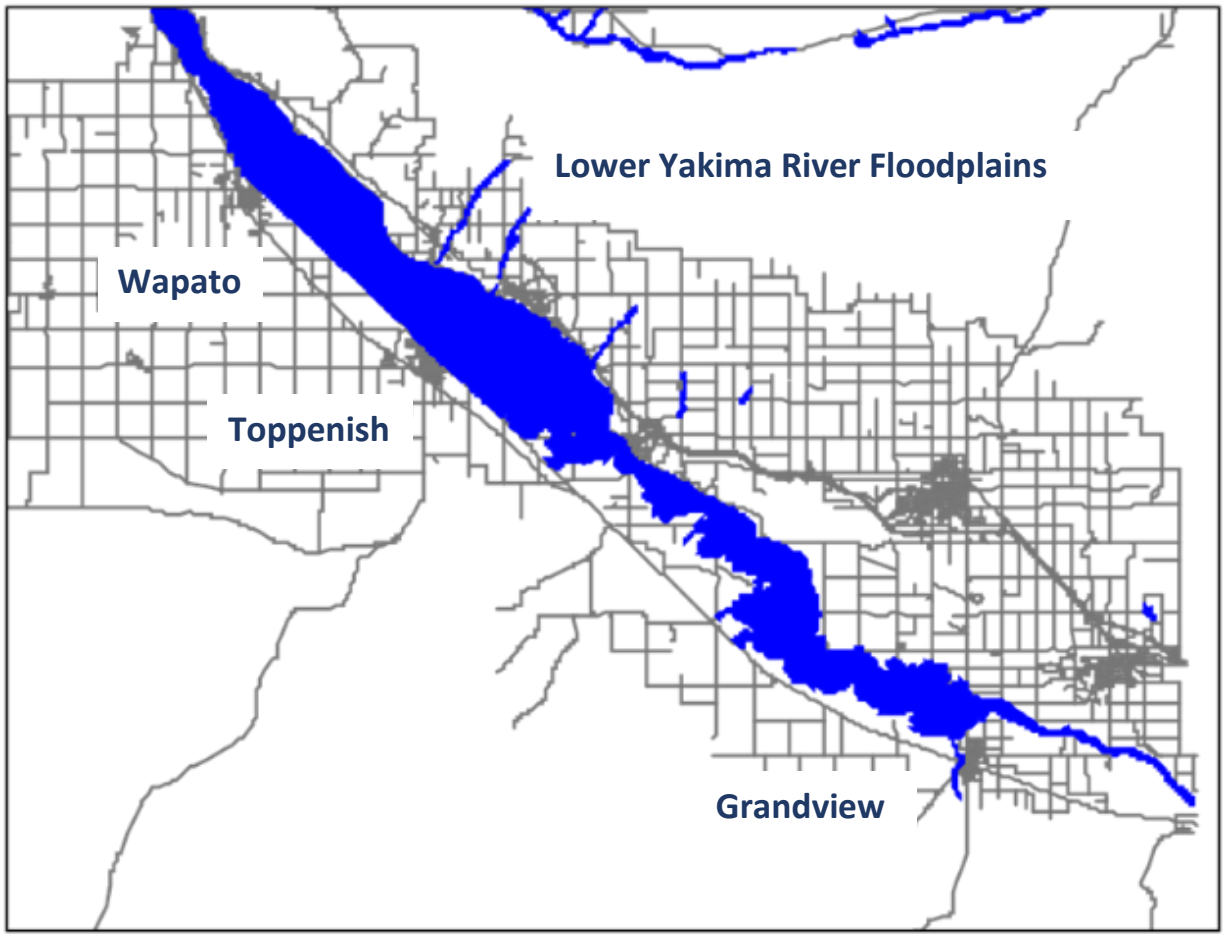
D. Project Status

D1. Recent Project Work: The 2018 Cowiche Addendum to the plan was developed and adopted by the County and the City to encompass Cowiche overflow flooding of the City

D2. Near Term Work: Implement CFHMP Projects and Recommendations through grant applications and cooperation

D3. Major Milestones & Dates:
2004 - Initiated Update of 1998 Upper Yakima CFHMP.
2005 - SEPA
2007 - Initial draft of Upper Yakima CFHMP Update
2007 - Adopted by County of Yakima plus cities of Selah, Union Gap and Yakima
2010 - Adopted by the Department of Ecology adoption.
2014 - Completed HAZUS study providing economic flood loss data for entire county.
2015-2017 - Section 1135 Feasibility Study.
2017 - Initiated CFHMP Amendment for Lower Cowiche Creek flooding within the City of Yakima.
2018 - CFHMP Addendum for Cowiche Creek adopted by County and City.
2019 - Fund recommendations and successful grant application to FbD & YBIP for Naches-Cowiche Phase I.
2020 & 2022 – Application to FbD for Naches-Cowiche Phase II. Application to RCO for NCCA resiliency.

Lower Yakima CFHMP



Toppenish 1933

Toppenish 1996

FCZD Project Status
May 2022

Scheduled Planning Project (CFHMP) **Upper Yakima**

A. Project Title: Lower Yakima CFHMP (FC3248) T.H.

B. FCZD Role: Lead
Cooperators: Towns of Toppenish, Wapato and Granger, Yakama Nation, WA Fish and Wildlife, WA Ecology and other stakeholders

C. Brief Project Description:

Need: A Comprehensive Flood Hazard Management Plan for the Lower Yakima River Valley to contain recommendations for decreasing flood risks in this flood-prone area. Extensive flooding and damages have occurred in this area, most recently 1996 and 1997. Urban growth in the area is affected by these issues.

Goals: Foster strong partnerships and cooperation among the towns of Toppenish, Wapato, Yakama Nation and Yakima County to provide a flood plan containing comprehensive solutions that reduce flood risks. The plan will collect input from a wide range of public, agency and other stakeholders to ensure community flood concerns are addressed in the recommendations.

Benefits: Plan will be created through a Citizen Advisory Committee with broad membership including residents, communities and agencies and be submitted to Ecology for approval. Plan will be a comprehensive flood guidance document that will provide locally generated, practical recommendations to reduce flood risks in the study area, by utilizing a multi-objective approach. This approach will decrease permitting time, increase local support and increase funding opportunities for projects recommended in the plan.

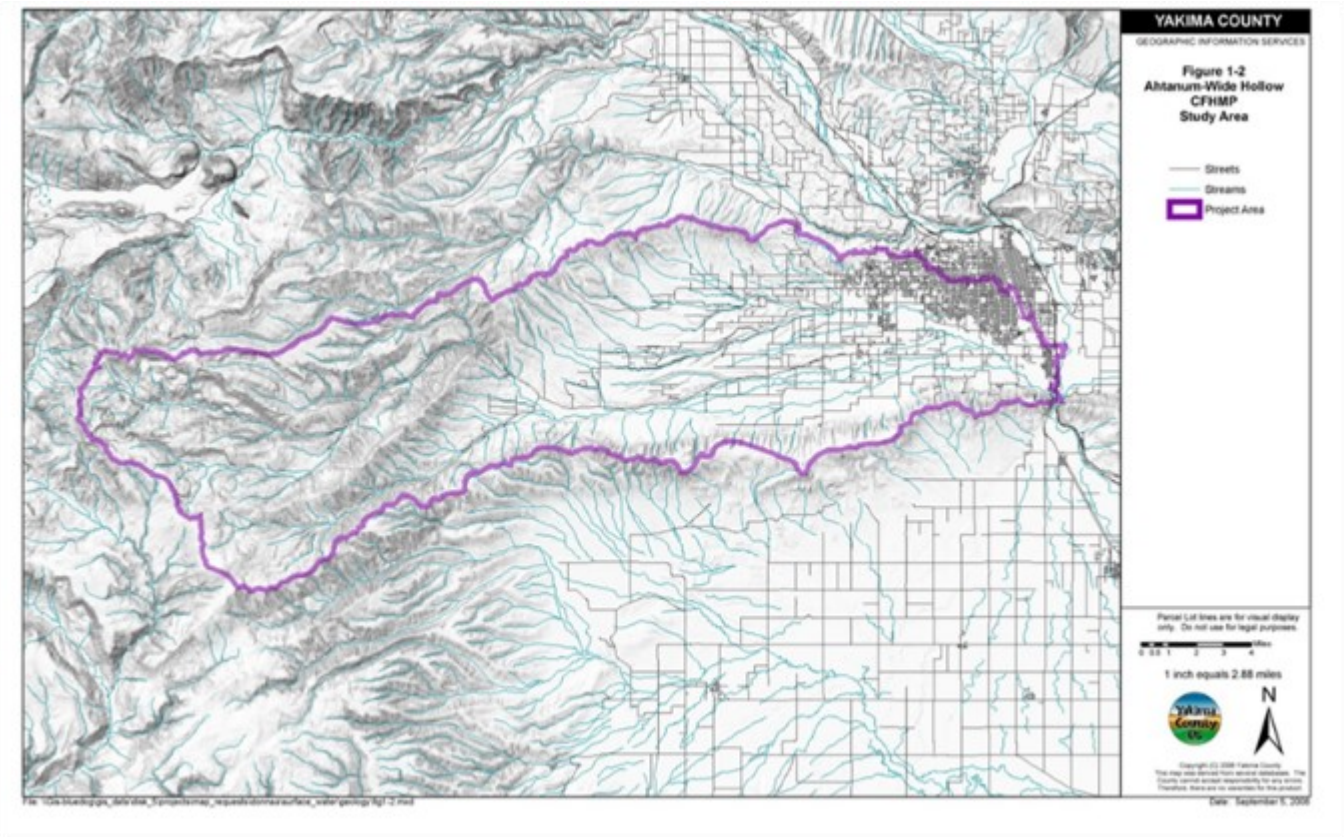
D. Project Status

D1. Recent Project Work: This CFHMP is the fourth of the four planned for the County prior to an executive County CFHMP. Discussions on plan content have been ongoing since 1998. A grant application to the Flood Assistance Application Program to initiate the plan was delayed awaiting when FEMA flood-mapping, and consensus with Yakama Nation. FEMA conducted Discovery process with communities and the Nation. FCZD has developed a 2D model of Lower Valley using high resolution LiDAR to assess hydraulic characteristics and floodplain function while addressing 5 sites of interest.

D2. Near Term Work: Modeling is the first step in revising FEMA NFIP maps and moving towards a solution orientated CFHMP. Discussion with communities and Yakama Nation on plan scope indicate CFHMP will not start until updated completion of assessment modeling and Lower Valley FEMA Flood Maps become available.

D3. Major Milestones & Dates:
1998 - CFHMP delayed awaiting tools.
2015 - FEMA high resolution LiDAR mapping
2017 - FEMA Discovery Process
2018 - Conceptual Modeling by FCZD of Lower Valley and 5 sites of interest.
2019 - Complete conceptual modeling, assessment, then mapping, then CFHMP in 2-3 years.
2020 - Discussions with Nation on timing of Lower Valley CFHMP.
2021 - FEMA mapping kickoff meeting held with jurisdictions

Ahtanum-Wide Hollow CFHMP (West Valley)



Flooding at road crossings

FCZD Project Status
May 2022

Completed Planning Project (CFHMP) — West Valley

A. Project Title: Ahtanum-Wide Hollow CFHMP (West Valley) (FC3110) — T.H. (D.W.)

B. FCZD Role: Lead

Cooperators: Yakama Nation, Cities of Yakima and Union Gap, WDRS, WA Ecology and other stakeholders, Advisory Committee including – property owners, business owners.

C. Brief Project Description:

Need: Develop a Comprehensive Flood Hazard Management Plan for these two flood-prone watersheds that will contain recommendations for decreasing flood risks. These watersheds are experiencing rapid urban growth into flood-prone areas, in addition to existing flood issues.

Goals: Identify economically viable long-range and broad-based solutions to flooding problems and short-term needs for projects. Foster strong partnerships and cooperation among the Yakama Nation, Union Gap, Yakima and Yakima County to reduce flood risks. The plan collected input from a wide range of public, agency and other stakeholders to ensure flood concerns are fully addressed in the recommendations. The final CFHMP was submitted to Ecology and approved in 2013 in order to allow increased funding sources for plan recommendations including projects.

Benefits: Plan is a comprehensive flood guidance document providing locally generated, practical recommendations based on economic constraints to reduce flood hazards while benefiting fish and wildlife resources.

D. Project Status

D1. Recent Project Work: Adoption of plan by County, City of Yakima and City of Union Gap, and the approved by the Department of Ecology. Implement recommendations.

D2. Near Term Work: Implement recommendations - See Activities and Projects within this document for West Valley.

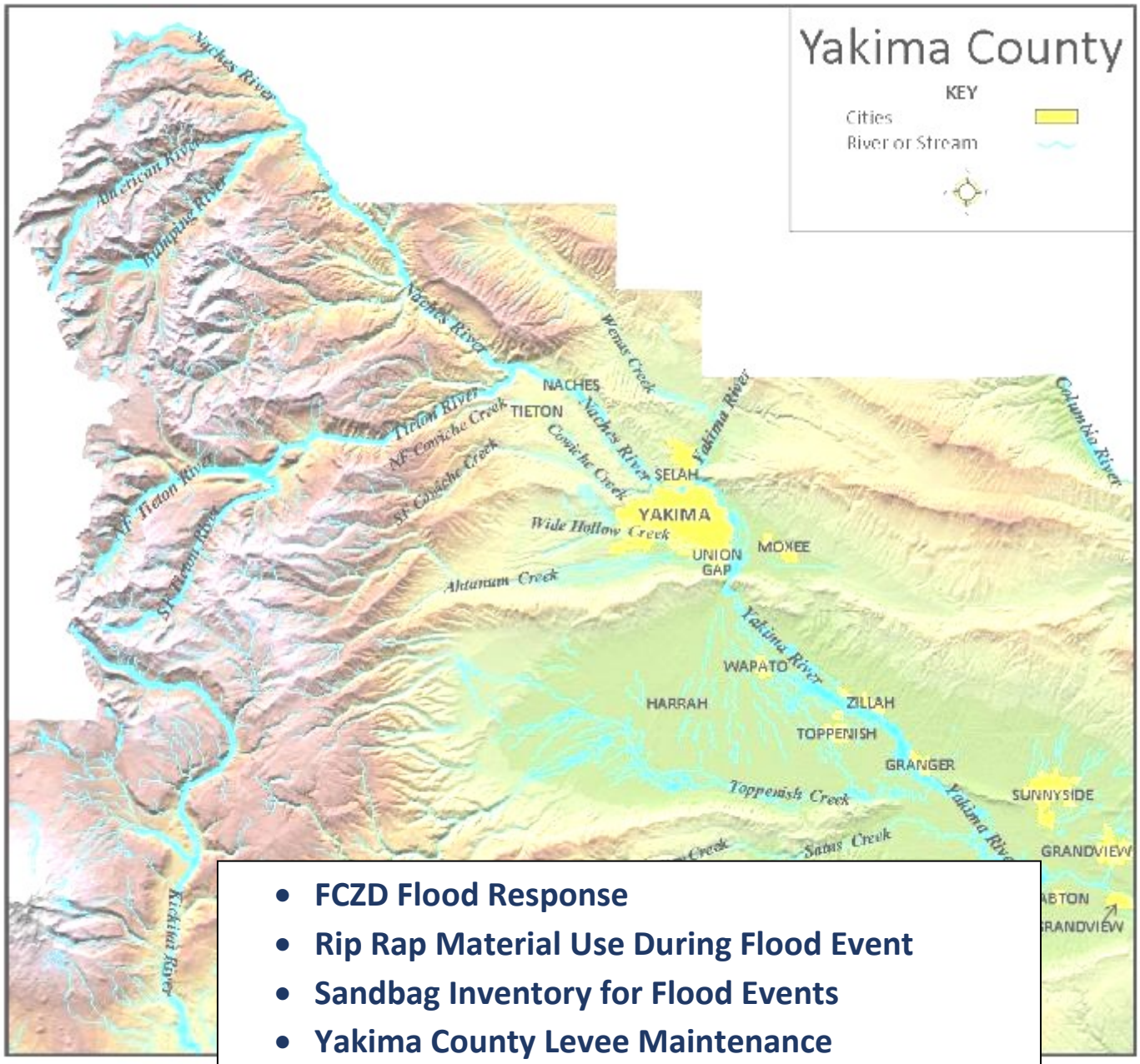
D3. Major Milestones & Dates:

2003 - FCAAP Grant $165k.
2004 - Initiate work on CFHMP.
2006 - Citizen Advisory Committee formed and set goals and objectives.
2009 - Draft Existing Conditions Report.
2010 - Revised FEMA Ahtanum and Wide Hollow work flood maps for comments.
2011 - Finalized CFHMP and sent to communities for pre-adoption study sessions.
2013 - Adoption by Yakima County, City of Union Gap, City of Yakima and the Department of Ecology.
2014 - Completed 10, 25, and 50-year mapping plus HAZUS study providing economic flood loss data for Ahtanum and Wide Hollow Creeks.
2015-2020 - FCZD completing pending studies on bridge capacities.
2020 - Recommendations to Planning & Roads in Yakima County and Cities of Yakima and Union Gap.
2021-2022 – Renew funding for Shaw Creek project. Continue vegetation projects.
2024 – Implement Shaw Creek project if funds are available.

~ This page intentionally left blank ~

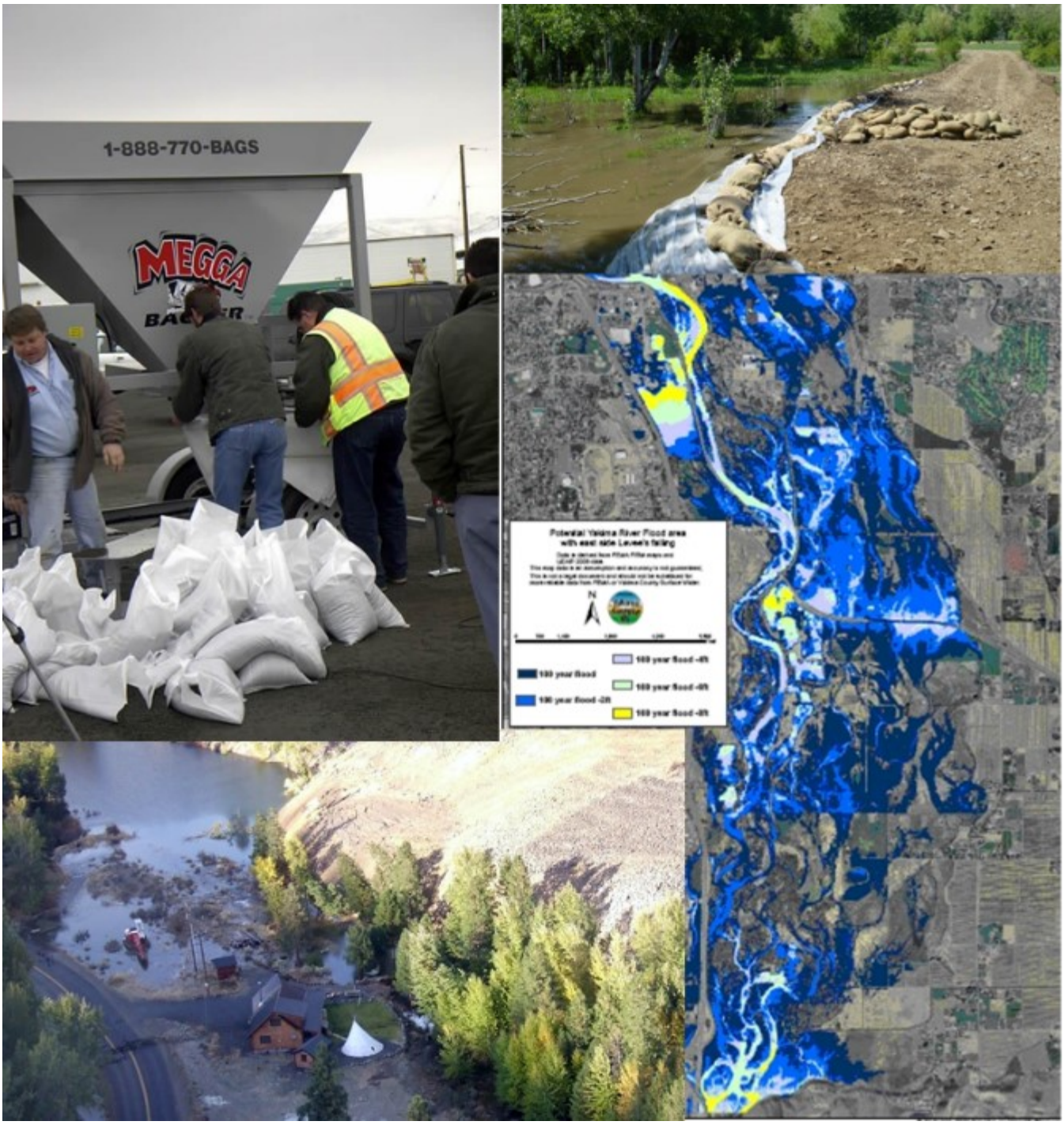
Section 3

Yakima County Flood Preparedness and Response



- **FCZD Flood Response**
- **Rip Rap Material Use During Flood Event**
- **Sandbag Inventory for Flood Events**
- **Yakima County Levee Maintenance**
- **Naches River Levee Maintenance**
- **Bridge Channel Maintenance**
- **Nile Slide Relocation Monitoring**
- **HAWBS Vegetation Management**

FCZD Flood Response Planning



FCZD Project Status
May 2022

Annual Flood Preparedness and Response **West Valley**

A. Project Title: FCZD Flood Response (FC3224) T.H. (D.W.)

B. FCZD Role: Lead
Cooperators: Emergency Management, County Department & Cities

C. Brief Project Description:

Need: The FCZD provides field gathered risk-based input to communities, departments and agencies before, during, and after emergency and non-emergency flood events, specifically to County Roads and Emergency Management. The FCZD documents and inventories flood extents and damage for a range of flood frequencies to allow future mitigative actions and appropriate responses.

Goals: Reduce or avoid flood risks to the public, private property and public infrastructure by anticipating flood effects that could lead to an emergency and adopting site-specific mitigative actions during floods. Provide technical input to local jurisdictions regarding current and anticipated flood risks in prevention of loss of life, property and public infrastructure damage immediately prior to, during and after flood events.

Benefits: Improved safety, reduced flood damage cost for public and private properties and directed structural flood fight actions. Flood documentation provides ground-truthing for new flood maps, photos provide examples for public outreach and data needed for successful grant applications

D. Project Status

D1. Recent Project Work: Drafted a Flood Response Plan specific to FCZD Staff. Provide Flood Control Zone District (FCZD) internal flood response roles, responsibilities and organization from flood warning to flood recovery. Provide support to the County, the Yakima Valley Office of Emergency Management, and others, including Dispatch Officers and Search and Rescue. The Plan ensures efficient use of limited FCZD staff resources, an appropriate response level for varying event intensities; and effectively integrates the FCZD into an Incident Command System when used by other agencies during large responses.

D2. Near Term Work: Annual Flood Watch. Finalize and train staff on the FCZD Response Plan. Investigate best methods to contract or otherwise acquire aerial photos and document high water marks and flood extents during flood events.

D3. Major Milestones & Dates:
2003 - County-wide small stream flooding.
2005 - Two thunderstorms produced flooding in and around Yakima and Sunnyside.
May & Nov 2006 - Mainstem river flooding.
Jan 2009 - Yakima River mainstem flood.
Oct 2009 - Nile Landslide emergency response. Use of FCZD emergency funds.
Jan 2010 - Yakima River flooding.
May 2011 - Naches River (Nile area), Rock Creek and Yakima River flooding.
March & July 2012 - Small stream flooding including Sunnyside due to heavy rain.
2013 - Finalize FCZD Flood Preparedness Plan and train staff.
2014 - Conducted annual drill and plan/map review.
2016 - Contracted with GIS to obtain aerial photos during flood events. Cowiche Creek flooding overflows into City.
2017 - Cowiche flood overflows into city. Performed emergency flood repairs on N-7 Levee.
2021 & 2022 **–Updated response plan. Coordinated roles and processes with new YVEM staff.**

Rip-Rap Material for Use During Flood Event

Rip-Rap Stockpile

Rip-Rap Repair at NC Machinery Levee January 2009

FCZD Project Status
May 2022

Annual Flood Preparedness and Response **County-Wide**

A. Project Title: Rip-Rap Material for Use During Flood Event C.E.

B. FCZD Role: Lead
Cooperators: Army Corps of Engineers (USCOE)

C. Brief Project Description:

Need: Rip-rap for use on levees, floodgates, bridges or roads for protection during floods. The amount purchased (4,000 cubic yards) and size specification of the rip-rap was recommended by the USACE.

Goals: Flood protection resources for levees during an emergency to prevent catastrophic failures.

Benefits: Prevent expensive flood damage and recovery.

D. Project Status

D1. Recent Project Work: We have purchased 4,000 cubic yards of rip-rap and placed it in the Summitview Pit as a baseline volume.

D2. Near Term Work: November 2020 Rip-Rap Inventory as follows:
6,000 cubic yards stored at Summitview Pit Site ranging in size from Class ll - V
2,000 cubic yards stored at Terrace Heights Landfill

D3. Major Milestones & Dates:
Use during floods.

Sandbag Inventory for the Flood Event

White Polypropylene Sand Bags

Plain Burlap SandBags

Sandbags used along Ahtanum Creek during the 2006 flood to prevent channel avulsion.

FCZD Project Status
May 2022

Annual Flood Preparedness and Response **County-Wide**

A. Project Title: Sandbag Inventory for Flood Events C.E.

B. FCZD Role: Lead
Cooperators: Yakima Valley Emergency Management

C. Brief Project Description:

Need: Have sufficient sandbags for use in a flood emergency to combat floods; for use on levees, floodgates, bridges or roads.

Goals: Store, inventory and replace old bags.

Benefits: Prevent expensive flood damage and recovery.

D. Project Status

D1. Recent Project Work: We have purchased 6,000 sandbags in 2006 which replaced the old 5,500 sandbags. The life span for well-maintained sandbags is around 10 years.

D2. Near Term Work: Sandbag inventory for 2019 floods:

a. Yakima County stored sandbags – 28,000
Yakima County stored sandbags in our Maintenance and Operation Complex at 1216 S 18th Street:
Nylon Sandbags – 25,000 (Approximately 25 bundles at 1,000 bags per bundle)
Burlap Sandbags – 3,000 (3 bundles at 1,000 bags per bundle)

b. Yakima Valley Emergency Management owned Sandbags – 75,000
YVEM sandbags were acquired during the 1996-97 flood event. They have been stored by the Yakima County Sheriff's Office and maintained by the YSO SAR Program. Their current location is a shipping container at 1822 S. 1st Street in Yakima.

D3. Major Milestones & Dates:
Use during floods.

Bridge Channel Maintenance

Obstructions removed upstream of bridge Wide Hollow Creek

Downstream of bridge Wide Hollow Creek

FCZD Project Status
May 2022

Ongoing Flood Preparedness and Response **Upper Yakima**

A. Project Title: Bridge Channel Maintenance (RM514) E.H. (L.S.)

B. FCZD Role: Lead

C. Brief Project Description:

Need: Most bridges within the County were constructed prior to the NFIP 100-year flood mapping and without complete knowledge of their potential impact to flooding. This flood potential is exacerbated as agricultural lands are converted to urban where floodplain inundation is more costly.

Goals: Provide inventory of problematic locations, identify capacity from existing studies. Inspect bridges for debris build-up, schedule equipment for removal.

Benefits: Maximize the flood capacity conveyance of bridges until their future replacement using current hydrologic flow studies.

D. Project Status

D1. Recent Project Work: Hydraulic modeling of effects of cleaning sediment at eight bridges. Provided bridge cleanout guidelines that were incorporated in the A-WH CFHMP. Inventories and prioritized bridges in Ahtanum and Wide Hollow drainages.

D2. Near Term Work: Evaluate bridges on Wide Hollow and Bachelor Creeks. Evaluate bridges on streams and rivers within Yakima County for additional projects – discuss with municipalities.

D3. Major Milestones & Dates:

2009 - Wide Hollow Creek maintenance, annual surveillance and after floods on 76 city and county bridges.
2010 - Modeled gravel cleanout at eight bridges.
2011 - Bridge cleanout guidelines.
2011 - Clean out for two Wide Hollow bridges.
2012 - Evaluate clean out for Wide Hollow bridges.

After next flood – Bridge maintenance.
2013 - County inspects select bridges for sediment accumulation.
2018 - Complete West Valley inventory of problematic bridge inventory. Recommended replacements or excavations based on hydraulics.
2020 - Long range plan to be discussed with roads.
2022 - Revisit with new bridge engineer.

Yakima County Levee Maintenance

January 2016

July 2017

FCZD Project Status
May 2022

Ongoing Flood Preparedness and Response — Upper Yakima

A. Project Title: Yakima Federal Project & Y-9 Levee Maintenance & Repairs (FC3273) T.H.

B. FCZD Role: Co-Lead with Road Maintenance

C. Brief Project Description:

Need: To maintain structural integrity of both the USCOE PL84-99 County-sponsored Yakima Federal Project levees and non-Federal Marsh Road (Y-9) levee. The former was established in 1948 and the latter in 1970, then expanded in subsequent years. The levees provide flood protection to areas and structures behind them, including bridges and roads. With the request from the County, the USCOE provides a large percentage of financial assistance and staff for the design, permitting and construction of flood damage repairs under PL84-99.

Goals: Inspect, maintain and repair levees owned by Yakima County to ensure USCOE flood repair program coverage under PL84-99. Inspection and maintenance of these levees including the following: bank erosion, vegetation growth, caving of levee slopes, seepage, saturation areas or boils, accumulation of drift, condition of levee maintenance road, encroachments by culverts, closure structures, closure materials and drainage/irrigation structures. The FCZD provides long term management of the facilities including needed configuration changes in cooperation with USCOE.

Benefits: Reduce flood damage to structures and high-value land behind levee.
- Maintain USCOE financial, design and construction support.

D. Project Status

D1. Recent Project Work: Following the December 2015 flood, Yakima County staff identified flood damage in six locations along the Federal Project levees. USCOE completed repairs in August 2017. Additional damage to the Federal Project occurred during the 2016-2017 flood season along the Naches River, and were rehabilitated in 2018.

D2. Near Term Work: Continue periodic inspection and maintenance of the levees by Yakima County Roads Department. Yakima County requests USACE to intervene, when necessary, under PL84-99.

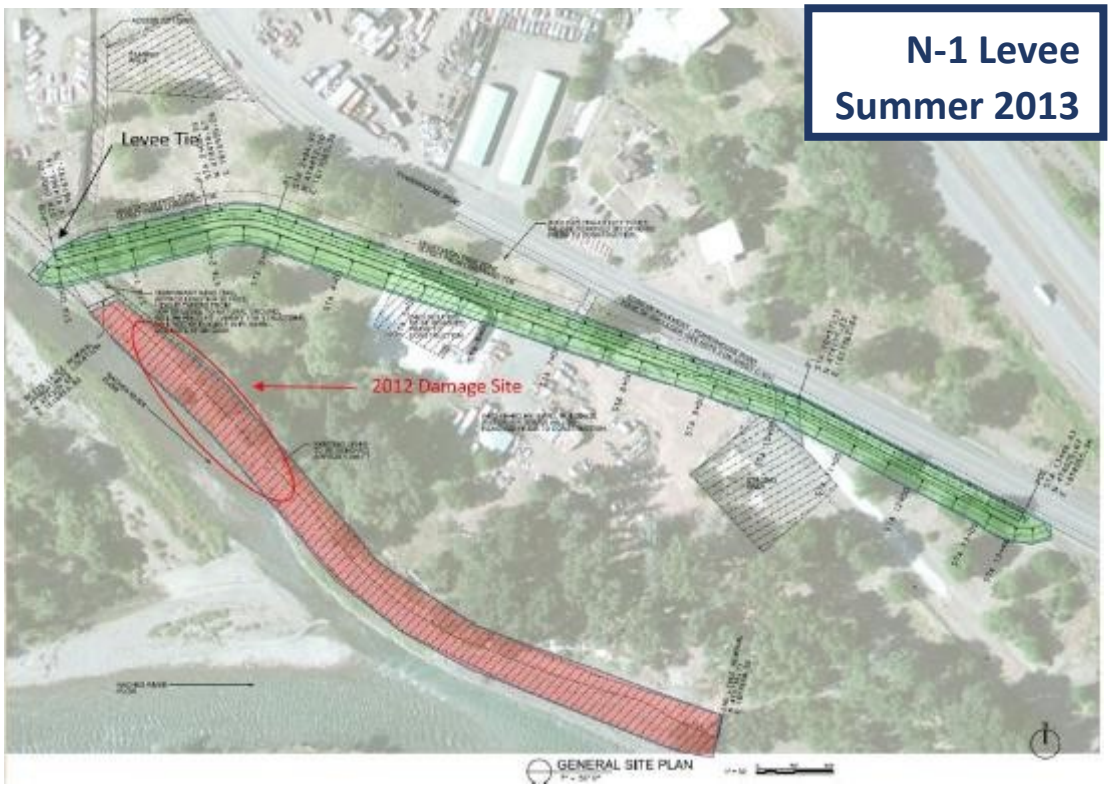
D3. Major Milestones & Dates:

1996 & 1997 - Flood fighting and damage repair at multiple locations.
2011 - Flood damage repairs near NC Machinery.
2012 - Flood damage repairs at six locations including Sportsman Park Setback. USCOE Routine Inspection on all PL84-99 levees. Federal Project Levee screening and risk evaluation.
2013 - Monitoring and annual maintenance.
2014 - USCOE Routine Inspection of Federal and non-federal levees. Y-9 Levee screening and risk evaluation.
2015 - Monitoring, annual maintenance, 5-year culvert inspections.
2016 - USCOE 5-yr Periodic Inspection on Federal Project.
2017 - Flood damage repairs at six locations on Federal Project levees. USCOE Routine Inspection on Federal Project Levees. Setback of Marsh Road levee (Y-9) completed.
2020 - 5-year culvert inspections. Anthropogenic damage repair.
2021 - Flood damage at 2 locations near right bank stations 121+00 and 138+50. Repaired in 2022 by USCOE.

Naches River Levee Maintenance

N-1 Levee
Spring 2012

N-1 Levee
Summer 2013



FCZD Project Status
May 2022

Ongoing Flood Preparedness and Response — Upper Yakima

A. Project Title: Naches River PL84-99 Levee Maintenance & Repairs (FC3647) T.H.

B. FCZD Role: Co-Lead with Road Maintenance
Cooperators: US Army Corps of Engineers (USCOE)

C. Brief Project Description:

Need: To maintain structural integrity of the County-sponsored USCOE PL84-99 non-Federal levees, initially established in 1948 and expanded in subsequent years assure the provision of flood protection to areas and structures behind them, including bridges and roads. With the request from the county, the USCOE provides a large percentage of financial assistance and staff time for the design and construction necessary to rehabilitate in-place or to setback levees under PL84-99.

Goals: Inspect, maintain and repair levees owned by Yakima County to ensure USCOE flood repair program coverage under PL84-99. Inspection and maintenance of these levees including the following: bank erosion, vegetation growth, caving of levee slopes, seepage, saturation areas or boils, accumulation of drift, levee maintenance roads, encroachments near culverts, closure structures, closure materials and drainage/irrigation structures. The FCZD provides long term management of the facilities including needed configuration changes in cooperation with USCOE.

Benefits: Reduce flood damage to structures and high-value land behind levee.
- Maintain USCOE financial, land certifications, design and construction support.

D. Project Status

D1. Recent Project Work: Following the 2016-2017 flood season, Yakima County and USCOE identified four Naches PL84-99 levees with erosional damage. Setback in 2018 of damaged portions of N-2 (McCormick) and N-7 (Naches) levees. N-11 (Rock Creek) levee was repaired, N-13 (Nile) repair completed 2019.

D2. Near Term Work: Continue periodic inspection and maintenance of the levees by Yakima County Roads Division. When necessary, Yakima County makes a request to the USCOE to repair flood damages under PL84-99.

D3. Major Milestones & Dates:

2006 - Town of Naches (N-7) and Rambler's Park (N-1) repairs.
2011 - Flood repairs on Rock Creek (N-11)
2012 - USCOE flood fight Rambler's Park (N-1). USCOE Routine Inspection. County monitoring, inspection and annual maintenance.
2013 - Completed setback portion of Rambler's Park (N-1).
2014 - USCOE Routine Inspection including screening analysis and risk evaluation.
2015 - USCOE continues screening analysis and risk evaluation.
2016 - County monitoring, inspection, and annual maintenance.
2017 - USCOE Routine Inspection. N-7 levee flood damage repaired by County. Additional damages to four Naches levees confirmed by USCOE.
2018 - Setback and repairs of N-7 and N-2. Repairs to N-11.
2019 - Repairs to N-13
2020 - Vegetation stewardship at N-2.
2021 - Weed management on N-7 and N-2.
2022 - **Pre-emergent and emergent treatment at N-7 and N-2.**

SR410 -Nile Slide Relocation Monitoring

FCZD Project Status
May 2022

Ongoing Flood Preparedness and Response **Upper Naches**

A. Project Title: Nile Landslide Channel Relocation Monitoring (FC3378) T.H.

B. FCZD Role: Lead
Cooperators: WSDOT, WDSW, WSDNR, USFWS, USFS, WSDOE

C. Brief Project Description:

Need: On October 11, 2009, a landslide occurred at SR 410 RM 22.3 (T 15N, R15E, SEC.2) on the Naches River in Yakima County. The landslide was a rotational slump, displacing 16 million cubic yards, obliterating SR 410 for over a quarter mile, destroying several houses, and completely blocking the Naches River channel pushing flows into the floodplain for over a half-mile. Emergency work was required prior to flood season to re-establish a stable, naturally functioning channel. This was completed Dec. 2009. The new channel allowed stabilization of the slide and design and construction of the new SR 410 in the valley.

Goals: To ensure continued road access to 600 homes located upstream and protection of downstream structures (Nile Road and City of Yakima Water Treatment Plant). This project continues monitoring and stabilization of the new channel.

Benefits: Reconnection of State Highway system. Reduced or eliminated downstream effects from major landslide.

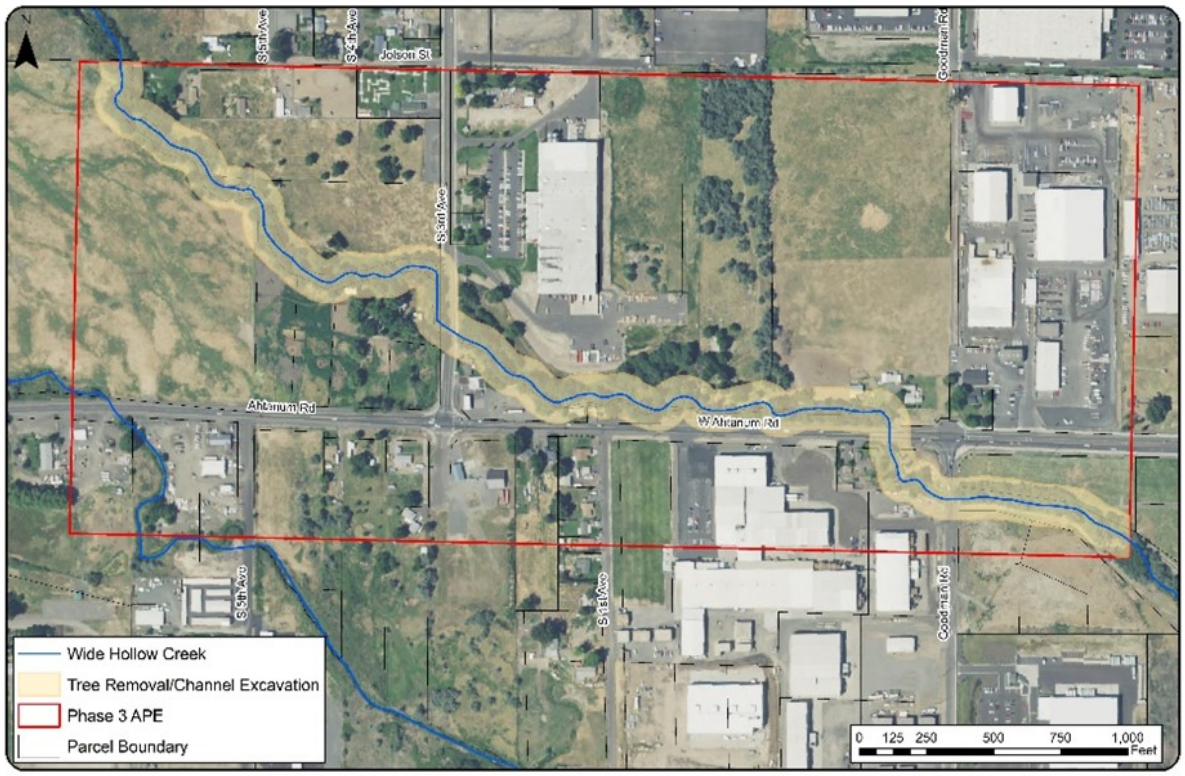
D. Project Status

D1. Recent Project Work: Worked with WSDOT on channel and SR410 relocation in 2009. Monitor and resurvey channel roughness components after flood season.

D2. Near Term Work: Monitor this location during winter and spring flood seasons.

D3. Major Milestones & Dates:
2009 - Built new river channel with WSDOT.
2010 - Monitor new channel during spring and summer flood season.
2010 - Fall plantings.
2011 - Major flood in May re-graded constructed channel. Permit and WSDOT design for new SR410 complete.
2012 - Re-construction of SR410, begin implementation of long-term management of channel.
2013-2016 - Monitor channel changes.
2016 - NFIP model of reach created.
2021 - NFIP model and maps become effective. WSDOT quit-claimed landslide properties back to FCZD.

HAWBS channel Vegetation Management



FCZD Project Status
May 2022

Ongoing Flood Preparedness Project YAPN 10-017 **West Valley**

A. Project Title: HAWBS Channel Vegetation Management – Demonstration Projects (FC3332) L.S.

B. FCZD Role: Lead
Cooperators: WDFW, Ecology, Yakima County Critical Areas, Landowners

C. Brief Project Description:

Need: Crack willow dominates the riparian zones (banks) of Hatton, Ahtanum, Wide Hollow, Bachelor and Spring Creeks. Crack willow debris and extensive root masses reduce the volume of water that can be contained within the streams and thereby producing unnecessary flooding during minor flood events. Crack willow's distinctive red root masses also smother the gravel stream beds that might provide fish habitat.

Goals: Identify flooding areas that impact transportation routes, homes and businesses. Remove crack willows and debris to increase channel capacity to contain small flood events. Establish desirable plant species in riparian areas. Establish monitoring program that includes photo points, LWD counts and vegetation transects.

Benefits: Reduction of maintenance costs for County and landowners along urbanized streams. More diverse and resilient riparian habitats which provide multiple benefits and lead to natural succession.

D. Project Status

D1. Recent Project Work: Working with Washington State Department of Ecology, the Washington Department of Fish and Wildlife, and the state/local Noxious Weed Board to develop a strategy for Salix fragilis removal and replacement strategies that can be easily permitted and rapidly implemented to replace shading function that large Salix fragilis trees provide.

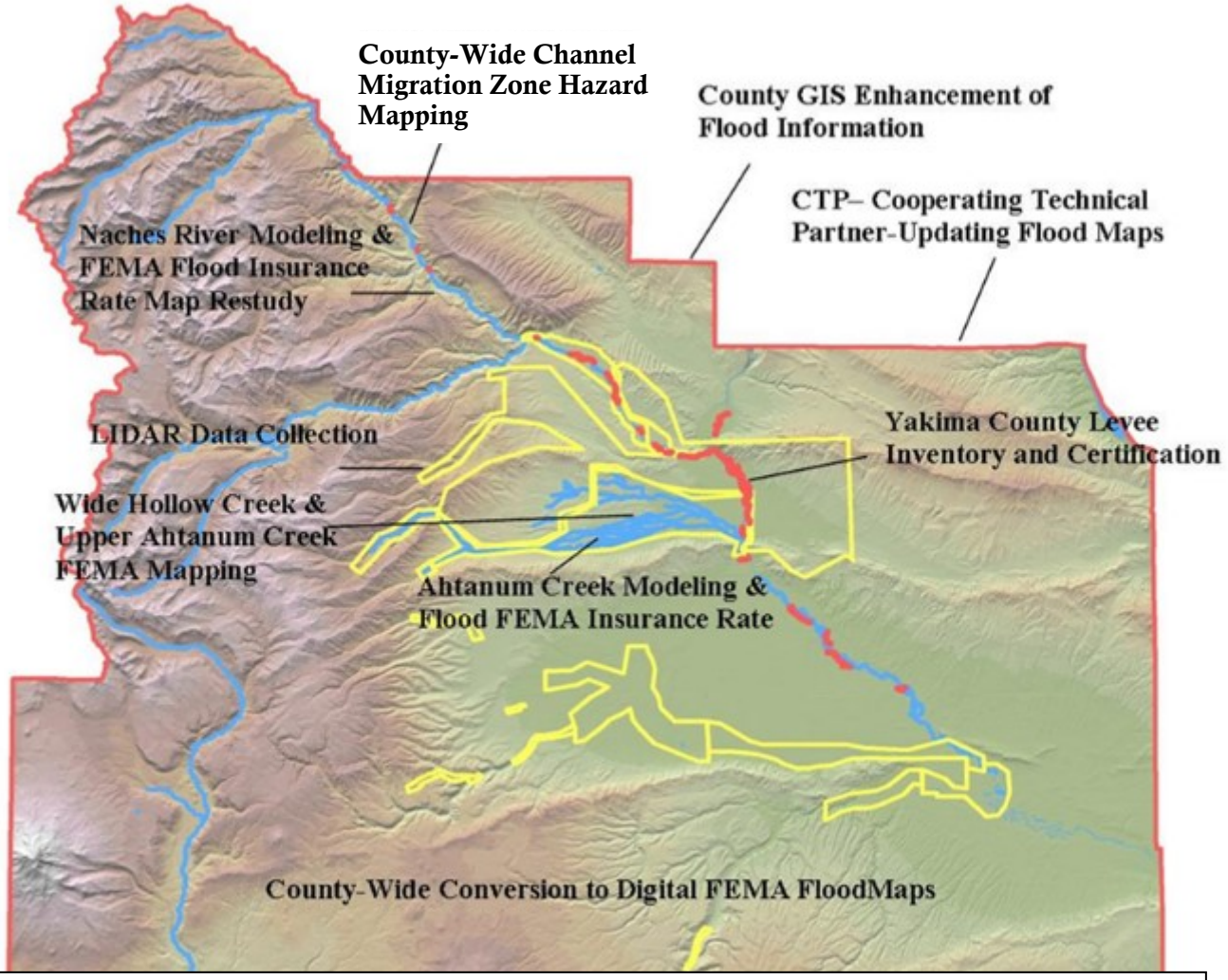
D2. Near Term Work: Develop designs for Phase 3. Start wetland permitting.

D3. Major Milestones & Dates:
2009 - Wide Hollow cleanup between 72nd & 80th Avenues.
2010 - Phase I Wiley City Demonstration Project completed.
2011 - Wide Hollow Creek 80th – 90th Avenues conveyance improvement project.
2013 - Phase II Wide Hollow Creek 96th Avenue bridge project planning.
2014 - Herbicide treatment and Wide Hollow tree felling west of 96th Ave at Phase II.
2015 - Planting and side channel excavation.
2019 - Completed cultural resource/archeology survey for phase 1, 2, and 3 along Wide Hollow.
2020 - Develop designs for Phase 3. Start wetland permitting.

~ This page intentionally left blank ~

Section 4

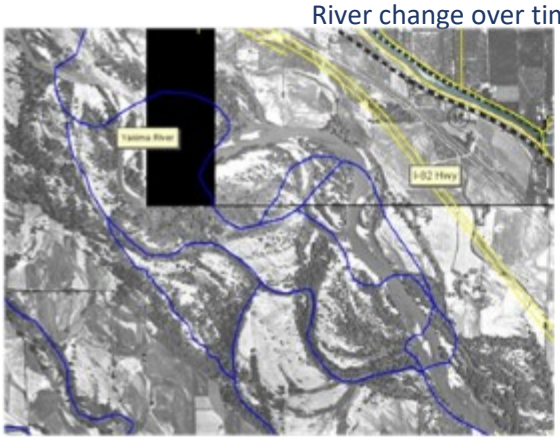
Enhance Flooding Problem Knowledge and Information

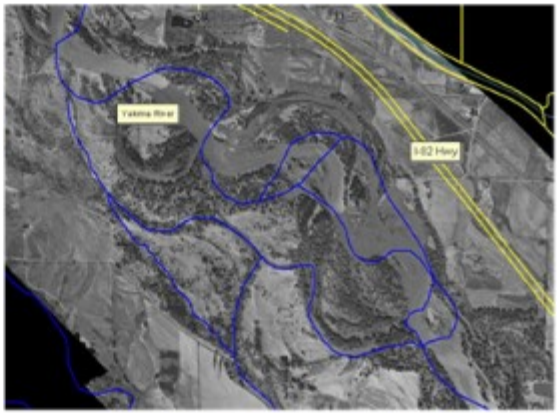


- County GIS Enhancement of Flood Information
- CTP – Cooperating Technical Partner – Updating Flood Maps
- LiDAR Data Collection in Yakima County
- Yakima County Levee Inventory, Certification and Accreditation
- Upper Naches River FEMA Flood Mapping and RiskMAP
- Cowiche Creek FEMA Flood Mapping and RiskMAP
- Crack Willow Inventory, Management and Nomination

County GIS Enhancement of Flood Information

River change over time upstream of Donald-Wapato Bridge

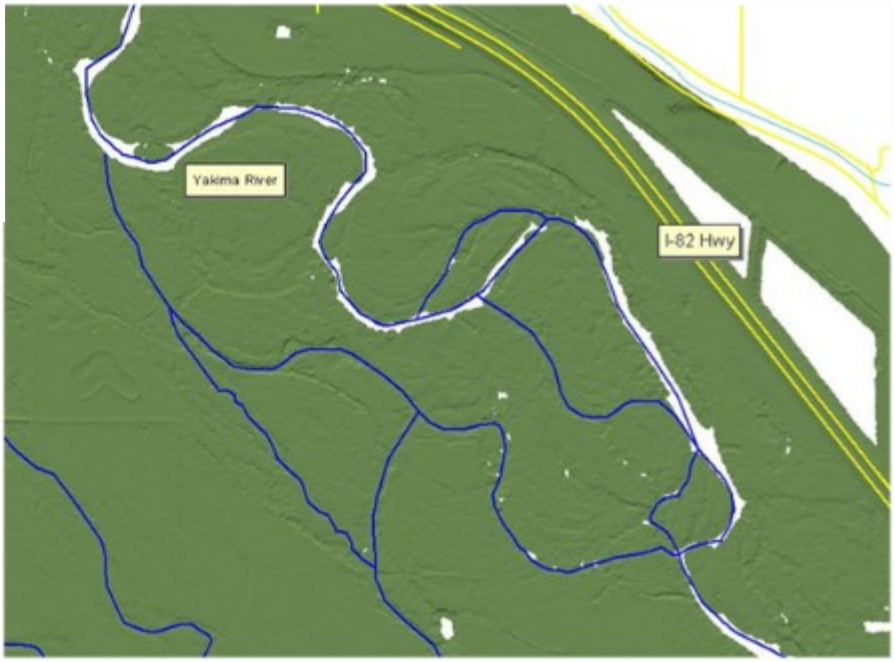




1947 Aerial Photo & 1971 Aerial Photo

2006 Aerial Photos

2000 LiDAR – Survey shows current and previous river channels.



FCZD Project Status
May 2022

Ongoing Planning Project **County-Wide**

A. Project Title: County GIS Enhancement of Flooding Information (FC200) T.H./C.E.

B. FCZD Role: Lead
Cooperators: Yakima County GIS Department

C. Brief Project Description:

Need: Increase GIS availability to flood-related information for risk analysis, planning, building, and project development.

Goals: Gather and place into the county GIS system numerous types of flood-related information: 1) Location files to track easements for levees; 2) Projects from geomorphic study to be used for flood hazard mitigation; 3) Projects from sediment transport study to be used for flood analysis and mitigation; 4) GIS data for HAZUS ; 5) 10, 25 and 50 year flood maps; 6) River corridor LiDAR; 7) Historic Flood Extents

Benefits: Ability to easily utilize applicable technology to analyze and determine mitigation actions to reduce flood risk. Increased ability to describe and explain flood risks and potential projects by using graphics made possible by GIS mapping information.

D. Project Status

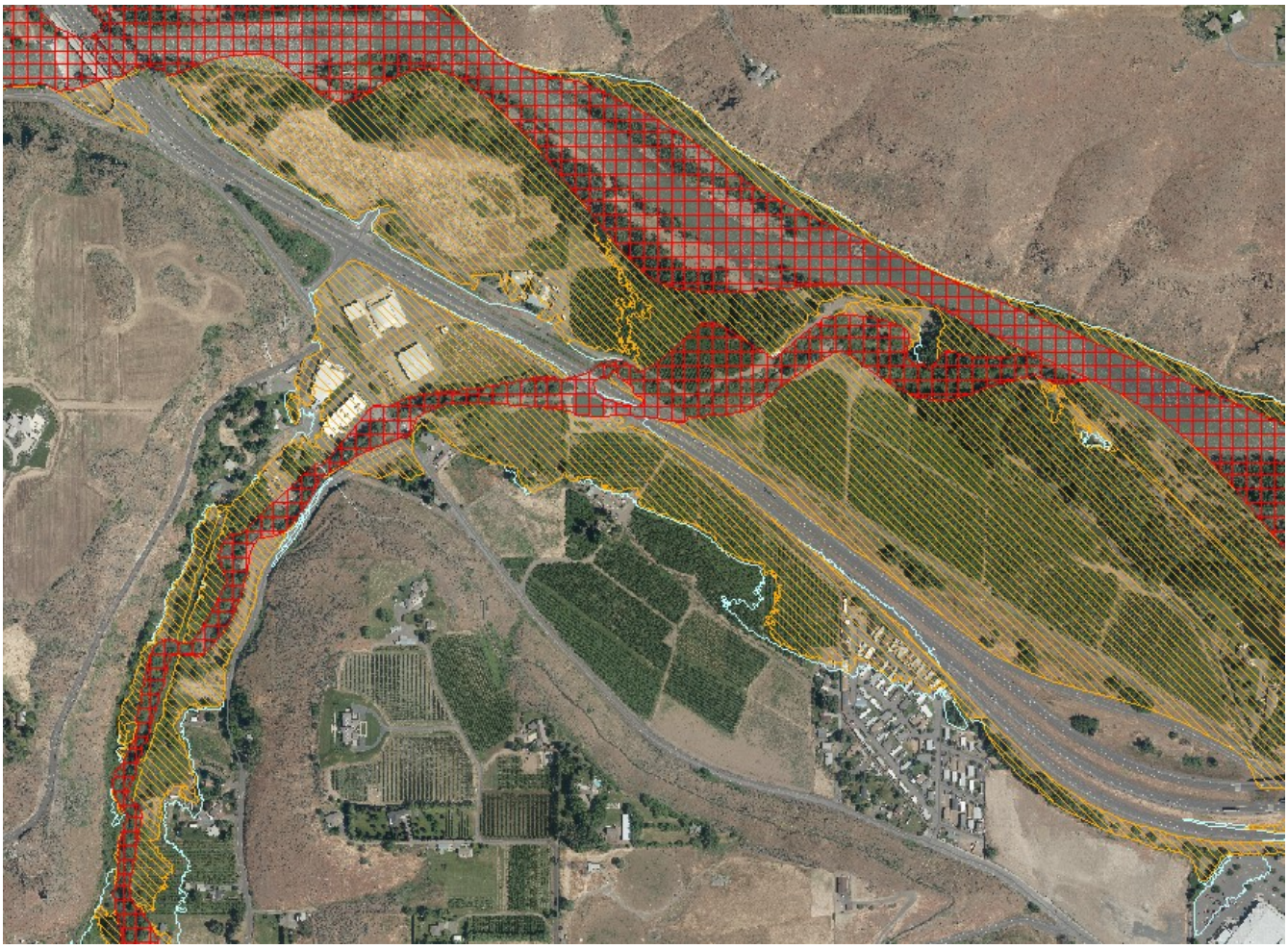
D1. Recent Project Work: Coordinate ESI data collection with lower Yakima River studies being done by FEMA. HAZUS database creation completed under FEMA grant. Established GIS layer for historic flooding.

