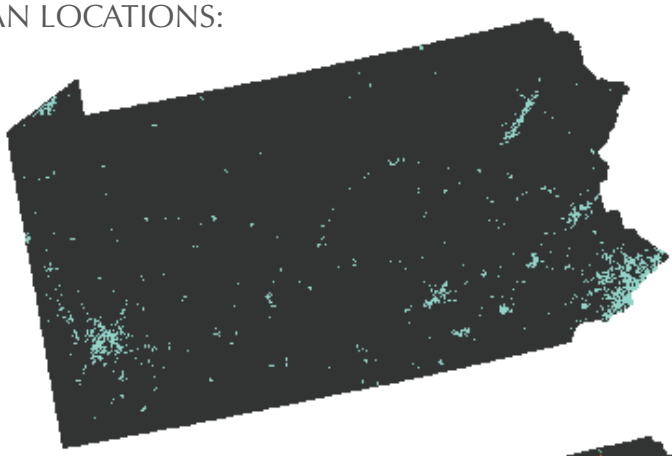
URBANIZATION BETWEEN 1992 - 2001

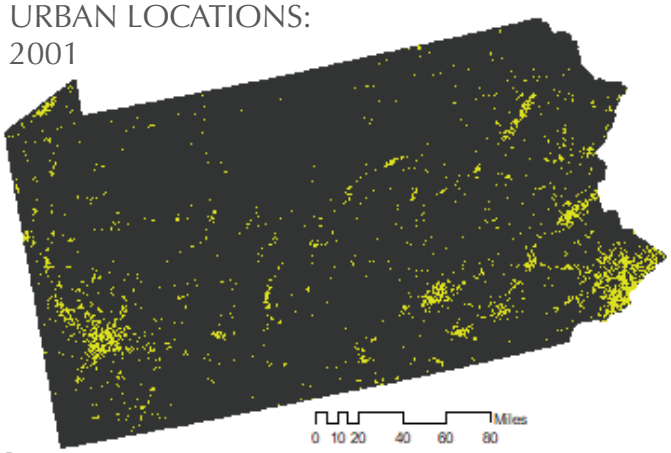
Assumption: landuse may be converted to urban or other uses.
Between the years 1992 & 2001, the aggregate landuse change was 16,974 units, of which 4,556 cells changed from urban to non-urban and 12,418 units were newly urbanized.

Value	Number Grid Cells	Change Type
- 1	4,556	to non-urban
0	599,226	no change
+ 1	12,418	urbanized

