Using the Recovery Potential Screening Tool to Support Planning and Prioritization

National Training Workshop on Water Quality Assessment and Plans

June 5, 2024

RPS Tool Intro

What is Recovery Potential Screening (RPS)?

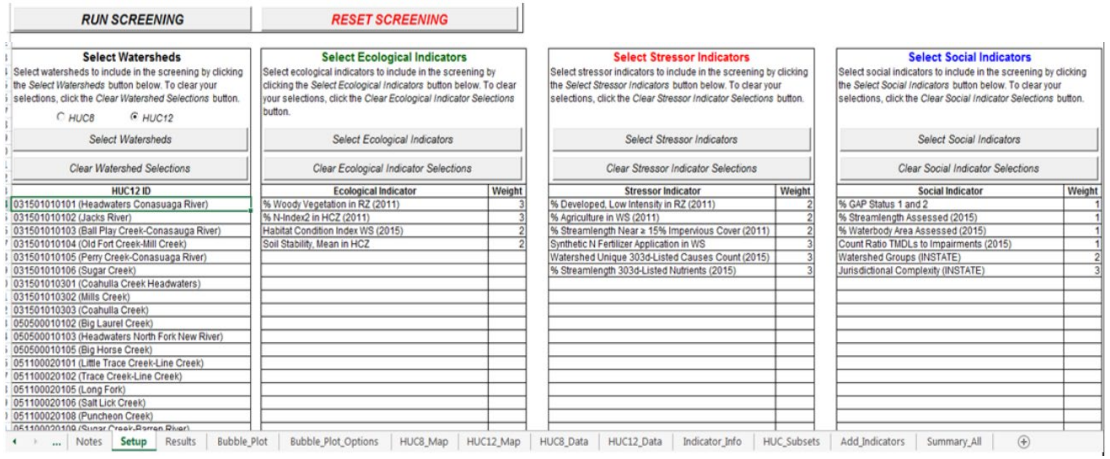
- Framework for comparing a group of watersheds based on environmental, stressor, and social factors relevant for priority-setting

- Developed by EPA in 2006 to provide a systematic method, data, and tool for comparing watersheds to inform management decisions and priorities

- Variety of applications, for example RPS has been used to inform planning of:
  - Total Maximum Daily Load (TMDL) development
  - State Nonpoint Source Program Plans & 319 grants
  - Healthy watersheds protection
  - Wetland and riparian buffer mitigation grants
  - Water quality monitoring strategies
  - Deepwater Horizon restoration funding

What is the RPS Tool?

- Excel file with custom macros and menus for running a screening
- Produced for all US states and territories
- Pre-loaded watershed data, HUC12 indicators calculated from national datasets
- Updated every 1-2 years to incorporate new indicator data and tool functions
- Projects in 40+ states and territories

