

REPORT CARD PROCESS



Watershed report cards are assessment and communication tools that have been used around the world to compare ecological, social, and/or economic information against predefined goals or objectives. Similar to school report cards, watershed report cards provide performance-driven numeric and letter grades to effectively integrate and synthesize large, often complex, information into simple scores that can be communicated to decision makers and the general public to help guide community activity and public policies.

This first White River Report Card was created by following an extensive co-development process (below) which involved over 200 stakeholders from the community, business, industry, government, agricultural, conservation, and utility sectors. The key to a report card's success is the use of measures called indicators that reflect the many different community values and uses of the river.



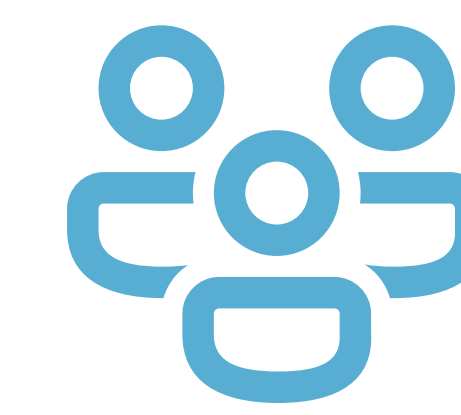
PLANNING

1 CONCEPTUALIZE



EXISTING KNOWLEDGE
CULTURE & VALUES

2 IDENTIFY



STAKEHOLDERS
INSTITUTIONS

3 DESIGN



ACTION &
EVALUATION PLAN

THE REPORT CARD PROCESS

1 WHAT IS THE BIG PICTURE?



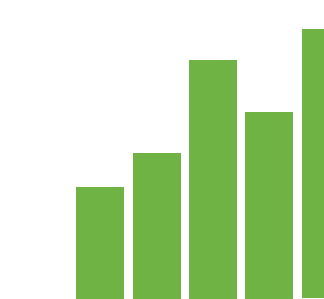
IDENTIFYING BASIN
VALUES AND THREATS

2 WHAT DO WE MEASURE?



CHOOSING
INDICATORS

3 WHAT IS HEALTHY?



DEFINING THRESHOLDS
FOR INDICATORS

4 HOW DOES IT ADD UP?



CALCULATING SCORES AND
DETERMINING GRADES

5 WHAT IS THE STORY?



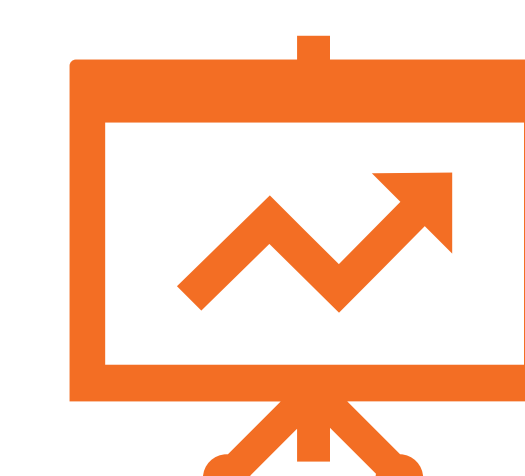
COMMUNICATING
RESULTS

RAISE THE GRADE

1 COMMUNICATE & ENGAGE



2 RECOMMEND POLICY & ACTIONS



3 BUILD CAPACITY





White River Report Card

Methods & Grades

White River Watershed



- 1.7 million acres
- All or parts of 16 counties
- 4 major reservoirs
- 15 major tributaries
- Home to 2M people
- Primary economic engines



White River Report Card



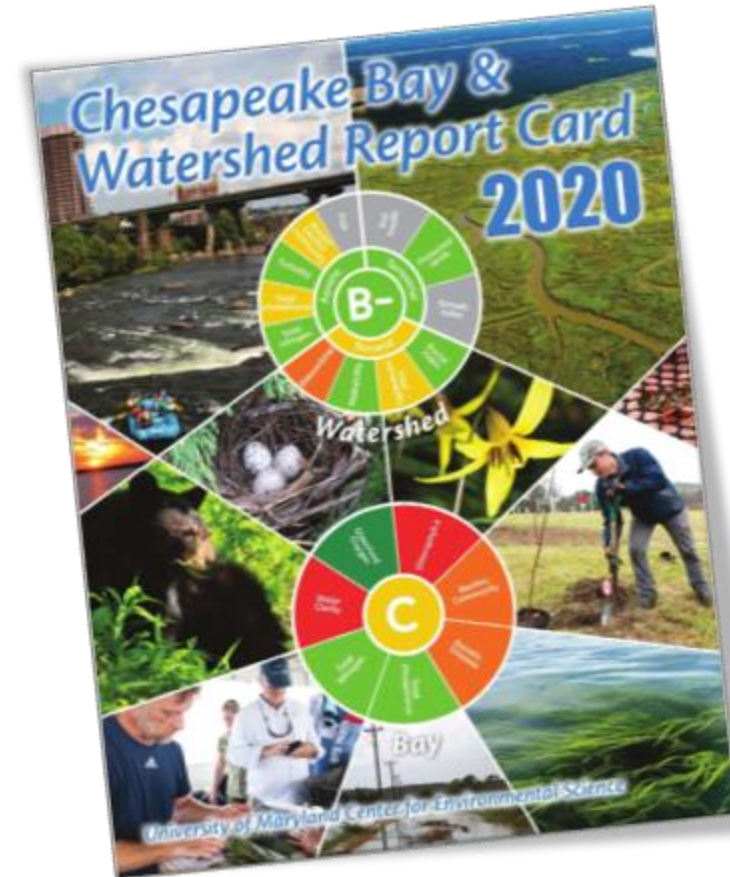
- ...is a stakeholder-developed assessment and communication tool to:
- **Measure** community progress
 - **Align** partners and activities
 - **Inspire** change



Eco Health Report Cards



- Uses data to catalyze and guide action
 - Community and ecosystem improvement
 - Direct resources and stimulate further research
- University of Maryland Center for Environmental Science
 - Over 15 years of experience
 - Implemented globally
 - Over 50 areas (watersheds & coastal)



Global Model

● Existing Report Cards ● Report Cards under-development

Mississippi River
USA



Chesapeake Bay
USA



Long Island Sound
USA



Chilika Lake
India



Upolu
Samoa



Willamette River
Oregon USA



Gulf of Mexico
USA



Orinoco River
Colombia



Kura River Basin
Armenia, Georgia



Great Barrier Reef
Australia



Report Card Process

3 Phases

PLANNING

1 CONCEPTUALIZE



EXISTING KNOWLEDGE
CULTURE & VALUES

2 IDENTIFY



STAKEHOLDERS
INSTITUTIONS

3 DESIGN



ACTION &
EVALUATION PLAN

THE REPORT CARD PROCESS

1 WHAT IS THE
BIG PICTURE?



IDENTIFYING BASIN
VALUES AND THREATS

2 WHAT DO
WE MEASURE?



CHOOSING
INDICATORS

3 WHAT IS
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DEFINING THRESHOLDS
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4 HOW DOES
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CALCULATING SCORES AND
DETERMINING GRADES

