

EJSCREEN: EPA's Environmental Justice Screening Tool



What is EJSCREEN?

- EPA's web-based GIS tool for nationally consistent EJ screening and mapping
- Combines environmental and demographic data to highlight areas where **vulnerable populations** may be **disproportionately impacted** by pollution



Key Features

- 11 EJ Indexes – one for each environmental indicator
 - combines environmental and demographic data to highlight areas where **vulnerable populations** may be **disproportionately impacted** by pollution
- Annually updated demographics – from most recent U.S. Census Bureau American Community Survey (ACS)
- Web accessible
- Standard printable reports, maps, and bar graphs
- Ability to download raw data



Geographic Unit is the Block Group

- Over 217,000 block groups in the U.S.
- The average block group has about 1,400 residents.
- Highest resolution available for most EJSCREEN data.



The small colored irregular polygons are block groups



EJSCREEN Data

- 11 environmental indicators that measure potential exposure, hazard/risk, and proximity.
- 6 demographic indicators from the ACS 5 Year Annual Survey.
- 11 EJ indexes, which combine environmental data and the demographic index.



Proximity to traffic is one of the 11 environmental indicators



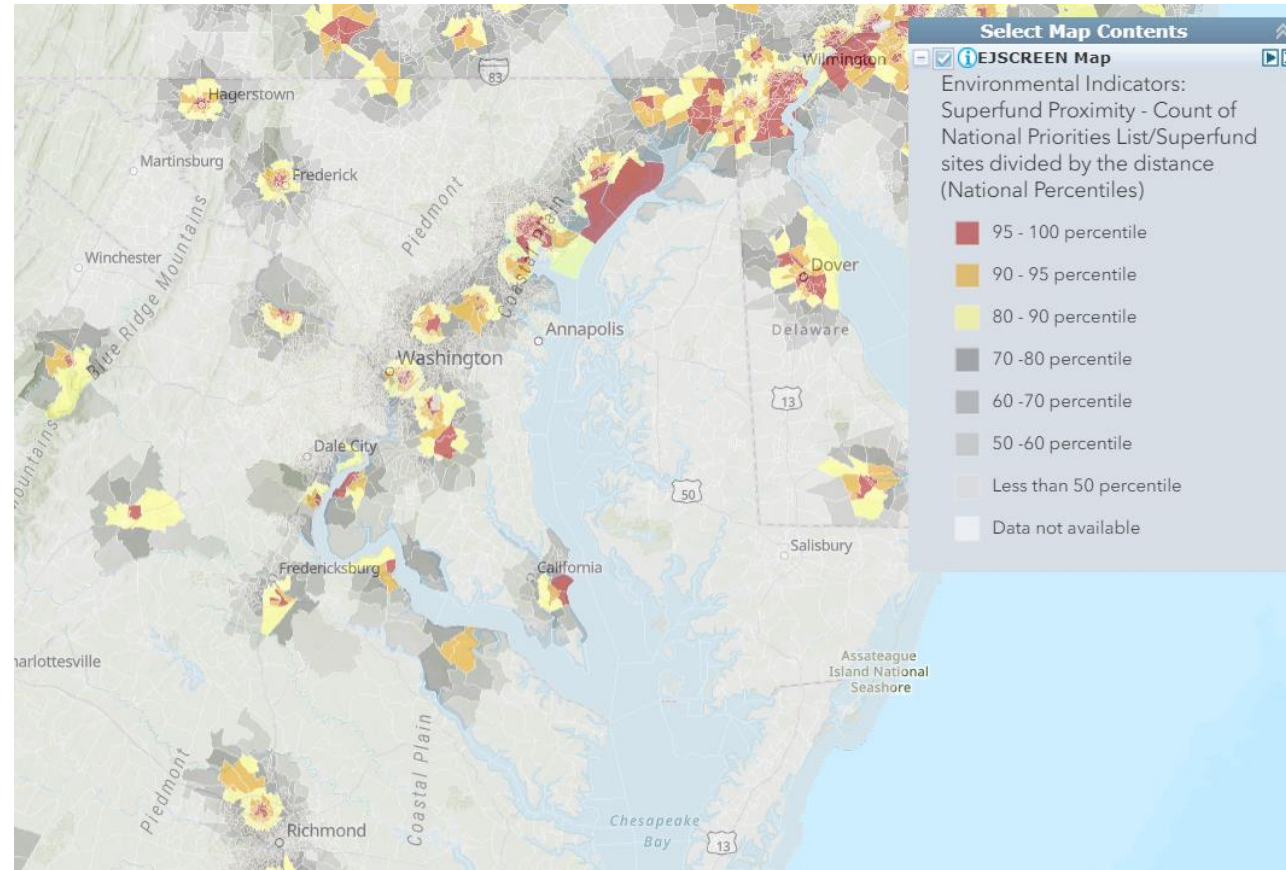
Environmental Indicators

<u>Environmental Indicator Raw Data Type (Units)</u>	<u>Indicator Descriptor</u>	<u>Year Data published</u>
Particulate Matter	Potential Exposure	2016
Ozone	Potential Exposure	2016
<i>National Air Toxics Assessment (NATA) Diesel PM</i>	Potential Exposure	2014
<i>NATA Air Toxics Cancer Risk</i>	Hazard/Risk	2014
<i>NATA Respiratory Hazard Index</i>	Hazard/Risk	2014
Lead Paint Indicator	Potential Exposure	2013-2017
Traffic Proximity	Proximity	2017
Proximity to Superfund (NPL) sites	Proximity	2019
Proximity to Risk Management Plan (RMP) facilities	Proximity	2019
Proximity to Hazardous Waste Facilities	Proximity	2019
Wastewater Discharger Indicator	Proximity	2019



