

A Recovery Potential Screening Tool for Comparing and Prioritizing Watersheds

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What is Recovery Potential Screening?

A method to help states and restoration planners compare restorability across all watersheds

- Systematic but very flexible approach to watershed comparative assessment
- Science-based, indicator-driven (GIS and field monitoring data) organized around:

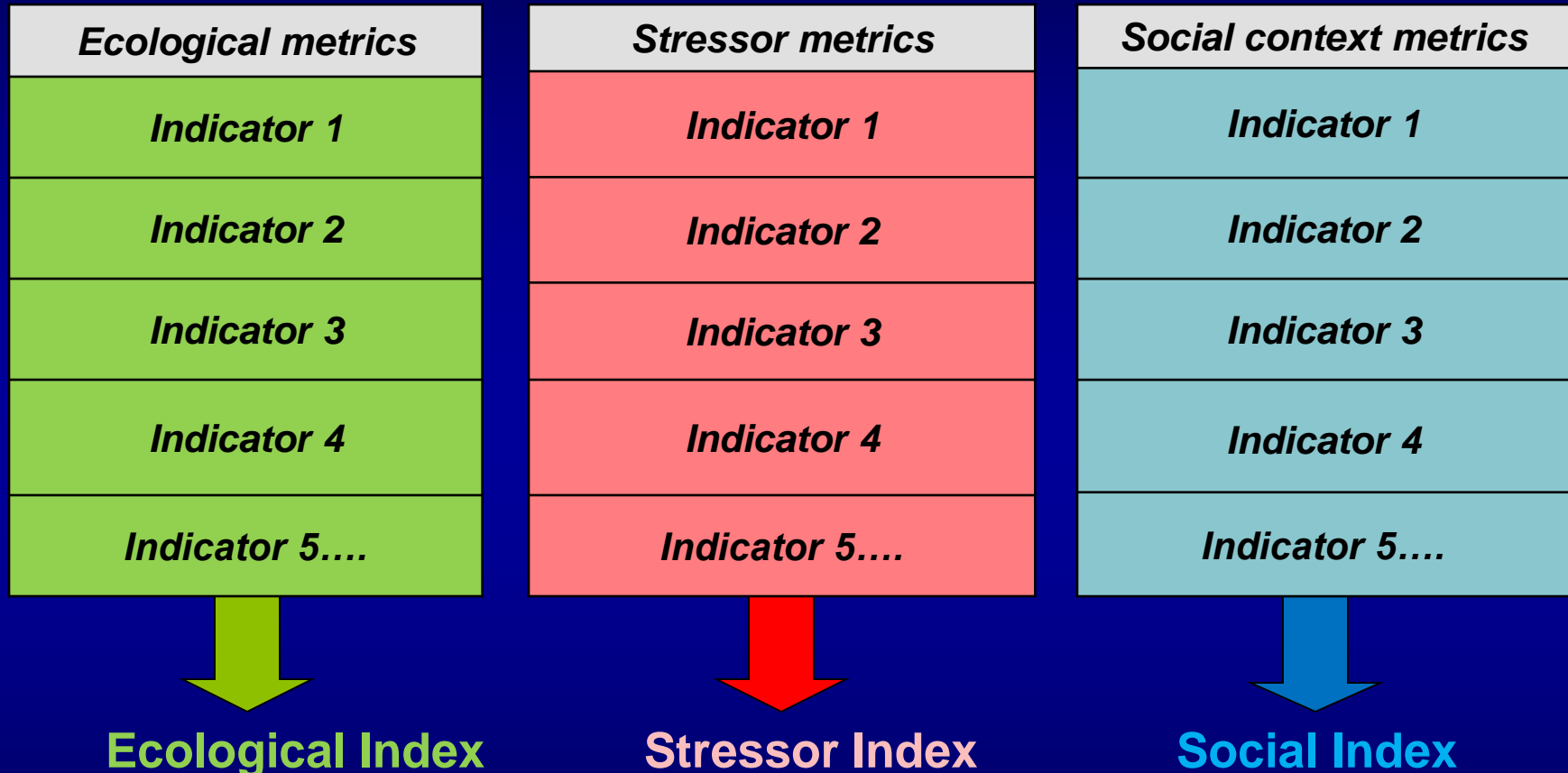
*ecological capacity,
exposure to stressors, and
social context affecting restoration efforts*

Using RPS to Compare, Prioritize Impaired Watersheds

Generally:

- **Develop “prioritized schedules”**
- **Plan implementation**
- **Strategize long-term for Restoration, Protection (TMDL Vision, NPS Program Strategies)**

Recovery Potential Screening - Basic Concept



$$\frac{\text{Ecological} + \text{Social} + (100 - \text{Stressor})}{3}$$

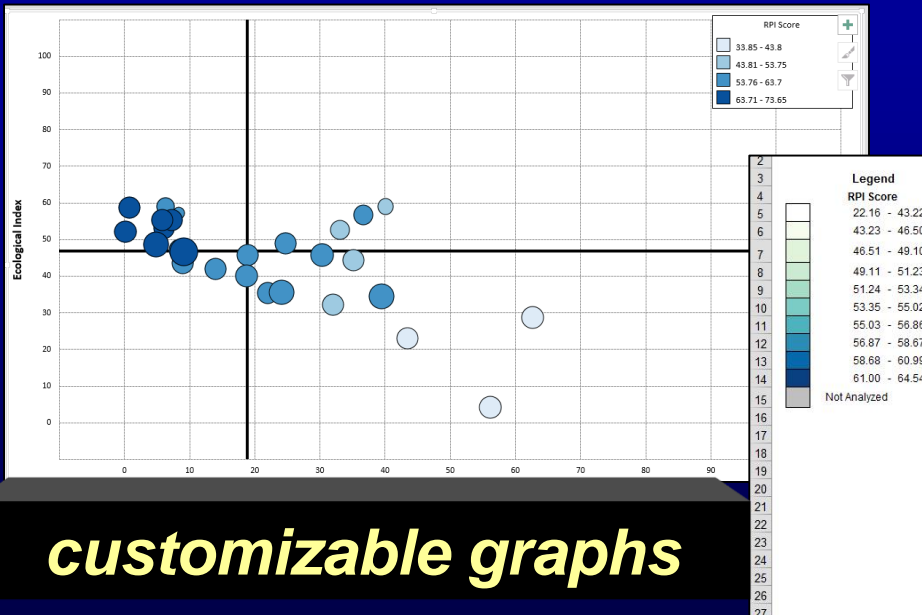
48 CONUS Statewide RPS Tools (7/2014)

**207 indicators on
HUC12 watersheds**

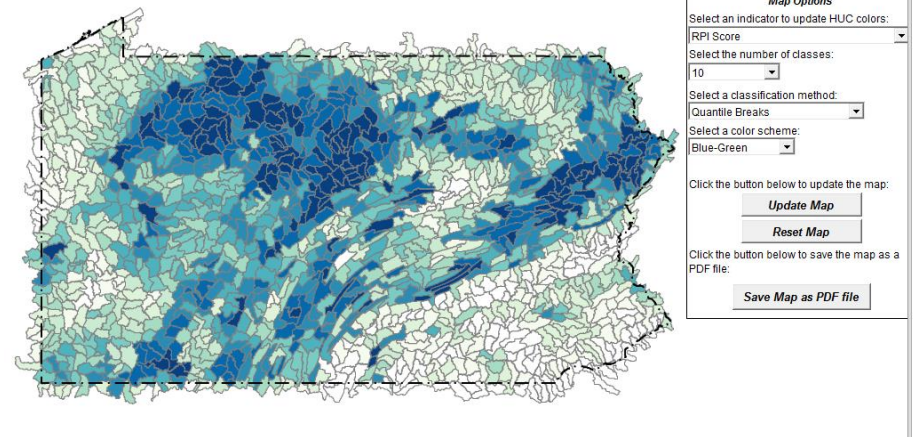
Hydrologic Unit Code 12-Digit (HUC12)	Name HUC12 Watershed	Area Of Watershed (HUC12) In Square Meters (Grid)	% Riparian Zone (RZ) in Watershed	% Hydrological y Connected Zone (HCZ) in Watershed	% Water in Watershed	% Land in Watershed	Watershed NHDPlus2 Streamlength	Watershed NHDPlus2 Waterbody Area
020401010305	Sherman Creek-Lower West Branch Delaware River	95209200.0000	19.9238	9.3980	4.6603	95.3397	63.9700	1.520002
020401010307	Balls Creek-Lower West Branch Delaware River	94473000.0000	23.8668	10.6992	5.4330	94.5670	62.9300	1.670002
020401010401	Upper Equinunk Creek	60305400.0000	37.8906	16.1001	10.3274	89.6726	39.2700	2.030003
020401010402	Lower Equinunk Creek	88650900.0000	25.3886	13.2222	6.7603	93.2397	43.2100	1.560003
020401010403	Factory Creek-Delaware River	57411900.0000	20.0843	12.0095	5.3691	94.6309	33.8900	0.600002
020401010405	Little Equinunk Creek	64941300.0000	29.3180	12.8470	6.9515	93.0485	46.6400	1.430003
020401010406	Pea Brook-Delaware River	93491100.0000	17.8814	9.1173	4.2010	95.7990	55.3200	0.690002
020401010501	Hankins Creek-Delaware River	108261900.0000						
020401010506	Beaverdam Creek-Delaware River	63308700.0000						
020401010601	North Branch Calkins Creek	55646100.0000						
020401010602	South Branch Calkins Creek	58320900.0000						
020401010604	Peggy Run-Delaware River	98454600.0000						
020401010605	Masthoke Creek	80787600.0000						