5 WHAT IS
THE STORY?



COMMUNICATING
RESULTS

RAISE THE GRADE

1 COMMUNICATE
& ENGAGE



2 RECOMMEND
POLICY & ACTIONS

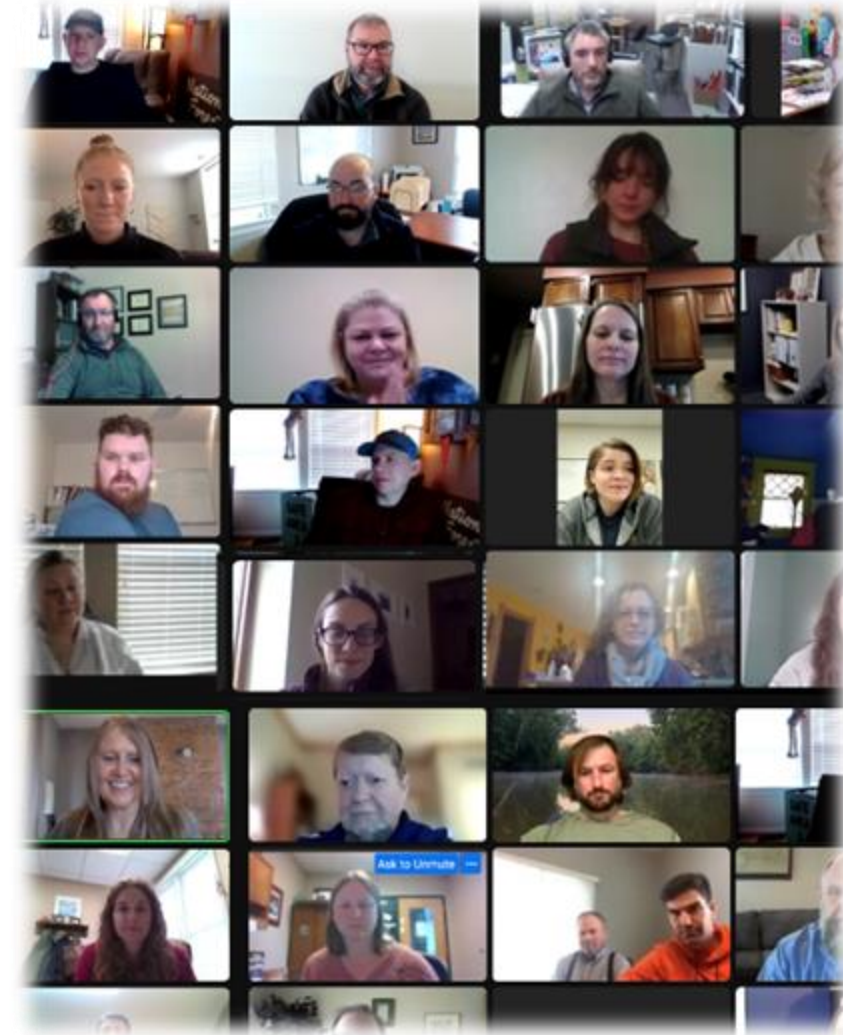


3 BUILD
CAPACITY



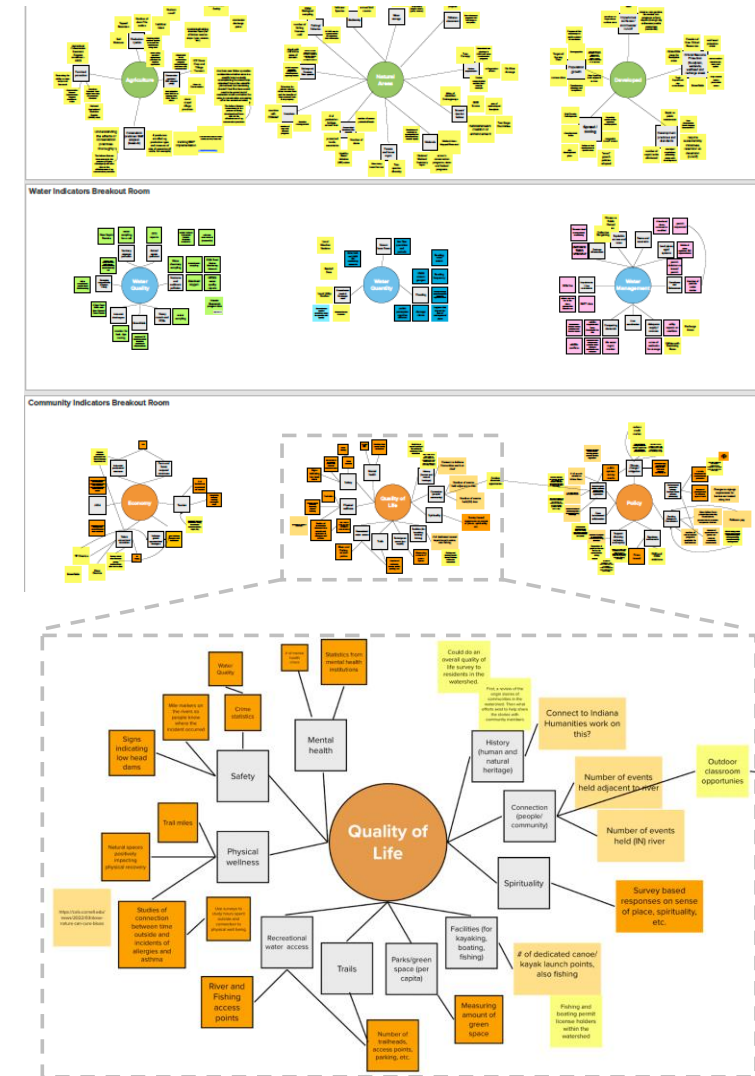
1. Co-Designed

- Built a shared understanding & provide the foundation of the report card
- Broad stakeholder engagement
 - Including: agricultural, business, community, conservation, industry, political, & utility
 - Over 530 individuals on communication list
 - Over 170 actively engaged
- 21 workshops, virtual open house and working group meetings
- 445 responses to input survey



2. Choose Indicators

- Input was used to select categories and measure (aka) indicators
 - Reflect many values, concerns & uses
 - Organized by Community, Land, Water
- Refined indicators with Working Groups
 - Made up of dozens of experts
- Indicators had to be “SMART”
 - Sensitive, Measurable, Available, Relevant, Thresholds

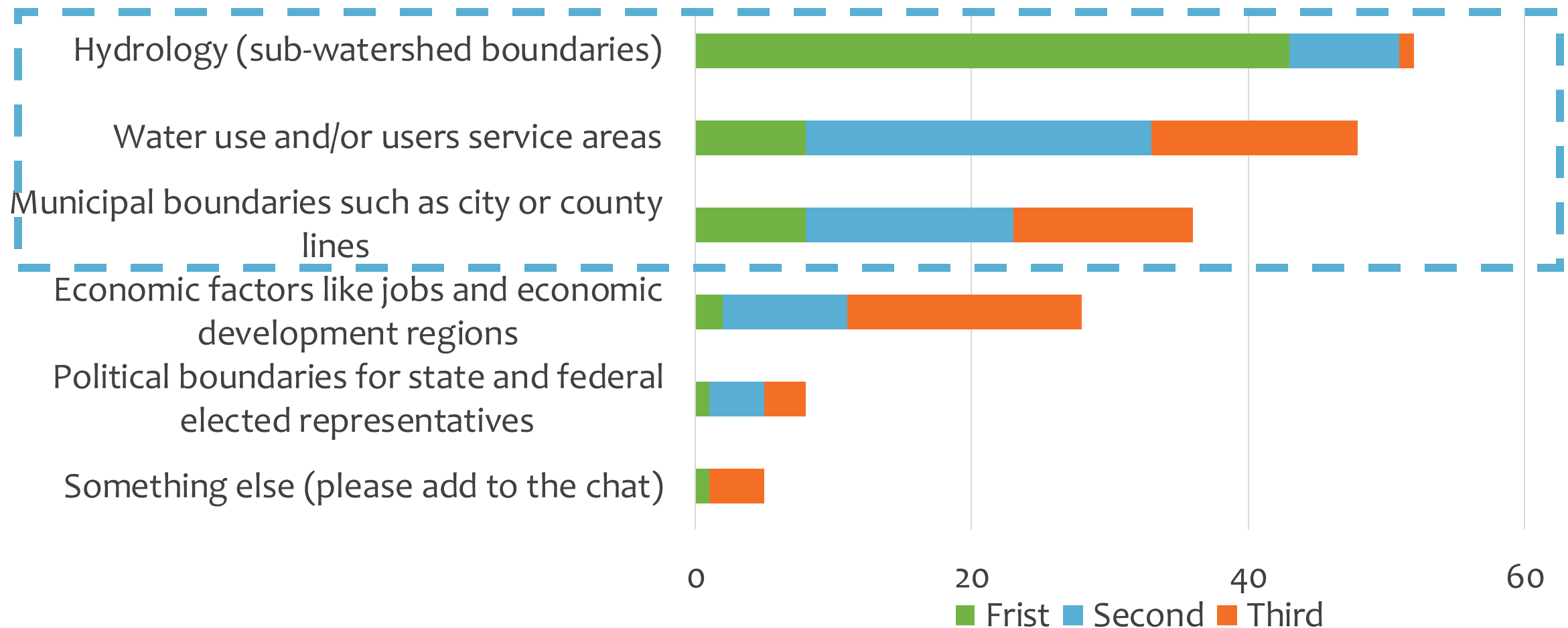


Indicator refinement



Region Development

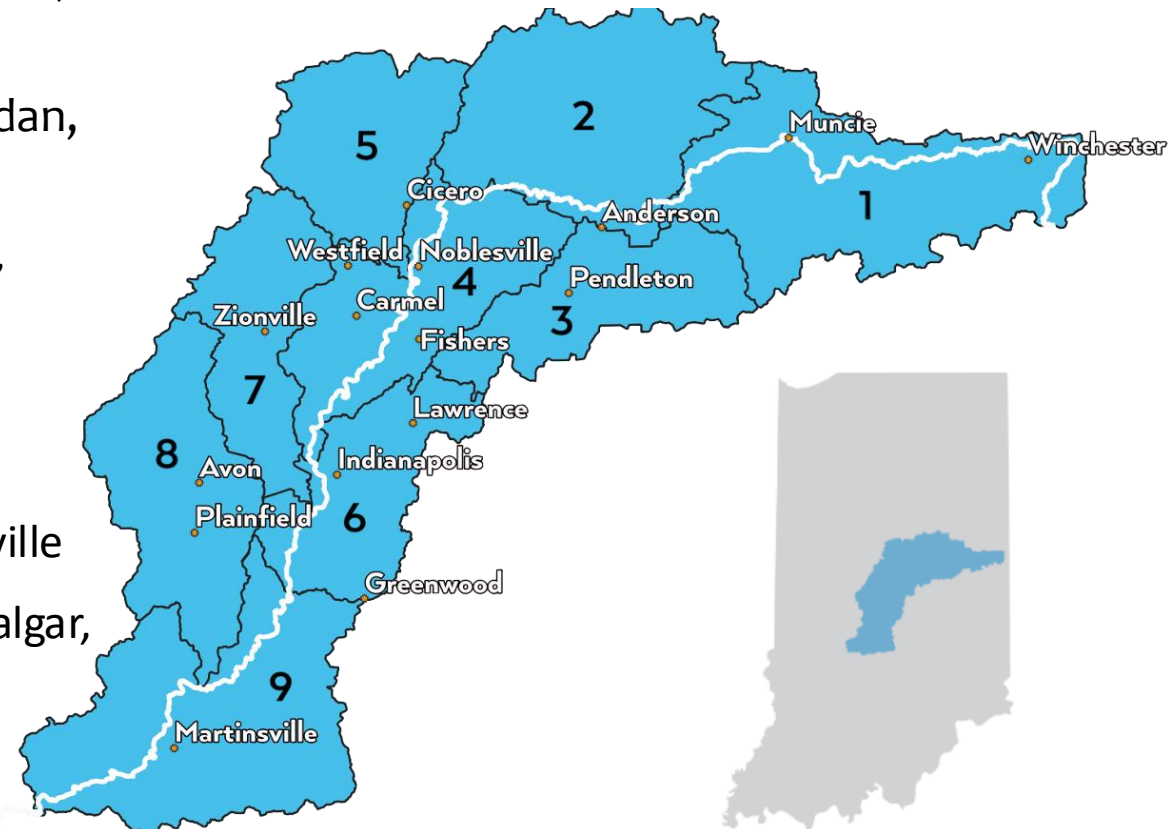
When considering the geography of the Report Card regions, please select the most important factor to consider.



