STEWARDSHIP OF THE HOOD RIVER – POWERDALE CORRIDOR

Columbia Land Trust

March 20, 2012

Diversion Dam Structure


CAT
KOMATSU

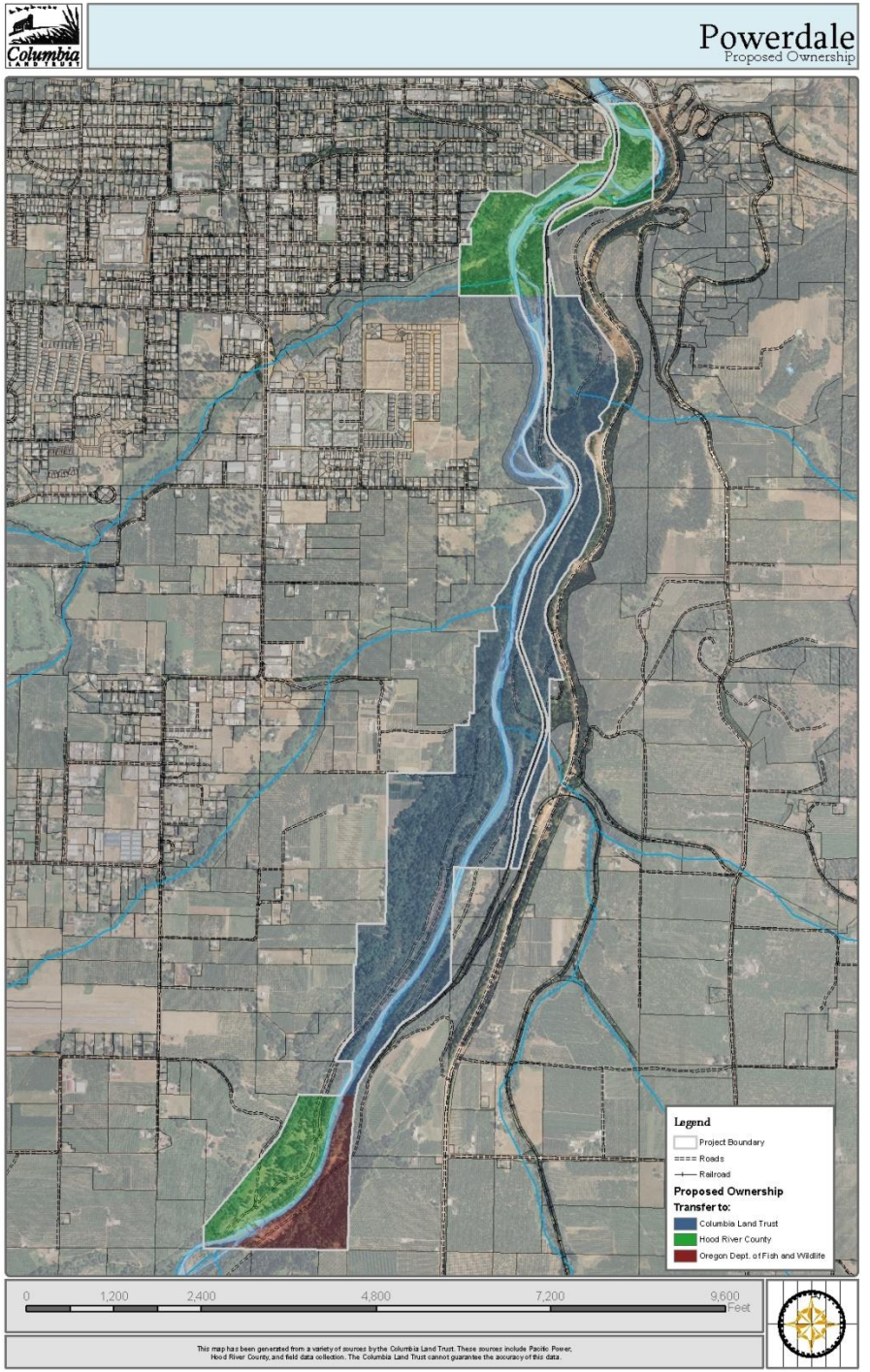

DYNALIFT

Columbia Land Trust Role

- Facilitate land transfer process
- Develop ownership plan for Powerdale lands and long-term management partnerships
- Develop long-term management strategies and goals for Powerdale lands with input from Powerdale neighbors, agencies, partners, user groups, and public
- Landowner and Steward

Powerdale Ownership

- Columbia Land Trust: 263 Ac
- Hood River County: 101 Ac
- Oregon Department of Fish and Wildlife: 32 Ac



Goals of Powerdale Lands from Settlement Agreement

1. Protect the existing fish and wildlife habitat while allowing for habitat restoration and enhancement;

2. Retain existing recreational uses and allow improvements commensurate with those uses, provided such uses and improvements are consistent with Goal 1;

3. Allow for expanded recreational and educational opportunities, provided those are consistent with Goal 1; and

4. Acknowledgement and preservation of the right of CTWS tribal members to exercise their Treaty secured off-reservation fishing rights on the Subject Lands.

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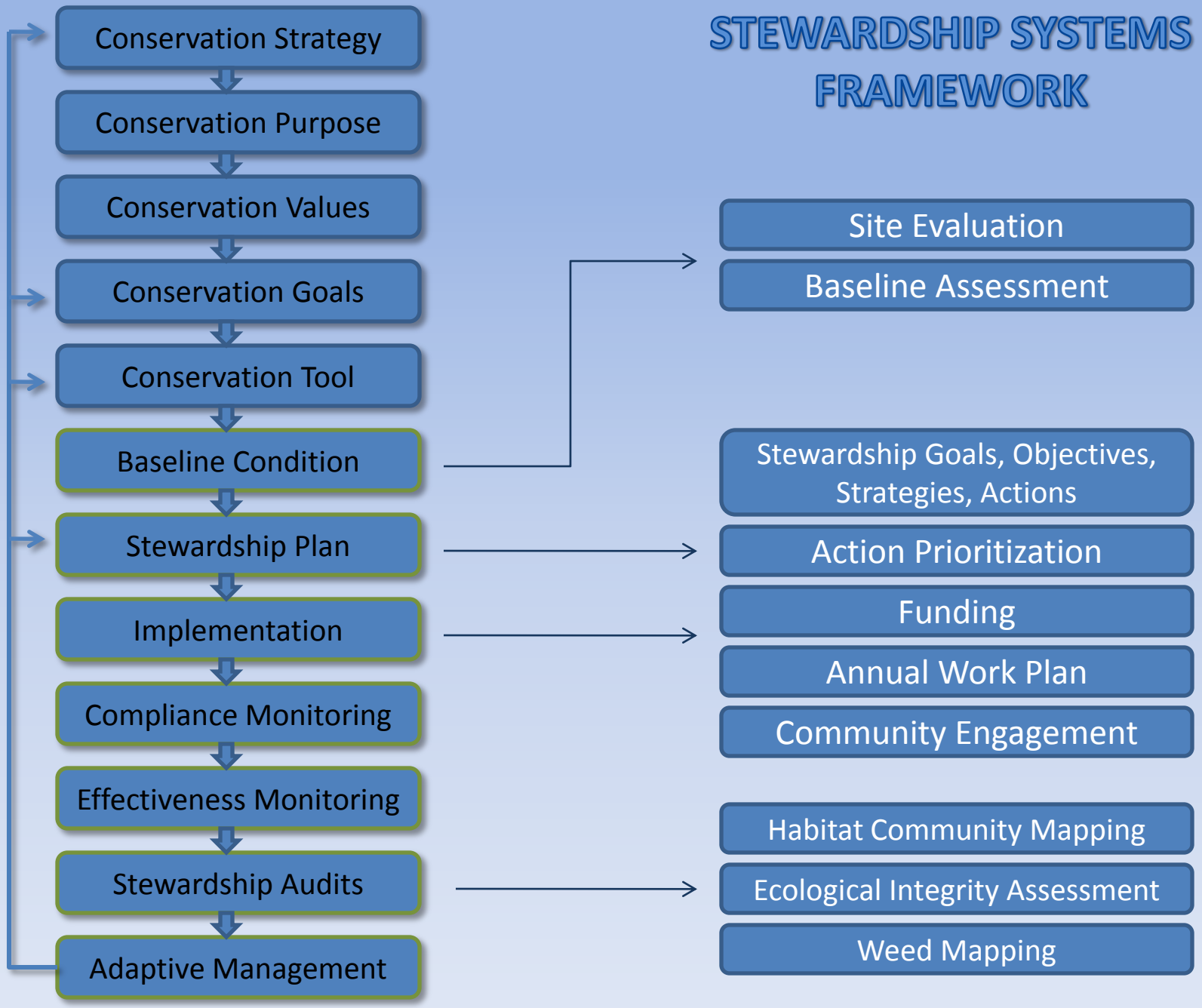
STEWARDSHIP SYSTEMS FRAMEWORK



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Powerdale Corridor Vision

- Intact and functional habitat
- Collaboration between partners, neighbors and the local community
- Maintain public access responsibly
- ‘Through’ trail restoration
- Leverage conservation beyond the property boundaries