**4 auto-calculated
indices and ranks**

Watershed Name	Ecological Index	Ecological Rank	Stressor Index	Stressor Rank	Social Index	Social Rank	RPI Score	RPI Rank
Sherman Creek-Lower West Branch Delaware River	49.18	474	6.63	199	14.57	1385	52.37	790
Balls Creek-Lower West Branch Delaware River	48.84	504	12.20	388	31.60	1300	56.08	499
Upper Equinunk Creek	49.14	476	12.70	413	33.33	776	56.59	466
Lower Equinunk Creek	50.66	361	6.33	192	33.33	776	59.22	244
Factory Creek-Delaware River	51.48	300	5.50	172	21.00	1360	55.66	534
Little Equinunk Creek	48.50	534	9.33	284	33.33	776	57.50	382
Pea Brook-Delaware River	51.74	278	3.15	106	6.33	1426	51.64	850
Hankins Creek-Delaware River	49.82	422	8.35	252	14.37	1387	51.95	826
Beaverdam Creek-Delaware River	47.40	616	9.58	293	24.37	1342	54.06	651
North Branch Calkins Creek	46.28	705	16.00	531	33.33	776	54.54	619
South Branch Calkins Creek	46.10	728	18.10	616	33.33	776	53.78	681
Peggy Run-Delaware River	49.54	444	7.23	212	15.53	1378	52.62	772
Masthoke Creek	52.10	255	7.43	218	33.33	776	59.34	238
Westcolang Creek-Delaware River	51.00	333	3.98	132	15.17	1381	54.06	651
Johnson Creek	46.80	665	18.73	646	33.33	776	53.80	675
Van Auker Creek	47.16	641	19.13	662	33.33	776	53.79	678
Belmont Lake-West Branch Lackawaxen River	46.20	715	18.48	635	33.33	776	53.69	688
East Branch Dyberry Creek	49.74	427	6.35	193	33.33	776	58.91	267
West Branch Dyberry Creek	50.00	411	12.15	384	33.33	776	57.06	421



customizable mapping



Goals: ecological indicator selection

- describe condition (physical structure, processes) and capacity to regain function, e.g.,

watershed natural structure

corridor condition

flow and channel dynamics

biotic community integrity

aquatic connectivity

ecological history

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ES examples in this category are numerous!

(pollutant filtering, rainfall detention and infiltration, bank stabilization, aquatic life support, etc)

Goals: stressor indicator selection

- describe conditions (sources and stressors) that impact normal function, e.g.,

watershed disturbance & sources

corridor or shorelands disturbance

flow or channel alteration

biological stressors

severity, complexity of pollution

land use legacies

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watershed disturbance & sources

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flow or channel alteration

biological stressors

severity, complexity of pollution

land use legacies

This category doesn't contain ES metrics, but affects them

Goals: social context indicator selection

- include factors that are not environmental, yet influence restoration success -- e.g.,