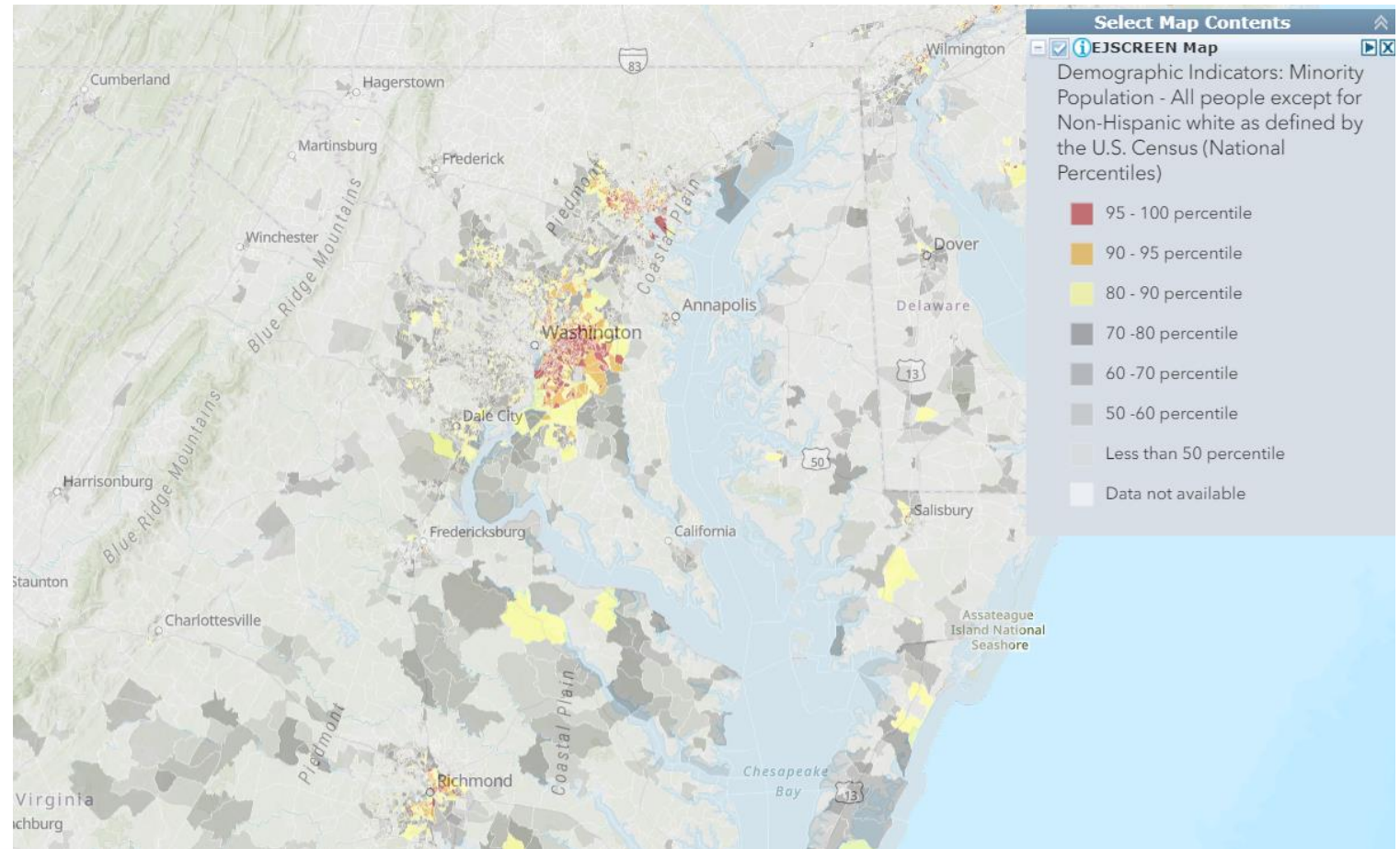
EJSCREEN Data

- Example Environmental Indicator – ***Proximity to Superfund Sites***



EJSCREEN Data

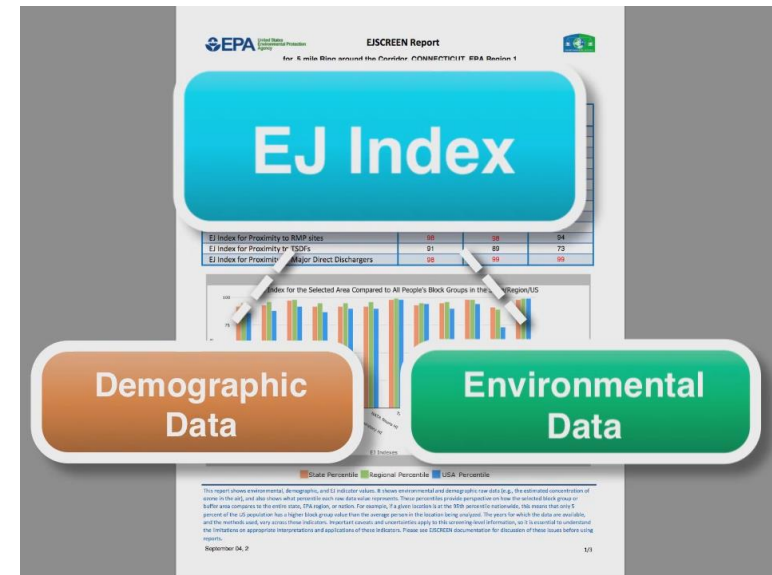
- Example Demographic Indicator – ***Minority Population***



What does the EJ Index mean?

The EJ index combines environmental and demographic data to highlight areas where **vulnerable populations** may be **disproportionately impacted** by pollution.

It helps identify areas that may have **higher pollution burdens** and **vulnerable populations** present.



Viewing EJSCREEN Data

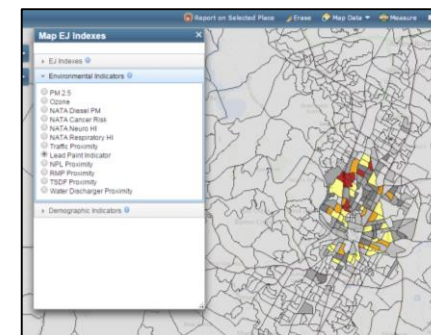
You can view all of the indicators in EJSCREEN within reports or on maps.

- A standard report gives you all the indicators at once for a single specified location
- A map gives you one indicator at a time, for each of the block groups within a wider area (e.g. across several miles)

EJSCREEN Report
for 1 mile Ring Centered at 33.820864, -118.931391, CALIFORNIA, EPA Region 9
Approximate Population: 23624