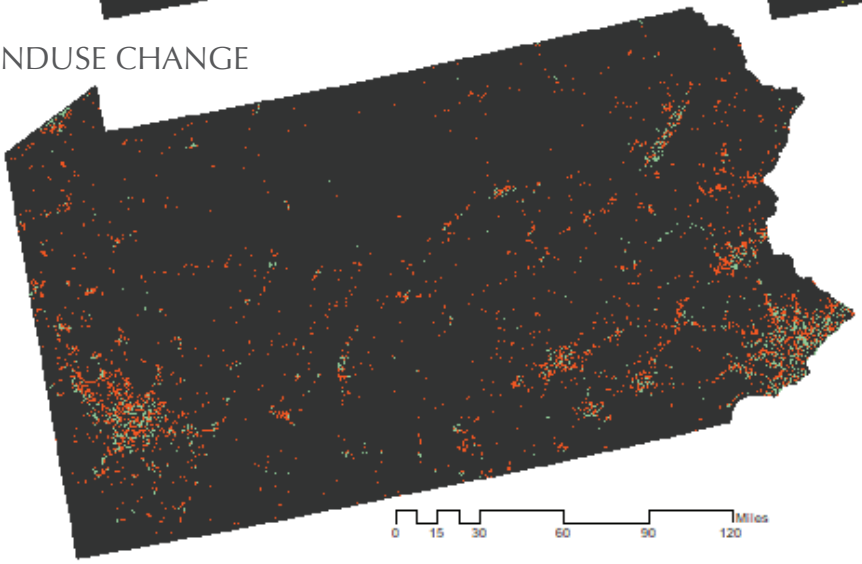
URBAN LOCATIONS:
1992



URBAN LOCATIONS:
2001

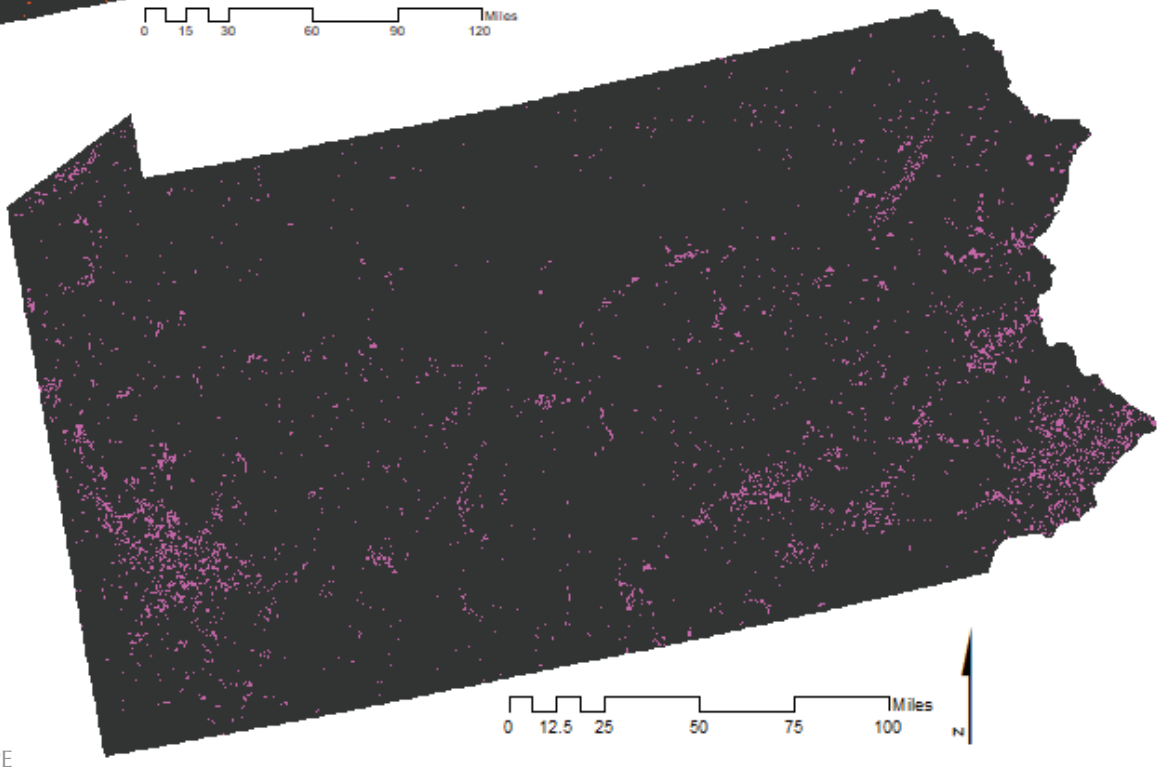


LANDUSE CHANGE



-1 loss of urban landuse
0 no change
1 urbanization

URBANIZED
LOCATIONS ONLY



TERRA R. EDENHART - PEPE

URBAN LAND CHANGE TABLE: Summarized by County

COUNTY NAME	POPULATION CHANGE	URBANIZATION AREA	CELL SUM	EFFICIENCY RATE
Lackawanna	59	55999402.08	224	3.797
Delaware	697	59249367.38	237	0.340
Northumberland	299	25249730.4	101	0.338
McKean	353	13249858.53	53	0.150
Jefferson	918	22749757.09	91	0.099
Blair	2357	42749543.55	171	0.073
Mercer	4134	64499311.32	258	0.062
Lawrence	3585	53749426.1	215	0.060
Lebanon	2708	36249612.95	145	0.054
Venango	1855	24749735.74	99	0.053
Erie	5964	72999220.56	292	0.049
Fulton	933	9749895.897	39	0.042
Crawford	4786	48999476.82	196	0.041
Tioga	1661	16749821.16	67	0.040
Fayette	4490	43249538.21	173	0.039
Schuylkill	3280	30999669.01	124	0.038
Dauphin	8754	81499129.81	326	0.037
Perry	1743	13749853.19	55	0.032
Bedford	2264	16249826.5	65	0.029
Montgomery	24762	176748112.8	707	0.029
Greene	1902	13499855.86	54	0.028
Mifflin	2307	14749842.51	59	0.026
Armstrong	4132	24249741.08	97	0.023
Franklin	10485	52999434.11	212	0.020
Elk	2086	9999893.228	40	0.019
Lycoming	11148	46749500.84	187	0.017
Clinton	3883	16249826.5	65	0.017
Clearfield	11549	47749490.16	191	0.017
Columbia	6574	25999722.39	104	0.016
Snyder	4215	15249837.17	61	0.014
Bradford	6691	22499759.76	90	0.013
Lehigh	27850	86249079.09	345	0.012
Warren	5256	15749831.83	63	0.012
Bucks	38793	115498766.8	462	0.012
Butler	26479	77749169.85	311	0.012
Northampton	26018	71999231.24	288	0.011
Somerset	7903	21499770.44	86	0.011
Carbon	10812	29249687.69	117	0.011
Centre	19168	50499460.8	202	0.011
Cumberland	26529	66749287.3	267	0.010
Susquehanna	7002	16499823.83	66	0.009
Berks	36913	84749095.11	339	0.009
Wyoming	5434	11999871.87	48	0.009
Monroe	50065	103748892.2	415	0.008
Potter	1698	3249965.299	13	0.008
Lancaster	52055	99498937.62	398	0.008
Union	8583	15499834.5	62	0.007

A figure such as the "efficiency rate" (Land conversion: Population growth) is like assigning a WEIGHTED VALUE to the grid based on RATE OF CONVERSION. In top quartiles, higher density occurs. However, binary grids, urban / rural landuse distinctions are GROSS estimates, rather than a gradient.

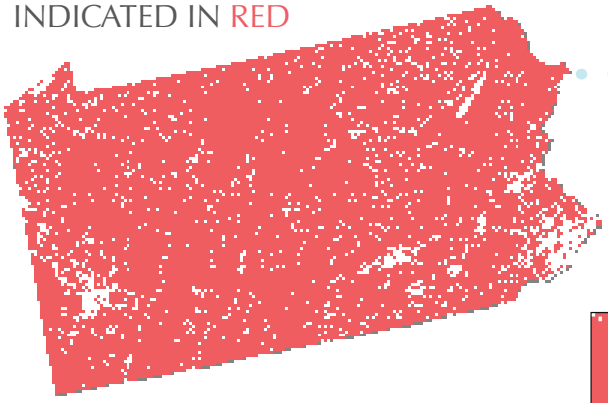
Lackawanna county experiences the most efficient urban land conversion. By contrast Indiana county is least efficient.

