



Stargrass Harvesting & Treatment

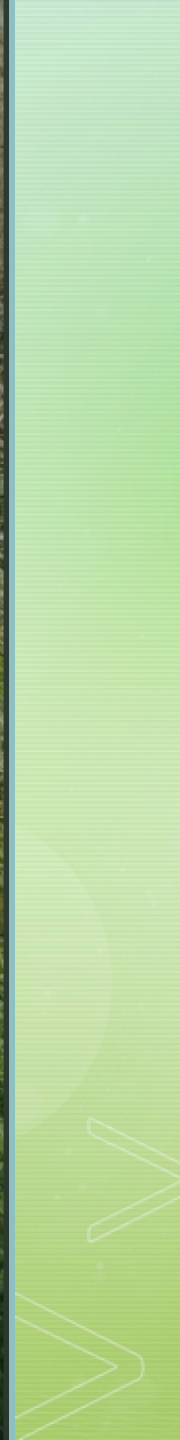
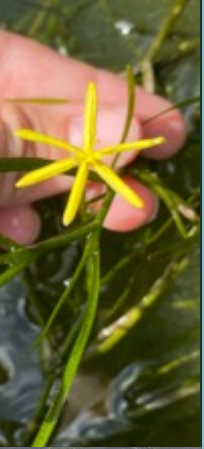
Rachel Little

Benton Conservation District

rachel-little@conserveva.net www.bentoncd.org

Water Stargrass Impacts on the Lower Yakima River

- ❖ Water Quality
- ❖ Fish & Wildlife
- ❖ Irrigation & Agriculture
- ❖ Human Health & WNV
- ❖ Recreation & Community Values



Fish Impacts

- ❖ 70-80% fall Chinook spawning occurred below Prosser before 2001

- ❖ By 2015, only 18%

- ❖ By 2018, WDFW stopped redd surveys



Fish Impacts

- ❖ excessive aquatic vegetation ***favours non-native predators*** that prey on smolts (McMichael 2017)