Selected Variables	Raw Data	State Avg.	State	EPA Region Avg.	EPA Region	USA Avg.	USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	13.3	10.8	84	10.3	87	10.7	86
Ozone (ppb)	41.6	51.6	19	52.9	18	49.3	20
NATA Cancer PM Leg-1 ¹	2.97	1.26	87	1.2	85-90th	0.824	85-95th
NATA Cancer Risk (Exposure-adjusted) ¹	130	76	82	69	85-95th	49	85-100th
NATA Respiratory Hazard Index	7.4	3.9	88	3.3	85-100th	2.3	85-100th
NATA Neurological Hazard Index	0.18	0.072	88	0.069	85-100th	0.063	85-100th
Traffic Proximity and Volume (Daily route distance to road)	610	210	81	190	82	110	66
Lead Paint Indicator (Within 500 feet)	0.87	0.3	78	0.28	82	0.3	79
NPL Proximity (Low-level radioactive waste)	0.085	0.13	61	0.11	65	0.09	71
RMP Proximity (Toxic substance release)	1.1	0.46	89	0.41	91	0.31	94
TSD Proximity (Toxic substance release)	0.51	0.13	88	0.12	88	0.054	89
Water Discharger Proximity (Toxic substance release)	0.33	0.18	88	0.13	87	0.25	81
Demographic Indicators							
Primary Demographic Index	47%	47%	83	48%	83	10%	71
Minority Population	71%	65%	88	57%	82	16%	88
Low Income Population	23%	15%	79	15%	78	14%	76
Linguistically Isolated Population	7%	11%	48	10%	53	5%	70
Population With Less Than High School Education	13%	20%	45	19%	48	15%	55
Population Under 5 years of age	5%	7%	33	7%	34	7%	35
Population over 64 years of age	16%	12%	77	12%	75	13%	69


¹ The National Air Quality Assessment (NAQA) is EPA's ongoing comprehensive evaluation of air toxics in the United States. EPA developed the NAQA to provide an in-depth, scientific, and transparent assessment of air toxics. It is important to remember that NAQA provides broad estimates of health risk, not definitive risk to specific individuals or locations. More information on the NAQA analysis can be found at: <http://www.epa.gov/naqa/naqa/index.html>.




The EJSCREEN Standard Report

Report has 3 pages:

- Page 1 – The first place to look:
 - 11 EJ indexes as a table (as percentiles)
 - Bar graph of the 11 EJ indexes
- Page 2:
 - Map (selected area of interest)
- Page 3 – for more details:
 - Environmental indicators
 - Demographic indicators



EJSCREEN Report
for 1 mile Ring around the Corridor, ILLINOIS, EPA Region 5
Approximate Population: 14801



Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	14.4	13.4	94	13.3	87	10.7	96
Ozone (ppb)	42.7	42.8	52	45	31	48.3	28
NATA Diesel PM ($\mu\text{g}/\text{m}^3$) [*]	1.28	0.988	89	0.712	80-90th	0.824	70-80th
NATA Cancer Risk (lifetime risk per million) [*]	54	48	87	42	70-80th	49	60-70th
NATA Respiratory Hazard Index [*]	2	1.8	83	1.5	70-80th	2.3	50-60th
NATA Neurological Hazard Index [*]	0.11	0.073	88	0.087	90-95th	0.083	90-95th
Traffic Proximity and Volume (daily traffic count/distance to road)	77	66	75	69	76	110	68
Lead Paint Indicator (% Pre-1980 Housing)	0.38	0.43	45	0.39	52	0.3	64
NPL Proximity (site count/m distance)	0.18	0.069	94	0.085	88	0.096	86
RMP Proximity (facility count/m distance)	0.78	0.43	83	0.33	88	0.31	89
TSDF Proximity (facility count/m distance)	0.12	0.037	96	0.051	92	0.054	91
Water Discharger Proximity (facility count/m distance)	0.16	0.27	51	0.23	59	0.25	59
Demographic Indicators							
Demographic Index	62%	34%	82	28%	89	35%	83
Minority Population	85%	36%	88	24%	93	36%	88
Low Income Population	30%	31%	67	32%	66	34%	62
Linguistically Isolated Population	3%	6%	62	3%	70	5%	64
Population With Less Than High School Education	15%	14%	67	12%	73	15%	63
Population Under 5 years of age	5%	6%	35	6%	36	7%	35
Population over 64 years of age	11%	13%	48	13%	42	13%	46

^{*} The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <http://www.epa.gov/ttn/ataw/natamain/index.html>.