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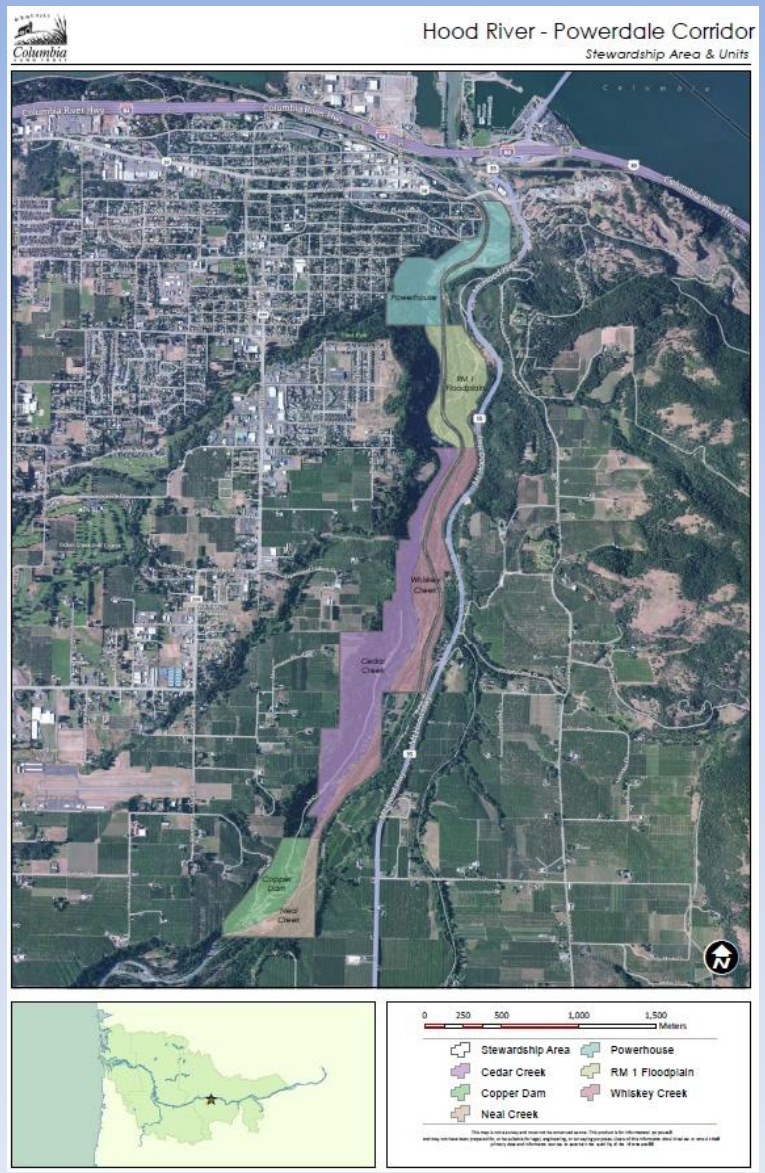
Stewardship Areas/Units



- Geographical division of conservation lands based on:
  - Ecological context
  - Socio-Jurisdictional context
  - Ecological conditions and processes
  - Practical considerations
- Each Unit is described in detail within the stewardship plan, including unit history and infrastructure
- Habitat Classification provides finer scale division of Stewardship Units

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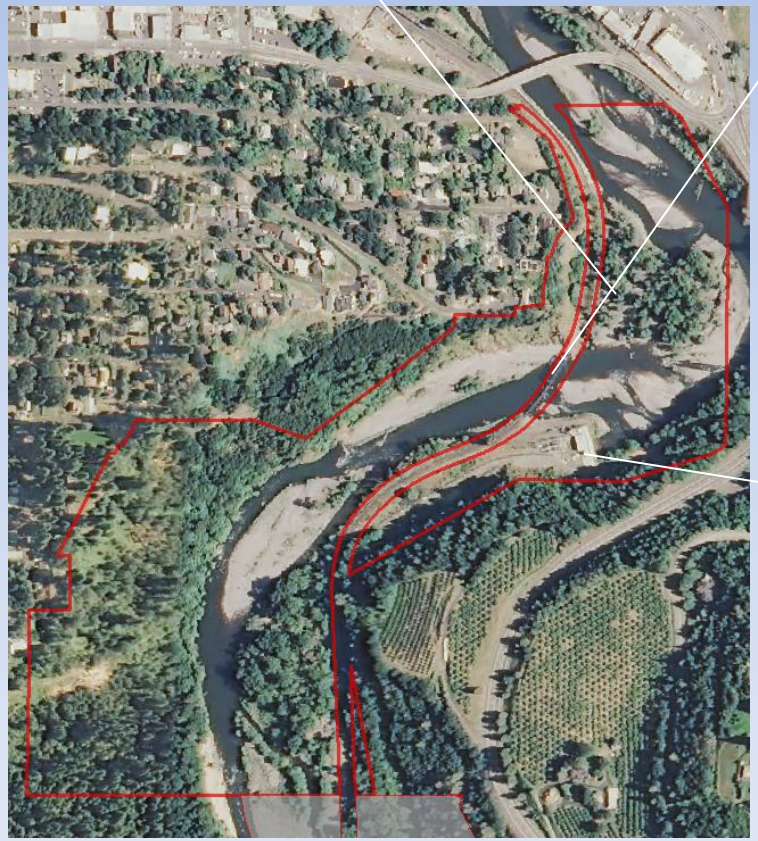

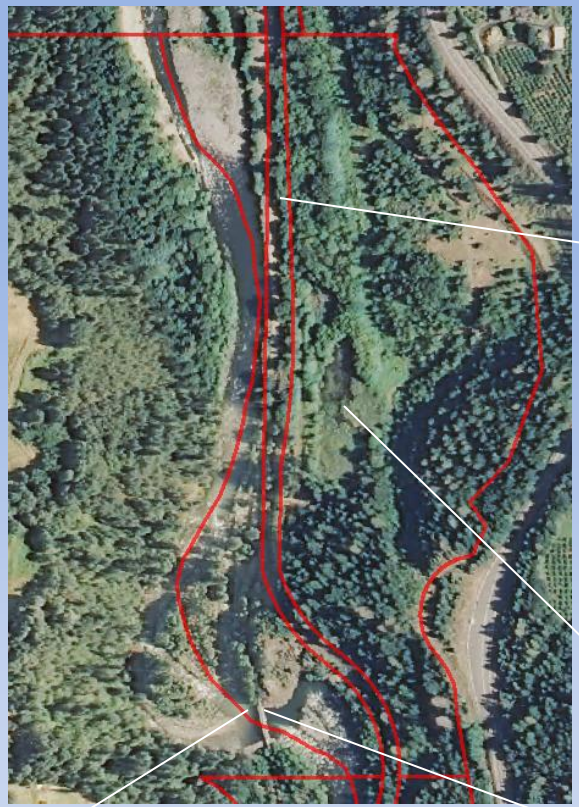

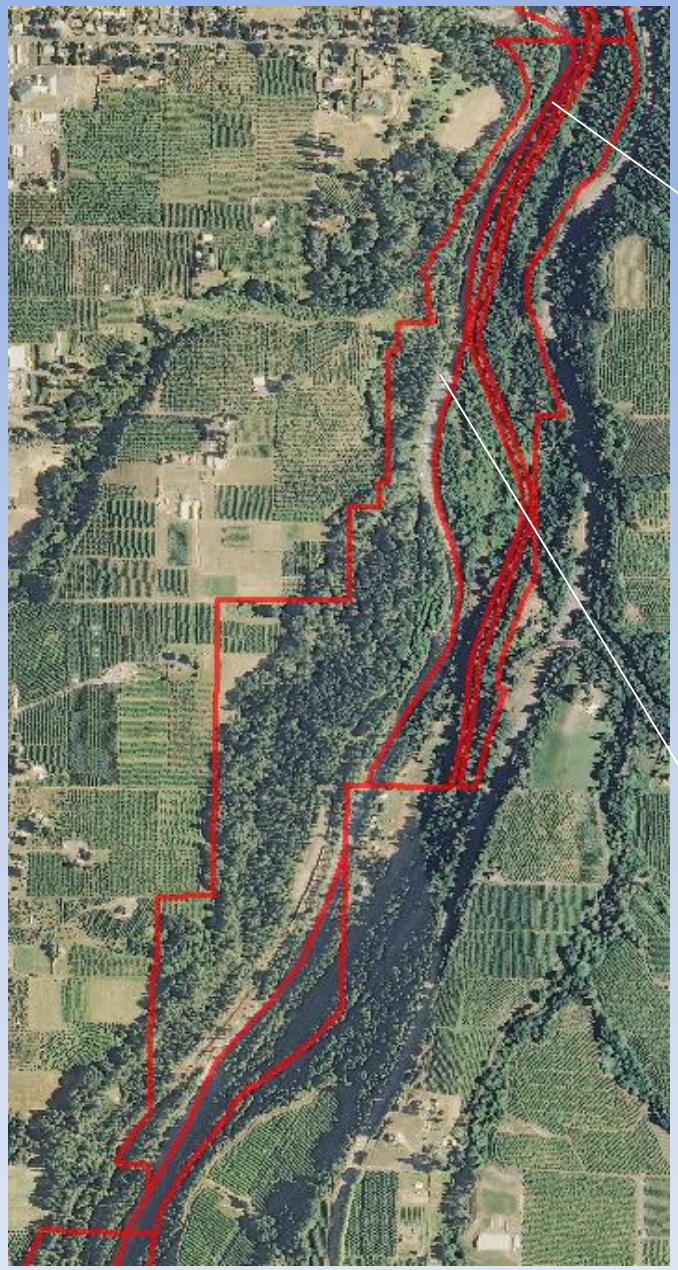

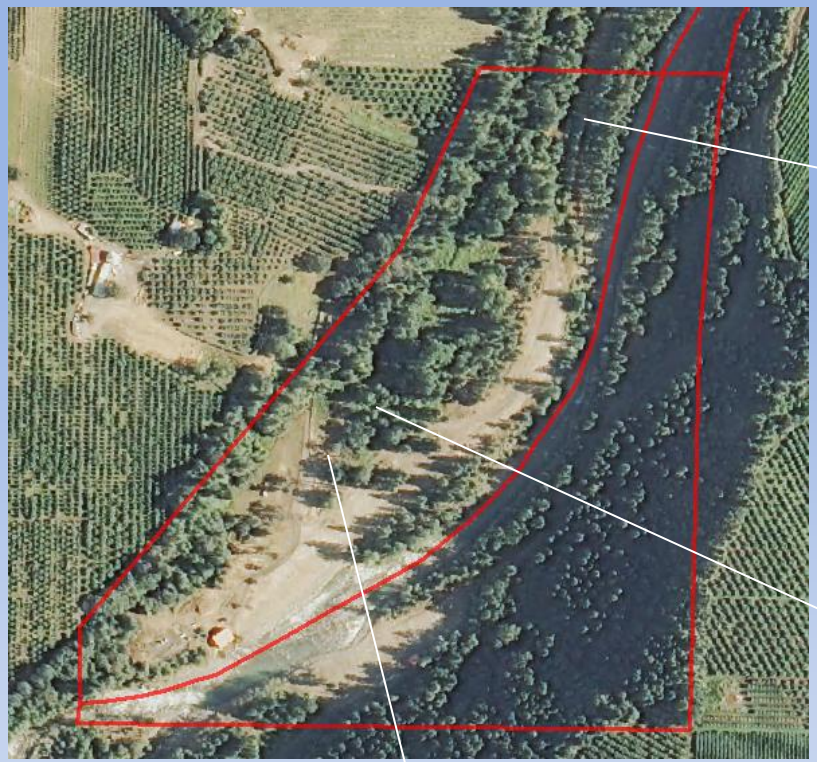


2007


ANGLERS
You are in
Bull Trout Country!
IF YOU DON'T KNOW,
BE SAFE AND LET IT GO!
INFORMATION
NO
DUMPING
Welcome To
POWERDALE PARK RECREATION AREA
Pacific Power