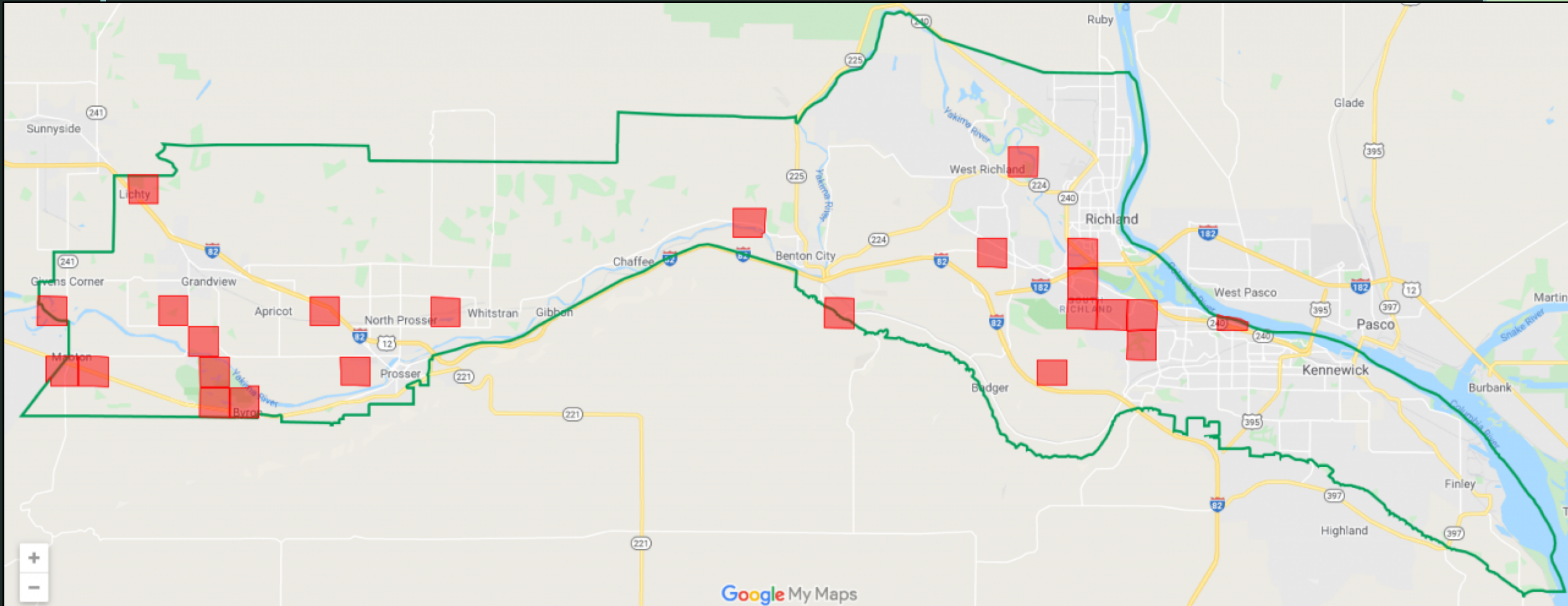


Irrigation Impacts

- ❖ Restricts flow
- ❖ Blocks intakes
- ❖ Increases maintenance



Public Health



Benton County Mosquito Control Board, Angela Beehler, Executive Director

Digitized Presence of WSG



Mid-Columbia Fisheries, Katrina Strathman & Zac Zacavish

WSG Drought Emergency Response Plan

Goals

- Reduce chemical & physical barriers to salmonid migration due to increased WSG in drought conditions.
- Create shovel-ready plan & cost-estimate to be implemented with drought year emergency funds.