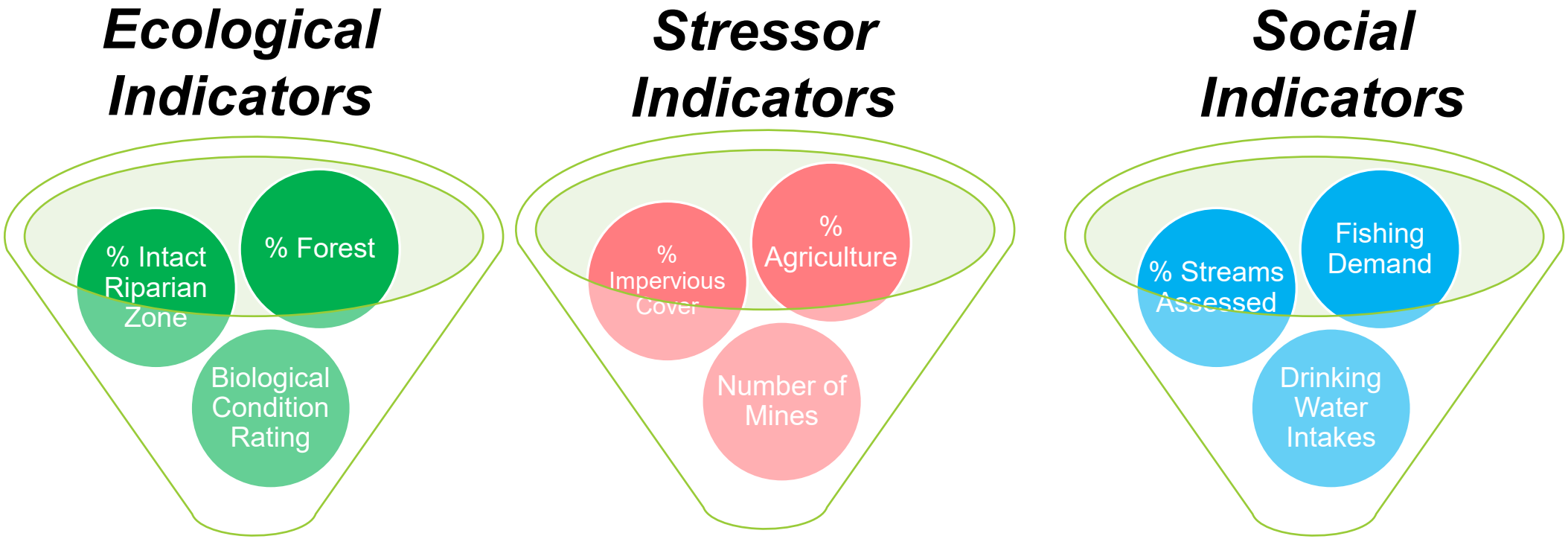


https://www.epa.gov/rps/downloadable-rps-tools-comparing-watersheds#Statewide

https://nas.er.usgs.gov/hucs.aspx

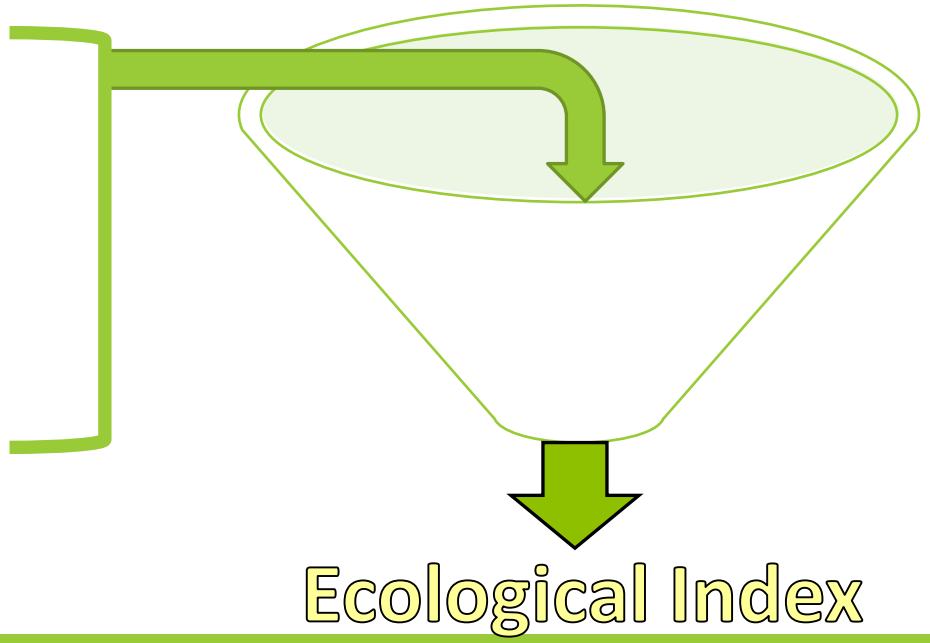
Watershed Indicators

- RPS is an indicator-based method for watershed comparison and priority-setting
- Indicators are measures of watershed attributes that are relevant to water quality restoration and protection



Ecological Indicators

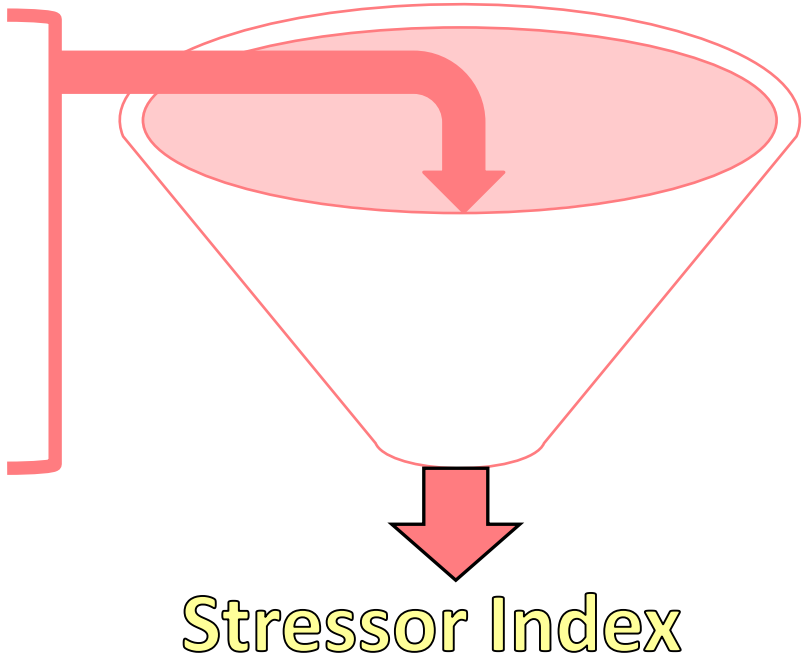
- Describe the condition of aquatic ecosystems and related landscape characteristics
- Offer insight into the relative health of watersheds and the presence of environmental features that can support successful restoration and protection
  - Natural Land Cover
  - Intact Riparian Zone
  - Aquatic Life and Habitat
  - Hydrologic and Geomorphic Regime



Stressor Indicators

- Describe risks to watershed and aquatic ecosystem health that are the focus of planning or on-the-ground activities to restore and protect water quality

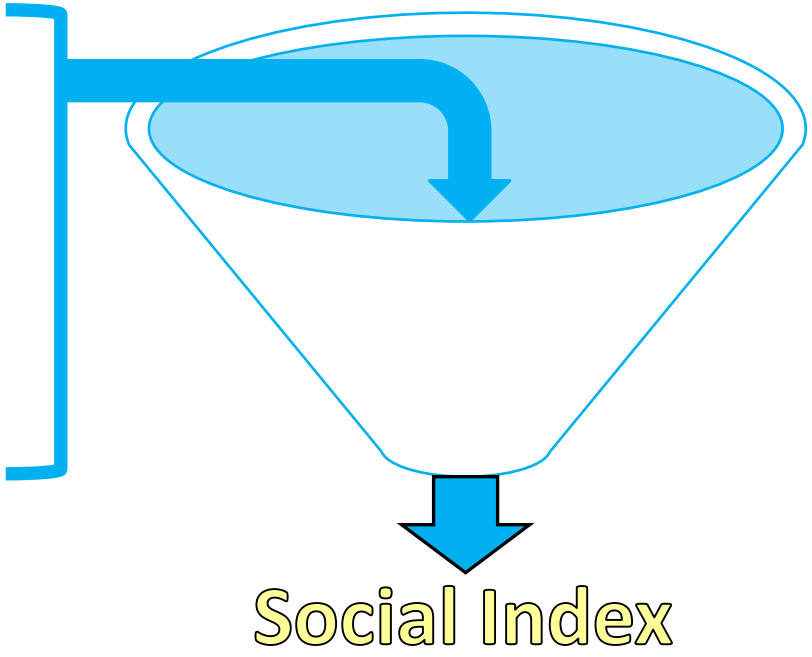
  - Human Use Land Cover
  - Pollutant Loads
  - Impaired Waters
  - NPDES Permitted Dischargers
  - Projected Climate and Hydrologic Change