Goal 1	Protect the existing fish and wildlife habitat while allowing for habitat restoration and enhancement												
Applicable Stewardship Units	*Copper Dam (CD), Neal Creek (NC), Cedar Creek (CC), Whiskey Creek (WC), River Mile 1 Floodplain (RM1) and Powerhouse (PH) Stewardship Units*							PRIORITY	5 Year Plan				
Objective	**Strategy**	**Action**	**Lead**	**Action Unit(s)**	**Est. Action Metric**	**Plan Period**	**Effort Level**		**2012**	**2013**	**2014**	**2015**	**2016**
No loss of habitat functionality	*Habitat function monitoring and evaluation*	*Establish baseline habitat mapping and Ecological Integrity Assessment (EIA)*	CLT	All	C	P	M		X				
		Periodically review habitat mapping and EIA to monitor stewardship effectiveness	CLT	All	C	P	M						X
	Minimize threats to habitat function	*Implement enhancement and restoration measures to address threats*		All	TBD	P	M		X	X	X	X	X
Functionally intact floodplain, wetland and riparian habitat	*Remove constraints on naturally functioning river processes to the extent practicable*	*Remove pipeline and support structure from active floodplain*	CLT	PH, CC, RM1, WC	TBD	3	H				X	X	X
		Re-contour and remove fill material from active floodplain		PH, CC, RM1, WC	TBD	2	H				X	X	X
		Remove unnecessary shoreline armoring		PH, CC, RM1, WC	TBD	3	H				X	X	X
		Bio-engineer shoreline areas to provide habitat function and infrastructure protection		PH, CC, RM1, WC	TBD	3	H				X	X	X
Upland Habitat areas are maintained in a natural condition	*Re-establish native vegetation communities in all non-developed upland areas*	*Restore native vegetation in disturbed areas*		All	TBD	3	H			X	X	X	X
		Control non-native vegetation		All	TBD	3	H		X	X	X	X	X
Forest Health is stable and functional	*Maintain diverse forest stand structure and composition*	*Monitor and evaluate forest stand structure and health*		All	TBD	P	M		X				
	Implement thinning, planting, snag/DWD prescriptions to enhance stand structure and function	*Develop prioritized forest action plan to enhance structure and function*		All	C	1	M		X	X			
	Allow forest communities to develop naturally	*No action*		All	C	P	L		-	-	-	-	-
	Manage forest fire fuel levels within reasonable limits	*Establish forest fuels baseline condition*		All	C	1	M		X				
		Implement prescriptions to reduce fuel loading and ladder structure		TBD	C	3	H					X	X

Stewardship Plan Work Flow Planning Chart

Goal 6: Functionally Intact Watershed Processes And Functions Related To Limiting Factors For Salmonid Habitat	Older-growth forest stand structure	Implement sustainable silviculture	*Adopt forest management plan*	HRU, HR, MR	C	1	H	1	
				KC, LC	C	1	H	1	
				DC, DR	C	1	H	1	
			Allow stands to continue to grow and develop	HRU, HR, MR, LC, KC, DC, DR	C	P	L	1	
			Implement thinning to enhance stand development	HRU, HR, MR, LC, KC, DC, DR	TBD	TBD	H	2	
			Interplant areas of low diversity	HRU, HR, MR, LC, KC, DC, DR	TBD	TBD	M	2	
	Hillslope stability comparable to reference conditions	Maintain or abandon forest roads	*Update and submit RMAP*	HR	C	1	M	1	
			Ensure compliance with RMAP	HRU, HR, MR, LC, KC, DC, DR	C	2	L	1	
			Evaluate roads for necessity, condition and cost of maintenance to determine abandonment or maintenance status	HRU, HR, MR, LC, KC, DC, DR	C	P	L	1	
			Repair, maintain or abandon roads and associated infrastructure	HRU, HR, MR, LC, KC, DC, DR	TBD	P	H	2	
		Develop mature forest stand structure	*Implement sustainable silviculture*	HRU, HR, MR, LC, KC, DC, DR	TBD	P	H	2	
		Limit unsustainable timber harvest and damaging harvest practices	*Harvest only as appropriate using low-impact practices*	HRU, HR, MR, LC, KC, DC, DR	C	P	H	2	
					C				
		Maintain natural drainage and infiltration patterns	*Reduce surface flow concentration from land alterations*	HRU, HR, MR, LC, KC, DC, DR	C	P	H	2	
	Surface runoff moderation	Maintain vegetation cover	*Plant areas of low diversity and/or cover as appropriate*	HRU, HR, MR, LC, KC, DC, DR	C	P	L	2	
		Maintain natural drainage and infiltration patterns	*Maintain road water conveyance infrastructure*	HRU, HR, MR, LC, KC, DC, DR	C	P	M	2	
	Sediment delivery comparable to reference conditions	Stabilize areas of erosion	*Restore vegetation and implement bioengineering techniques for stabilization*	HRU, HR, MR, LC, KC, DC, DR	C	P	H	1	
	Habitat is appropriate for use by wildlife, including rare, threatened and endangered species	Enhance wildlife habitat for R,T,E, and priority species	*Develop and implement prescriptions for species-specific habitat enhancement, as necessary*	HRU, HR, MR, LC, KC, DC, DR	C	TBD	H	3	
					C				
Goal 7: Self-Regenerating Aspen Woodland Exists in Its Historic Extent With Native Understory And Provides Habitat For Wildlife	Structure and function of aspen stands approximate reference conditions	Establish reference and desired future condition	*Define specific habitat parameters and DFC's*	YW	C	1	M	1	
			Map and classify plant communities	YW	C	P	M	1	
		Control invasive and non-native plants	*Patrol and control noxious weeds*	YW	C	P	L	1	
			Map weed infestations	YW	C	P	L	1	
		Maintain species dominance in overstory	*Remove encroaching conifers*	YW	C	1	M	1	
		Encourage cloning and regeneration	*Evaluate and reduce grazing pressure*	YW	C	1	L	1	
			Encourage regeneration by mimicking stand-replacing disturbance	YW	C	P	H	2	
			Monitor size and vigor of colony	YW	C	P	M	2	
			Minimize soil disturbance and compaction where aspen roots may be damaged	YW	C	P	L	1	