D2. Near Term Work: Ongoing county-wide level database upgrade with newest LIDAR. Explore integration of flood photos spatially.

D3. Major Milestones & Dates:

2012 - 10, 25 and 50-year maps on Wide Hollow and Ahtanum basins.
2014 - 10, 25 and 50-year flood maps for 70% of county FEMA flood reaches.
2014 - Completed county-wide HAZUS damage assessment database.
2015 - Mapping of county-wide levee easements/ownership and levee crest survey information. Naches-Upper Yakima high resolution LiDAR.
2016 - Update GIS database with Lower Yakima FEMA LIDAR, and December 9, 2015 - Flood orthophotos of Naches River.
2018-2019 - Initiate GIS layer for post 1996 flood extents – flood of record.
2022 - Update FCZD owned property layer.

CTP Cooperating Technical Partner – Updating Flood Maps



– Naches-Cowiche Confluence –

Effective map showing new overflow path to City of Yakima.

FCZD Project Status
May 2022

Ongoing Planning Project **West Valley**

A. Project Title: CTP - Cooperating Technical Partner - Updating Flood Maps T.H. (D.H.)

B. FCZD Role: Lead
Cooperators: This is a FEMA Program, Ecology is also a CTP and cooperator with us

C. Brief Project Description:

Need: As of 2003, all Yakima County FEMA flood maps were over 20 years old, based on outdated technology and are very costly to redo.

Goals: Utilize the FEMA CTP program to leverage additional funding for updating our flood maps more quickly than FEMA would be able to do without a cooperator.

Benefits: Creation of flood hazard maps using new technology and data for more accurate mapping in conjunction with historical flooding patterns. Including unique, local features into FEMA flood maps, where needed. CTP membership also allows eligibility for credits in the Community Rating System Program

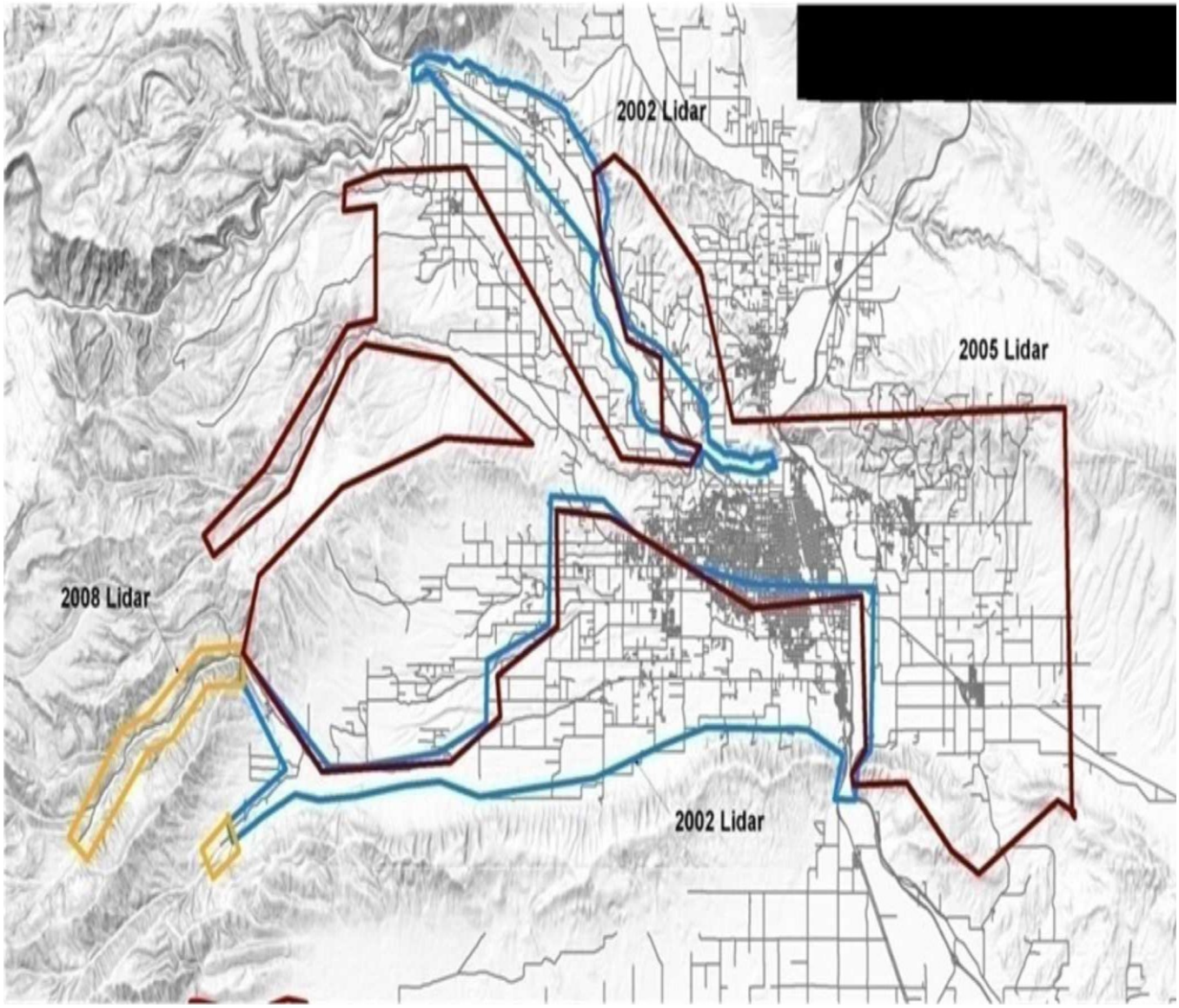
D. Project Status

D1. Recent Project Work: Implemented FEMA mapping grants. The FCZD reviewed Cowiche and Naches work maps.

D2. Near Term Work:. Upper Naches & Cowiche Letter of Final Determination executed in Spring of 2021. Effective Maps Fall 2021.

D3. Major Milestones & Dates:
2003 - CTP partnership agreement.
2004 - Mapping grant for Upper Ahtanum-Wide Hollow Creek.
2009 - County-wide DFIRM, including Lower Naches re-study.
2011 - Initiate Cowiche Creek and Upper Naches FEMA restudy.
2012 - Wide Hollow mapping to FEMA as a Physical Map Revision.
2013 - Ahtanum Preliminary FEMA Maps to community for review.
2015 - Final Ahtanum Maps.
2017 -2018 - Reviewed Naches and Cowiche FEMA work maps.
2019 - Preliminary FEMA NFIP Maps for Naches and Cowiche.
2021 - Final NFIP Maps for Upper Naches and Cowiche adopted October 21.

LiDAR Data Collection in Yakima County



FCZD Project Status
May 2022

Ongoing Planning Project **West Valley**

A. Project Title: LiDAR Data Collection in Yakima County C.E.

B. FCZD Role: Lead
Cooperators: Bureau of Reclamation, Yakama Nation, City of Yakima

C. Brief Project Description:

Need: Topographic data with contours in the form of LiDAR data is needed for different projects. The LiDAR data delivered includes: 2 ft and 6-inch Digital Elevation Model (DEM), 2-ft and 6-inch Contour data, bare earth point data and raw point collected data and is provided for various locations in the County, in particular, along the river corridors.

Goals: To collect topographic data in the form of LiDAR data and make available to communities and agencies through GIS.

Benefits: The LiDAR data is used in different projects which include flood mapping projects, flood mitigation projects and other capital improvement projects in the area. Instances of LiDAR data at the same location for different times indicate natural changes due to river processes and those constructed.

D. Project Status

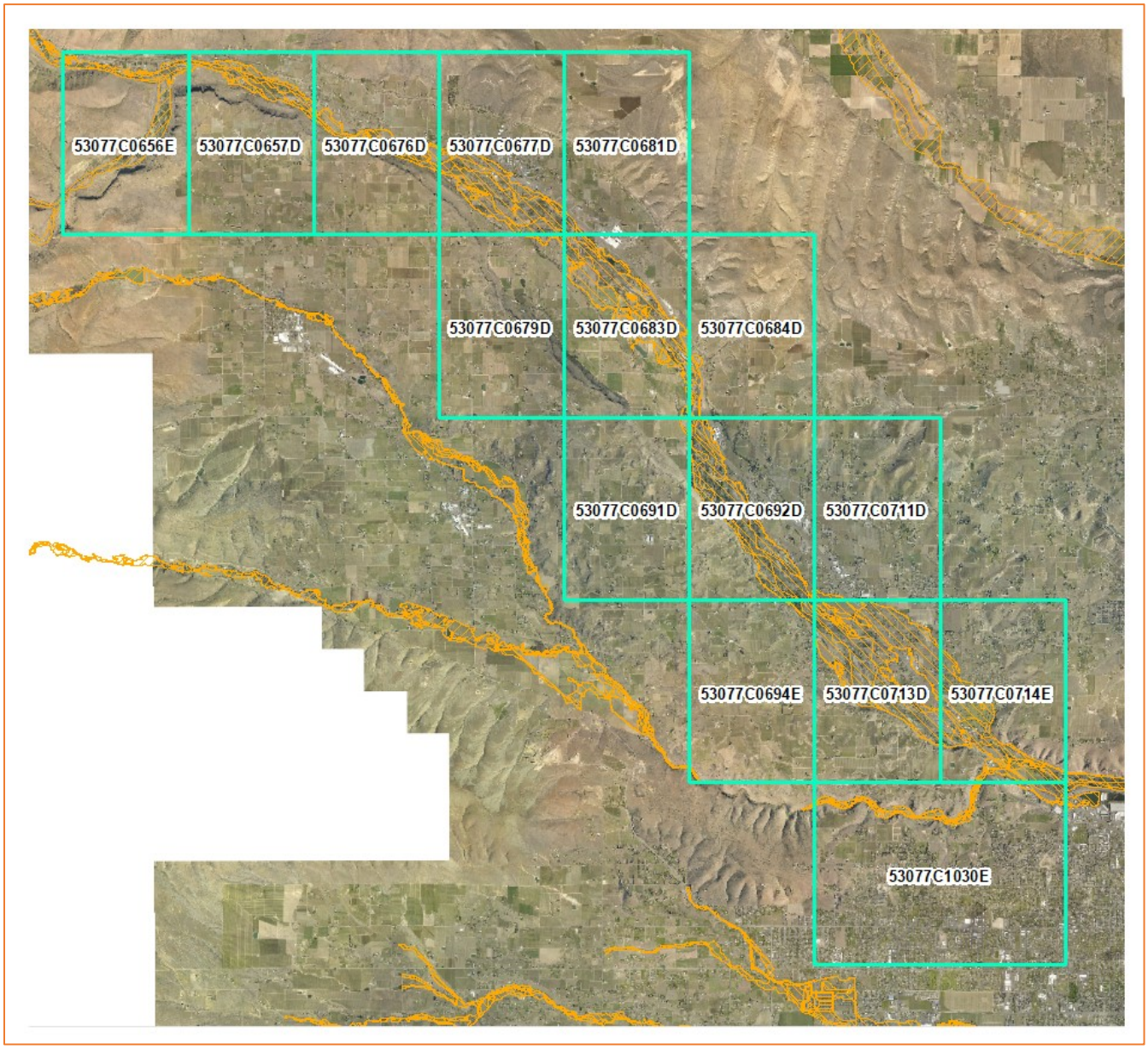
D1. Recent Project Work: Upper Naches LiDAR data in 2012. Lower Yakima high resolution LiDAR in 2014.

D2. Near Term Work: Lower Naches high resolution topobathy LiDAR USGS, 3DEP and FEMA compliant.

D3. Major Milestones & Dates:

2011 - LiDAR for Naches River
2012 - County datums associated with Upper Ahtanum.
2013 - High resolution LiDAR (6-inch contour intervals) flown by US Corps of Engineers (USCOE) from Naches Y downstream to Selah Gap. Funded by USCOE Continuing Authorities Program.
2015 - High resolution LiDAR flown by FEMA for Yakima River below Union Gap.
2018 - High resolution LiDAR flown by County for Lower Naches River and Yakima River above Union Gap.
2019 – High Resolution LiDAR & Bathymetry flown for Gap to Gap by USACE
2022 – High Resolution Bathymetry for lower Naches River collected. Blend with 2019 Eastern Cascades LiDAR.

Lower Naches River FEMA Mapping Update



FCZD Project Status
May 2022

Current Planning Project **Lower Naches River**

A. Project Title: Lower Naches River FEMA Mapping Update (FC3741) Y.L.

B. FCZD Role: Lead
Cooperators: Dept. of Ecology, Town of Naches, City of Yakima, County Planning, GIS and FEMA

C. Brief Project Description:

Need: Updated regulatory mapping following implementation of a multitude of flood risk reduction and restoration efforts have been implemented along the lower Naches River which have significantly lowered water surface elevations and improved natural processes. Regulatory modeling platform using open-source software to provide familiarity and equity of use across a broad range of users. The above is needed prior to updating the lower Naches River CFHMP, originally completed in 2005.

Goals: Update annual chance exceedance flows with 15 years of new data. Collect contemporary topographic and bathymetric data following reach scale project implementation and prior to the removal of Nelson Dam. Convert the existing effective FIS model to HEC-RAS and make necessary adjustments to better reflect current conditions. Update FIRMs through the LOMR process.

Benefits: Provide open-source FIS model and maps to allow for wise and consistent future floodplain management policies and investments. Share topo and bathymetric data with partners for potential future studies or advanced 2D modeling. Updated mapping is expected to provide a near immediate and significant financial benefit to hundreds of residences in the study area when maps become effective.

D. Project Status

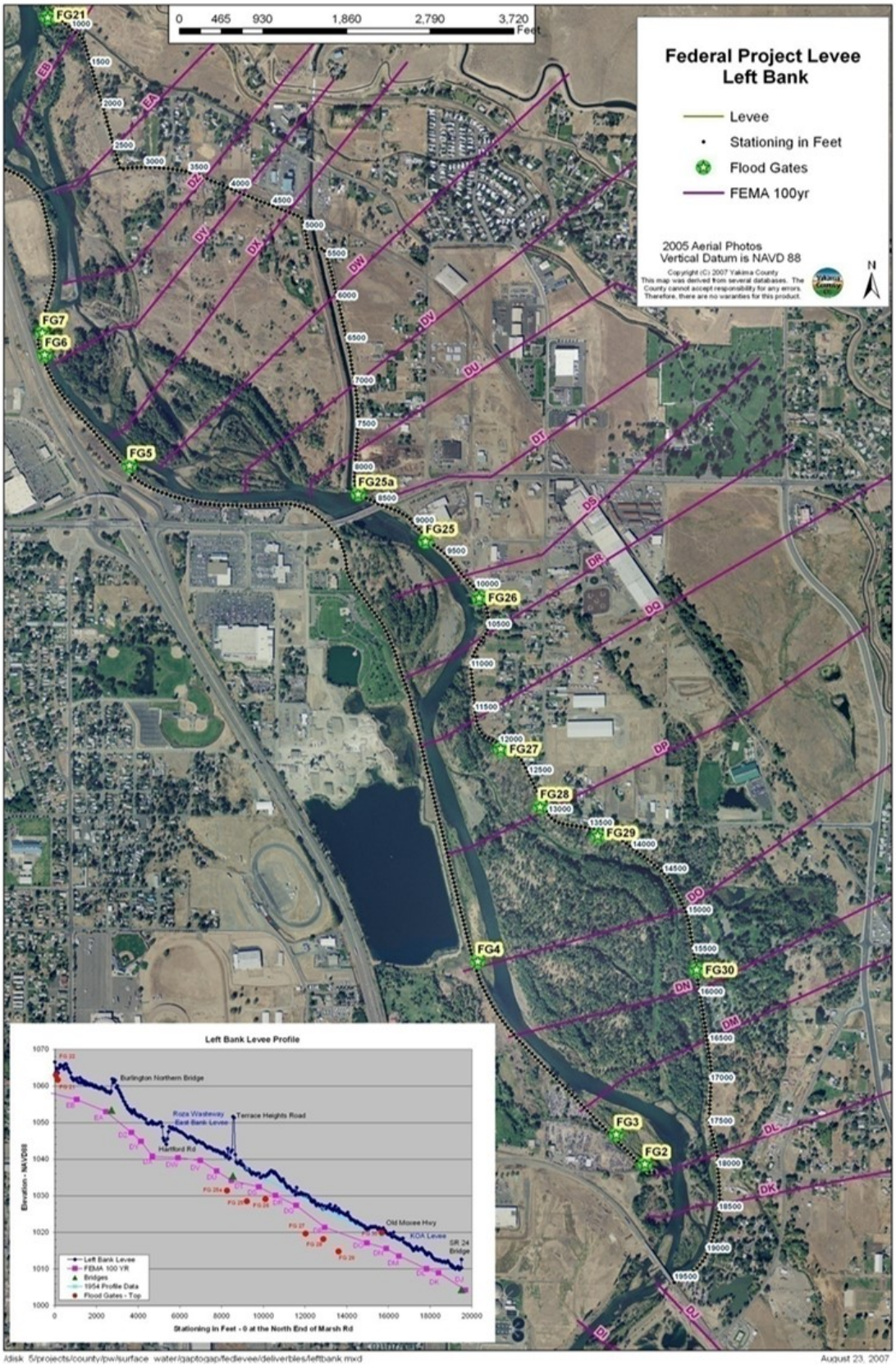
D1. Recent Project Work: FCAAP grant (SEAFCAAC-2123-YaCoPS-00012) was awarded in November 2021. Completed topobathy data collection by NV5 consultant. Selected hydraulics consultant. Coordinated with FEMA for requirements and draft product handoff anticipated in 2023.

D2. Near Term Work: Contract for the collection of USGS 3DEP quality topographic and bathymetric LiDAR. Contract for Hydrologic and Hydraulic analysis.

D3. Major Milestones & Dates:

2021 – FCAAP Grant Awarded
2022 – Topographic data collection
2022 – Hydraulic modeling. Public Outreach
2023 – FEMA Mapping Coordination
2024-2026 – Steward final products and adoption

Yakima County Levee Inventory Accreditation and Certification



FCZD Project Status
May 2022

Ongoing Planning Project **Yakima & Naches Rivers**

A. Project Title: Yakima County Levee Inventory, Accreditation and Certificate (FC3273) T.H./J.B.

B. FCZD Role: Lead

C. Brief Project Description:

Need: Establish an information database on twenty-five miles of County levees that protects infrastructure and development, supports levee operational maintenance, supports federal Certification requirements and facilitates future modifications. Information includes: GIS mapping, design data, current structure configurations and design drawings, damage repairs and costs, maintenance records, ownership and easements.

Goals: Minimize risk and costs associated with levees through consistent methods provided by the Corps and FEMA.

Benefits: Maintain PL84-99 Certification and funding for community levees. Maintain 100-year certification and FEMA accreditation of Federal Project Levee and associated benefits to cities of Yakima, Union Gap, and Terrace Heights.

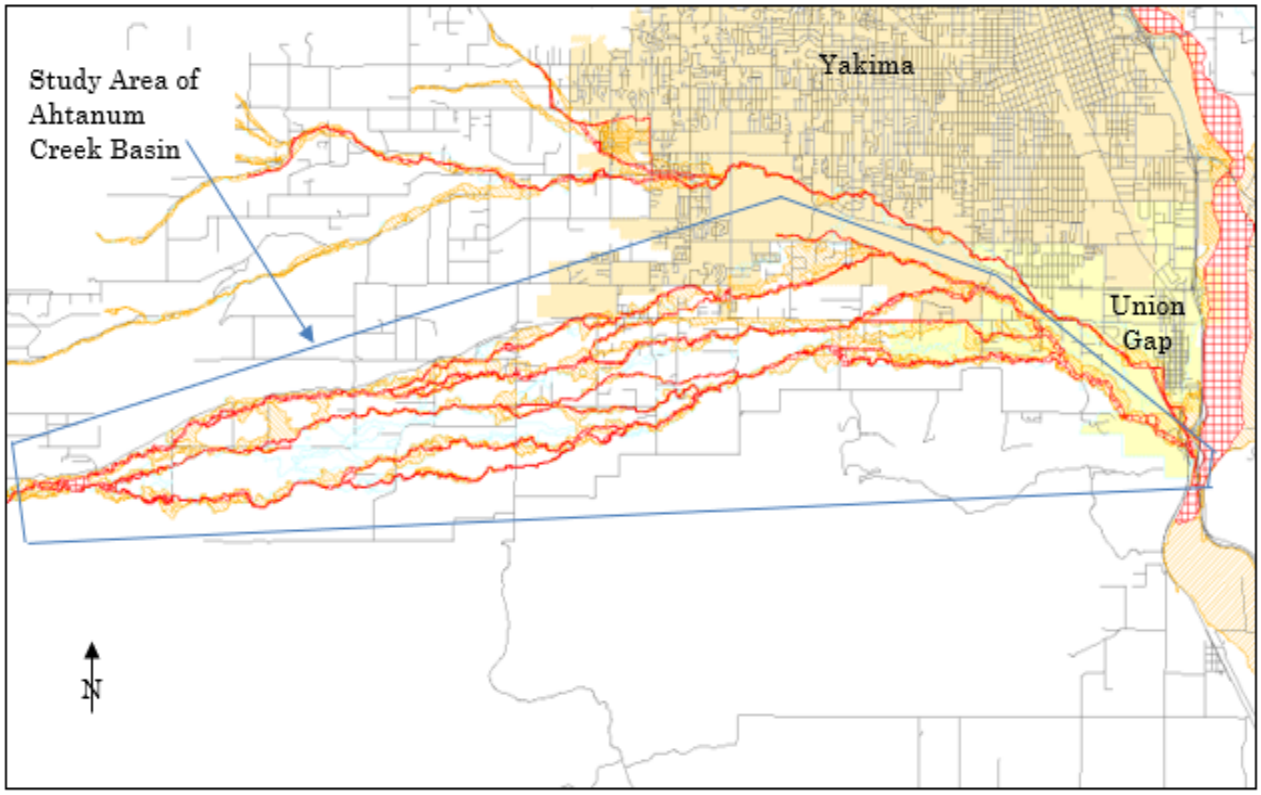
D. Project Status

D1. Recent Project Work: Yearly inspections conducted by YC & Corps of Engineers (USCOE). Levee Data Base created. Updated the County GIS Levee database and GIS flood mapping. First five-year Period Inspection on Federal Project Levee. Provide input to state study on levee requirements. Five -year Risk Assessment on levee status received from USCOE on Federal Project and mobilized action plan. Forward updated County GIS levee database to the USCOE. USCOE August 2012 letter stating that they are no longer certifying levee after August 2013.

D2. Near Term Work: County to provide certification and ensure FEMA accreditation by continuing to gather, analyze and submit data and information to FEMA.

D3. Major Milestones & Dates: Ongoing annual inspections, maintenance and documentation requirements.

2009 - Updated levee database on GIS.
2010 - Forwarded updated levee database to Ecology for forwarding to USCOE.
2010 - First five-year periodic inspection on Federal Project Levee.
2010 - Provide input to State Levee Inventory / Accreditation Study.
2011 - Respond to first five-year risk assessment on Federal Project.
2011 - Input to NCLS roundtable.
2012 - Forward levee database to USCOE.
2012 - USCOE follow-up inspection to 2011 risk assessment.
2013 - Federal Project Levee re-accreditation submission by County to FEMA. Creation of Risk Mitigation Implementation Plan for Federal Levee.
2014- FEMA re-accreditation review. Will finalize on next FEMA remap following projects and repairs.
2016 - Levee repair plan required. Participated in USCOE Levee Inspection Checklist overhaul and provided comments to Seattle District Office.
2017 - Gathering, analyzing and submitting additional data for FEMA reaccreditation between Terry and Troy.
2018-2019 - City finalize levee evacuation plans.
2020-2022 – Planning with USACE & FEMA for accreditation of Blue Slough Levee.


Study Area of
Ahtanum
Creek Basin
Yakima
Union
Gap
N

FCZD Project Status
May 2022

Current Planning Project **West Valley**

A. Project Title: Ahtanum Preferred Flood Paths (FC3700) T.H.

B. FCZD Role: Lead
Cooperators: FCZD**,** City of Yakima, City of Union Gap, County Planning and County Roads

C. Brief Project Description:

Need: A coordinated flood economically based relief effort by communities affected by 100-year flooding overflows in the 15-mile Ahtanum/Bachelor/Hatton Creek basin to target short-term and long-term drainage, identify preferred flood paths and planning/ development improvements that can influence TIPs and CIPs.

Goals: Reduced damages and economic benefits from coordinated long range planning from 2-dimensional modeling results providing options in this flat and alternately tilting basin. Gather input from communities on preferred flood paths. Develop a set of preferred flood paths through hydraulic modeling that maximize community benefit based on economics, public safety and other metrics. Community adoption of a policy guidance document that will be consistent across all jurisdictions.

Benefits: Reduction of public safety hazards and flood and infrastructure costs across the Cities of Union Gap and Yakima and Yakima County. Future development will be guided by a comprehensive plan mindful of flood hazard site suitability in the context of flood risk and communities' development needs.

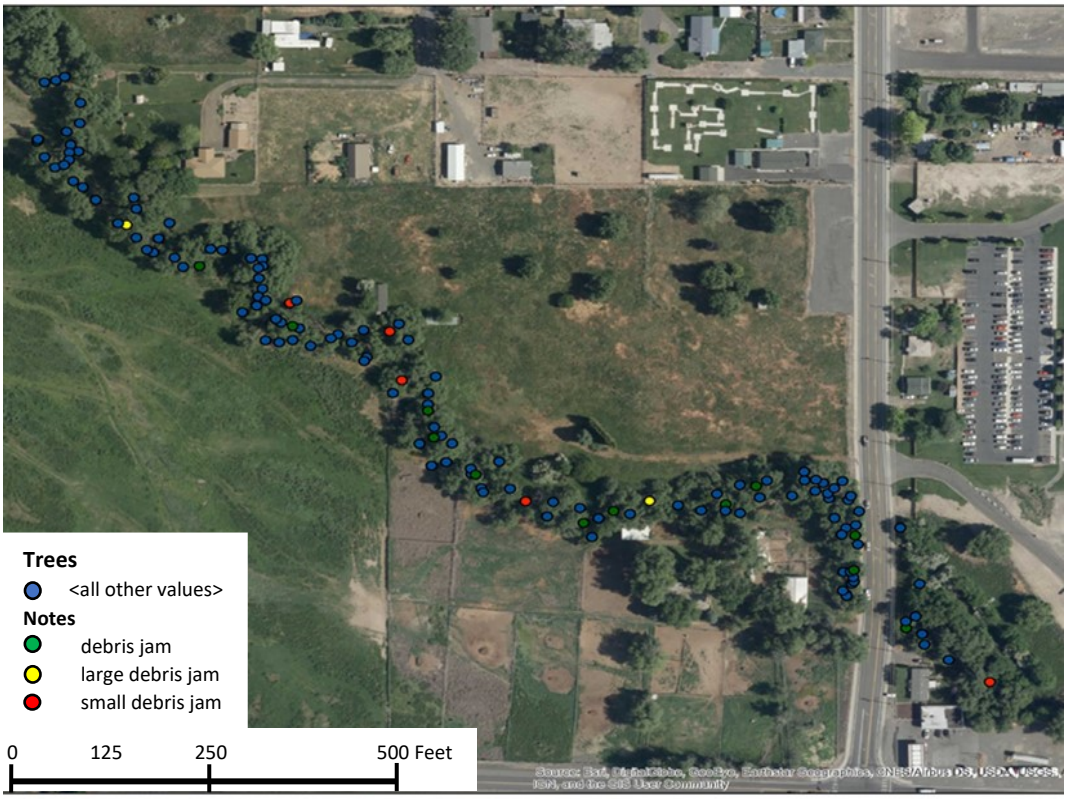
D. Project Status:

D1. Recent Project Work: Initial meeting with communities rallying support and participation. Existing conditions hydraulic modeling. Alternative analysis.

D2. Near Term Work: economic studies, community meetings, modeling report, floodplain development strategy/recommendations report to Communities' planning departments.

D3. Major Milestone & Dates:

2019 - Initial meetings and existing conditions model
2020 - Final report with recommendations



WASHINGTON STATE
Noxious Weed Control Board

FCZD Project Status
May 2022

Current CIP Project in CFHMP **West Valley**

A. Project Title: Crack Willow (Salix Fragilis) Inventory, Management and Nomination to Washington State Noxious Weed Board. (FC3484) L.S.

B. FCZD Role: Lead
Cooperators: North Yakima Conservation District, Department of Ecology, City of Yakima.

C. Brief Project Description:

Need: Crack willow (Salix fragilis) is an invasive species that was introduced into the Yakima Valley in the 1960's as a method of controlling stream bank erosion. It has flourished in a number of streams on the west side of the City of Yakima. Specifically, it has increased in Wide Hollow Creek and Ahtanum Creek, and to a lesser extent in Bachelor Creek, Cowiche Creek and Hatton and Spring creeks. In areas with heavy infestations of crack willow such as Wide Hollow Creek, the stream ecosystem is dominated with this aggressive species and the normal stream function is severely reduced. Flooding in the adjacent residences and agricultural areas occur frequently as a result of accumulation of sediment, debris, and downed and fallen crack willow. The normal streamside vegetation is crowded out and a monoculture of crack willow is established.

Goals: The goal is to complete an inventory in Yakima County and assess the rate of spread and abundance of Crack Willow. A complete inventory will allow Yakima County, and adjacent strategies to develop treatment strategies, project proposals and grant requests for crack willow removal. A recent 2019 Centennial Clean Water Grant request was submitted to the Department of Ecology for funding to complete one crack willow removal project on Wide Hollow Creek (HAWBS 1), complete the crack willow inventory in Wide Hollow creek, develop a long-term crack willow removal strategy, nominate crack willow as a noxious weed, and provide a public outreach program for crack willow removal projects.

Benefits: The benefits of this Crack Willow inventory will be to provide Yakima County with a better tool to develop a strategy for scheduling crack willow removal projects. Nomination of this species as a noxious weed to the Washington State Noxious weed board will potentially provide additional funding from granting agencies and provide create an awareness with the public and other agencies of the potential threat to the stream ecosystem that this invasive crack willow poses.

D. Project Status

D1. Recent Project Work: Mapping of crack willows in HAWBS phase 3 project area. Yakima County will support and attend the DOE sponsored crack willow technical advisory committee.

D2. Near Term Work: Met with Yakima County Noxious Weed Board on June 16th 2022, to discuss proposal and attempt to garner support for elevating the species at the state level.

D3. Major Milestones & Dates:
2018 - Completion of draft 2018 field inventory work and draft report - 80% complete in 2018.
2019 - Submitted Salix fragilis as a noxious weed to Washington State noxious weed board. Nomination to elevate species from monitor list to Class C noxious weed.
2020-2022 – Coordination with Washington State Noxious Weed Board to support nomination through the selection and deliberation process.

~ This page intentionally left blank ~

Section 5

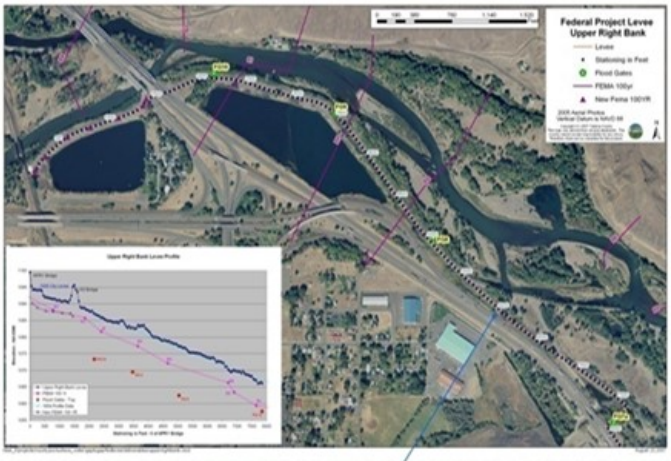
Flooding Issues Public Education

- Community Rating System (CRS) - Reducing Flood Insurance Rates
- Flood Public Education Outreach
- Community Assistance Visit (CAV) - Flood Insurance Compliance

Flood Public Education Outreach

Levees and Flood Gates

There is a system of levees with drainage and control structures extends from the Moxee highway bridge across the Yakima River to the Burlington Northern railroad bridge upstream from the confluence of the Yakima and Naches Rivers.

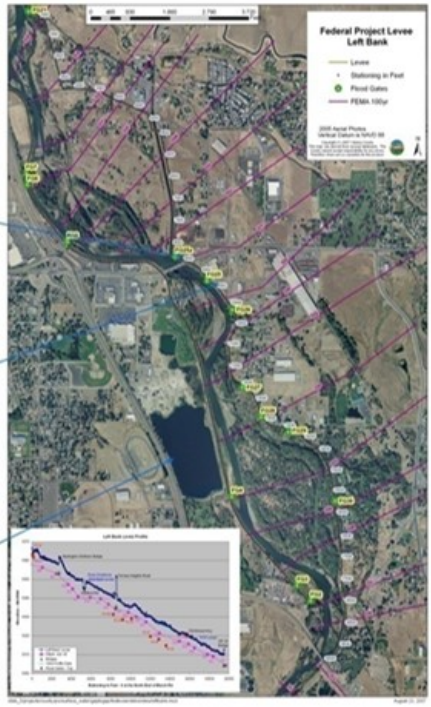


These levees provide flood protection for the city of Yakima, its suburban area, and lands on the east bank of the Yakima River.

Flood damages prevented through September 1998 totaled $12,374,000

The Greenway Path

Buchanan Lake



? Did You Know ?

Highway 12— The Greenway Path — I-82 are part of our levee system

FCZD Project Status
May 2022

Ongoing Planning Project **County-Wide**

A. Project Title: Flood Public Education Outreach (FC402) T.H. (D.W.)

B. FCZD Role: Lead
Cooperators: Emergency Management Office, Building and Planning Officials and cities

C. Brief Project Description:

Need: Develop program that will heighten public and local jurisdiction awareness and knowledge of flood issues. Membership in the CRS (Community Rating System, FEMA) may facilitate programmatic structure to support and encourage public outreach.

Goals: Utilize opportunities to increase flood awareness and develop a long-term public outreach program related to flood risks. Reduce development potential in flood-prone areas of County including cities

Benefits: Decrease public flood risk by reducing flood prone development, increasing the tools and information about what to do before, during and after flood emergencies. Increased community understanding of the need for safety regulations.

D. Project Status

D1. Recent Project Work: Current work includes outreach in conjunction with other projects, such as flood mapping and major changes in how flood insurance rates are determined. Updated FCZD web pages include links announcing NFIP training for insurance updates and links for new maps. Public outreach surrounding release of the Cowiche and upper Naches flood maps by postcard to property owners with effective map date and links to interactive maps on the FCZD website. Bi-annual presentation to YVC students in partnership with ASCE and YVC.

D2. Near Term Work: Ongoing assistance for property owners, lenders and insurance agents with flood insurance documentation and general information regarding flood maps and restudy schedules. Work with Town of Naches, City of Yakima, and County staff on flood map restudies.

D3. Major Milestones & Dates:

October 2007 - Unincorporated Yakima County joined the CRS program.
2009 - New Yakima County-Wide digital flood maps were adopted.
2012 - First workshop for lenders and insurance agents in June.
2012 - Flood insurance outreach related to newly adopted Wide Hollow flood maps.
2014 - Additional public outreach surrounding the Ahtanum revised preliminary flood maps.
2016 – The final effective Ahtanum flood maps were issued. Responding to related inquiries.
2018 - Cowiche CFHMP provides recommendations regarding recent floods entering Yakima
2017-2021 - Upper Naches and Cowiche flood maps, changed rate calculations for flood insurance (NFIP).
2021 - Updated Public Outreach plan including long range time frame with objectives and activities in coordination with CRS planning. Revise/update FCZD brochure, as needed.
2023 – In coordination with Greenway Director, design informative signage and other ways to inform Greenway users about the levees utilized for trails.
2024 – Implement Greenway/levee outreach and other projects in outreach plan.

Community Assistance Visit (CAV)
Flood Insurance Compliance

The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling Property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

FCZD Project Status
May 2022

Ongoing Planning Project **County-Wide**

A. Project Title: Community Assistance Visit (CAV) – Flood Insurance Compliance (FC200) T.H. (D.W.)

B. FCZD Role: Support to County Building and Planning Officials
Cooperators: Department of Ecology, FEMA

C. Brief Project Description:

Need: A CAV is a visit by FEMA or their designated state floodplain coordinator (Ecology for Washington State) to assess a community's compliance with the National Flood Insurance Program (NFIP). FCZD involvement in the CAV is to provide support and coordination with Ecology/FEMA and the Public Services Division that is responsible for regulation of floodplains in unincorporated Yakima County as needed.

Goals: Assist Public Services Division and Yakima County to maintain compliance with the NFIP.

Benefits: Compliance with the NFIP ensures reduced flood risks and availability of federally insured loans for buildings in floodplains, flood insurance, and disaster assistance. Approved CAV is required for eligibility in FEMA's CRS (Community Rating System).

D. Project Status

D1. Recent Project Work: Current FCZD work involves support for regulatory authorities to maintain compliance with the NFIP. The last CAV started in 2016 and was completed in 2018.

D2. Near Term Work: Assist in response to new CAV inquiries throughout 2022 as a result of initiation in 2021. Continue to provide support for regulatory authorities to maintain compliance with NFIP requirements. FCZD will cooperate with NORFMA (Northwest Regional Floodplain Management Association) if they decide to bring additional workshops to Yakima County.

D3. Major Milestones & Dates:

1988 - CAV visit.
2004 - CAV visit.
2005 - Modifications to County Ordinances were adopted. Workshops and other training have been brought to Yakima County.
2006 - The most recent CAV was closed successfully.
2009 - LOMR and elevation workshops in Yakima.
2010 - Workshop supporting local floodplain officials presented in Yakima.
2016 - CAV visit. Review continued.
2018 - CAV Review completed. County retrograded out of CRS due to elevation certificate errors.
2021 - Next CAV for CRS reentry – field tour
2022 - CAV Office visit in January. County will receive a report on any changes that need to be implemented.
2023 - FEMA approval of CAV
2024 - Assist PS maintain compliance with all requirements from CAV.

Community Rating System (CRS)

Reducing Flood Insurance Costs

CRS Points and Classifications			
Credit points earned, classification awarded and premium reductions given for communities in the National Flood Insurance Program Community Rating System.			
Premium Reduction			
Credit Points	Class	SFHA*	Non-SFHA**
4,500+	1	45%	10%
4,000 - 4,499	2	40%	10%
3,500 - 3,999	3	35%	10%
3,000 - 3,499	4	30%	10%
2,500 - 2,999	5	25%	10%
2,000 - 2,499	6	20%	10%
1,500 - 1,999	7	15%	5%
1,000 - 1,499	8	10%	5%
500 - 999	9	5%	5%
0 - 4 9 9	10	0	0

◆ Special Flood Hazard Area

**Preferred Risk. Policies are available only in B,C and X 2ones for properties that are shown to have a minimal risk of flood damage. The Preferred Risk Policy does not receive premium rate credits under the CRS because it already has a lower premium than other policies. The CRS credit for AR and A99 zones are based on non-SFHAs (B, C and X). Credits are: classes 1-6,10% and classes 7-9, 5%. Premium reductions are subject to change.

FCZD Project Status
May 2022

Ongoing Planning Project **County-Wide**

A. Project Title: Community Rating System (CRS) – Reducing Flood Insurance Rates (FC3239) T.H. (D.W.)

B. FCZD Role: FEMA Program

C. Brief Project Description:

Need: CRS is a voluntary program through FEMA that allows NFIP communities to earn points that in turn reduce property owners' premium costs for flood insurance. Points are earned through various activities that are aimed at reducing loss of life and property due to flooding. Each NFIP community (cities and unincorporated county) must join the CRS program individually.

Goals: The County CRS program reduces flood risk through proven community approaches. Yakima County enrolled in this program to reduce insurance premium costs for property owners, while reducing flood risk. Additional goal is to gain CRS program experience so the FCZD can assist cities who wish to join this FEMA program.

Benefits: The County had an eight rating with a net reduction of 10% on flood insurance premiums for buildings in floodplains.

D. Project Status

D1. Recent Project Work: Continue coordination with officials in other divisions (Planning, Building and Emergency Management) and departments to regain Class 8 eligibility for CRS program. County started a new CAV in 2021 and will work through 2022 to maintain NFIP status.

D2. Near Term Work: Successfully complete the Community Assistance Visit in 2022. Assist Planning, Building and Fire Safety with these efforts along with short and long-range strategies for keeping records current and accessible, which is needed for the recertification required annually for the CRS program.

Review the extensive changes in the new 2017 CRS Manual and 2021 addendum for possible impacts to the County's estimated points for re-entry into the program.

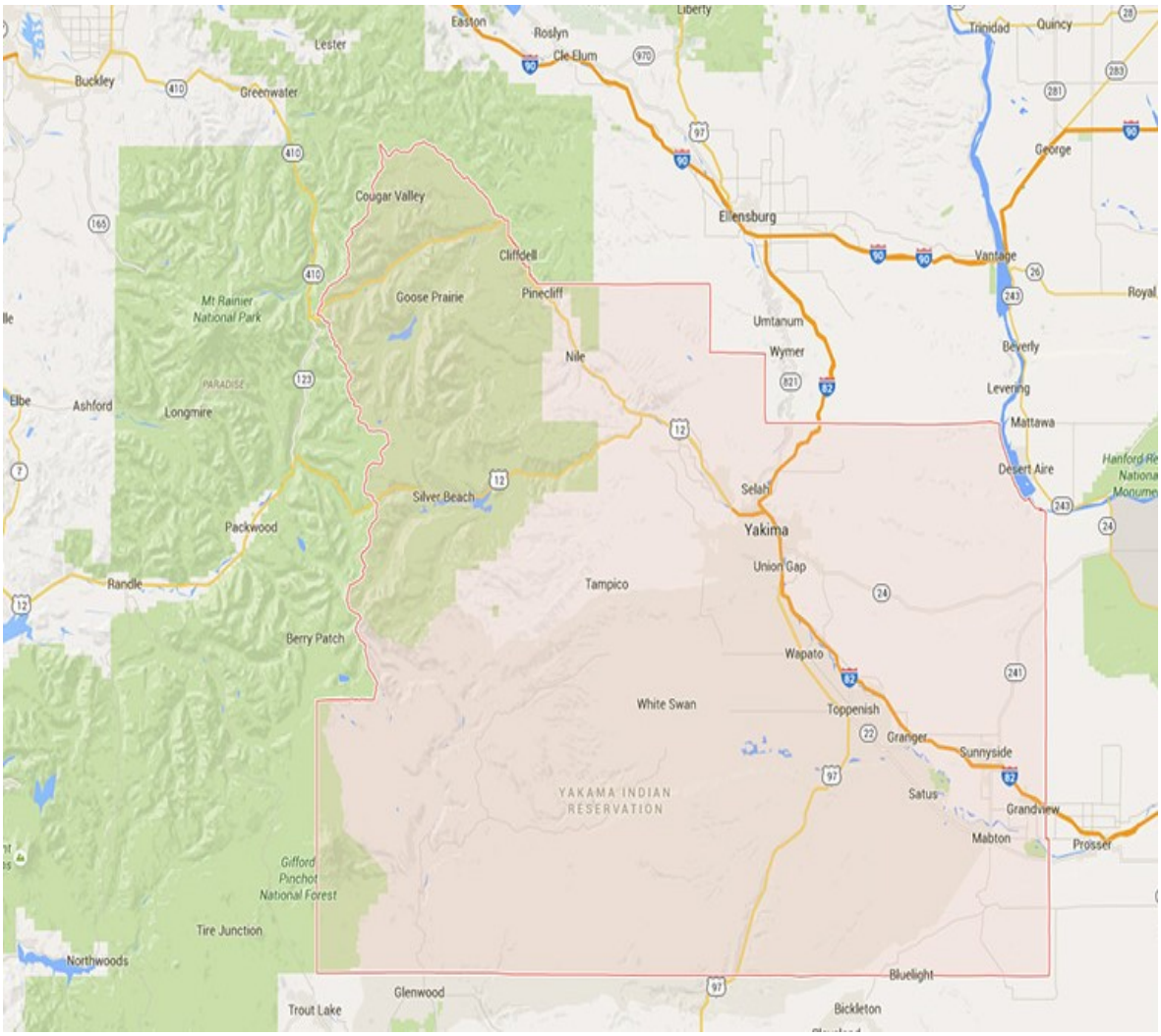
D3. Major Milestones & Dates:

2007 - Yakima County joined CRS.
2008-2012 - Annual recertifications.
2011 - Full audit (cycle visit) to verify compliance with the program.
2012 - Joined the newly established Northwest CRS Users Group.
2013 - Review new CRS Manual and outline opportunities to increase points.
2013-2015 - Completed annual recertifications.
2017 - Community removed (retrograde) from CRS due to elevation certificate issues.
2021 – Initiated new CAV for CRS admission. Yakima County will respond to inquiries in 2022.
2023 - CRS application and readmission – dependent on when the CAV is completed.

~ This page intentionally left blank ~

Section 6

Coordinate / Participate in Related Resource Management Projects



- **Native Plant Nursery and Restoration Projects**
- **Yakima basin Water Supply & Habitat Planning Support**
- **Floodplain & Natural Resource Conservation Program Development**
- **Flood Issues Reviews**
- **Water Resources Multi-Agency Coordination**
- **South Fork Tieton Bridge and Fish Passage**
- **Lower Naches Coordination Group**
- **Naches River Levees Assessment**
- **Gap-to-Gap Levee Set Back Coordination**

Native Plant Nursery and Restoration Projects

2-3-year-old nursery stock Ponderosa Pines

FCZD Project Status
May 2022

Ongoing Planning Project **County-Wide**

A. Project Title: Native Plant Nursery and Restoration Projects (FC3255) L.S.

B. FCZD Role: Lead
Cooperators: North Yakima Conservation District

C. Brief Project Description:

Need: Establish successful vegetation for riparian and floodplain restoration projects, by bolstering a local native plant nursery and providing seed sources of native plants adapted to this area.

Goals: Develop a native plant nursery in cooperation with North Yakima Conservation District. Develop seed sources or stock for low elevation Ponderosa Pine, Garry Oak, and female Cottonwoods to be utilized by the County, NYCD and other organizations that restore floodplains or are required to mitigate for floodplain impacts.

Benefits: An available supply of native plants for restoration, at no/low cost to agencies and organizations that conduct floodplain restoration, as well as the public who own and protect riparian zones or desire low water use landscaping on private property. Improved riparian and floodplain function and reduced invasive species and weeds.

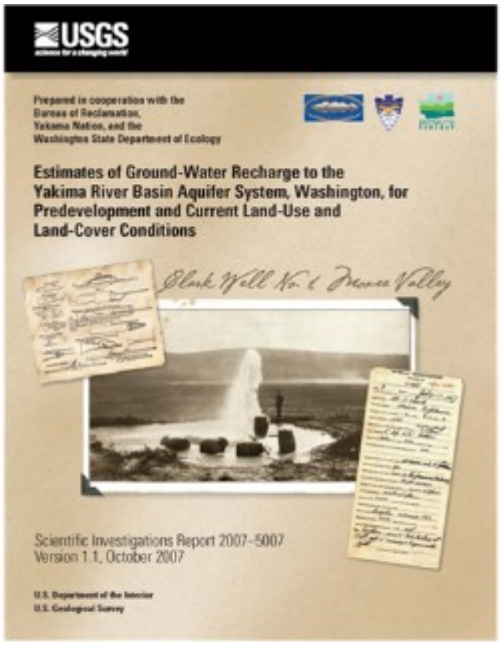
D. Project Status

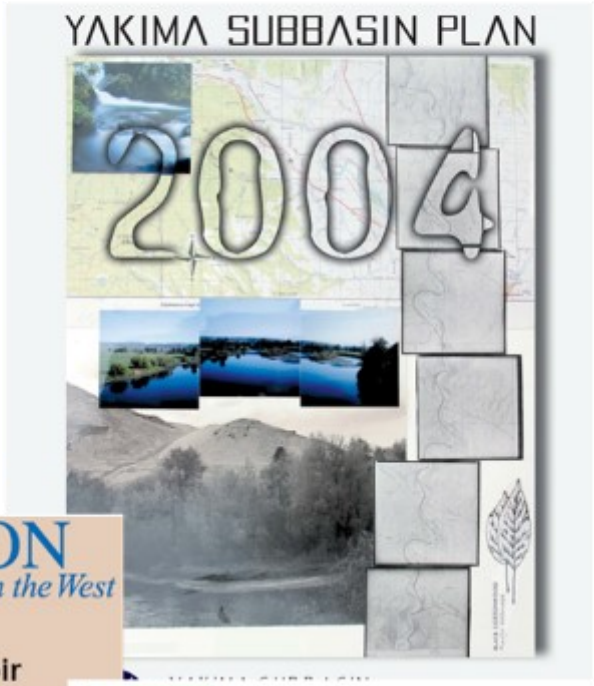
D1. Recent Project Work: Several hundred acorns of the Garry oak were planted in the Nile Landslide area in 2021.

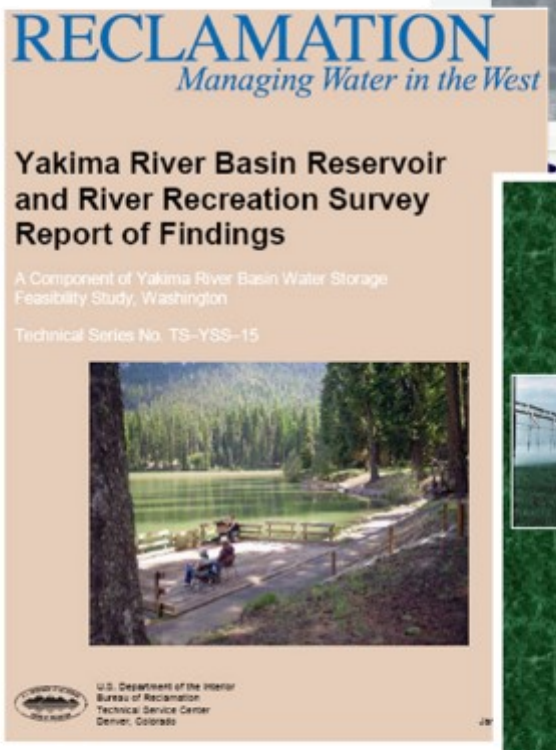
D2. Near Term Work: Coordinate with NYCD to find more suitable County owned sites for installation of low-elevation Ponderosa Pines, continue monitoring survival of previous plantings.

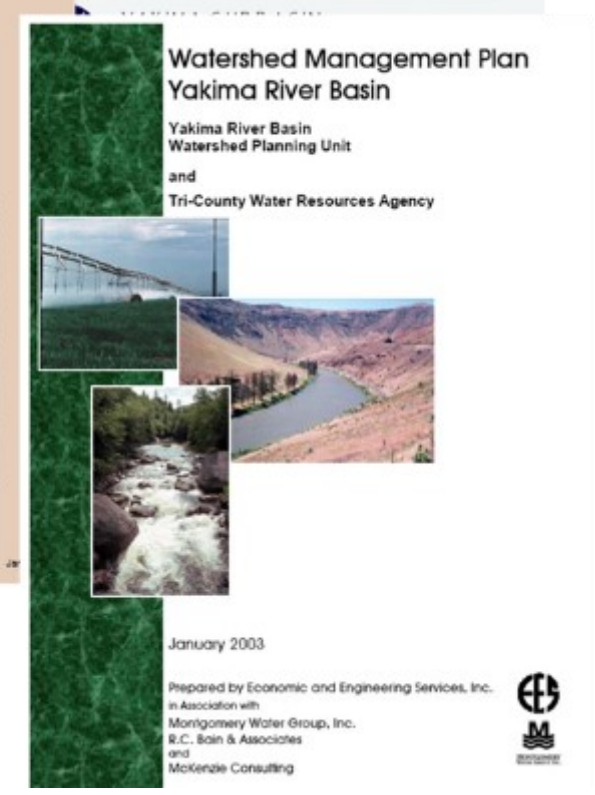
D3. Major Milestones & Dates:
April 2010 - New trees delivered and planted in 2011
Fall 2010 - New trees delivered and planted in 2012.
Spring 2011 - 4500 trees delivered to conservation districts.
Spring 2011 - Plant approximately 500 trees.
Spring/Fall 2012 - Plant approximately 500 trees.
Spring/Fall 2013 - Plant approximately 500 trees.
Spring/Fall 2014 - Plant approximately 500 trees.
Spring/Fall 2015 - Plant approximately 200 trees.
Spring/Fall 2016 - Plant approximately 500 trees.
Spring 2017 - Delivery of 1500 trees from Silva seed.
2017 - Order 1,000 additional trees. Plant 500 trees.
2019 - Order 500 Cottonwood, 300 Ponderosa Pine (prep for G2G).
2021 - Received 500 low elevation ponderosa pine seedlings for floodplain planting projects including areas where Salix fragilis is removed, North Yakima Conservation District took delivery and provides stewardship of seedlings until installation.

Yakima Basin Water Supply and Habitat Planning Support









FCZD Project Status
May 2022

Ongoing Planning Project **County and Basin-Wide**

A. Project Title: Yakima Basin Water Supply and Habitat Planning Support (FC3090, FC3091) J.K.F.

B. FCZD Role: Lead
Cooperators: WDFW, YN, Benton County, Kittitas County, YBFWRB, YBWRA, NMFS, Ecology, BOR

C. Brief Project Description:

Need: Federal and state agencies desire the participation of local governments, in particular, the three counties, in various Yakima Valley natural resource management programs related to water supply, water quality, fish and wildlife habitat, and threatened and endangered species.

Goals: Provide technical comments and input on local, county and basin-wide water and habitat planning and management boards plus large-scale storage initiatives, such as Bureau Storage Study or Ecology SEIS. This includes activities related to Columbia River Policy Advisory Group (CRPAG), Yakima Basin Watershed Plan, Storage Study processes, BOR management of irrigation system, participation on multiple Technical Advisory Groups, linking potential County or other agency project to funding sources, etc.

Benefits: Increased local control of natural resource and water usage issues that benefit the welfare of County residents. Connections to funding sources and processes can and have provided funding for water resources efforts, plus increases voice for the BOCC.

D. Project Status

D1. Recent Project Work: Ongoing involvement with Yakima Basin Integrated Plan including, serving on Habitat, Water Supply, Land/Watershed, Groundwater and Implementation Committees.

D2. Near Term Work: Ongoing activities - Direct support to BOCC on water-related boards and commissions. Provide State Senate and Representative tours.

D3. Major Milestones & Dates:

October 2005 - Completed Basin Recovery Plan.
2006 - Yakima Basin Fish and Wildlife Recovery Board established.
January 2009 - Comments on BOR and Ecology Storage Study EISs.
May 2009 - Legislative session with bills proposed for amendments to Columbia River Water Supply Development Account.
March 2009 - Yakima Basin Storage Study completed.
2010 - Completion of support to YRBWE III Integrated Watershed Management Plan.
2011 - USGS Groundwater Study completed.
2012-2019 - Yakima Basin Integrated Plan Support.
2013 – State legislation approved
2015-2016 - Domestic Rural Water (DRW) use studies and planning.
2017 - Insert DRW into Comprehensive Plan under GMA.
2018 - Institute Domestic Rural Water Program.
2019 - Process DRW application, Federal Legislation approved.
2020 - Continue YBIP support.

Floodplain and Natural Resource Conservation Program Development

FCZD Project Status
May 2022

Scheduled Planning Project **County-Wide**

A. Project Title: Floodplain and Natural Resource Conservation Program Development (FC200) J.K.F.

B. FCZD Role: Co-Lead with County Planning

C. Brief Project Description:

Need: Develop policy basis and investigate mechanisms for a Non-Regulatory Program to aid the protection of critical areas and natural resource lands within the County.