Social Indicators

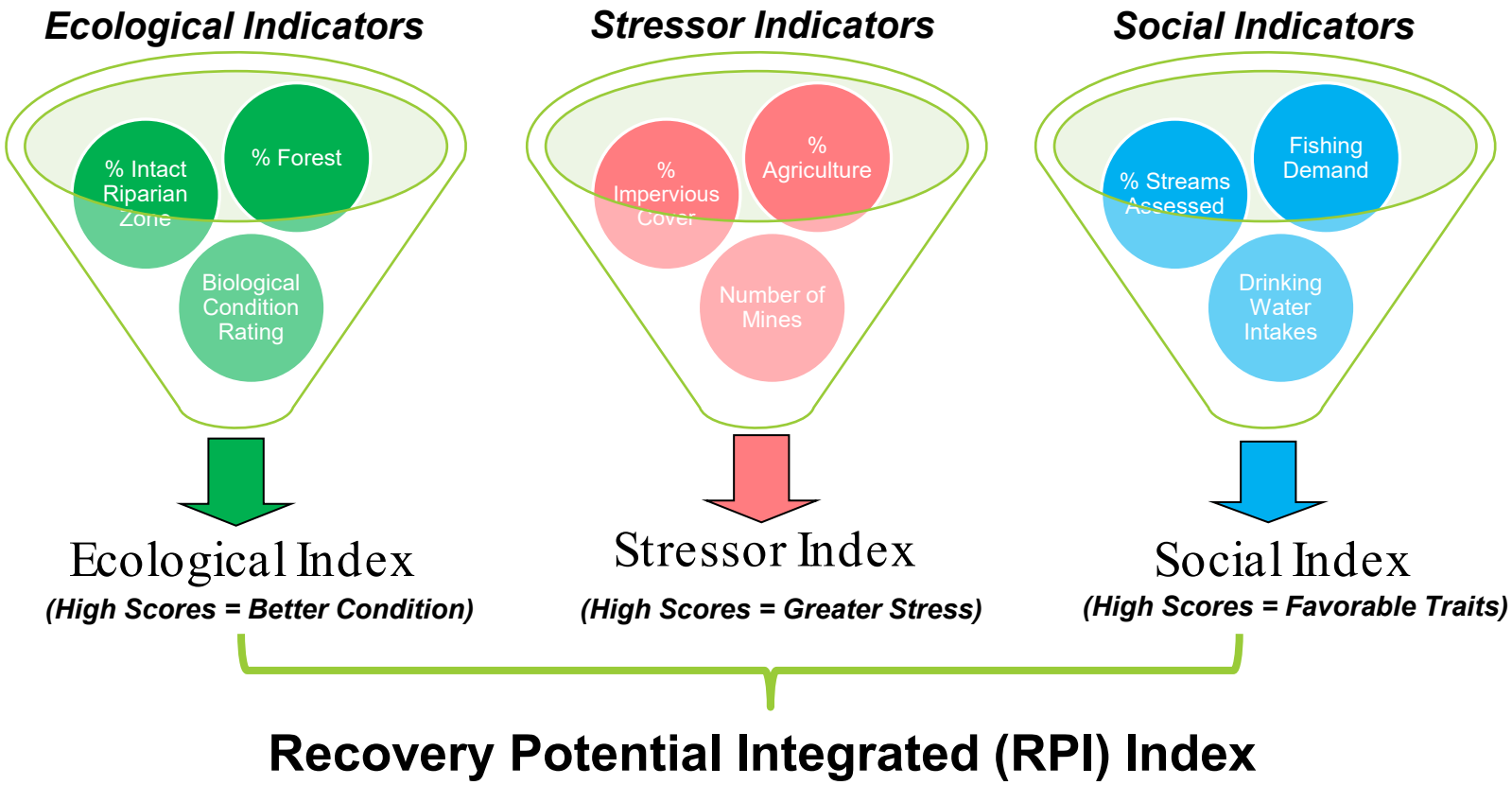
- Societal or programmatic factors that influence watershed management approaches, planning, and priority-setting

  - Community Context
  - Drinking Water Protection
  - Protected Lands & Waters
  - Participation in Conservation Programs
  - Water Quality Assessments and TMDL



RPS Index Scores

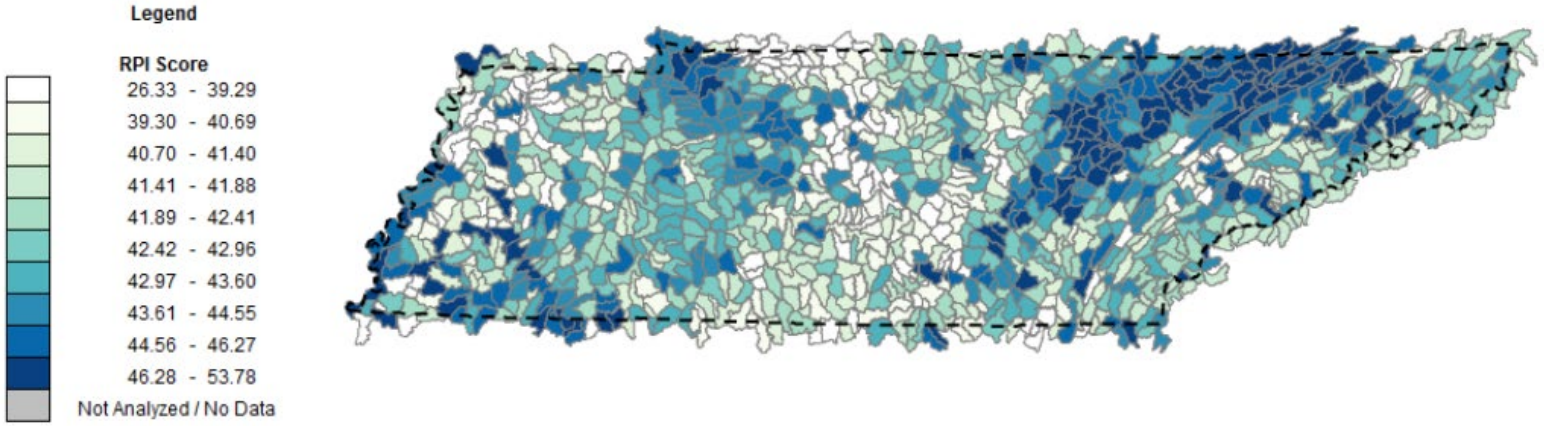
- Indicators are combined into **Index Scores** – offer overall picture of ecological, stressor, and social characteristics