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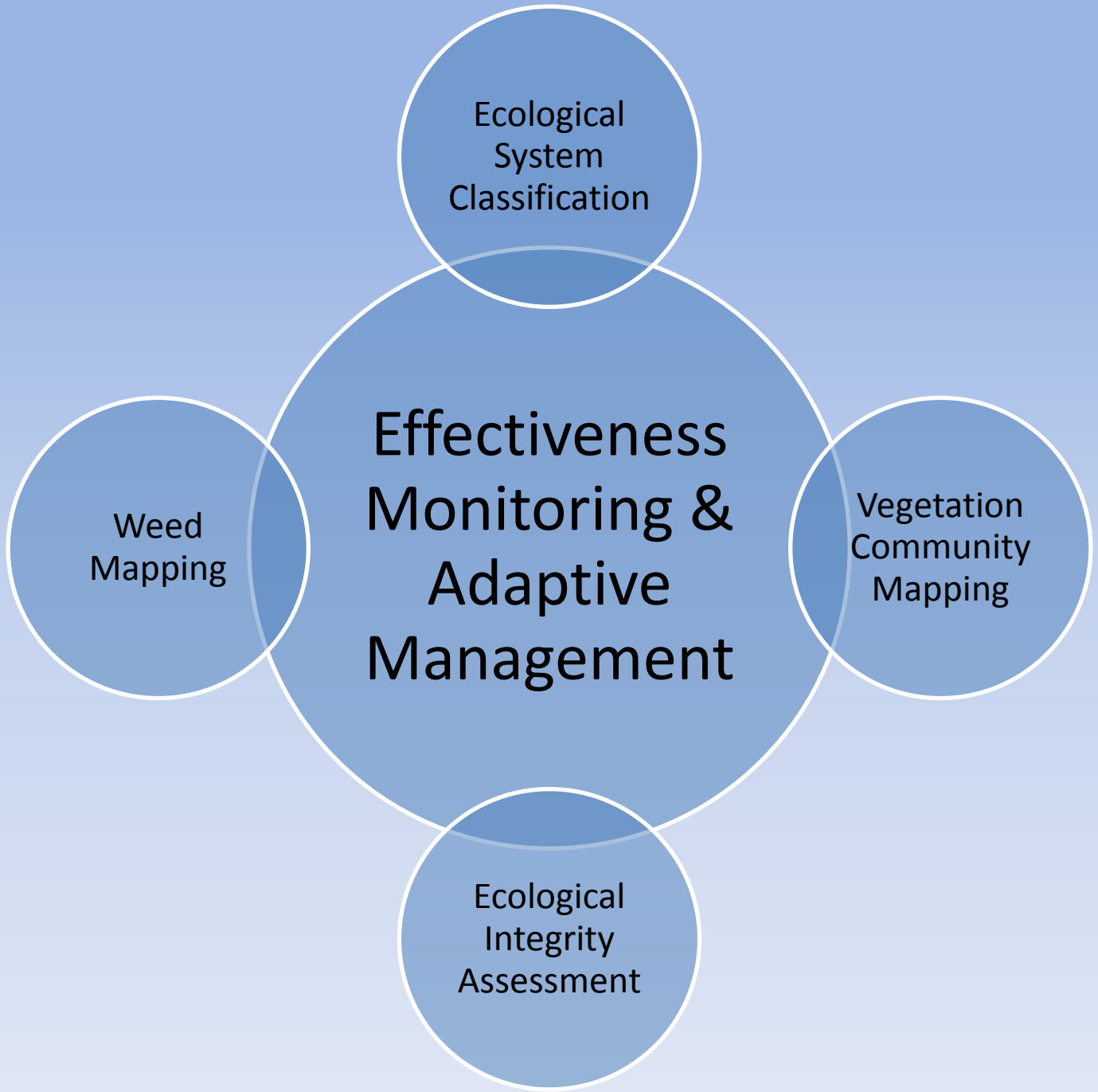
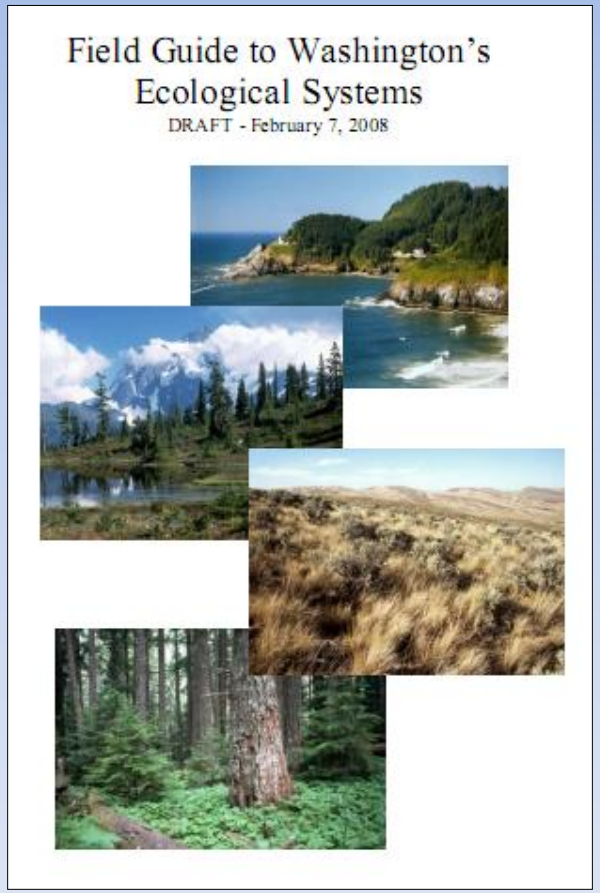

Ecological System Classification
Weed Mapping
Effectiveness Monitoring & Adaptive Management
Vegetation Community Mapping
Ecological Integrity Assessment

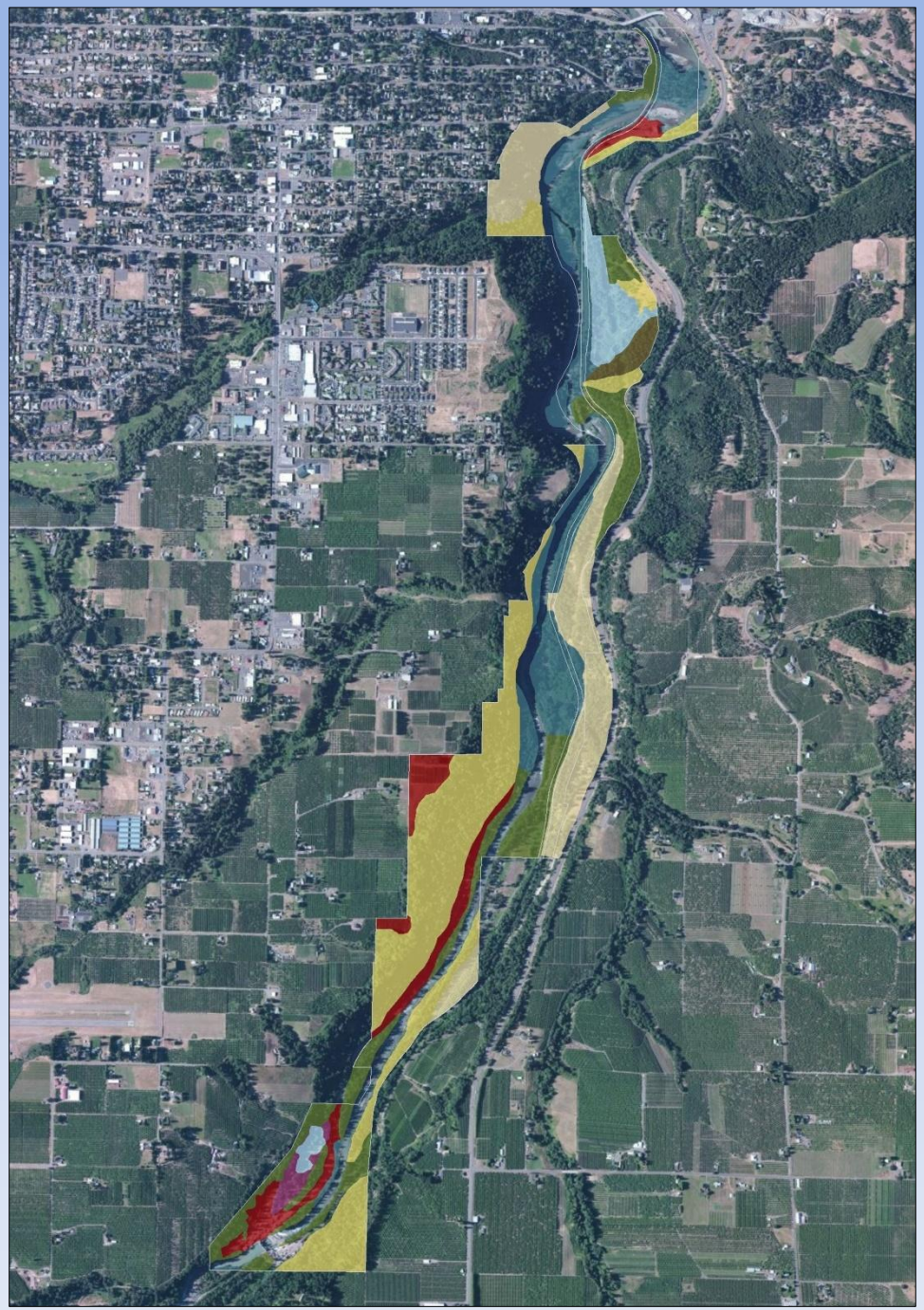
Ecological Systems

…a *group of plant communities that tend to co-occur within landscapes sharing similar ecological processes, substrates and/or environmental gradients*.[1]

- Mid-Scale Classification
- Terrestrial (upland & wetland)
- Temporal (10s-1,000s hectares) & Spatial (>50 years)
- Readily Mappable & Identifiable in Field
- “Natural” or “Near Natural” Conditions
- Hierarchical Framework w/USNVC
- NatureServe, Natural Heritage Program members, funding from TNC
- Classified for conterminous U.S., portions of Mexico & Canada