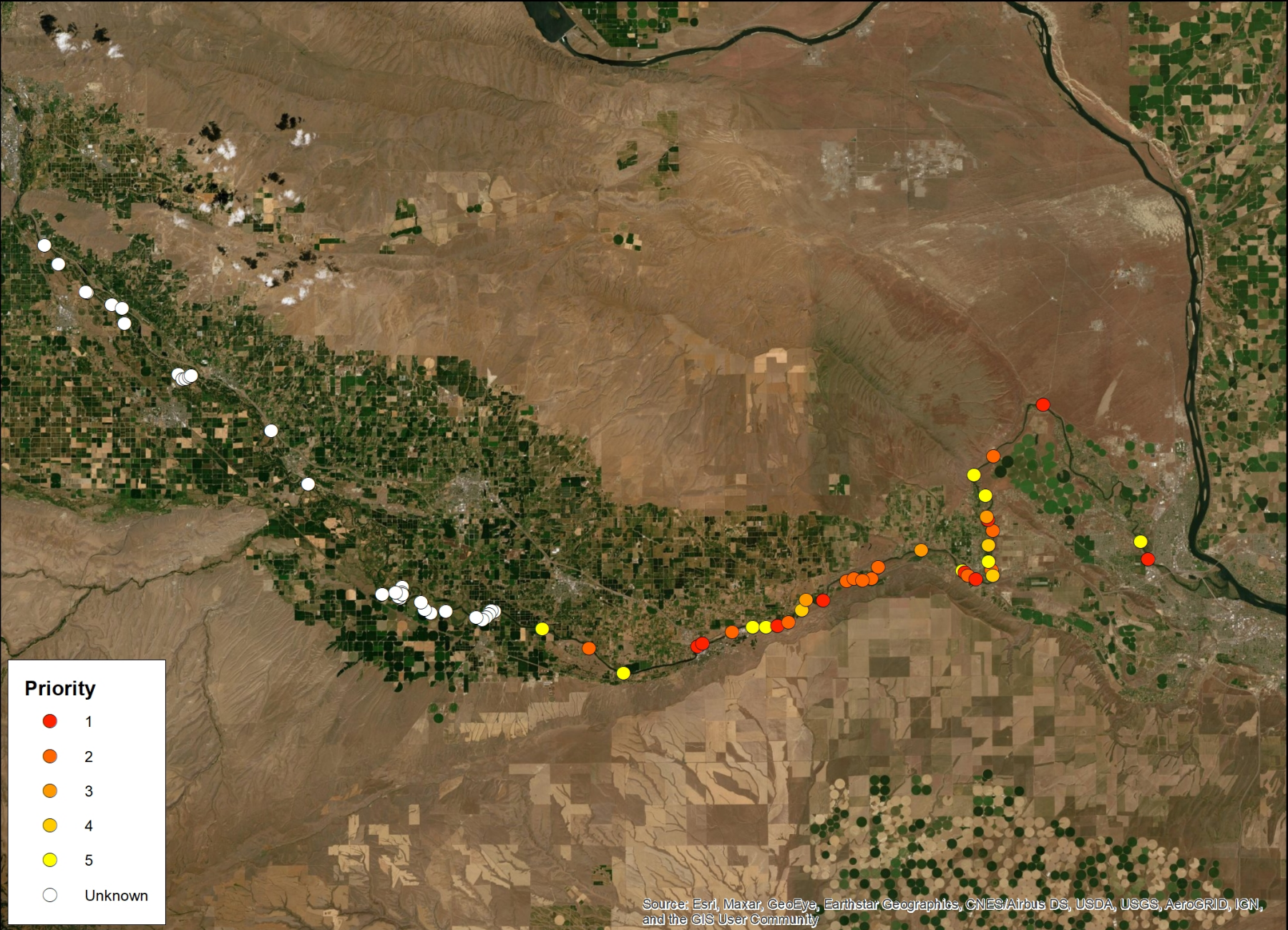
Tasks

- Identify & prioritize potential WSG removal locations to best mitigate increased extent WSG in drought conditions.
- Select WSG priority removal locations based on access, off-loading & composting sites.
- Identify treatment methods & develop cost estimates for priority sites.

Why Is a Drought Emergency Plan Important for Fish?

Redd Count by Reach Upper to Lower	Year																		
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Prosser to Chandler	199	95	587	392	377	56	33	29	40	67	53	58	0	37	37	18	12	26	4
Chandler to Benton City	150	101	188	286	48	2	10	3	1	1	0	14	0	1	0	0	0	2	5
Benton City to Horn Rapids	311	21	106	4	0	0	0	1	0	0	3	18	2	34	7	3	0	5	0
Horn Rapids to Confluence	29	71	150	112	24	2	2	8	1	2	1	62	13	43	31	0	4	10	---
Total	689	288	1031	794	449	60	45	41	42	70	57	152	15	115	75	21	16	43	9
		↑ drought				↑ drought						↑ flood				↑ drought			

DRAFT Priorities: Water Stargrass Drought-Year Response



Priority WSG Removal Sites:

- WSG occurrences with total channel coverage, > 1000 ft length
- WSG occurrences with thalweg open, > 1000 ft length
- Fish ladders
- Cold water anomalies
- Historic mapped redds

Water Stargrass (*Heteranthera dubia*)

Growing body of work investigating WSG over the past 20 years:

Research

- 2004 - 7: USGS/SYCD Eutrophication Study investigated nutrients & aquatic plants from Zillah to the mouth
- 2018 – 2020: USGS/BCD WSG Dynamics Study investigating relationships between water quality, nutrients, & metabolism in 3 reaches in lower river
- 2018 -2020: WSU-TC WSG metabolism & DO study
- 2020 - PNNL Investigation of WSG as a biofuel

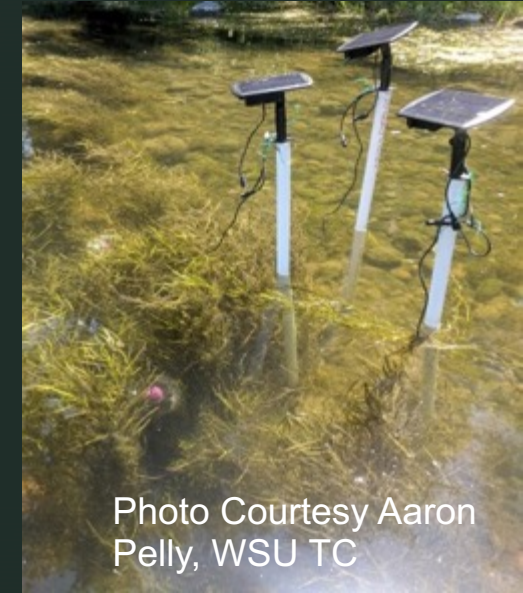


Photo Courtesy Aaron Pelly, WSU TC



Photo Courtesy Dr. Sheibley, USGS

Water Stargrass (*Heteranthera dubia*)