Goals: A broad range of possible tools has been considered, including: Changes in zoning and/or taxation, easements and purchases. For the land purchase tool, the initial guidance was to find or cultivate a receiving entity and then gradually turn over that entire component to them.

Benefits: Including flood risk as a criterion for the tools listed above will help reduce infrastructure and private property risks from flood damage.

D. Project Status

D1. Recent Project Work: Program delayed by Planning

D2. Near Term Work: Implementation complicated by Voluntary Stewardship Program

D3. Major Milestones & Dates:

2015 - Initiated project then placed on hold.
2016 - Flood Control Zone District initiates buyouts for flood conservation purposes.
2018 - FCZD drafts standard easement language.
2019-2019 - FCZD discussion with planning on land use.
2021 - Property Management Discussions

Flood Issues Reviews

FCZD Project Status
May 2022

Ongoing Planning Project **County-Wide**

A. Project Title: Flood Issues Reviews with Stormwater Input (FC401) T.H. (D.W.)

B. FCZD Role: Comment on development projects and on County & City GMA plans.
Cooperators: County Planning & Cities & Agencies

C. Brief Project Description:

Need: Technical review of development projects -- county-wide -- for flood issues. County and City jurisdictions and other agencies need technical input on how or whether a proposed development will have a negative impact on flooding and on the Federal Regulatory restraints while noting methods to minimize impacts. FCZD acts as resource to cities and county for information regarding NFIP compliance, and comment on flood hazard and regulatory issues associated with expansion of urban growth areas.

Goals: Provide technical input regarding flooding issues from CFHMPs and modeling to assist local jurisdictions and agencies in reducing flood risk and meeting Federal insurance requirements.

Benefits: Reduce or avoid flood risks to health and safety for the public, private property and public infrastructure from new development in floodplains. In addition to improved safety and resilience, this will reduce flood damage costs for public and private properties and assist communities in the long term to maintaining NFIP insurance requirements.

D. Project Status

D1. Recent Project Work: Since implementation of the Yakima County Stormwater program and Utility, this project code has been used almost exclusively to review project proposals submitted by other jurisdictions and agencies. These reviews can generate input as we become aware of project proposals if there are flooding or floodplain concerns.

D2. Near Term Work: Requesting jurisdictions and agencies to add the FCZD to their SEPA distribution list. Increase efficiency of review for jurisdictions that provide multiple notices on the same proposal.

D3. Major Milestones & Dates:
2020 - List of other jurisdiction proposals that have been reviewed, by year.
2021 - Digital files have been set-up for proposals that require more detailed input from the FCZD.
2022 - Review Ecology-posted SEPA applications for Yakima County to ensure FCZD review, but these are only the ones submitted to Ecology by agencies, which isn't required.
2022 - Initiated review guidance for use by staff given recent turnover.
2023 - Continue fine-tuning methods to receive notice of all SEPA applications for Yakima County.

Water Resources Multi-Agency Coordination

FCZD Project Status
May 2022

Multi-Agency Coordinating **County-Wide**

A. Project Title: Water Resources Multi-Agency Technical Cooperation (FC3392) J.K.F.

B. FCZD Role: Lead, Co-Lead and Cooperator
Cooperators: City of Yakima, WDFW, WSDOT, Reclamation, USFWS, Non-Profits, Yakima Tributary Access and Habitat Project, Yakima Basin Fish and Wildlife Recovery Board and others.

C. Brief Project Description:

Need: Multiple projects between multiple agencies for coordination and management of numerous projects in and around Yakima County's river and stream network.

Goals: Overall objective is to provide technical expertise relevant to CFHMP goals and assist in coordination between multiple agencies and projects as Yakima County Water Resources Division continues to build strong working relationships to further projects with our partner agencies.

Benefits: More projects, easier implementation, and better cooperation across jurisdictions to reduce flood hazards, improve habitats and restore floodplain connectivity in the Yakima Valley.

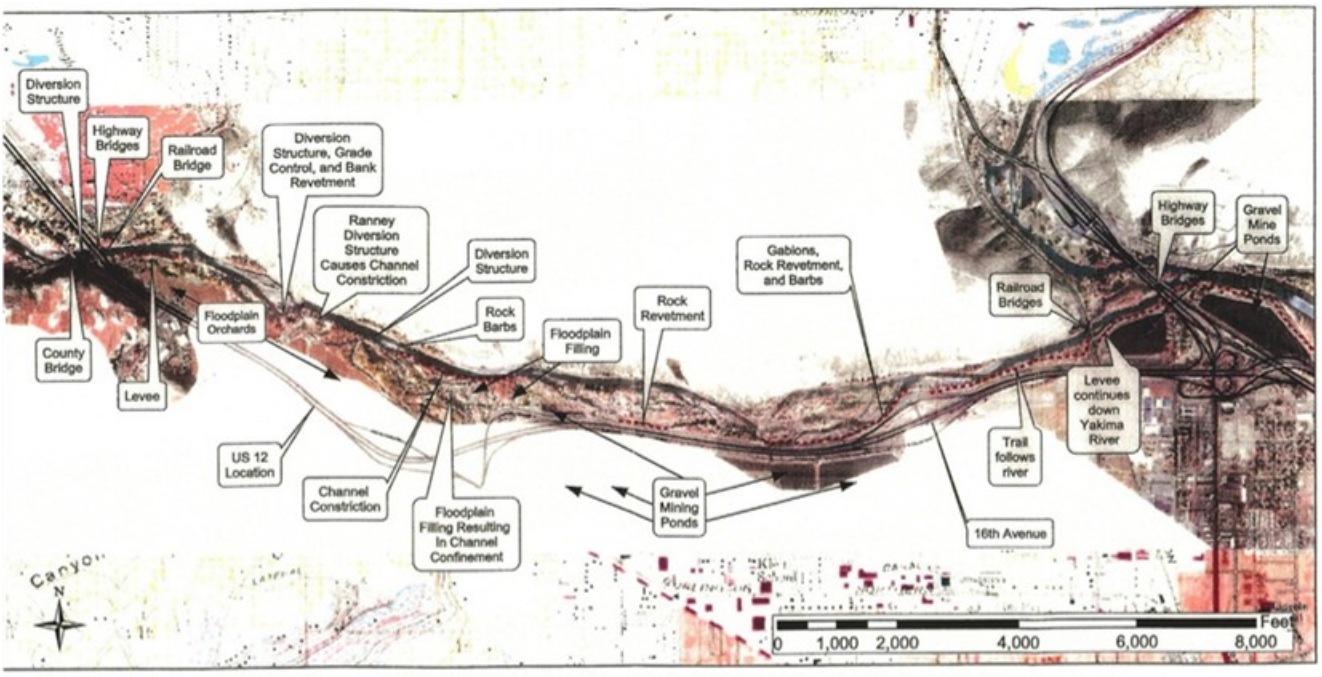
D. Project Status

D1. Recent Project Work: Nile Valley Landslide emergency response and design-build project Between Yakima County and WSDOT was enabled by the trust created and established working relationships between agencies on shared goals to reduce flood hazards and improve floodplain function. Cooperating partners with City of Yakima, WSDOT, WDFW, USFWS, Mid-Columbia Fisheries and Cowiche Canyon Conservancy for a levee setback project on Cowiche Creek. Compiled data with WDFW, USFWS and the Yakama Nation on the Lower Yakima as part of the Wapato Reach assessment to increase floodplain function.

D2. Near Term Work: Continue to accumulate hydraulic models for use of partners in design studies at reaches in the Cowiche Creek, West Valley Park, Nelson Dam and Lower Yakima Valley.

D3. Major Milestones & Dates:
2010 - Cowiche Jenner-John Levee removal.
2011 - Provided hydraulic model on Nile Landslide to aid WSDOT in final road design.
2014 - City WTP diversion input.
2015 - Initiate Nelson Dam rehabilitation discussions and obtained grant.
2017 - Preliminary design of Nelson Dam and natural by-pass. Design levels for West Valley Park berm.
2018-2019 - Modeling of conceptual hydraulic Lower Yakima Valley for use by partners.
2018-2021 - Nelson Dam final design and construction.
2021 - Rock Creek alternatives study with DOT and USCOE through FPMS.
2022 - Assistance to City of Yakima for Cowiche Creek Trail Bridge modeling.

Lower Naches Coordination Group



Lambert Conformal Conic
Washington State Plane South
North American Datum 1983

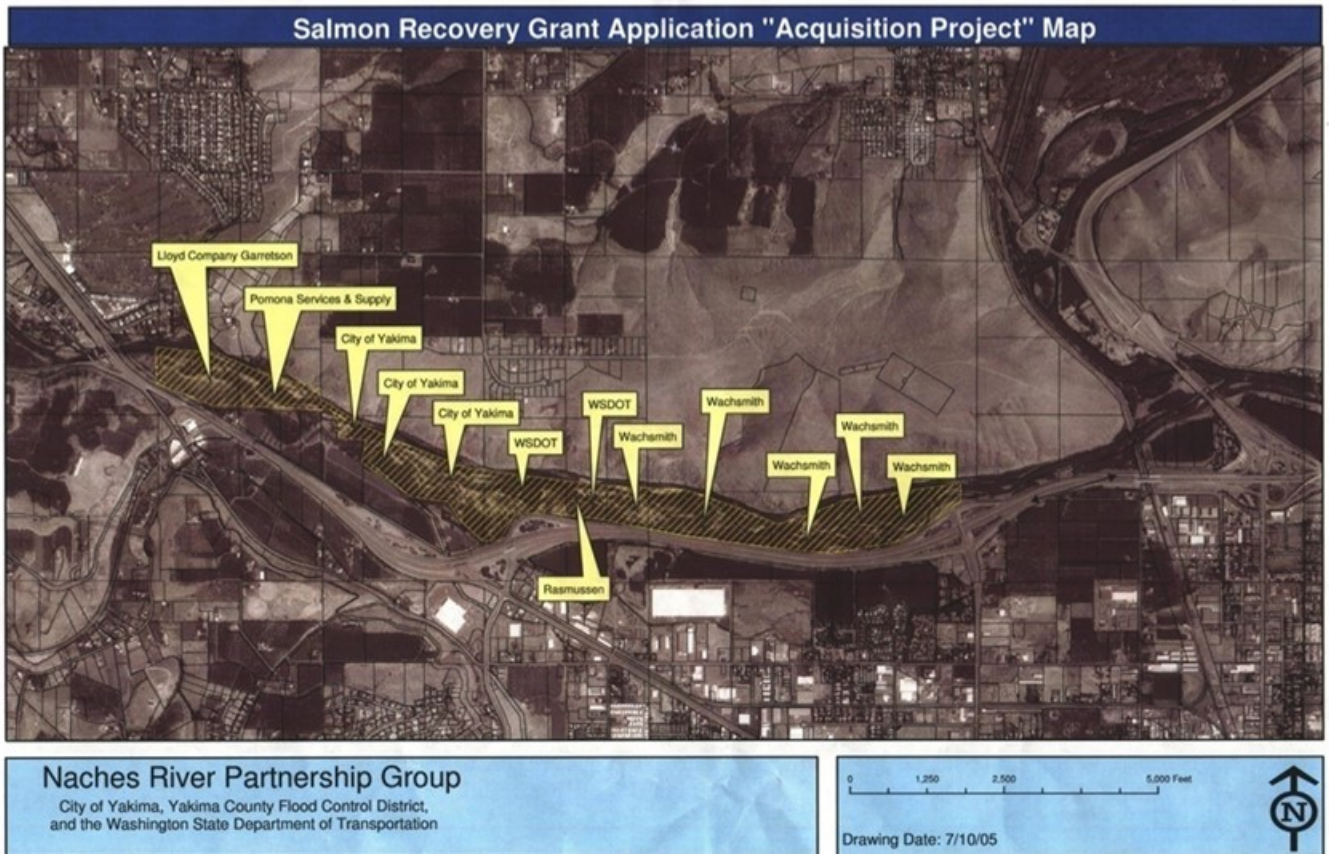
Data Source: Washington Department of Transportation, Yakima County GIS Department, SureMaps Raster USGS 7.5' Selah and Yakima West Quads at 1:24k.

This map is for information purposes. Data were compiled from multiple sources as listed on this map. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this map. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication. The locations of all features shown are approximate.

GeoEngineers

FIGURE A-10

2000 Aerial Photograph of Project Area Depicting
All Discernable Impacts to the Naches River at the Time of this Report



Naches River Partnership Group
City of Yakima, Yakima County Flood Control District,
and the Washington State Department of Transportation

0 1,250 2,500 5,000 Feet

Drawing Date: 7/10/05

N

FCZD Project Status
May 2022

Ongoing CIP Planning Projects in CFHMP – YAPN 07-028 **Lower Naches**

A. Project Title: Lower Naches Coordination Group (FC3170, FC3254) J.K.F.

B. FCZD Role: Co-Lead with WSDOT and City of Yakima
Cooperators: Yakima Tributary Access and Habitat Project, Yakima Basin Fish and Wildlife Recovery Board

C. Brief Project Description:

Need: A cooperative program between the City of Yakima, WSDOT and Yakima County to manage and coordinate numerous projects which will occur along the rapidly urbanizing Naches River between Powerhouse Road and the confluence with the Yakima River. This partnership was created following the completion of the 1998 Upper Yakima Comprehensive Flood Hazard Plan.

Goals: Overall objective is to coordinate infrastructure changes and projects to reduce flood hazard, improve sediment transport to this end and conserve funding through cooperation, or sequencing, of projects.

Benefits: Reduced flood hazard, reduced project costs, improved cooperation across jurisdictions and agencies on infrastructure design in context with overall riverine / floodplain goals.

D. Project Status

D1. Recent Project Work: Negotiation with landowners on easements / acquisitions, develop integrated ownership / management plans for this reach including the Greenway Naches River Trail and William O. Douglas Trails. Member of conceptual design team for Nelson Dam & Pipeline reconfiguration which directly impacts Naches-Cowiche confluence design and construction.

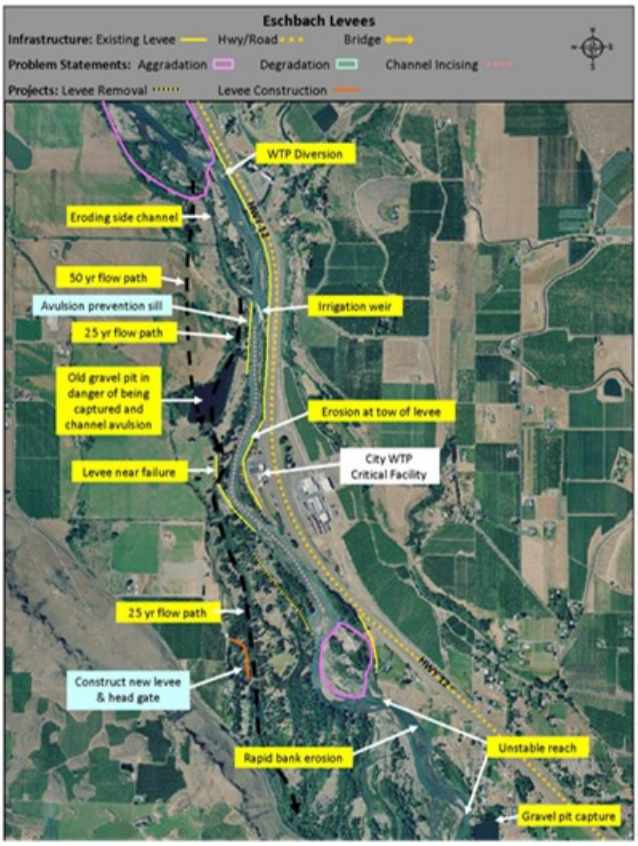
D2. Near Term Work: The Fruitvale Diversion will be removed in 2024-25 in coordination with the planned Nelson Dam reconfiguration. [Continue participation in working group of landowners and agencies to finalize restoration / reconstruction of Lower Cowiche Creek to improve habitat and lower flood elevations.]

D3. Major Milestones & Dates:

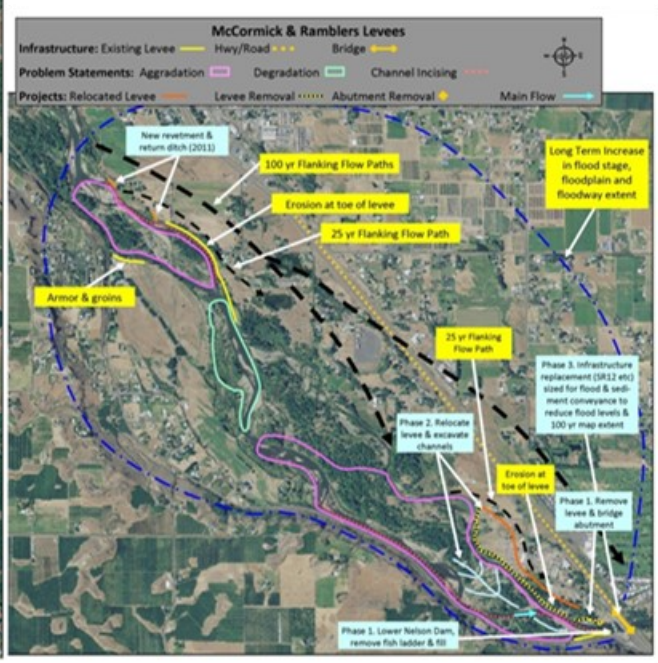
2006 - Construction of County Powerhouse Bridge with increased flow capacity.
2008 - SRF Grant acquisition of flood prone Naches River properties.
2009 - Draft lower Cowiche/Fruitvale and lower Naches floodplain restoration plan.
2009 - Ranney Well levee removal and erosion control.
2010 - Transfer to Yakima County FCZD of 126 acres owned by WSDOT.
2011 - Awarded SRFB for Cowiche re-design. Modeling of Nelson Dam reach for infrastructure sizing.
2016-2020 - Cowiche Creek and Nelson Dam reconfiguration of infrastructure and design Cowiche channel relocation.
2019-2023 - Complete work on Nelson Dam and Cowiche. YBIP FbD funding.
2024-2025 - Retire Fruitvale and Old Union ditch. (City)

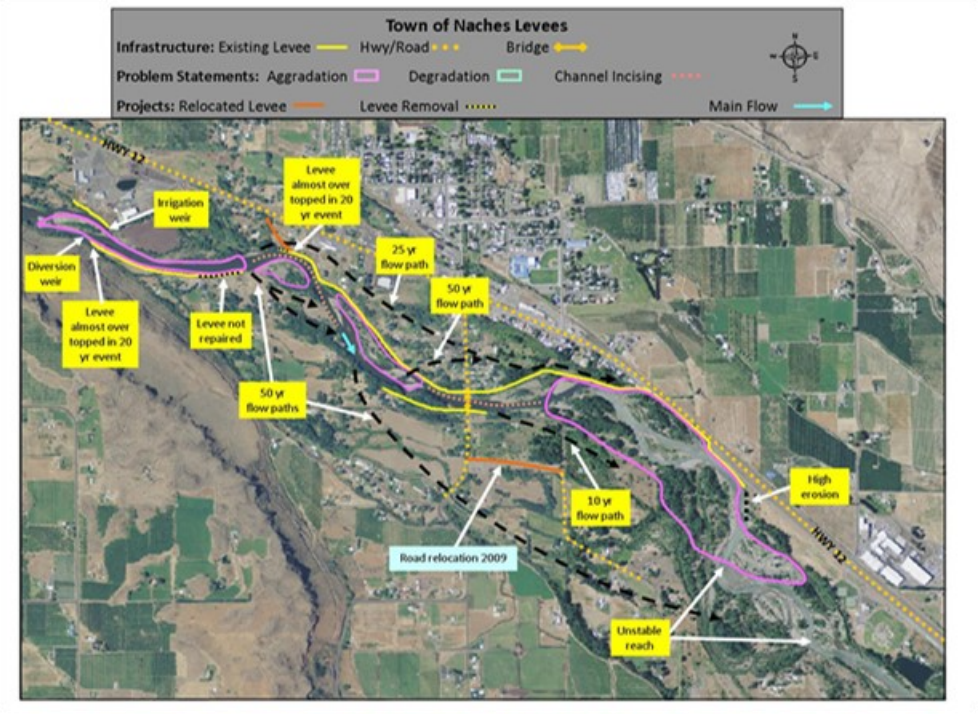
Naches River Levees Assessment

Eschbach Levees



Rambler's & McCormick





Town of Naches Levee

FCZD Project Status
May 2022

Ongoing Planning Project – YAPN 12-012 **Lower Naches**

A. Project Title: Naches Levees Assessment (FC3443) T.H.

B. FCZD Role: Lead
Cooperators: USACE, USBR, WSDOT, USFW, Yakama Nation

C. Brief Project Description:

Need: A primary recommendation of the Lower Naches CFHMP is that a study of the Naches River be undertaken to reduce flood hazard to multiple infrastructure components in the reach including US 12, the Yakima Water Treatment Plant, the YWTP diversion, the orphaned USCOE levees on the east side of the river, the Gleed diversion, the Yakima Valley Canal Company diversion headwork and screens, Eschbach Park and Kershaw Lane. This reach is unstable in its upper and lower portions and has had numerous emergency flood control/repair actions during and in response to recent, relatively minor flood events. During the May 2011 flood (15-year reoccurrence interval), several of the Naches River PL84-99 levees (Ramblers, McCormick, Town of Naches and Eschbach) protecting infrastructure and private property, were within less than one-half foot from over topping and failure. The 2011 overtopping and flanking threat was at the upstream ends of the levees where large sediment deposits have been observed. Complete failures of these levees were last experienced in 1996, a fifty-year flood, and damages were extensive at these locations. Also observed were large overflow paths around the levees in the 1996 flood.

Goals: To provide fluvial geomorphic assessments and hydraulic and sediment modeling of the Naches River reach below the Tieton River to assess alternate mitigative courses of actions such as levee raising, removal of sediment or removal of competing opposite bank levees and bank protection.

Benefits: Decreased long term flood risk, probable removal of abandoned levees and associated floodplain restoration with habitat and fish passage improvements.

D. Project Status

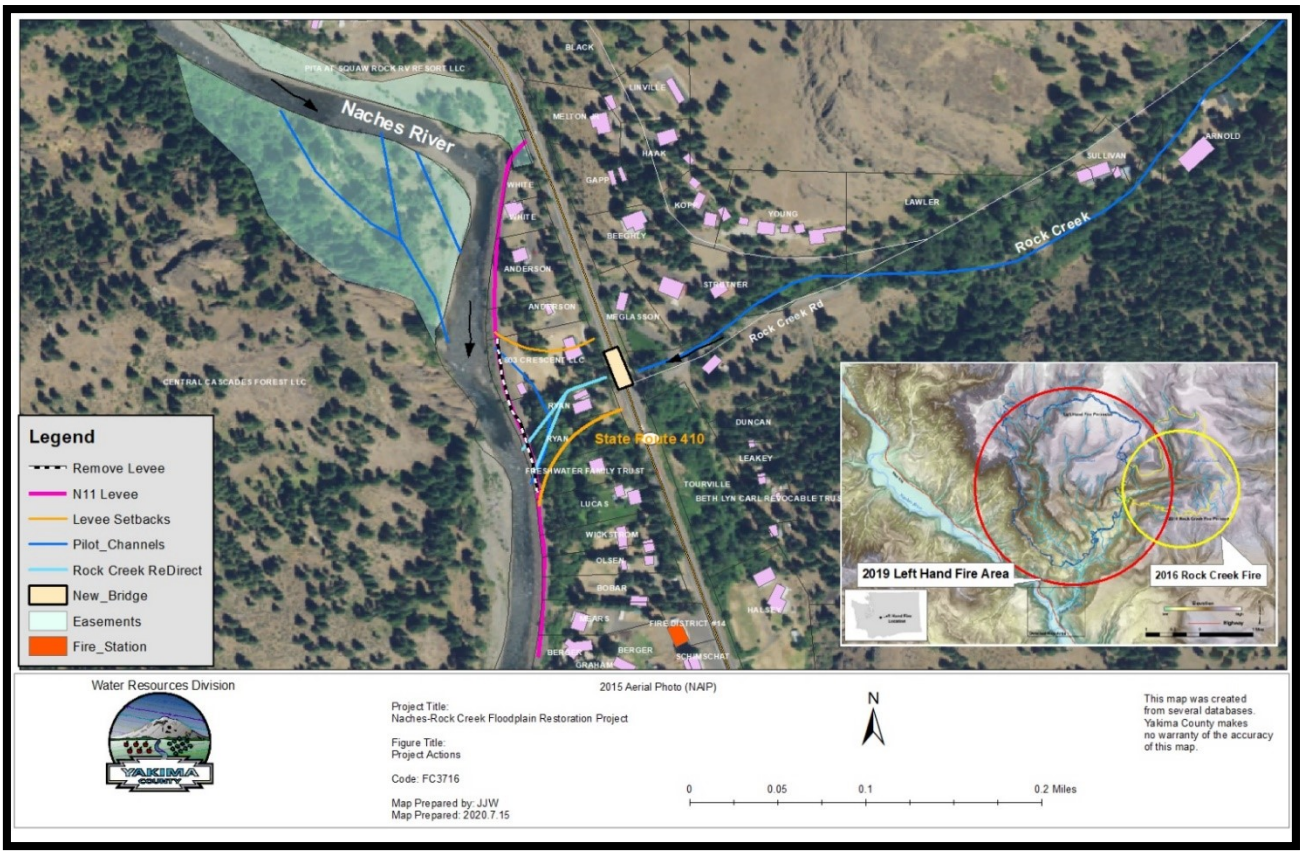
D1. Recent Project Work: 2015 Assessment report of entire 18-mile stretch completed. Report was based on geomorphic assessment and detailed HEC-RAS modeling of leveed reaches.

D2. Near Term Work: Implement levee setback and floodplain reconnection projects plus Nelson Dam replacement.

D3. Major Milestones & Dates:

2006 - First hydraulic model of reach by DHI for FEMA studies using 2000 LIDAR & bathymetry.
2011 - DHI studies for Ramblers Park levee backwater assessment.
2012 - Setback Lower half of N-1 Levee.
2013 - Signed USCOE cooperative agreement for Naches River HEC-RAS and sediment models with USCOE.
2014 - Eschbach Levee setback.
2014 - Field work data collection with USCOE creation of initial models, updated geomorphology assessment and Remediation Plan.
2015 - NHC modified and completed USCOE "assessment models" with report and geomorphic assessment.
2016 - Completed Rambler's Phase III channels and implementation plan.
2017 - Purchase Trout Meadows for future river capture.
2017 - Complete levee setback at N-9 levee.
2018 - Complete levee setbacks at N-1, N-2, and N-7 levees.
2021 - Start Nelson Dam removal.

Naches-Rock Creek Floodplain Restoration Project



FCZD Project Status
May 2022

Current Planning Project **Upper Naches**

A. Project Title: Naches-Rock Creek Floodplain Restoration Project (FC3716) T.H.

B. FCZD Role: Lead
Cooperators: WSDOT, WDFW, USCOE

C. Brief Project Description:

Need: Along the upper Naches River, the N-11 levee reduces flood risk to US12, several nearby residences, the Naches fire district station, and several hundred feet of the Rock Creek confluence. This levee has been repeatedly damaged, or flood fought since 1975 in two repetitive locations. The US12 culvert that passes Rock creek to the Naches River is severely undersized and prone to sediment infill and subsequent flooding and inundation of US12, FS Road 1702 and adjacent residences.

Goals: This project is established as a partnering effort with WSDOT to comprehensively reduce risk to infrastructure and residences in the area through culvert upsizing, property purchases, levee setback/removal, and floodplain modification.

Benefits: The project will remove/reconfigure up to 1,000 feet of levee and 4 homes with high flood risk and upsize a highway culvert. Up to 4 acres of floodplain will be returned to the Naches River as well as 500 linear feet of Rock Creek. Levee removal will reduce County O&M costs, federal repair costs, inundation and overtopping of US 12, the protected area footprint, and quantity of structures in danger. The restored corridor of Rock Creek will see an increase in habitat natural process function.

D. Project Status

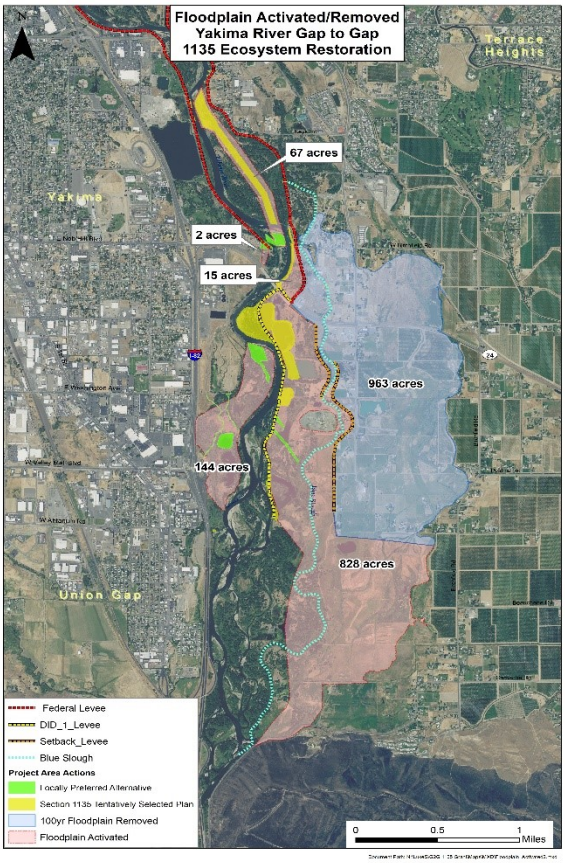
D1. Recent Project Work: Initial Meeting with WSDOT in Fall 2019. Pre-application work for FbD.

D2. Near Term Work: Continue planning and coordination meetings with WSDOT. Preliminary modeling and cost estimating. Discussions with landowners. Submit FbD applications.

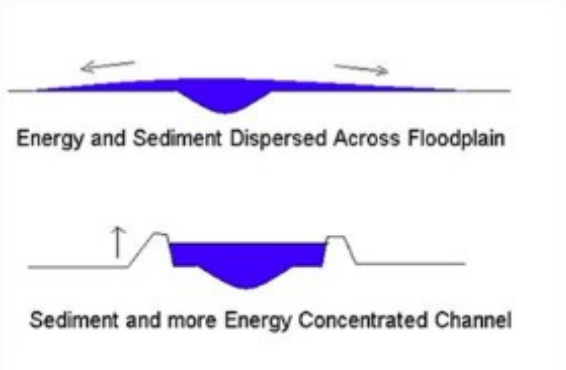
D3. Major Milestones & Dates:
2020 - Conceptual design and pre-application to FbD.
2020 - Landowners not interested in purchase/relocation – full FbD application withdrawn.
2021 - 2D alternatives modeling complete by Corps of Engineers. Outreach to landowners regarding purchase/relocation revealed status quo from 2020.
2022 - Reach out to landowners for willingness to sell.
2022 – WSDOT starts permitting, land interests and preliminary design
2025 - WSDOT replaces culvert

Gap to Gap Levee Set Back Coordination

Gap to Gap Reach Current Levee Configuration with existing 100-year floodplain.



Gap to Gap Reach levee configuration results in a wider floodway with a reduction in the 100-year floodplain.



FCZD Project Status
May 2022

Current CIP Planning Projects in CFHMP – YAPN 07-025 **Upper Yakima**

A. Project Title: Gap to Gap Levee Setback Coordination (FC3280) J.K.F.

B. FCZD Role: Lead

Cooperators: Yakama Nation, DOE, WDFW, BOR, NOAA, USFWS, WSDOT, Greenway, State Parks, City of Yakima, City of Union Gap, etc.

C. Brief Project Description:

Need: The effectiveness of the levee system that protects the Cities of Yakima and Union Gap, Terrace Heights and I-82 have been reduced by changes in the river channel that have occurred since their construction. In addition, the Diking Improvement District 1 levee, located downstream of SR 24 does not meet FEMA standards so that a large area east of the river is mapped as 100-yr floodplain and unnecessarily constrains economic development in this area. The DID 1 levee, which is not maintained by the DID, directs water towards Union Gap and may fail in a large flood causing hardships.

Goals: The project is to coordinate the setback, upgrade and certification of the DID 1 levee as a County levee to FEMA standards that reduces hazard to the Cities and County, removes mapped floodplain, improves floodplain maps to accurately reflect current hazard, restores a large portion of the natural river floodplain and greatly improves critical fish habitat. This project requires broad cooperation and coordinated activities with multiple groups, including acquisition of floodplain properties and easements supplementing those already owned by agencies. Land purchases by BOR have been completed. Associated studies will assist management of the entire levee system.

Benefits: Return river accessibility to 600 plus acres of adjacent high-grade floodplain to reduce flood hazard for urban and industrial lands and increase riverine habitat use for ESA species. Removal from the 100-yr floodplain of 800 acres of land along the SR-24 corridor for industrial and other upgraded land use. Implements recommendations of the Upper Yakima CFHMP, the Yakima Greenway Master Plan and East Side trail concept. Creates significant local partnerships for multi-jurisdiction flood risk awareness, cooperation and funding.

D. Project Status

D1. Recent Project Work: Convened and maintained Gap-to-Gap partnership (members listed above) for political and agency support and cooperative project design and implementation. Confirmed feasibility of funding for USCOE 1135 Environmental project. Approved by USCOE. Applied for FbD grant

D2. Near Term Work: Continue coordination meetings and overall management of project. Continue to seek inclusion of this project in Yakima Basin Restoration Plans and projects. Continue work with WSDOT and consultants on lower reach issues including City of Union Gap, South Union Gap interchange and Wapato Dam.

D3. Major Milestones & Dates:

2006 - First Gap-To-Gap Meeting. BOR had purchased land in set-back area.
2007 - Contract with BOR Technical Services and USGS for Sediment Studies.
2008 – Formal G2G Coordination Group.
2009 - Contract with Entrix for Geomorphic Studies on water gaps.
2009 - BOR purchases KOA.
2010 - Submitted Funding Request / Proposal to Congress - declined.
2011 - Final Sediment and Geomorphic Studies. USCOE levee setback at KOA authorized.
2012 - Completed USCOE set-back of KOA and Marsh Rd Levee modification.
2013 - City relocation of Greenway trail and levee removals, secured $1.3 million for WWTP outfall relocation. Submit Section 1135 Funding Request to USCOE including HAZUS analysis. Finalized CPM mine / levee easement agreement.
2014 - USCOE 1135 feasibility study initiated. NHC gravel management & risk studies for NEPA.
2015 - Completed Pit Capture Studies, begin NEPA and USCOE Realty agreement, DOT partnership.
2016 - Project preliminary design and property acquisitions before construction.
2018 - Feasibility study establishing positive basis for project completed.
2019 - Section 1135 Project Partnership Agreement for design and construction of Phases II & V. Obtained FbD grant above $10 million limit for locally preferred alternative.
2019-2022 - Funding and design.
2022-2025 – Construction by USCOE & Yakima County.

Riparian Planting Guidance

FCZD Project Status

May 2022

Current Planning Project **West Valley**

A. Project Title: Riparian Planting Guidance - (FC3704) L.S.

B. FCZD Role: Lead
Cooperators: Ecology, YBFWRB, North Yakima Conservation District

C. Brief Project Description:

Need: Yakima County has revegetated several riparian sites within the valley with varying levels of success. Differences in planting plans, contractors, timing, depth to groundwater and stewardship can drastically affect the establishment and survival rate of new plantings. A standardized successful approach to planting projects and proven strategies will benefit organizations.

Intent: Increase institutional knowledge of riparian planting strategies, including watering, to inform staff when designing or contracting for re-vegetation work and required maintenance for establishment. Identify factors that led to success or failure of various planting projects to improve future efforts.

Benefits: Provides consistent guidelines and resources for FCZD staff to reference when planning projects and hiring contractors. Helps identify species and planting timing for optimal benefit versus cost. Details challenges associated with different environmental conditions and groundwater depths at various riparian sites and how to mitigate deleterious effects to vegetation.

D. Project Status

D1. Recent Project Work:
2019 - Review planting plans & techniques at various completed projects, develop initial guidelines for application & testing across current & future project sites.

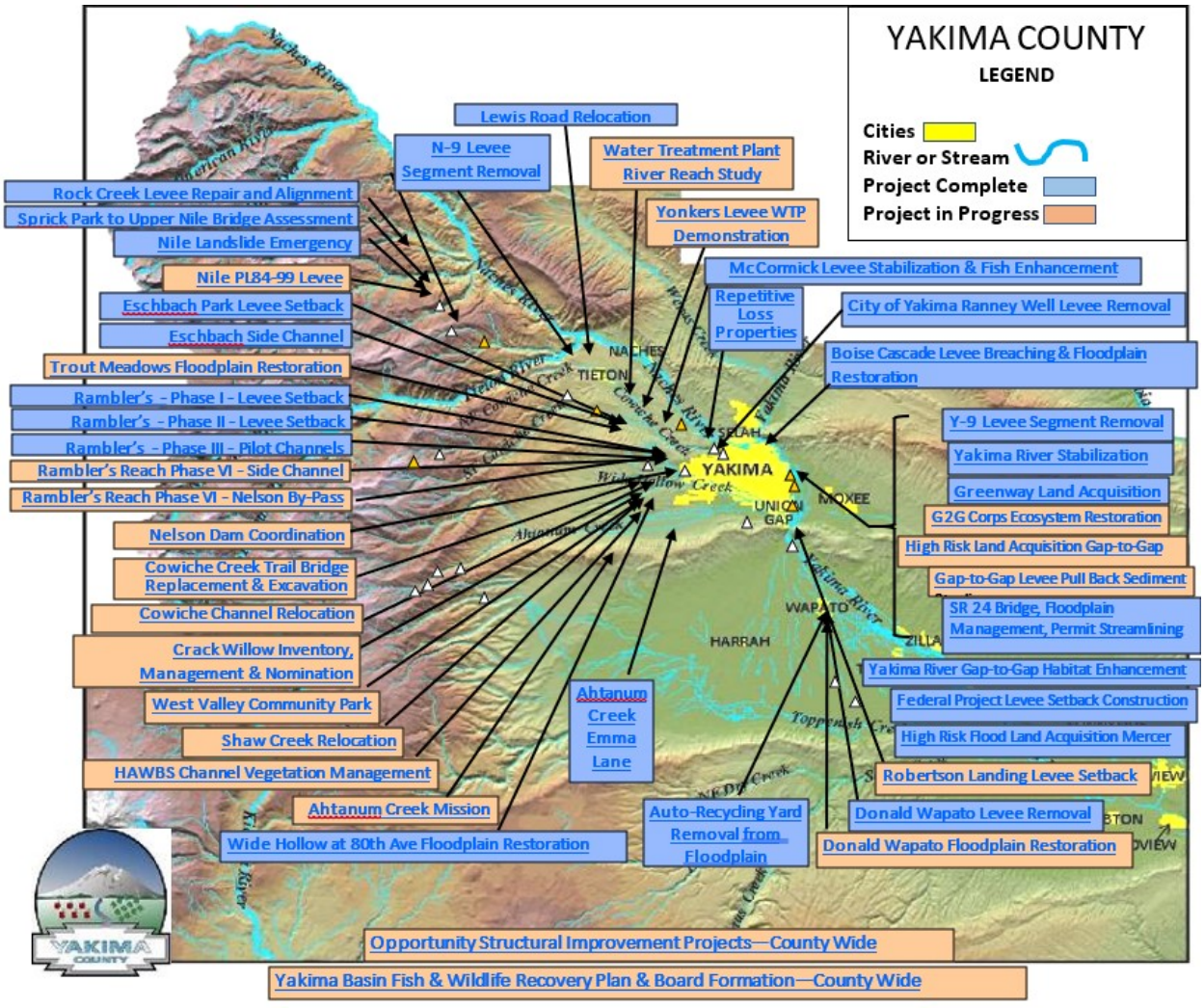
D2. Near Term Work:
2022 - Monitor success of deep planting and willow trench techniques at Trout Meadows, Ramblers IV, and Y-9 channels to inform future efforts.

D3. Major Milestones & Dates:
2019 - Review planting plans & techniques at various completed projects for guidelines
2020 - Completed draft.
2021 - Distribute guidelines document for use and further data.

~ This page intentionally left blank ~

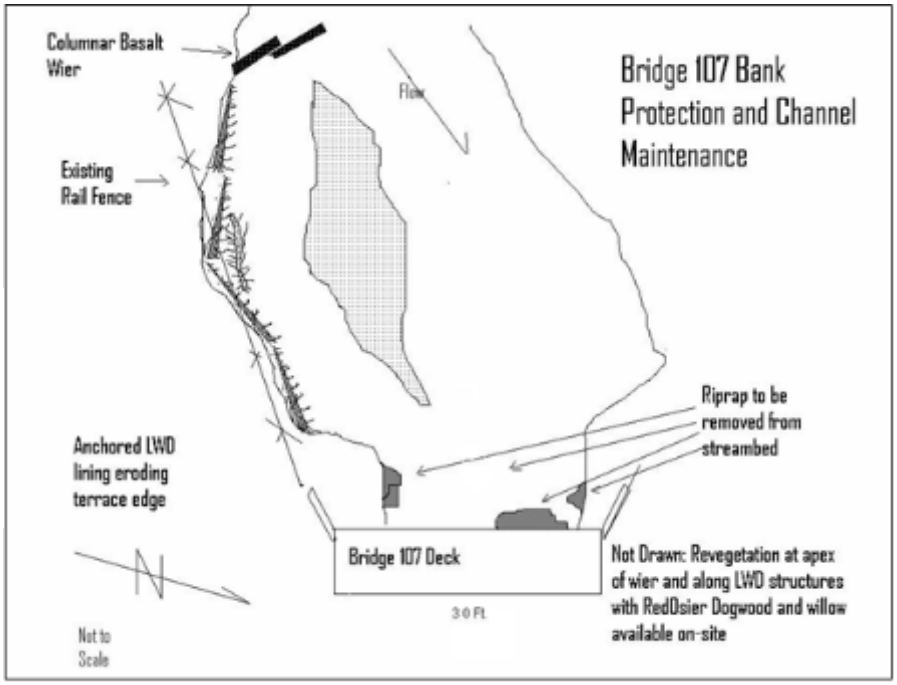
Section 7

Flood Hazard Mitigation Projects



Opportunity Structural Improvement Projects

Plan for Ahtanum Creek Bridge 107



16th Avenue Naches River Bank Protection

SR 24 Bridge Design & Construction

FCZD Project Status
May 2022

Ongoing Demonstration (CIP) Projects – YAPN 07-029 **County-Wide**

A. Project Title: Opportunity Structural Improvement Projects Coordination (FC400) T.H. / J.K.F.

B. FCZD Role: Cooperator acting as Co-Lead, support or facilitator
Cooperators: Numerous Parties depending on project

C. Brief Project Description:

Need: Projects initiated by other private or public entities often have a strong relationship to improving or worsening flood hazard in the County. The Flood Control Zone District RCWs authorize FCZDs to cooperate with a wide range of agencies and private entities for the purposes of flood control. The FCZD actively pursues cooperation with entities on their projects where such cooperation will result in reduction of flood hazard in the County.

Goals: To improve the design and implementation of County-Wide projects relative to flood hazard, while meeting the needs of cooperating agencies. This is accomplished through information sharing, cooperative design, contribution of funds, joint actions, MOAs, ILAs, or contracts that have a strong relationship to CFHMPs.

Benefits: Fulfilling the FCZD purpose to reduce flood hazard over the long term at relatively low cost. Provide cooperative partnership and comprehensive technical support based on acquired river understanding that minimizes future costs.

D. Project Status

D1. Recent Project Work:

WSDOT - SR24 bridge design and construction (2004), SR12 bank stabilization at 16th (2008), SR12 Tieton River Bridges (2009, Nile Slide (2009, 2010), Valley Mall Boulevard exit design and construction (2010), Garrett Canyon debris flow (2013) excavation, Union Gap interchange design, 16th Av/Naches River bank protection design and implementation. SR12 Cowiche Creek bridge design. Cowiche Creek channel excavations (2017). Rock Creek culvert & levee 2D alternative modeling (2021). Powerhouse Rd Study (2021).

Yakima County Public Services - All road, railroad and bridge design and construction projects which have some connection to streams and rivers (ongoing), Donald-Wapato Bridge (2005), Rattlesnake Bridge (2006), East-West Connector Bridge (2012 & 2019). Meyers Road (2013). Rattlesnake Bridge (2016).

North Yakima Conservation District - Habitat restoration (Cowiche and Ahtanum Creeks - completed 2005, 2007), irrigation diversion/fish passage (Rattlesnake Creek diversion removal - 2009) and riparian zone planting design and implementation (ongoing).

Bureau of Reclamation - Diversion and fish screen design and maintenance plans; water and land acquisition and habitat improvement through YRBWEP program (ongoing). Water and land acquisition and habitat improvement through YRBWEP program, KOA Campground Levee Setback (2012), Marsh Road PL84-99 Levee Setback on BOR property (2012 & 2019). East-West Connector (2012).

City of Yakima - W.O. Douglas Trail Bridge. (Model and abutment design), Nelson Dam Redesign (2011-2016), Cowiche Creek realignment (2016-17). Yakama Nation, WDFW and BOR (YRBWEP) Wapato Reach Assessment and Levee Abandonment (2012). Riverpointe Landing Traffic layout, Creekside Development and William O. Douglas Trail Crossing. Miscellaneous irrigation diversions on Naches River, Nelson Dam (2011-2016), Cowiche Creek Trail Bridge (2021)

City of Union Gap - Valley Mall Boulevard design and mitigation implementation.

D2. Near Term Work: Tieton Reservoir bridge, Cowiche-Naches confluence reconfiguration, Lower Valley modeling, East-West bridge connector, and Powerhouse Road bridge.

D3. Major Milestones & Dates: FCZD is not lead on these projects but is cooperator.

Yonkers Levee WTP Demonstration Project

FCZD Project Status
May 2022

Current CIP Project in CFHMPs – YAPN 07-023 **Lower Naches**

A. Project Title: Yonkers Levee WTP Project (FC3312) J.K.F.

B. FCZD Role: Cooperator acting as Co-Lead, support or facilitator
Cooperators: Numerous Parties depending on project

C. Brief Project Description:

Need: In the Spring 2008 Flood, a section of bank across the river from the WTP diversion began rapidly eroding, threatening the WTP and Gleed Diversions, as well as other areas downstream, including Eschbach Park. The FCZD requested the Corps of Engineers (USCOE) to install emergency bank protection in this area on Yonkers property. The FCZD is required to bring this structure into compliance with the Shoreline and Critical Areas Code and WDFW's Hydraulic Code.

Goals: Incorporate Yonkers levee with long-term stability of this reach using vegetation, large woody debris, riprap and levee pull back. Develop a reach-based restoration strategy over the long-term; the first element of this strategy is the pullback of the Eschbach Park Levee downstream, and then the city stabilization project incorporating the earlier emergency work.

Benefits: Reduced river energy, protection of the Park and Diversions.

D. Project Status: Activity deferred pending city design.

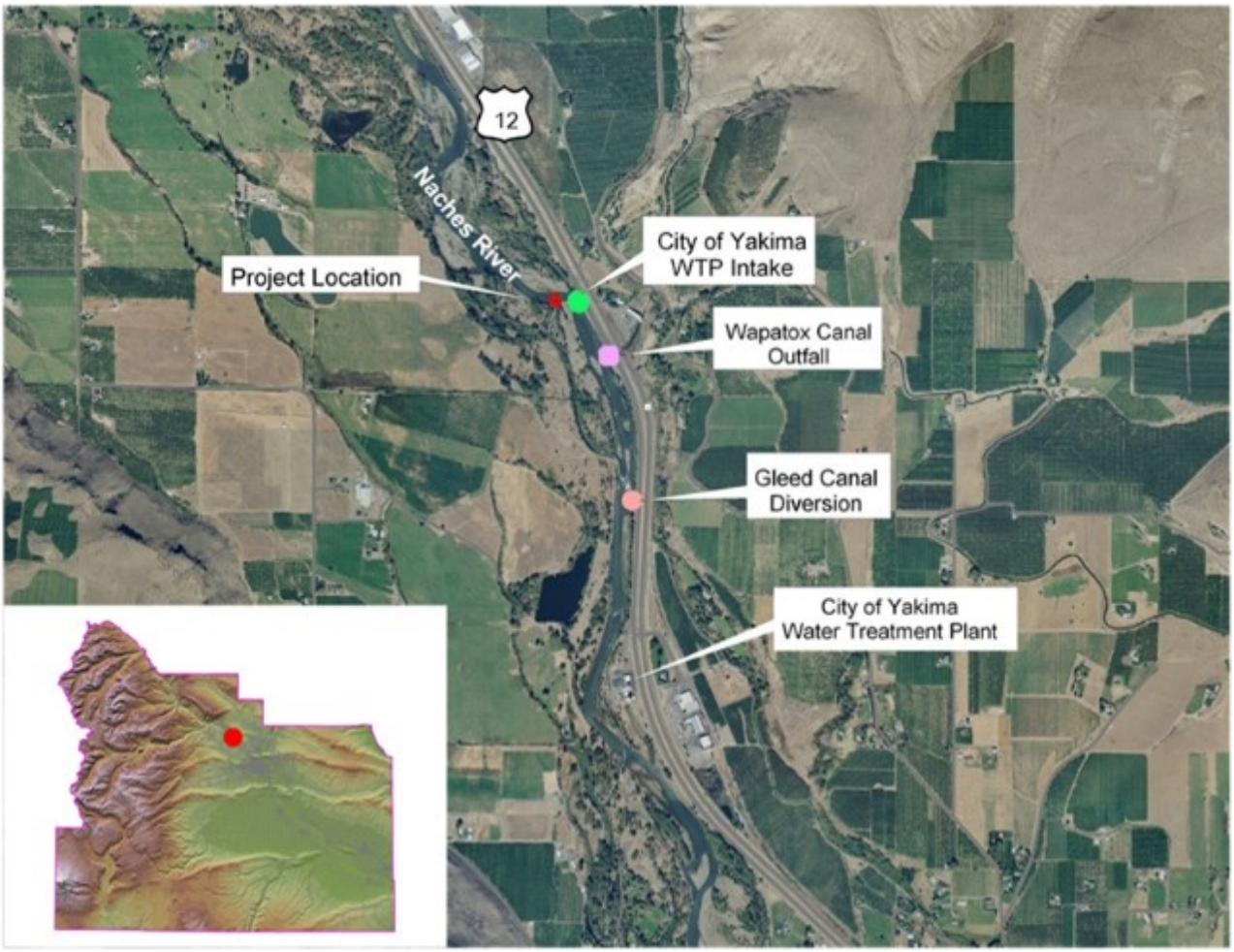
D1. Recent Project Work: City of Yakima/WDFW agreement on need for Yonkers.

D2. Near Term Work: Partnering with City of Yakima on WTP.

D3. Major Milestone & Dates:

2008 - Flood requiring emergency work on WTP diversion.
2008 - Contracted Entrix and received draft memo.
2009 - Site stabilization work (old levee removal and revegetation).
2011 - Completed Entrix memo.
2012 - Golder release a report on WTP reach designs.
2014 - Completed Eschbach Park construction (see Eschbach Park Levee Setback (FC3379).
2015 - City of Yakima and Gleed ditch design a reach stabilization project based on Golder Report (see YPN 07-027) that may re-configure USCOE emergency levee on Yonkers property.
2016 - City of Yakima plan to implement grade control structures in Naches River. (See FC3249 for future work rolled into YRBWEP Phase III).
2022 - City of Yakima Construction.

Water Treatment Plant River Reach Study



FCZD Project Status
May 2022

Current CIP Project in CFHMPs – YAPN 07-027 **Lower Naches**

A. Project Title: Water Treatment Plant River Reach Study (FC3249) J.K.F.

B. FCZD Role: Lead
Cooperators: City of Yakima, WSDOT, WDFW, Yakima Valley Canal Co., adjacent landowners

C. Brief Project Description:

Need: A primary recommendation of the Lower Naches CFHMP is that a study of the Naches River be undertaken to reduce flood hazard to multiple infrastructure components in the reach including US 12, the Yakima Water Treatment Plant, the YWTP diversion, the orphaned USCOE levees on the east side of the river, the Gleed diversion, the Yakima Valley Canal Company diversion headwork and screens, Eschbach Park and Kershaw Lane. This reach is unstable in its upper and lower portions and has had numerous emergency flood control/repair actions during and in response to recent, relatively minor flood events. Due to the instability of this reach, short term actions to stabilize the reach with potential long term detrimental impacts and costs have been, and will continue to be, required until a comprehensive approach to the WTP reach with greater effectiveness is developed and implemented. Prior actions have also been largely uncoordinated, with inadvertent conflicts.

Goals: A fluvial geomorphic study of the area has been undertaken by Golder and the City to determine how the facilities and river function, the causal long-term factors for instability, and how infrastructure can be managed to reduce flood hazard and to improve riverine function over the long term. That information will be used to develop a specific plan for the Naches Water Treatment Plant reach in cooperation with the owners/managers of the infrastructure.

Benefits: Increased understanding of how to manage infrastructure in this reach into the future. Reduced flood hazard and need for emergency action in the WTP reach plus an approach to manage the orphaned USCOE levees in the reach.

D. Project Status: Activity deferred pending implementation of related funded projects within the area, i.e. City WTP diversion.

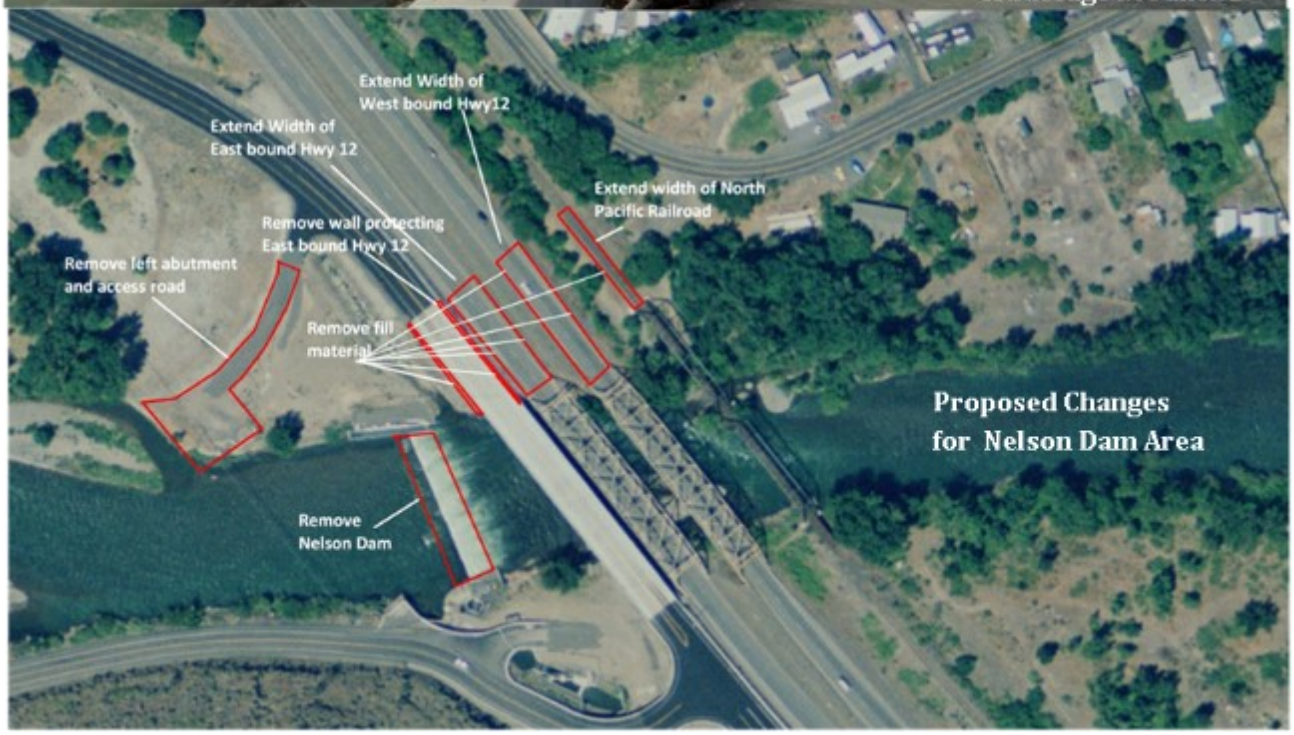
D1. Recent Project Work: The City Study by Golder was completed (2016). The scheduled reach scale restoration/flood hazard reduction project was placed within the YRBWEP Phase III BOR/Ecology Basin Study.