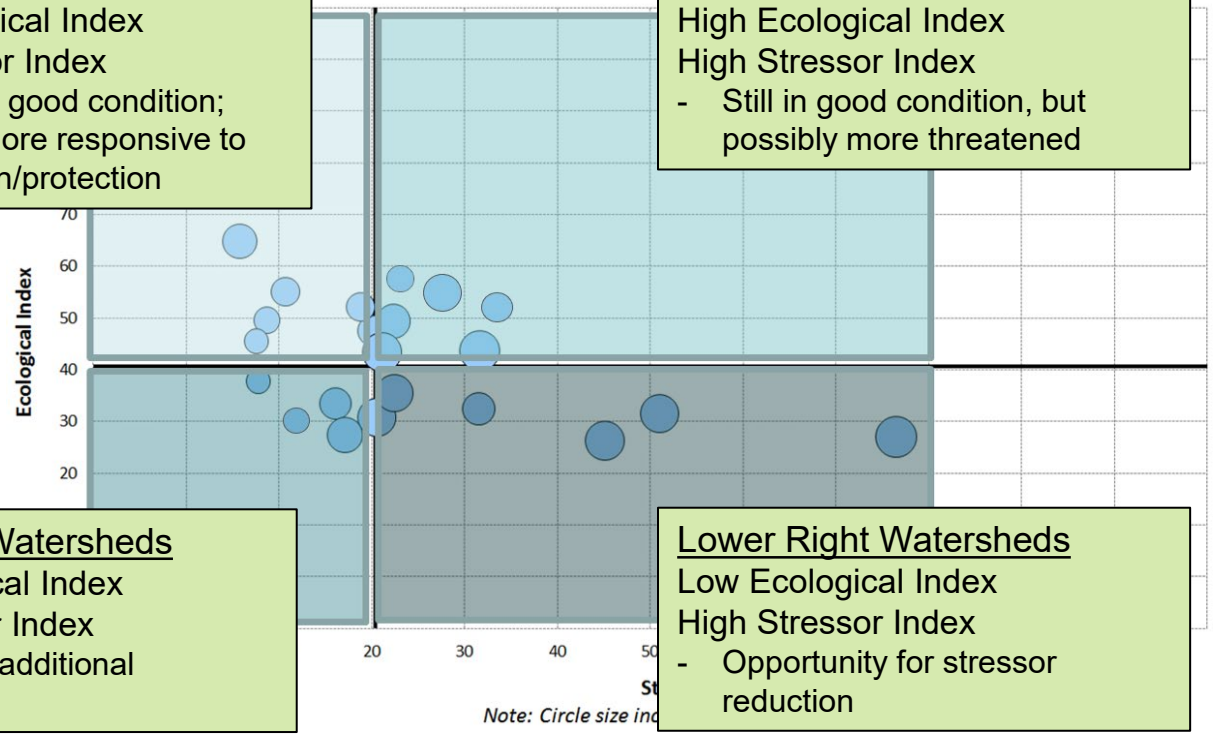
RPS Results

Watershed ID	Watershed Name	Ecological Index	Ecological Rank	Stressor Index	Stressor Rank	Social Index	Social Rank	RPI Score	RPI Rank
031501010101	eadwaters Conasuaga River	53.98	78	2.10	93	19.38	743	57.09	177
031501010102	Jacks River	53.17	84	0.01	7	43.97	58	65.71	7
031501010103	Ball Play Creek-Conasauga River	50.06	160	3.13	156	39.44	125	62.13	42
031501010104	Old Fort Creek-Mill Creek	41.22	582	21.81	917	38.87	131	52.76	451
031501010105	Perry Creek-Conasuaga River	43.14	481	11.60	599	31.48	287	54.34	333
031501010106	Sugar Creek	45.38	362	13.53	671	21.59	652	51.15	598
031501010301	Coahulla Creek Headwaters	42.16	537	14.59	717	26.53	471	51.37	573
031501010302	Mills Creek	37.20	812	13.53	671	21.37	662	48.35	809
031501010303	Coahulla Creek	44.65	408	9.14	475	15.52	897	50.34	672
050500010102	Big Laurel Creek	51.47	118	4.44	235	7.50	1103	51.51	560
050500010103	Headwaters North Fork New River	46.73	292	4.08	212	14.83	928	52.49	471
050500010105	Big Horse Creek	49.44	173	6.26	311	7.73	1099	50.30	675
051100020101	Little Trace Creek-Line Creek	35.39	910	14.89	730	22.32	629	47.61	842
051100020102	Trace Creek-Line Creek	35.82	885	14.94	732	22.94	602	47.94	826
051100020105	Long Fork	39.16	705	25.14	979	15.63	891	43.22	1005
051100020106	Salt Lick Creek	40.38	631	15.10	737	19.82	729	48.37	806
051100020108	Puncheon Creek	36.82	833	15.30	747	18.29	789	46.60	901
051100020109	Sugar Creek-Barren River	41.01	597	15.37	750	2.98	1139	42.87	1020
051100020201	Upper Long Creek	36.27	863	16.23	787	16.23	875	45.42	942
051100020203	Pinchgut Creek-Barren River	40.81	606	13.25	656	22.58	620	50.05	699
051100020501	Headwaters Tra[illegible]	37.29	804	19.23	863	28.57	394	48.88	767

... | Setup | **Results** | Bubble_Plot | Bubble_Plot_Options | HUC12_Map | HUC8_Data | HUC12_Data



RPS Results

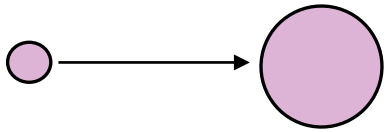


Upper Left Watersheds
High Ecological Index
Low Stressor Index
- Relatively good condition; may be more responsive to restoration/protection

Upper Right Watersheds
High Ecological Index
High Stressor Index
- Still in good condition, but possibly more threatened

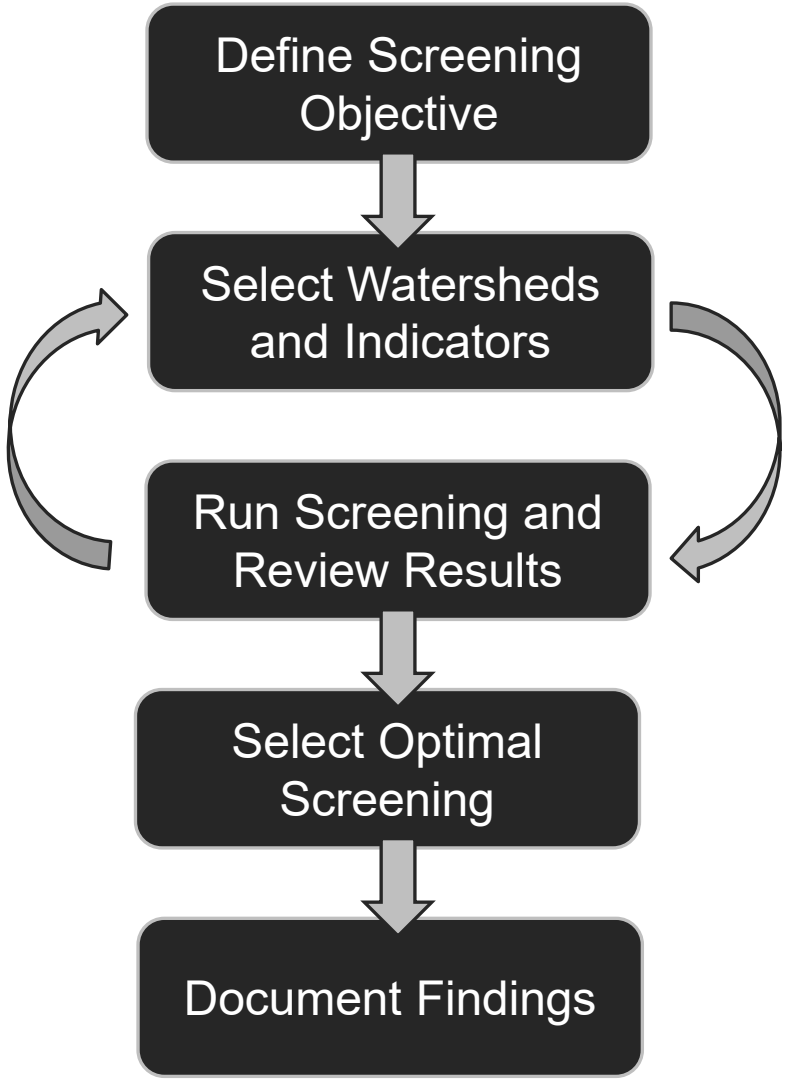
Lower Left Watersheds
Low Ecological Index
Low Stressor Index
- May need additional evaluation