Report Card Regions



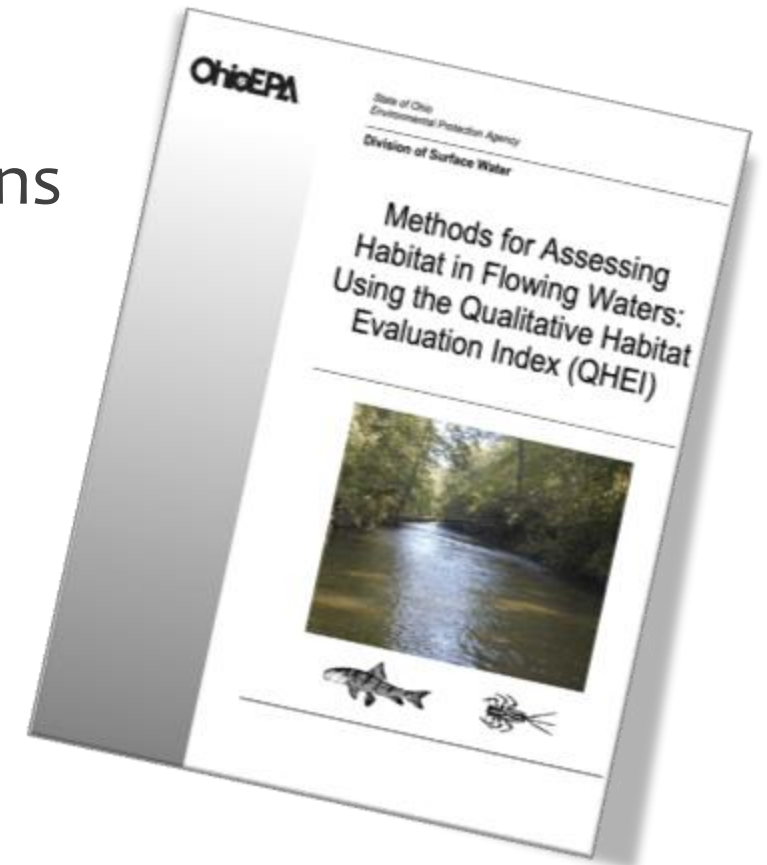
1. **Headwaters & Prairie Reservoir** - Muncie, Yorktown, Daleville, and Winchester
2. **Killbuck, Pipe, & Duck Creek** - Elwood, Alexandria, Frankton, and Anderson (north ½)
3. **Upper Fall Creek & Geist Reservoir** - Pendleton, McCordsville, Ingalls, Anderson (south ½)
4. **Stony Creek & Crooked Creek** - Carmel, Noblesville, Fishers, Westfield, and northern Indianapolis
5. **Cicero Creek & Morse Reservoir** - Cicero, Tipton, Sheridan, and northwest Noblesville
6. **Lower Fall Creek, Pleasant Run** - Indianapolis, Lawrence, Beech Grove, Southport, and northwestern Greenwood
7. **Eagle Creek** - Zionville, Speedway, Whitestown, and northwestern Indianapolis
8. **White Lick Creek** - Avon, Plainfield, Brownsburg, and Danville
9. **Clear, Lambs, Indian, & Butler Creek** - Martinsville, Trafalgar, Bargersville, and Monrovia



3. Determine Thresholds

Thresholds are specific goals, limits, or standards which are known to change indicator's condition

- Regulatory and/or management guidelines
- Historical baseline and/ or reference conditions
- Biological limits
- Socio-economic requirements
- Institutional goals
- Professional judgment

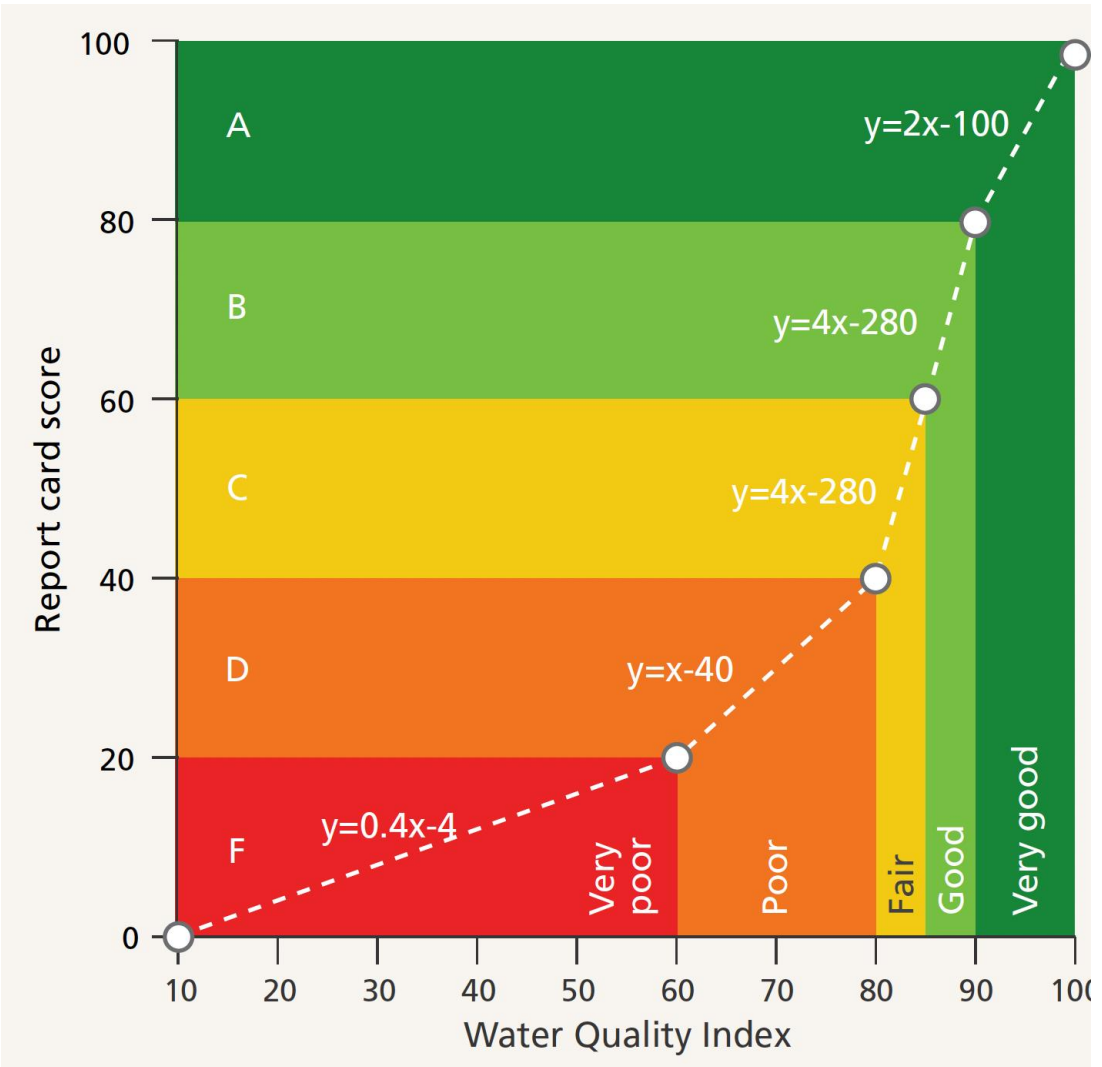
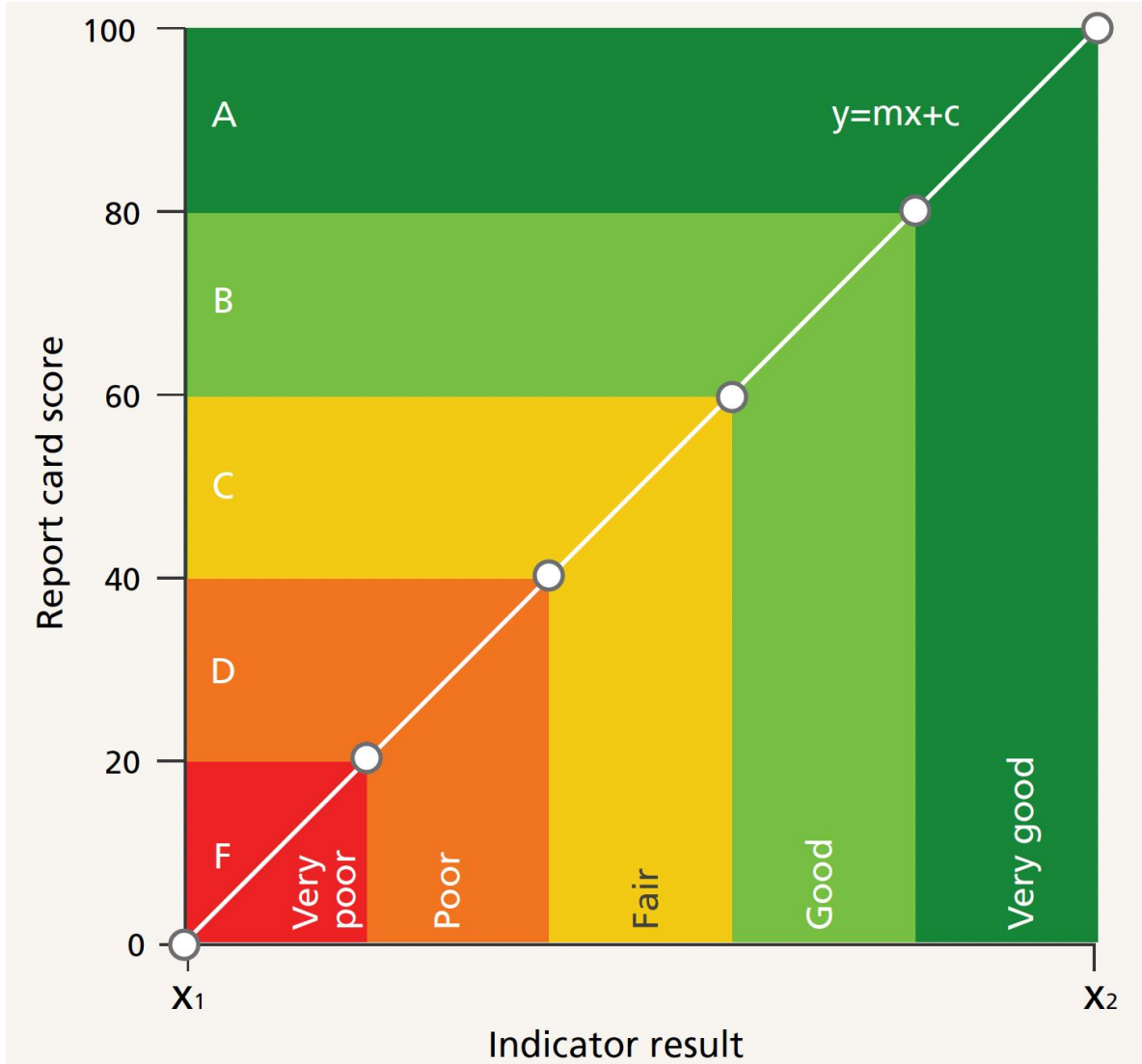


4. Calculating Grades

- Indicator scores are based on thresholds
- Indicator scores converted report card scale
 - 100-point scale with grades in 20-point increments
 - A through F
 - +/- for top/ bottom 5 points
 - Broader evenly distributed scale to be more sensitive to change

GRADING SCALE		
VERY GOOD	A+	100-95%
	A	95-85%
	A-	85-80%
GOOD	B+	80-75%
	B	75-65%
	B-	65-60%
MODERATE	C+	60-55%
	C	55-45%
	C-	45-40%
POOR	D+	40-35%
	D	35-25%
	D-	25-20%
VERY POOR	F	20-0%
	U	UNRATED