COUNTY NAME	POPULATION CHANGE	URBANIZATION AREA	CELL SUM	EFFICIENCY RATE
Montour	4257	6749927.929	27	0.006
Chester	53626	82249121.8	329	0.006
Juniata	4797	6249933.267	25	0.005
Huntingdon	9090	10999882.55	44	0.005
York	58042	64749308.65	259	0.004
Pike	30740	32999647.65	132	0.004
Wayne	20068	19749789.13	79	0.004
Adams	23189	19499791.79	78	0.003
Sullivan	4180	2999967.968	12	0.003
Forest	5016	3249965.299	13	0.003
Cameron	7270	749991.9921	3	0.000
Philadelphia	-68940	53749426.1	215	-0.003
Cambria	-12183	46499503.51	186	-0.015
Allegheny	-55123	312746660.7	1251	-0.023
Washington	-10436	68999263.27	276	-0.026
Luzerne	-9359	73499215.22	294	-0.031
Beaver	-5504	82749116.46	331	-0.060
Westmoreland	-4974	102498905.6	410	-0.082
Clarion	-390	19249794.46	77	-0.197
Indiana	-111	21749767.77	87	-0.784

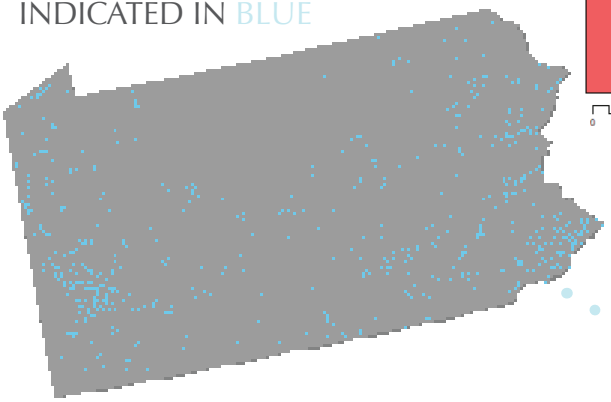
SENSITIVE LANDS AND URBAN GROWTH

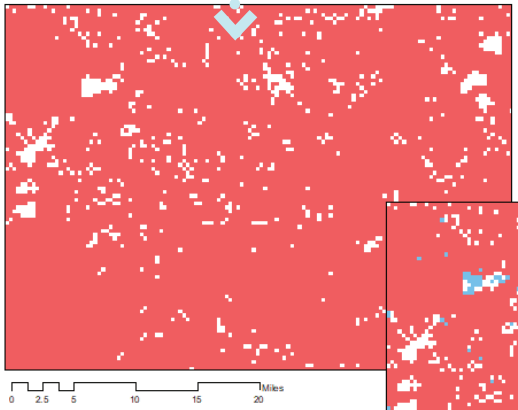
Number Grid Cells	Quality
44,811	sensitive
4,677	sensitive & developed

SENSITIVE AREAS INDICATED IN RED

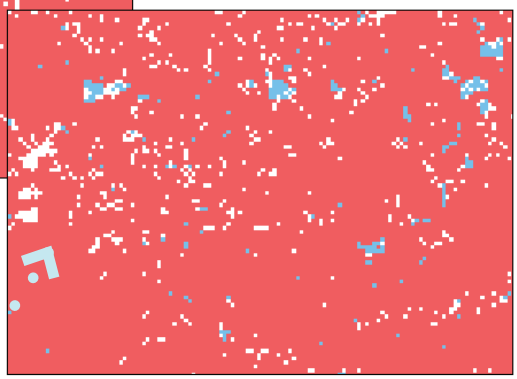


URBAN CHANGE INDICATED IN BLUE





DETAIL OF CONFLICT AREAS



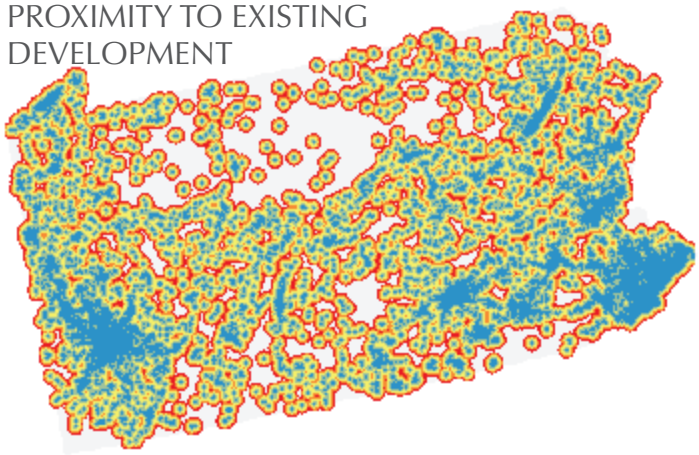
COUNTY NAME	CELL SUM	AREA
Erie	292	72999220.6
Bradford	90	22499759.8
Tioga	67	16749821.2
Potter	13	3249965.3
McKean	53	13249858.5
Warren	63	15749831.8
Wayne	79	19749789.1
Susquehanna	66	16499823.8
Crawford	196	48999476.8
Wyoming	48	11999871.9
Lackawanna	224	55999402.1
Elk	40	9999893.23
Forest	13	3249965.3
Venango	99	24749735.7
Cameron	3	749991.992
Pike	132	32999647.7
Lycoming	187	46749500.8
Sullivan	12	2999967.97
Mercer	258	64499311.3
Clinton	65	16249826.5
Clarion	77	19249794.5
Luzerne	294	73499215.2
Jefferson	91	22749757.1
Columbia	104	25999722.4
Clearfield	191	47749490.2
Centre	202	50499460.8
Monroe	415	103748892
Northumberland	101	25249730.4
Butler	311	77749169.8
Montour	27	6749927.93
Armstrong	97	24249741.1
Union	62	15499834.5
Carbon	117	29249687.7
Lawrence	215	53749426.1
Northampton	288	71999231.2
Schuylkill	124	30999669
Indiana	87	21749767.8
Snyder	61	15249837.2
Beaver	331	82749116.5
Mifflin	59	14749842.5
Lehigh	345	86249079.1
Huntingdon	44	10999882.6
Blair	171	42749543.5
Cambria	186	46499503.5
Juniata	25	6249933.27
Westmoreland	410	102498906
Berks	339	84749095.1
Allegheny	1251	312746661
Dauphin	326	81499129.8
Perry	55	13749853.2
Bucks	462	115498767
Lebanon	145	36249613
Washington	276	68999263.3
Montgomery	707	176748113
Cumberland	267	66749287.3
Bedford	65	16249826.5
Lancaster	398	99498937.6
Franklin	212	52999434.1
Somerset	86	21499770.4
Chester	329	82249121.8
York	259	64749308.7
Fulton	39	9749895.9
Fayette	173	43249538.2
Philadelphia	215	53749426.1
Adams	78	19499791.8
Delaware	237	59249367.4
Greene	54	13499855.9

Overlap of urbanized and sensitive land tends to occur close to road and water ways. Conflict areas are clustered around or "spill over" from other urban areas, which reflects common, radial growth patterns.