D2. Near Term Work: Continue to work with other funding and water conservation sources to rework irrigation diversion and levee systems in this reach to reduce flood hazard and improve channel stability and fish habitat including, the USCOE levee work at City of Yakima Water Treatment and irrigation diversions.

D3. Major Milestone & Dates:

2008 - Entrix contracted for Reach-Scale & Water Gap Geomorphic Work.
2008 - WTP reach analysis memo received. Local early action items identified and completed.
2009 - Eschbach Park grant awarded.
2009 - Geomorphic study on hold.
2010 - Completed WTP reach report.
2011 - City hired Golder after May 2011 flood to develop designs to improve stability.
2014 - Completed Eschbach diversion project.
2017 - Finalize Reach requirements after Golder report for City. Obtain permits. Geomorphic recommendation complete. Gleed diversion reinforced.
2019 - Addendum to complete Corps required Gleed and City WTP diversion work (FC3312).
2022 - Reassess the need for revegetation, habitat enhancement or other actions (minor excavation) to meet design goals for reach.

Nelson Dam Coordination Project



FCZD Project Status
May 2022

Current CIP Project in CFHMP – YAPN 07-029 **Lower Naches**

A. Project Title: Nelson Dam Reach Coordination - Rambler's Phase IV (FC3389, 3588, 3732) and VI (FC3664)T.H.

B. FCZD Role: Cooperator
Cooperators: Reclamation, City of Yakima, WDFW

C. Brief Project Description:

Need: Following the 1996 flood an upgrade of Nelson Dam was recommended in the 1998 Upper Yakima CFHMP to reduce the high flood hazard in the Gap and reach at Rambler's Park. This area was highly impacted during the 1996 flood, an estimated 50-year flood that damaged Nelson Dam and other infrastructures and houses. A cooperative project between Reclamation, the City of Yakima, WDFW, and Yakima County FCZD was initiated to reconstruct and improve the weir structure at Nelson Dam to improve flood and fish passage, maintenance, sediment movement and reduce bed aggradation.

Goals: **P**rovide a design and structure that meets the above multiple objectives, fish and sediment passage, reducing local flooding over a range of floods, the FEMA 100-year floodplain and floodway upstream of the dam.

Benefits: Better fish and sediment passage, reduced dam maintenance and flooding through enhancing natural river functions, and a design that can be used to coordinate future infrastructure design and modifications (i.e., expansion of WSDOT bridge and County bridge) at this high hazard location. Benefits include partnership that will guide future infrastructure modifications and cooperation at this location.

D. Project Status:

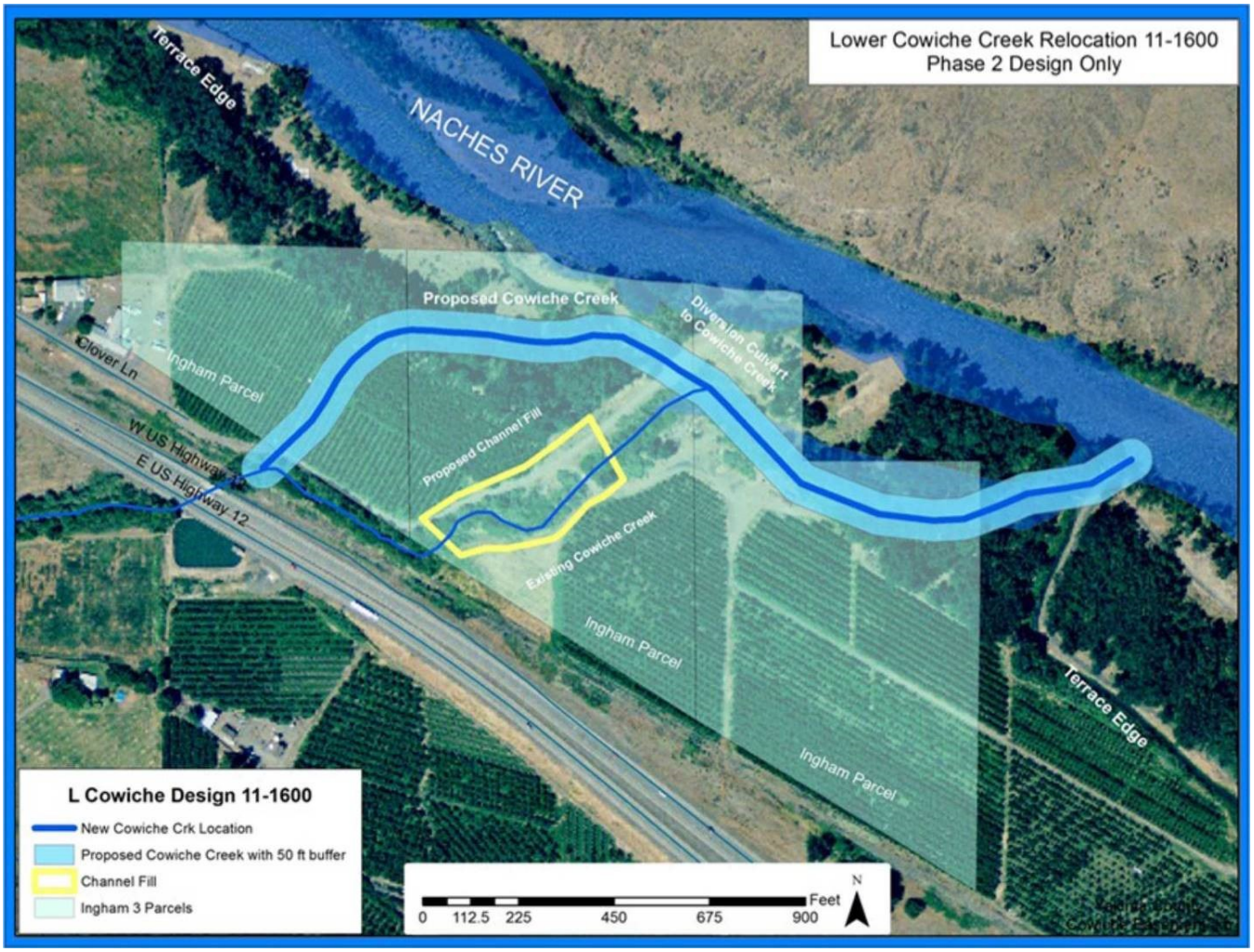
D1. Recent Project Work: Completed DHI report on hydraulics and shared with partners to inform project scoping, local coordination and long-term vision

D2. Near Term Work: Use DHI, USCOE, and NHC model and BOR preliminary engineering to develop an overall reach and infrastructure design for flood hazard reduction, fish passage and irrigation diversion consolidation for BPA funding round.

D3. Major Milestone & Dates:

2009-2010 - Data collection.
2010 - Hydraulic design phase, project scoping and multi objective cost sharing.
2010 - County contracted DHI for long term floodway reduction designs.
2010 - Conceptual design and agreement on project objectives.
2011 - DHI completed hydraulic analyses.
2012 - County presents hydraulics for use in designs and sets back 1500 feet of adjacent N-1 levee.
2013 - City completes conceptual/alternatives/preliminary design report for dam replacement.
2015 - Obtained funding for boulder by-pass or fish passage facilities complementary to Nelson Dam reconfiguration by the City and partners; discuss project with YBIP, City initiates preliminary design for Nelson Dam design after agreement with partners.
2016 - Joint by-pass/new dam feasibility study funded by floodplain by design including physical model. Followed by preliminary design for dam and by-pass.
2017 - NHC completes preliminary design of bypass from physical model. HDR completes preliminary design of dam and piping. Seek funding for proposed design. Obtained funding for enlarged boulder dam structure.
2018 - Secured Nelson Dam / Weir funding through bond & FbD.
2019-2020 - NEPA, permitting by others.
2021-2023 – Nelson Dam Replacement construction. Grant closeout.
2024-2025 - Retire Fruitvale and Old Union diversions, when funded.

Lower Cowiche Channel Relocation



FCZD Project Status
May 2022

Current CIP Project in CFHMP – YAPN 11-006 **Lower Naches**

A. Project Title: Lower Cowiche Creek Channel Relocation Project (FC3439) L.S.

B. FCZD Role: Cooperator with City of Yakima and WSDOT and Landowner

C. Brief Project Description:

Need: The City of Yakima is retiring two Naches River diversions as part of the Nelson Dam reconfiguration which will allow removal of several levees and relocation of the lower 2,000 feet of Cowiche Creek towards its former route prior to agricultural development.

Goals: Relocate Cowiche Creek downstream of US 12 in cooperation with the City retirement of irrigation structures to improve floodplain access, flood control and fish and wildlife habitat along Lower Cowiche Creek.

Benefits: Increase flood protection for the 40th Avenue/Fruitvale interchange with US 12 through reduced flood heights in lower Cowiche Creek between US 12 and the Naches River confluence. This will also improve fish passage up Cowiche Creek.

D. Project Status:

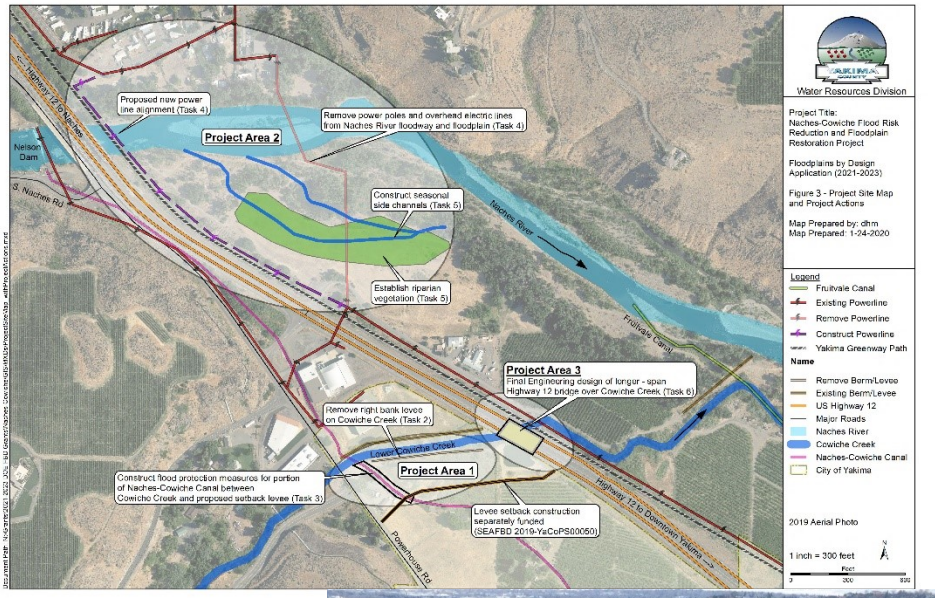
D1. Recent Project Work: Successful SRF grant applications and purchase of easement. Design of channel reconstruction for lower Cowiche.

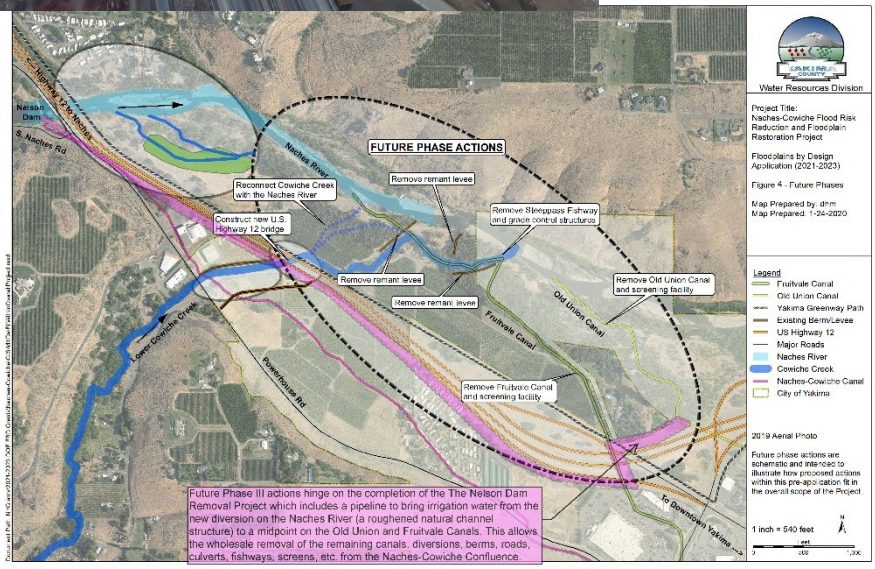
D2. Near Term Work: City to initiate Nelson Dam design, develop plan for retirement of Fruitvale diversion and setback of the Cowiche levees. Revisit channel relocation design and restoration in association with diversion removal and recent Cowiche infrastructure changes proposed in 2018 CFHMP Cowiche Addendum.

D3. Major Milestone & Dates:

2008 - Partial Naches River levee removal in cooperation with WSDOT.
2010 - Finalize water right transfer.
2010 - SRF Grant approval for Lower Cowiche easement ($85k).
2012 - Obtain SRF Grant for Cowiche design ($105k).
2014 - Cowiche preliminary design completed.
2016 - Obtained conservation easement.
2018 - Cowiche Creek Addendum to UYCFHMP expanded scope of this project upstream (FC3687). Application for FbD funding for expanded design.
2019-2021 - Cowiche design, SEPA, CLOMR
2020 - Apply for FbD grant for Hwy 12 bridge sizing, pilot channels & powerline relocation (Phase II).
2021 - Begin planning for future actions (phase III).
2021 - Purchase of Squire – Ingham parcel.
2023 - Complete modifications upstream of Hwy 12 (Phase I).
2025 - Fruitvale diversion retirement, following Nelson Dam construction.

Naches-Cowiche Flood Risk Reduction and Floodplain Restoration





FCZD Project Status
May 2022

Current CIP Project in CFHMP **Lower Naches / Cowiche Creek**

A. Project Title: Naches-Cowiche Flood Risk Reduction and Floodplain Restoration Phase I (FC3687) D.M.

B. FCZD Role: Lead
Cooperators: WSDOT and City of Yakima as collaborative partners

C. Brief Project Description:

Need: Floods in 2016 and 2017 reinforced the need for a coordinated multi-agency effort towards integrated floodplain management of the entire Naches-Cowiche confluence downstream of Yakima Valley Canal siphon.

Goals: Transform the Naches-Cowiche confluence through the coordinated design and permitting of a series of interrelated flood hazard reduction and floodplain and habitat restoration actions including those previously identified in FC3439. Goals include: Restored fish passage, ecological floodplain functions, and habitats for native and endangered species on Lower Cowiche Creek and within the Naches-Cowiche floodplain and confluence; reduced flood risk to the City of Yakima, Hwy 12, Powerhouse Road, and adjacent working agricultural lands; and reduced need for costly and disruptive emergency maintenance and flood response efforts.

Benefits: Approximately 82 acres of habitat and floodplain restoration along about 8000 feet of Cowiche Creek and the Naches River. Reduced likelihood of damages (and closures) to Hwy 12, Powerhouse Road, Fruitvale Blvd, 40th Avenue, and a swath of the road network within the City of Yakima. Significant flood risk reduction to over 16,000 residents in the City of Yakima.

D. Project Status

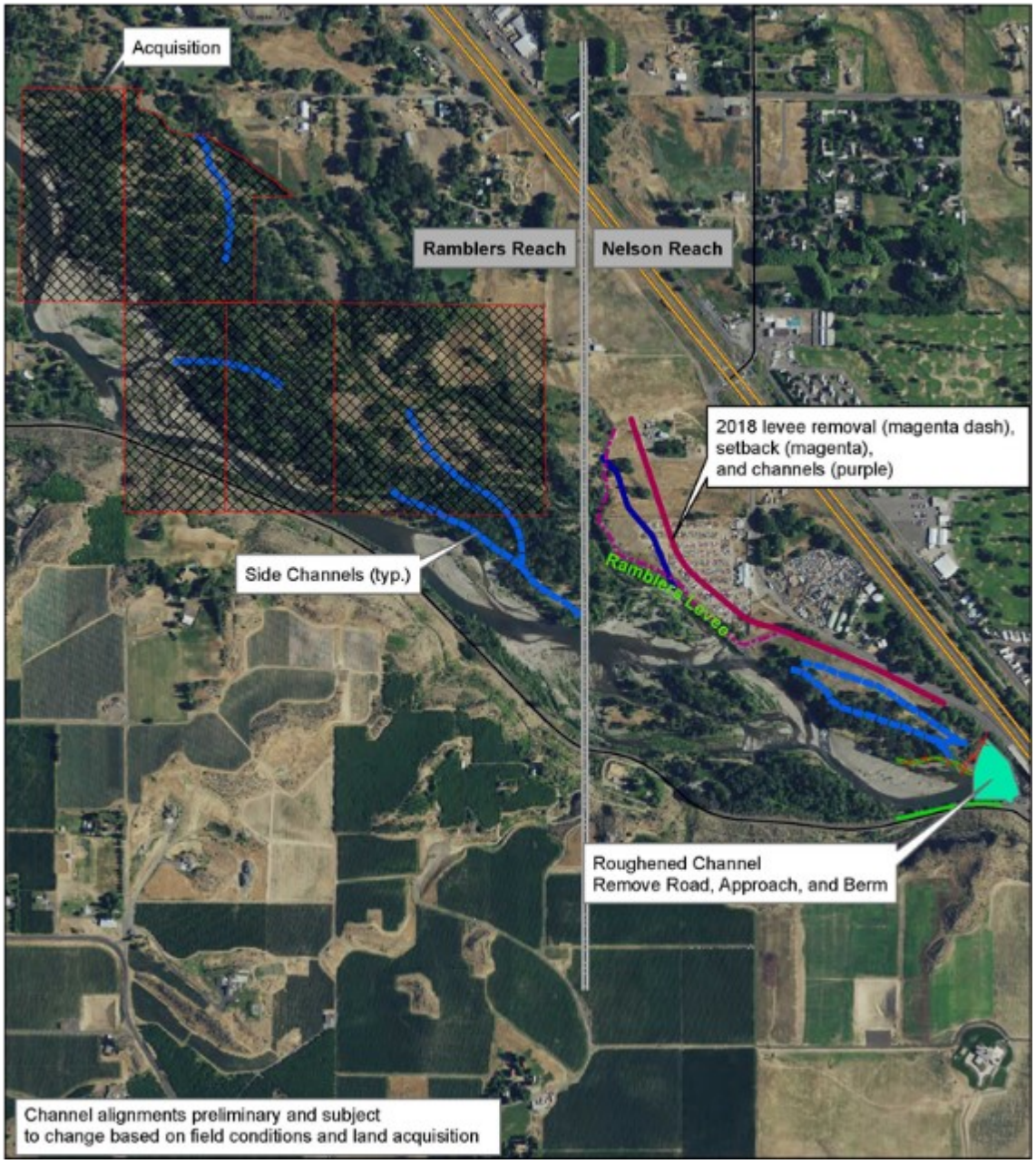
D1. Recent Project Work: Project formulation and grant funding applications. $500k in Yakima Basin Integrated Plan funding received. Additional Floodplains by Design funding applied for (Phase II). Completed ILA.

D2. Near Term Work: Finalize permitting plan and acquisitions. Initiate permitting.

D3. Major Milestones & Dates:

2018 - 2018 Cowiche Addendum to the Upper Yakima River Comprehensive Flood Hazard Management Plan (CFHMP), grant funding applications (YBIP and FbD)
2019 - Secured YBIP funding for planning & FbD funding for setback levee.
2019-2020 - Develop ILA, permitting plan, preliminary designs, initial acquisition planning, secure permits and proceed to final designs.
2020 - Applied for Phase II funding through FbD equivalent to $1.7 million for Phase II (2021-2023). Not awarded.
2021 - Begin planning phase III folding in partners & Squire-Ingham purchase.
2021-2022 - Design of setback levee and other floodplain restoration actions upstream of Highway 12 (Final design contract with Anderson Perry)
2022 - Application to FbD for Phase II. Application to RCO for NCCA canal resiliency funding.
2023 - Construct Phase I

Rambler's Reach Phase 6



FCZD Project Status
May 2022

Current CIP Project in CFHMP **Lower Naches**

A. Project Title: Ramblers Reach Phase 6, side-channel restoration (FC3664) T.H.

B. FCZD Role: Lead

C. Brief Project Description:

Need: This 3.0-mile reach known as "Ramblers Reach" located on the Lower Naches River upstream of Nelson Dam has been functionally compromised through a historic combination of dam construction, highway building, shoreline armoring, levee construction and residential, commercial, and agricultural development. Confinement and sediment accumulation have rendered the reach highly unstable during larger floods and recently resulted in extensive damage during the 1996 flood, a 50-year flood event.

Goals: To reduce the lateral constrictions and reconnect the floodplain of this, the most highly productive Naches River mainstem floodplain reach, by restoring the hydraulic, geomorphic and ecosystem functions back towards pre-dam and pre-levee flood conditions. The project is the sixth and final project phase intended to reverse the hydraulic, ecologic and economic degradation experienced in recent years from floodplain and channel intrusions.

Benefits: Removal of lateral channel and floodplain constraints within the central Naches River floodplain located between Rambler's Park and Trout Meadows through 1) Completion of the Trout Meadows pilot channels which will assist the river to reoccupy the upstream 60 acres of floodplain and reestablish abandoned channels; 2) Setback of the downstream 600 feet of McCormick Levee allowing side channel access, 3) Acquisition of up to 100 floodplain acres, (in addition to the already County-owned 100 acres in this reach), 4) Excavation up to 6,500 feet of floodplain channels to reestablish multiple abandoned river side channels which have aggraded, thereby reestablishing floodplain connectivity and pre-disturbance hyporheic flows for up to 123 acres, and 5) Setback 1,700 feet of damaged levee to protect 79 acres of active farmland and highway 12 thereby reducing overland flow towards Highway 12 and the community of Gleed to remove 250 homes from the FEMA floodplain. The project will be completed in combination with the replacement of Nelson Dam with a boulder by-pass structure to reduce the vertical restraint of an 8-foot fall at the dam by a sloped natural bed structure.

D. Project Status

D1. Recent Project Work: Previous to this Phase VI work, completed and ongoing Rambler's Park project phases undertaken to reduce infrastructure constrictions and their long- term impacts, include:

Pre-Phase I - relocated Powerhouse Road with a wider bridge (2006)

Pre-Phase I & Phase I - removal of multiple residences (2003 and 2013)

Phase I-1500 feet (2013) and Phase II-(2018) - setback of 3,000 feet of Rambler's levee;

Phase III-2016 - channel creation (1000 feet) in a 5-acre elevated island deposit that had produced excessive channel instability and flood impacts;

Phase IV-2018 - purchase of the two properties of abandoned floodplain at Trout Meadows.

Rambler's Park Phases IV and V (City) - design studies to replace Nelson Dam with a more fish and flood friendly dam and natural by-pass structure (2017); **construction started July 2021**

D2. Near Term Work: Acquire easement and right-of-entry permit, final design and modelling, permitting and construction.

D3. Major Milestones & Dates:

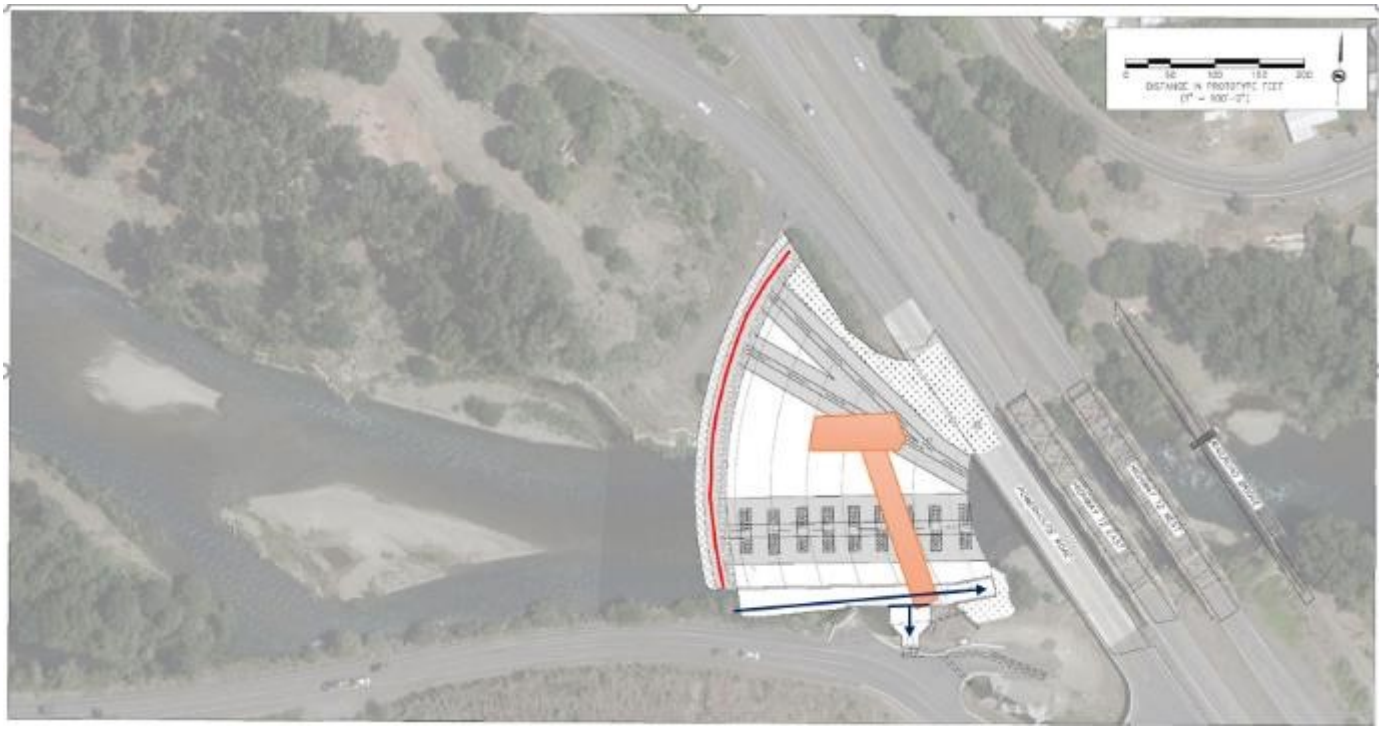
2018 - Preliminary designs and acquisitions underway.

2019 - Designs to enable acquisitions and proceed to permitting.

2021-2022 - Final design and move towards construction.

2023 - Revegetation and grant closeout.

Rambler's Reach Phase 6 – Nelson Dam By-Pass



FCZD Project Status
May 2022

Current CIP Project in CFHMP **Lower Naches**

A. Project Title: Ramblers Reach Phase 6, Nelson Dam By-pass (FC3664) T.H.

B. FCZD Role: Lead

C. Brief Project Description:

Need: This 3.0-mile reach known as "Ramblers Reach" located on the Lower Naches River upstream of Nelson Dam has been functionally compromised through a historic combination of dam construction, highway building, shoreline armoring, levee construction and residential, commercial, and agricultural development. Confinement and sediment accumulation have rendered the reach highly unstable during larger floods and recently resulted in extensive damage during the 1996 flood, a 50-year flood event.

Goals: To reduce the vertical constrictions and reconnect the floodplain of this highly productive Naches River mainstem reach, by restoring the hydraulic, geomorphic and ecosystem functions back towards pre-dam and pre-levee flood conditions. Activities include replacement of Nelson Dam with a dam reconfiguration that contributes to lessened flood levels, reduced flood overflows to Gleed, more consistent upstream and downstream fish passage, reactivates unbalanced sediment processes and provide small boat recreational opportunities. The project is the sixth and final project phase intended to reverse the hydraulic, ecologic, and economic degradation experienced in recent years from floodplain and channel intrusions.

Benefits: Removal of vertical channel and floodplain constraints within the central Naches River floodplain located between Rambler's Park and Trout Meadows through 1) replacement of Nelson Dam with a two-acre boulder-material fish and sediment natural boulder by-pass structure that removes the vertical 8-foot fall at the dam by a sloped natural bed structure.; 2) Construction of 2,500 feet of by-pass approach channels for flood reduction, fish passage, and sediment transport, 3) Protection of Powerhouse Road at the structure, 4) Removal of two downstream irrigation intakes by incorporation at the dam. 5) upstream movement of the dam crest several hundred feet to reduce overland flow towards Highway 12 and the community of Gleed from the FEMA floodplain. The project will be completed in combination with the replacement of Ramblers Reach Phase 6 channels.

D. Project Status

D1. Recent Project Work: Previous to this Phase VI work, completed and ongoing Rambler's Park project phases undertaken to reduce infrastructure constrictions and their long- term impacts, include:

Pre-Phase I - relocated Powerhouse Road with a wider bridge (2006)

Pre-Phase I & Phase I - removal of multiple residences (2003 and 2013)

Phase I-1500 feet (2013) and Phase II-(2018) - setback of 3,000 feet of Rambler's levee;

Phase III-2016 - channel creation (1000 feet) in a 5-acre elevated island deposit that had produced excessive channel instability and flood impacts;

Phase IV-2018 - purchase of the two properties of abandoned floodplain at Trout Meadows.

Rambler's Park Phases IV and V (City) - design studies to replace Nelson Dam with a more fish and flood friendly dam and natural by-pass structure (2017);

D2. Near Term Work: Provide City County ILA, Structure design and hydraulic modelling that allows permitting.

D3. Major Milestones & Dates:

2018 - Provide County-City ILA.

2019 - Hire consultant.

2020 - Complete 60% designs and proceed to permitting, final design and move towards to bypass construction.

2021-2023 - Construction and revegetation.

South Fork Tieton Bridge and Fish Passage

FCZD Project Status
May 2022

Ongoing Project **Lower Naches**

A. Project Title: South Fork Bridge and Fish Passage (FC3612) N.P.

B. FCZD Role: Lead
Cooperators: Bureau of Reclamation, U.S. Forest Service, U.S. Fish & Wildlife Service, DOE, WDFW

C. Brief Project Description:

Need: Current bridge/channel configuration is a blockage to fish passage upstream, and likely increases mortality rates for downstream migrating fish during most of the year. Fish passage into and out of the river and Rimrock Reservoir is only available near full pool, which forces BOR to keep the pool full into August.

Goals: Provide for year-round upstream and downstream fish passage from Rimrock Reservoir into the South Fork Tieton River. In order for this to be accomplished, a design for a new bridge or other crossing is needed for installation on the Tieton Reservoir Road, which is managed and maintained by Yakima County through various agreements with the U.S. Forest Service.

Benefits: 1) Improved productivity of the SF Tieton Bull Trout population; 2) Improved overall habitat productivity of Rimrock Reservoir; 3) Providing passage for anadromous fish such as Chinook, Steelhead, Sockeye and Coho into the largest tributary of Rimrock Reservoir; 4) Improved operational flexibility of Reclamation's Yakima Project by eliminating the current need to hold the reservoir at full pool until Aug. 10 to allow for Bull Trout passage into SF Tieton.

D. Project Status

D1. Recent Project Work: As part of the initial feasibility study, three alignment options and several road crossing options were evaluated. Based on study findings and collaborative discussions, Alignment 3 and structure Option B (single-span bridge) is the preferred option.

D2. Near Term Work: Contractor will drill additional borings near the proposed bridge abutments. This includes sampling and analysis of materials at nearby gravel/ waste pits to determine the characteristics of those materials for incorporation into the structure as rip-rap or components of structural fill. A preliminary design package will be completed.

D3. Major Milestones & Dates:
2016 - IAA between YC and DOE (May)
2017/2018- Subsurface explorations at site.
2018 - IAA between YC and DOE (February). Preliminary design package delivered for partner discussion (June).
2018 - Agreement with Forest Service and Bureau of Reclamation.
2019-2020 - Additional YBIP funding for final design.
2022 – Complete permitting, agreements, and final design. Received funding for construction

Flood Risk Reduction Yakima County Gravel Pit

FCZD Project Status Form

November 2021

A. Project Title: Yakima County Gravel Pit Flood Risk Reduction - (FC3739) L.S.

B. FCZD Role: Lead
Cooperators:

C. Brief Project Description:

Need: Yakima County FCZD has acquired 5 parcels with 4 abandoned former gravel mining pits. This project will utilize floodplain fill generated at other projects to fill the pits to a uniform depth of 18-24 inches to create shallow wetland habitat and reduce the risk of headcutting and channel avulsion should the river migrate into these pits.

Intent: Provide high value shallow water wetland habitat, reduce the risk of flooding and erosion damages to nearby homes and infrastructure, and acquire wetland mitigation credits for our restoration efforts.

Benefits: Reduced flood risk, habitat creation, suitable use for excess fill material generated at other projects, reduction of invasive aquatic plants such as Eurasian milfoil which has infested the abandoned pits.

D. Project Status

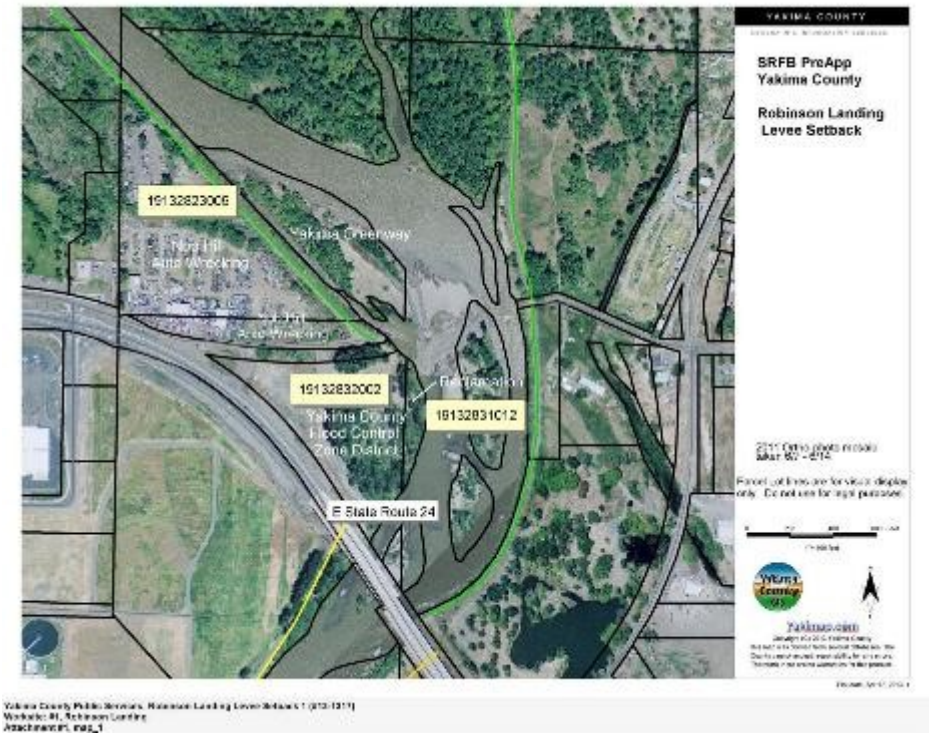
D1. Recent Project Work:
2021-Submitted SEPA application and Shoreline Exemption application to County Planning.

D2. Near Term Work:
2022- Start stockpiling fill from projects such as the Nelson Dam habitat channels to the sites and dump/spread material pending permit issuance.

D3. Major Milestones & Dates:
2021/2022 – SEPA/Shorelines permits issued
2022/2031 – Fill pits as described with material generated at other projects over the next ten years. Install native wetland plugs at each pit once the desired final depth has been attained.

Robertson Landing Levee Setbacks

Sitemap



Levee Setback

Abutment for Removal

FCZD Project Status
May 2022

Completed CIP Project **Upper Yakima**

A. Project Title: Robertson Landing Levee Setbacks (Incorporated into FC3530) J.K.F.

B. FCZD Role: Lead
Cooperators: USACE, Nob Hill Wrecking

C. Brief Project Description:

Need: In 1952, the SR24 bridge crossing of Yakima River was moved 1,500 feet downstream, then following pier failure, expanded in 2006 from a 550' opening to 1,590'. The abutments and piers of the original bridge still remain. In 2012, the east bank levees were set back to match the 2006 bridge. The west bank levees are still in their original alignment causing severe channel and floodplain restriction.

Goals: Design the new configuration that removes the remnant abutments and piers from the original bridge and setting back the west bank levee for 700' so that the attack of the opposite bank levee is reduced. This will increase channel conveyance by as much as 40% allowing side channel development through the existing point bar and island complex. Returning the floodplain connectivity through the reach will foster system resilience, which in turn will benefit fish that are moving through the system.

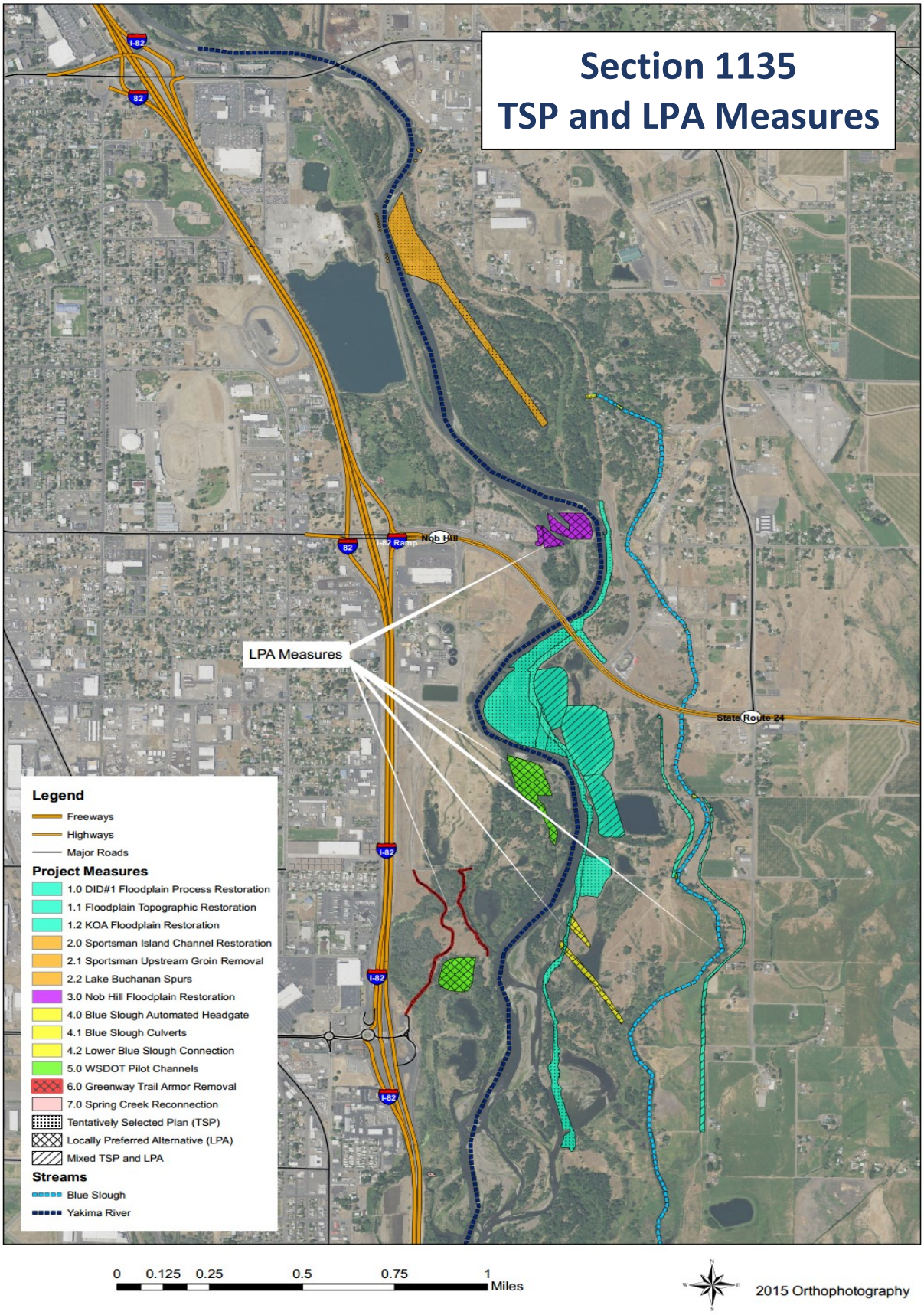
Benefits: Reduced damages on east bank levee. River access to more than 2 acres of old floodplain, improved increased floodplain connectivity, habitat and migratory conditions for native species including steelhead, bull trout as well as Chinook, Coho salmon and other native species. Actions will foster long term sediment mobility and erosion through the existing zones of constrictions/aggradation and reduce flood risks and repairs on current and proposed setback levees.

D. Project Status:

D1. Major Milestone & Dates: Complete

2013 - Grant Award from State.
2014 - Design and agency involvement. State grant refused by FCZD due to conflicting scope and inclusion with USCOE Section 1135.
2015 - Work and design incorporated into FbD Locally Preferred Alternative. (FC3707)
2020-2021 – Design, permitting, and acquisition to be completed within FbD LPA (FC3707).
2022 – Construction with FbD funding.

Yakima River G2G Corps & County Ecosystem Restoration



FCZD Project Status
May 2022

Current CIP Project in CFHMP **Upper Yakima**

A. Project Title: G2G Corps & County Ecosystem Restoration (FC3530, FC3706, FC3707) J.K.F.

B. FCZD Role: Lead
Cooperators: US Army Corps of Engineers, City of Yakima, Yakama Nation, WDFW, WSDOT

C. Brief Project Description:

Need: Severe flooding in 1933 prompted the authorization and construction of the nearly 8.6-mile Yakima Authorized Flood Control Project Levees. As a result of the YAFCP levee system, including adjoining levees, the Yakima River was channelized and straightened upstream and downstream from its natural meandering course. This loss of normal fluvial processes resulted in severe degradation and loss of habitat for fish and wildlife, including ESA listed bull trout and steelhead. In addition, sediment deposits between the levees are reducing flood protection.

Goals: Complete a Section 1135 feasibility-level analysis of potential environmental restoration actions associated with levee setbacks and related items along the Gap to Gap Yakima River reach area to reestablish more natural processes and improved habitat.

Benefits: Choose restoration alternatives that reestablish natural channel processes which will improve water quality, temperature, and complexity of aquatic habitat, while continuing to offer flood damage reduction benefits to residents of Yakima County.

D. Project Status:

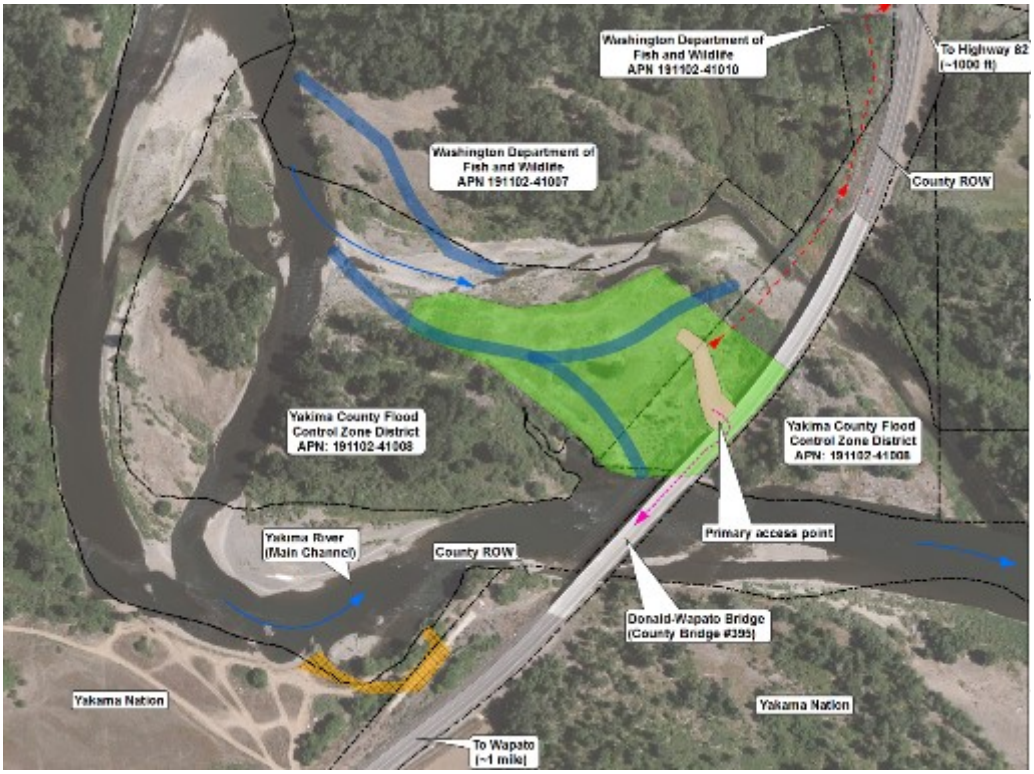
D1. Recent Project Work: 65% Design complete. Agreements with Agencies.

D2. Near Term Work: Complete Design & Advertise.

D3. Major Milestone & Dates:

2014 - Federal Interest Determination Report by Corps - Feb 11, 2014
2014 - Project Agreement Signed with Corps- May 1, 2014
2016 - Detailed Project Report-includes alternative selection and screening
2018 - Federal 1135 approval and SEPA. (complete in FC3530).
2019 - Project partnership agreement with USCOE for G2G section 1135 ($10 million). USCOE begin design and project Implementation.
2019 - Successful FbD grant ($7 million) for Locally Preferred Alternative.
2021 - Split 1135 into three contract packages
2022 - Final design. Advertise for bid. $13M grant application to HMA-DR-4481. $1.3M application to SRFB
2023 - 2025 - Construction, project monitoring and adaptive management

Donald Wapato Floodplain Restoration



FCZD Project Status
May 2022

Current CIP Project **Lower Yakima Valley**

A. Project Title: Donald-Wapato Conveyance Improvement Project (FC3643,3723) N.P

B. FCZD Role: Lead & support for other agency efforts
Cooperators: Yakama Nation, County Roads, WSDOT, WDFW, Ecology

C. Brief Project Description:

Need: The Donald-Wapato Bridge (Yakima County #395) which crosses the Yakima River and connects the towns of Donald and Wapato and serves as a critical transportation link for local communities. The bridge was constructed in 2004 at a cost of $6 million to provide a continuous 1200-foot span doubling the combined span of the two bridges which it replaced. The new bridge spanned the island on which a wrecking yard existed. In 2011 the flood control zone district relocated the Douglas Wrecking Yard following long-standing efforts to remove the yard to allow the river to reoccupy the island, reduce flood overflows to Toppenish and Wapato (extensive in 1996) and reestablish floodplain and channel alignments. The junked cars were removed to an upland location and over 8,000 yards of buried and stockpiled concrete and asphalt debris were broken up and removed from the floodplain. Despite the FCZD expenditures of $1 million complete restoration of the wrecking yard site to riparian and aquatic habitats would have to wait, until three power poles located on the island could be removed and replaced with a free-spanning configuration, and their access point off the bridge removed. A minor flood event in April of 2017 threatened the west abutment of the bridge prompting an emergency declaration and over $300,000 in emergency riprap placement. Without action, continued damage at this location is anticipated at only moderate flood events.

Goals: Complete the aquatic and riparian habitat restoration vision that began with the 2011 removal of the wrecking yard (FC3251). Following Pacific Power Pole relocation, remove the asphalt ramp, wire mesh gabion boxes, and temporary fill material, construct pilot channel/seasonal side channel habitats, to recenter the river channel on the new span, and establish native vegetation. Work cooperatively with the Yakama Nation Natural Resources Department and the Sunnyside Wildlife Area managed by WDFW.

Benefits:

- Reduce flood risk to critical component of community transportation network (Donald-Wapato Bridge)
- Reduce flood risk/100 year flood stage to Wapato and Toppenish by removing the armored island and infrastructure that inhibiting natural river and floodplain processes and redirecting flood overflows.
- Complete aquatic and riparian habitat restoration and enhancement vision that began with the removal of the Douglas wrecking yard in the fall of 2011 (FC3251)
- Reduced maintenance and emergency repair costs
- Improved consistency with Shoreline Management designations and Yakama Nation Management goals for the Wapato Reach.

D. Project Status

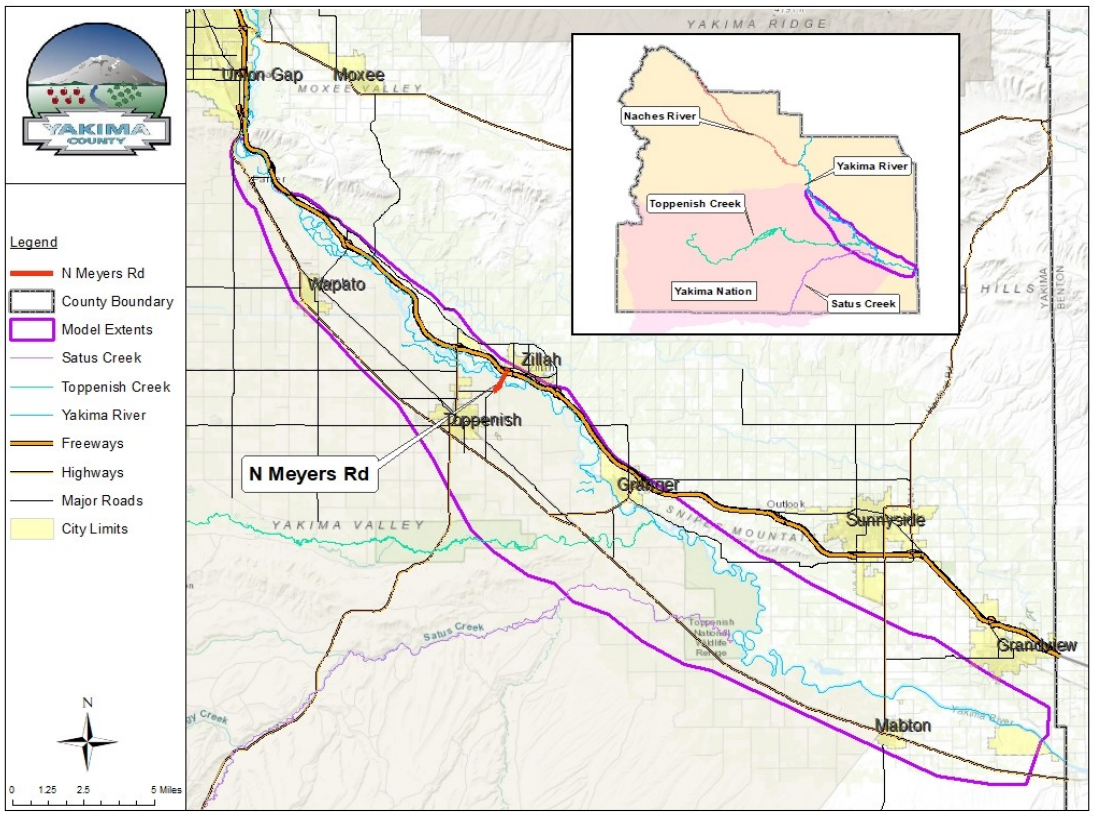
D1. Recent Project Work: Cultural Resources [field] Survey and report completed by Archaeological and Historical Services of Eastern Washington University. 30% and 60% engineered design plans and corresponding HEC-RAS model complete.

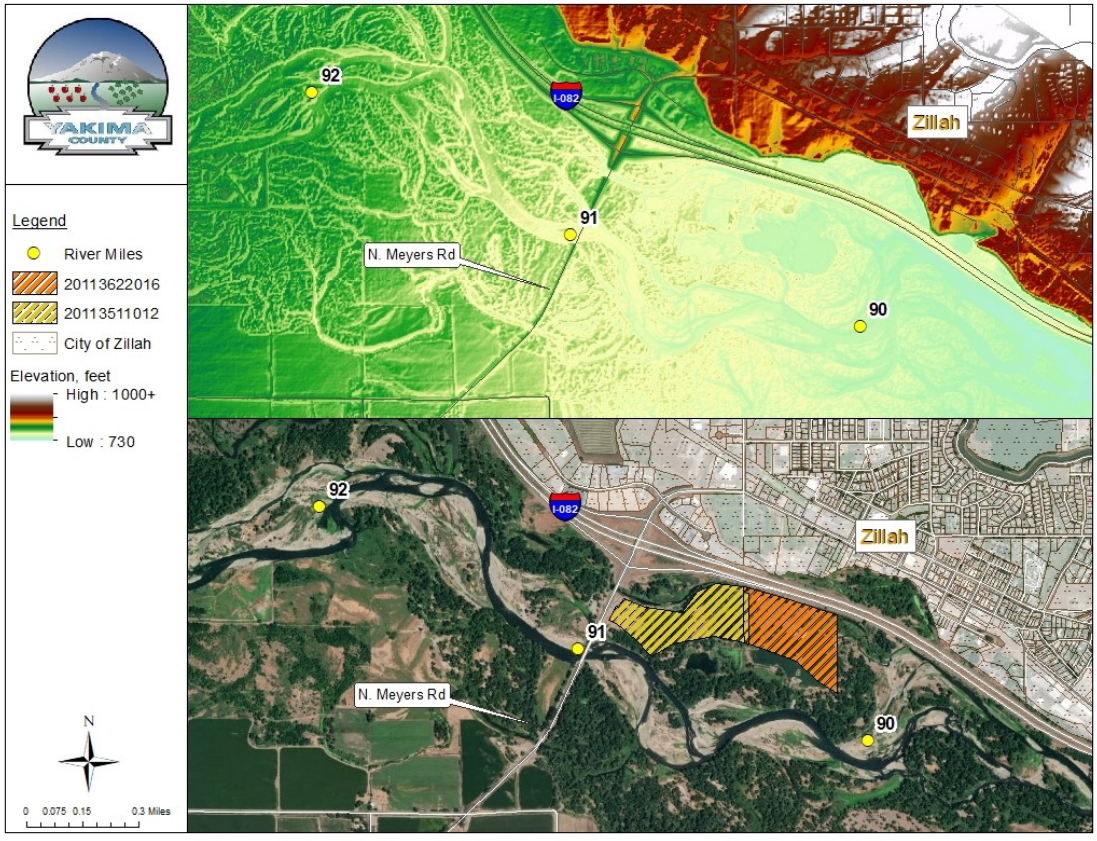
D2. Near Term Work: Complete local, state and federal permitting; hold stakeholder update meeting.

D3. Major Milestones & Dates:

2018 - Project formulation and discussions with basin partners.
2019 - Lower Yakima River 2D model completed
2019 - Pacific Power, power poles reconfigured to span entire Yakima River (no longer on site)
2020 - Secured funding under Ecology YBIP Agreement No. WRYBIP-1921-YaCoPS-00019
2020-2021 - OHWM/Wetland Delineation Report, Cultural Resources survey/report, 30% and 60% design completed
2022 - Local, state and federal permit applications to be secured, coordination with YN, stakeholder meeting updates
2023 - Final design and construction

Myers Road Conveyance Improvements





FCZD Project Status
May 2022

Current CIP Project **Lower Yakima**

A. Project Title: Myers Road Conveyance Improvements (FC3715) N.P

B. FCZD Role: Lead
Cooperators: YBIP, Yakama Nation and County Roads

C. Brief Project Description:

Need: Due to loss of floodplain conveyance between the Meyers Road Bridge and the I-82 exit to Zillah, the Yakima River has translated southward away from I-82, threatening flanking of the recently constructed (2018) bridge.

Goals: The river has moved southwards due to the 1982 northern bridge approach and levees downstream cutting off the northern floodplain. Measures are needed to prevent further river avulsion to the south that can lead to the need to repair or provide further structures in the southern road approach. The goal is to open up, to a limited degree, the northern floodplain downstream of the structure and improve floodplain conveyance in the floodplain north of the bridge. A hydraulic model is used to confirm the removal of fill and levees on County owned parcel 20113511012 and adjacent parcel 20113622016 acquired to allow additional removal of road fills.