leadership, organization, engagement

protective ownership or regulation

level of information, planning, certainty

cost, complexity

socio-economic factors

human health, uses, incentives

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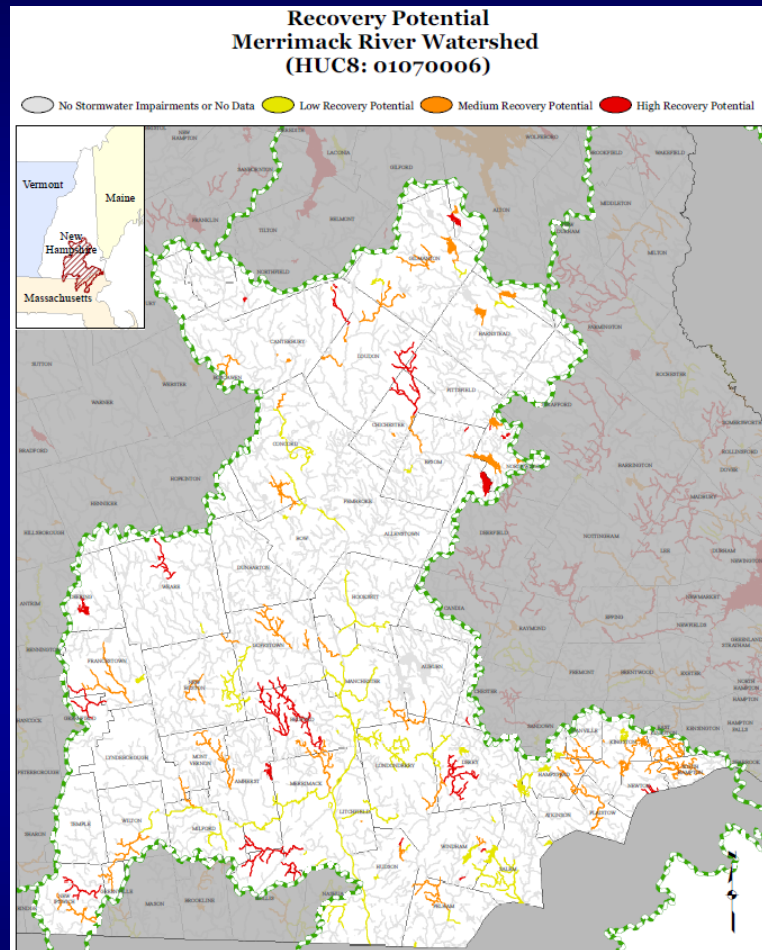
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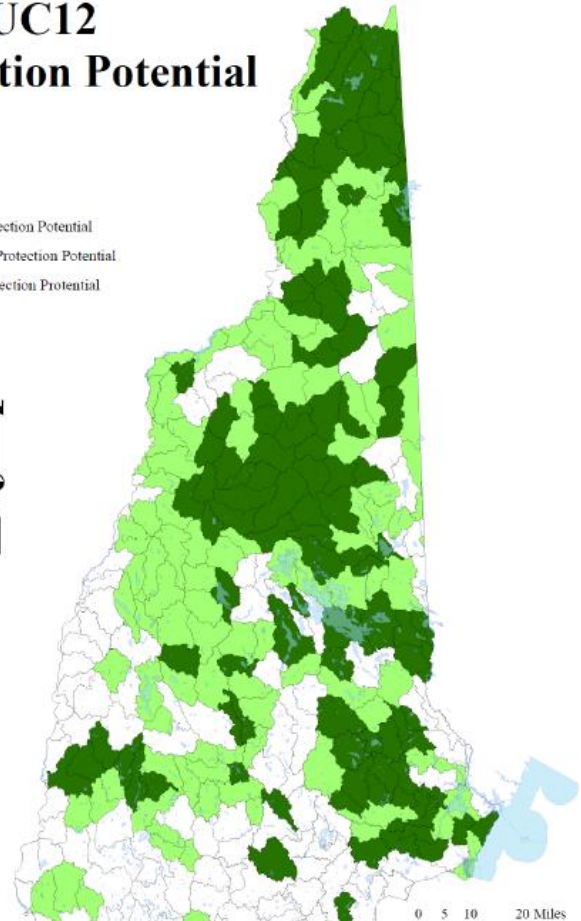
Again, ES examples in this category are numerous!

(drinking water protection, recreation, property value enhancement, etc)

