

MEMORANDUM

To: Ben Floyd, White Bluffs Consulting
From: Kelsi Potterf, Benton Conservation District
Date: 06/13/2025
Subject: Benton County Shrubsteppe and Wetland Prioritization

Scope of Work

This memo summarizes the GIS services completed by Benton Conservation District in support of Benton County Shrubsteppe and Wetland Prioritization under subcontract agreement dated November 27, 2024 with White Bluffs Consulting. Deliverables include a description of processes and procedures conducted under the scope of work, a shapefile and maps of high-priority properties for protection and restoration, and an associated attribute table to include, at a minimum, parcel ID, acres, and rankings between value and function models.

Prioritized parcels work to fulfill the following objectives:

- Ease of acquisition—Parcels, fields, or patches should be fairly large (>50 ac) and should have few owners
- Relative Quality—Priority areas should be focused on those already in shrubsteppe, wetland/riparian, or other native plant community cover types and require little up-front management to maintain ecological functions
- Greatest impact—Identify those patches which, if protected or restored, would contribute to the following concepts:
 - Connect existing protected areas
 - “Protect the Core, Expand the Core, Connect the Core”
 - Consider connection and growth between ecosystem types

Reporting Period

January 1st, 2025 – June 30th, 2025

Tasks Completed

SHRUBSTEPPE PRIORITIZATION

1. **Data Collection and Review**
 - For the purpose of prioritizing shrubsteppe, data collection considered two categories:

1. Maps derived for values assessments, i.e., priority species presence, occurrence of shrubsteppe habitats, and landscape value.
2. Models developed to assess habitat function, i.e., biodiversity potential and resiliency to disturbance.

Table 1. Data layers and sources utilized in shrubsteppe prioritization.

Data Layer	Source	Year (s)
WSRRI Xeric & Mesic Landscape Priorities PHS Species Specific Occurrences PHS Eastside and Shrubsteppe PHS Columbia Plateau Regional BAC WDFW & Regional Partner Acquisition/Public Access Priorities	Washington Department of Fish & Wildlife	2020-2025
Boundary Parcels Urban Growth Boundary	Benton County	2024
Ag Land use Field Boundaries Possible CRP/Fallow Fields	Washington State Department of Agriculture	2023
Core and Linkages	Arid Lands Initiative	
Shrubsteppe Biodiversity Potential Model <ul style="list-style-type: none"> • LANDFIRE FBFM40 2020 • MRLC RCMAP Fractional Cover Layers 2020 <ul style="list-style-type: none"> ○ Annual Herbaceous ○ Perennial Herbaceous ○ Sagebrush ○ Non-Sage Shrub ○ Tree ○ Bare Ground ○ Litter • WDNR Ecological Integrity Assessment—Upland Ecosystems <ul style="list-style-type: none"> ○ Ecological Systems Key 	Benton & Franklin Conservation Districts	2020

2. Data Processing and Analysis

Strategy:

- Isolate large parcels/fields (>50 ac) that contain shrubsteppe (SSBP) AND intersect multiple landscape conservation priorities (PHS/WSRRI/ALI) AND work to connect multiple habitat types and/or existing protected areas.

- Isolate large parcels/fields (<50 ac) that contain shrubsteppe (SSBP) AND intersect multiple landscape conservation priorities (PHS/WSRRI/ALI) AND work to connect larger areas previously selected and/or existing protected areas.
- Clean up polygons (edit layer) and recalc area
- Compare isolated polygons to the SSBP and code for management needs and intersecting priority layers.

Development:

Clip all layers to county boundary

Isolating Ag fields from Parcels (Allows the selection of polygons to retain parcel information around or specific to ag fields)

1. Clip Parcels to Fields
2. Merge Fields to clipped Parcels
3. Remove Fields from Parcels (Pairwise erase with outputs)
4. Merge the outputs from 2 and 3.
5. Split by WSDA Crop Layer (so you can select individual fields within a parcel)
6. Clean up attribute table to contain only pertinent information
7. Add field for acres and run geometry (US Survey Acres)
8. Add fields for management recommendations, priority intersects, and a sum of values to rank.
 - a. WSRRI: Core =5; GOA=4; Corridor= 3; Other=2
 - b. ALI: Core=3; Linkage=1
 - c. PHS:
 - i. Species: # of PHS spp possibly occurring
 - ii. Steppe: Present=1; Absent=0
 - iii. BAC: Bio/Core=5; Corridor=3
 - d. SSBP: Good=5; Fair=3; Poor=1
 - e. Landuse: Rangeland=3; CRP=1
 - f. Partner Priorities: 1
9. Clip and convert all vector layers to polygon layers; add 100ft buffer to linear
10. Feature to point for isolated fields; Extract Multi Values to Points
 - a. Batch process what is possible
 - b. Use attribute table to calculate the previous fields
 - c. Caveat—based on the location of the point, some extracted data may not reflect the intersect between layers unless the intersection is central to the polygon.