Lower Right Watersheds
Low Ecological Index
High Stressor Index
- Opportunity for stressor reduction



Bubble size
Larger bubbles = more favorable social traits based on screening objective

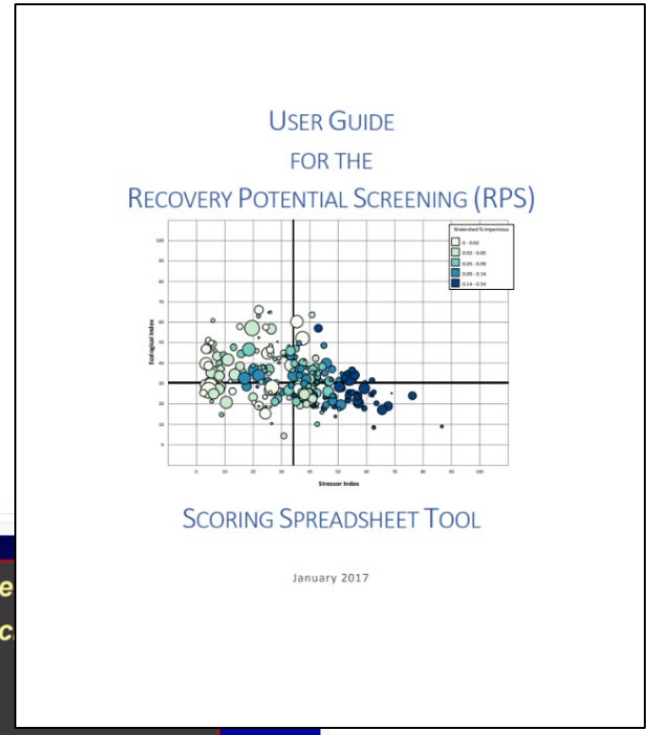
RPS Screening Process

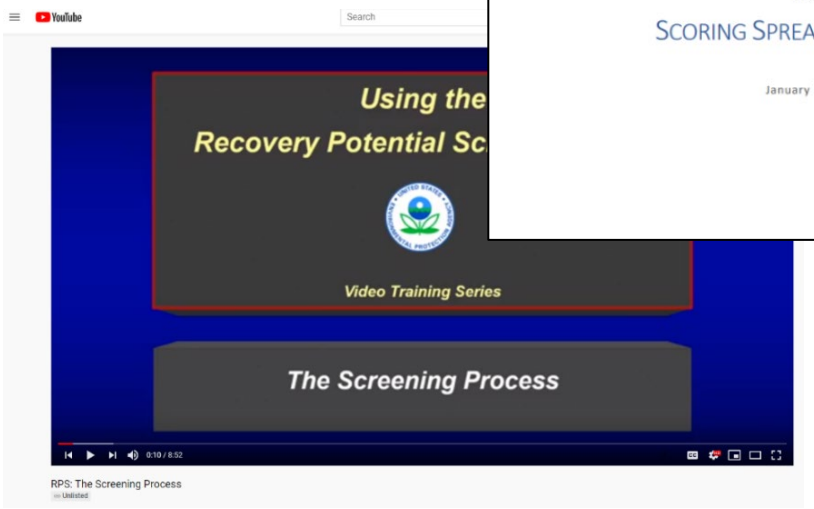


RPS Resources and Support

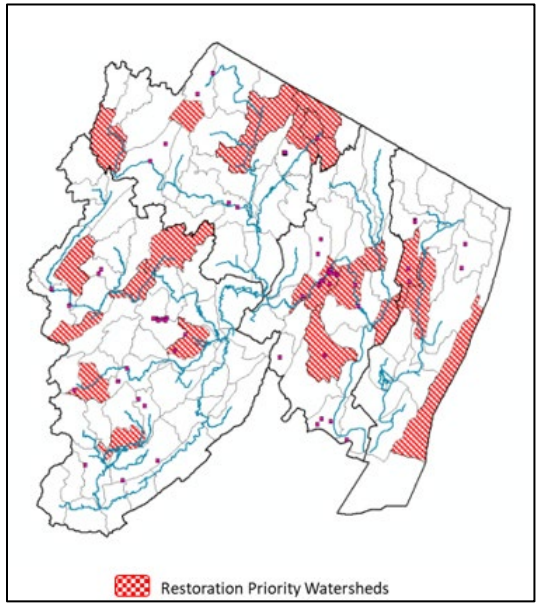
- User Guide with step-by-step instructions
- Video Training Series - short instructional videos that each focus on critical elements of the RPS Tool
- Reports from past projects
- Indicator Reference Sheets
- RPS Scenario Fact Sheets
- Web Service Guide
- ...and technical support!