1 – http://www.natureserve.org/explorer/classeco.htm

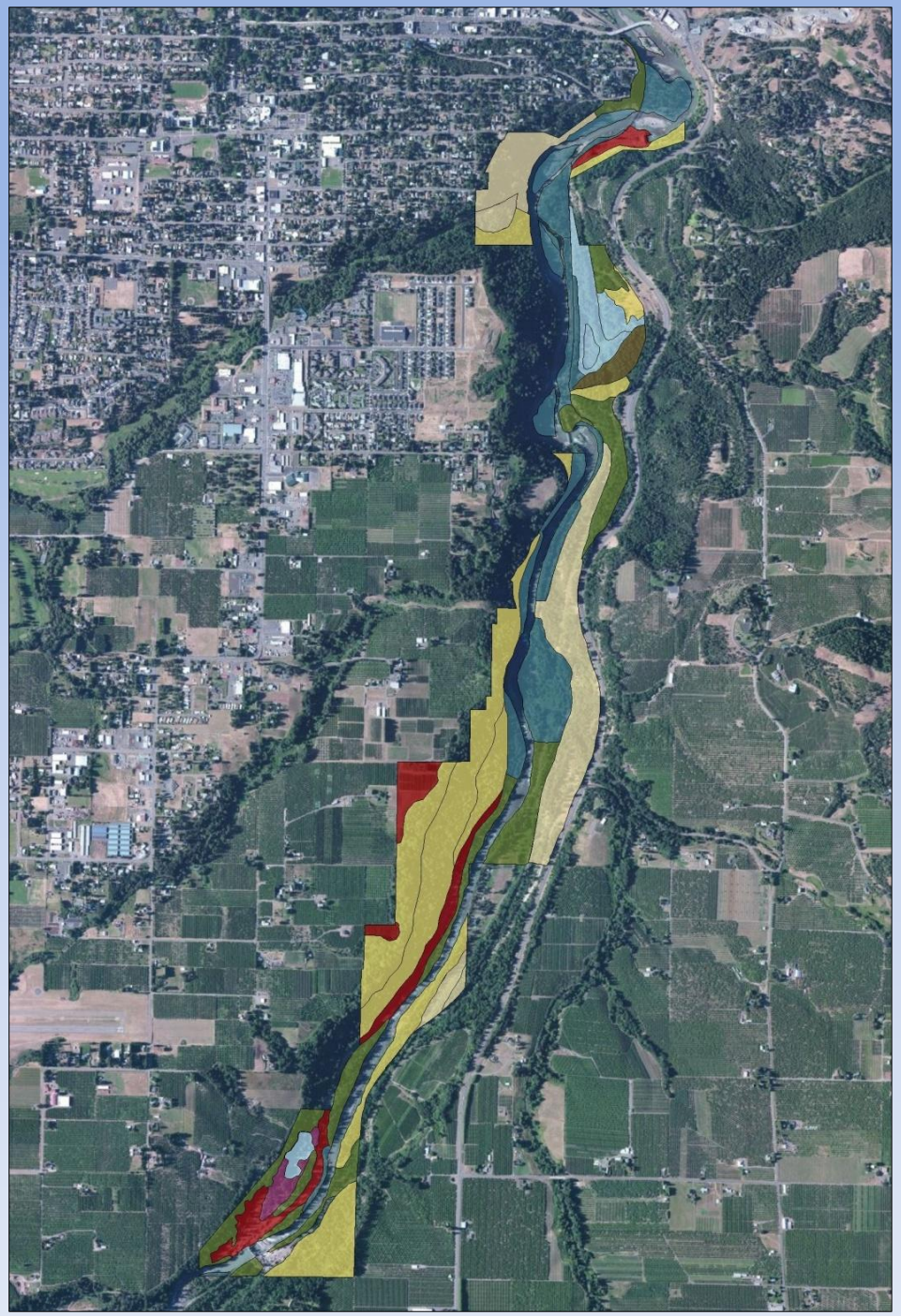


Ecological Systems Site-Level

- 7 Ecological System Types at Site
- Difficulties classifying due to anthropogenic influences
- Some portions unclassifiable to natural systems (ruderal)

Ecological System Types

- Agriculture, Pasture, and Mixed Environs; Urban and Mixed Environs
- Columbia Basin Foothill Riparian Wetland and Shrubland
- East Cascades Dry Mesic Montane Mixed Conifer Forest
- East Cascades Oak-Ponderosa Pine Forest and Woodland
- East Cascades Wet Mesic Montant Mixed Conifer Forest
- North Pacific Lowland Riparian Forest and Shrubland
- North Pacific Oak Woodland
- Temperate Pacific Freshwater Emergent Marsh



Vegetation Community Classification

- Finer Scale Classification
- *Rapid* assessment of vegetation including species composition and structure
- Modified protocol based on California Native Plant Society's Rapid Assessment Protocol
- Communities often contain multiple associations (limitations: timing, effort-level, disturbance confounding transitions)
- Hierarchical (in theory) - USNVC
- Ecological Integrity Assessments at this mapping unit level

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Ecological Integrity Assessment (EIA)

- Framework – Ecological Systems Classification
- Based on Heritage Methodology, but incorporates elements of other assessment tools.
- Evaluates biotic and abiotic integrity of a specific ecosystem type along a range of degradation
- Provide baseline as well as long-term progress monitoring of stewardship effectiveness.
- WA Natural Heritage – Developed EIA for most Ecological System Types

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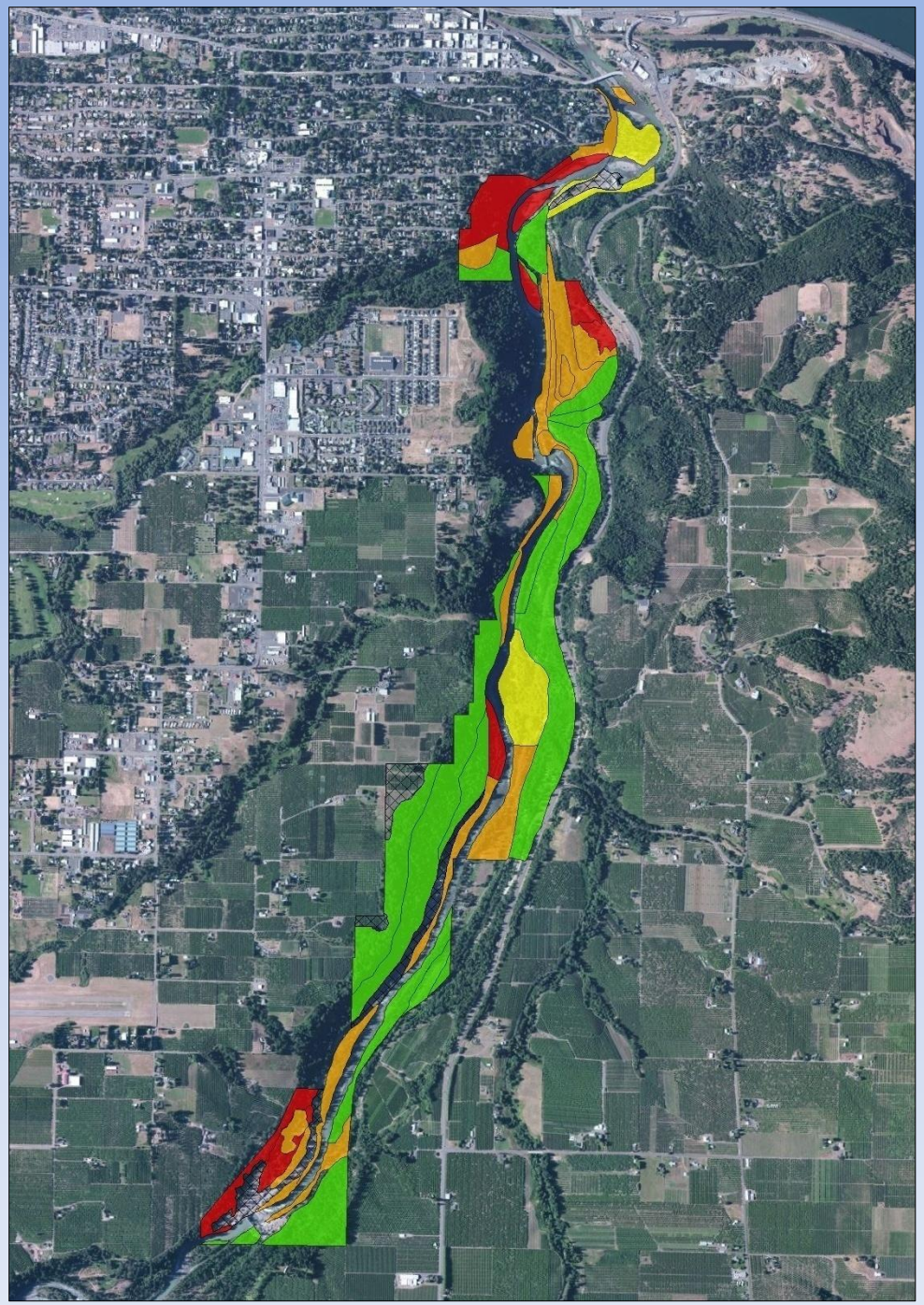
EIA Features

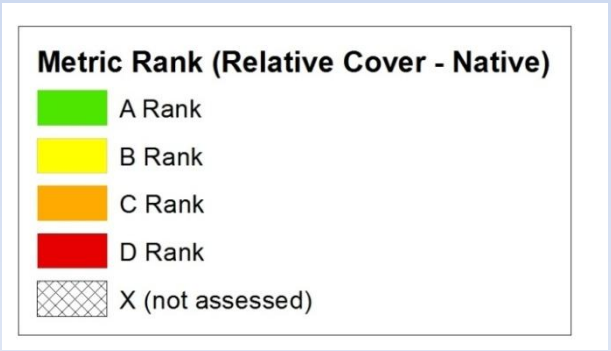
- Scalable:
  - Effort Level/depth (remote to intensive)
  - Spatially (landscape scale to site scale)
- Identifies *Key Ecological Attributes* representing structure and function of system
- Identifies biotic and abiotic *metrics* to measure integrity
- Scorecard matrix - integrates ratings into overall assessment