Benefits: Reduction of public safety hazards and flood and infrastructure costs to County Roads and restoration of accessible groundwater discharge for summer migration (Sockeye and Summer Chinook) and warmwater for winter salmonid rearing.

D. Project Status:

D1. Recent Project Work: Landowners contacted & not interested in project. On hold.

D2. Near Term Work: Keep in contact with Landowner.

D3. Major Milestone & Dates:

2019 - Initial meetings and existing conditions model
2020 - Initiate acquisition of private parcel
2021 – On hold. Pending Landowner Agreement.

Ahtanum Creek Mission Project

Ongoing Ahtanum Creek down-cutting since levee removal.

Grade controls to prevent Ahtanum Creek avulsion into Hatton Creek.

FCZD Project Status
May 2022

Current CIP Project in CFHMP – YAPN 10-016 **West Valley**

A. Project Title: Ahtanum Creek Mission Project (FC3238) J.K.F.

B. FCZD Role: Lead
Cooperators: Ahtanum Irrigation District, BOR

C. Brief Project Description:

Need: This reach of Ahtanum Creek is a tilted valley reach that controls the distribution of flood waters down the Ahtanum Valley. The creek is in danger of avulsing and redirecting flows from Ahtanum Creek into Hatton, Bachelor Creeks and irrigation routes. The uncontrolled changes can dramatically alter the frequency and scale of flood damage in the entire Ahtanum valley downstream, a distance of 14.5 miles, including the cities of Union Gap and Yakima.

Goals: The project consists of management actions and projects to increase Ahtanum channel capacity and reduce flood overflow to Hatton and Bachelor Creeks. Some actions were already successfully undertaken in 2004 and 2006 including removal of a series of old groins, levees and roadways. Further actions, including modification, removal or management of irrigation diversions in this reach can further reduce downstream flood hazard.

Benefits: Avoid Ahtanum Creek capture into Bachelor and Hatton Creeks with resulting urban flood rerouting and damage.

D. Project Status:

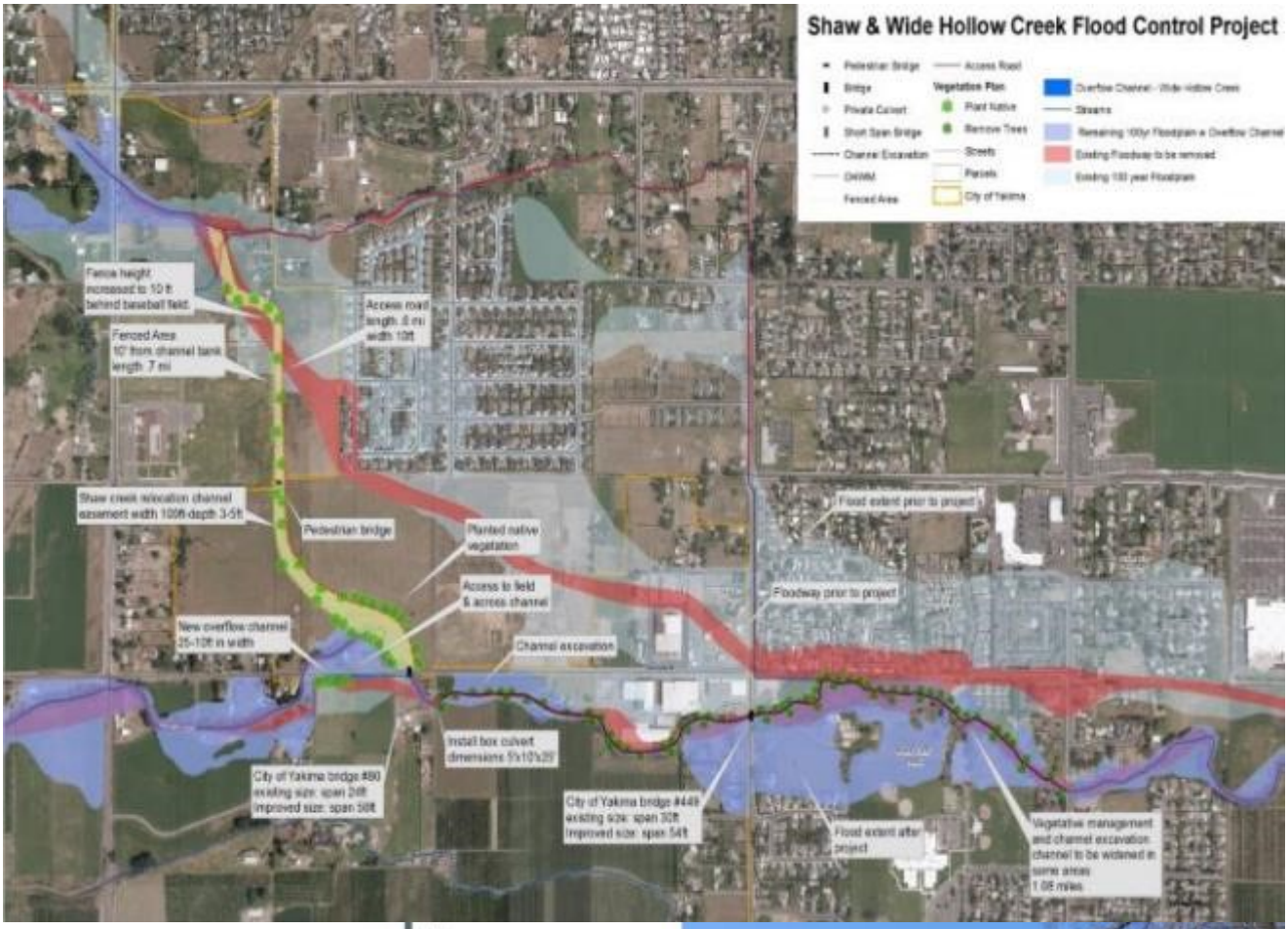
D1. Recent Project Work: The stream channel responded to the emergency work toward the end of the spring 2006 flood and continues to alter during flood events. Due to continued channel down-cutting and channel capacity increase, flows were contained during the 2008 flood even though they greatly exceeded previous flows that caused the Creek to go out of bank at the Mission (damaged Mission facilities and County and private roads for 8 miles downstream). Design alternatives were deferred in order to have final FEMA flood model for alternative analysis. Goals and objectives were completed, and analysis begun. Alternatives through FCZD study. Applied for 2021-2023 Funding.

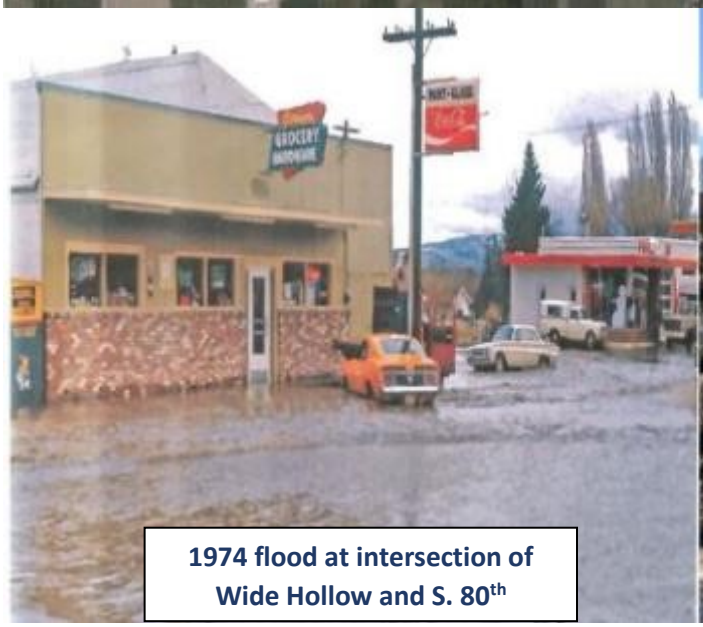
D2. Near Term Work: Seek Funding from several sources.

D3. Major Milestone & Dates:

2004 - Removed abandoned levees & constructed overflow weir in response to flood.
2006 - Constructed overflow berm in response to November flood.
2010 - Recommendations within CFHMP to prevent avulsion.
2015 - Conceptual design to determine alternatives, find landowners partners. Initiated discussion with Yakama Nation.
2020 - Discuss conceptual design including WIP diversion with Public and Nation and seek funding support, implementation by landowners in near future if concur. Funding application to FbD.
2021 - Potential reconfiguration of the main Bachelor Creek diversion and adjacent floodplain. Seek funding from Corps (Water Resources Development Act 2020), Federal infrastructure, or WIIN act with Yakima Basin Integrated Plan, or YN project funding since most of project is in current Wapato Irrigation Project Capital Improvement Plan.
2022 - Application for FbD funding 2023-2025

Shaw Creek Relocation Project





1974 flood at intersection of Wide Hollow and S. 80th

2016 flooding at Wide Hollow Rd

FCZD Project Status
May 2022

Current CIP Project in CFHMP – YAPN 09-008 **West Valley**

A. Project Title: Shaw Creek Relocation Project (FC3301) T.H.

B. FCZD Role: Lead
Cooperators: City of Yakima, West Valley School District, Department of Ecology

C. Brief Project Description:

Need: Localized flooding from Shaw Creek near 92nd Avenue creates a hazard to existing and future residential development. Re-routing of Shaw Creek flood flows to Wide Hollow Creek will reduce hazard. In addition, very recent flooding in March of 2016 and 2017 within Wide Hollow Creek flooded at least 7 residences and caused considerable damage to a number of residences and farmed fields.

Goals: The project will reduce flooding from Shaw Creek with a relocation of lower Shaw Creek to close to the historical location. Wide Hollow Creek conveyance improvements will provide increase conveyance in Wide Hollow Creek for increased Shaw Creek flows and Wide Hollow Flows. Two bridges will be replaced on Wide Hollow creek. A centennial clean water grant will improve water quality and habitat for both streams

Benefits: This project will benefit residents in the Cottonwood Grove residential development, along Wide Hollow Creek between 88th and 72nd Avenues and future development in adjacent parcels through flood hazard reduction and removal from the pending FEMA floodplain designation. It will improve water quality in both Shaw and Wide Hollow Creeks, both or which are 303 listed waters.

D. Project Status:

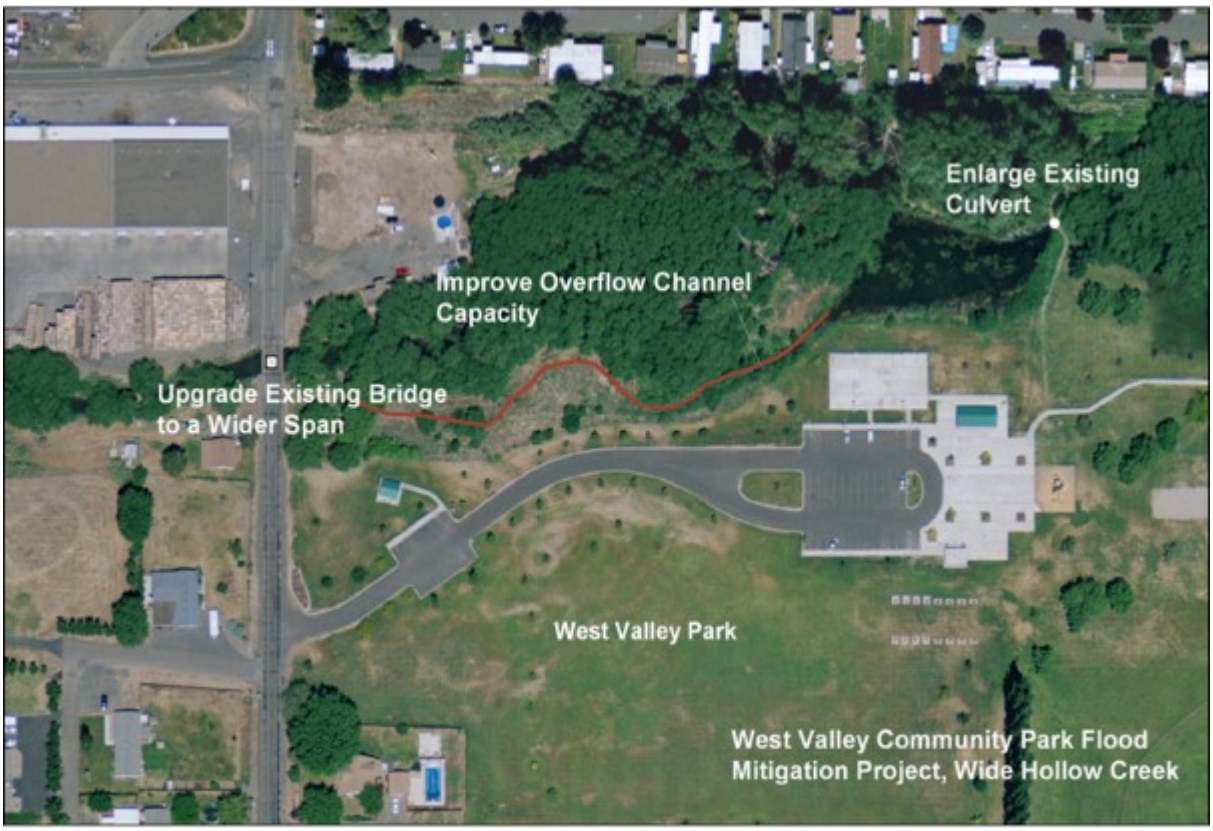
D1. Recent Project Work: FEMA Pre-Disaster Mitigation grant request for $2.7 million was awarded by FEMA in November of 2016. A $498,000 Centennial Clean water Grant was awarded in July of 2016. Completion of the NEPA document and FONSI and related environmental work in early 2016. Acquisition of 1 parcel. Majority of appraisals complete.

D2. Near Term Work: Apply for BRIC Funding pending watch. Work with partners.

D3. Major Milestone & Dates:

2007 - HMGP Grant Application and Public Meeting.
2009 - PDM Grant Application.
2009 - Consultant Study on overflow corridor.
2010 - 2nd PDM Grant Application and discussions with landowners.
2011 - FEMA obligates funds for project.
2012 - Contract with consultant for hydraulic studies and preliminary design.
2013 - Start NEPA/SEPA and cultural resource survey.
2016 - Approve NEPA and publish FONSI. FEMA awards grant to County, project design.
2017-2019 - Parcel acquisitions, permitting, obtain right of ways / easements
2020 – Permitting feedback. Acquisition.
2021 – Seek additional funding. BCA.
2022 – Partners meeting and ongoing coordination. DR-4481 application unsuccessful.

West Valley Community Park Project



FCZD Project Status
May 2022

Current CIP Project in CFHMP – YAPN 09-079 **West Valley**

A. Project Title: West Valley Community Park Project (FC3121, FC3301) T.H.

B. FCZD Role: Lead
Cooperators: City of Yakima, Department of Fish & Wildlife

C. Brief Project Description:

Need: The park area and residences to the west and north of the Park experience flooding in response to major and more frequent floods due to restricted channel capacity and bridge capacity at 80th Avenue. An overflow channel was constructed in 2004 to the south of Wide Hollow main channel but is proving insufficient for intermediate size floods. Property was acquired for the flood control works.

Goals: The following changes are considered: Increase the capacity of the overflow channel. Improve access to the overflow channel. Enlarge the existing culvert at the end of the overflow channel to allow water to return to Wide Hollow Creek main channel and stabilize erosion in that area. Acquire additional property adjacent to school property located in the park area for additional flood control works such as berms. Through cooperation with the City upgrade the existing bridge on S 80th Avenue to a wider span

Benefits: Reduce flooding to City and County residents and enhance fish and wildlife habitats in the area

D. Project Status:

D1. Recent Project Work: The FEMA hydraulic model of the area was completed which includes the West Valley Flood Mitigation Project area. In December 2010, FCZD submitted a FEMA PDM Grant for the Shaw Creek project and the West Valley Community Park Project. In January 2010, FCZD and the City of Yakima with the help from Washington Conservation USCOE completed a channel project between 72nd and 80th avenues removing beaver dams, debris collection and cutting trees blocking channel flow. Purchase and demolition of frequently flooded home immediately upstream of 80th Avenue and re-graded lot to reduce flooding issues.

D2. Near Term Work: Complete NEPA/SEPA on successful Shaw Creek FEMA Grant.

D3. Major Milestone & Dates:

2004 - Property acquisition & modifications to overflow channel.
2005 - FEMA remapping study initiated.
2007 - FEMA HMGP Grant Application - Unsuccessful.
2008 - FEMA hydrology completed.
2008 - City annexed and park transfer.
2009 - FEMA model complete with new surveys. FEMA PDM Grant Application.
2010 - Channel maintenance 72nd - 80th Streets. State grant to demolish repetitive loss property at 80th.
2011 - FEMA Shaw Creek grant awarded. Re-grade lot upstream of 80th Avenue.
2012 - Remaining project work becomes part of Shaw Creek project (FC3301).
2015 - NEPA/SEPA on Shaw / Wide Hollow.
2017-2019 - Design work with City of Yakima to include improvements needed in the park.
2020 - City restored Trolly Berm.
2021 - Apply for funding coincident with Shaw Creek Project.
2022 - Held stakeholder meeting. DR-4481 application unsuccessful.

~ This page intentionally left blank ~

Section 8

Completed Activities

Sandbagging Machine Acquisition for County/Cities

FCZD Project Status
May 2022

Completed Flood Preparedness Activity **County-Wide**

A. Project Title: Sandbagging Machine Acquisition for County / Cities (FC3054) C.E.

B. FCZD Role: Lead
Cooperators: City of Yakima, Department of Fish & Wildlife

C. Brief Project Description:

Need: Sandbags are used to assist in the protection of critical infrastructure and may be made available to private citizens once an emergency is declared. Since risks during a flood are likely to be wide spread through-out the county, the FCZD purchased four sandbag filling machines, retaining two at the 18th Street County Shop and posting one each in the towns of Naches and Toppenish.

Goals: To increase the availability of filled sandbags prior to and during a flood. The machines ensure higher volume availability of filled sandbags. The machines are mobile and the two sandbagging machines at the Shop can be mobilized to critical locations as a shared resource during a flood emergency.

Benefits: Pre-staging of flood fight resources will help reduce damage and avoid the need to request the resource and then determine how to mobilize the sandbagger to the city/town/fire district during an emergency. The machines allow rapid filling of sandbags during a flood emergency, in multiple locations without delay since the machines are already distributed.

D. Project Status:

D1. Recent Project Work: Four sandbagging machines were purchased by FCZD. Two of the machines were transferred to the municipalities of Naches and Toppenish. Tieton expressed an interest in acquiring a machine but declined. Usage incorporated in the Flood Response Plan.

D2. Near Term Work: Complete.

D3. Major Milestone & Dates:

2003 - One machine each transferred to Naches and Toppenish.

2021 – Provided sandbag machine for local jurisdiction flood fight training at the County Fairgrounds in cooperation with USCOE and County Roads.

Ongoing - maintenance, training and preparedness checks each year, as needed, for remaining machines.

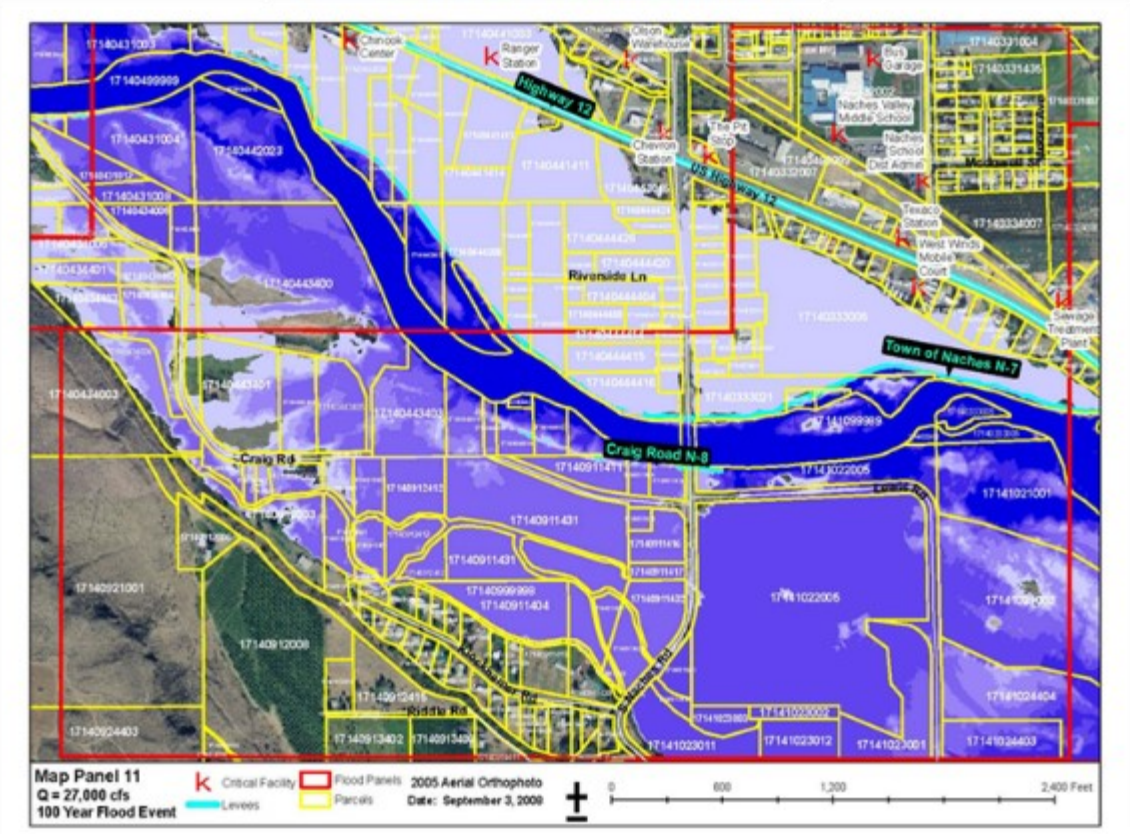
Yakima County Flood Response Plan

Flood Emergency Planning Documents

Public Services Flood Action Plan
Flood Emergency Response Plan

Tactical Functions, Tactical Response Guide &
Implementation Procedures for Flood Response
After Action Report/Improvement Plan (AAR/IP)
September 2008

100 Year flood inundation map.



FCZD Project Status

May 2022

Completed Flood Preparedness Planning Project **County-Wide**

A. Project Title: Yakima County Flood Response Plan K.M.

B. FCZD Role: Lead

Cooperators: Yakima Valley Office of Emergency Management, Yakima Valley flood responders (Cities, Fire Districts, Irrigation Districts, Public Works Departments)

C. Brief Project Description:

Need: Following the flood of 1996, Yakima County undertook to develop a flood response plan to assist in coordinating flood response within the County and across the valley by:
- Identifying essential services to the public and integrating resources
-Identifying entities / personnel manning the Operational Area Emergency Operation Center plus local entities responding to flood emergency in the Valley
-Identifying elements and levels of coordination/integration among local, state, and federal entities responding to flood emergency.
-Creating training workshops to train FCZD and other entities in the valley on the created flood response plan.

Goals: Create a comprehensive Flood Response Plan that would include the incorporated and unincorporated areas of Yakima County to be activated during a flood emergency event to save lives and protect properties. The plan would use the phases of emergency management, namely mitigation, preparedness, response, and recovery for flood emergencies.

Benefits: The plan will ensure coherent and continual integration among entities responding to flood emergency minimize flood damages and accelerate recovery for return to normal conditions after flooding.

D. Project Status:

D1. Recent Project Work: The final flood response plan documents distributed to cities, public works departments, fire districts, irrigation districts, etc. in December 2008 through YVOEM included:

1. Yakima County Public Services Flood Action Plan
2. Yakima County Flood Emergency Response Plan
3. Tactical Response Guide and Implementation Procedures

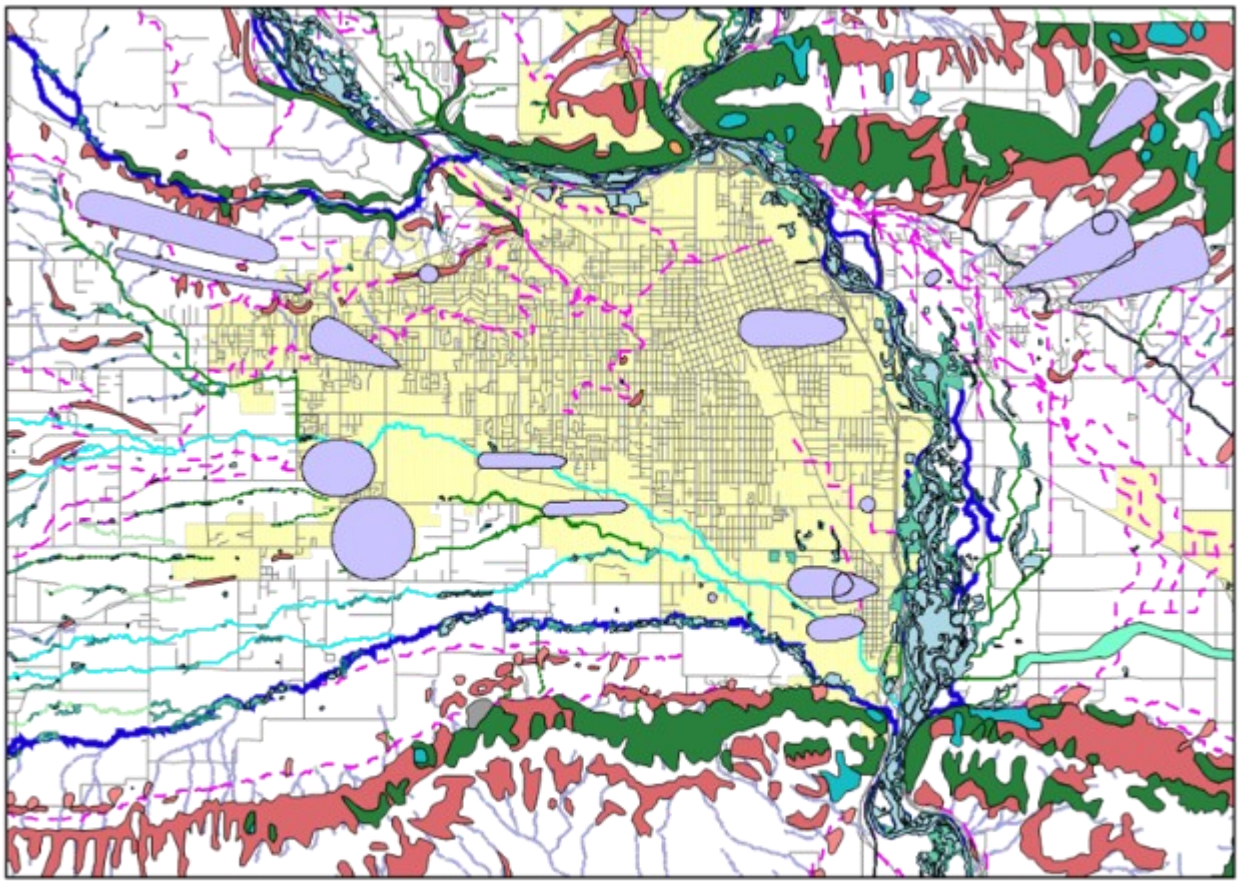
Two training workshops on the flood response plans were conducted in 2009 for the entities responding to flood emergencies in the Valley which produced an After-Action Report / Improvement Plan.

D2. Near Term Work: FCZD / YVOEM are planning to conduct future training workshops for the different entities responding to flood emergency in the valley. Updates are foreseen.

D3. Major Milestone & Dates:

2002 - Emergency Flood Plan updates initiated.
2008 - Consultant completed Plans.
2009 - Training workshops and action report / improvement plan
2014 - FCZD developed area specific Flood Response Plans for early warning.

Critical Areas Ordinance and Maps Update



Example Critical Area Map showing Wellheads, Geological Hazards, National Wetlands & Stream Types

FCZD Project Status
May 2022

Completed Planning Projects **County-Wide**

A. Project Title: Critical Areas Ordinances and Maps Update J.K.F.

B. FCZD Role: Planning is Lead, FCZD provides technical support

C. Brief Project Description:

Need: Revision and update of the Yakima County Critical Areas Code and the Shoreline Master Program. Project consists of an update to the GIS critical areas inventory, a review of the applicable science in conjunction with a Science Advisory Group and drafting a new code.

D. Project Status: Completed, code adopted in December 2007.

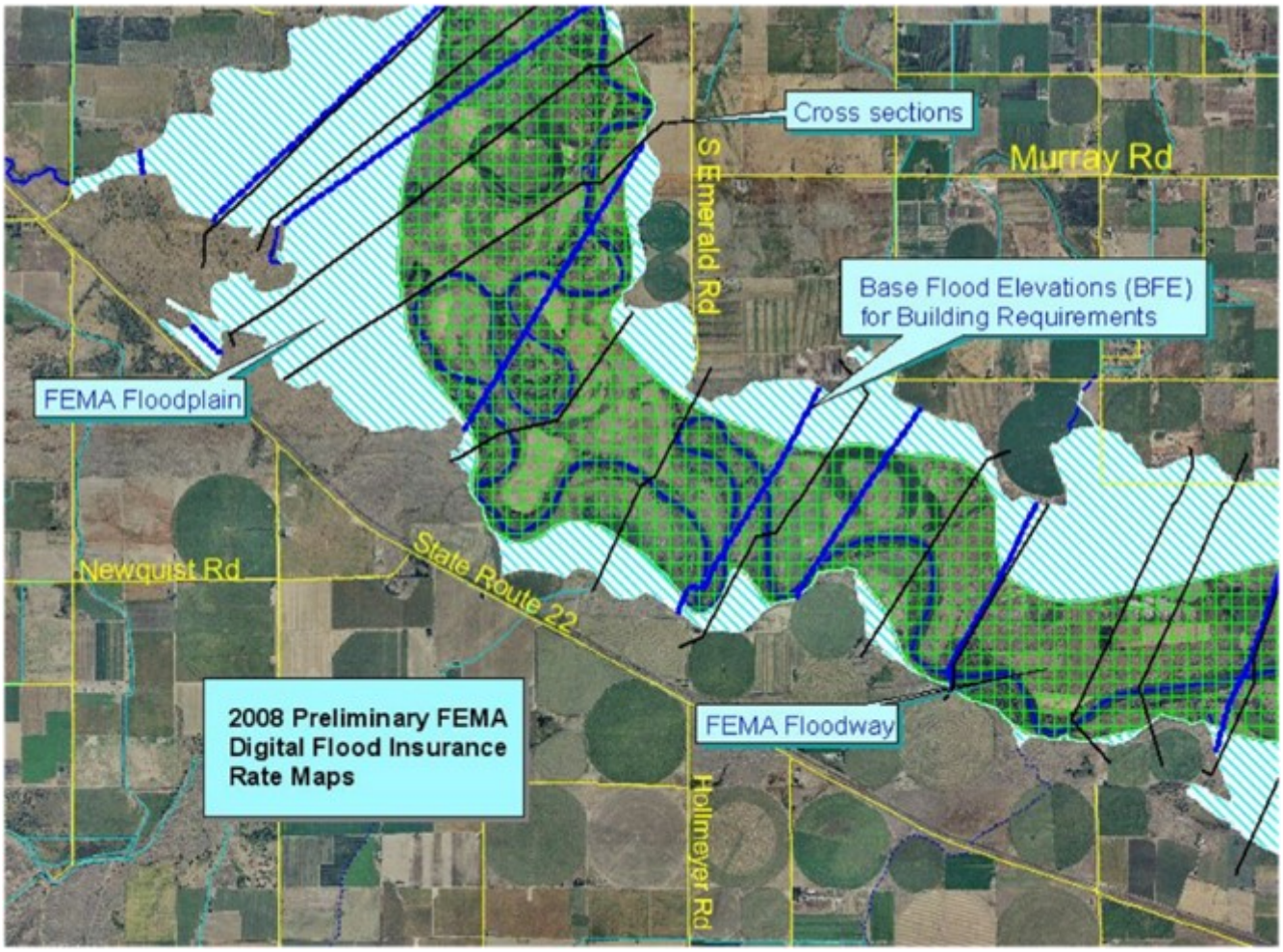
D1. Recent Project Work: None.

D2. Near Term Work: Review and comment on future amendments to code as a result of the appeal and mediation process.

D3. Major Milestone & Dates:

2009 - Amendment final.
2009 - City adoptions of the remainders.
2017 - County code revisions to Critical Areas.
2019-2021 - County code revisions to Shoreline Master Program.
2021 - Flood regulations removed from SMP and now reside solely in CAO. Updated NFIP language in CAO as part of upper Naches and Cowiche map/code updates in coordination with FEMA and DOE.
2022 - FEMA identified NFIP code deficiencies in CAO during the CAV. Work to identify reasons missed in 2021 and update appropriately.

County-Wide Digital FEMA Flood Conversion



FCZD Project Status
May 2022

Completed Planning Project **County-Wide**

A. Project Title: County-Wide Digital FEMA Flood Map (DFIRM) Conversion (FC200) D.W.

B. FCZD Role: Support, FEMA & Ecology are the leads.
Cooperators: Yakima, Union Gap, Naches, Toppenish, Wapato, Granger

C. Brief Project Description:

Need: FEMA provision of updated, rectified and re-delineated county-wide Digital Flood Insurance Rate Maps (DFIRM) based in GIS were assisted by County sponsorship through provision of local LIDAR terrain data and technical expertise for the Lower Naches restudy. These higher resolution digital DFIRMs are updated to reflect high resolution ground contours where available and provide a more accurate identification of flood hazard properties and insurance requirements. The County supported a Lower Naches restudy in a high-risk area for inclusion in the FEMA DFIRMs.

Goals: Provision of more accurate, easier to use maps that can be used and revised more readily. Increase the availability, usage and familiarity of the maps and insurance requirements to the towns, cities and citizens. Provide technical assistance to the public and local governments regarding the countywide DFIRM production process and options.

Benefits: Increase the FEMA flood hazard map accuracy and local understanding of DFIRMs review process. Increased awareness of floodplains and flood risks through the FEMA and FCZD outreach efforts regarding the maps.

D. Project Status:

D1. Recent Project Work: Participated in conference calls with FEMA, Ecology and FEMA consultants regarding the most recent restudy – for Cowiche Creek and the Upper Naches Rivers. Reviewed FEMA Preliminary FIRMs (Flood Insurance Rate Map), DFIRMs, and FIS (Flood Insurance Study) to look for omissions and errors, and then submitted these comments to FEMA. Coordinated meeting location for FEMA's jurisdiction and public meetings to present the communities with the Preliminary FIRMs. Offer technical assistance for local city and county governments on the maps, map-making process, and community options. Postcards were mailed to property owners included in the restudy to alert them to the effective date for the maps; 10-21-21.

D2. Near Term Work: Continue assistance to cities and citizens on map questions and process. Continue to respond to property owners newly mapped in the floodplain so they're aware of their options.

D3. Major Milestone & Dates:

2007 - Study delivered to FEMA/RMC10, Seattle (Regional Management Center) for review.
2008 - FEMA review was completed and provided the preliminary Flood Insurance Study maps for review.
2009 - Final official study/DFIRM delivered to communities.
2009 - Amend flood ordinance to reflect new maps.
2009 – County-wide DFIRM Maps became effective, included Lower Naches restudy
2012 – Wide Hollow restudy.
2016 – Ahtanum restudy.
2021 – Cowiche – Upper Naches restudy
2022 – Lower Yakima restudy – FEMA will lead this one, just started, unknown when they will continue project.
2022-2023 – lower Naches River restudy through FCAAP grant. Draft products to FEMA 2023.

Repetitive Loss Properties

FCZD Project Status
May 2022

Completed CIP Project – YAPN 10-013 **County-Wide**

A. Project Title: Repetitive Loss Properties (FC3326) C.B.

B. FCZD Role: Lead
Cooperators: DOE, FEMA, State EMD

C. Brief Project Description:
Need: There are nine (9) repetitive loss properties in Yakima County that incur frequent damage.

Goals: To mitigate repetitive loss properties and their insurance claims within Yakima County.

Benefits: Positive benefits for landowners that have incurred losses from flooding. Increased flexibility for County / City infrastructure modifications. Increased benefits through reductions in County wide flood insurance premiums through CRS program.

D. Project Status:
D1. Recent Project Work: Structure at 1308 S 80th has been removed. Pull level back from Wide Hollow Creek and plant with native vegetation. HMPG Grant was awarded to Yakima County for $121,290 for the properties at 231 Tampico Park Rd and 200 Golf Course Road (6 Playland extensions). Structures were to be elevated to 1' above base flood elevation. Contracts for elevation cancelled due to lack of qualified contractors.

D2. Near Term Work: Project completed.

D3. Major Milestone & Dates:
2009 - Submitted HMGP Grants and FCAAP for repetitive loss properties.
2009 - Secured FCAAP Grant for $120k for Wide Hollow Creek property at 130 S 80th.
2010 - Acquired FCAAP Property, 1308 S 80th Avenue, demolished and rehabilitated site.
October 2010 - HMPG Grant for 200 Golf Course Rd and 231 Tampico Park Rd.
2011 - Complete grant requirements for FCAAP Grant at 80th Street.
Jan 2013 - Grant extended to 12/2013 for two properties.
2014 - Cancelled elevation at Ahtanum and Selah structures due to lack of available contractors (went to bid three (3) times). Grant closeout.
2015 - Grant cancelled and final fund reimbursement to Yakima County.

Yakima Basin Fish and Wildlife Recovery Plan and Board Formation

FCZD Project Status
May 2022

Completed Planning Project **County and Basin-Wide**

A. Project Title: Yakima Basin Fish and Wildlife Recovery Plan and Board Formation J.K.F.

B. FCZD Role: Lead for Administration of funding/deliverables, joint oversight with WDFW, YN, Fisheries, Benton County, Kittitas County

C. Brief Project Description:

Need: Yakima Valley local governments and state agencies desired the participation of local governments, in particular the County, in natural resource management programs under a Plan improve and fund projects for fish and wildlife habitat and Threatened and Endangered Species.

Goals: Develop a Yakima Basin Plan Endangered Species Recovery Plan under state guidelines that will guide how the state salmon Recovery office and BPA spends mitigation funds ($13 mil/yr) in the Basin. Support the participation of members of the Board of Yakima County Commissioners. Develop a locally-based organization to oversee disbursement of funds for salmon recovery and ongoing involvement with state and federal initiatives for management of natural resources.

Benefits: Increased local control of natural resource issues in a comprehensive manner bringing long term coordinated benefits. Provides a forum for Commissioners, Mayors / Council Members, and YN. Connections to funding sources and processes that can and has provided funding for Flood Hazard Reduction efforts.

D. Project Status:

D1. Recent Project Work: Completed Sub-Basin Recovery Plan in October 2005. Established Yakima Basin Fish and Wildlife Recovery Board as non-profit in 2006, which continues today. Board represent 22 local governments including 3 counties and the Yakama Nation.

D2. Near Term Work: Ongoing activities - Sit as alternate for BOCC on the recovery Board. Member of Technical Advisory. The YBFWRB has funded 116 projects and engages local landowners.

D3. Major Milestone & Dates: Bi-monthly Board meetings to establish annual program.
2006 - Formed Yakima Basin Fish & Wildlife Recovery Board.
2009 - Yakima Steelhead Recovery Plan.
2012 - Yakima Bull Trout.
Ongoing - annual project list.
2021 - Plan updates.

Naches River Flood Forecasting / Early Warning

FCZD Project Status
May 2022

Completed Planning Project **Lower Naches**

A. Project Title: Naches River Flood Forecasting / Early Warning T.K.

B. FCZD Role: Lead
Cooperators: Transportation Section / Yakima County

C. Brief Project Description:

Need: Heavy rains and warm weather on the east side of the Cascade crest generates rapid runoff and high flood peaks on the Naches River and Ahtanum Creek, amongst other county streams. The need was for improved flood warning on the Ahtanum and Wide Hollow Creeks in particular.

Goals: A website on forecast backed by a sophisticated climate model was built by the Consultant (3 Tier), who were doing similar forecasts on the western slopes of the Cascades. The website gave flood and weather forecast at different locations in the watershed based on their weather data plus stations located in the Yakima Valley.

Benefits: Increased forecast reliability was the goal. However, the system was discontinued after 2 years due to lesser accuracy than sought. One of the main reasons was weather inversions typical to Yakima Valley and the poor resolution of weather stations with regard to spacing and elevation range.

D. Project Status:

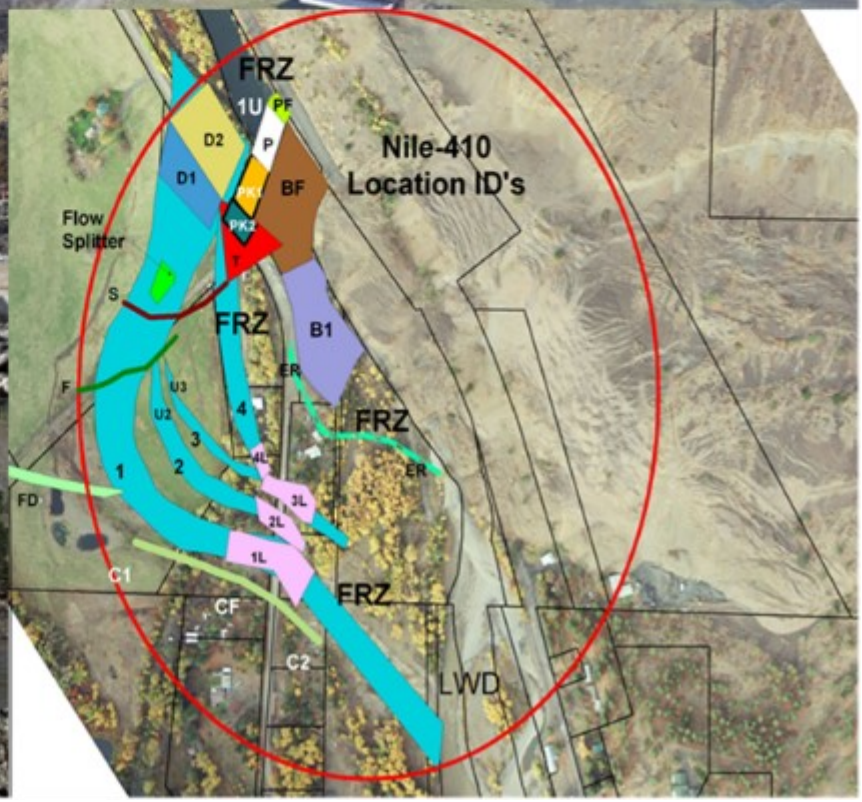
D1. Recent Project Work: This project is no longer active; the contract with 3 Tier was terminated, since they could not substantively improve on the already available National Weather Service that we currently rely on for our flood forecast in Yakima County.

D2. Near Term Work: No action. Continue to use National Weather Service.

D3. Major Milestone & Dates:

2004 - Contract with 3-Tier
2006 - Contract with 3-Tier terminated.

Nile Landslide Emergency Response



FCZD Project Status
May 2022

Completed Flood Response Project **Lower Naches**

A. Project Title: Nile Landslide Emergency Response (FC3356) J.K.F.

B. FCZD Role: Lead on River Channel Work, Permits; Cooperator on Temporary SR 410 Construction
Cooperators: WSDOT, WDFW, WSDNR, USFWS, USFS, WSDOE

C. Brief Project Description of SR 410:

On October 11, 2009, a landslide occurred at SR 410 RM 22.3 (T 15N, R15E, Sec. 2) on the Naches River in Yakima County. The landslide was a rotational slump, displacing 16 million cubic yards obliterating SR 410 for over a quarter mile and completely blocking the Naches River channel for over one-half mile. Emergency work is complete.

Goals: The priority for emergency actions by WSDOT and Yakima County were to restore road access to the Nile Valley and points upstream prior to forced winter closure of alternative routes, deal with flooding issues at 12 homes by establishing a new river channel. The new channel would reduce the river head cut erosion at the landslide face and toe reducing the potential for landslide face and toe erosion leading to further slide activity. Long term issues were the upcoming flood season community access following winter road closure and protection of downstream structures (Nile Road Bridge and City Yakima Water Treatment Plant).

Benefits: Protection of community access, mitigation of flooding damages, landslide stabilization, relocation of residents away from danger and protection of infrastructure.

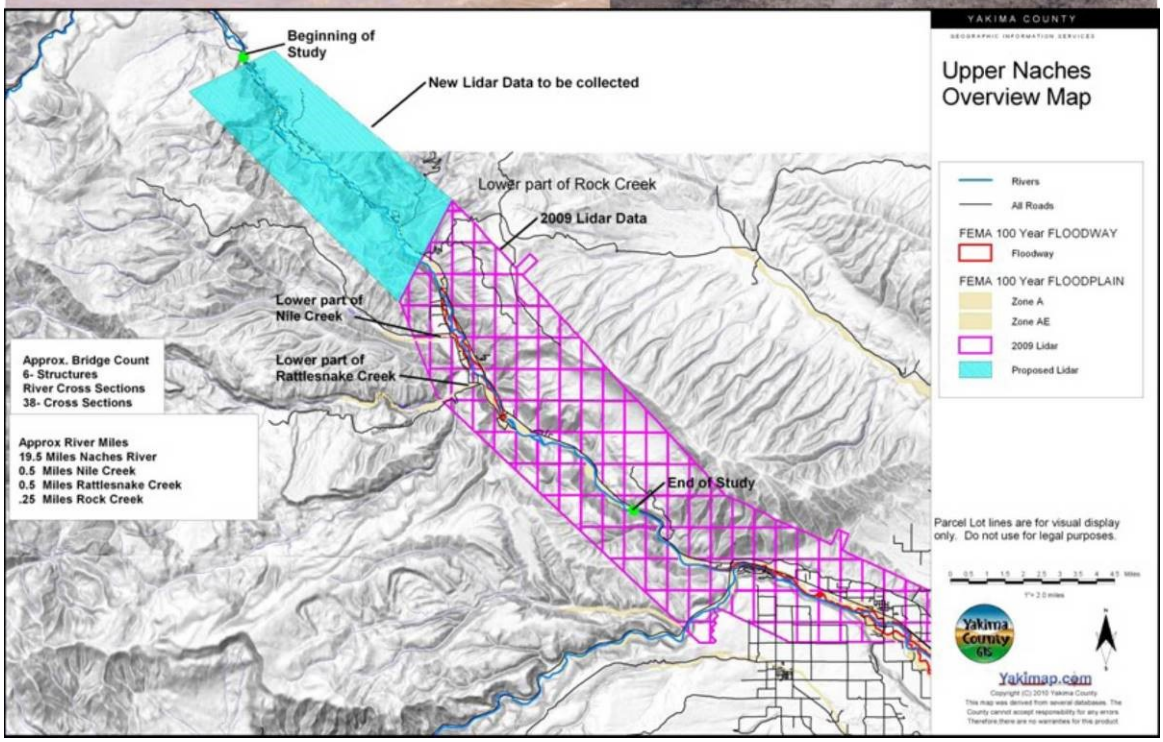
D. Project Status: Project moved from Emergency Status to FCZD Project status in March 2010.

D1. Recent Project Work: Spring replanting of riparian zones, monitor volunteer riparian forest growth. Monitoring of channel. Construction and relocation of Naches River channel away from landslide toe in cooperation with WSDOT construction of temporary SR 410. New SR 410 completed in 2012.

D2. Near Term Work: Monitor this location during floods. Acquire property back from WSDOT.

D3. Major Milestone & Dates:
October 11, 2009 - Landslide and flood.
October 14, 2009 - Temporary channel constructed and property acquisitions.
November 17, 2009 - New Naches River channel opened.
December 2009 - Compile data record. Move to Monitoring Phase.
2012 - New SR 410 route completed.
2021 – Transfer of property back to FCZD.

Upper Naches River FEMA
Flood Mapping and Risk MAP



FCZD Project Status
May 2022

Completed Planning Project **Upper Naches**

A. Project Title: Upper Naches River FEMA Flood Mapping and RiskMAP (FC3390) T.K.

B. FCZD Role: Lead
Cooperators: FEMA, Communities in the Upper Naches Area

C. Brief Project Description:

Need: Current FEMA maps in the area were from 1970's data and studies and the maps need to be updated due to changes in the river system and the recent Nile Landslide. Yakima County obtained a $199,000 grant with FEMA.

Goals: Update current FEMA maps with the detailed maps that will produce digital Flood Insurance Rate Maps (FIRMs) and Risk Maps. New FEMA approved hydrology and hydraulic modeling will be required to develop the FIRMs.

Benefits: Replacement of outdated FIRMs will be utilized by the FCZD to reduce risk and guide new development in hazardous areas. Assists residents to obtain flood insurance.

D. Project Status

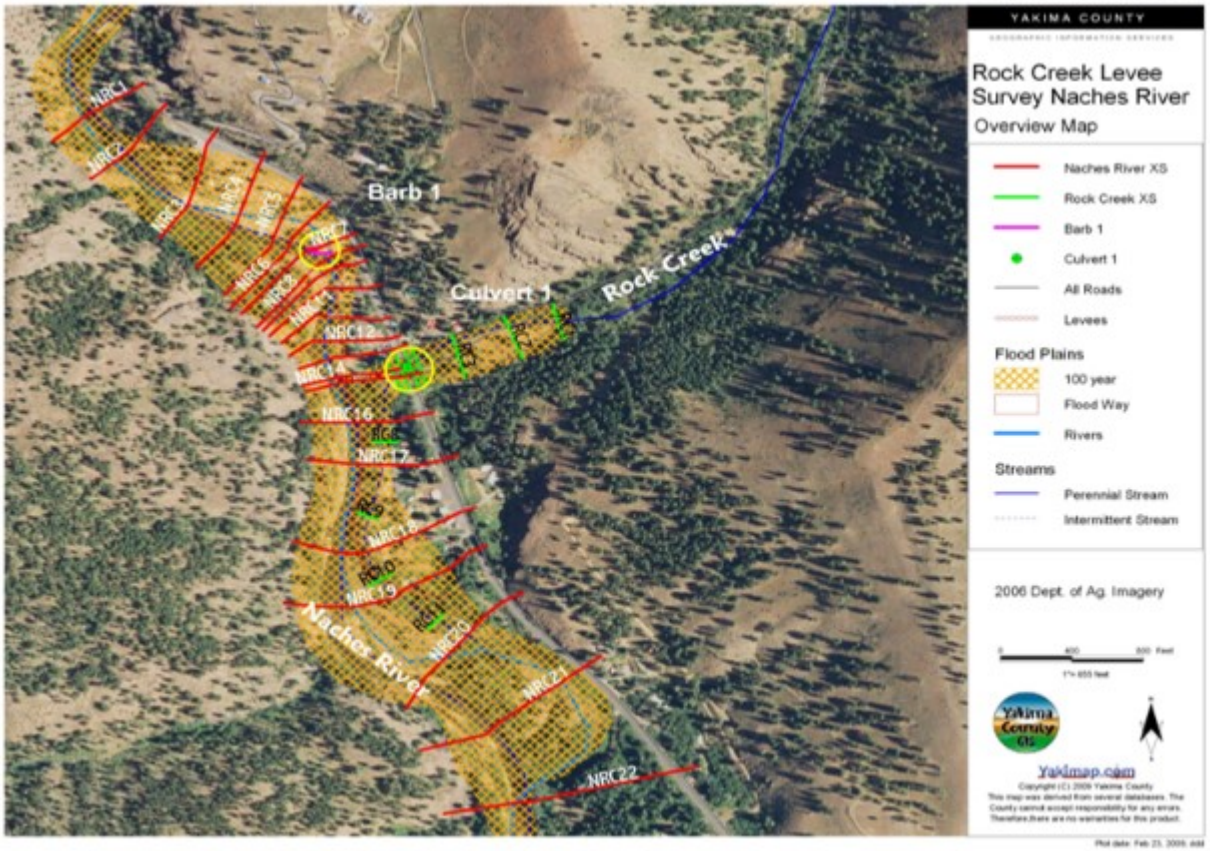
D1. Recent Project Work: Preliminary FIS maps completed for community review.

D2. Near Term Work: Adopt FIS maps.

D3. Major Milestones & Dates:

2011 - Survey data collection for cross sections and structures.
2012 - LiDAR data collection.
2012 - Processing of bridge data. Hydrology complete with consultant.
2012 - Completion of survey & LiDAR data collection and hydrology.
2013 - FEMA acceptance of hydrology. Consultant starts hydraulic model.
2013 - Consultant submitted hydraulic models for community and FEMA review.
2014 - Community and FEMA review of work maps result in re-review of Naches hydrology.
2016 - FEMA contract extension to complete revisions.
2019 - FEMA preliminary map and appeal period.
2019 - FEMA performs risk assessment (depth grid generation).
2021 - FEMA letter of final determination and final FEMA FIS maps. Adopted by code and effective 10/21/2021.

Rock Creek Levee



FCZD Project Status
May 2022

Completed CIP Project – YAPN 08-047 **Upper Naches**

A. Project Title: Rock Creek Levee Repair and Alignment (FC3325) T.K.

B. FCZD Role: Lead
Cooperators: USCOE

C. Brief Project Description:

Need: Levee maintenance has been minimal since USCOE failed levee in 1989 removing from PL84-99 Program. The levee required repairs before attaining full PL84-99 status again.

Goals: To repair and align levee damaged by previous flooding and establish PL84-99 status to protect residences.

Benefits: Long-term protection of existing residences and fire station.

D. Project Status:

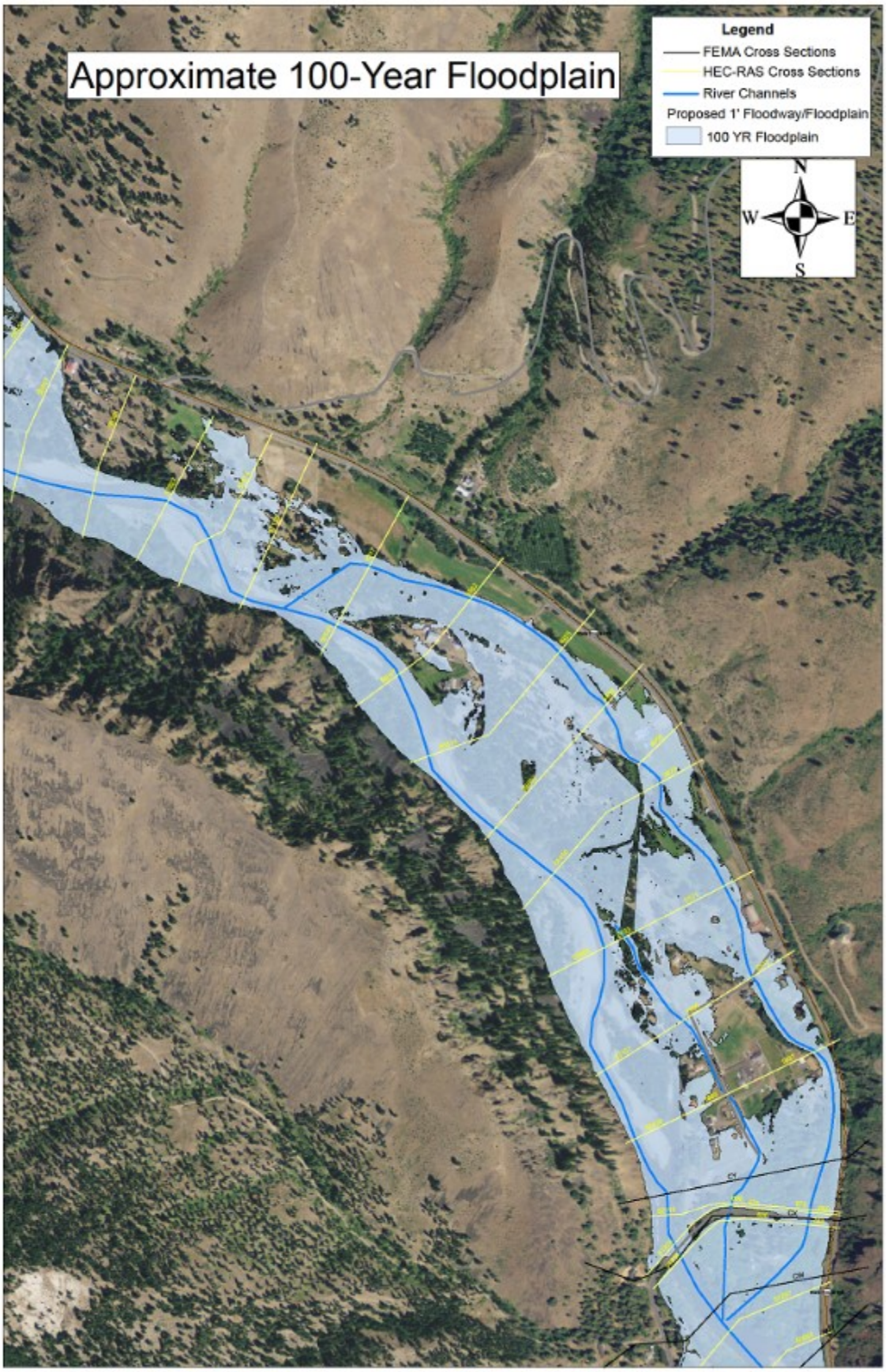
D1. Recent Project Work: May 2011 repair by the USCOE.