https://www.epa.gov/rps

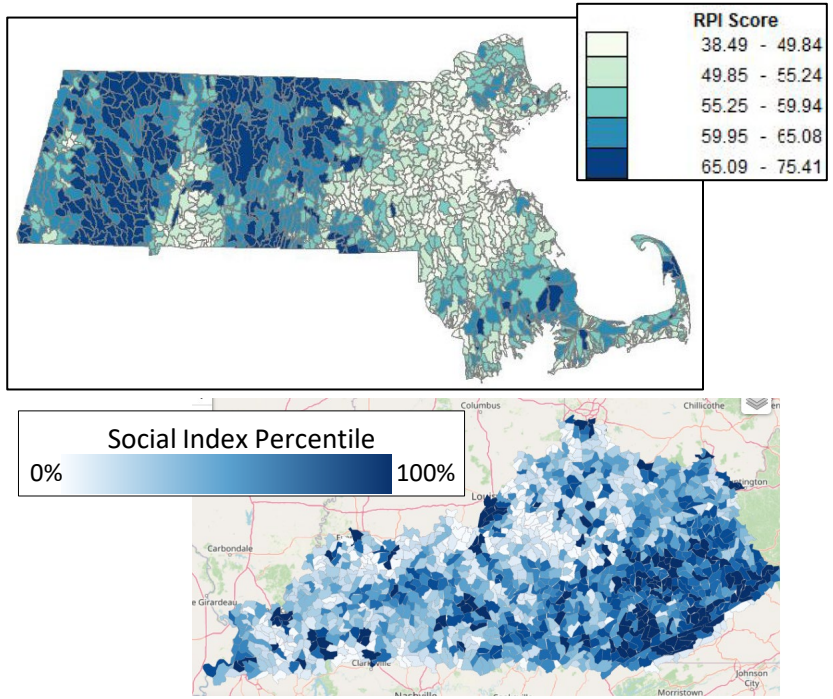




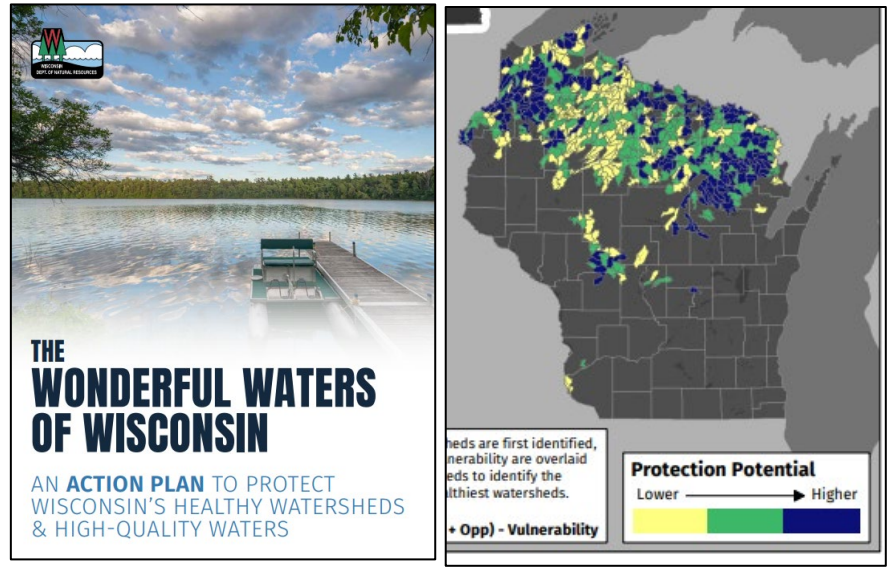
Example RPS Uses by States



TMDL/303(d)
Vision Priorities



NPS Program Planning &
319 Grant Scoring

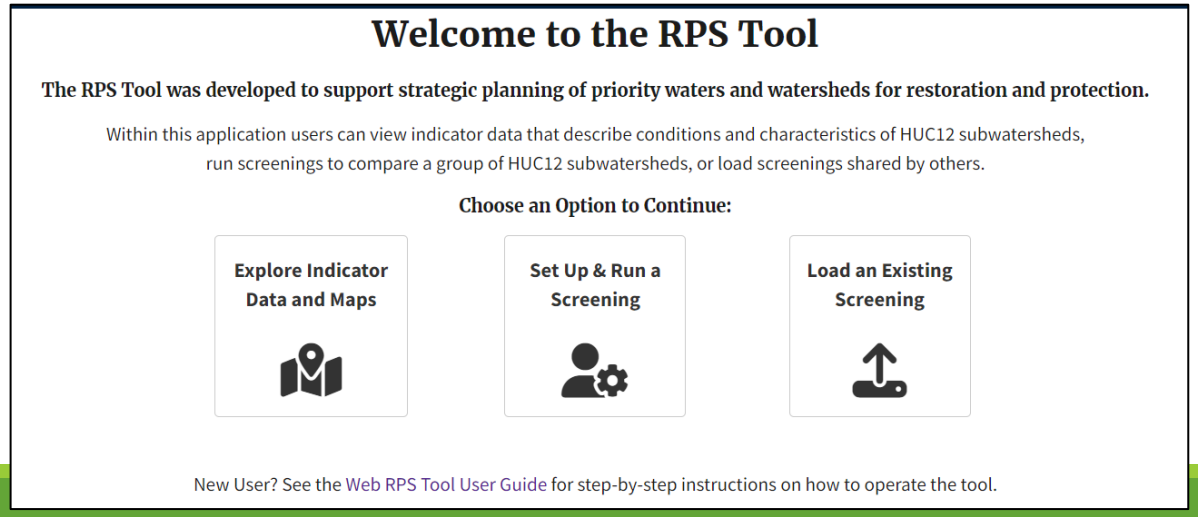


Healthy Watersheds
Protection Planning

Upcoming Updates

- Launch of Web-Based RPS Tool
- Website relaunch and rebranding – *Restoration and Protection Screening Tool*
- Updates to national HUC12 indicator database
- Integrate NHDPlus Catchment scale data into RPS Tool

Please reach out for more information or to be added to distribution list: HWP-Team@epa.gov



Overview of Web-Based RPS Tool

Explore Indicator Data and Maps

Explore the RPS HUC12 Indicator Database by viewing maps and other data visualizations

- Evaluate conditions in a single HUC12 of interest or complete basic HUC12 comparisons
- Understand the indicators available in the database and begin planning a screening

Set Up & Run a Screening

Configure a screening and calculate index scores to compare a group of HUC12s.

- Evaluate screening results with maps, bubble plots, and tables
- Save your screening to revisit later or share with others
- Download the screening results in shapefile, Excel, or delimited text format

Load an Existing Screening

Upload a saved screening file

- Finish setting up an in-progress screening
- Revise the settings of a previously completed screening
- View a screening shared by others

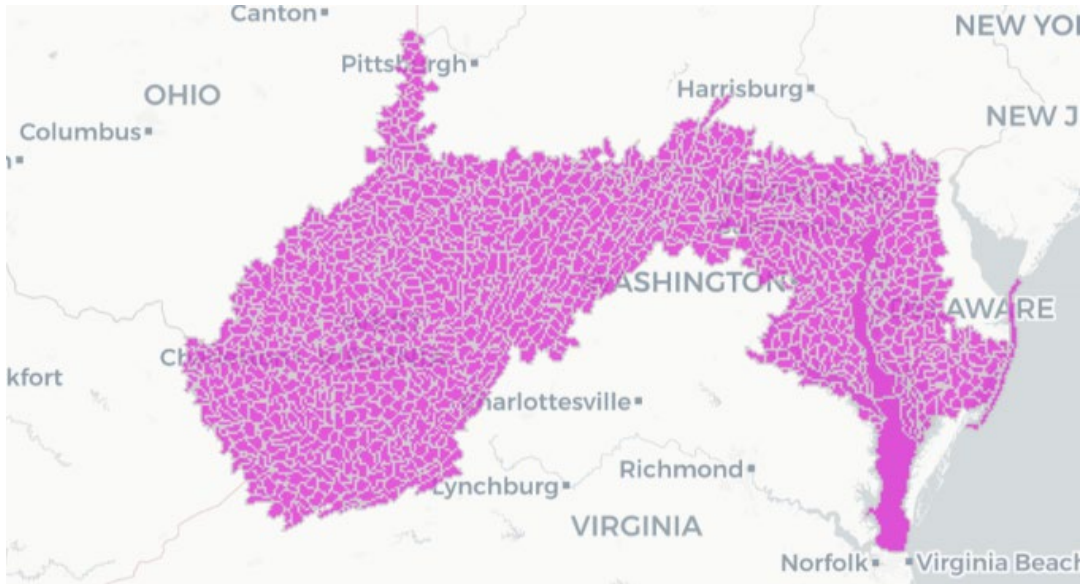
Web-Based RPS Tool: Choosing HUC12s to Screen