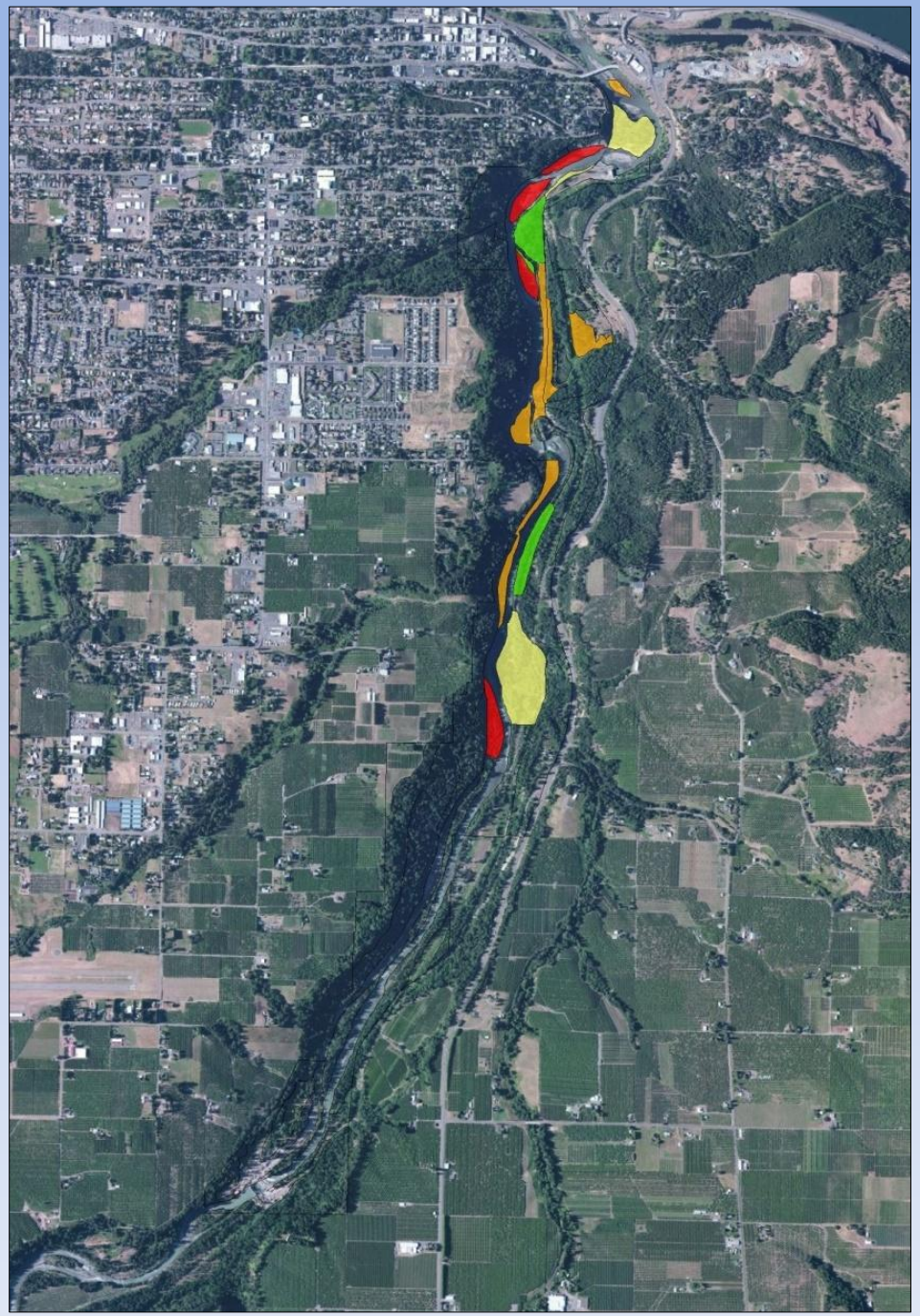


EIA – Metric Level

Relative Cover Native Vegetation/ Native Understory Vegetation

- Finest scale for tool
- Ranks on specific metric
- 182 Acres total:
  - A Rank: 182 ac. (9)
  - B Rank: 28 ac. (3)
  - C Rank: 78 ac. (15)
  - D Rank: 45 ac. (7)
  - X: 31 ac. (5) – outside NRV





EIA – Metric Level

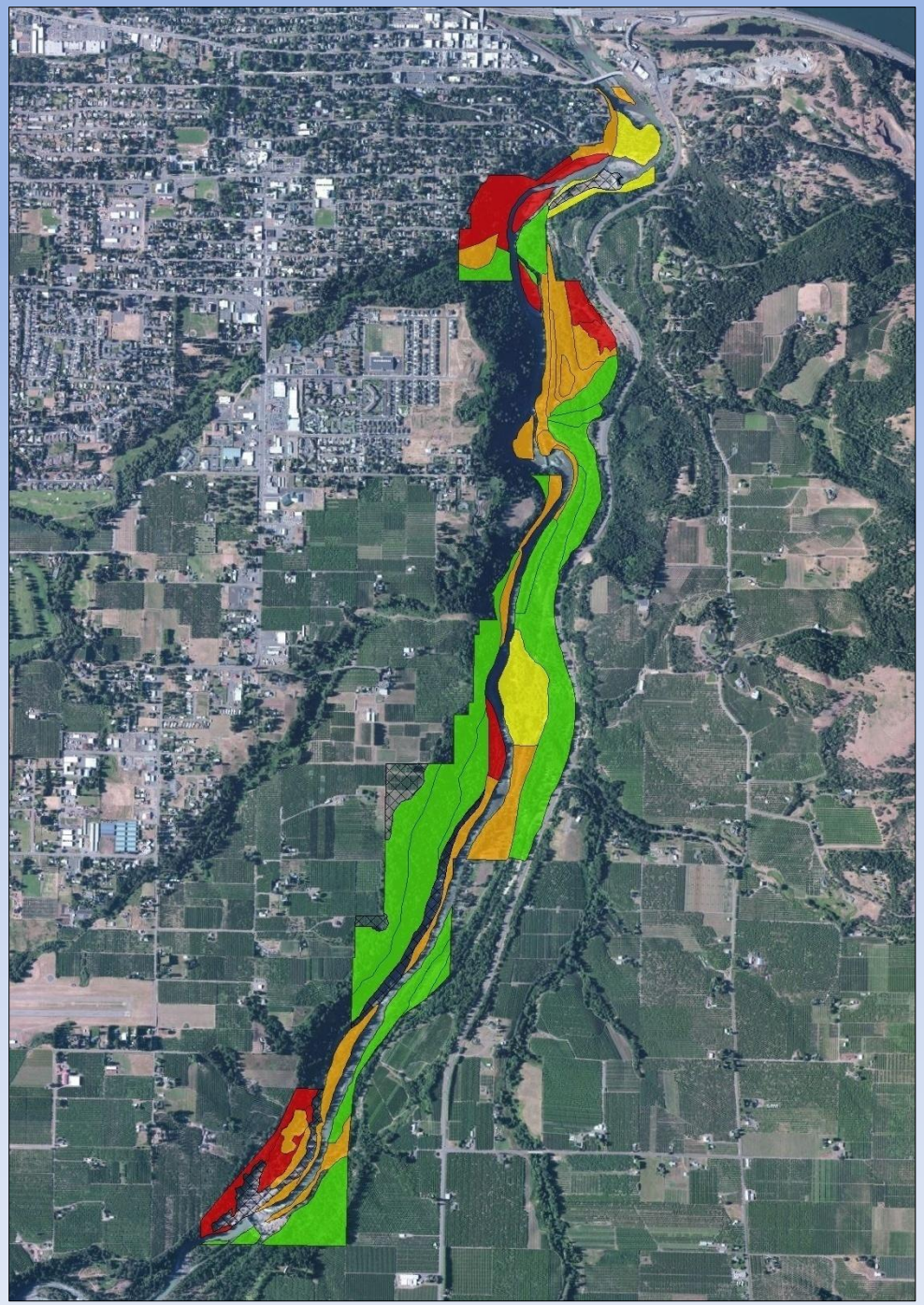
Columbia Basin Foothill Riparian Woodland & Shrubland System

Relative Cover Native Vegetation

- Results: ~68 acres
  - A Rank: 11 ac. (2)
  - B Rank: 24 ac. (2)
  - C Rank: 20 ac. (5)
  - D Rank: 6 ac. (2)

Ecological System w/Relative Percent Native Cover Metric

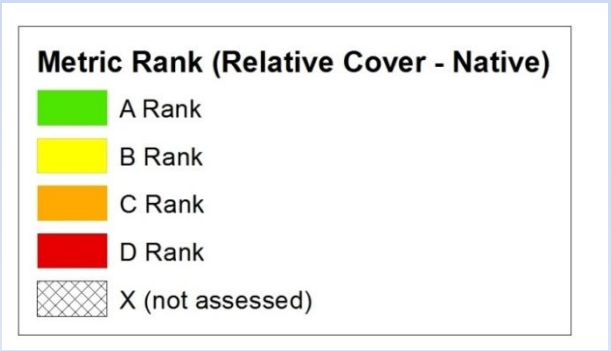
- CB Foothill Riparian Wetland & Shrubland - A
- CB Foothill Riparian Wetland & Shrubland - B
- CB Foothill Riparian Wetland & Shrubland - C
- CB Foothill Riparian Wetland & Shrubland - D