For additional information, see: www.epa.gov/environmentaljustice

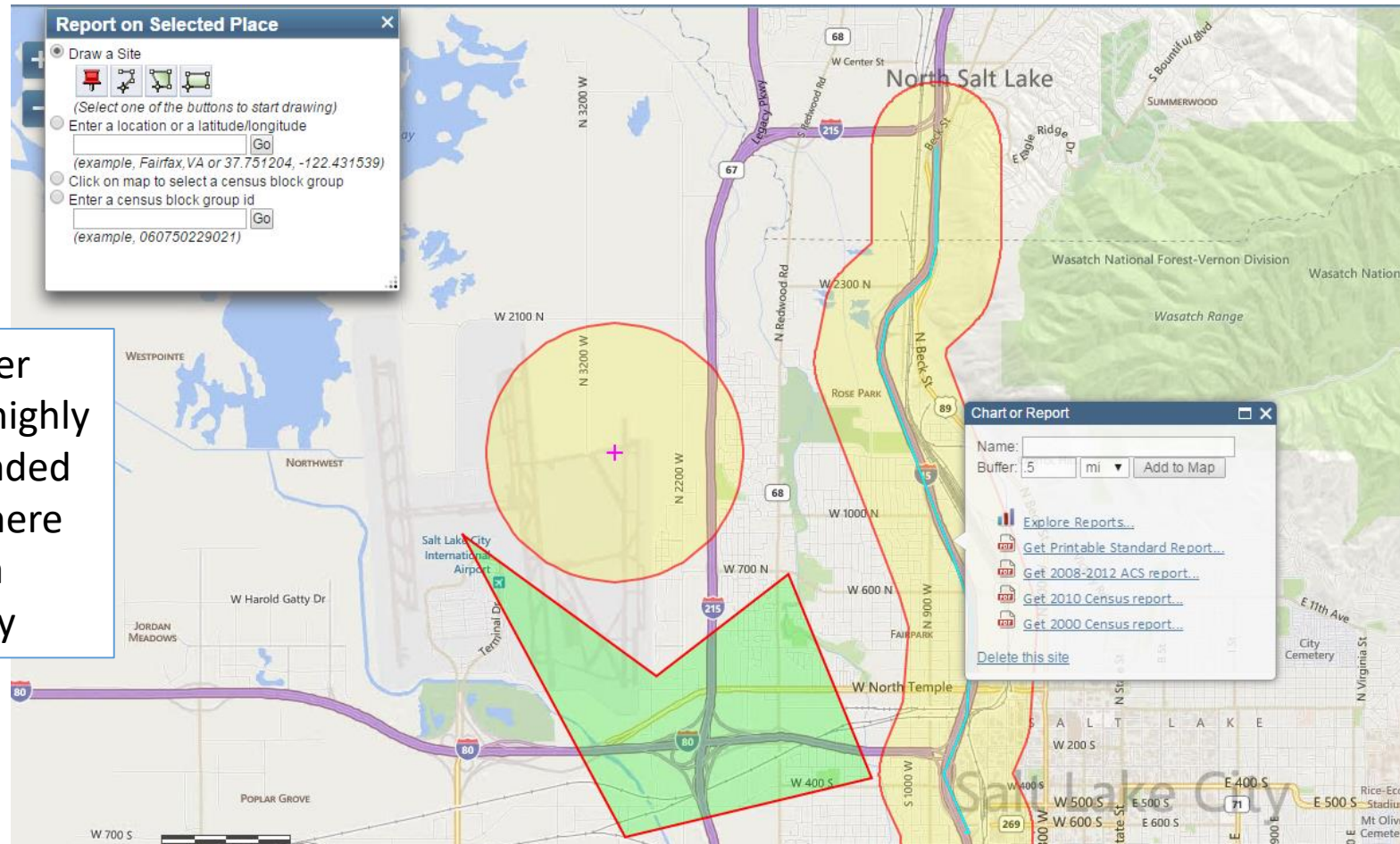
EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

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You Can Specify User-Defined Areas to Generate Standard Reports