Growing body of work investigating WSG over the past 20 years:

Management

- 2007, 2010, 2015: BCD investigated hand methods for WSG control & impact on spawning habitat
- 2015: CID Mechanical Harvesting for irrigation
- 2019 – 2020: BCMC/BCD elevate issue to WA legislators, requesting financial support
- 2020 – 2021: MCF WSG mapping & Emergency Drought Plan
- Summer 2021: Harvester acquisition & field testing
- Sumer 2022: Monitoring river response to harvest



Mechanical Harvester as Management Tool



interchangeable implements

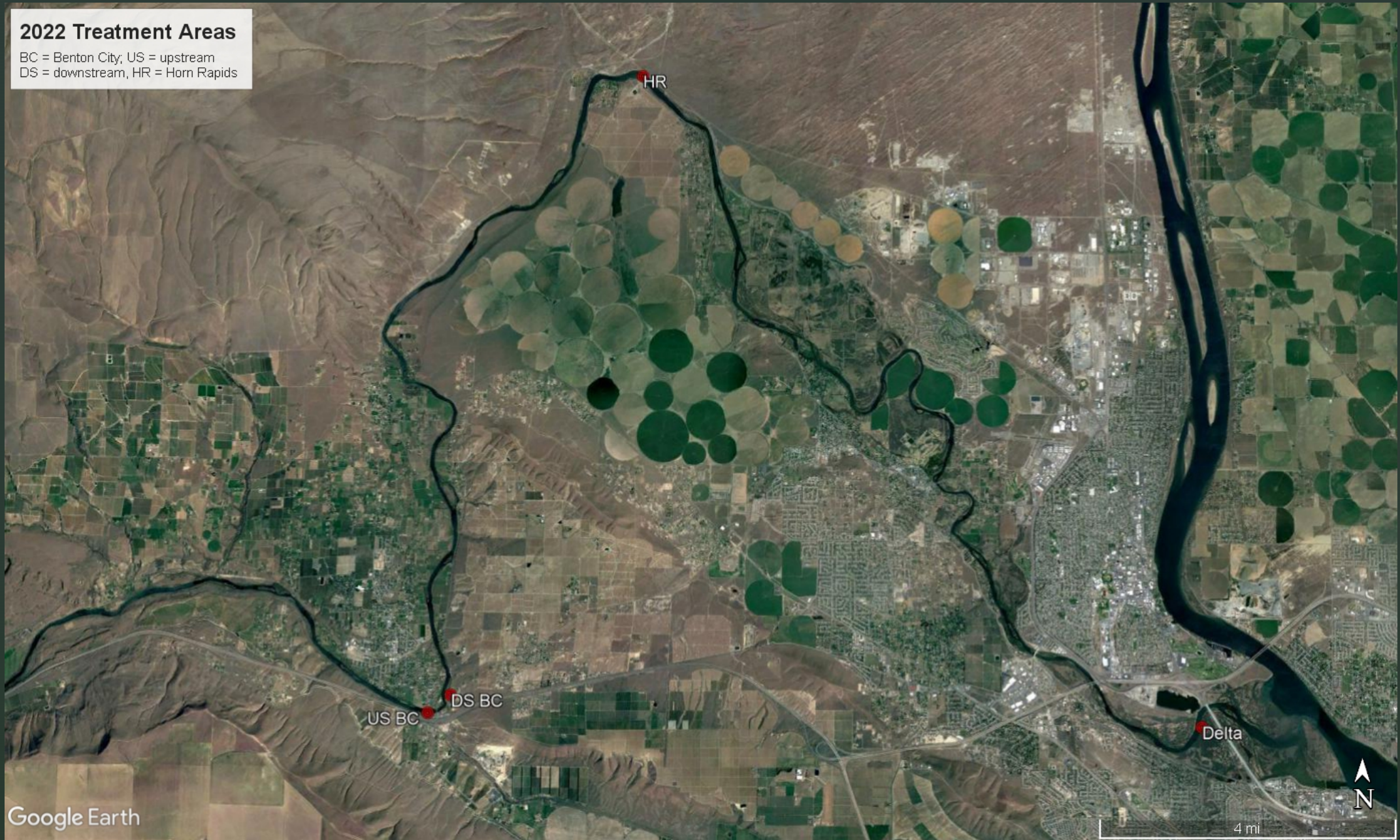


unloading



2022 Treatment Areas

BC = Benton City, US = upstream
DS = downstream, HR = Horn Rapids