3. Map Production

- ArcGIS was utilized in the processing and development of resulting maps and models. See attached Benton County Shrubsteppe Prioritization map for a sample of outputs. Staff identified significant core and corridor areas—those parcels with low cumulative

value and function rank are shown in red/orange, while those high-priority parcels are provided in green tones.

4. Deliverables Provided

- A Memo describing the work and major findings among primarily private lands
- Shared folder via ArcGIS Online that includes a shapefile of the target parcels with an attribute table containing ranking/ownership information

5. Meetings and Coordination

- Staff attended multiple meetings with White Bluffs Consulting, including those to evaluate the progress of deliverables and to provide updates to County and WDFW Staff.

Next Steps / Remaining Work

Should work continue to prioritize these parcels further, District staff would take the opportunity to run 2024 Shrubsteppe Biodiversity Potential Models and begin field validation, as well as assist in the evaluation of high-priority parcels for protection measures.

WETLAND/RIPARIAN PRIORITIZATION

6. Data Collection and Review

- For the purpose of prioritizing wetland and riparian areas, data collection considered the challenges resulting in reduced accuracy among current wetland/riparian mapping efforts:
 1. Impacts of low precipitation (5-10" per year) and irrigation inputs on typical watershed hydrology.
 2. Limitations in resolution among national datasets impacting the ability of current models to detect riparian vegetation.
 3. The tendency for satellite imagery-based processing to classify farm ponds, manure lagoons, metal roofs, gravel pits/quarries, and irrigation infrastructure as open water.
 4. As irrigation methods become more efficient, and seasonal droughts increase in frequency and severity, we expect to see declines in the extent and abundance of wetlands and riparian areas across the landscape.

Table 2. Input and developed layers utilized in preliminary processing for wetland/riparian prioritization.

Input Layers	Source	Year (s)
Digital Elevation Models (DEM) Digital Terrain Models (DTM)	Washington Department of Natural Resources	2020

Boundary Parcels City limits Urban Growth Boundary Wetlands & Streams	Benton County (NWI & WDFW)	2018/2024
Developed Layers/Tools	Purpose	Process
Depth Grid Cuts & Dams Streamflow Network Farm pond digitization ArcGIS Field Maps	Topographic barriers to flow; Culvert identification Ephemeral wetland potential Alignment of streams in topographic lows Reducing “false positives” in wetland mapping Field validation of questionable farm ponds	Agricultural Conservation Planning Framework (ACPF)
Further applications	Alignment of floodplains in valley bottoms Assessment of riparian condition Siting of conservation practices	ACPF; Riparian Condition Assessment Tool (RCAT)

7. Data Processing and Analysis

- DEM/DTM data was processed prior to the receipt of contracted services.
- Staff began the process of hydroconditioning the DEMs by HUC12 watershed. This involved filling pits, identifying topographic lows and confined basins, topographic dams and culverts, and navigating the flow paths more accurately as they navigate through irrigation infrastructure and roadways. Staff completed 2 rounds of hydroconditioning on 3 of the 6 tributary watersheds where intermittent/perennial flows have been identified.
- Staff additionally digitized farm ponds and constructed wetlands throughout Benton County. Features with questionable origins or wetland functions were flagged for field validation. ArcGIS Field Maps were created for future use in windshield surveys.

8. Map Production

- ArcGIS was utilized in the processing and development of resulting maps and models. See attached Benton County Streamflow Network & Farm Ponds map for a sample of outputs.

9. Deliverables Provided

- A Memo describing the work and what has been completed in the processing of wetland/riparian features
- Shared folder via ArcGIS Online that includes a shapefile of the digitized farm ponds and revised streamflow networks for completed HUC12’s.
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10. Meetings and Coordination

- Staff attended multiple meetings with White Bluffs Consulting, including those to gain an understanding of valuable tools for shoreline assessments.

Next Steps / Remaining Work

Should work continue to evaluate priority wetlands and riparian areas, District staff would take the opportunity to continue building accurate streamflow networks, field validate 20% of identified wetlands and farm ponds, and run the RCAT model to identify high-priority riparian areas for protection and restoration.

Please let me know if any additional information or clarification is needed. I appreciate the opportunity to support this project.

Sincerely,

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Voluntary Stewardship Program Coordinator

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