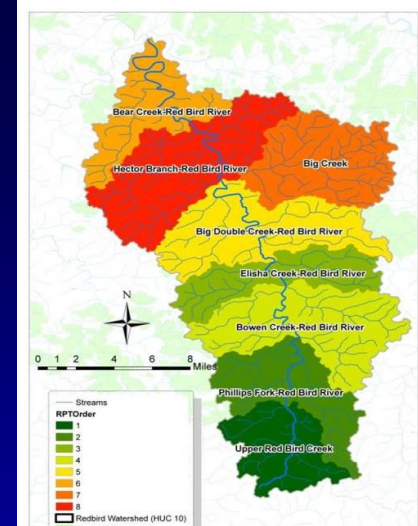
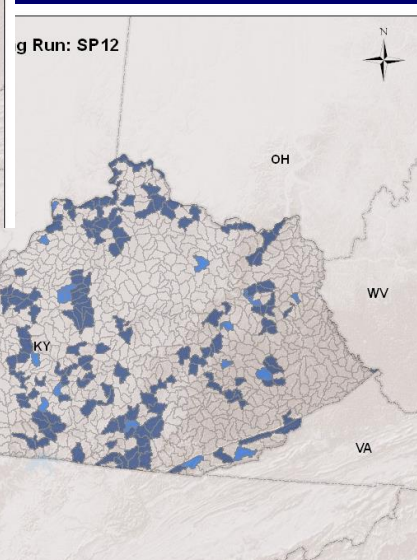
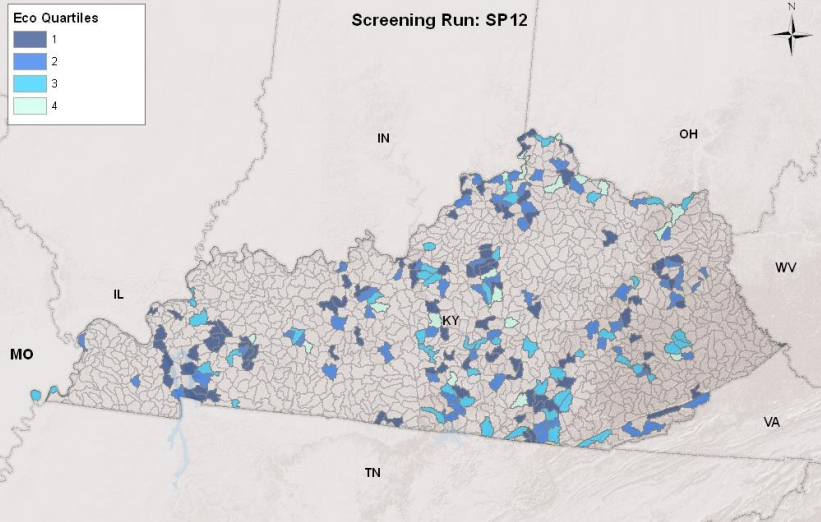


NH HUC12 Protection Potential

○ Low Protection Potential
 ● Medium Protection Potential
 ● High Protection Potential



- *RPS supports restoration and protection priority setting*



State Scale

Local Scale

- RPS Indices identify state and local candidates for an “improving watersheds” performance measure*

Using all four RPS Indices

Healthy Watersheds Risk from Three Scenarios



HUC ID	HUC12 NAME	TYPE	AGRICULTURE				MINING				POPULATION GROWTH				MEAN RPIRANK
			ECO	STR	SOC	RPI	ECO	STR	SOC	RPI	ECO	STR	SOC	RPI	
51100011301	Echo River-Green River	REFW	547	117	2	10	290	270	3	4	203	14	3	4	3
51001010509	Scott Creek-Licking River	REFW	17	194	5	1	9	833	4	8	7	105	4	3	5
51100010307	White Oak Creek-Green River	REFW	80	350	28	13	7	794	20	18	13	217	16	5	17
51301050303	Ashburn Creek-Obey River	REFW	477	80	57	61	1	1	34	1	1	39	41	1	20
50600021605	Carroll Run-Scioto River	REFW	837	233	53	192	29	5	31	2	17	491	31	10	22
51100011106	Conoloway Creek-Nolin River	REFW	153	79	85	34	26	13	69	5	38	13	74	6	32
51100010205	Wilson Creek-Robinson Creek	REFW	129	375	58	36	22	784	43	48	47	301	42	14	40
51100020207	Walnut Creek-Barren River	REFW	329	285	64	68	293	32	60	11	334	112	61	50	42
51302050703	Long Creek-Cumberland River	REFW	208	61	121	47	14	124	102	6	34	23	99	8	45
51301040701	Wolf Creek-Big South Fork Cumberland River	REFW	345	12	96	60	69	412	82	28	71	46	73	11	45
51002040503	Ross Creek-Kentucky River	REFW	87	67	96	26	157	377	88	41	123	41	91	19	52
51002040207	Upper Middle Fork Red River	REFW	76	67	68	12	163	514	55	39	179	454	57	55	54
51100020102	Trace Creek-Line Creek	REFW	308	513	71	98	318	165	54	20	368	315	56	79	57
51100010306	Lower Casey Creek-Green River	REFW	184	333	82	51	46	773	67	83	94	148	66	20	62
51002030103	Martins Creek-Goose Creek	REFW	503	149	46	69	335	668	27	76	240	682	29	81	68
51001010404	Leatherwood Creek-Beaver Creek	REFW	24	181	93	19	13	846	74	104	14	306	77	15	71
51301040505	Williams Creek-Big South Fork Cumberland River	REFW	5	14	200	28	36	379	153	47	35	8	162	16	88
51100020505	Lower Trammel Creek	PHW	351	390	116	124	449	173	100	62	423	168	97	100	93
60400051005	Bear Creek-Kentucky Lake	REFW	325	283	211	170	24	21	219	13	63	116	216	56	93
60102060403	Indian Creek	REFW	482	69	216	181	171	59	172	42	21	163	176	30	96
51100020905	Clifty Creek-Barren River	PHW	311	309	132	111	364	215	156	96	360	87	157	107	112
51002040501	Billey Fork	REFW	166	83	160	62	327	337	140	110	256	88	143	71	114