Scoring: Linear vs. Non-linear Conversation

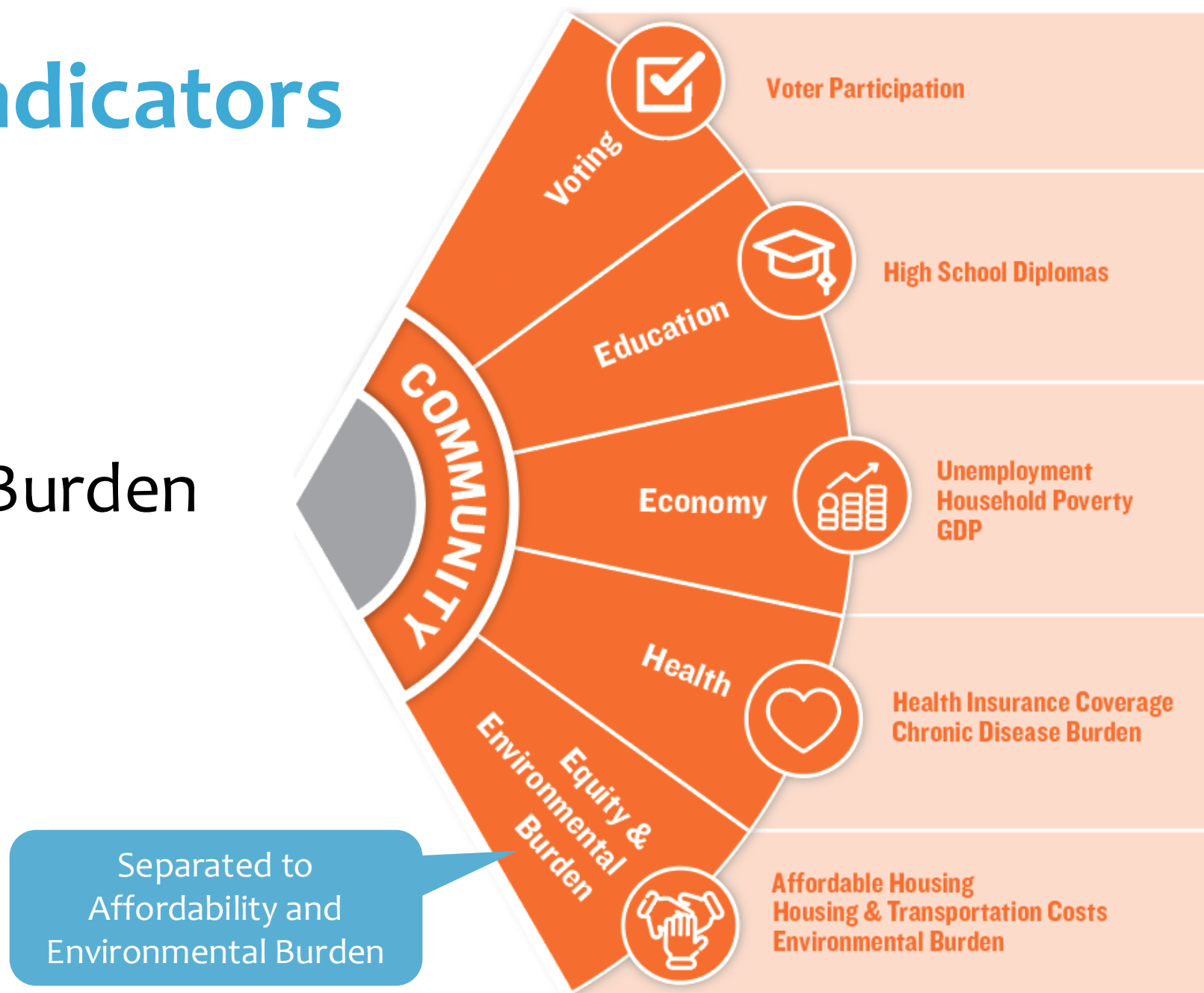


Community Indicator Grades



Community Indicators & Measures

- Affordability
- Environmental Burden
- Health
- Economy
- Education
- Voting



Affordability: Housing & Transportation Costs



- **Measure:** How much income is spent on housing and transportation costs
 - Based on median incomes and costs
- **Threshold and Scoring:** Relative performance compared to state, High/Low equal buckets based on statewide county observations (39.48-63.00)

Grading				
	H&T Costs		Report Card	
	Low	High	High	Low
A	39.5	44.2	100	80
B	44.2	48.9	80	60
C	48.9	53.6	60	40
D	53.6	58.3	40	20
F	58.3	63.0	20	0

#	Region Name	Value	Score	Grade
11	Headwaters	51.9	47.2	C
12	Killbuck, Pipe, & Duck Creek	41.9	89.6	A
13	Upper Fall Creek & Geist	53.2	41.7	C-
14	Stoney & Crooked Creek	50.3	54.0	C
15	Cicero Creek & Morse	51.6	48.6	C
16	Lower Fall Creek & Pleasant Run	40.3	96.3	A+
17	Eagle Creek	46.5	70.0	B
18	White Lick Creek	49.9	55.7	C+
19	Clear, Lambs, Indian, Butler Crk	50.9	51.4	C
ALL	White River Watershed	46.6	61.6	B-

Affordability: Housing

- **Measure:** Percent of Households Paying More than 30% of their Income for Housing
 - Source is US Census
- **Threshold and Scoring:** Relative performance compared to state, High/Low equal buckets based on statewide county observations (0.16-0.34), A is 0

Grading				
	Housing Cost Burden		Report Card	
	Low	High	High	Low
A	0.00	0.00	100	80
B	0.00	0.20	80	60
C	0.20	0.25	60	40
D	0.25	0.30	40	20
F	0.30	0.34	20	0

#	Region Name	Value	Score	Grade
11	Headwaters	0.27	34.0	D
12	Killbuck, Pipe, & Duck Creek	0.25	37.8	D+
13	Upper Fall Creek & Geist	0.19	60.7	B-
14	Stoney & Crooked Creek	0.24	43.1	C-
15	Cicero Creek & Morse	0.20	60.8	B-
16	Lower Fall Creek & Pleasant Run	0.34	2.6	F
17	Eagle Creek	0.29	22.9	D-
18	White Lick Creek	0.22	52.8	C
19	Clear, Lambs, Indian, Butler Crk	0.20	60.2	B-
ALL	White River Watershed	0.27	41.2	C-

Affordability Combine Grades



#	Region Name	Housing & Transportation Costs			Housing Cost Burden			Combine	
		Value	Score	Grade	Value	Score	Grade	Avg	Grade
11	Headwaters	51.9	47.2	C	0.27	34.0	D	38.3	D+
12	Killbuck, Pipe, & Duck Creek	41.9	89.6	A	0.25	37.8	D+	64.0	B-
13	Upper Fall Creek & Geist	53.2	41.7	C-	0.19	60.7	B-	51.2	C
14	Stoney & Crooked Creek	50.3	54.0	C	0.24	43.1	C-	48.6	C
15	Cicero Creek & Morse	51.6	48.6	C	0.20	60.8	B-	54.7	C
16	Lower Fall Creek & Pleasant Run	40.3	96.3	A+	0.34	2.6	F	49.4	C
17	Eagle Creek	46.5	70.0	B	0.29	22.9	D-	46.5	C
18	White Lick Creek	49.9	55.7	C+	0.22	52.8	C	54.2	C
19	Clear, Lambs, Indian, Butler Crk	50.9	51.4	C	0.20	60.2	B-	55.8	C+
ALL	White River Watershed	46.6	69.7	B	0.27	41.2	C-	51.4	C

Environmental Burden



- **Measure:** Person's Potential Exposure to Environmental Pollution
 - Based on population and presence of various air pollution, hazardous sites, transportation infrastructure, water pollution, and lead-based paint presence.
- **Threshold and Scoring:** Relative performance compared to state, High/Low equal buckets based on statewide county observations(0.02-0.66)

Grading				
	Environmental Burden		Report Card	
Grade	Low	High	High	Low
A	0.00	0.00	100	80
B	0.00	0.18	80	60
C	0.18	0.34	60	40
D	0.34	0.50	40	20
F	0.50	0.66	20	0

#	Region Name	Value	Score	Grade
11	Headwaters	0.44	28.3	D
12	Killbuck, Pipe, & Duck Creek	0.62	6.3	F
13	Upper Fall Creek & Geist	0.33	41.2	C-
14	Stoney & Crooked Creek	0.37	36.2	D+
15	Cicero Creek & Morse	0.21	55.5	C+
16	Lower Fall Creek & Pleasant Run	0.65	2.6	F
17	Eagle Creek	0.54	16.2	F
18	White Lick Creek	0.42	29.8	D
19	Clear, Lambs, Indian, Butler Crk	0.29	45.9	C
ALL	White River Watershed	0.49	28..9	D

Health: Insurance Coverage

- **Measure:** Percent of Population with Health Insurance Coverage
- **Threshold and Scoring:** Relative performance compared to state, High/Low equal buckets based on statewide county observations(0.74-0.96)

Grading				
	Insurance Coverage		Report Card	
	Low	High	High	Low
A	0.92	0.96	100	80
B	0.87	0.92	80	60
C	0.83	0.87	60	40
D	0.79	0.83	40	20
F	0.74	0.79	20	0

		Insurance Coverage		
#	Region Name	Value	Score	Grade
11	Headwaters	0.93	84.55	A-
12	Killbuck, Pipe, & Duck Creek	0.92	80.73	A-
13	Upper Fall Creek & Geist	0.95	92.58	A
14	Stoney & Crooked Creek	0.94	91.80	A
15	Cicero Creek & Morse	0.93	86.65	A
16	Lower Fall Creek & Pleasant Run	0.90	72.71	B
17	Eagle Creek	0.89	68.93	B
18	White Lick Creek	0.94	89.17	A
19	Clear, Lambs, Indian, Butler Crk	0.95	93.85	A
ALL	White River Watershed	0.92	81.87	A-

Health: Chronic Disease Burden



- **Measure:** Percent of Population Living in Area with High Burdens of at least 2 of 5 Chronic Health Conditions
 - Asthma, Cancer, Depression, Diabetes, High Blood Pressure, High Burden means Census Tract is in top third of all tracts in Indiana for the health condition
- **Threshold and Scoring:** Relative performance compared to state, High/Low equal buckets based on statewide county observations(0 - 1), A is 0

Grading				
	Chronic Disease Burden		Report Card	
	Low	High	High	Low
A	0.00	0.00	100	80
B	0.00	0.25	80	60
C	0.25	0.50	60	40
D	0.50	0.75	40	20
F	0.75	1.00	20	0