D2. Near Term Work: The setback designs were preceded by the May 2011 flood which required emergency repairs that precluded the setback design.

D3. Major Milestone & Dates:

2008 - Petition by landowners for levee reinstatement in PL84-99.
August 2010 - Design completion and homeowner meeting repair and realignment of levee.
May 2011 - Repair and construction of levee during flood precluded the planned setback.
2021-2025 - Potential Alignment changes in concert with WSDOTS Hwy Bridge installation.

Sprick Park to Upper Nile Bridge Assessment



FCZD Project Status
May 2022

Completed Study for CIP Project **Upper Naches**

A. Project Title: Sprick Park to Upper Nile Bridge Assessment (FC3627) T.K.

B. FCZD Role: Lead
Cooperators: Nile Fire District

C. Brief Project Description:

The Naches River reach from Sprick Park downstream to the Upper Road bridge and the residents within have experienced significant flooding during higher frequency floods, the latest being 2011 and 2015. Localized flooding has been increased by efforts to protect Sprick Park.

Goals: Provide hydraulic modeling using the new FEMA model to allow assessment of alternatives so that community will have a better understanding of options and implications. Ensure increased safety for proposed new Nile Fire District Office.

Benefits: Identify long-term solutions for this reach that residents can agree with and provide a basis for external funding.

D. Project Status:

D1. Recent Project Work: Development of the FEMA 1D model of the reach under a County NFIP remapping contract. The model includes existing flooding for the 10, 25, 50, 100 and 500-year events. Development by the County of a GIS database showing flooding and damages for above flood events. Analysis of alternatives by an enhanced 2D model for community review.

D2. Near Term Work: Hold future meetings to seek agreement on a preferred alternative.

D3. Major Milestone & Dates:
2012-2013 - FEMA 1D model development.
2013 - GIS database development
2016 - Meet with residents to present material.
2017-2018 - 2D modeling for preliminary results. Reveal limited benefits.
2019 - Seek community consensus on actions. No simple solutions.

Nile PL84-99 Levee

Upstream access

Downstream access

Levee downstream

Levee mid-stream

FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 08-046 **Upper Naches**

A. Project Title: Nile (N-13) PL84-99 Levee (FC3384) T.H.

B. FCZD Role: Lead
Cooperators: WSDOT, DOE, USCOE

C. Brief Project Description:

Need: Secure Federal assistance for maintenance and flood fighting of the levee constructed by the County and USCOE along the Naches River to protect the detour route of Highway 410 (later County road once Hwy 410 rerouted) following the 2009 Nile landslide.

Goals: To construct an access road to the levee and necessary easements for maintenance as per requirements of the PL84-99 USCOE Program.

Benefits: Reduce risk to homes and infrastructure through an established long-term levee maintenance.

D. Project Status:

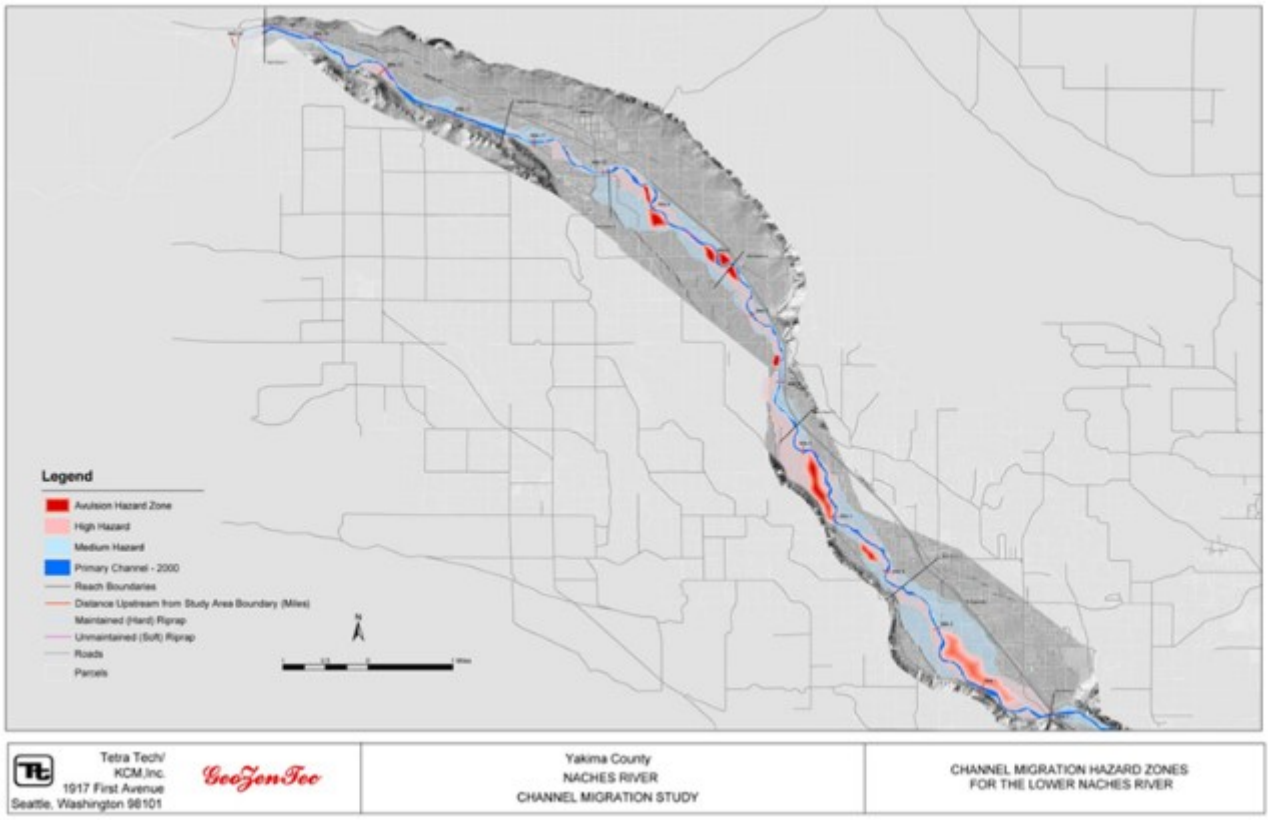
D1. Recent Project Work: Completed boundary adjustment. Use LIDAR to design new access road and construct,

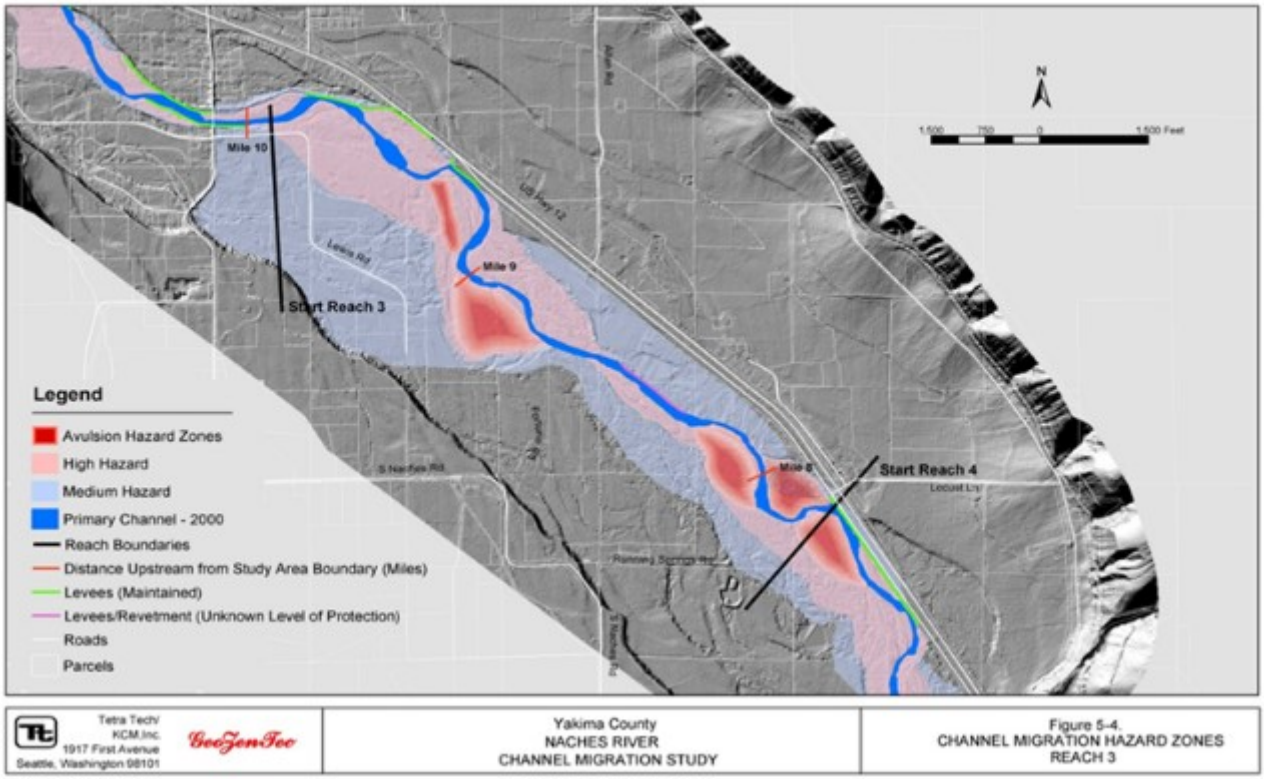
D2. Near Term Work: Constructed access road. Submitted PL84-99 application to USCOE for enrollment.

D3. Major Milestone & Dates:

2010 - Determine the status of the property ownership. Developed easement for levee access and maintenance.
Jan 2011 - Sent easement agreement to WSDOT.
2013 - Approve / Finalize agreement with WSDOT for easements.
2013 - Construct access road.
2014 - Submitted USCOE for PL84-99 enrollment accepted. Obtained WSDOT easement. USCOE enrollment in Rehabilitation and Inspection Program.
2016-2018 - Awaiting WSDOT property transfer to Yakima County to include proposed levee access easement.
2017 - Levee sustained flood damage during 2016-2017 event.
2019 - USCOE Rehabilitation completed.
2020 - Levee easement from WSDOT.

Naches River Channel Migration Zone Hazard Mapping





FCZD Project Status
May 2022

Completed Planning Project **Lower Naches**

A. Project Title: Naches River Channel Migration Zone Hazard Mapping (FC2911-400) K.M.

B. FCZD Role: Cooperator with Greenway
Cooperators: Department of Ecology, County Planning

C. Brief Project Description:

Need: This study provides a better understanding of the flood hazards to residents and infrastructure from channel migration along the Naches River and flood plain.

Goals: Identify high and medium channel migration zones and potential hazards associated with channel migration and avulsion.

Benefits: The primary products from this study are the channel migration and hazard zone maps that will be used as a tool for regulating land use and future development along the Naches River area. Regulation of these areas will be done through the Critical Areas Ordinance and Shoreline Master Program.

D. Project Status:

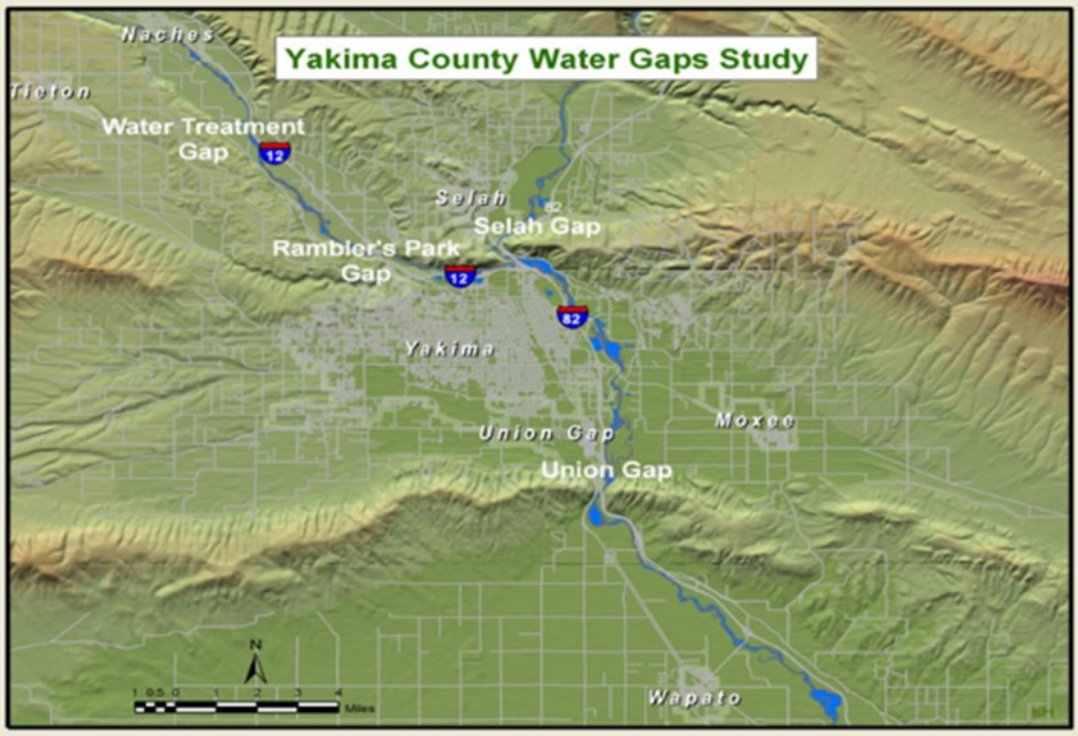
D1. Recent Project Work: Complete.

D2. Near Term Work: Complete.

D3. Major Milestone & Dates:

2003 - CMZ Study complete
2004 - CMZ submitted to Ecology.
2007 - Shoreline Master Plan and CMZ adopted by BOCC as part of Plan 2015.
2010 - DOE adoption.

Naches River Modeling & FEMA Flood Insurance Rate Map Re-Study



FCZD Project Status
May 2022

Completed Planning Project **Lower Naches**

A. Project Title: Lower Naches FEMA Flood Insurance Rate Map Restudy (FC2911) T.H. ( )

B. FCZD Role: Lead
Cooperators: FEMA

C. Brief Project Description:

Need: Existing FIRM maps were generated in 1970's and need to be updated on the Naches River which has experienced significant man-made and natural changes, especially after the flood of 1996. Better techniques in topographic data gathering in the form of LIDAR data and hydraulics modeling are achievable and desired at this time to produce more accurate flood inundation maps. Extensive amount of survey, LIDAR, flow, and structural survey data was gathered for this project.

Goals: To model the hydraulics of Naches River and its flood plain system to produce the FEMA flood maps; a one-dimensional model was used. To produce more detailed hydraulics for capital improvement projects two-dimensional modeling was used in two locations.

Benefits: Generation of Digital Flood Insurance Rate Maps (DFIRMs) that would be easy to maintain, change, and reproduce. Generation of detailed flood extents maps for different return periods to be used for flood emergency response in the Naches River area. Creation of detailed two-dimensional hydraulic modeling for two capital improvement project areas in the Naches River: McCormick Levee area and the Town of Naches. Creation of a hydraulic model that could be used to model future capital improvement projects along the Naches River and its flood plain system.

D. Project Status:

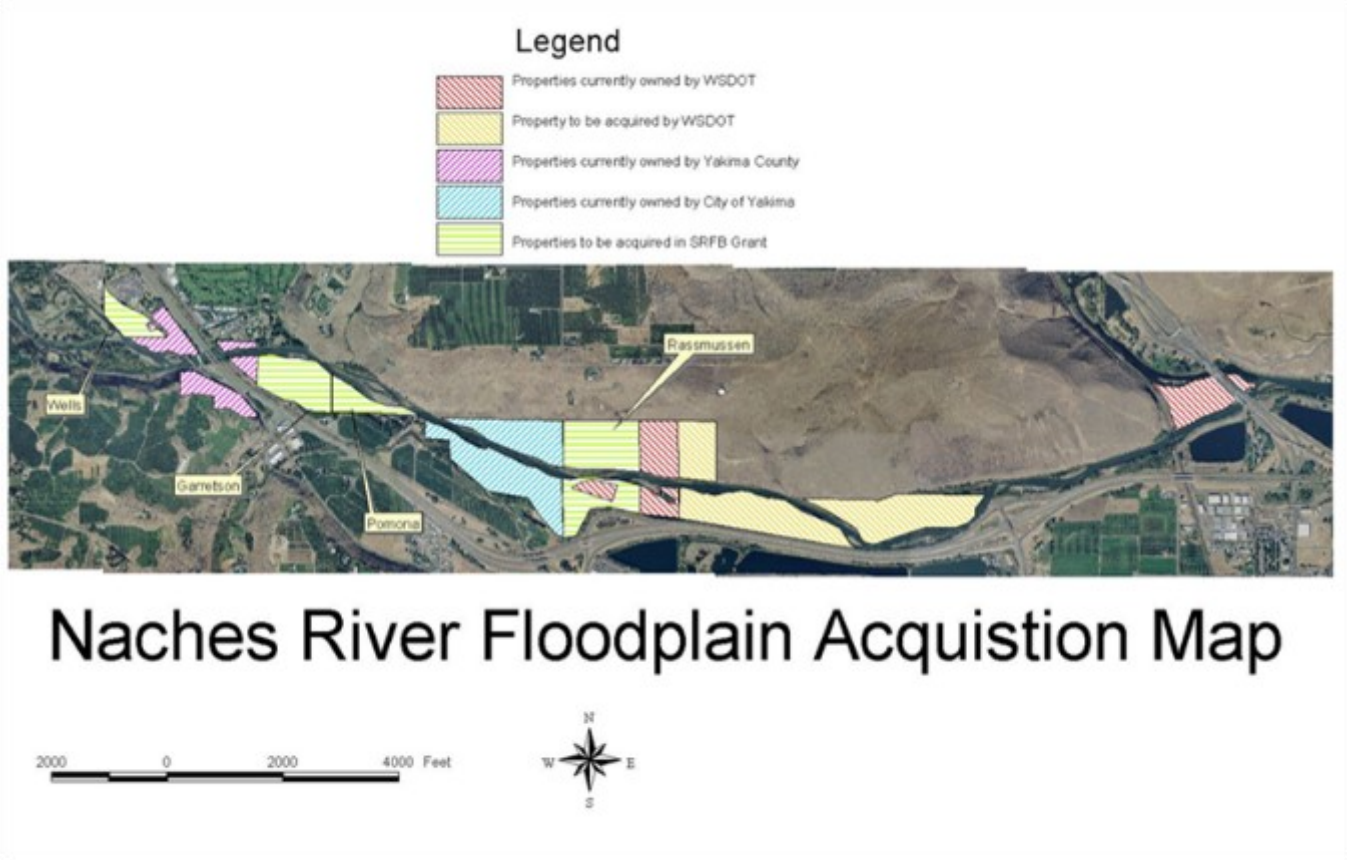
D1. Recent Project Work: Maps were adopted November 2009.

D2. Near Term Work: Complete.

D3. Major Milestone & Dates:

2003 - FEMA Grant $90k.
2004 - Hire consultant.
2006 - Initial consultant products.
2007 - Maps delivered to FEMA/RMC10, Seattle (Regional Management Center) for review.
2008 - FEMA review completed and provided the preliminary Flood Insurance Study maps for review.
November 2008 - Meeting was held with the public which involved FCZD FEMA/RMC10 and study consultant, DHI.
2008 - Publish the Notice of Appeal Period.
2009 - Letter of Final Determination Review sent to communities.
2009 - Final official study/DFIRM delivered to communities.
2009 - Amend flood ordinance to reflect new maps.
November 2009 - Maps became effective.
2022-2023 – Restudy initiated due to multitude of flood risk reduction projects implemented.

Lower Naches Partnership Land Acquisition



FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 07-028 **Lower Naches**

A. Project Title: Lower Naches Floodway Land Acquisition (FC3254)

B. FCZD Role: Lead
Cooperators: City of Yakima, WSDOT and Lower Naches Partnership

C. Brief Project Description:

Need: There are a number of undeveloped properties along the Naches River between 40th Avenue and Powerhouse Road Bridge that are susceptible to high hazard floods and sudden river movement. As road crossings and other infrastructure change in this reach the damage potential to properties, which is already high, may increase.

Goals: A Salmon Recovery Funding Board Grant for acquisition of properties in the area of the Fruitvale Diversion / Twin Bridges / Powerhouse Bridge was approved. Acquire 3 parcels upstream in this reach to allow levee setback and maintenance of agricultural uses (this area is in the Yakima UGA and could be converted to high density housing).

Benefits: Reduced flood damages and use of parcels for future public benefit such as trees.

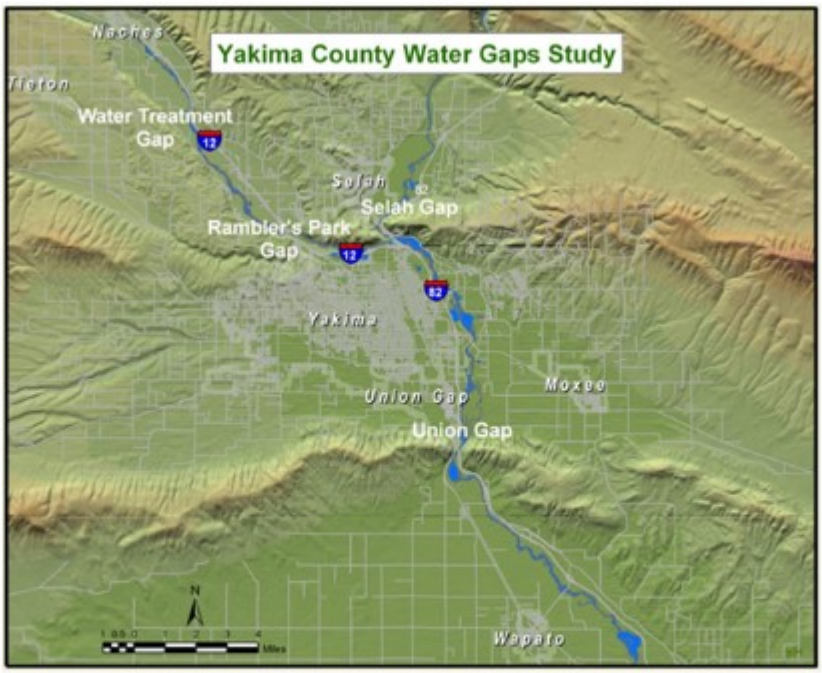
D. Project Status:

D1. Recent Project Work: Parcel acquisition complete. Development of integrated ownership / management plan for this reach including role and management of the Greenway Naches River trail and William O. Douglas Trail.

D2. Near Term Work: Complete.

D3. Major Milestone & Dates: Complete
2005 - Acquisition of Garretson and Rassmussen properties.
2012 - WESDOT transfer of properties to FCZD for management as floodplain and habitat.

Yakima County Water Gaps Study



Selah Gap

Union Gap

Ramblers / Naches Gap

FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 07-027 **Lower Naches**

A. Project Title: Yakima County Water Gaps Study (FC3312) J.K.F.

B. FCZD Role: Lead
Cooperators: City of Yakima, WSDOT, WDFW, Yakima Valley Canal Co, adjacent landowners

C. Brief Project Description:

Need: Recommendations of the Lower Naches and Upper Yakima CFHMPs are to study the Naches and Yakima River reaches where flood hazard threatens infrastructure due to channel instability. These locations are evidenced by numerous emergency flood control/repair actions. The channel and floodplains of these reaches include the Water Treatment Plant, Rambler's Park/Gleed, Selah Gap and Union Gap areas. Common to these locations are river passage through restraining geological gaps and placement of infrastructure including bridges and diversions.

Goals: Due to the instability of these reaches, short term actions to stabilize the reach have had potential long term detrimental impacts and costs will continue to until a comprehensive approach to the reaches is developed and implemented. Prior floodplain actions by various agencies have been largely uncoordinated, provided unintended conflicts. Their short and long-term effectiveness would be increased, and their costs reduced through a coordinated and comprehensive approach. A fluvial geomorphic study of the "water gaps" where most infrastructure is located has been undertaken to determine how the facilities and river function, the causal factors for instability, and how infrastructure can be managed to reduce flood hazard and to improve riverine function over the long term. That information will be used in the development of a plan for current and future infrastructure.

Benefits: Increased understanding of how to manage infrastructure into the future based on how these "gaps" function, plus reduced flood hazard and need for emergency action. Information gained in this study will also be of great value to infrastructure modifications at Rambler's Park and Union Gap which are growing more severe over time, and to all bridge crossing replacements.

D. Project Status:

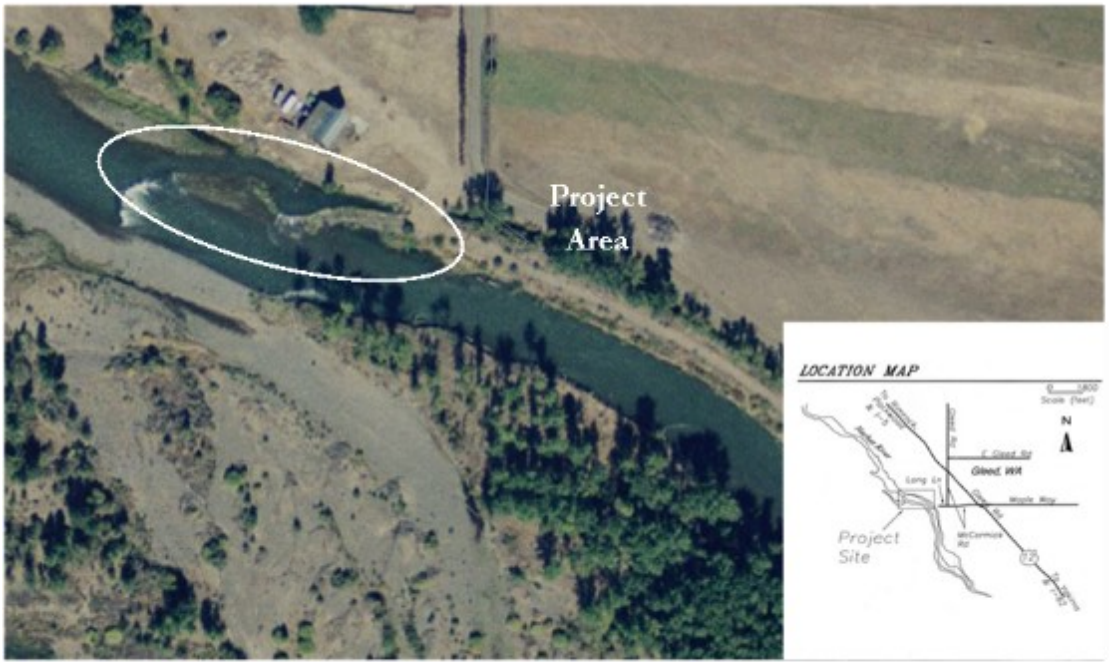
D1. Recent Project Work: Design work on gaps initiated at Eschbach Park Levee pullback design and the USCOE levee at City of Yakima Water Treatment Plant. See “Nelson Dam Coordination”.

D2. Near Term Work: Further geomorphic reach studies on hold pending YRBWEP Phase III BOR Ecology Study.

D3. Major Milestone & Dates: Complete

2008 - Entrix contracted for Reach-Scale and Water Gap Geomorphic Work.
2008 - WTP reach analysis draft memo received.
2009 - Eschbach Park grant awarded.
2009 - Geomorphic Entrix “Water Gaps” draft report received, and comments provided.
2011 - Modeling of sediment and flood in Gaps by Bureau. Finalized “Water Gaps” study.
2015 - YRBWEP Phase III Study Mediation and Funding. Start long-term geomorphic studies.

McCormick Levee Stabilization and Fish Enhancement Project



FCZD Project Status
May 2022

Completed Demonstration Project **Lower Naches**

A. Project Title: McCormick Levee Stabilization and Fish Enhancement Project (FC2993) K.M.

B. FCZD Role: Lead
Cooperators: Department of Ecology (partial financial support)

C. Brief Project Description:

Need: The 1996 flood produced erosion along the upstream end of the County sponsored McCormick Levee. Continued erosion would compromise the integrity of the levee and could cause levee failure during a significant flood with associated damages to life and property.

Goals: To stabilize and monitor performance of the structure using the following measures:
- Construct four rip-rap barbs extending from the left bank of the river into the river channel in order to divert the flow away from the damaged levee and bank.
- Plant a strip of the river bank/levee with native plants in order to stabilize bank/ levee. Also, plant grass in the area adjacent to the irrigation intake structures to reduce erosion.
- Place habitat elements to enhance fish habitats. These fish habitat elements composed of: 1) Logs with root wads tied with big rocks for stabilization, 2) Assemblage of big rock downstream and upstream of each constructed barb.

Benefits: Protect life and properties behind the levee while creating fish habitat elements in the project area.

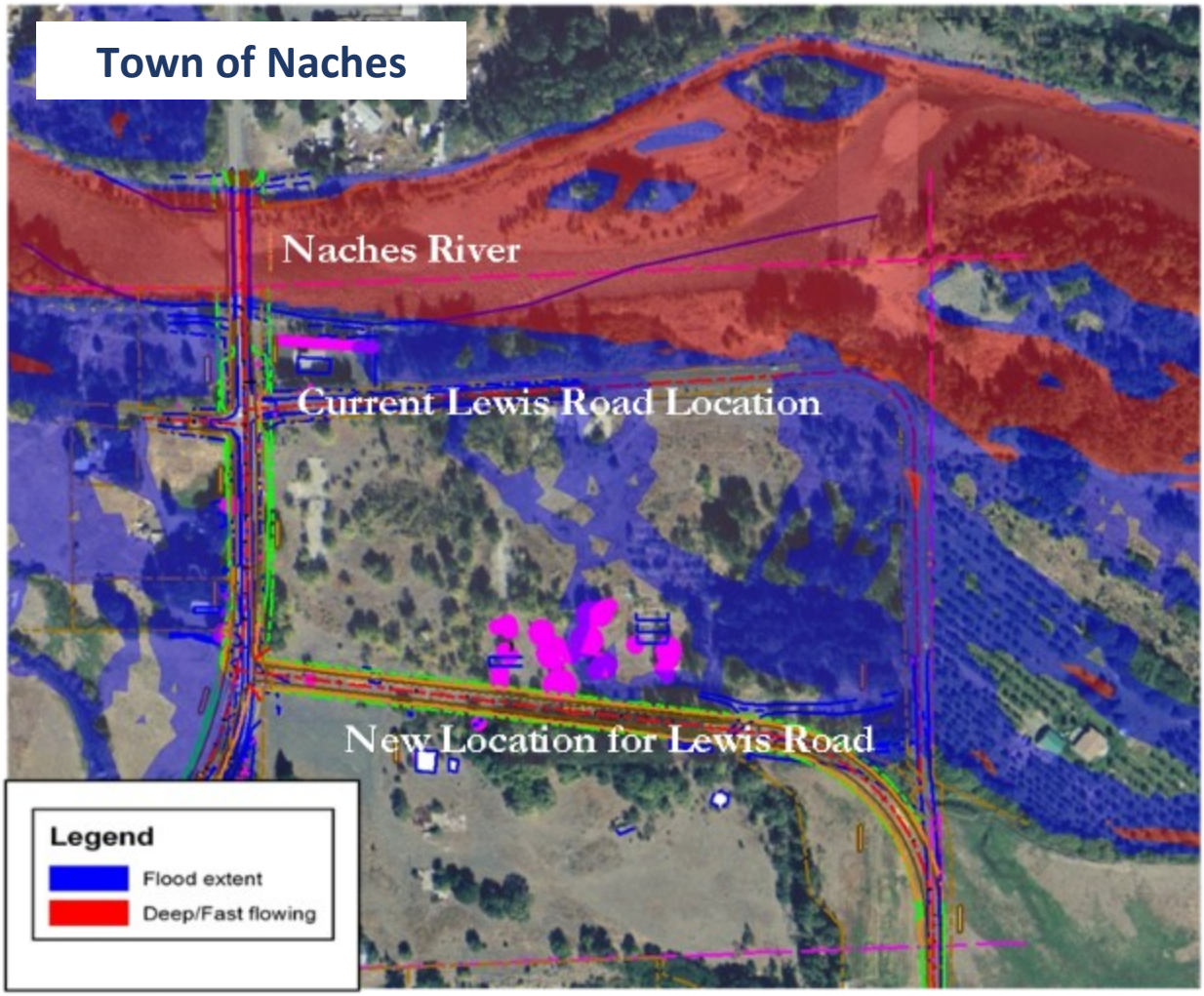
D. Project Status:

D1. Recent Project Work: The project was completed in November 2002 and was placed in monitory mode.

D2. Near Term Work: Water Resources Division staff monitored the project until 2011 flood in order to gain knowledge about system performance and methods used to design such projects. Monitoring will indicate if actions are needed to adjust, fix, or add to the barbs to enhance the performance of the project. The project performed according to the goals and objectives set forth in the design process until the 15-year flood in May 2011.

D3. Major Milestone & Dates: Complete
1999 - FCAAP Grant to design $24k.
2001 - Collection of survey / hydraulics / hydrology data, design and permitting.
2002 - Construction.
November 2002-2011 - Project performance monitoring after floods.
2011 - Barbs removed by May 2011 flood

Lewis Road Relocation Project



FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 03-082 **Lower Naches**

A. Project Title: Lewis Road Relocation Project (FC3122) K.M.

B. FCZD Role: Lead
Cooperators: Department of Ecology (partial financing $50,000), Yakima County Roads

C. Brief Project Description:

Need: Lewis Road is a dead-end road or single access point that has experienced severe damages during Naches River higher frequency floods. The road is located where high energy floodwaters leave the Naches River and flow overland. This water erodes Lewis Road, making it impassible during and after floods and resulting in isolation of property owners.

Goals: The project will relocate Lewis Road away from the river to an alignment on higher ground that is less susceptible to erosion and wash out. The new location was identified from two-dimensional hydraulic modeling in the project area as part of the Naches flood mapping project.

Benefits: The new location of Lewis Road will still be in the 100-yr floodplain, but damages to the road would be greatly reduced or eliminated. The new location will provide access to residents in the area during floods up to the 25-yr flood. The engineer's estimate for construction of this project is under $200,000 and funds provided by an FCAAP and a Flood Hazard Mitigation Grant.

D. Project Status:

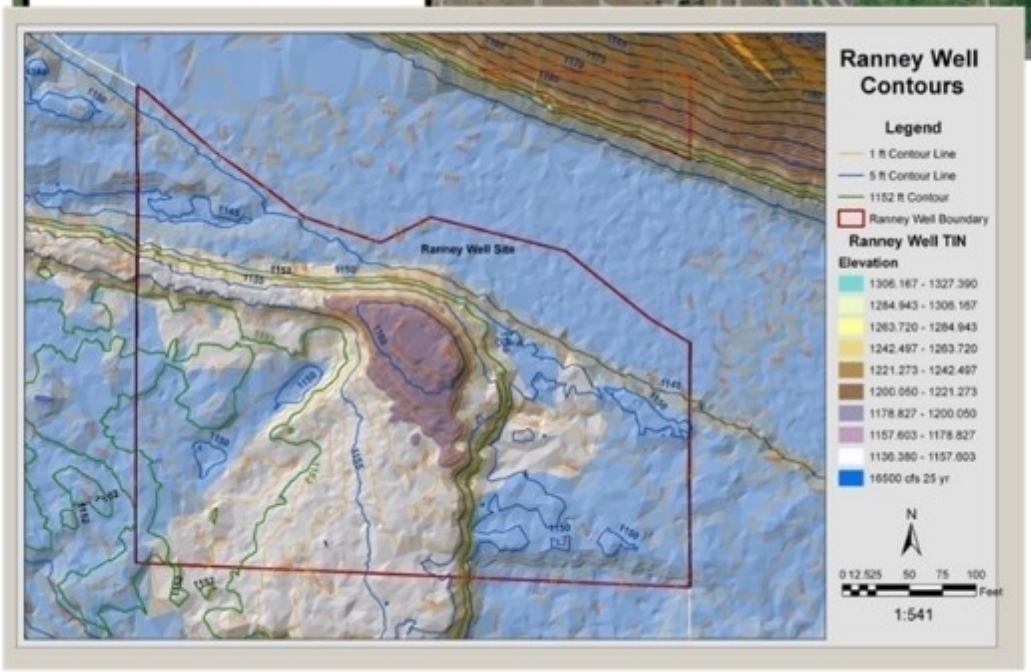
D1. Recent Project Work: The project was completed in October 2009.

D2. Near Term Work: No action.

D3. Major Milestone & Dates: Complete

2007 - Acquire FCAAP Grant $50,000
2008 - Acquire FEMA Grant $150,000
2008 - Complete design and land acquisition
2009 - Construction at total cost of $350,000

City of Yakima Ranney Well Levee Removal Project



FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 07-026 **Lower Naches**

A. Project Title: City of Yakima Ranney Well Levee Removal (FC3252) J.K.F./K.H.

B. FCZD Role: Cooperator with City of Yakima and WSDOT and adjacent landowners

C. Brief Project Description:

Need: The City of Yakima is retiring several diversions from the Naches River, and will cease maintenance of levees along Cowiche Creek which date from the 1930s.

Goals: Cooperate with the City in retirement of these structures while maintaining or improving flood control and fish and wildlife habitat in the future through levee and channel relocation of Lower Cowiche Creek.

Benefits: Maintain flood protection for the 40th Avenue/Fruitvale interchange with US 12. Reduced flood heights and flood damage in lower Cowiche Creek which joins the Naches River at this location and has been severely modified in the past for irrigation diversion.

D. Project Status:

D1. Activity deferred pending implementation of related funded projects within the area.

D1. Recent Project Work: Successful SRF grant applications for lower Cowiche easement and design to allow channel reconstruction.

D2. Near Term Work: City to initiate Nelson Dam replacement design, develop plan for retirement of Fruitvale diversion and final setback of the levees. Secure easement and prepare design for Cowiche channel relocation and restoration in association with diversion removal.

D3. Major Milestone & Dates: Complete

2008 - Partial levee removal in cooperation with WSDOT

2010 - Finalize water right transfer. Await Nelson Dam construction for next phase.

Rambler's Park Levee Setback Ph I

FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 12-0 **Lower Naches**

A. Project Title: Rambler's Park Levee Setback (FC3465) – Phase I J.K.F.

B. FCZD Role: Lead
Cooperators: USACE, City of Yakima, Reclamation, Yakama-Klickitat Fisheries Project (YN/WDFW)

C. Brief Project Description:

Need: The Rambler's Park Levee is a County-owned facility enrolled in the USCOE's P84-99 program. The Levee has experienced repeated failures at relatively low flows and provides limited protection at higher flows due to historic upstream flanking from downstream backwater from Nelson Dam and Highway 12 resulting in sediment deposits. The Levee and adjacent infrastructure configuration creates multiple constrictions producing river bed aggradation upstream for several miles and sediment starvation downstream. These ongoing conditions are leading to ever-increasing flood water surface elevations of 3-5 feet, expanding regulatory floodplain and floodways over a very large area and increasing flood hazard. The infrastructure configuration and sediment issues in this reach has severely degraded fish passage and fish habitat in the reach.

Goals: In cooperation with our infrastructure partners, reconfigure the levee system and adjacent infrastructure to halt and reverse sediment aggradation thereby increasing reach flood, sediment plus fish conveyance and reducing occurrences of levee failure.

Benefits: The long-term financial benefits to the County (reduced levee maintenance and emergency response costs) and local residents (reduced flood hazard, reduced regulatory floodplain and floodway) are large and sustainable. Based on experience gained on other levee setback projects, habitat conditions should improve dramatically in the short-term and with the planned modification to Nelson Dam, fish production in the Naches River should improve as well. In addition, related projects will allow improvements in irrigation water delivery and water conservation to the City of Yakima.

D. Project Status:

D1. Recent Project Work: Partial and near complete failure of 320' of Rambler's Park Levee in 2012 at less than a two-year flow and led to negotiations with adjacent landowners (Hallauer, Weber, Wells) and development of four phase approved. In cooperation with USACE, development of setback design for lower Rambler's Park Left Bank Levee to be implemented in two phases: Purchase of Wells (Ph I) and Hallauer properties (Ph II). SEPA initiated for Levee Setback (Phase I &II). Applied and awarded grant for Phase III— property purchase on southwest bank to remove constricting levee and create pilot channels to mobilize sediment (see Rambler's Property Acquisition/Restoration). City contracts HDR Engineers for alternative analysis of Nelson Dam (Ph IV).

D2. Near Term Work: Complete Phase I & II SEPA. Acquired Phase I property; USCOE completes lower Rambler's Levee setback (Phase I); Review City alternatives report, Phase IV.

D3. Major Milestone & Dates: Complete

2011 - Preliminary Nelson Dam design modifications (BOR) with associated sediment transport modeling. FCZD hydraulic study of Rambler's Park levee, road and dam infrastructure reconfiguration alternatives.

2012 - Rambler's Levee failure. Steelhead radio tracking study indicating poor upstream passage conditions at Nelson Dam for ESA listed steelhead.

2013 - Completed Phase I, City completed Nelson Dam alternatives design report (PH IV).

2014 - Obtained grant funding for setback of upper Rambler's Levee (Ph II), finalize real estate needs and permit and land use conditions (see FC3542). Setback levee construction and revegetation (Ph III). Complete Phase II (see FC3492). Finalize Nelson Dam design and seek funding (Ph IV) - action by others.

Eschbach Park Levee Setback

Side Channel Reactivation after Eschbach Restoration and Modification Project Completion

FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 10-014 **Lower Naches**

A. Project Title: Eschbach Park Levee Setback (FC3379) K.H.

B. FCZD Role: Lead
Cooperators: City of Yakima, Yakima Valley Canal Co, WDFW and Yakama Nation

C. Brief Project Description:

Need: There are several locations upstream of Eschbach Park levee where the Naches River can and eventually will change channel, trapping the river behind the Eschbach Park Levee, which will damage or destroy the Park and the Yakima Valley Canal Company diversion. The levee also causes channel constriction which increases downstream erosion, specifically in the area of Kershaw Lane, the site of repeated emergency response in 2006, 2007 and 2009.

Goals: Pull back the Eschbach Park levee to avoid flanking, reduce downstream erosion, and reconnect the floodplain thereby reducing velocities and improve salmon habitat. The ultimate goal of this project is to improve hydrologic functions across 2.1 miles of the Naches River and provide river access to approximately 240 acres of its floodplains.

Benefits: Relocation of the levee will allow the Naches River to re-occupy its historic channel downstream activating 41 acres of floodplain and riparian habitat and reconnect two side channels that were cut off when the levee was constructed in 1974. The levee setback will protect the park and the Yakima Valley Canal headworks and fish screens from floods.

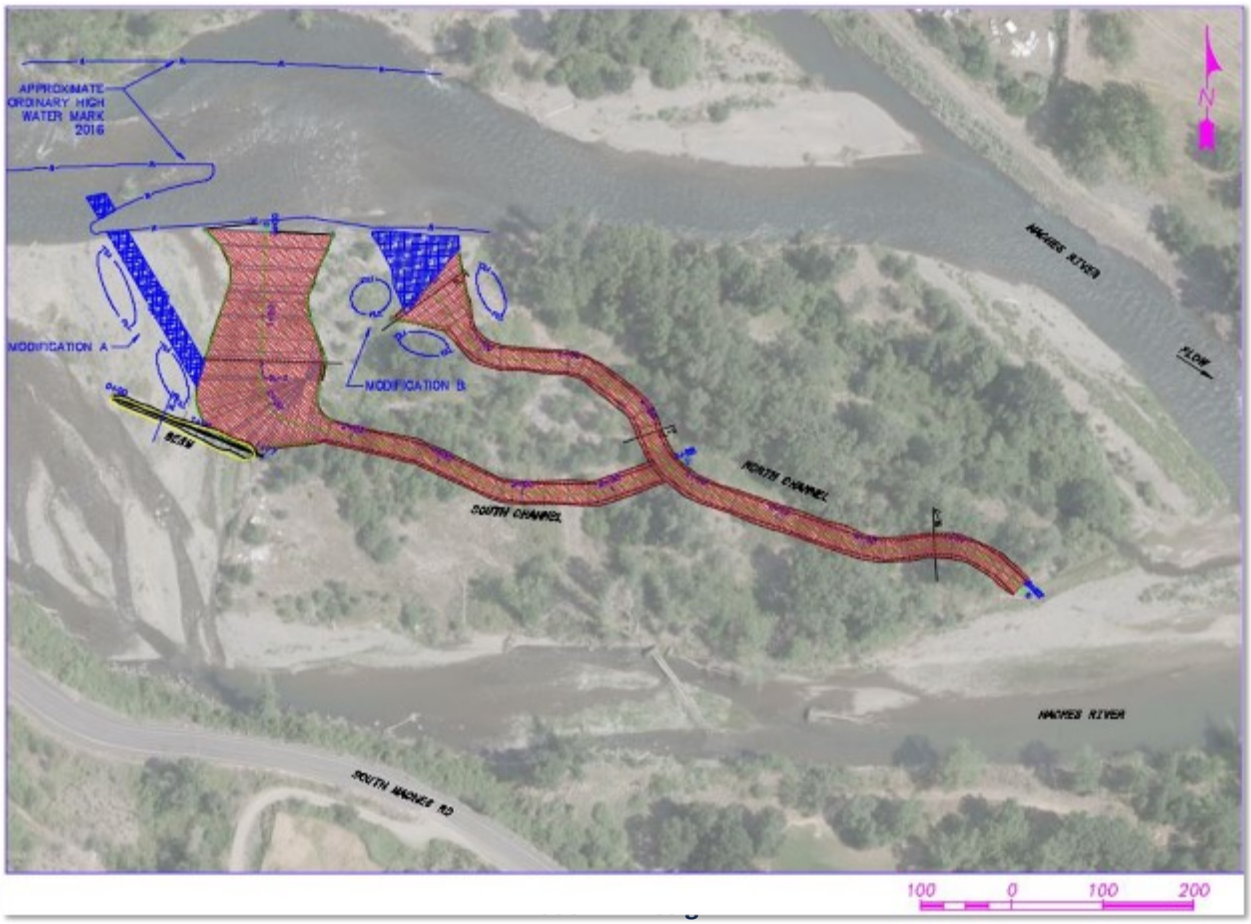
D. Project Status:

D1. Recent Project Work: Received Salmon Recovery Funding Board Grants for design of Eschbach Park Levee pullback for $122,608 and construction Grant for $284,000 plus USFWS Grants of $76,000. Phase I (Design) completed.

D2. Near Term Work: Phase II – Construction completed March 2017.

D3. Major Milestone & Dates: Complete
2009 - SRF Grant $122k
2010 - Preliminary design complete. SRF Grant $284k
2012 - Final design, SEPA, and permit levee pullback.
2013 - NEPA, permitting and initiate construction.
2013-2014 - Complete construction
2014-2016 - Monitoring and revegetation.
2017 - Perpetuity – Vegetation monitoring / maintenance.
2018 - Channel connection (see FC3621)

Rambler's Property Acquisition / Restoration – Phase III



Before Construction

After Construction

FCZD Project Status
May 2022

Completed CIP Project in CFHMP **Lower Naches**

A. Project Title: Rambler's Property Acquisition / Restoration – Phase III (FC3492) M.R.

B. FCZD Role: Lead
Cooperators: RCO, Yakima Basin, F&W, WF&W, City of Yakima

C. Brief Project Description:

Need: Yakima County has been working with the City of Yakima (COY), Bureau of Reclamation (BOR), WA Dept of Transportation (WSDOT) and others to reduce flood hazards to infrastructure and improve floodplain habitats in the Rambler's Park reach of the Naches River over the past ten years. Results of 100-year flood mapping indicate that this reach is aggrading upstream of the Nelson Dam by 3-5 feet . The aggradation has resulted in chronic bed instability, loss of side channel formation and loss of habitat for ESA listed species.

Goals: The purchase of properties and subsequent private levee removal (Phase III) on the right bank will reduce pressure on Federal PL 84-99 Levee on the opposing bank and improve approach to Nelson Dam, which has fish passage issues. Side channel development and initiation of channels through zones of aggradation will encourage movement of sediment through the reach and improve habitat for ESA listed species.

Benefits: Reversal of historic channel aggradation, reduce flood hazards and improve riverine processes and habitat. Cooperate with partners to allow the Naches River to reoccupy old side channels and enhance the river's ability to remove sediment accumulations upstream of Nelson Dam. Improved geomorphic processes, improved habitat and fish passage for ESA listed species in this reach of the Naches River near Rambler's Park.

D. Project Status:

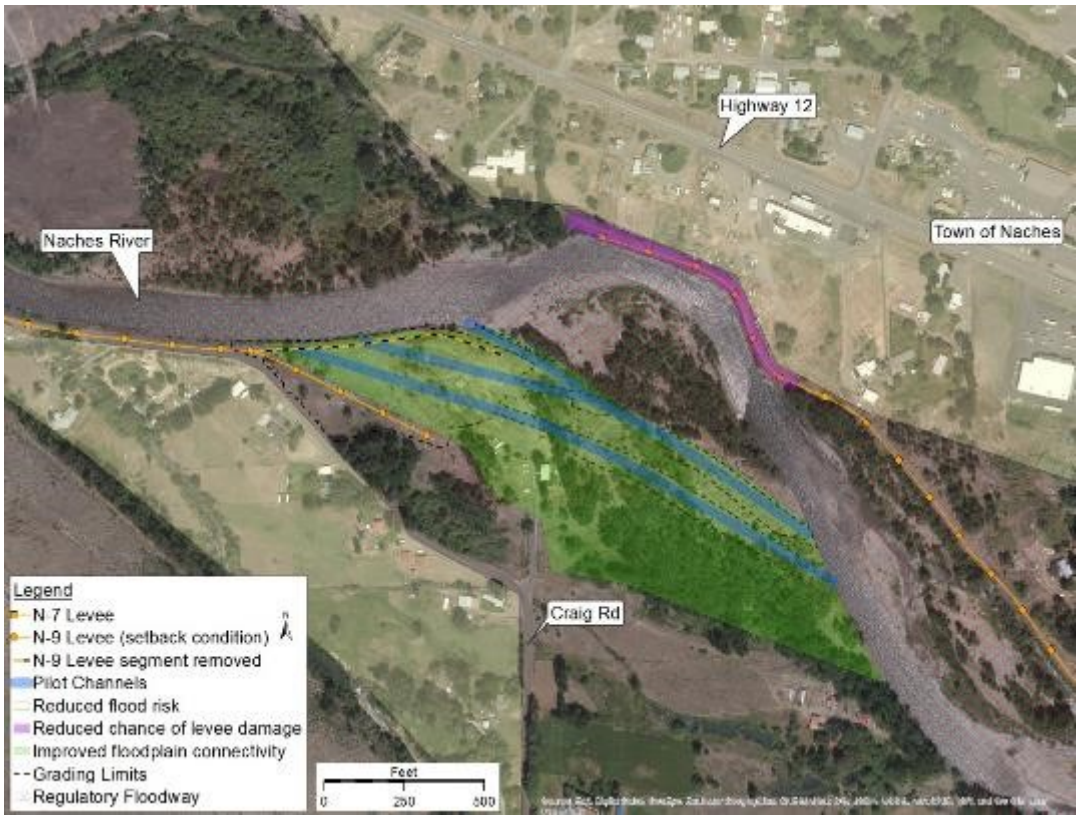
D1. Recent Project Work: Phase III - Property acquisition - Design completed for permitting.).

D2. Near Term Work: Constructed and completed in 2016

D3. Major Milestone & Dates: Complete

Spring 2012 - Failure of Ramblers Levee on left bank and USCOE levee repair. Phase III property negotiations.
2012 - Grant agreement signed.
2014 - Phase III property acquisitions.
2015 - Channel design and permitting, side channel development, channel initiation through mid-channel properties and debris removal.
2016 - Constructed

N-9 Naches Levee Segment Removal



FCZD Project Status
May 2022

Completed CIP Project in CFHMP **Lower Naches**

A. Project Title: N-9 Naches Levee Segment Removal (FC3543) D.M.

B. FCZD Role: Lead
Cooperators: Ecology

C. Brief Project Description:

Need: The N-9 levee is a County-owned levee located west of the Town of Naches on the south bank of the Naches River. Enrolled in the USACE's PL84-99 program, the N-9 is largely coincident with the western end of Craig Rd. While it is not a FEMA-accredited 100-year levee, it provides a moderate level of flood protection to a number of private residences along the southern side of Craig Rd. Prior to the Project, the N-9 levee extended eastward and northward from the corner of Craig Rd and directed the river squarely into the face of the N-7 levee (also County-owned) that protects the town of Naches. The N-7 levee experienced expensive and repetitive repairs, including failure and property damage in 1996 and near failure in 2011.

Goals: The Project was initiated in 2014 through an Ecology Floodplains by Design grant agreement. The objective was to acquire the necessary properties to enable the removal and setback of the eastern end of the N-9 levee to reduce N-7 levee damages, maintenance costs, and the threat of flooding to 101 structures behind the N-7 levee in the Town of Naches, and to reconnect a large area of historically active floodplain. The Project will allow natural, floodplain-forming processes to occur with more regularity and to greater effect and reduce the likelihood of expensive emergency actions, flooding in the Town, and lessen the ongoing maintenance costs to the N-7 levee.

Benefits: The Project was completed in the Fall of 2017. Project components included the removal of approximately 700 feet of levee, the removal of a house (and associated site clean-up of stockpiled construction waste), the construction of setback levee, the construction (and enhancement) of nearly 3,800 feet of pilot channels, the return of 21 acres to active floodplain, and the revegetation of the disturbed areas with native seeds.

It is anticipated that the project area will continue to evolve during flood events on the river, creating an expanded network of seasonal channels and healthy riparian areas that benefit native aquatic species and reduce flood risk to the Town of Naches.

D. Project Status:

D1. Recent Project Work: Construction and revegetation complete.

D2. Near Term Work: Monitoring.

D3. Major Milestone & Dates: Complete

2014 - Grant acquisition
2014 - SEPA application
2015 - Land acquisitions
2016 - Complete all six land acquisitions
2016 - Construction design and permitting
2017 - Complete construction with initial revegetation
2018 - Complete revegetation

Cowiche Creek Trail Bridge Replacement & Excavation

FCZD Project Status
May 2022

Completed CIP Project in CFHMP – **Lower Cowiche**

A. Project Title: Cowiche Creek Trail Bridge Replacement & Excavation Roads

B. FCZD Role: Cooperator
Cooperators: WSDOT

C. Brief Project Description:

Need: The new Naches trail passes over the old railway bridge across Cowiche Creek. The County replaced this bridge with a pedestrian bridge and The FCZD excavated out the channel underneath's for relocation of these uses.

Goals: Provide safe passage across the decaying structure, remove the bridge piles in Cowiche Creek that were obstructed flow, depositing sediment and creating flooding.

Benefits: Safety for trail users and relief from flooding to City residents.