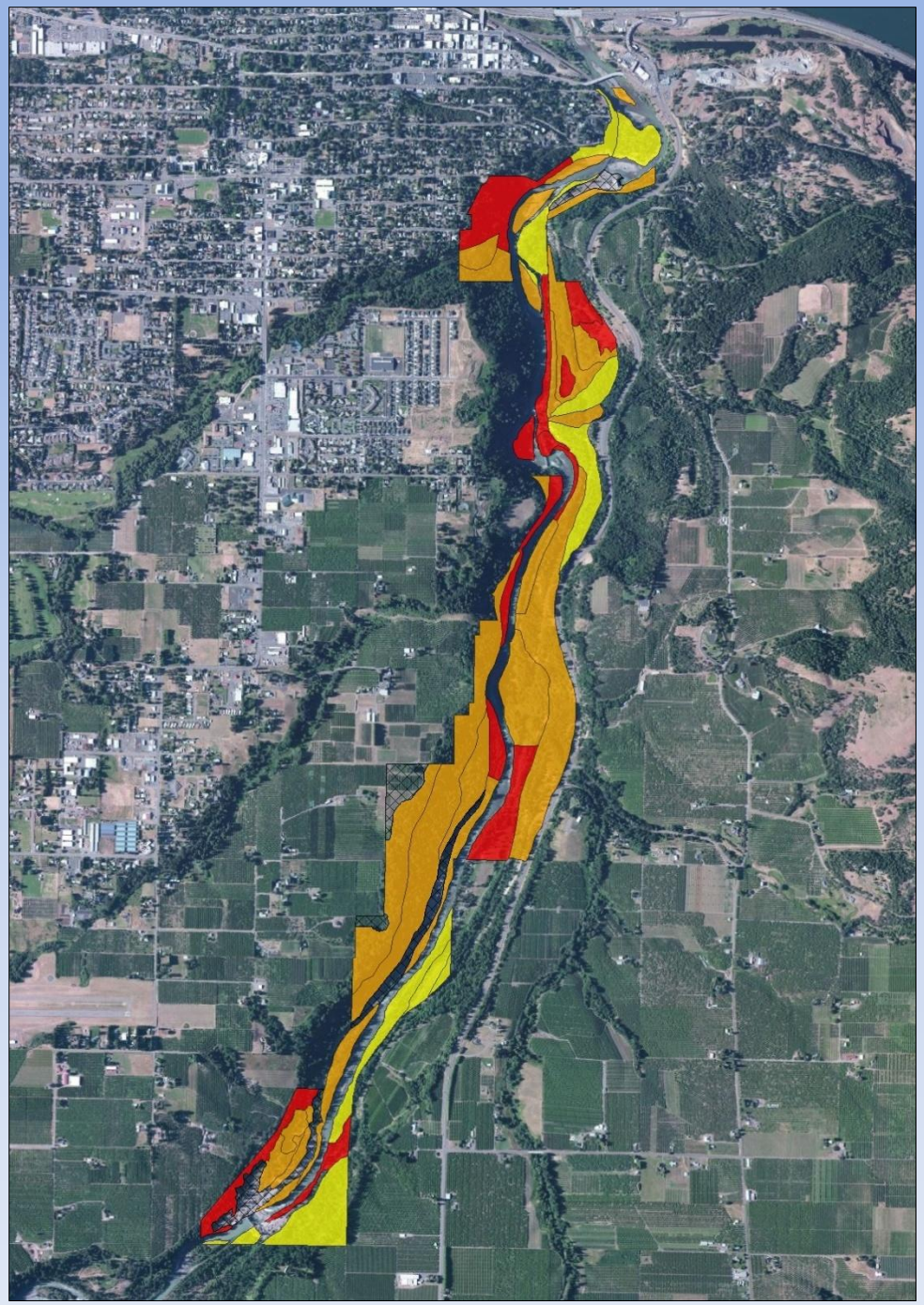


EIA –Metric Level

(Relative Cover Native Vegetation/ Native Understory Vegetation)

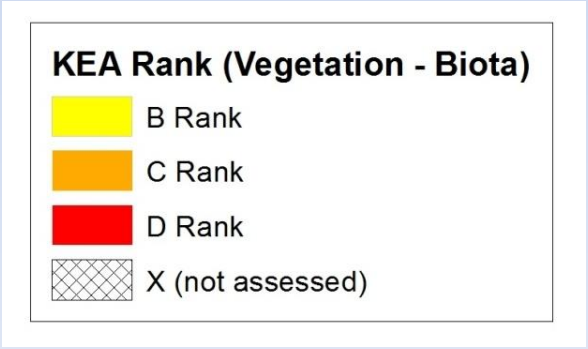
- Finest scale for tool
- Ranks on specific metric
- 182 Acres total:
  - A Rank: 182 ac. (9)
  - B Rank: 28 ac. (3)
  - C Rank: 78 ac. (15)
  - D Rank: 45 ac. (7)
  - X: 31 ac. (5) – outside NRV

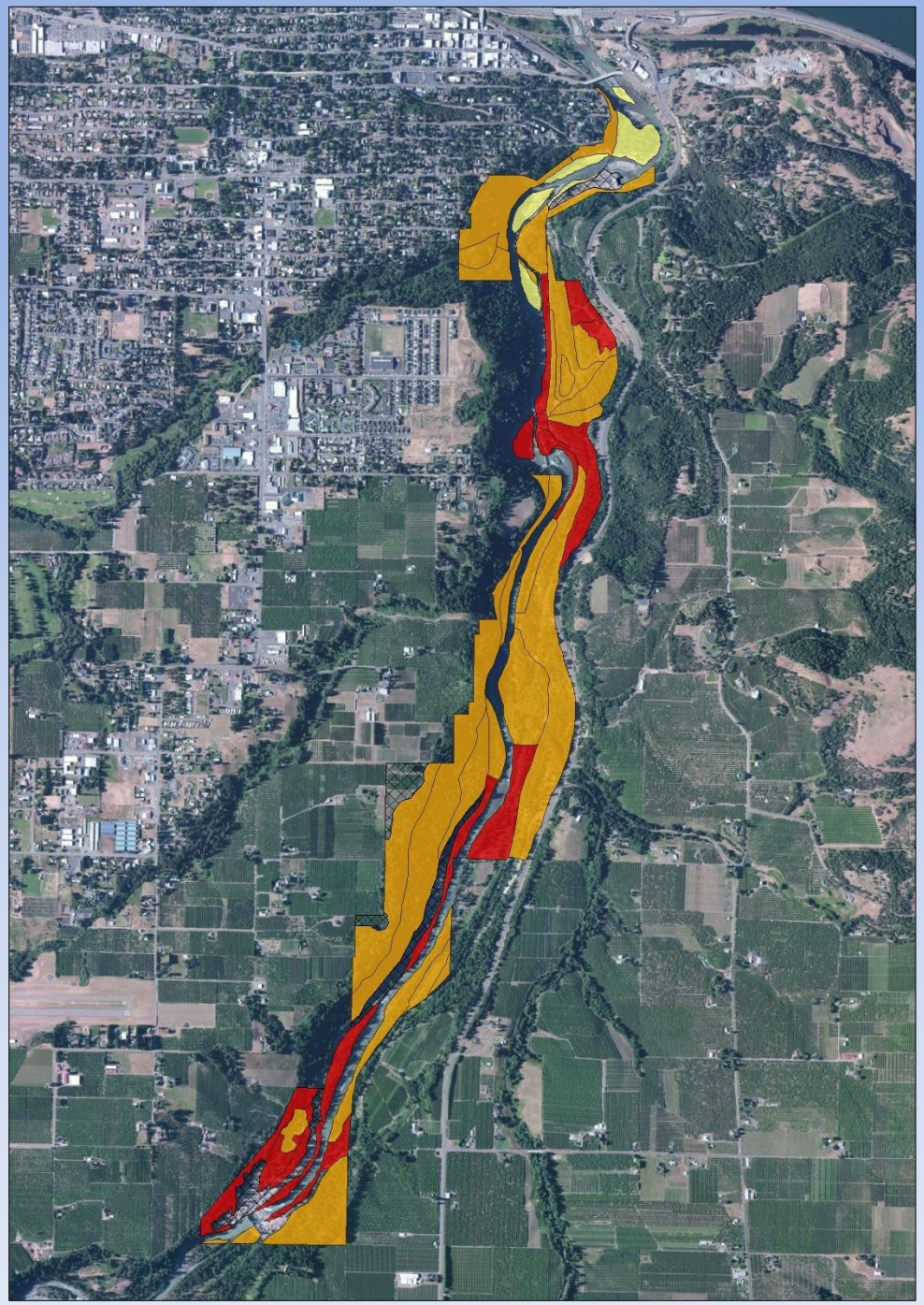




EIA Key Ecological Attribute (Vegetation Condition)

- Needs modification
- Results:
  - A Rank: None
  - B Rank: 63 ac. (6)
  - C Rank: 199 ac. (17)
  - D Rank: 67 ac. (11)
  - Remainder - out of NRV





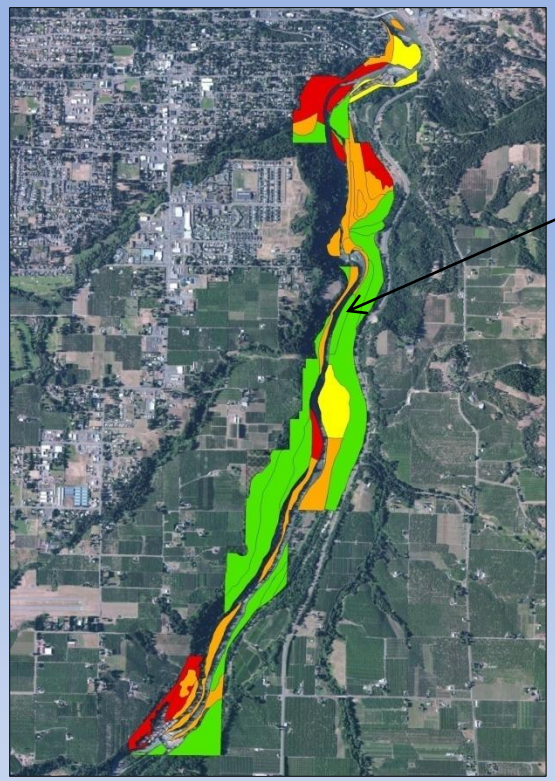
EIA - Rollup

- Inaccurate “roll-up” for scale currently
  - Missing metrics
  - Some metrics unsuitable
- Results:
  - A Rank: None
  - B Rank: 16 ac. (3)
  - C Rank: 71 ac. (20)
  - D Rank: 74 ac. (11)
  - Remainder - out of NRV

Overall Ecological Integrity Rank

- B Rank
- C Rank
- D Rank
- X (not assessed)

Sample EIA Scorecard



POLYGON ID	PODA_23B							
ECOSYSTEM TYPE	Columbia Basin Foothill Riparian Woodland and Shrubland							
KEY ECOLOGICAL ATTRIBUTES (KEA)	Assigned Metric Rating	Assigned Metric Points	Weight (W)*	Metric Score (M)	KEA Score (M/W)	KEA Rank	Ecological Integrity Score	Ecological Integrity Rank (EO Rank)
Metric								
LANDSCAPE CONTEXT					2	D		
Buffer Length	C	3	0.20	0.60				
Buffer Width	D	1	0.20	0.20				
Buffer Condition	C	3	0.20	0.60				
Landscape Condition Model Index	Office	FALSE	0.20	0.00				
Watershed Connectivity	C	3	0.20	0.60				
5			Σ=1	Σ=2				
SIZE					1	D		
Relative Size	D	1	0.50	0.5				
Absolute Size	D	1	0.50	0.5				
2			Σ=1	Σ=1				
VEGETATION (BIOTA)					3.375	C		
Relative Cover Native Plant Species	A	5	0.13	0.625				
Absolute Cover of Invasive Species	B	4	0.13	0.5				
Relative Cover Native Increasers	n/a	FALSE	0.13	0				
Species Composition	B	4	0.13	0.5				
Canopy Structure	C	3	0.13	0.375				
Regeneration Woody Species	B	4	0.13	0.5				
Organic Matter Accumulation	B	4	0.13	0.5				
Patch Diversity & Connectivity	C	3	0.13	0.375				
8			Σ=1	Σ=3				
HYDROLOGY					3.75	B		
Water Source	B	4	0.25	1				
Channel Stability	C	3	0.25	0.75				
Streambank Stability	A	5	0.25	1.25				
Hydrologic Connectivity (Riverine)	C	3	0.25	0.75				
4			Σ=1	Σ=3.8				
SOILS (PHYSICOCHEMISTRY)					4	B		
Soil Surface Condition	B	4	0.50	2				
Water Quality	C	3	0.50	1.5				
2			Σ=1	Σ=2				
					Σ=14			
RATING A=4.5-5.0, B = 3.5-4.4, C=2.5-3.4, D=1.0-2.4 4 B							2.825	C