Google Earth

4 mi



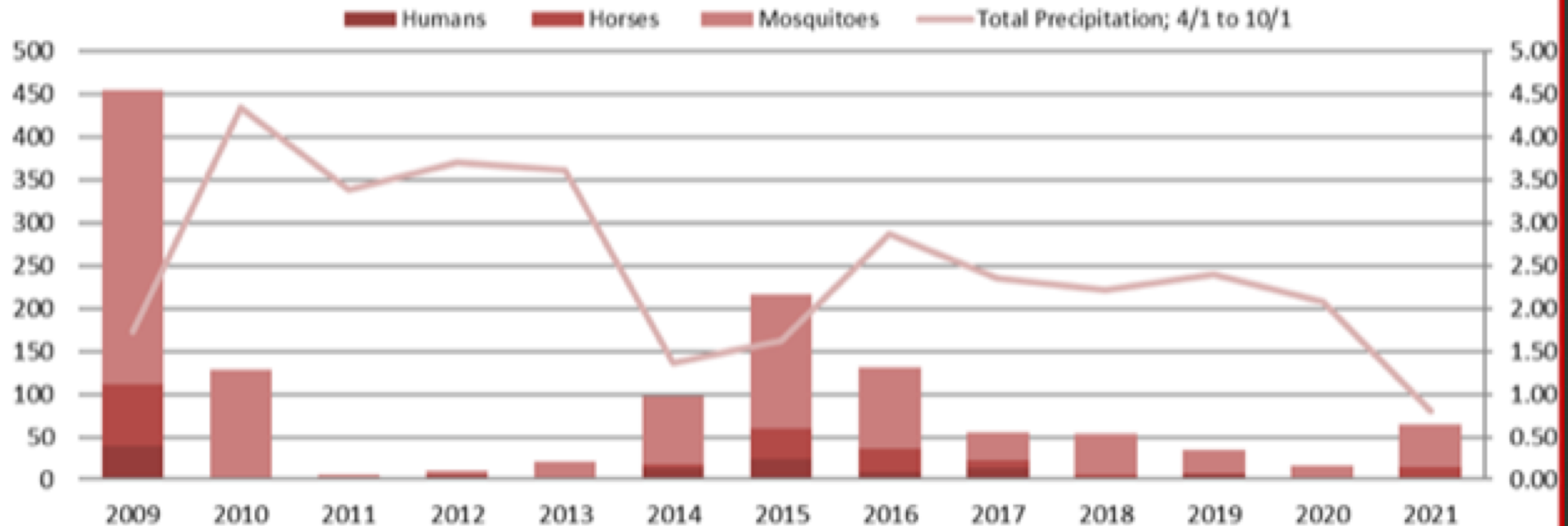


water
quality
monitoring
locations

Monitoring Aquatic Insects



WA West Nile Virus Activity In relation to precipitation



2018-2020, USGS Research

DO, nutrients, flow relationships with
Biomass



Partners in WSG Work

- Benton Conservation District
- Yakima Basin Integrated Plan
- Benton County Mosquito Control
- Mid-Columbia Fisheries
- Yakima Basin Fish and Wildlife Recovery Board
- WA Dept of Ecology
- WA Dept of Fish and Wildlife
- WSU Tricities
- Benton County
- Benton County Parks
- Columbia Irrigation District
- PNNL (PNW National Lab)
- Benton-Franklin Health District
- Senator Warnick & Representative Klippert