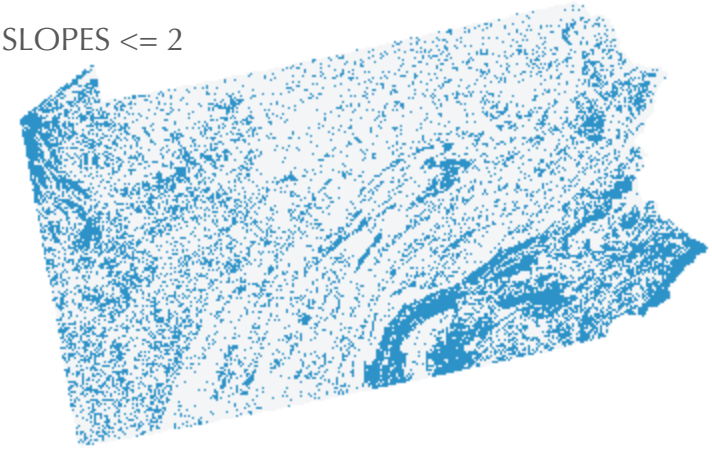
DETERMINING FUTURE URBANIZATION: THREE DECISION FACTORS

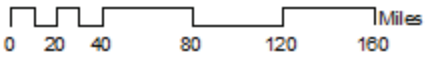
PROXIMITY TO ROADS

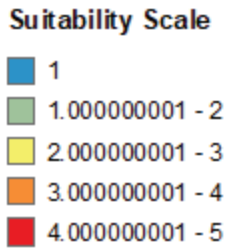