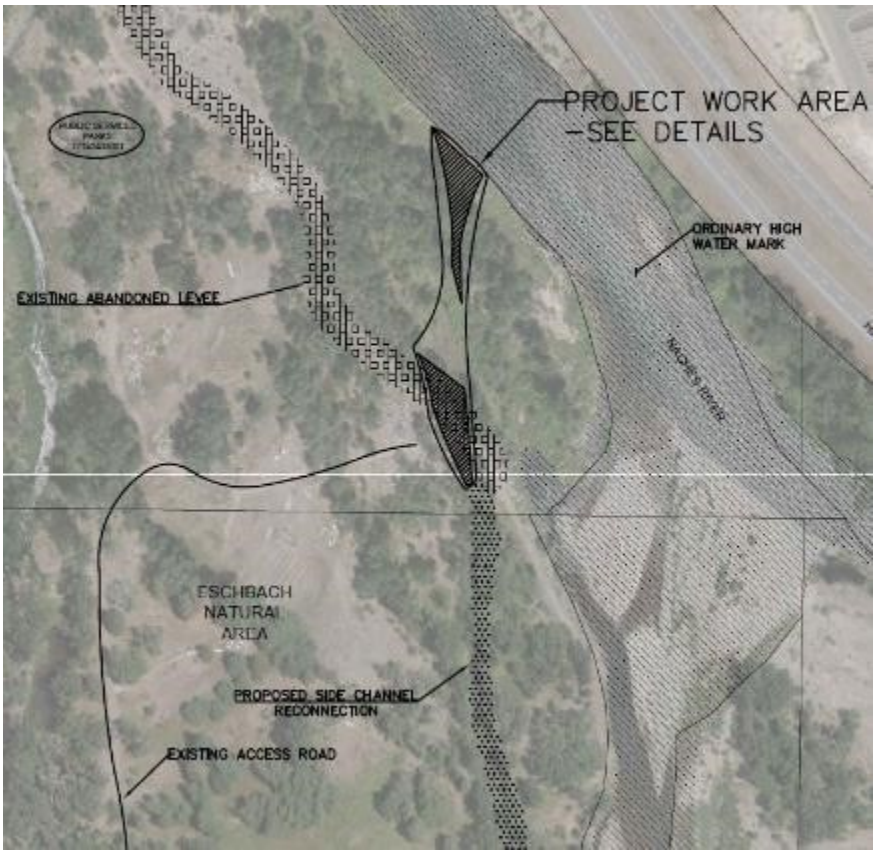
D. Project Status:

D1. Recent Project Work: Bridge Project completed in 2016, excavations in 2017.

D2. Near Term Work: Maintenance of landscaping along Old Yakima Valley Highway. Removal of access road on old yard.

D3. Major Milestones & Dates:
2016 - Construction of new bridge
2017 - Excavation by FCZD and WSDOT below new bridge.

Eschbach Side Channel



FCZD Project Status
May 2022

Completed CIP Project in CFHMP **Lower Naches**

A. Project Title: Eschbach Side Channel Project (FC3621) T.H.

B. FCZD Role: Lead
Cooperators: WA Dept. of Fish & Wildlife

C. Brief Project Description:

Need: Eschbach Park has numerous side channels that have been disconnected from the floodplain through historic levee construction. In 2013, the County removed and breached portions of the Eschbach Park levee in an effort to provide flood relief and side channel habitat downstream. These actions allowed flood waters to re-enter the park and its side channels, but at significantly lower frequency than intended. Investigations showed one location where flood waters were not entering as planned just upstream from the 2013 work.

Goals: Increase the frequency of floodplain habitat and historic side channel activation. A short connecting side channel was needed to provide intended access to this historic side channel habitat on a more frequent basis.

Benefits: Increases frequency of floodplain and side channel inundation, decreasing flood risk while enhancing riparian habitat, water quality and fish access.

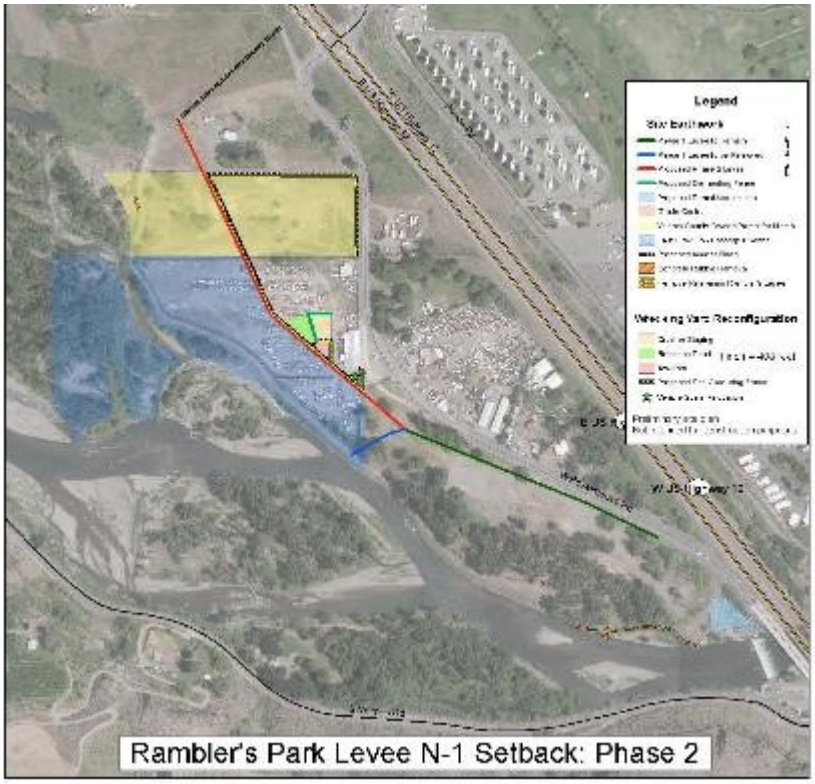
D. Project Status:

D1. Recent Project Work: Completed hydraulic modeling, design and construction in 2017.

D2. Near Term Work: Construction planned for 2017.

D3. Major Milestone & Dates: Complete
2016 - Preliminary modeling and design completed.
2016 - Fish Habitat Enhancement Project HPA secured from Fish & Wildlife. Other permits secured.
2017 - Final modeling and design and construction completed in winter.

N-1 Naches Levee Setback – Rambler's Phase II



FCZD Project Status
May 2022

Completed CIP Project in CFHMP **Lower Naches**

A. Project Title: N-1 Naches Levee Setback – Rambler's Phase II (FC3542) J.K.F. / D.M.

B. FCZD Role: Lead
Cooperators: Ecology, Fish & Wildlife

C. Brief Project Description:

Need: The Rambler's Park Levee (N1) is a County-owned levee, enrolled in the USCOE's P84-99 program that protects SR12, Powerhouse Road, several businesses and residences. The Levee has experienced repeated failures during floods (1927, 1972, 1974, 1996, 2006, 2017) and at relatively low freshets (3,200 cfs flood failure in 2012) and now provides limited protection at higher flows due to historic upstream flanking produced by historic sediment deposits dropped in the backwater from the constrictions of the existing levee alignment, Nelson Dam, and Highway 12.

Goals: The County objectives in this reach are to remove constrictions and reduce backwater and improve sediment transport. This would reverse the channel aggradation in the Rambler's Park area and allow for future designs of less intrusive infrastructure, including replacement of Nelson Dam, that reduce constriction and sedimentation. This phase of the County five phase actions (plus one by city) will act to reduce flood hazard and improve riverine and floodplain habitats over a large reach of the main stem river, while improving fish passage and holding areas.

Benefits: This project will reduce levee damages and failure risk in the highest 1996 Naches damaged reach, remove areas from the 100-yr floodplain and reconnect a large area of historically active floodplain to facilitate reach scale restoration of hydraulic and sediment processes that will also restore riverine and floodplain habitats. The project will purchase floodway properties, reconfigure and relocate the existing wrecking yard, set the existing 2,100-foot levee segment back 300 feet to a reduced 1,800 foot segment, allow floodplain access to 9 acres, remove the old Powerhouse Road 200 foot embankment allowing access to a further 2 acres at the Nelson Dam approach, and create pilot channels in the long term floodplain deposits. The project is phase two of a four phased project identified under Recommendations 14, 15, 16, and 17 of the Naches River Comprehensive Flood Hazard Management Plan

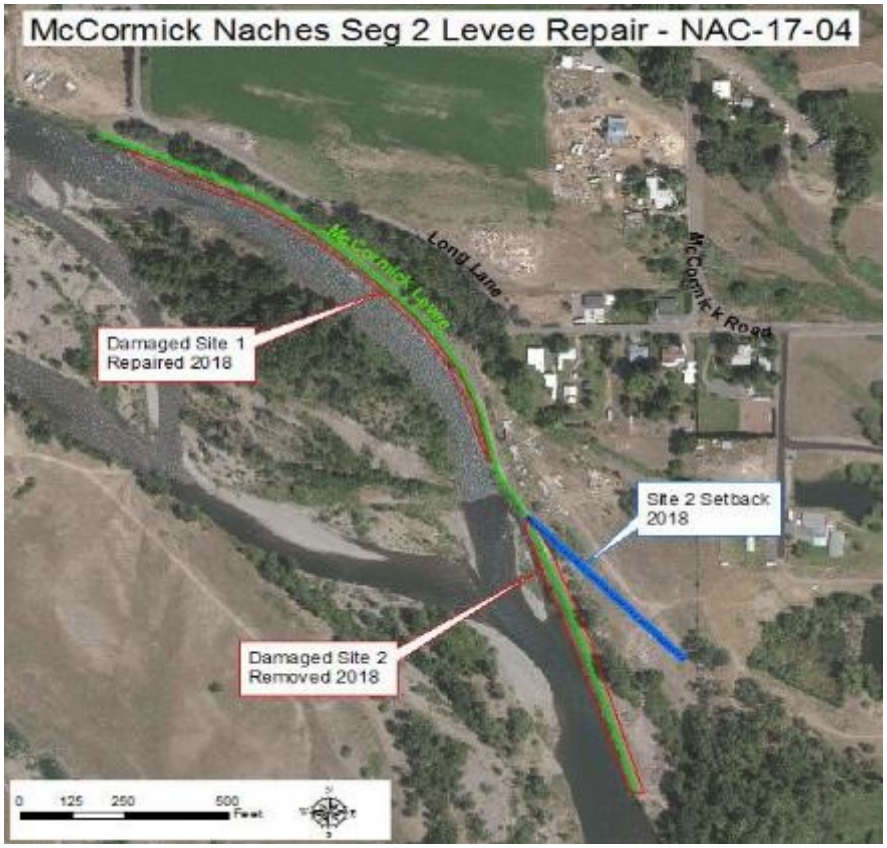
D. Project Status:

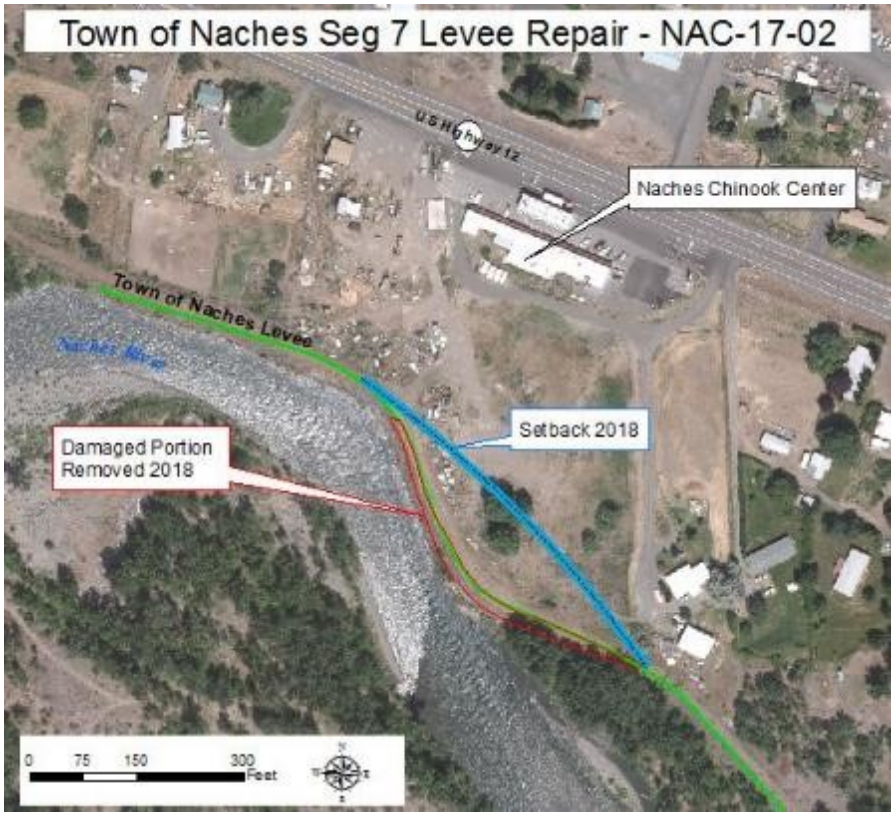
D1. Recent Project Work: Securement of Ecology Grant for project in May 2014.

D2. Near Term Work: Land acquisitions in 2014 and 2015. SEPA application in 2014.

D3. Major Milestone & Dates: Complete
2014 - Grant acquisition
2014 - SEPA application
2017 - Complete all land acquisitions and wrecking yard relocation agreement
2017 - Construction design and permitting of relocated wrecking yard and setback levee
2018 - October construction for levee and relocated wrecking yard.
2019 - Revegetation

Naches River PL84-99 (N7 and N2) Partial Setback





FCZD Project Status
May 2022

Completed Flood Preparedness **Lower Naches**

A. Project Title: Naches River PL84-99 (N7 & N2) Partial Setback (FC3647) T.H.

B. FCZD Role: Co-Lead with Road Maintenance
Cooperators: US Army Corps of Engineers (USCOE)

C. Brief Project Description:

Need: To minimize future costly damages and disruptive flood fighting and repair in-kind at frequently damaged located along County sponsored PL84-99 levees.

Goals: Setback portions of levee alignment that have been damaged or frequently damaged where feasible.

Benefits: Reduce flood damage to PL84-99 levees and repetitive repairs.

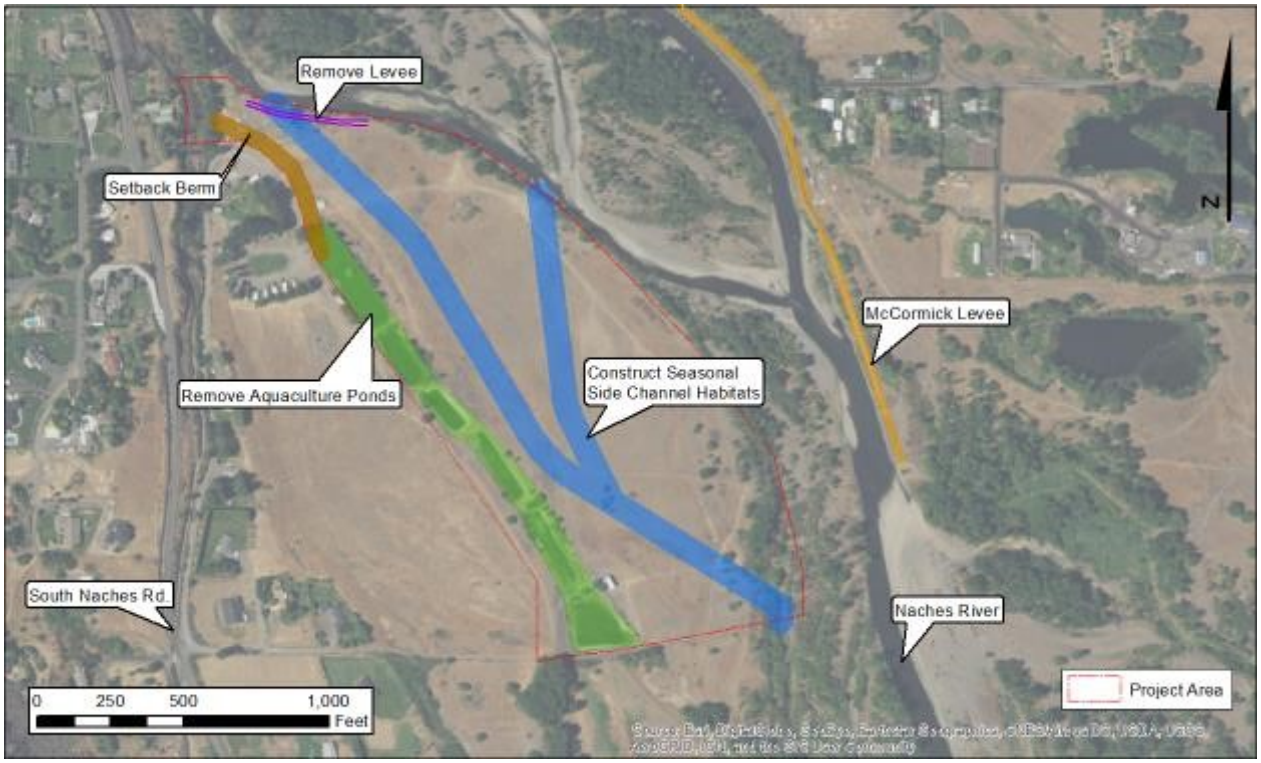
D. Project Status

D1. Recent Project Work: Acquired necessary easements, permits and agreements for partial setback of the McCormick levee (N2) and Town of Naches levee (N7). USCOE project numbers NAC-04-17 and NAC-02-17, respectively.

D2. Near Term Work:
- Perform as-built survey
- Monitor performance during floods
- Inspect for damage following floods

D3. Major Milestones & Dates:
2017 (Summer) - County identified damage to levees and reported to USCOE under PL84-99 authority
2018 (Spring) - County signed CA and provided matching funds to USCOE under PL84—99 requirements
2018 - USCOE secured state and federal permits to prosecute the project
2018 (Summer) - County secured local permits and easements from landowners for setback
2018 (Fall) - USACE initiated construction on both projects
2018 (Fall) - USACE completed construction on both projects
2020-2023 - Ongoing herbaceous weed management at both sites.

Trout Meadows Floodplain Restoration



FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 07-029 **Lower Naches**

A. Project Title: Trout Meadows Side Channel and Floodplain Restoration (FC3526, FC3588) D.M.

B. FCZD Role: Lead
Cooperators: Ecology, Office of Columbia River, U.S. Fish and Wildlife Service

C. Brief Project Description:

Need: On the south bank of the Naches River, a short distance upstream of the Trout Meadows RV Park, is a poorly-constructed private berm that directs a major braid of the river eastward towards the southern end of the County-owned McCormick Levee (also called the N-2 levee). The N-2 levee is not a certified 100-year FEMA levee, but does protect a number of homes and structures to about the 25-year event and is enrolled in the USACE PL84-99 program. The private berm also forms a constriction in the width of the active river channel/floodplain that prevents flood flows from accessing largely undeveloped historic channels and floodplains and has contributed to an accumulation of coarse river sediments within the channel and floodplain areas upstream. This aggradation has increased the risk of flood flanking around the McCormick Levee and raised base flood elevations. The effective FEMA Flood Insurance Rate Map (FIRM) shows the 100-year event now crosses Highway 12 and affects nearly 250 residential and commercial structures.

Goals: The goal is to address these flood risk needs by acquiring two largely undeveloped properties along the south bank of the river, removing the failing private berm, and a series of abandoned aquaculture ponds and related structures, then constructing a network of pilot channels and habitat features to encourage the river to reoccupy this broad swath of historic floodplain.

Benefits: The Project will reestablish natural, floodplain habitat forming processes, restore approximately 35 acres of off-channel, floodplain, and aquatic habitats; reduce flood risk to communities along Highway 12, and reduce flood flow velocities along the McCormick Levee to reduce maintenance costs and the need for emergency repairs. The Project, once completed, is anticipated to continue improving sediment transport dynamics across the reach to provide additional flood risk reduction benefits as the river continues to evolve in the future.

D. Project Status:

D1. Recent Project Work: Appraisal of Ibrahim property complete. One key parcel acquired.

D2. Near Term Work: Yolo negotiations for easement permit and construct.

D3. Major Milestone & Dates:

2014 - Received project funding from Ecology in March 2014 for Phase I.
2015 - Additional partnered funds from US Fish and Wildlife Service
2017 - Ibrahim parcel acquired. Reconfigured Ibrahim parcel. Phase I Design. Acquire Phase II funds.
2018 - Complete remaining acquisitions on Yolo property.
2019 - Completed Design acquisition, permit, and construction.
2020 - Restoration Planting.

SR24 Bridge, Floodplain Management, Permit Streamlining

New SR 24 Bridge on the Yakima River

FCZD Project Status
May 2022

Completed Planning Project **Upper Yakima**

A. Project Title: SR24 Bridge Support, Floodplain Management, Permit Streamlining J.K.F.

B. FCZD Role: Participant, Lead on Floodplain management policy issues

C. Brief Project Description:

Need: The replacement of the SR24 Bridge, damaged during the 1996 flood, was chosen as a pilot project by DOT to test out recent permit streamlining legislation. The process involves gathering all interested and affected agencies and attempting to have the major environmental issues / concerns discussed and semi-addressed going into the permitting process with agencies. As this process was occurring, the need arose to consider the ongoing purchase of properties by the BOR and the potential removal of levees that were training levees to the old bridge in order to allow floodplain restoration.

Goals: DOT desired the bridge design and mitigation scenarios to increase hydraulic conveyance to reduce bridge flood damages and allow floodplain restoration through future levee setback but there was little local policy basis that they could legally include in their environmental analysis. The Upper Yakima CFHMP was updated to include this potential.

Benefits: SR24 Bridge as constructed is now highly resistant to potential damage from floods and will continuously function during major flood events. Current bridge allows setback of USCOE and Diking District No. 1 Levees upstream and downstream. Bureau of Reclamation has purchased the KOA Campground upstream at a total cost of $5.2m to facilitate levee setback.

D. Project Status:

D1. Recent Project Work: Bridge construction was completed in 2007.

D2. Near Term Work: Work on levee pullback at four bridge corners extending old 600-foot bridge to 1600-foot span to realize gains made at this location.

D3. Major Milestone & Dates: Complete

2007 - Bridge completed.

2010 - KOA Campground purchase by BOR.

Greenway Land Acquisition

Yakima Greenway Foundation

Parks...pathways...natural areas...along the Yakima and Naches Rivers

North section of pathway, and Plath Pathway to the West:

Boise Pond area south to Robertson Landing:

Sherman Park south to pathway ending at Spring Creek / Valley Mall Blvd parking lot:

FCZD Project Status
May 2022

Completed Planning Project within CFHMP **Upper Yakima**

A. Project Title: Greenway Land Acquisition (FC3156) J.K.F.

B. FCZD Role: Cooperator with Greenway

C. Brief Project Description:

Provide match to a $500k grant the Greenway has received from SRFB to buy conservation lands consistent with the BOR strategy.

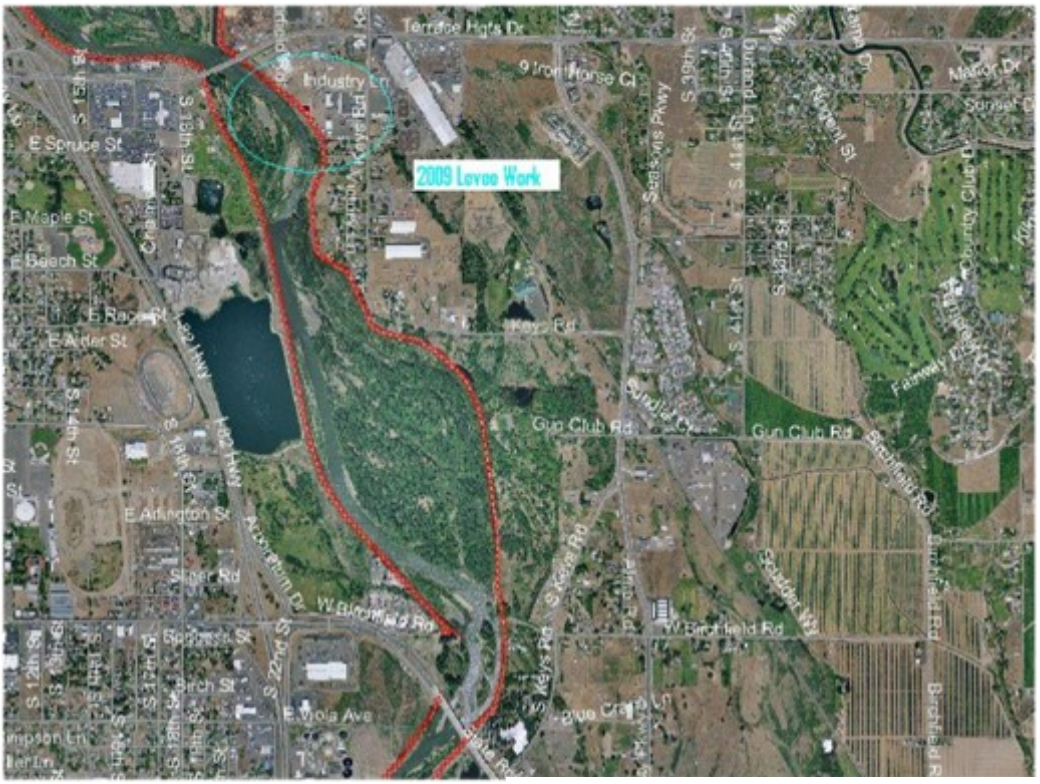
D. Project Status:

D1. Recent Project Work: Completed acquisitions of two parcels just above I-82 Bridge near Union Gap, FCZD share was $11,000.

D2. Near Term Work: None

D3. Major Milestone & Dates: Complete
2005 - Acquisition completed.

Yakima River Levee Stabilization Project Below Terrace Heights Bridge



Levee needing repair

FCZD Project Status
May 2022

Completed CIP Project within CFHMP – YAPN 03-077 **Upper Yakima**

A. Project Title: Yakima River Stabilization Project Below Terrace Heights Bridge T.K.

B. FCZD Role: Lead
Cooperators: US Army Corps of Engineers (USCOE)

C. Brief Project Description:

Need: Levees located downstream of Terrace Height bridge have been experiencing flood damages since the last major flood in February 1996. The last major work to strengthen and harden these levees was done during the flood of February 1996. These levees protect Terrace Heights and commercial businesses such as NC Machinery plus a segment of Highway I-82 in the area.

Goals: To strengthen and harden the levees by placing rip raps and barbs 1996 at repair locations. The work will also involve assessing the hydraulic effects of the barb structures and their interaction with the levees in the area; this could result in addition and or removal of some of these barb structures in order to optimize their functions and interactions with the levees.

Benefits: Reduced risk of levee failure during major flood events leading to flooding of Terrace Heights.

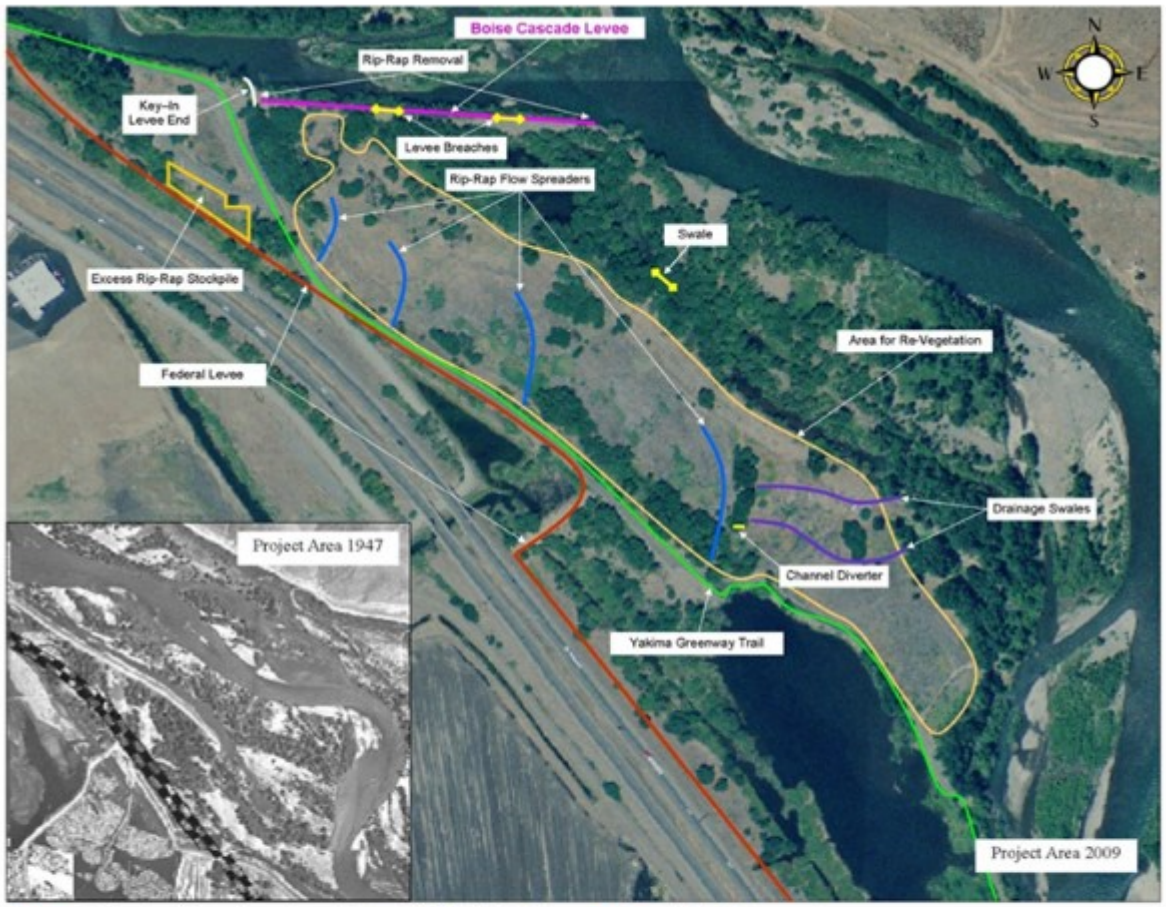
D. Project Status:

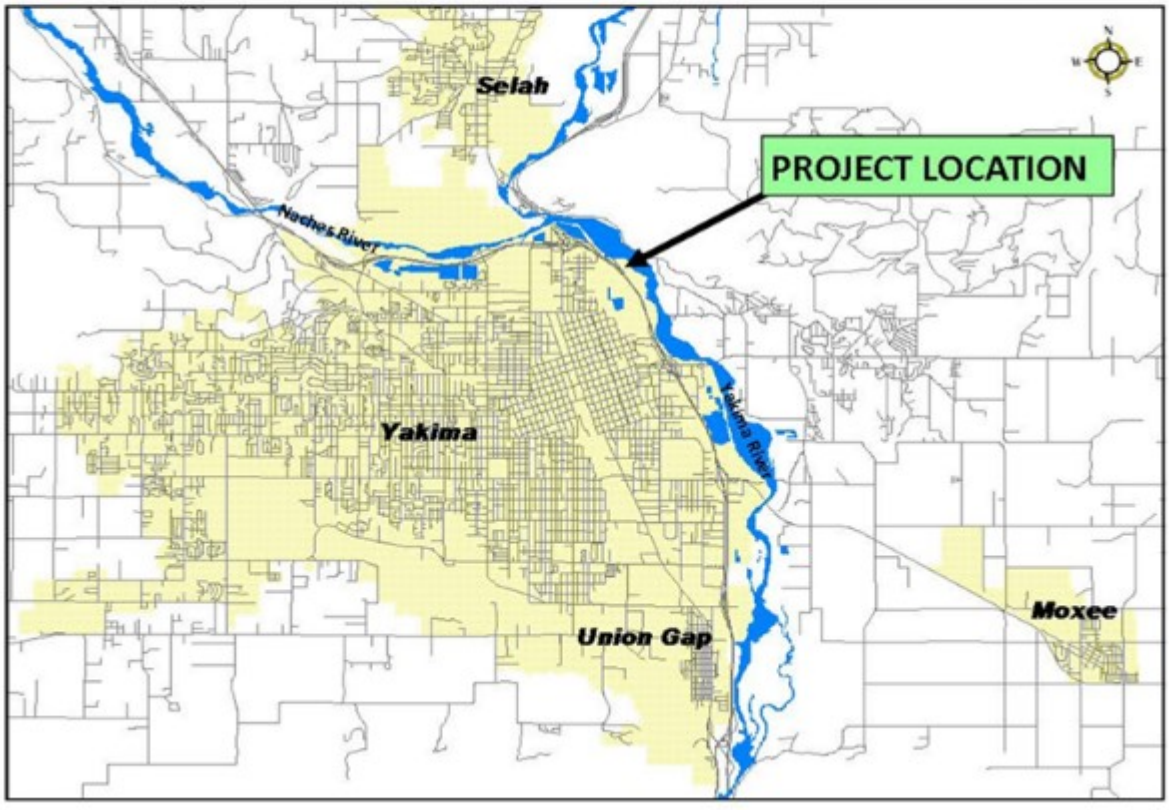
D1. Recent Project Work: January 2009, Jan 2010 and May 2011 USCOE repairs during flood fights.

D2. Near Term Work: Completed.

D3. Major Milestone & Dates: Complete
2007 - Problem identification.
2008 - Levee surveys and grant application.
2009 - USCOE flood-fight rehab – grant application withdrawn due to USCOE action.
2010 - USCOE repairs initiated.
2011 - USCOE repairs complete.
2017 - USCOE rehabilitation to old barb structure.

Boise Cascade Levee Breaching & Floodplain Restoration





FCZD Project Status
May 2022

Completed CIP Project within CFHMP – YAPN 10-018 **Upper Yakima**

A. Project Title: Boise Cascade Levee Breaching & Floodplain Restoration (FC3355) J.L.

B. FCZD Role: Lead
Cooperators: Washington State Department of Fish & Wildlife

C. Brief Project Description:

Need: The levee is internal to the Yakima Federal Flood Central Project levees and was constructed in the 1900s to protect a Boise Cascade log yard the levee constricts the flow of the Yakima River causing erosion to the Federal Levee Project and has been abandoned and is now failing.

Goals: Breach the levee to allow the river to return to historic flow paths, eradicate noxious weeds, and re-vegetate with native vegetation.

Benefits: Reduce Federal Levee erosion. Obtain a fully functional floodplain and enhance fish habitat.

D. Project Status:

D1. Recent Project Work: Completed construction and vegetation phases of project.

D2. Near Term Work: Completed.

D3. Major Milestone & Dates: Complete
2009 - Department of Ecology Grant $100k.
February 2010 - SEPA and design.
Mar 2010 - Construction phase.
Spring 2010 - Initiate weed control.
Fall 2011 - Re-vegetation complete.

High Risk Flood Land Acquisition Mercer

FCZD Project Status
May 2022

Completed CIP Project within CFHMP – YAPN 10-015 **Upper Yakima**

A. Project Title: High Risk Flood Land Acquisition Mercer (FC3416) J.K.F.

B. FCZD Role: Lead
Cooperators: BOR, Yakama Nation, Ecology

C. Brief Project Description:

Need: This property (Mercer) lies between Sportsman's State Park and the former KOA, which is now owned by Reclamation. With the purchase of this property, the lower end of the Federal Levee project can be relocated from the abutment of the new SR 24 Bridge upstream to a location interior to Sportsman's State Park.

Goals: As property becomes available for acquisition, high risk properties will be acquired by the FCZD.

Benefits: Allows application to the USCOE to reconfigure federal project levee. Increased side channel habitat and removal of residences and structures within high risk flood hazard areas that include floodways and high-risk floodplains.

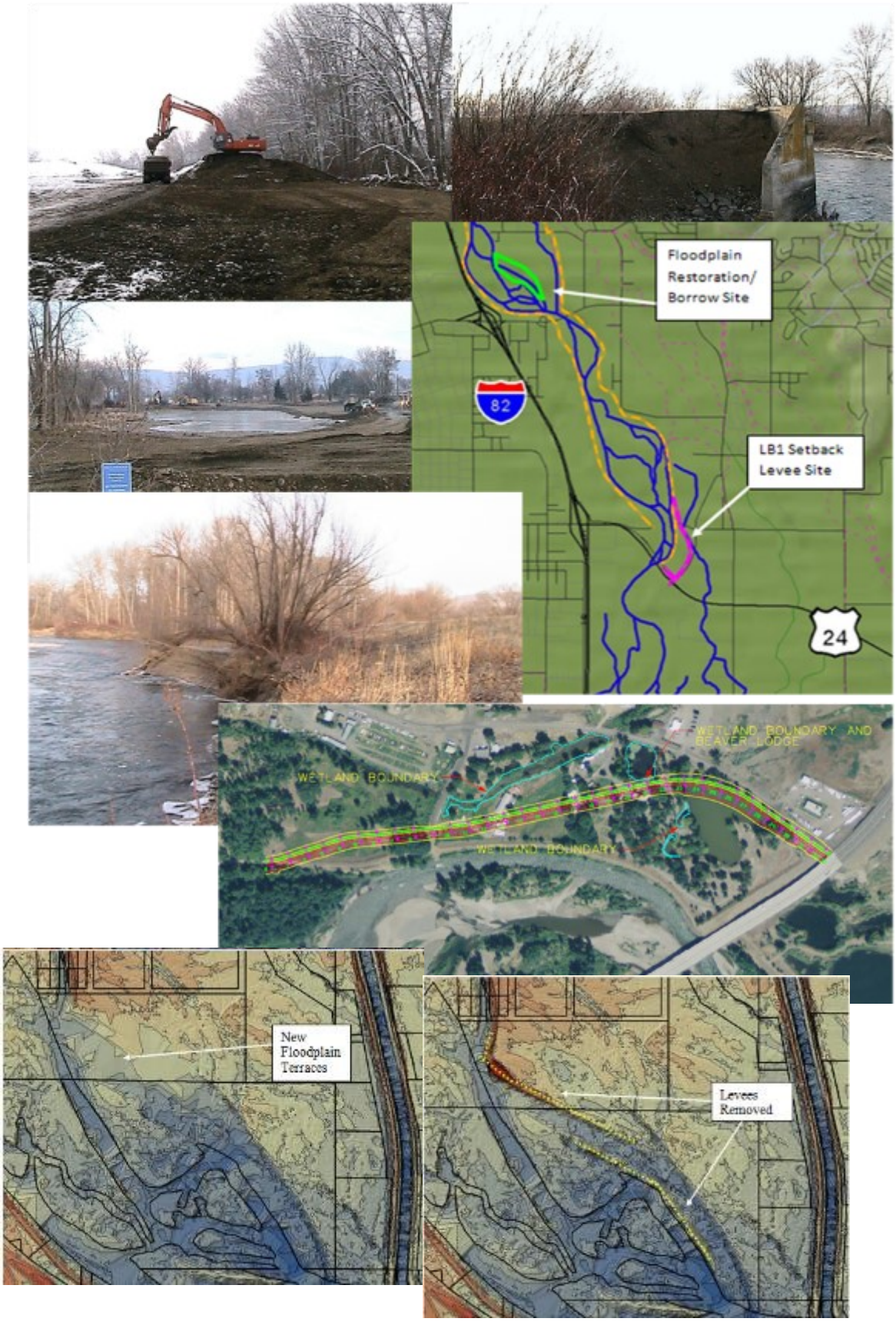
D. Project Status:

D1. Recent Project Work: Development and approval (by Ecology, YN and Reclamation) of deed restriction and future ownership of Mercer property to allow access to groundwater mitigation funds held by Reclamation pursuant to a settlement decree. Closings, demolition of existing structures, revegetation (noxious weed control).

D2. Near Term Work: Completed.

D3. Major Milestone & Dates: Complete
2011 - Acquisition of Mercer property.
2011- Site cleanup
2012 - Land returned to river – See FC3449

Federal Project Levee Setback Construction



FCZD Project Status
May 2022

Completed CIP Project within CFHMP – YAPN 12-0 **Upper Yakima**

A. Project Title: Federal Project Levee Setback Construction (FC3449) J.K.F.

B. FCZD Role: Lead
Cooperators: USACE, ISBR, WSDOT, WS Parks

C. Brief Project Description:

Need: Portions of the Federal Project Levee (Left Bank 1, upstream of SR24) began to fail during the May 2011 flooding and continued over the summer until the levee was at high risk. Failure of this levee segment would inundate large areas of Terrace Heights and potentially allow river avulsion to the east. Damages during a 100-year flood would exceed 10 million dollars. Repair in place prior to the flood season was not possible due to ESA and Clean Water Act concerns on in-water work and fill so that an alternate solution was required. Setting back this section of levee also required maintenance of existing flow characteristics at the City of Yakima WWTP until completion of the planned alterations to the discharge point of the WWTP.

Goals: To prevent failure the USCOE chose to use the near-term County plans for this levee setback from just upstream of the failure site downstream to SR24, which is a recommendation from the Upper Yakima Comprehensive Flood Hazard Management Plan that allows continued levee setback further downstream. This approach was possible as the necessary land and right of ways had been acquired or negotiated. Partners included USBR, State Parks and WSDOT. Project is emergency funded at 100% federal cost. An existing cross-dike was maintained to continue flow towards the WWTP

Benefits: Allows setback of levees downstream to implement full project as described in Upper Yakima CFHMP. Allows for connection of pedestrian/bike path on SR24 Bridge to levee system, directly adds 20 acres of riparian zone to the active floodplain, improves levee alignment, and directly lowers 100-year flood elevations. Will also use the area upstream of Terrace Heights Bridge as a material source, expanding the active floodplain, improving the approach angle to Terrace Heights Drive Bridge and reduce pressure on and need for response the federal project levee at the NC Machinery. This project also includes removal of abandoned levees, and some floodplain restoration upstream of Terrace Heights Bridge, planned by BOR.

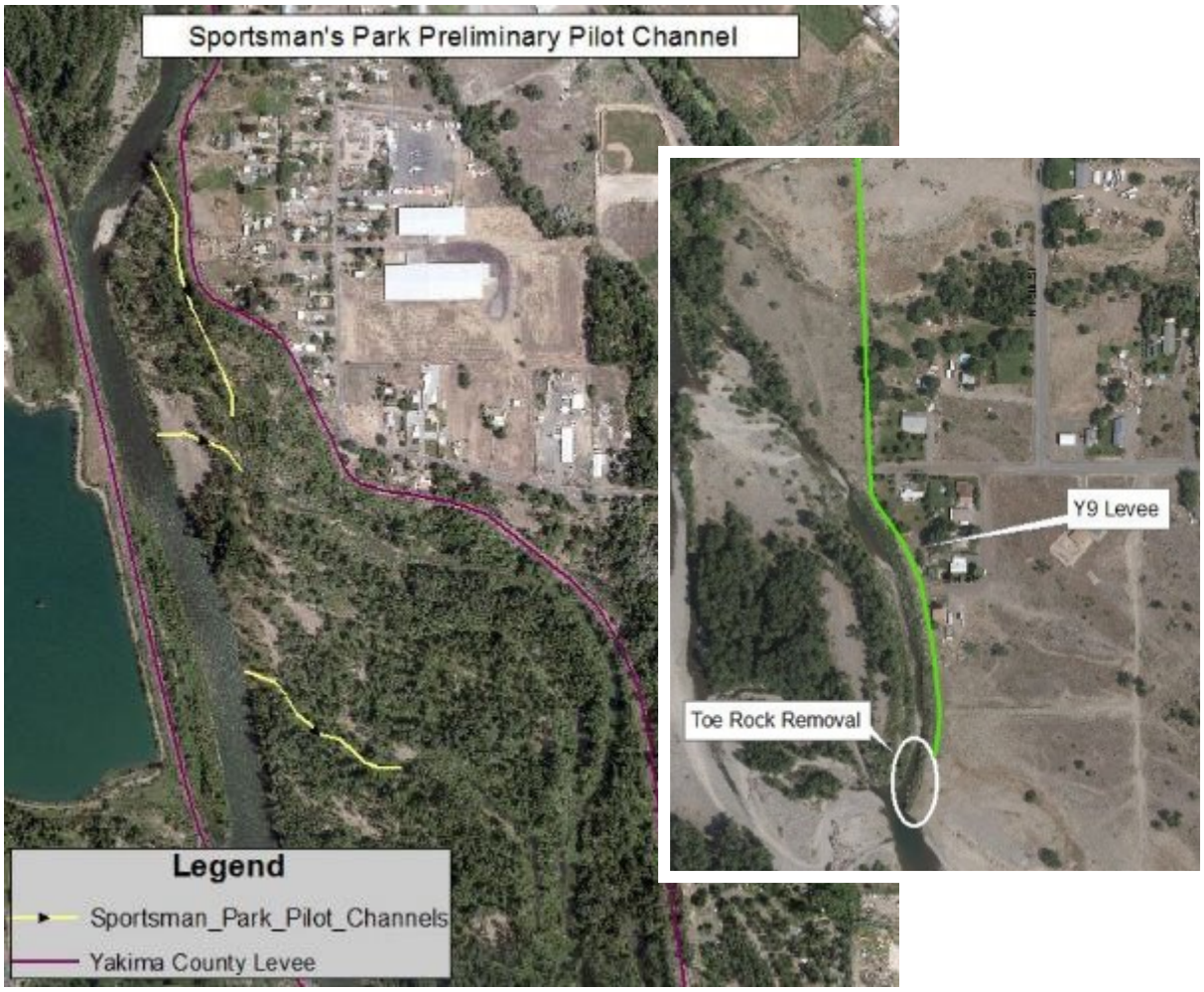
D. Project Status:

D1. Recent Project Work: 2011 – Mercer Closings, securing of easements from WS Parks, USBR, WSDOT and acquisition of former Terrace Heights Sewer District Pump Station to allow levee setback by USACE. Secure permits from USBR and WSDOT to remove levees and restore floodplain on their properties upstream of Terrace Heights Bridge

D2. Near Term Work:
February 2012 – Finish levee setback construction at a cost of $3million, set final grades and revegetate floodplain restoration areas.
June 2012 – Federal levee repairs by USCOE on west bank sites.

D3. Major Milestone & Dates: Complete
2011 - Land and easement acquisitions.
2012 - Setback levee construction complete February 2012. Federal project repairs near Boise cascade completed in June.

Yakima River Gap-to-Gap Habitat Enhancement



FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 12-0 **Upper Yakima**

A. Project Title: Yakima River Gap-to-Gap Habitat Enhancement (FC3493) J.K.F.

B. FCZD Role: Lead
Cooperators: Bureau of Reclamation

C. Brief Project Description:

Need: Most of the current levee high hazard locations in the Gap-to-Gap reach are the result of fixed river meanders created by the configuration of the levees. At this time, a large area of the river is changing in response to recent levee setbacks at two locations. Past permits at KOA campground and Hartford Road Levee, under which the USCOE operated, did not allow in-water work and toe armor or a removed levee section remains, limiting riverine response to the levee removal and setback.

Goals: This project will remove the remaining levee toe rock near Hartford Road to allow full riverine response and will open up old side channels in the vicinity of Sportsman's State Park and allow desirable channel migration to occur further downstream. These actions will allow the river to begin to migrate away from these high hazard locations, including the NC Machinery and Buchanan Lake locations.

Benefits: At both locations, the actions will reduce flood heights and risk. Reductions in water surface elevations and erosive energy are anticipated, especially at the high hazard areas at the NC Machinery and Buchanan Lake levees. Additional benefits include improved fish habitat along almost 3.8 miles of mainstem river habitat.

D. Project Status:

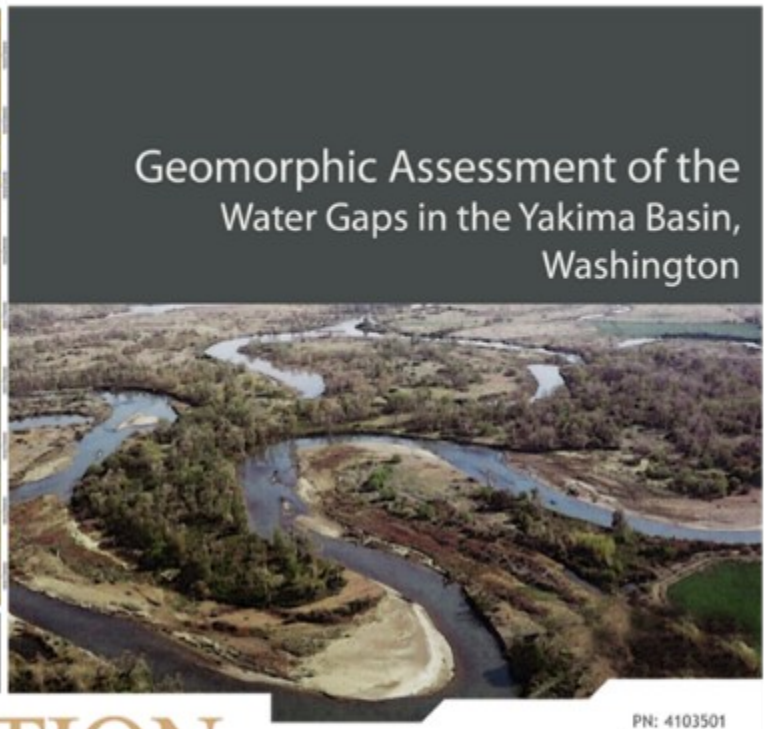
D1. Major Milestone & Dates: Complete

2012 - Completion of USCOE levee pullback with Hartford Road tow armor remaining in place.
2012 - Application and award of Salmon Recovery Funding Board Grant for the Hartford Road Sportsman Park channel projects.

D2. Near Term Work:

2014 - Permit application. Development of MOU with DNR.
2015 - Construction of project during winter/spring low flow.
2015 - Project Complete.

Gap-to-Gap Levee Pull Back Sediment Studies



RECLAMATION
Managing Water in the West

PN: 4103501
Prepared for:
Yakima County Public Services
Surface Water Management Division
128 N. 2nd Street | Yakima, WA 98901

Technical Report No. SRH-2010-08

Yakima River Geomorphology and Sediment Transport Study:
Gap to Gap Reach, Yakima, WA

Prepared by:
ENTRIX
Down to Earth. Down to Business.
ENTRIX, Inc.
200 First Avenue West, Suite 500
Seattle, WA 98119

U.S. Department of the Interior
Bureau of Reclamation
Technical Services Center
Denver, CO

November 2010

FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 07-025 **Upper Yakima**

A. Project Title: Gap-to-Gap Levee Pull Back Sediment Studies (FC3280) J.K.F.

B. FCZD Role: Lead
Cooperators: Yakama Nation, DOE, WDFW, BOR, NOAA, USFWS, WSDOT, Greenway, State Parks, City of Yakima, City of Union Gap, private citizens, etc.

C. Brief Project Description:

Need: The effectiveness of the levee system that protects the Cities of Yakima, Terrace Heights, Union Gap and I-82 has been reduced by changes in the river channel since levee construction. The proposed levee setback project south of SR24 is to pull-back and upgrade the DID 1 levee as a County levee built to federal standards. The project will reduce hazard to the Cities and County, reduce mapped floodway extents, improve floodplain maps to accurately reflect current hazards, increase and restore the natural river floodplain and greatly improve critical fish habitat.

Goals: Sediment transport and infrastructure risk studies are required to assist management of the entire levee system during the proposed levee setbacks. Although this project will reduce general flood risk, it will also introduce a period of channel readjustment with associated risk as sediments stabilize.

Benefits: Return river accessibility directly to over 600 acres of adjacent high-grade floodplain plus increasing riverine habitat use for ESA species another 1,000 acres downstream; removal from the 100-year floodplain of 800 acres of land along the SR-24 corridor for industrial and other upgraded land use; Implements recommendations of the Upper Yakima CFHMP, the Yakima Greenway Master Plan and East Side trail concept; fosters significant local partnerships for multi-jurisdictional cooperation and funding.

D. Project Status:

D1. Recent Project Work: Initiation and partial completion of the risk and gravel management studies for proposed levee modifications downstream of SR-24; and for Wapato Dam scenarios.

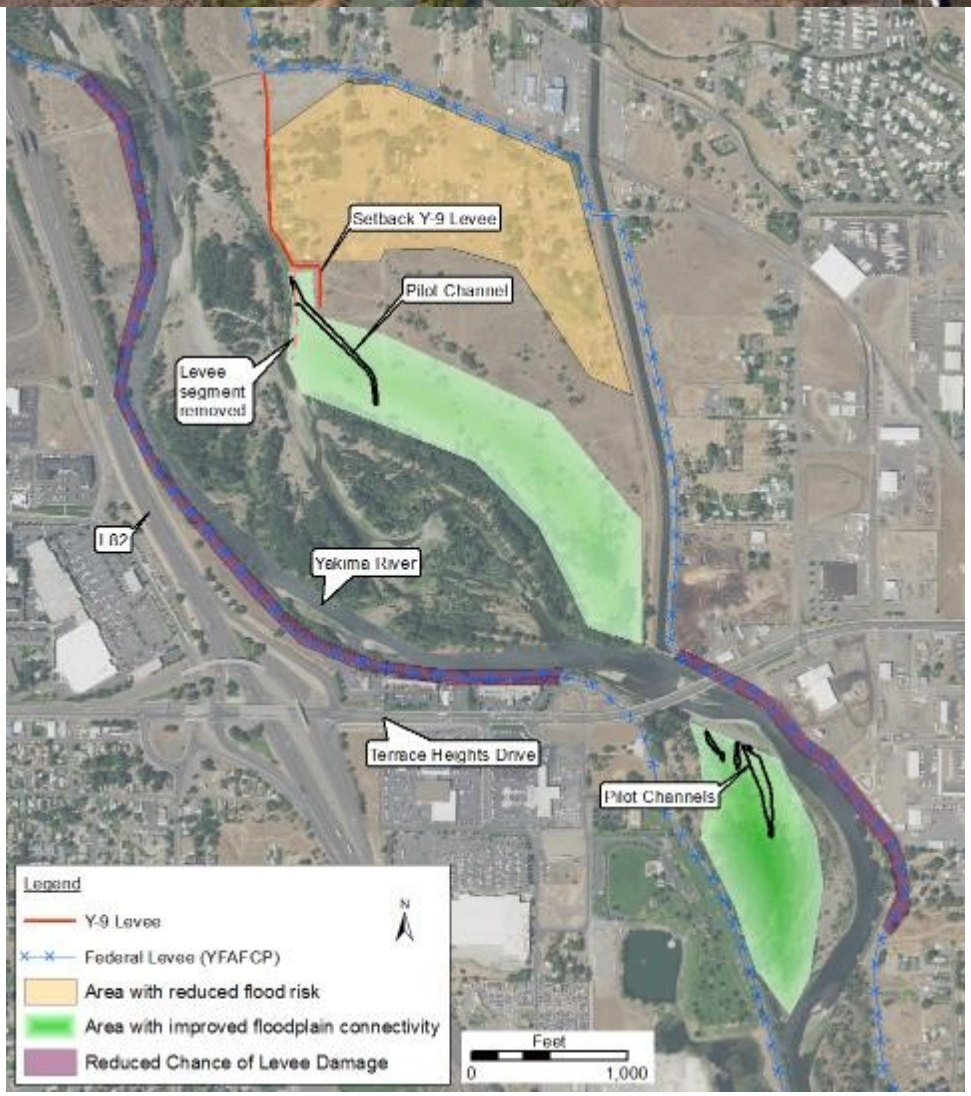
D2. Near Term Work

Finalize setback levee risk and gravel management studies.

D3. Major Milestones & Dates:

2007 - Contract with BOR TSC and USGS for Sediment and Geomorphic data collection and bathymetric survey.
2008 - USGS bed-load sediment collection and bathymetric survey complete.
2008 - Contract with Entrix Inc for Geomorphic Analysis of Water Gaps.
2010 - Contract with Northwest Hydraulic Consultants (HNC) for peer review of all studies to date.
2011 - BOR Final Reports for Sediment and Geomorphic Studies complete.
2011 - Contract with NHC for Wapato Dam scenarios, gravel management and levee realignment risk studies.
2014 - Cooperative agreement with Corps for 1135 Ecosystem Restoration Project intended to implement the remainder of this project.
2016 - Final NHC pit capture studies. Now complete.
2017 - See FC3530 for construction.