#	Region Name	Value	Score	Grade
11	Headwaters	0.62	30.08	D
12	Killbuck, Pipe, & Duck Creek	0.90	8.32	F
13	Upper Fall Creek & Geist	0.48	41.55	C-
14	Stoney & Crooked Creek	0.11	70.95	B
15	Cicero Creek & Morse	0.11	71.38	B
16	Lower Fall Creek & Pleasant Run	0.43	45.92	C
17	Eagle Creek	0.30	56.01	C+
18	White Lick Creek	0.07	74.40	B
19	Clear, Lambs, Indian, Butler Crk	0.12	70.04	B
ALL	White River Watershed	0.32	54.02	C

Health Combine Grades



		Insurance Coverage			Chronic Disease Burden			Combine Score	
#	Region Name	Value	Score	Grade	Value	Score	Grade	Avg	Grade
11	Headwaters	0.93	84.55	A-	0.62	30.08	D	41.9	C-
12	Killbuck, Pipe, & Duck Creek	0.92	80.73	A-	0.90	8.32	F	33.7	D
13	Upper Fall Creek & Geist	0.95	92.58	A	0.48	41.55	C-	49.0	C
14	Stoney & Crooked Creek	0.94	91.80	A	0.11	70.95	B	58.9	C+
15	Cicero Creek & Morse	0.93	86.65	A	0.11	71.38	B	57.7	C+
16	Lower Fall Creek & Pleasant Run	0.90	72.71	B	0.43	45.92	C	44.9	C-
17	Eagle Creek	0.89	68.93	B	0.30	56.01	C+	47.3	C
18	White Lick Creek	0.94	89.17	A	0.07	74.40	B	60.5	B-
19	Clear, Lambs, Indian, Butler Crk	0.95	93.85	A	0.12	70.04	B	61.0	B-
ALL	White River Watershed	0.92	81.87	A-	0.32	54.02	C	67.9	B

Economy: Unemployment



- **Measure:** Estimated Unemployment Rate for Labor Force Over Age 16
- **Threshold:** Goal of Full Employment using CBO's "Noncyclical Rate of Unemployment" (2021 was 0.046081... 4.6%)
- **Scoring:** A is within 0.0025 of Full, with lower unemployment and higher unemployment using equal buckets based on statewide county observations (0.0198-0.0615)

Grading				
	Low	High	Low	High
A	0.04358	0.04858		
B	0.04858	0.05181	0.03763	0.04358
C	0.05181	0.05504	0.03168	0.03763
D	0.05504	0.05828	0.02573	0.03168
F	0.05828	< Over	Under>	0.02573
	If Over Full		If Under Full	

#	Region Name	Value	Score	Grade
11	Headwaters	0.04	76.03	B+
12	Killbuck, Pipe, & Duck Creek	0.04	79.09	B+
13	Upper Fall Creek & Geist	0.03	66.85	B
14	Stoney & Crooked Creek	0.03	65.78	B
15	Cicero Creek & Morse	0.03	67.50	B
16	Lower Fall Creek & Pleasant Run	0.05	80.8	A-
17	Eagle Creek	0.04	76.41	B+
18	White Lick Creek	0.03	66.59	B
19	Clear, Lambs, Indian, Butler Crk	0.03	67.84	B
ALL	White River Watershed	0.04	71.4	B

Economy: Poverty

- **Measure:** Population living below federal poverty line in previous year
- **Threshold:** Goal of 2% with range base on state county range
- **Scoring:** High/Low equal buckets based on statewide county observations (0.0396-0.2183)

Grading		
	Low	High
A	Under >	0.02000
B	0.02000	0.06956
C	0.06956	0.11913
D	0.11913	0.16869
F	0.16869	< Over

		Value	Score	Grade
11	Headwaters	0.21	2.57	F
12	Killbuck, Pipe, & Duck Creek	0.16	20.46	D-
13	Upper Fall Creek & Geist	0.07	53.84	C
14	Stoney & Crooked Creek	0.07	55.15	C+
15	Cicero Creek & Morse	0.07	55.41	C+
16	Lower Fall Creek & Pleasant Run	0.18	14.91	F
17	Eagle Creek	0.13	32.43	D
18	White Lick Creek	0.07	53.68	C
19	Clear, Lambs, Indian, Butler Crk	0.07	52.53	C
	White River Watershed	0.12	37.9	D+

Economy: GDP

- **Measure:** Annual Change in (Aggregated Per-Capita) GDP
- **Threshold:** Goal of 2% with range base on state county range
- **Scoring:** High/Low equal buckets based on statewide county observations (-0.074 – 0.247) We remove extreme counties outside +/- 3 Standard Deviations (Adjusted Observations: -0.074-.1522)

Grading		
	Low	High
A	0.10690	< Over
B	0.06157	0.10690
C	0.01625	0.06157
D	-0.02907	0.01625
F	Under >	-0.02907

#	Region Name	Value	Score	Grade
11	Headwaters	0.028	45.37	C
12	Killbuck, Pipe, & Duck Creek	0.043	51.92	C
13	Upper Fall Creek & Geist	0.091	73.06	B
14	Stoney & Crooked Creek	0.039	50.21	C
15	Cicero Creek & Morse	0.071	64.03	B-
16	Lower Fall Creek & Pleasant Run	0.045	52.87	C
17	Eagle Creek	0.053	56.06	C+
18	White Lick Creek	0.079	67.61	B
19	Clear, Lambs, Indian, Butler Crk	0.051	55.20	C+
ALL	White River Watershed	0.049	57.4	C+

Economy Combined Grades



#	Region Name	Unemployment			Poverty			GDP			Combine Score	
		Value	Score	Grade	Value	Score	Grade	Value	Score	Grade	Avg	Grade
11	Headwaters	0.04	76.03	B+	0.21	2.57	F	0.028	45.37	C	41.3	C-
12	Killbuck, Pipe, & Duck Creek	0.04	79.09	B+	0.16	20.46	D-	0.043	51.92	C	50.5	C
13	Upper Fall Creek & Geist	0.03	66.85	B	0.07	53.84	C	0.091	73.06	B	64.6	B-
14	Stoney & Crooked Creek	0.03	65.78	B	0.07	55.15	C+	0.039	50.21	C	57.0	C+
15	Cicero Creek & Morse	0.03	67.50	B	0.07	55.41	C+	0.071	64.03	B-	62.3	B-
16	Lower Fall Creek & Pleasant Run	0.05	77.03	B+	0.18	14.91	F	0.045	52.87	C	48.3	C
17	Eagle Creek	0.04	76.41	B+	0.13	32.43	D	0.053	56.06	C+	55.0	C
18	White Lick Creek	0.03	66.59	B	0.07	53.68	C	0.079	67.61	B	62.6	B-
19	Clear, Lambs, Indian, Butler Crk	0.03	67.84	B	0.07	52.53	C	0.051	55.20	C+	58.5	C+
ALL	White River Watershed	0.04	73.86	B	0.12	35.08	D+	0.049	54.57	C	54.5	C

Education



- **Measure:** Population 25+ with at least high school diploma or equivalent
- **Threshold:** Relative performance compared to state
 - LaGrange County is excluded for comparison (Amish anomaly)
- **Scoring:** High/Low equal buckets based on statewide county observations (0.768-0.972)

Grading		
	Low	High
A	0.93164	< Over
B	0.89090	0.93164
C	0.85015	0.89090
D	0.80941	0.85015
F	Under >	0.80941

#	Region Name	Value	Score	Grade
11	Headwaters	0.90	66.51	B
12	Killbuck, Pipe, & Duck Creek	0.89	58.77	C+
13	Upper Fall Creek & Geist	0.94	82.47	A-
14	Stoney & Crooked Creek	0.96	94.77	A
15	Cicero Creek & Morse	0.95	87.51	A
16	Lower Fall Creek & Pleasant Run	0.85	39.01	D+
17	Eagle Creek	0.89	59.75	C+
18	White Lick Creek	0.93	79.81	B+
19	Clear, Lambs, Indian, Butler Crk	0.92	73.21	B
ALL	White River Watershed	0.90	71.30	B

Voter Participation



- **Measure:** Percent of Non-Incarcerated Voting-Age Population who Cast a Ballot in 2020
- **Threshold:** Relative performance compared to state LaGrange County is excluded for comparison (Amish anomaly)
- **Scoring:** High/Low equal buckets based on statewide county observations (0.49-0.77)

Grading		
	Low	High
A	0.71075	< Over
B	0.65492	0.71075
C	0.59910	0.65492
D	0.54327	0.59910
F	Under >	0.54327

#	Region Name	Value	Score	Grade
11	Headwaters	0.53	15.86	F
12	Killbuck, Pipe, & Duck Creek	0.51	9.55	F
13	Upper Fall Creek & Geist	0.70	74.98	B
14	Stoney & Crooked Creek	0.71	80.11	A-
15	Cicero Creek & Morse	0.74	91.94	A
16	Lower Fall Creek & Pleasant Run	0.50	5.64	F
17	Eagle Creek	0.56	24.65	D-
18	White Lick Creek	0.66	60.42	B-
19	Clear, Lambs, Indian, Butler Crk	0.69	72.38	B
ALL	White River Watershed	0.60	48.39	C-