PROXIMITY TO EXISTING DEVELOPMENT



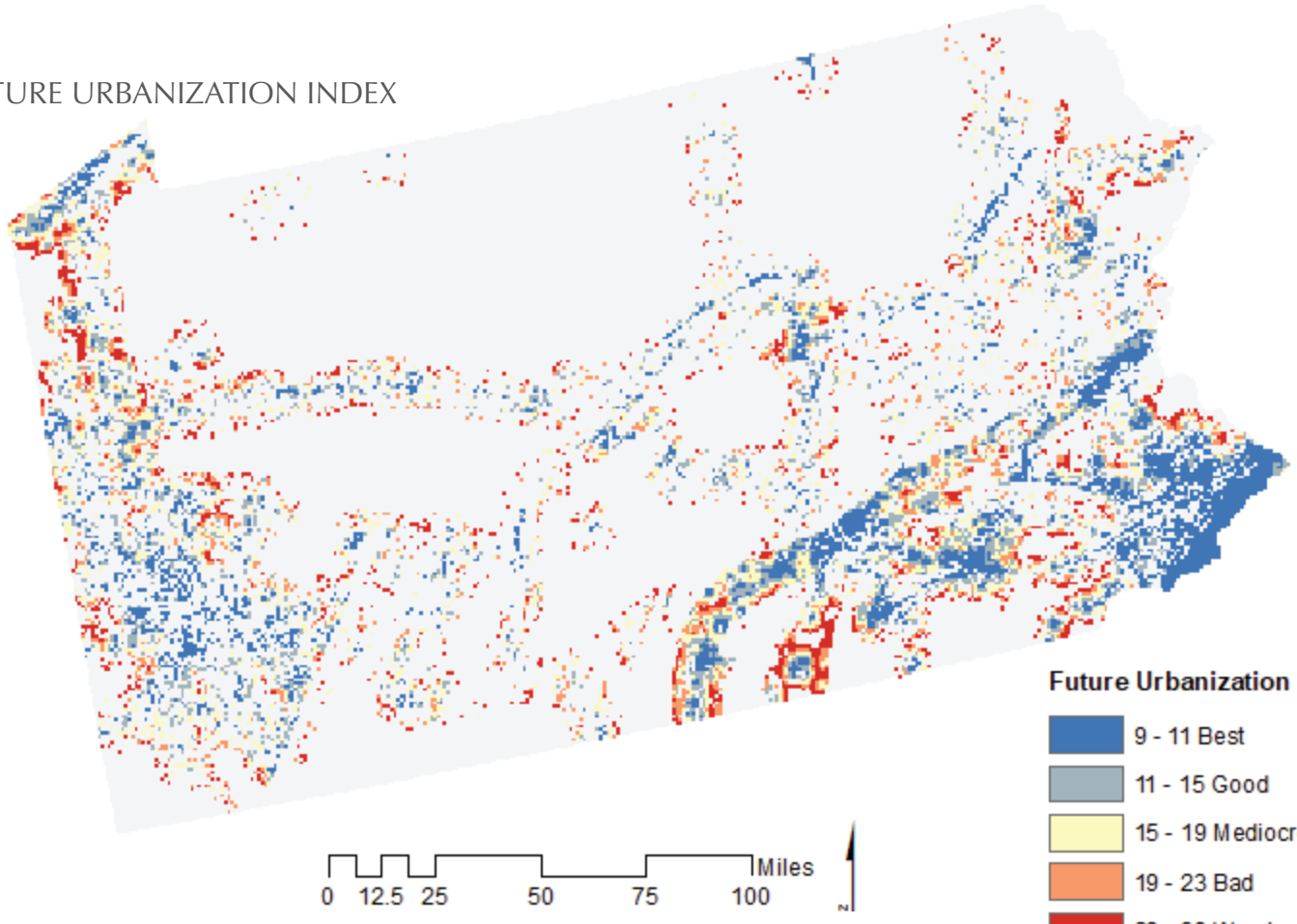
SLOPES <= 2



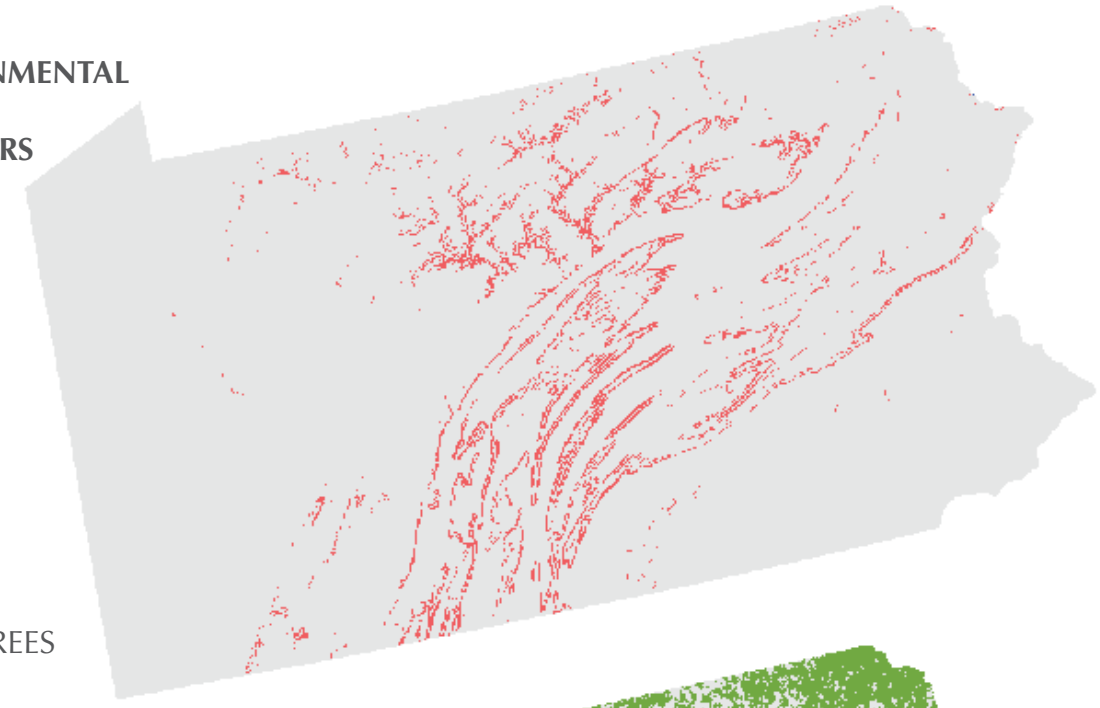




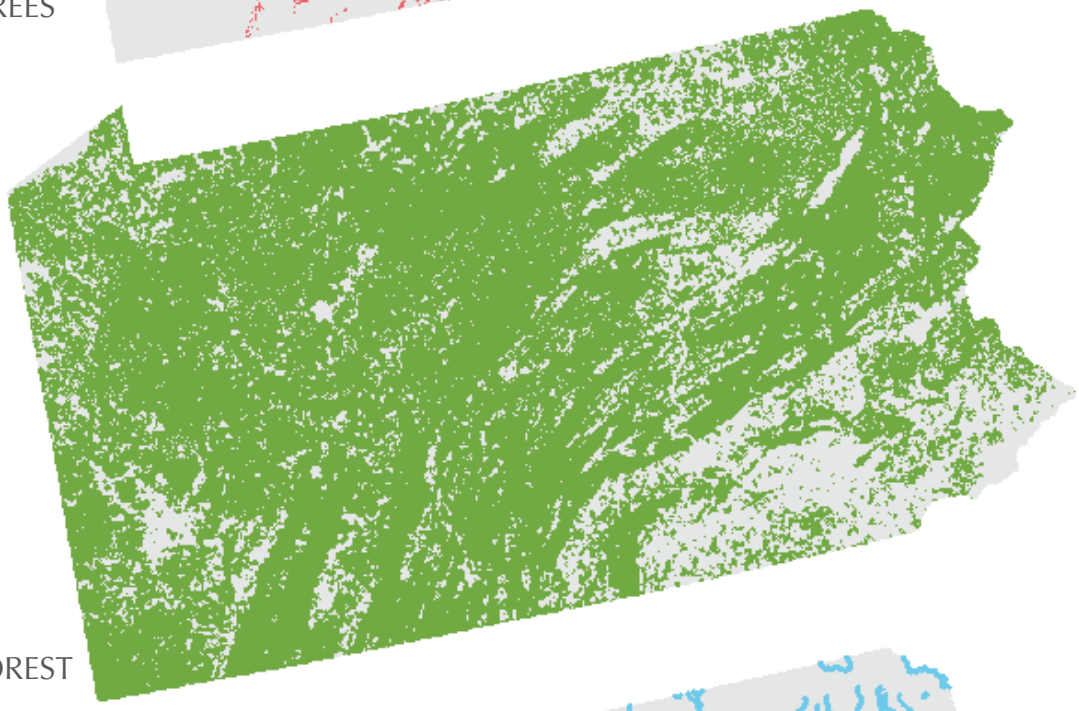
FUTURE URBANIZATION INDEX