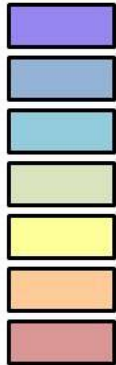
A Comparative Analysis of Recovery Potential for Impaired Waters in the Buffalo River Watershed



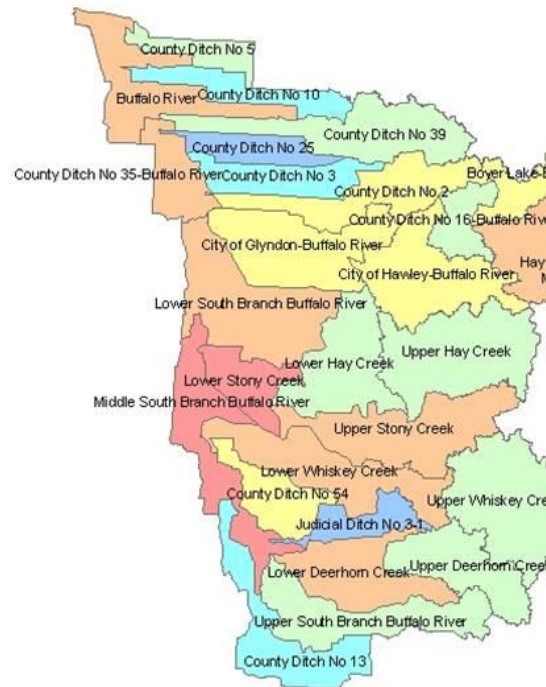
Pete Knutson, MPCA
Peter Mead, NRCS

Recovery Potential Integrated Score (RPI Score) for Buffalo River, Minnesota sub-watersheds [courtesy of Minnesota Pollution Control Agency]

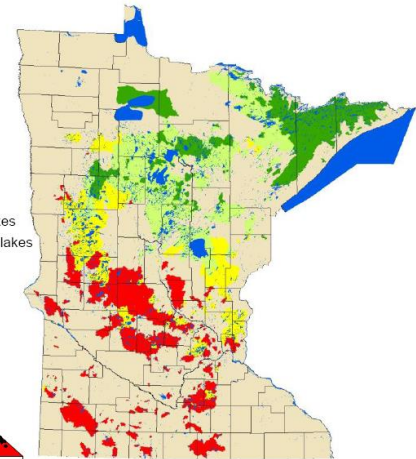
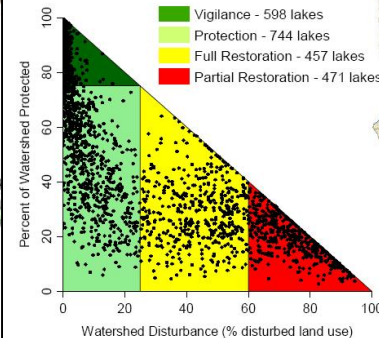
HIGHEST