Overall Community Grade



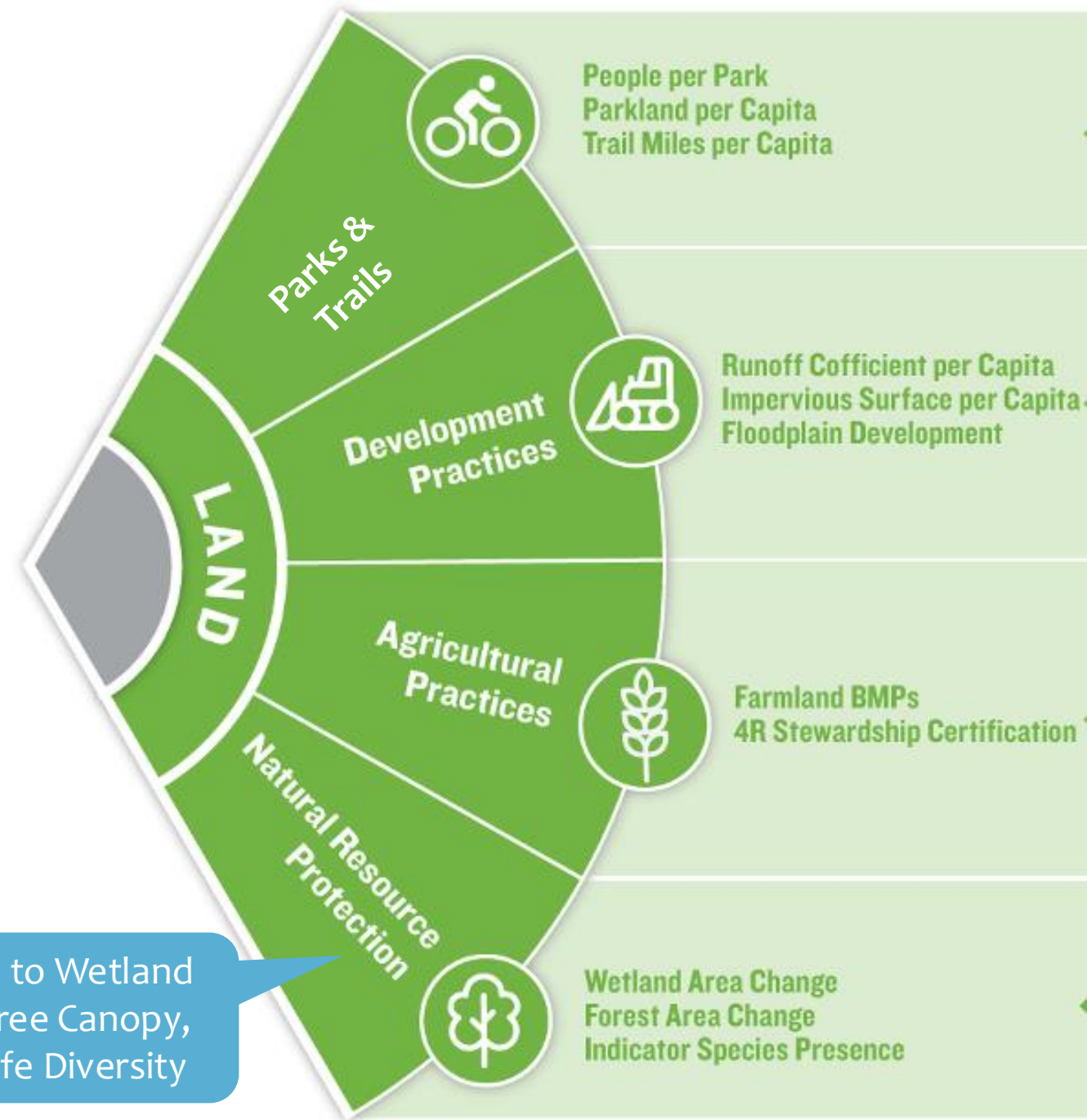
#	Region Name	Afford.	Envir. Burden	Health	Econ.	Education	Voting	Avg	Grade
11	Headwaters	38.3	28.0	41.9	41.3	66.5	15.9	38.6	D+
12	Killbuck, Pipe, & Duck Creek	64.0	5.1	33.7	50.5	58.8	9.6	36.9	D+
13	Upper Fall Creek & Geist	51.2	41.6	49.0	64.4	82.5	75.0	60.6	B-
14	Stoney & Crooked Creek	48.6	36.3	58.9	56.8	94.8	80.1	62.6	B-
15	Cicero Creek & Morse	54.7	56.5	57.7	62.1	87.5	91.9	68.4	B
16	Lower Fall Creek & Pleasant Run	49.4	1.2	44.9	49.5	39.0	5.6	31.6	D
17	Eagle Creek	46.5	15.4	47.3	54.9	59.8	24.7	41.4	C-
18	White Lick Creek	54.2	29.6	60.5	62.4	79.8	60.4	57.8	B+
19	Clear, Lambs, Indian, Butler Crk	55.8	46.5	61.0	58.3	73.2	72.4	61.2	B-
ALL	White River Watershed	51.4	28.9	50.5	55.6	71.3	48.4	51.0	C
		C	D	C	C+	B	C	C	

Land Indicator Grades



Land Indicators & Measures

- Parks & Trails
- Development Practices
- Agricultural Practices
- Wetland Change
- Tree Canopy
- Wildlife Diversity



Parks & Trails



- **Measures:** Number of people per park, Park Acreage per Person, and Miles of trail per 1,000 residents
- **Thresholds and Scoring:**
 - National Recreation & Park Association Agency Performance Review Data by Great Lakes Region and Population density; non-linear (different spread between quartiles)
 - PROS Consulting Plans (Indy, Pendleton, National) state best practice, linear

	Park per person		Acre park		Trails Score		Report Card	
Grade	Low	High	Low	High	Low	High	Low	High
A	7820	11274	18.30000	23.78333	1	>	80	100
B	4366	7820	12.81667	18.30000	0.75	1	60	80
C	2300	4366	8.38333	12.81667	0.5	0.75	40	60
D	1622	2300	5.00000	8.38333	0.25	0.5	20	40
F	0	1622	0.00000	5.00000	0	0.25	0	20

Parks & Trails Grade



		People per Park			Park Acres per 1,000 People			Trail Miles per 1,000 People			Combine	
#	Region Name	Value	Score	Grade	Value	Score	Grade	Value	Score	Grade	Avg	Grade
11	Headwaters	1872.6	28.0	D	26.9	100.0	A+	0.4	34.8	D	54.3	C+
12	Killbuck, Pipe, & Duck Creek	1386.6	17.1	F	11.9	56.2	C+	0.3	26.9	D	33.4	D
13	Upper Fall Creek & Geist	3425.0	51.3	C	5.4	23.4	D-	0.3	27.3	D	34.0	D
14	Stoney & Crooked Creek	3392.4	66.7	B	10.0	41.6	C-	0.9	74.7	B	61.0	B-
15	Cicero Creek & Morse	2981.9	47.3	C	13.1	61.2	B-	0.5	40.6	C-	49.7	C
16	Lower Fall Creek & Pleasant Run	3410.6	71.8	B	7.8	45.7	C	0.2	18.6	F	45.3	C
17	Eagle Creek	3955.3	71.8	B	21.8	78.4	B+	0.5	42.2	C-	64.1	B-
18	White Lick Creek	4928.3	80.6	A-	8.1	33.0	D	0.5	42.9	C-	52.2	C
19	Clear, Lambs, Indian, Butler Crk	5417.8	66.1	B	142.9	100.0	A+	0.3	26.4	D	64.2	B-
ALL	White River Watershed	3338.0	55.6	C+	18.8	59.9	C+	0.5	37.2	D+	50.9	C

Development Practices



- **Measures:** Flood damage risk, and acres of development per capita, percent of floodplain developed per capita
- **Threshold and scoring:**
 - Flood damage: Flood factor scale, linear
 - Acres of Development Per Capita: high/low data breaks, linear

	Flood Damage Risk		% of Floodplain Dev.		Acres Dev. per Capita		Report Card	
	Low	High	Low	High	Low	High	High	Low
A	4.5%	9.3%	2.5%	0.0%	1.00	0.00	100	80
B	9.3%	14.1%	5.0%	2.5%	2.00	1.00	80	60
C	14.1%	18.9%	7.5%	5.0%	3.00	2.00	60	40
D	18.9%	23.7%	10.0%	7.5%	4.00	3.00	40	20
F	23.7%	28.5%	100.0%	10.0%	10.00	4.00	20	0

Development Practices



		Flood Damage Risk			Percent of Floodplain Developed Per Capita			Acres of Dev. Per Capita			Combine	
#	Region Name	Value	Score	Grade	Value	Score	Grade	Value	Score	Grade	Avg score	Grade
11	Muncie	0.09	83.40	A-	0.22	51.2	C	4.28	19.1	F	51.2	C
12	Anderson north	0.09	79.40	B+	0.20	53.6	C	4.56	18.1	F	50.4	C
13	Pendleton/ Geist	0.06	94.24	A	0.15	54.6	C	4.62	17.9	F	55.6	C+
14	Carmel/ Fishers/ Noblesville	0.08	86.34	A	0.18	18.1	F	3.72	45.7	C	50.1	C
15	Cicero/ Morse	0.08	84.99	A-	0.35	54.0	D	3.31	53.7	C	64.2	B-
16	Downtown Indy/ east	0.07	90.80	A	0.22	15.0	C+	3.44	51.2	C	52.3	C
17	Indy NW/ Zionsville	0.06	94.65	A	0.19	18.3	B-	3.21	55.9	C+	56.3	C+
18	Indy W., Avon/ Plainfield	0.04	101.94	A+	0.14	27.0	B	4.53	18.2	F	48.4	C
19	Martinsville	0.09	81.26	A-	0.20	81.0	C+	3.11	57.8	C+	73.4	B
ALL	White River Watershed	0.07	89.36	A	0.20	19.7	C+	3.86	37.5	D+	55.8	C+

Agricultural Practices



- **Measures:** Percent of farmland using BMP (cover crops, min./no tillage)
 - Future measure: percent of row crop acres 4R certified (program too new)
- **Threshold and Scoring:**
 - Based on median and standard deviation of statewide county BMP data (4-year)
 - Standard Deviation: 6.23%
 - Median: 46.84%

	Conservation Practices		Report Card	
Grade	High	Low	High	Low
A	100%	65.54%	100	80
B	65.53%	53.08%	80	60
C	53.07%	40.61%	60	40
D	40.60%	28.15%	40	20
F	28.14%	0%	20	0

		Conservation Practices		
#	Region Name	% Avg	RC Score	Grade
11	Headwaters	56.09%	64.86	B-
12	Killbuck, Pipe, & Duck Creek	51.00%	56.68	C+
13	Upper Fall Creek & Geist	52.81%	59.59	C+
14	Stoney & Crooked Creek	51.75%	57.89	C+
15	Cicero Creek & Morse	47.51%	51.08	C
16	Lower Fall Creek & Pleasant Run	N/A	N/A	N/A
17	Eagle Creek	54.85%	62.86	B-
18	White Lick Creek	52.42%	58.96	C+
19	Clear, Lambs, Indian, Butler Crk	51.92%	58.16	C+
ALL	White River Watershed	52.29%	58.76	C+

Tree Canopy



- **Measures:** Change in tree canopy cover area
- **Thresholds and Scoring:**
 - Wetlands Percent changed from baseline (2011) by region

	Wetland % Change		Report Card	
Grade	Low	High	Low	High
A	2%	<	80	100
B	1%	2%	60	80
C	0%	1%	40	60
D	-1%	0%	20	40
F	-100%	-1%	0	20

		Wetland Area Percent Change (2005-19)		
#	Region Name	% Change	RC Score	Grade
11	Headwaters	0.18%	43.6	C-
12	Killbuck, Pipe, & Duck Creek	-0.28%	34.4	D
13	Upper Fall Creek & Geist	-0.53%	29.3	D
14	Stoney & Crooked Creek	-2.15%	19.8	F
15	Cicero Creek & Morse	-1.11%	20.0	F
16	Lower Fall Creek & Pleasant Run	-1.12%	20.0	F
17	Eagle Creek	-0.12%	37.6	D+
18	White Lick Creek	1.18%	63.7	B-
19	Clear, Lambs, Indian, Butler Crk	0.22%	44.3	C-
ALL	White River Watershed	-0.42%	34.7	D