Y-9 Yakima Levee Segment Removal



FCZD Project Status
May 2022

Completed CIP Project within CFHMP **Upper Yakima**

A. Project Title: Y-9 Yakima Levee Segment Removal and Setback Phase II (FC3544) D.M.

B. FCZD Role: Lead
Cooperators: Ecology, Bureau of Reclamation

C. Brief Project Description:

Need: The Y-9 levee is a County-owned levee located at the western end of Hartford Rd on the east bank of the Yakima River. The Y-9 levee is directly across the river from the west bank levee of the Yakima Federal Authorized Flood Control Project (YFAFCP). The YFAFCP is a FEMA-accredited levee system with approximately eight miles of levees on both banks of the Yakima River designed to protect the City of Yakima and the community of Terrace Heights from flood flows in the Yakima River. Enrolled in the USACE's PL84-99 program, the Y-9 levee is a spur levee segment that branches off southward from the east bank of the YFAFCP levee at the eastern end of the Central Washington Railroad bridge. Located between the river and the east bank levee of the YFAFCP, the Y-9 levee is not an accredited 100-year levee and offers a moderate level of flood protection to only a few residential properties. Due to its location within the YFAFCP levees, the Y-9 levee results in significant cutoff of interior historic floodplain and floodplain channels and increased water heights and velocities on adjacent infrastructure. This increases risk and potential damages to the YFAFCP right bank levee and the Terrace Heights Bridge at the downstream end of the reach.

Goals: The objective is to acquire the necessary property to enable the removal and setback of the southern end of the Y-9 levee to reduce damages (and maintenance costs) to the YFAFCP right bank levee and to reconnect a large area of historically active floodplain. In order to reduce risk to the YFAFCP left bank levee downstream of Terrace Heights Bridge, the Project was expanded to include additional pilot channels and some side channel enhancement activities on the right bank below the Terrace Heights Bridge. Specific components included the removal of approximately 500 feet of levee (and an additional 320 feet of adjacent non-levee berm), the acquisition and removal of a house (and associated site clean-up), the construction of a setback levee, the construction (and enhancement) of nearly 2,000 feet of pilot channels, and the revegetation of the disturbed areas with native seeds

Benefits: The Project will allow natural, floodplain-forming processes to occur with more regularity and to greater effect over a 4,000-foot reach. It is anticipated that the project areas will continue to evolve during flood events on the river, creating an expanded network of seasonal channels and healthy riparian areas that benefit native aquatic species and reduce flood risk to critical elements of the community's flood protection system. It will improve flood protection for the federal levee and six homes behind the levee in particular. Public access to 30 acres is enhanced.

D. Project Status:

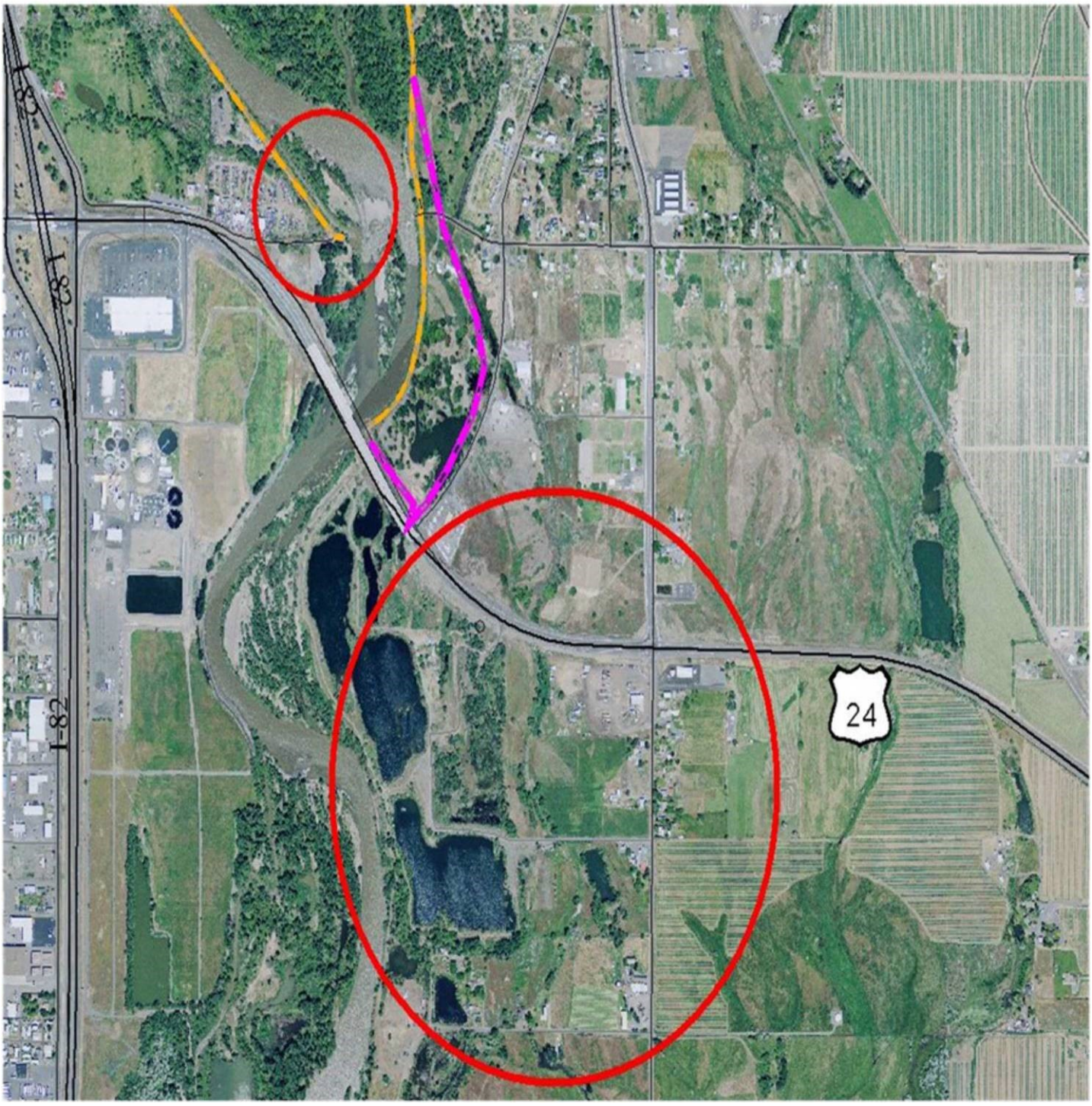
D1. Recent Project Work: Securement of Ecology Grant for project in May 2014.

D2. Near Term Work: Land acquisitions in 2016. SEPA application in 2016.

D3. Major Milestones & Dates:

2014 - Grant acquisition.
2016 - Complete all land acquisitions. Demolish residence. Construction design and Permitting. Fall construction
2017 - Complete construction with initial revegetation
2018 - Complete revegetation

High Risk Land Acquisition Gap-to-Gap



FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 12-030 **Upper Yakima**

A. Project Title: High Risk Land Acquisition Gap-to-Gap (FC3416) J.K.F.

B. FCZD Role: Lead
Cooperators: BOR, Yakama Nation, Ecology

C. Brief Project Description:

Need: The levee setbacks near SR24 were identified as the highest ranked project in the Upper Yakima CFHMP due to threats to the City of Yakima, Town of Union Gap and Terrace Heights. Risk and long-term cost reductions can be attained on the levee and existing bridge crossings through the setback of portions of the Yakima Federal Project levee at the high repair - high risk locations typically near floodplain constrictions. Setbacks also increase the level of protection for existing levees. Land acquisitions and easements are required to enable the construction projects to proceed and typically are separately funded.

Goals: Acquire Right of Way, easements or property on the following properties near SR24: WSDOT parcels, Root Orchard Toppings, Meeks, Newland, Lester Sisters, New Northwest Broadcasting and Central Pre-Mix on the east bank and Nob Hill Auto Wrecking on the west bank.

Benefits: Allows application to the USCOE to reconfigure the Federal Project levee. The levee setback downstream of SR24 will reduce current risk to structures on both banks, provide direct river flood hazard benefits, potentially remove 1.3 square miles from the 100-year floodplain and provide direct river accessed area of 1,600 acres. The setback will provide increase side channel habitat within in a reach critical to Yakima Basin habitat restoration, improve fluvial processes and functions, increase recreational opportunities and improve ESA listed and Salmonid survival and productivity in keeping with numerous basin and Columbia basin initiatives.

D. Project Status:

D1. Recent Project Work: Acquisition of properties below SR24, working with BOR and WSDOT to allow some project actions and/or some project benefits to occur on their lands.

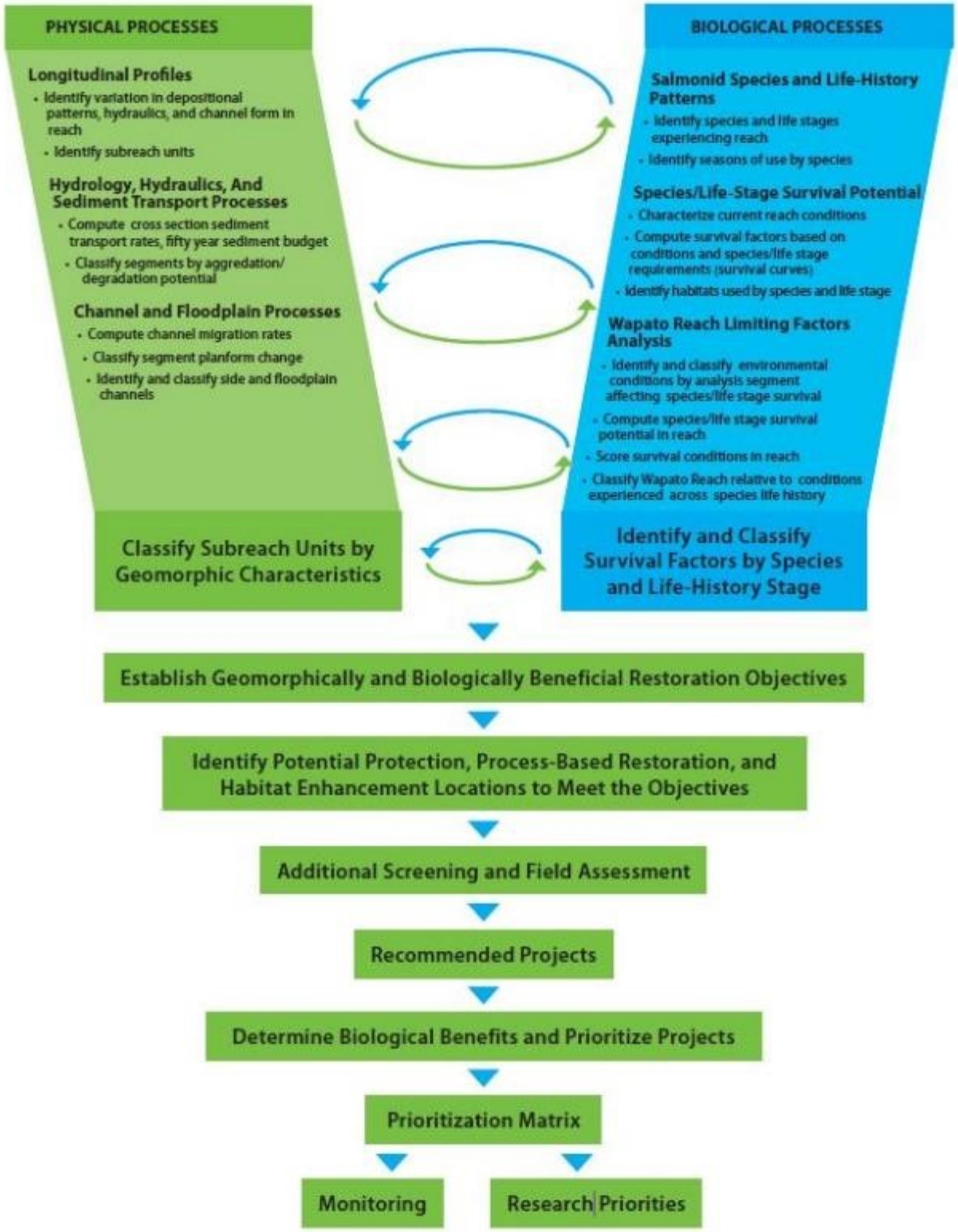
D2. Near Term Work: Complete final private acquisitions. Development of cooperative agreements with BOR and WSDOT

D3. Major Milestone & Dates:

2011 - Development and approval by Ecology, Yakama Nation and Reclamation of deed restriction and ownership of Mercer property.
2011 - Acquisition of Mercer property and demolition of Mercer structures in preparation for new setback levee north of SR24. Reached agreement with Nob Hill for cooperative project on west bank north of SR24.
2012 - Revegetation north of SR24 (Mercer, Ron).
2013 - Discussions with USCOE indicate potential alternative funding for acquisitions.
2014 - Initial contact landowners south of SR 24 along the agreed setback levee alignment.
2016-2019 - Acquisitions and agency agreements.
2019 - All acquisitions complete.
2020-2021 - Construction in phases. (see FC3706, FC3787)

Wapato Reach Assessment

Figure 1-1. Wapato Reach Quantitative Assessment and Project Prioritization Framework



FCZD Project Status
May 2022

Completed Planning Project **Lower Yakima**

A. Project Title: Wapato Reach Assessment (FC3352) J.K.F.

B. FCZD Role: Cooperator, -Lead is Technical Advisory Group
Cooperators: WDFW FCZD, Yakima Nation, TAG

C. Brief Project Description:

Need: An assessment of the Lower Valley habitat and flood issues was required before actions could be undertaken. A geomorphic analysis was required to allow habitat modeling and assessment to establish priorities.

Goals: The purpose of the Wapato Reach assessment is to is to identify and prioritize river restoration opportunities in the Wapato Reach of the Yakima river, with an emphasis on habitat improvement for culturally important and ESA species to assist the Yakima Nation and the Technical Advisory Group in pursuing immediate restoration and management goals, as well as to provide a foundation for long-term restoration planning.

Benefits: Improved cooperation across jurisdictions and agencies on future infrastructure design and removals in context with long-term overall floodplain restoration goals.

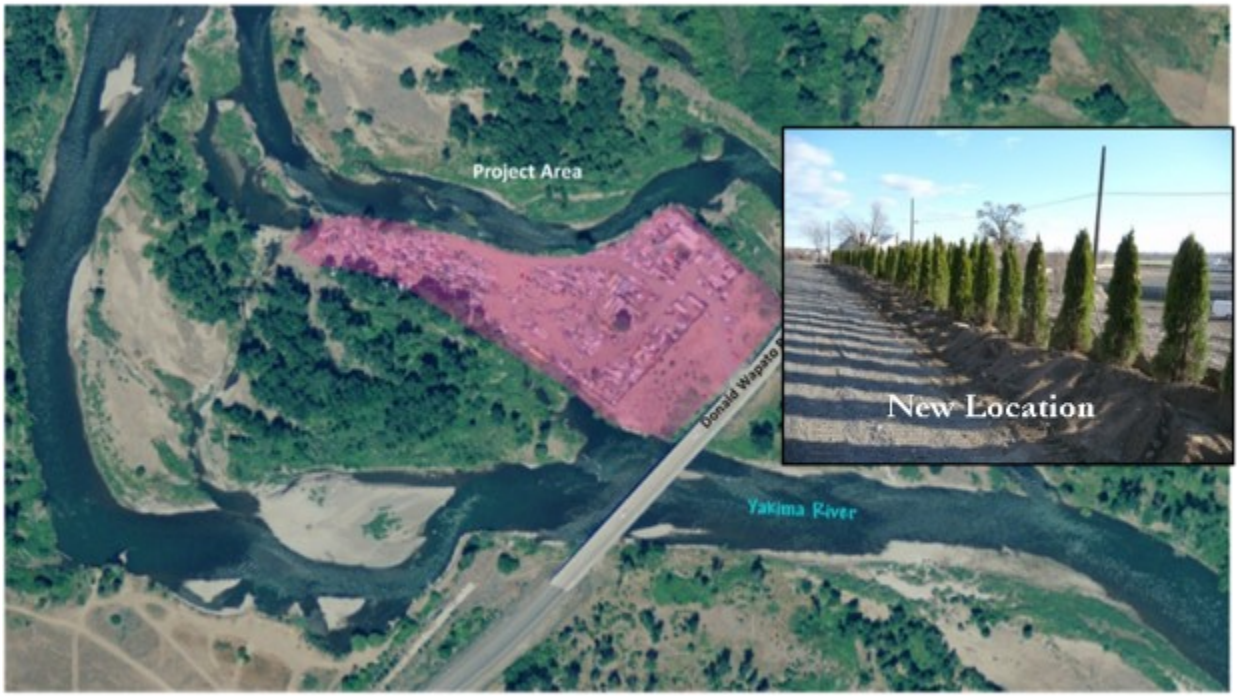
D. Project Status

D1. Recent Project Work: The County and WDFW obtained a RCO grant which was turned over to the Technical Advisory Group to coordinate planning and Yakima Nation to collect data.

D2. Near Term Work: The Wapato Reach Assessment Report contracted by the Nation was completed.

D3. Major Milestones & Dates:
2008 - RCO grant obtained by WDFW and Yakima County.
2008 - SRF Grant acquisition of flood prone Naches River properties.
2009 - Phase I data collection by Yakima nation.
2010 - Phase II hiring of consultant for report generation.
2012 - Assessment Report completed.

Auto-Recycling Yard Removal from Floodplains Project



Old Location

FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 03-083 **Lower Yakima**

A. Project Title: Auto-Recycling Yard Removal from Floodplains Project (FC3064) J.K.F.

B. FCZD Role: Lead
Cooperators: Ecology, Bureau of Indian Affairs, Washington State Department of Fish & Wildlife

C. Brief Project Description:

Need: Certain land uses (such as wrecking yards) are traditionally located in very high flood hazard areas, experience repeated damage, and cause damage to adjacent parcels. Generally, these uses are difficult to relocate or buy out due to the low land values at their current location relative to more upland locations. This project will define a process for relocation of these uses.

Goals: Project consists of two parts; (1) a land use analysis section to identify areas for relocation; and (2) a demonstration project where there is significant flood hazard benefit to move one of the yards out of the floodplain. The Yakima River wrecking yard at the Donald Wapato Bridge was selected based on maximum benefits, owner willingness, and planned construction of a new $7.7 million County bridge to maximize the combined flood risk benefits.

Benefits: Reduced flood hazard (including water quality risk) locally to wrecking yard, Donald Wapato Bridge and Road, and local residents. Will also significantly reduce flood hazard to county residents, the City of Wapato and the City of Toppenish. Reduce river contamination. This project becomes fully implemented in combination with the Donald-Wapato levee pullback project.

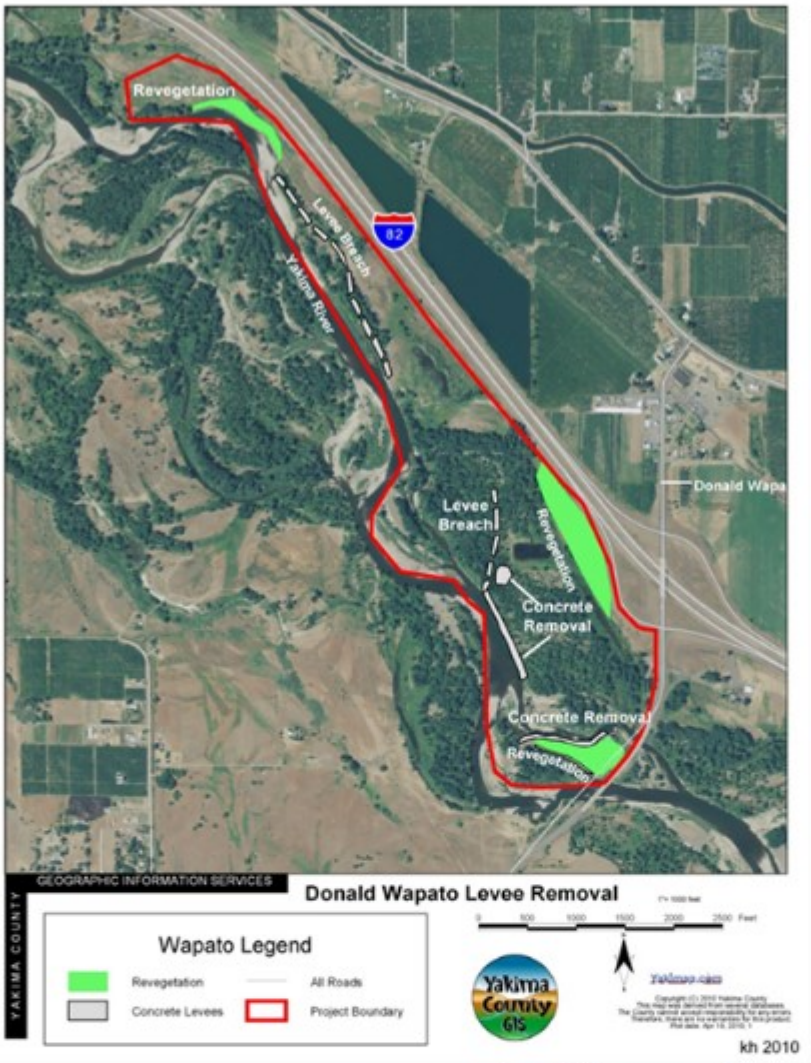
D. Project Status:

D1. Recent Project Work: Project completed in 2009.

D2. Near Term Work: Maintenance of landscaping along Old Yakima Valley Highway. Removal of access road on old yard.

D3. Major Milestones & Dates:
2002 - Ecology Grant $200k and assessment of three wrecking yards for relocation.
December 22, 2004 - Received Zoning Conditional Use Permit for the new site.
June 2007 - Value engineering study of costs.
November 2008 - Completion of site screening through vegetation.
October 2009 - Completion of new site.
November 2009 - Opening of business.
December 2009 - Completion of property transfer.

Donald Wapato Levee Removal Project



Concrete debris to be removed

FCZD Project Status
May 2022

Completed CIP Project – YAPN 07-023 **Lower Yakima**

A. Project Title: Donald Wapato Levee Removal Project (FC3251) J.K.F.

B. FCZD Role: Lead
Cooperators: Washington State Department of Fish & Wildlife

C. Brief Project Description:

Need: Since the construction of I-82, the levees near the Donald Wapato crossing no longer serve a purpose. The capacity of the Donald Wapato Bridge is reduced by these levees and fill, which contributes flood overflows towards Wapato and Toppenish. The land north of the crossing is owned by WDFW, while the land at the wrecking yard belongs to the County. Removal of the levees and fill at these two locations will open up a large area of floodplain (100 acres), increase bridge capacity, reduce flood overflows, benefit riparian habitat, native plant communities and fish.

Goals: Removal of the levee and large amounts of waste concrete, at and upstream of the former wrecking yard site. Revegetate riparian zone floodplain.

Benefits: Maximize flood storage and flood hazard reduction function of floodplain to reduce flood overflows and flooding hazard to Donald-Wapato Road, the bridge and the communities of Wapato and Toppenish.

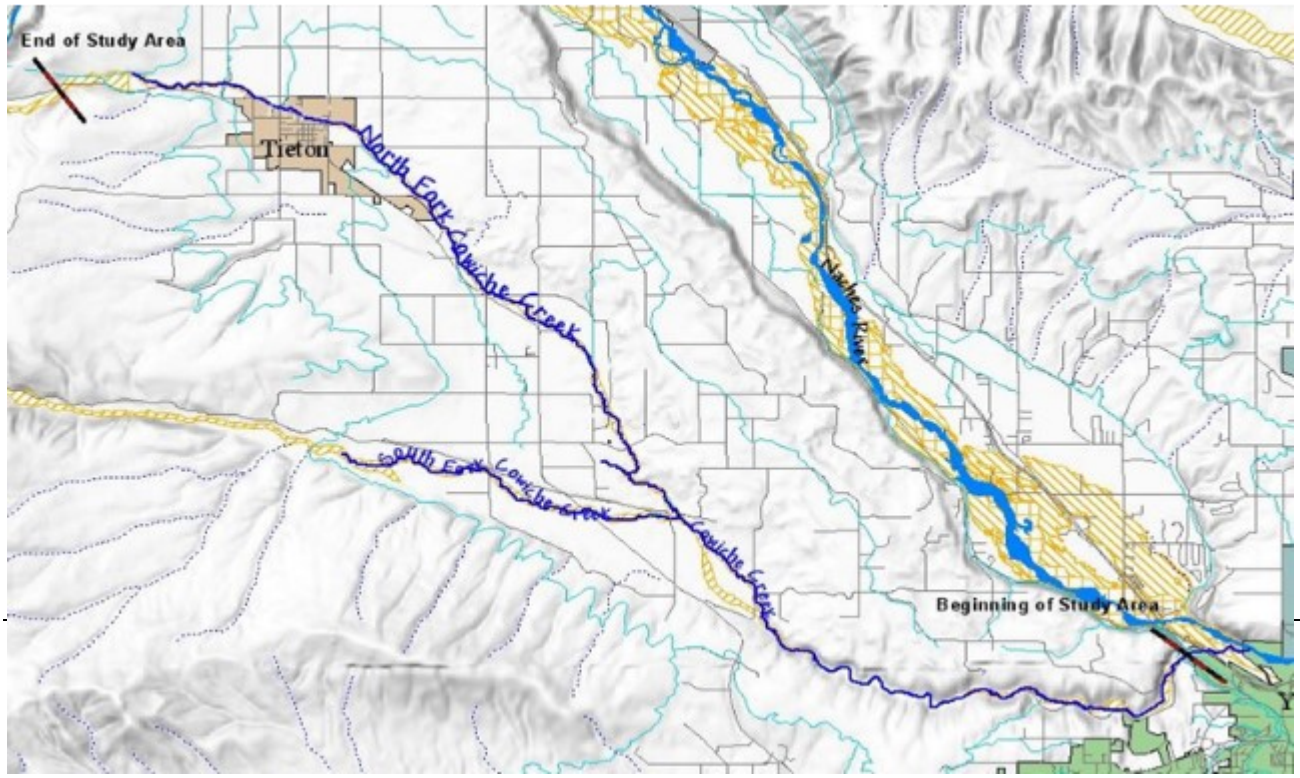
D. Project Status:

D1. Recent Project Work: Removal of armor and waste concrete and revegetation at both sites in 2011.

D2. Near Term Work: Planting and removal of power line and access road. 2015 – Flood map revisions following river capture.

D3. Major Milestones & Dates:
2009 - SRF Grant received $123k SRF Board, $100k Yakima County match.
Fall 2011 - Material removed and planting.
2012 - Planting complete.

Cowiche Creek Mapping



May 2022

Completed Planning Project **West Valley**

A. Project Title: Cowiche Creek FEMA Flood Mapping and RiskMAP (FC3350) T.K.

B. FCZD Role: Lead
Cooperators: FEMA, Dept. of Ecology, City of Tieton, City of Yakima

C. Brief Project Description:

Need: Current FEMA maps in the area are old and were approximate studies; the maps need to be updated due to development pressure in the Cowiche area and because of changes in the river system.

Goals: This will update current FIRM maps and produce digital Flood Insurance Rate Maps (FIRMs) and Risk Maps. New FEMA approved hydrology and hydraulic modeling will be required to develop the FIRM maps.

Benefits: Replacement of outdated FIRMs can be utilized by the FCZD for flood emergency response and to assist in responding to development needs. The FEMA models can be used in development application for new projects in the floodplains.

D. Project Status

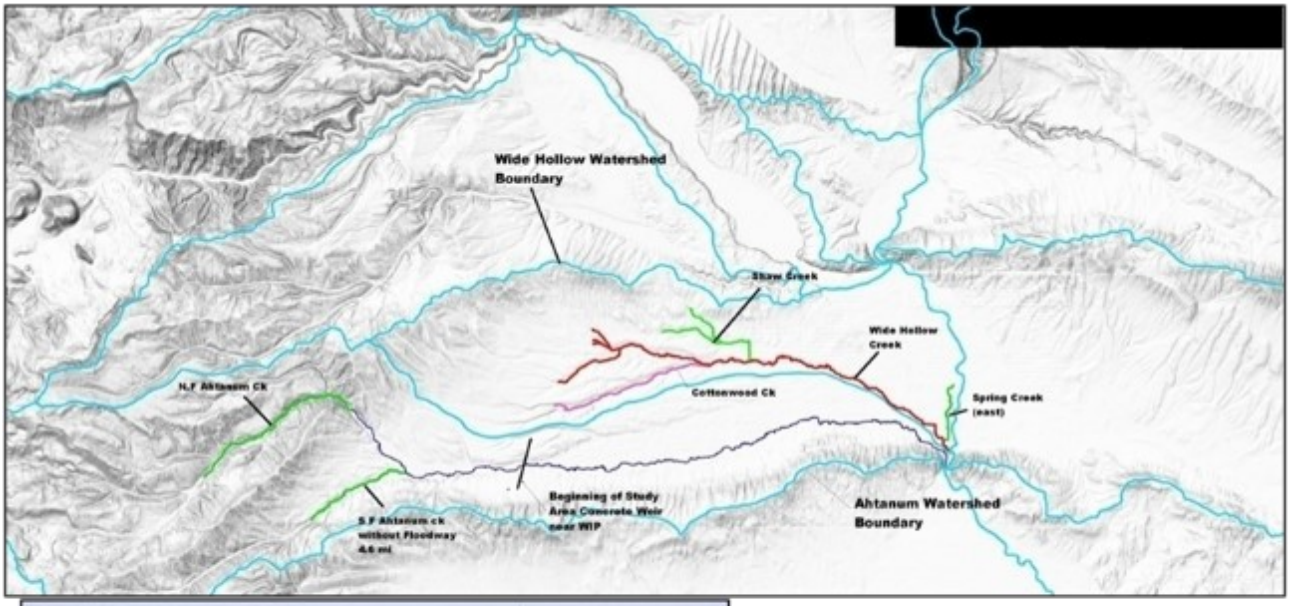
D1. Recent Project Work: Preliminary FIS maps completed for community review.

D2. Near Term Work: Adopt FIS maps.

D3. Major Milestones & Dates:

2004 - Survey data collection for lower Cowiche.
2005 - LiDAR data collection.
2010-2011- Processing of bridge data. Collection of survey data remaining survey structure (weirs, culverts, bridges).
2011 - FEMA acceptance of hydrology
2011 - Consultant submitted hydraulic models for community and FEMA review.
2012 - FEMA delayed map review pending new levee policy.
2015 - Review of work maps indicate overflow paths missed at interface of STARR/WEST study.
2018 - FEMA preliminary map provided to community.
2019 - Yakima County performs risk assessment.
2019 - Preliminary NFIP flood maps and appeal period
2021 - FEMA letter of final determination and final Flood Insurance Rate Maps.
2021 - Adopted by code and effective 10/21/2021.

Wide Hollow Creek FEMA Flood Mapping Restudy



Wide Hollow Creek Flooding 2003

FCZD Project Status
May 2022

Completed Planning Project **West Valley**

A. Project Title: Wide Hollow Creek FEMA Flood Mapping Restudy (FC3290) T.K.

B. FCZD Role: Lead
Cooperators: FEMA, Ecology, Cities of Union Gap and Yakima

C. Brief Project Description:

Need: Current FEMA maps in the area are old and need to be change for different reasons including man-made/natural change in the river system and the development pressure in the area.

Goals: This upcoming project will update current FIRM maps and produce Digital Flood Insurance Rate Maps (DFIRM). The project requires gathering extensive data including LIDAR, survey of hydraulic structures (bridges/culverts/dams), as built plans, and historical flow data. New FEMA approved hydrology and hydraulic modeling will be determined for this project in order to provide maps.

Benefits: Replacement of outdated FEMA FIRMs with Digital maps that would be easy to maintain, change, and reproduce. FCZD involvement ensures higher accuracy mapping based on historical flooding and high-resolution ground contours.
– Generation of detailed flood extents maps for different return periods to be used for flood emergency response.
– Provision of a hydraulic model for use to develop flood or capital improvement projects in the Wide Hollow creek watershed area and its flood plain system.

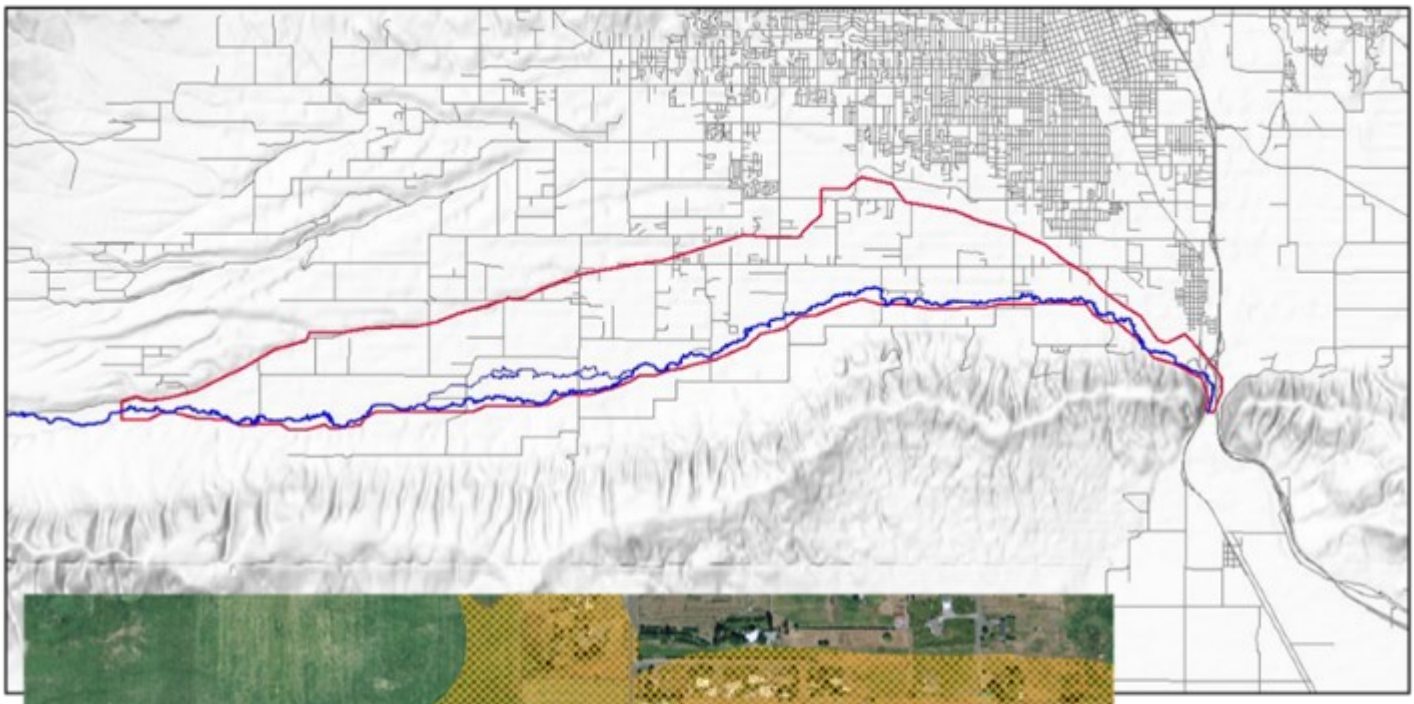
D. Project Status:

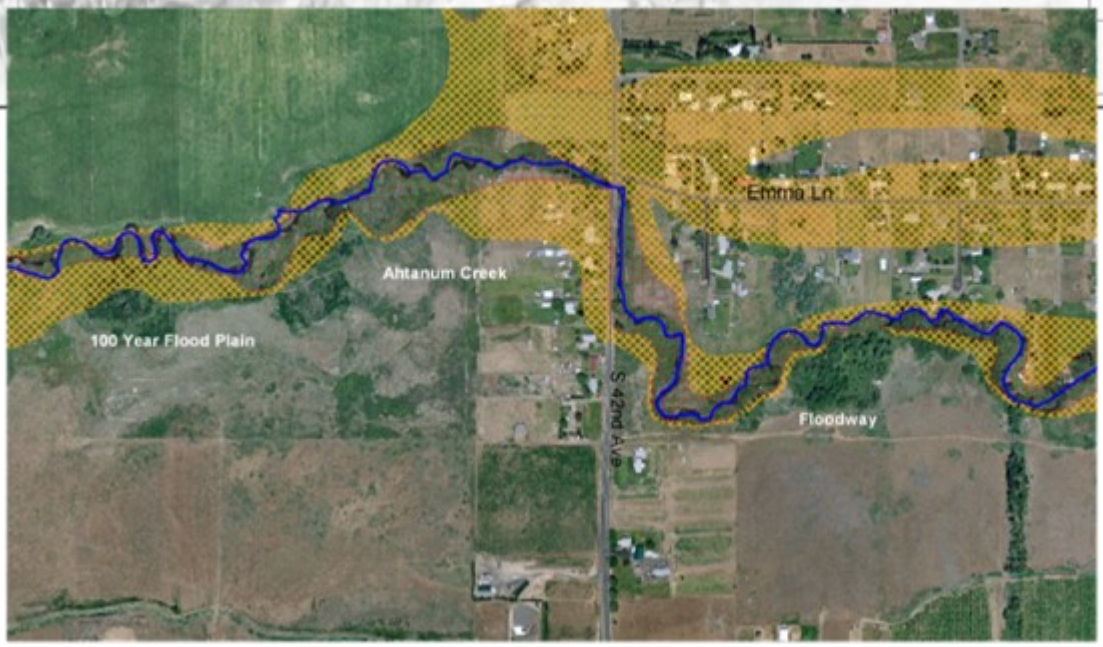
D1. Recent Project Work: Community Outreach meetings to review preliminary maps.

D2. Near Term Work: Assist communities.

D3. Major Milestones & Dates:
2005 - Ecology grant - Contract consultant.
2008 - Complete data collection and hydrology.
2009 - Hydraulic model completed.
2010 - Preliminary FEMA FIRMs for Wide Hollow.
2011 - Letter of Final Determination.
2012 - Community Adoption of Wide Hollow FIRMs.

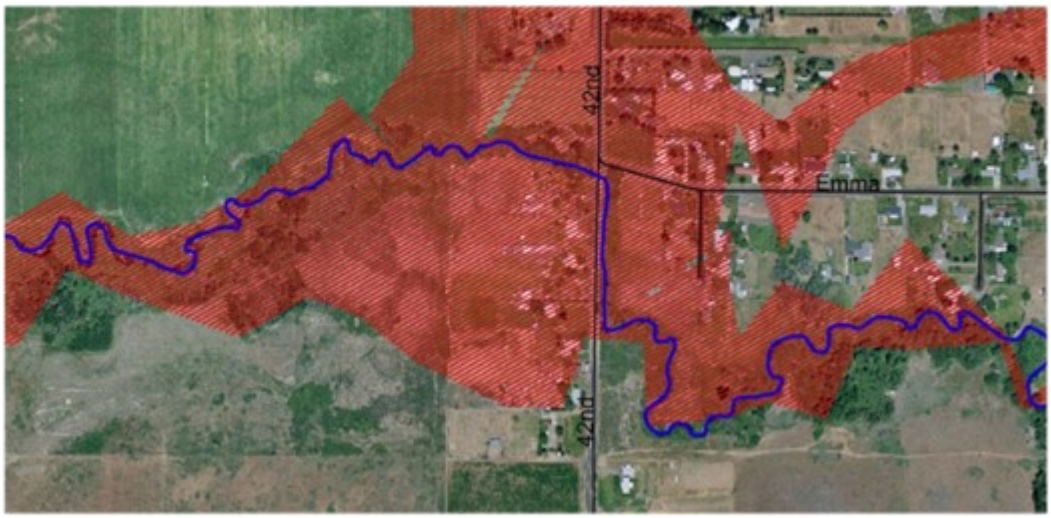
Ahtanum Creek FEMA Flood Mapping Re-Study





Existing Map

2008 Working Map



FCZD Project Status
May 2022

Completed Planning Project **West Valley**

A. Project Title: Ahtanum Creek FEMA Flood Mapping and RiskMAP (FC3110) T.K.

B. FCZD Role: Lead
Cooperators: FEMA, Ecology, Cities of Union Gap and Yakima

C. Brief Project Description:

Need: Current FEMA maps in the area are old and need updating for different reasons including increased accuracy of man-made/natural change in the river system and the development pressure in the area. The study extent is from the North and South Forks downstream to the Ahtanum Creek with the confluence Yakima River.

Goals: Update current FIRM maps and produce Digital Flood Insurance Rate Maps (DFIRM). The project includes gathering extensive amounts of information and data including LIDAR, survey of hydraulic structures (bridges/culverts/dams), as built plans, and historical flow data. New FEMA approved hydrology and hydraulic modeling will be provided by this project.

Benefits:

– Replacement of outdated FEMA 100-year FIRMs with Digital maps that would be easy to maintain, change, and reproduce. FCZD involvement ensures higher accuracy mapping based on historical flooding and high-resolution ground contours.
– Generation for higher frequency floods of detailed flood extents maps to be used for flood emergency response.
– Provision of a hydraulic model for use to develop flood or capital improvement projects in the Ahtanum Creek watershed area and its flood plain system.

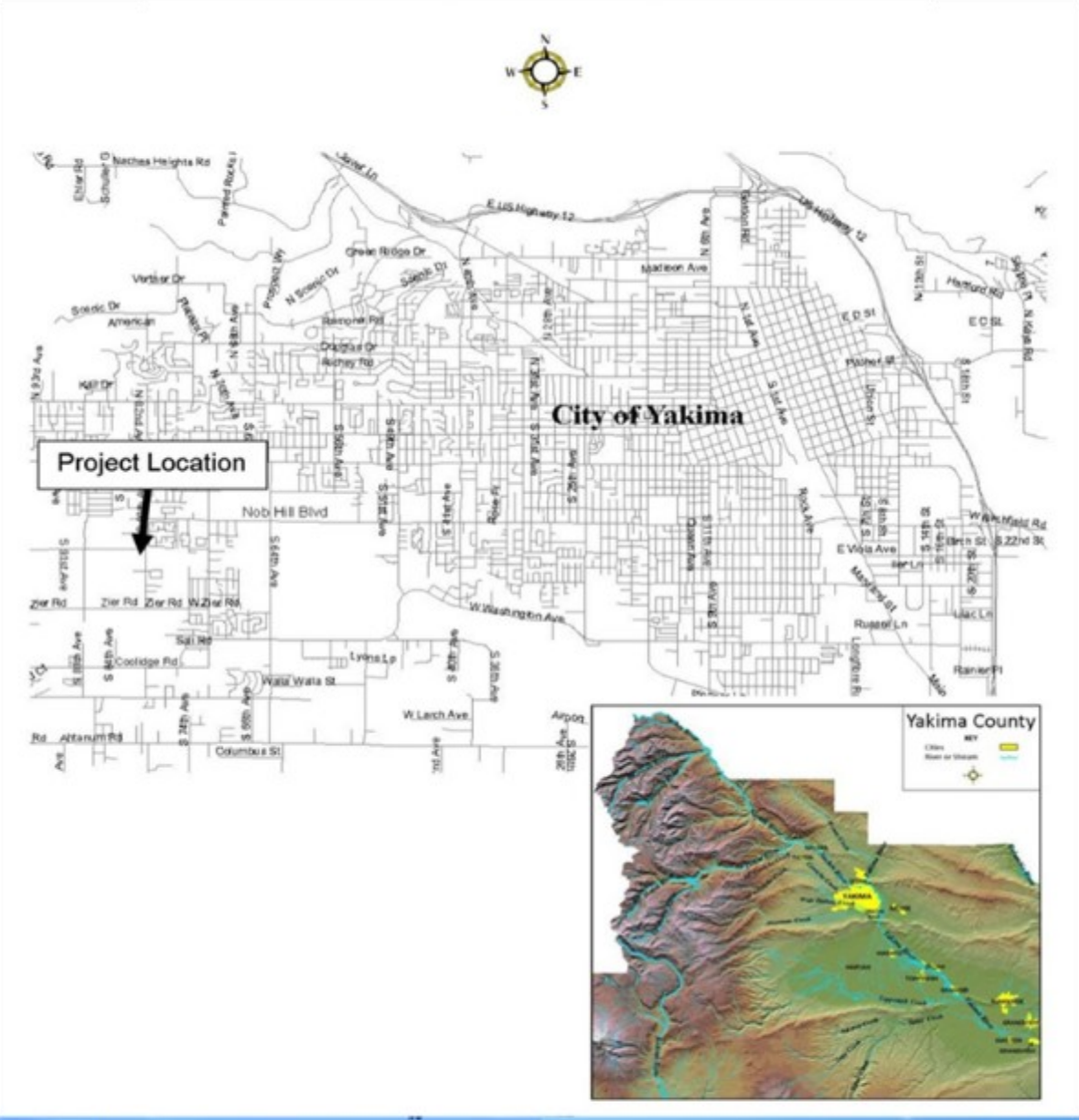
D. Project Status:

D1. Recent Project Work:
1 – Receive preliminary maps in March 2011.
2 – Community Outreach for preliminary maps 2013-2014.
3 – Received revised preliminary maps in December 2013.

D2. Near Term Work: Assist communities and citizens to adopt FIS maps.

D3. Major Milestones & Dates:
2004 - FEMA grant – hire consultant.
2007 - Review of FEMA Ahtanum Hydrology.
2008 - Final Ahtanum Hydrology.
2008 - Hydraulic model completed and reviewed.
2009 - FEMA funding delay.
2011 - Ahtanum restudy will be issued as Preliminary Maps.
2013 - Revised FEMA Preliminary Maps in December.
2015 - Final FEMA FIRMs, Letter of Final Determination community outreach.
2016 - Community adoption of FIRMs.

Wide Hollow at 80th Floodplain Restoration



FCZD Project Status
May 2022

Completed Planning Project **West Valley**

A. Project Title: Wide Hollow at 80th Floodplain Restoration C.B.

B. FCZD Role: Lead
Cooperators: DOE, State EMD

C. Brief Project Description:
Need: There are 9 repetitive loss properties in Yakima County that incur frequent damage.

Goals: To mitigate repetitive loss properties within Yakima County.

Benefits: Increased benefits through reductions in county wide flood insurance premiums through CRS program. Positive benefits for landowners that have incurred losses from flooding. Increase active floodplain. Increased flexibility for county / city infrastructure modifications.

D. Project Status:

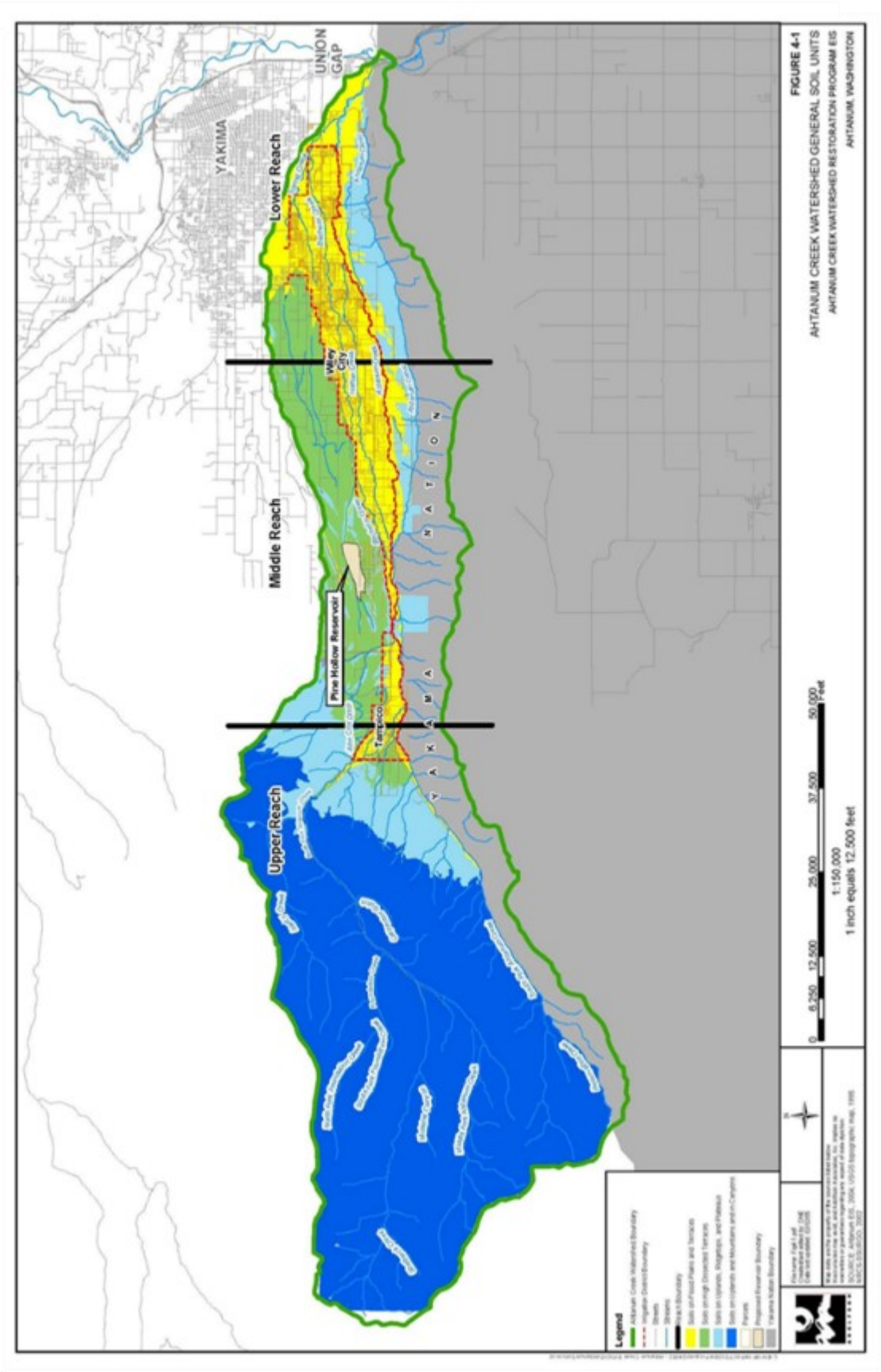
D1. Recent Project Work: Structure (residence) at 1308 S 80th Avenue has been removed. Levee was pulled back and constructed. Parcel was seeded, silt fences were installed, and a flap gate installed. Grant has been closed out.

D2. Near Term Work: Apr 2012 – Plant vegetative hedge along south boundary to provide privacy for neighbors. Funding will come from Yakima County Flood Control Zone funds.

D3. Major Milestones & Dates:
2009 - Secured FCAAP Grant for $120k.
2010 - Acquire parcel at 1308 S 80th Avenue, demolish and rehabilitate site.
2011 - Complete levee relocation and parcel revegetation.
2011 - Complete grant requirements for FCAAP Grant.
2012 - Complete vegetative planting along south side of parcel.

.

Ahtanum Watershed Assessment / Pine Hollow Reservoir



FCZD Project Status
May 2022

On Hold Planning Project **West Valley**

A. Project Title: Ahtanum Watershed Assessment / Pine Hollow Reservoir (FC3066) J.K.F.

B. FCZD Role: Technical Advisory for science and planning process
Cooperators: Ecology (Lead), YN, WDFW, USFWS, NOAA, Ahtanum Irrigation District

C. Brief Project Description:

Need: Analysis of water needs, habitat conditions, and fish population status in Ahtanum Watershed. Specifically looks at the proposed Pine Hollow Reservoir, as a precursor to develop an EIS for that reservoir and related habitat and flood hazard reduction projects. Funded by the Legislature through Ecology.

Goals: Participate in the development of alternatives for water storage, habitat restoration and flood hazard reduction.

Benefits: Improved water supply and water use efficiency in the Ahtanum Basin, minimally reduced flood hazard, and improve habitat (providing the project is implemented).

D. Project Status:

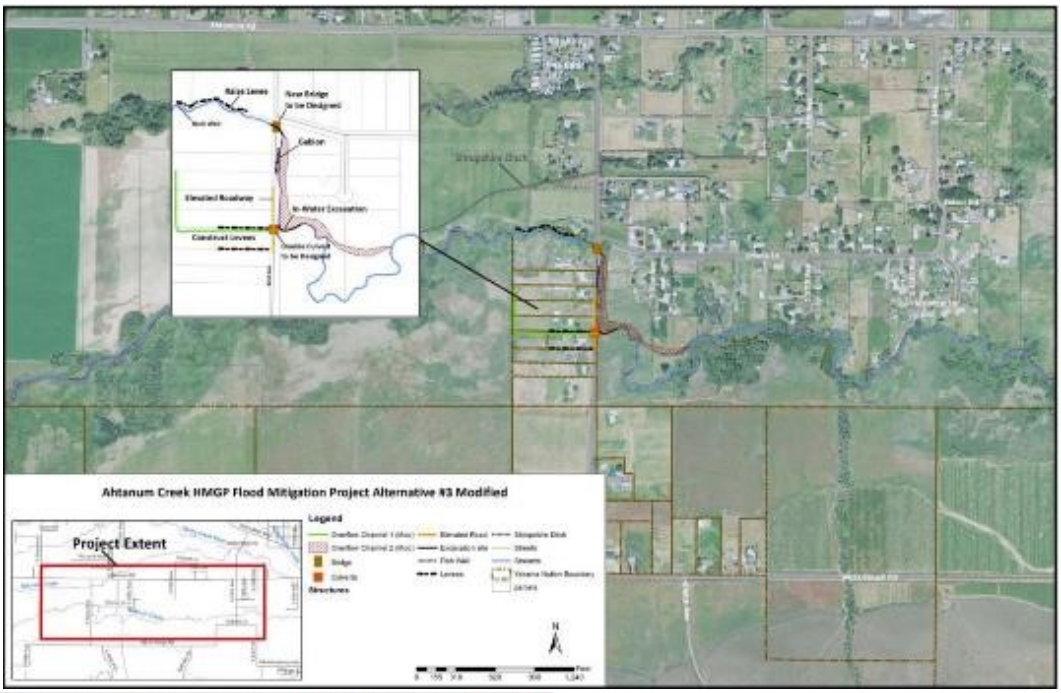
D1. Recent Project Work: Report complete in 2005. Project will be included in upcoming Ecology Storage Study SEIS.

D2. Near Term Work: Progress on this project is dependent upon policy stance of Yakama Nation.

D3. Major Milestones & Dates: Ecology is lead.

.

Ahtanum Creek Emma Lane Project



February 2003 Flood

FCZD Project Status
May 2022

Completed CIP Project in CFHMP – YAPN 03-078 **West Valley**

A. Project Title: Ahtanum Creek Emma Lane Project (FC3149) C.B.

B. FCZD Role: Lead
Cooperators: Yakama Nation, FEMA, Grant through HMGP

C. Brief Project Description:

Need: An undersized bridge on S 42nd Avenue and two 90° bends in the channel of Ahtanum Creek creates frequent flooding problems from small to moderate flood events in the Emma Lane residential area, on the Yakama Nation and redirects flows overland to downstream neighborhoods within the Town of Union Gap.

Goals: The objective of the project will be to reduce flooding by relocating Ahtanum Creek and/or construct an overflow channel and providing a new bridge with a wider span bridge on S 42nd Avenue. The two 90° bends will be replaced with a more natural channel configuration.

Benefits: Reduction and potential elimination of the frequent wide spread flooding and reduction of 100-year floodplain and improved S 42nd Avenue access during floods.

D. Project Status:

D1. Recent Project Work: Met with FEMA and State Emergency Management Division to request government to government meeting with FEMA and Yakama Nation. Developed NEPA/SEPA for alternatives not on Nation land. Held public meeting.

D2. Near Term Work: project cancelled as Nation does not support.

D3. Major Milestones & Dates:
1998 - HMPG Grant Application unsuccessful.
2003 - LiDAR data collection.
2005 - Survey / data collected.
2007 - HMPG Grant Application and Public Meeting.
2008 - Grant acquired.
2009 - Yakama Nation discussions.
2010 - Develop NEPA Alternatives, scoping and public participation process.
2011 - Government to government discussion revised NEPA alternatives public process.
2012 - Completed hydraulics and held public meeting.
2014 - Project cancelled as Nation did not support the project.