LOWEST

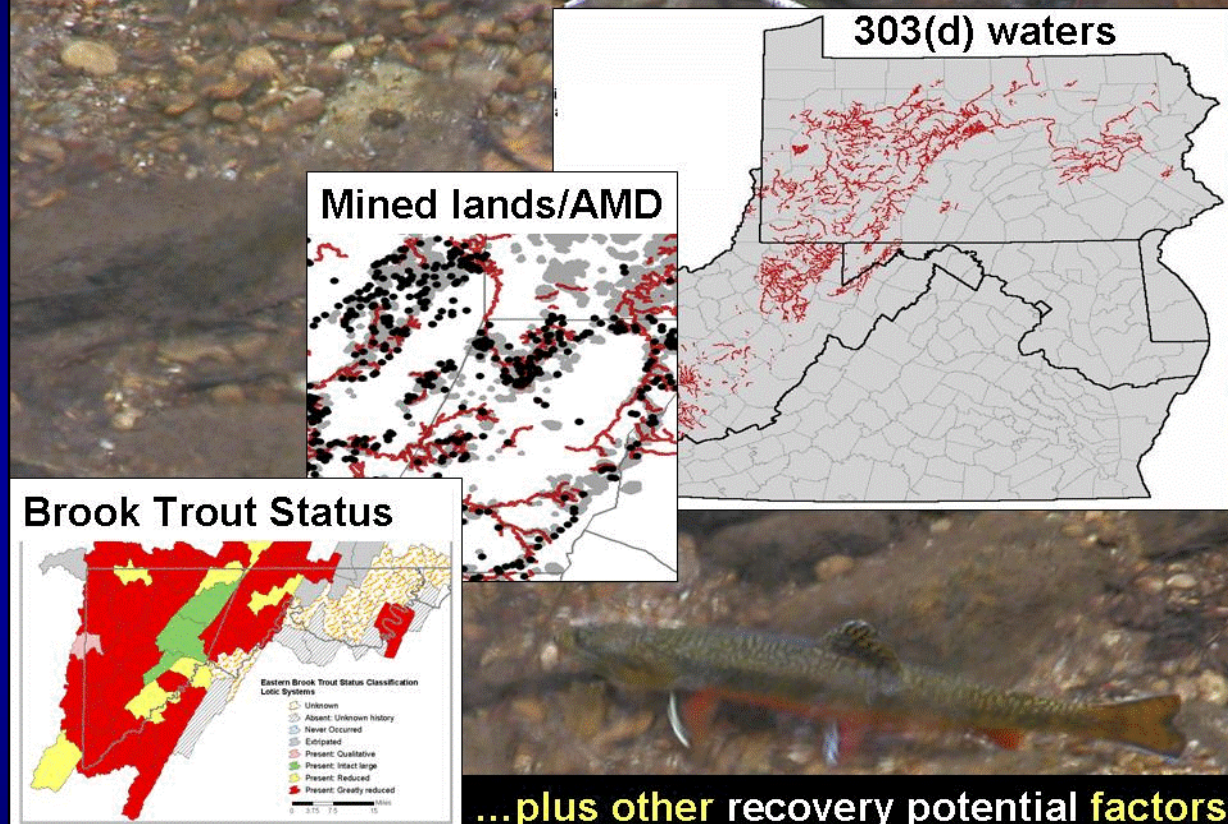


Suggested approaches for watershed protection and restoration of DNR managed fish lakes in Minnesota



- *RPS informs the priority setting dialogue among partners (USDA, EPA, MPCA, MDNR and local citizens' involvement)*

GIS data reveal the common interest areas:



- RPS reveals the common interest areas among programs (partnering of impaired waters, mining, fisheries efforts)*