- Screenings can be set up to include HUC12s across multiple states, HUC6 Basins, or HUC8 Subbasins

Area of Interest

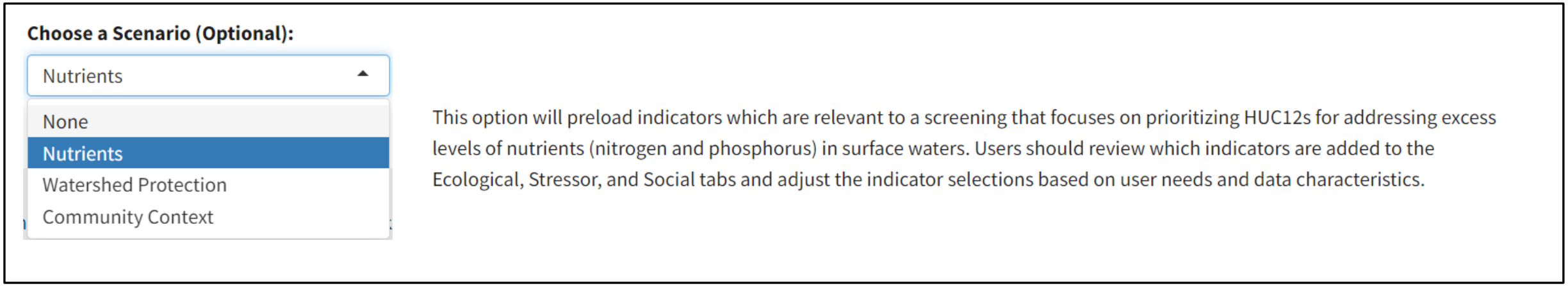
Selection	State, Basin, or Subbasin
Shepherdstown, WV, USA | HUC8 Subbasin: Conococheague-Opequon (02070004)	Subbasin
West Virginia	State
Maryland	State

Your screening will include 1185 HUC12 Subwatersheds, the selected HUC12s are displayed in the map below



Web-Based RPS Tool: Choosing Indicators

- Preset screening scenarios can be selected as a starting point for choosing indicators to include in a screening



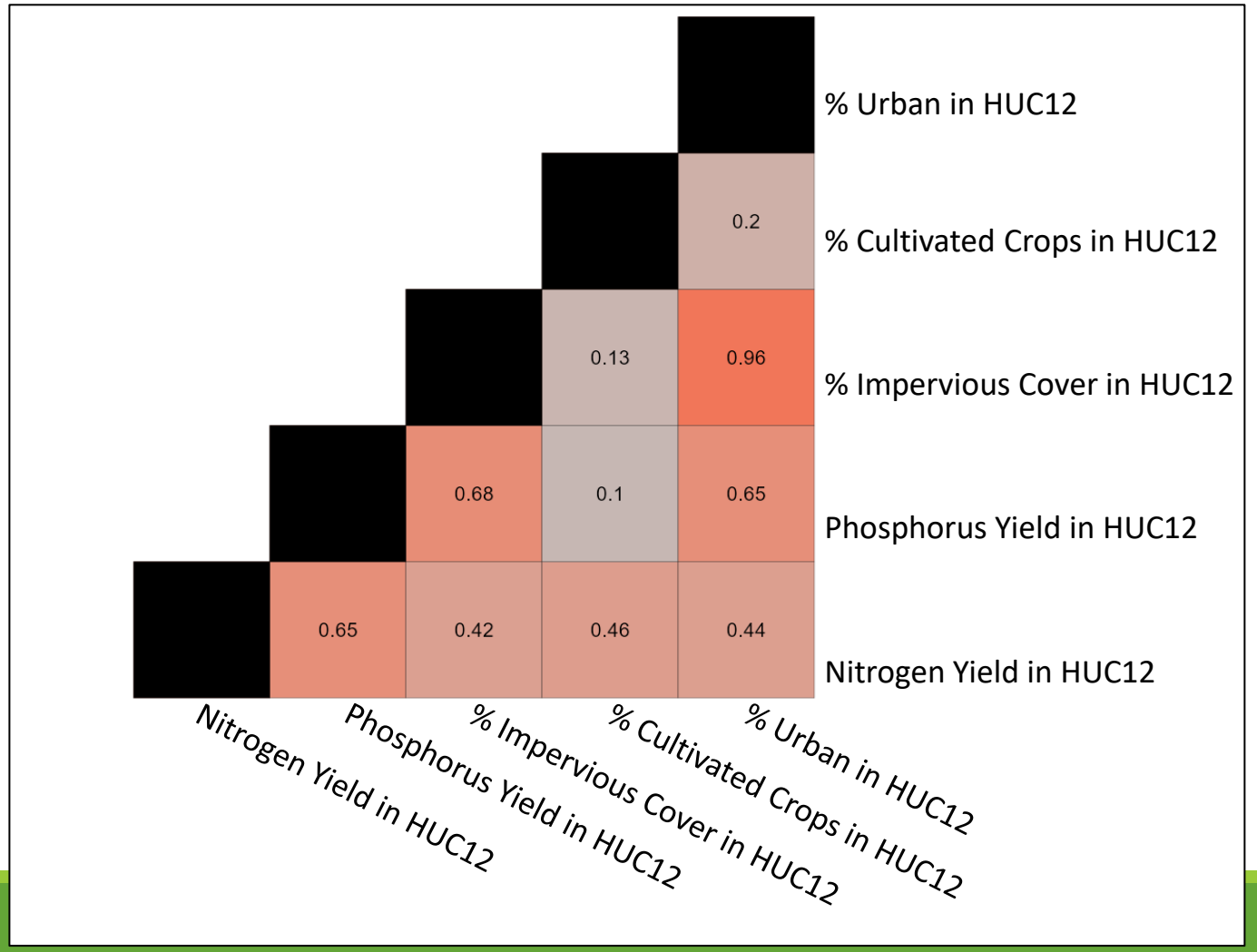
Web-Based RPS Tool: Indicator Settings

- Indicator categories and directionality can be adjusted as part of screening setup