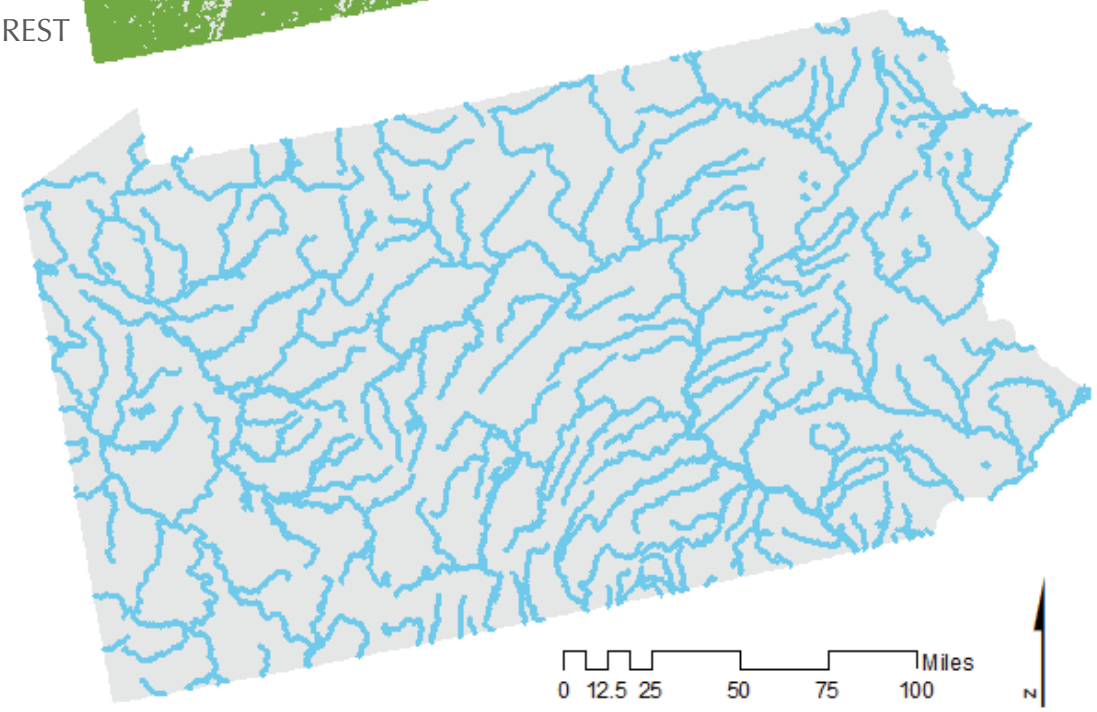
DETERMINING ENVIRONMENTAL SENSITIVITY: THREE DECISION FACTORS



SLOPES <= 15 DEGREES
(WEIGHT 3)

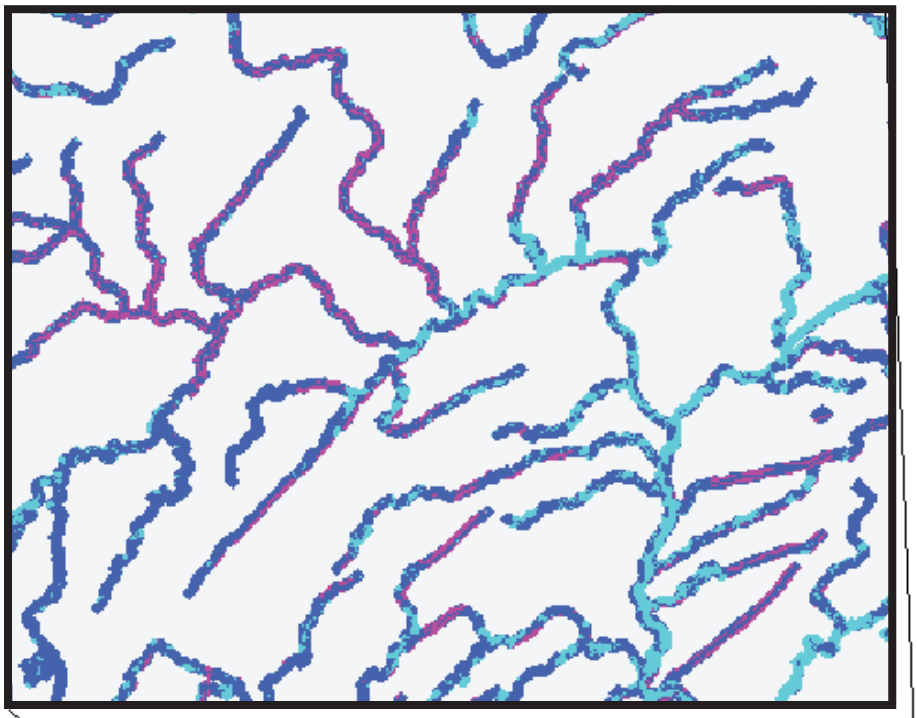


IN ACTIVE FARM/FOREST
(WEIGHT 2)