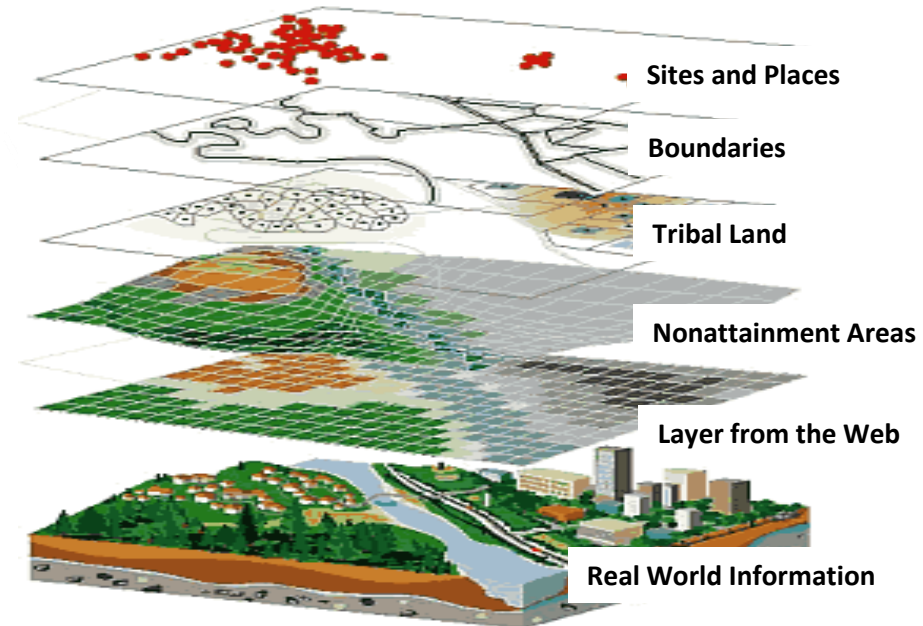
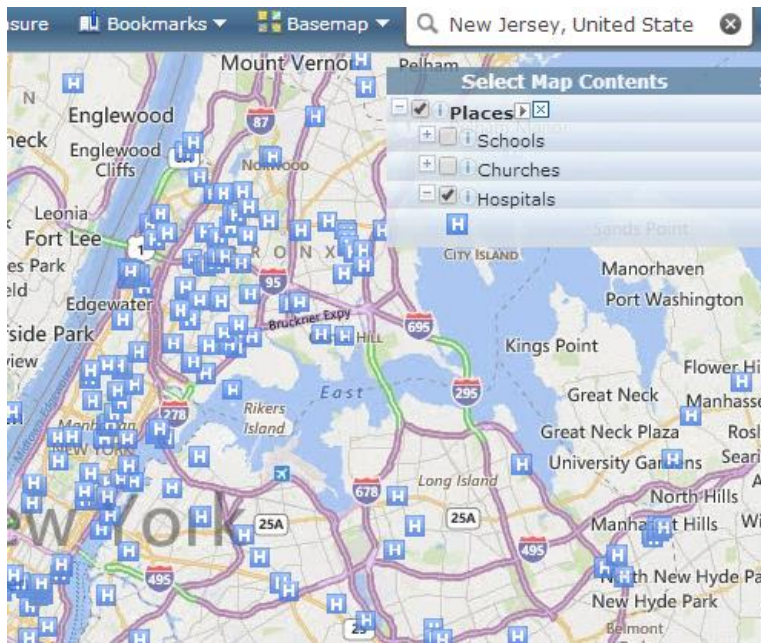


Note: Buffer areas are highly recommended because there is less data uncertainty



EJSCREEN has Many Other Map Layers

EJSCREEN adds many other types of data by overlaying various datasets (called “layers”)



Types of Additional Layers

Additional Demographic 'Layers'

- Education
- Geography
- Households
- Housing
- Income/Poverty
- Language
- Marital Status
- Place of Birth
- Population

Additional Supplementary Map Layers

- Facilities Reporting to EPA
- Places (i.e. churches, hospitals, schools)
- Transportation
- Water Features
- EPA Tribal Areas
- Nonattainment Areas
- Boundaries



EJSCREEN in Action

EPA uses EJSCREEN in the following ways:

- EJ analyses
- Community outreach
- Prioritization
- Evaluating areas for place-based work
- Education and research
- Retrospective reporting



Limitations For Using EJSCREEN

- EJSCREEN is a starting point. It is a pre-decisional screening tool; does not direct final outcomes for EPA.
- EJSCREEN highlights places for further review for the potential for EJ concerns.
- EJSCREEN does not cover all environmental issues.
- Baseline screening should be supplemented with local information and experience.
- EJSCREEN does **not** identify “EJ Communities.”



Acknowledgment

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