Indicator Name	Category	Original Category	Subcategory	Weight	Invert
PHWA Watershed Health Index, State	Ecological	Ecological	Integrated Watershed Health Index & Sub-Indices	1	☐
Nitrogen Yield in HUC12	Stressor	Stressor	Pollutant Loading Severity	1	☐
Phosphorus Yield in HUC12	Stressor	Stressor	Pollutant Loading Severity	1	☐
Nutrient Impaired Waters, % of HUC12	Stressor	Stressor	Impaired Waters	1	☐
% Urban in HUC12		Stressor	Urban/Developed Cover	1	

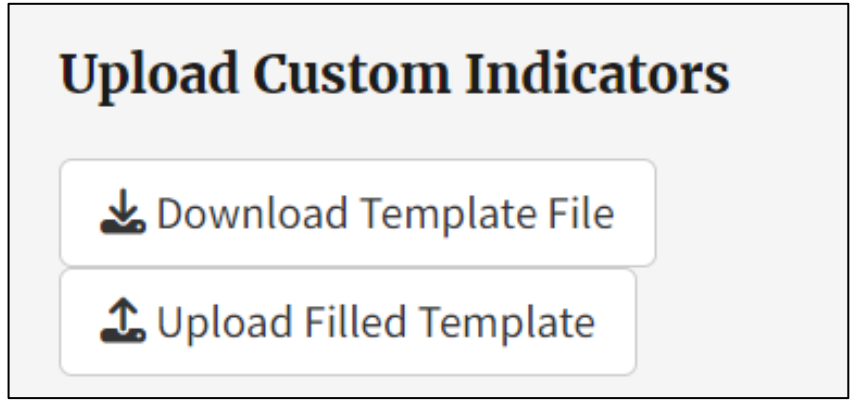
Web-Based RPS Tool: Indicator Correlation

- Correlation matrix for indicators included in a screening



Web-Based RPS Tool: Custom Indicators

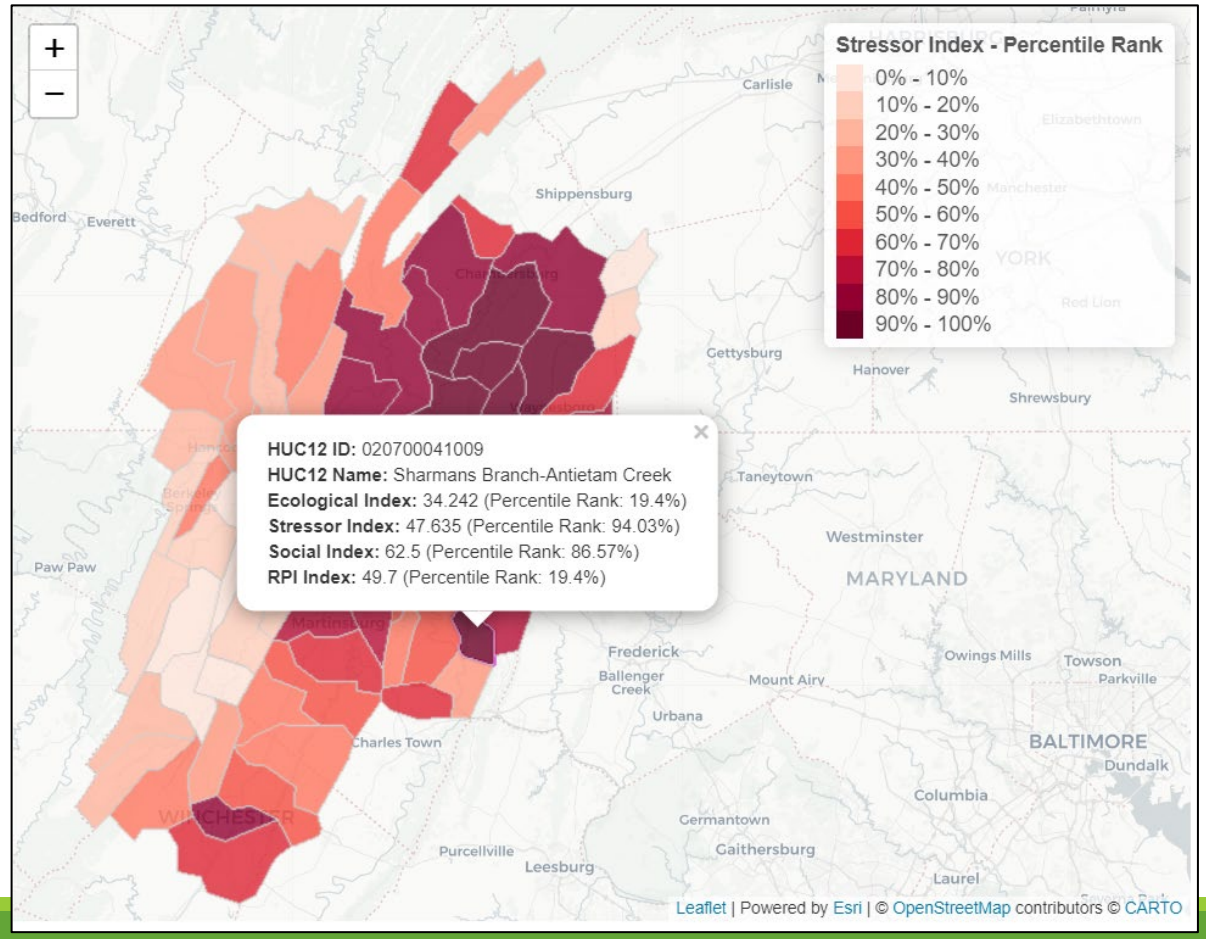
- Custom indicators can be uploaded and added to a screening



HUC12	Average Fish IBI Rating	Average Macroinvertebrate IBI Rating
99100100010006	1	3
99100100010007	4	3
99100100010008	4	3
99100100010009	3	3
99100100010010	3	3
99100100010011	4	3
99100100020003	4	3
99100100030001	3	2
99100100040001	4	3
99100100040003	5	3
99100100040004	2	2
99100100040005	3	2
99100100040007	3	2
99100100040009	2	2
99100100040010	3	1
99100100040011	3	2
99100100050001	2	2
99100100050002	3	4
99100100050003	4	2
99100100060001	2	2

Web-Based RPS Tool: Improved Mapping

- Interactive maps with popup boxes to view screening results for individual HUC12s



Web-Based RPS Tool: Download Results

- Downloadable screening results in shapefile, Excel, or delimited text format