Nutrients RPS Two-Stage Approach

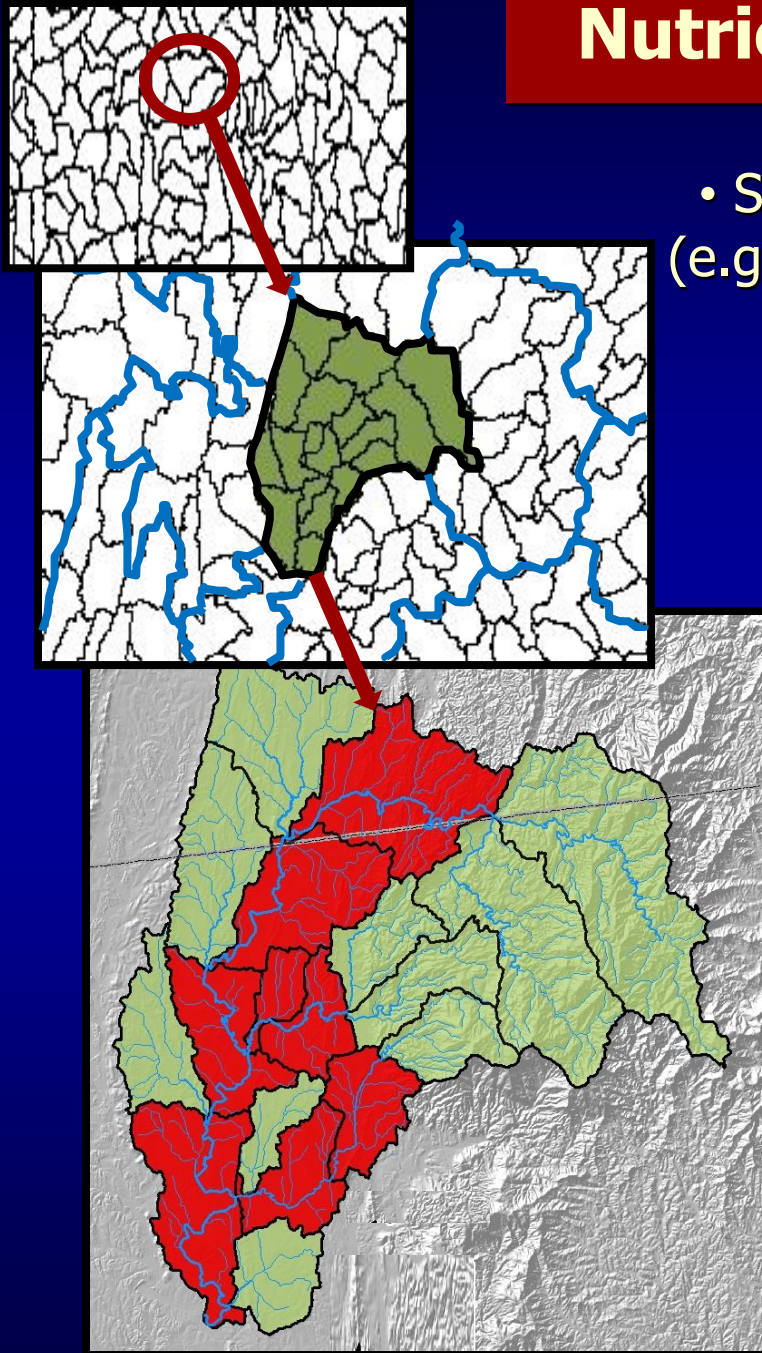
- State defines major Nutrient Scenarios (e.g., rural/agr watersheds, urban watersheds)



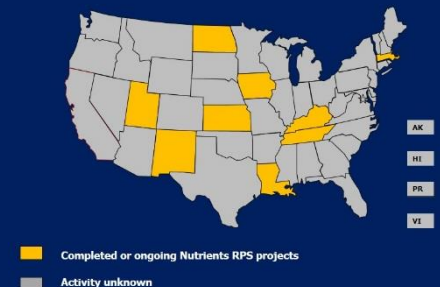
- RPS Targeting stage 1: priority HUC8s



- RPS Implementing stage 2: HUC12s in HUC8



Recovery Potential Screening for Nutrients, 9/2014



www.epa.gov/recoverypotential/ step by step instructions, indicators, tools



United States Environmental Protection Agency

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Recovery Potential Screening

Tools for Comparing Impaired Waters Restorability



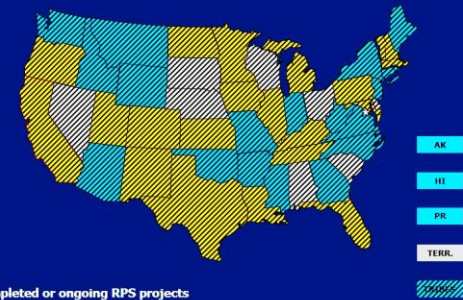
Monitoring programs under the Clean Water Act have identified tens of thousands of US water bodies that do not meet Water Quality Standards and are in need of restoration. This website provides technical assistance for restoration programs to help them consider where to invest their efforts for greater likelihood of success, based on the traits of their own geographic area's environment and communities. There are three main website components. [Step-by-step instructions in recovery potential screening](#) provide watershed managers with a methodology for comparing restorability differences among their waters. The steps in the methodology link to several online [tools and resources](#) that are used in recovery potential screening. A library of [recovery potential indicators](#) offers technical information on specific recovery-related factors (ecological, stressor, and social), how they influence restorability, and how to measure them. [More ...](#)

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Recovery Potential Screening Activity in States, 12/2014



Completed or ongoing RPS projects
Expressed interest in RPS
RPS Tool and HUC12 data available, 2014

(please help us compile and use more ES indicators!)