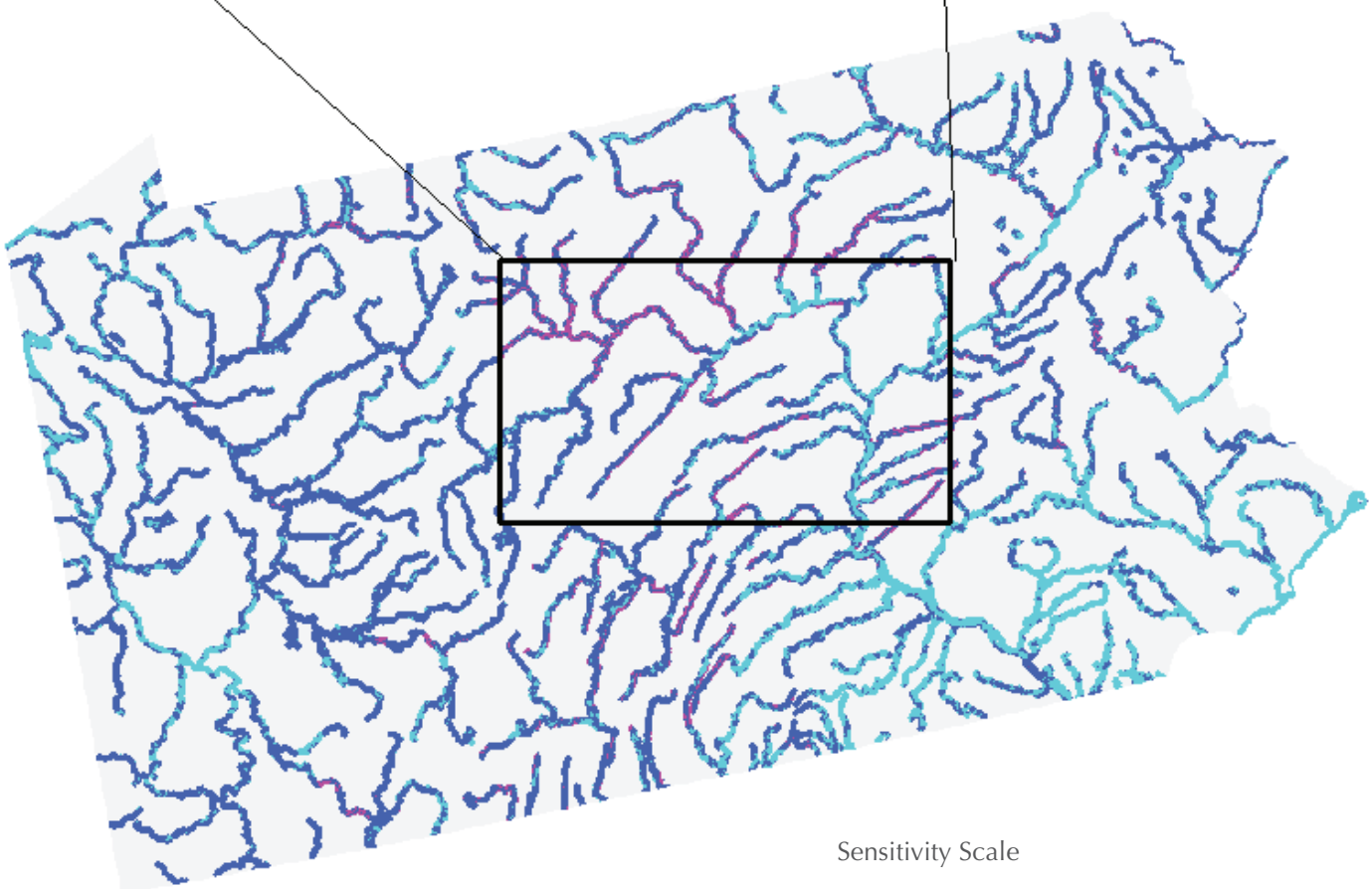


WITHIN 1000 M OF
RIVERS
(WEIGHT 4)