Wetland Change



- **Measures:** Change in wetland area
- **Thresholds and Scoring:**
 - Wetlands Percent changed from baseline (2005) by region

	Wetland % Change		Report Card	
Grade	Low	High	Low	High
A	2%	<	80	100
B	1%	2%	60	80
C	0%	1%	40	60
D	-1%	0%	20	40
F	-100%	-1%	0	20

		Wetland Area Percent Change (2005-19)		
#	Region Name	% Change	RC Score	Grade
11	Headwaters	-0.38%	32.41	D
12	Killbuck, Pipe, & Duck Creek	-0.70%	25.94	D
13	Upper Fall Creek & Geist	-0.69%	26.16	D
14	Stoney & Crooked Creek	-2.40%	0.28	F
15	Cicero Creek & Morse	-0.45%	31.03	D
16	Lower Fall Creek & Pleasant Run	-9.51%	1.72	F
17	Eagle Creek	-3.70%	0.54	F
18	White Lick Creek	-2.49%	0.30	F
19	Clear, Lambs, Indian, Butler Crk	-2.55%	0.31	F
ALL	White River Watershed	-1.69%	13.19	F

Wildlife Diversity



- **Measures:** Presence of wildlife indicator species
- **Thresholds and Scoring:**
 - Wildlife checklist of indicator species by ecosystem (present/ null)

	Wetland % Change		Report Card	
Grade	Low	High	Low	High
A	80%	100%	80	100
B	60%	80%	60	80
C	40%	60%	40	60
D	20%	40%	20	40
F	0%	20%	0	20

		Wildlife Indicator Species		
#	Region Name	% Species Present	RC Score	Grade
11	Headwaters	50.0%	50.00	C
12	Killbuck, Pipe, & Duck Creek	55.9%	55.88	C+
13	Upper Fall Creek & Geist	50.0%	50.00	C
14	Stoney & Crooked Creek	73.5%	73.53	B
15	Cicero Creek & Morse	35.3%	35.29	D+
16	Lower Fall Creek & Pleasant Run	73.5%	73.53	B
17	Eagle Creek	76.5%	76.47	B+
18	White Lick Creek	70.6%	70.59	B
19	Clear, Lambs, Indian, Butler Crk	61.8%	61.76	B-
ALL	White River Watershed	60.8%	60.78	B-

Overall Land Grade



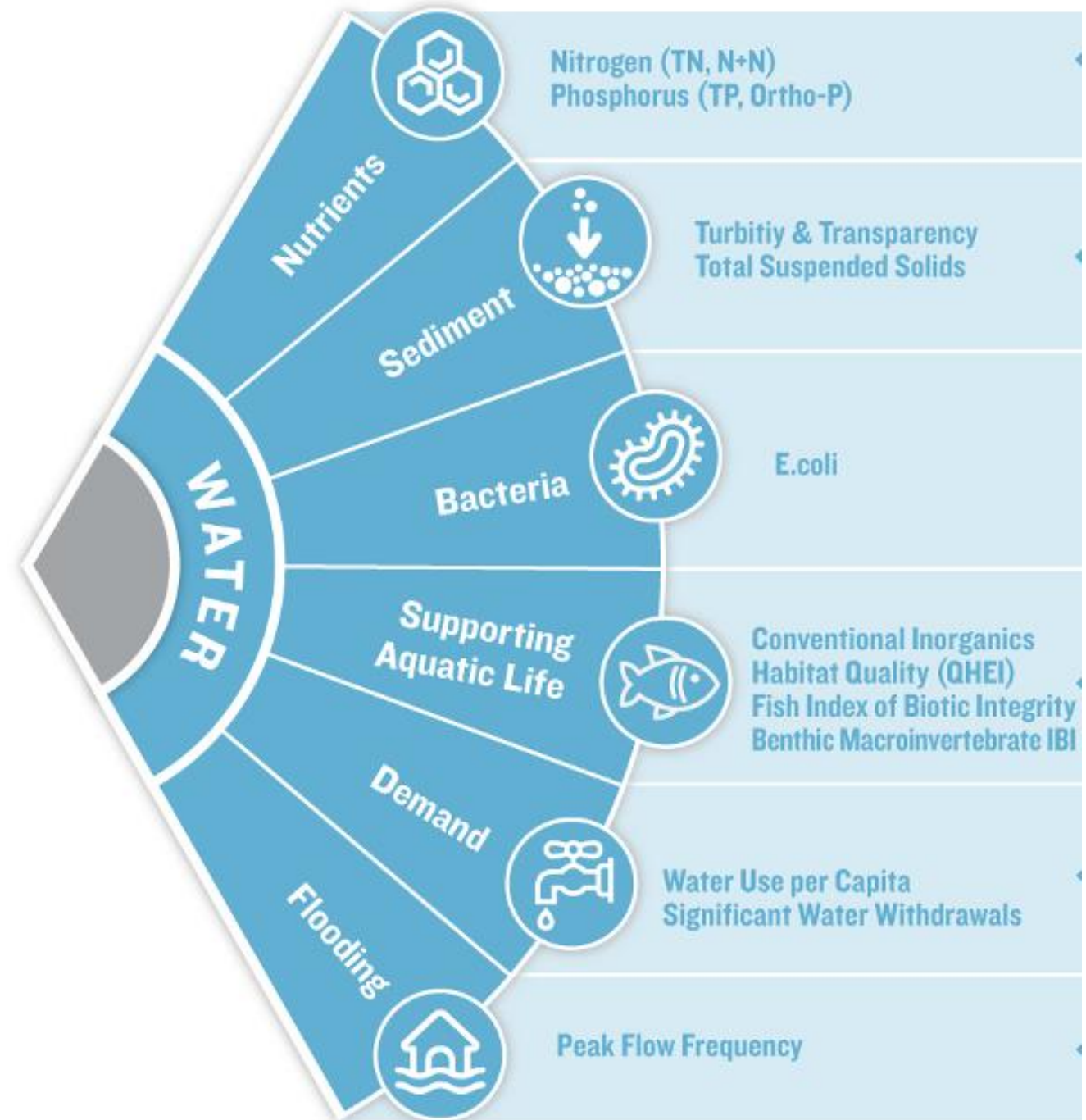
#	Region Name	Parks & Trail	Dev. Practices	Ag Practices	Tree Canopy	Wetland	Wildlife	Avg.	Grade
11	Headwaters	54.28	51.21	64.86	43.56	32.41	50.00	49.39	C
12	Killbuck, Pipe, & Duck Creek	33.40	50.37	56.68	34.38	25.94	55.88	42.77	C-
13	Upper Fall Creek & Geist	34.01	55.59	59.59	29.33	26.16	50.00	42.45	C-
14	Stoney & Crooked Creek	61.02	50.05	57.89	19.77	0.28	73.53	43.76	C-
15	Cicero Creek & Morse	49.66	64.23	51.08	19.98	31.03	35.29	41.88	C-
16	Lower Fall Creek & Pleasant Run	45.35	52.34	N/A	19.98	1.72	73.53	38.58	D+
17	Eagle Creek	64.13	56.28	62.86	37.58	0.54	76.47	49.64	C
18	White Lick Creek	52.17	48.40	58.96	63.66	0.30	70.59	49.01	C
19	Clear, Lambs, Indian, Butler Crk	64.16	73.36	58.16	44.32	0.31	61.76	50.35	C
ALL	White River Watershed	50.91	55.76	58.76	34.73	13.19	60.78	45.31	C
		C	C+	C+	D	F	B-	C	

Water Indicator Grades



Water Indicators & Measures

- Nutrients
- Sediment
- Bacteria
- Supporting Aquatic Life
- Demand
- Flooding



Nutrients



- **Measure:** Median concentration of Nitrogen as Nitrate + Nitrate (N+| as N) and Total Phosphorus.
- **Thresholds and Scoring:**
 - N+N: 1.6 mg/L = C (EPA), linear (0.8 increments)
 - TP: 0.08 mg/L (Ohio EPA) < A; & 0.3 mg/L (IDEM, TDML) > F, non-linear

	N+N Concentration		TP Concentration		Report Card Scores	
Grade	Low	High	Low	High	High	Low
A	0	0.7	0.00	0.07	100	80
B	0.8	1.5	0.08	0.14	80	60
C	1.6	2.3	0.15	0.22	60	40
D	2.4	3.1	0.23	0.30	40	20
F	3.2	>	0.30	>	20	0

Nutrients Grades



#	Region Name	N+N, as N			TP		
		Median	RC Score	Grade	Median	RC Score	Grade
1	Headwaters	1.4	65.00	B-	0.091	77.00	B+
2	Killbuck, Pipe, & Duck Creek	1.8	55.00	C	0.152	60.36	B-
3	Upper Fall Creek & Geist	1.9	52.50	C	0.064	82.63	A-
4	Stoney & Crooked Creek	2.8	30.00	D	0.218	42.36	C-
5	Cicero Creek & Morse	3.3	17.50	F	0.086	78.36	B+
6	Lower Fall Creek & Pleasant Run	0.7	82.50	A-	0.081	79.73	B+
7	Eagle Creek	1.6	60.00	C+	0.078	78.83	B+
8	White Lick Creek	1.8	55.00	C	0.109	72.09	B
9	Clear, Lambs, Indian, Butler Crk	2.7	32.50	D	0.170	55.45	C+
All	White River Watershed	2.00	50.00	C	0.117	69.42	B

N & P Combine	
Score	Grade
71.00	B
57.68	C+
67.56	B
36.18	D+
47.93	C
81.11	A-
69.41	B
63.55	B-
43.98	C-
59.71	C+

Sediment



- **Measures:** Frequency of Total Suspended Solids (TSS) exceeding threshold
- **Thresholds and Scoring:**
 - Percent exceeding 25.0 mg/L (reduced fish concentrations Waters, T.F., 1995), <10% = A (Minnesota EPA), non-linear (due to F)

	% Exceed (25 mg/L)		Report Card Scores	
Grade	Low	High	High	Low
A	0	10%	100	80
B	10%	19.9%	80	60
C	20%	29.9%	60	40
D	30%	39.9%	40	20
F	40%	100%	20	0