- Aggregate Rankings
  - **Metric**
  - Rank Factor
  - Overall Ecological Rank
- Simple weight based – Will change as Heritage/NatureServe develop weights for each ecosystem type
- Flexible/adaptable
- Triggers Defined

Triggers & Level 3 EIA

Table 2. Triggers for Level 2 & 3 EIA

Key Ecological Attribute or Metric	Trigger	Action
Any metric (except Connectivity)	▪ C rank ▪ Shift from A to B rank ▪ negative trend within the B rating (Level 3)	Level 2 triggers: conduct Level 3 assessment; make appropriate short-term management changes to ensure no further degradation Level 3 triggers: make appropriate management adjustments to ensure no additional degradation occurs. Continue monitoring using Level 3.
Any Key Ecological Attribute	▪ any metric has a C rank ▪ >½ of all metrics are ranked B ▪ negative trend within the B rating (Level 3)	Level 2 triggers: conduct Level 3 assessment; make appropriate short-term management changes to ensure no further degradation Level 3 triggers: make appropriate management adjustments to ensure no additional degradation occurs. Continue monitoring using Level 3.

Example: Columbia Basin Foothill Riparian Woodland and Shrubland

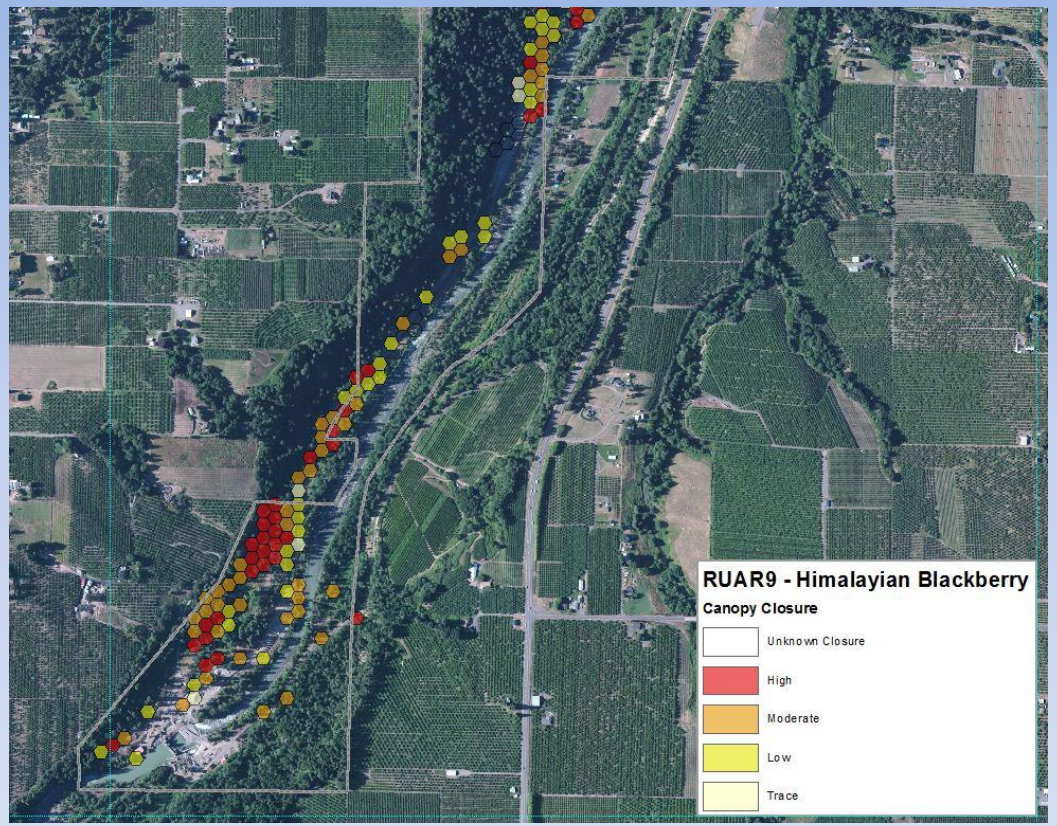
Level 3 EIA

Level 3 metrics would include more quantitative measures of the metrics listed above. In addition, the following metrics should be considered in a Level 3 EIA:

- Benthic invertebrate Index of Biotic Integrity (BIBI; WADOE 2003); Statewide data are maintained by WADOE: http://www.ecy.wa.gov/apps/watersheds/streambio/regions/state.asp?symtype=1
- Index of Hydrological Alteration (Richter et al. 1997)
- Specific water quality measures (e.g., the temperature, dissolved oxygen, pH, conductivity, turbidity of stream water
- Pool Quality Index (May (2002); may need modification for Eastside riparian systems)
- Riffle Quality Index (May (2002); may need modification for Eastside riparian systems)

Invasive Species Mapping

- Early Detection Rapid Response (EDRR) Methodology
- 30 meter hexagon grid
- Coarse Cover Classes
- Track Treatment Efforts
- Meso-scale monitoring tool



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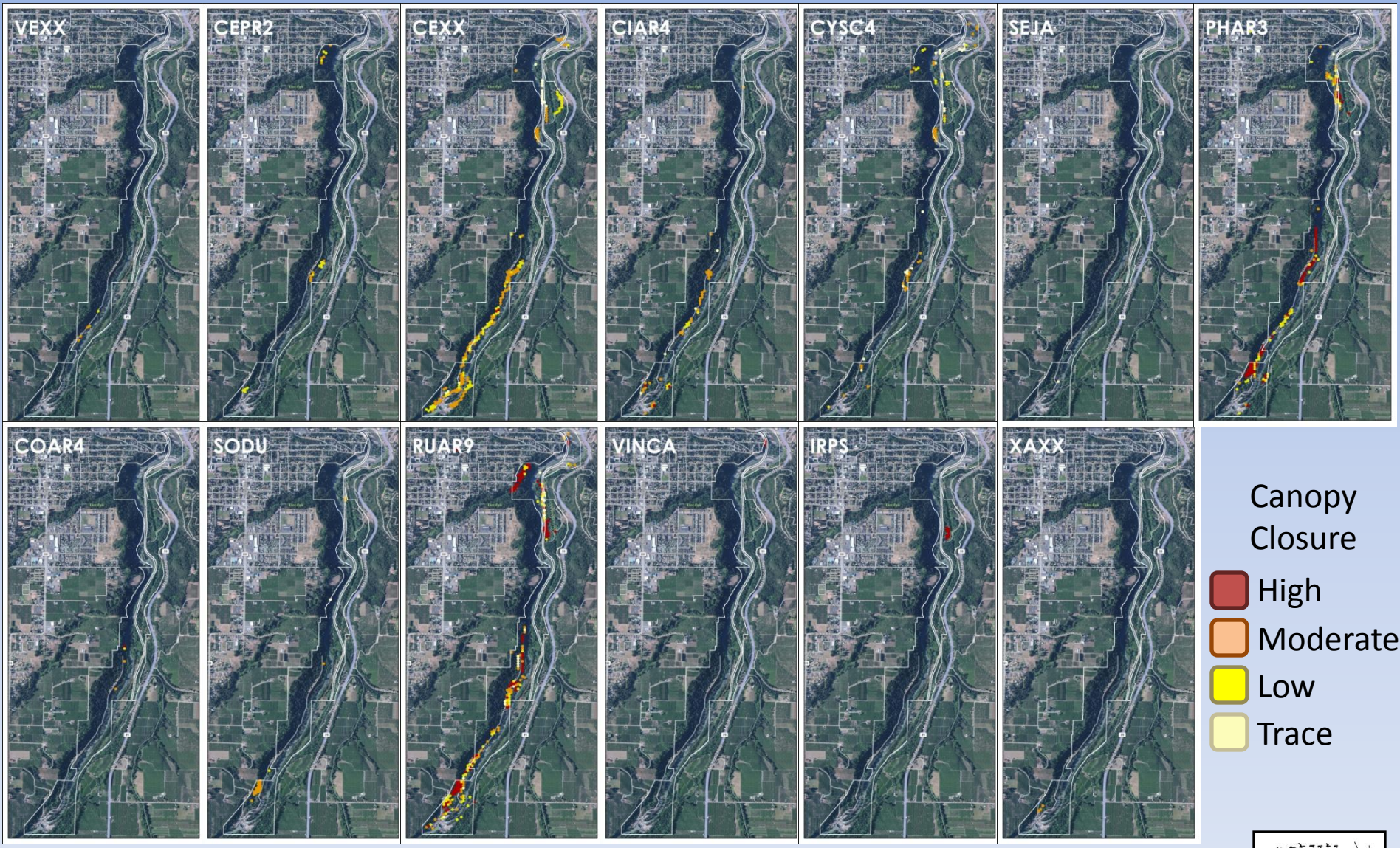
VEXX
CEPR2
CEXX
CIAR4
CYSC4
SEJA
PHAR3
COAR4
SODU
RUAR9
VINCA
IRPS
XAXX
Canopy Closure
High
Moderate
Low
Trace