FINAL ENVIRONMENTAL SENSITIVITY INDEX



DETAIL OF ENVIRONMENTAL SENSITIVITY



Sensitivity Scale

- 1 Somewhat Sensitive
- 2 Moderately Sensitive
- 3 Very Sensitive
- 4 Critical

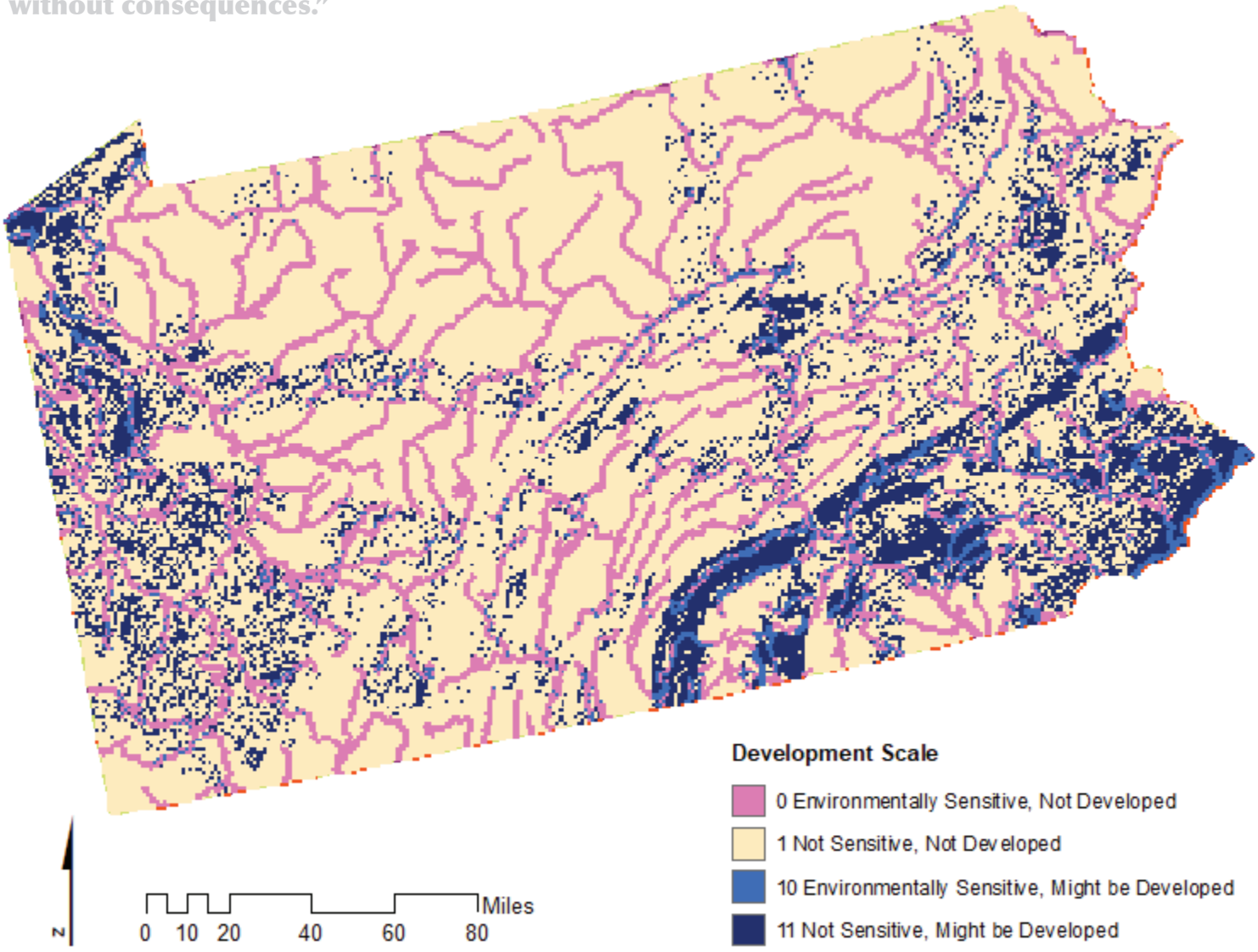
N

0 10 20 40 60 80 Miles

ENVIRONMENTAL SENSITIVITY + FUTURE URBANIZATION: FOUR CATEGORIES

While, theoretically, this map illustrates areas that should or could be preserved, based on sensitivity, or developed, based on suitability, the process herein omits some realities of a complex situation.
For example, valuation of properties is omitted in this model. Planners may be able to identify where development is best, based on certain criteria, but they are not decision-makers. The economic reality is that developers develop properties they have purchased; purchases are based on cost and projected value.
To dissuade purchase and development in environmentally sensitive areas, Philadelphia could impose an environmental 'tax' on sites within sensitive areas, thereby raising the cost of development in sensitive areas. However, de-incentivizing development in sensitive areas by taxation would likely be quickly rejected on the grounds that it would discourage to much development.

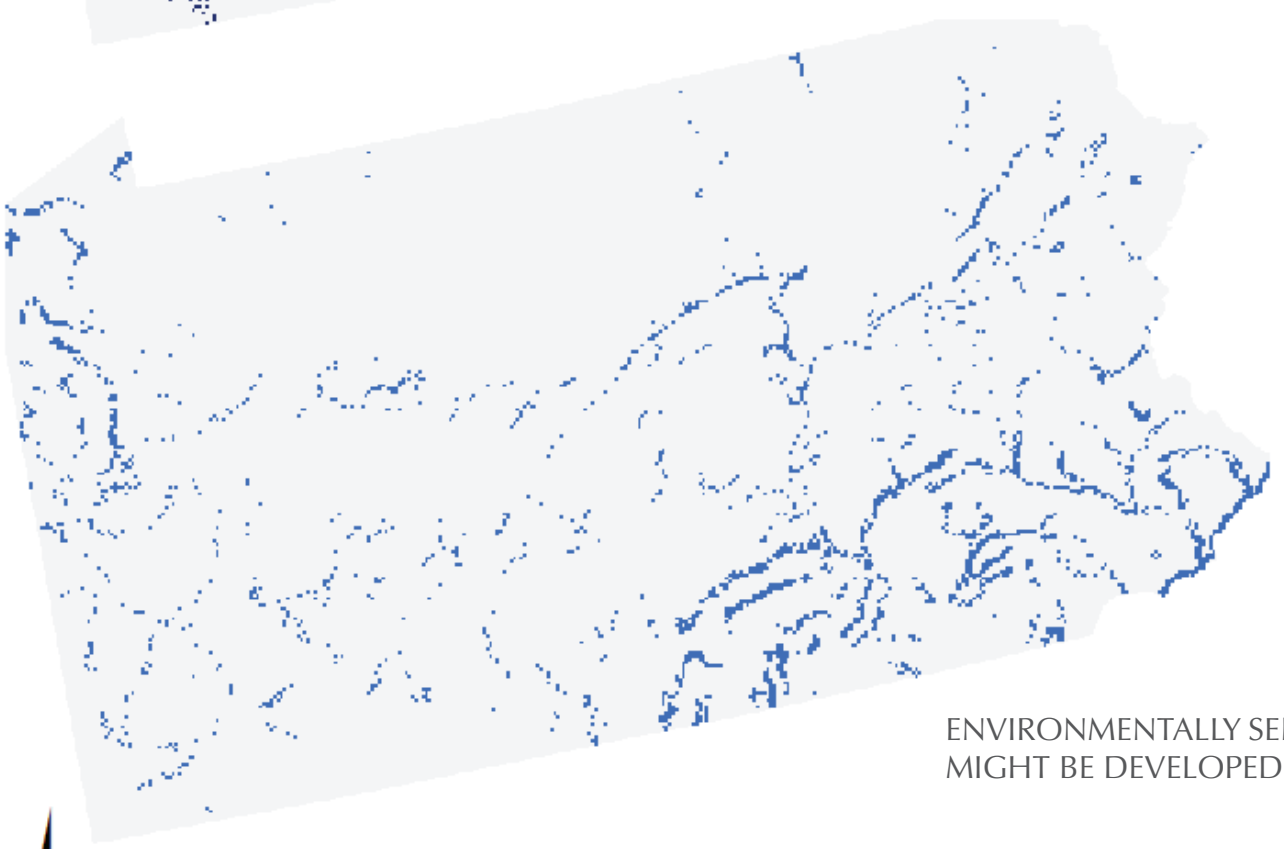
"Nature never gives anything to anyone; everything is sold. It is only through the abstraction of ideals that choice comes without consequences."



Environmental sensitivity and preferred development locations maintain an inverse relationship. As an intermediate step, the environmental sensitivity scale was converted to reflect "develop-ability".

ENVIRONMENTAL SENSITIVITY + FUTURE URBANIZATION: TWO COMPONENTS

NOT ENVIRONMENTALLY SENSITIVE, MIGHT BE DEVELOPED



ENVIRONMENTALLY SENSITIVE,BUT MIGHT BE DEVELOPED