#	Region Name	TSS		
		% Exceed (25 mg/L)	RC Score	Grade
1	Headwaters	21.6%	56.70	C+
2	Killbuck, Pipe, & Duck Creek	17.4%	65.26	B
3	Upper Fall Creek & Geist	26.1%	47.83	C
4	Stoney & Crooked Creek	12.8%	74.31	B
5	Cicero Creek & Morse	15.6%	68.89	B
6	Lower Fall Creek & Pleasant Run	19.4%	61.14	B-
7	Eagle Creek	7.8%	84.42	A-
8	White Lick Creek	24.5%	51.02	C
9	Clear, Lambs, Indian, Butler Crk	31.5%	37.04	D+
All	White River Watershed	19.6%	60.73	B-

Bacteria



- **Measure:** Concentration and frequency of *E.coli* exceed threshold
- **Threshold and Scoring:**
 - 235 cfu/100mL (Indiana Water Quality Standards), non-linear
 - A= Geomean <235, and sample exceed < 10% , non-linear (due to F)

	Geo Mean		% Exceed (235 cfu/100mL)		Report Card	
Grade	Low	High	Low	High	High	Low
A	0	125	0%	10.0%	100	80
B	125	235	10%	20.0%	80	60
C	236	575	20%	30.0%	60	40
D	576	915	30%	40.0%	40	20
F	916	1255	40%	100%	20	0

Bacteria Grades



		Geo Mean			% Exceed		
#	Region Name	Mean	Score	Grade	% Exceed	Score	Grade
1	Headwaters	332.3	58.4	C+	48.2%	17.3	F
2	Killbuck, Pipe, & Duck Creek	339.5	57.8	C+	50.6%	16.5	F
3	Upper Fall Creek & Geist	271.6	63.3	B-	43.6%	18.8	F
4	Stoney & Crooked Creek	230.3	63.1	B-	47.4%	17.5	F
5	Cicero Creek & Morse	186.5	70.2	B	45.5%	18.2	F
6	Lower Fall Creek, Pleasant Run	589.3	37.4	D+	73.3%	8.9	F
7	Eagle Creek	172.8	72.3	B	35.5%	29.0	D
8	White Lick Creek	629.0	34.1	D	65.0%	11.7	F
9	Clear, Lambs, Indian, Butler Crk	1054.5	-0.6	F	92.0%	2.7	F
All	White River Watershed	422.9	50.7	C	55.7%	15.6	F

Combined	
Avg Score	Grade
37.8	D+
37.1	D+
41.1	C-
40.3	C-
44.2	C-
23.1	D-
50.7	C
22.9	D-
1.0	F
33.1	D

Supporting Aquatic Life: QHEI



- **Measure:** Fish community scores (IBI) and Qualitative Habitat Evaluation Index (QHEI)
- **Threshold and scoring:**
 - Ohio EPA ranges, non-linear

		Fish IBI		QHEI		Report Card	
Grade	Narrative	High	Low	High	Low	High	Low
A	Excellent	60	53	100	75	100	80
B	Good	52	45	74	60	80	60
C	Fair	44	36	59	45	60	40
D	Poor	35	23	44	30	40	20
F	Very Poor	22	1	29	0	20	0

Supporting Aquatic Life Grades



#	Region Name	QHEI			Fish IBI			Combine	
		Avg QHEI	RC Score	Grade	Fish IBI	RC Score	Grade	Score	Grade
1	Headwaters	66.0	69.3	B	40.2	50.9	C	60.1	B-
2	Killbuck, Pipe, & Duck Creek	68.9	73.2	B	50.8	76.9	B+	75.0	B+
3	Upper Fall Creek & Geist	52.5	51.3	C	40.7	52.1	C	51.7	C
4	Stoney & Crooked Creek	68.8	73.1	B	42.7	56.9	C+	65.0	B
5	Cicero Creek & Morse	57.0	57.3	C+	37.3	44.2	C-	50.8	C
6	Lower Fall Creek & Pleasant Run	64.0	66.7	B	42.0	55.3	C+	61.0	B-
7	Eagle Creek	N/A	N/A		N/A	N/A		N/A	
8	White Lick Creek	73.5	79.3	B+	48.0	70.0	B	74.7	B
9	Clear, Lambs, Indian, Butler Crk	66.8	70.3	B	43.3	58.2	C+	64.3	B-
All	White River Watershed	64.7	67.6	B	43.1	60.34	B-	64.0	B-

Demand – Not Graded



- **Measure:** Significant Water Withdrawals facilities use over time, and/ or Water Use Per Capita
- **Data & Thresholds:**
 - Central IN Water Study forecasts water withdrawal by sections
 - No county data for Delaware, Randolph, Tipton, Henry, Brown, Owen – so not able to grade
 - Calculation issue of PWS serving people in multiple regions, need service map for all PWS utilities to correct this but not available

This indicator will NOT be scored in this version of the Report Card (grayed out)

Flooding Frequency



- **Measure:** Discharge rate for peak rain events and rain event duration/frequency
 - Calculation method: rain gauge data, runoff coefficients (land use)
- **Threshold and Scoring:** Suggesting use of this data as a baseline, past data does not provide relevant comparison for scoring.
 - Rain gauges not in same place in 2011 (Land Use data)

This indicator will NOT be scored in this version of the Report Card (grayed out)

Overall Water Grade



#	Region Name	Nutrients	Sediment	Bacteria	Aqu. Life	Demand	Flooding	Average	Grade
11	Muncie	71.0	56.7	37.8	70.1	N/A	N/A	58.9	C+
12	Anderson north	57.7	65.3	37.1	75.0	N/A	N/A	58.8	C+
13	Pendleton/ Geist	67.1	47.8	41.1	51.5	N/A	N/A	51.9	C
14	Carmel/ Fishers/ Noblesville	36.2	74.3	40.3	64.9	N/A	N/A	53.9	C
15	Cicero/ Morse	47.9	68.9	44.2	50.3	N/A	N/A	52.8	C
16	Downtown Indy/ east	81.1	61.1	23.1	60.8	N/A	N/A	56.6	C+
17	Indy NW/ Zionsville	68.9	84.4	50.7	N/A	N/A	N/A	68.0	B
18	Indy W Avon/ Plainfield	63.5	51.0	22.9	74.7	N/A	N/A	53.0	C
19	Martinsville	44.0	37.0	1.0	64.2	N/A	N/A	36.6	D+
ALL	White River Watershed	59.7	60.7	33.1	64.0	N/A	N/A	54.5	C
		C+	B-	D	B-			C	

5. Communicating the Results



Overall Grade



VERY GOOD

GOOD

MODERATE

POOR

VERY POOR



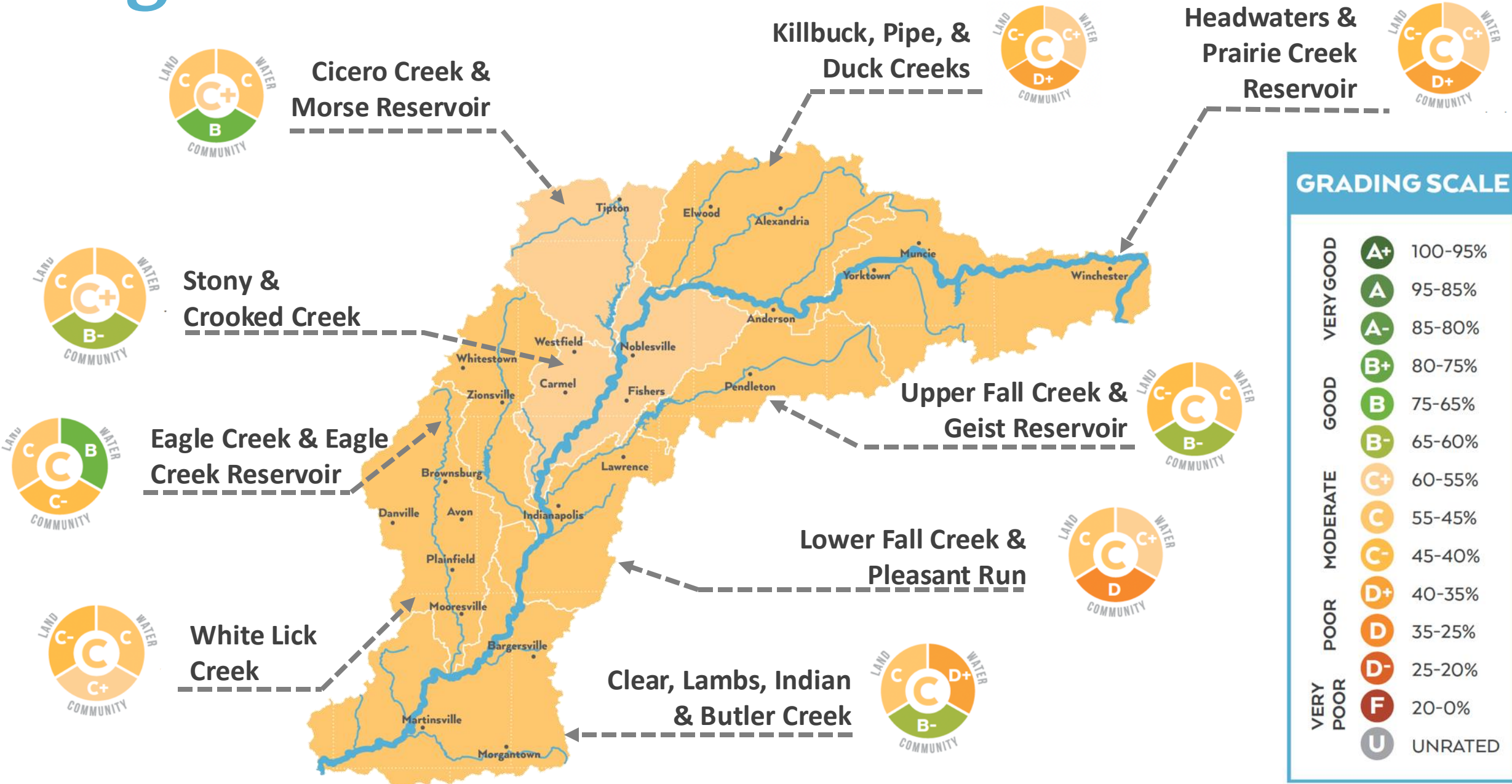


Regional Grades

How do the score add up?



Regional Grades



Next Steps: Raise the Grade



1 COMMUNICATE & ENGAGE



Communicate Results & Engage Stakeholder

- Regional conversations
- Engage key partners aligned to indicators

2 RECOMMEND POLICY & ACTIONS



Recommend Actions & Policy

- Deeper dive into regional data to guide actions and policies
- Create resources like model ordinances

3 BUILD CAPACITY



Build Capacity

- Align partner activities and increase collaboration
- Direct and leverage funding sources

Leadership Team



Supported By

