

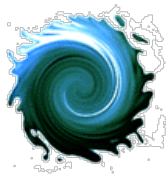


CREATING and UPDATING ENVIRONMENTAL & NATURAL RESOURCE INVENTORIES

Presented March 22, 2023

**ANJEC's Fundamentals for Effective
Environmental Commissions**

Debbie Kratzer



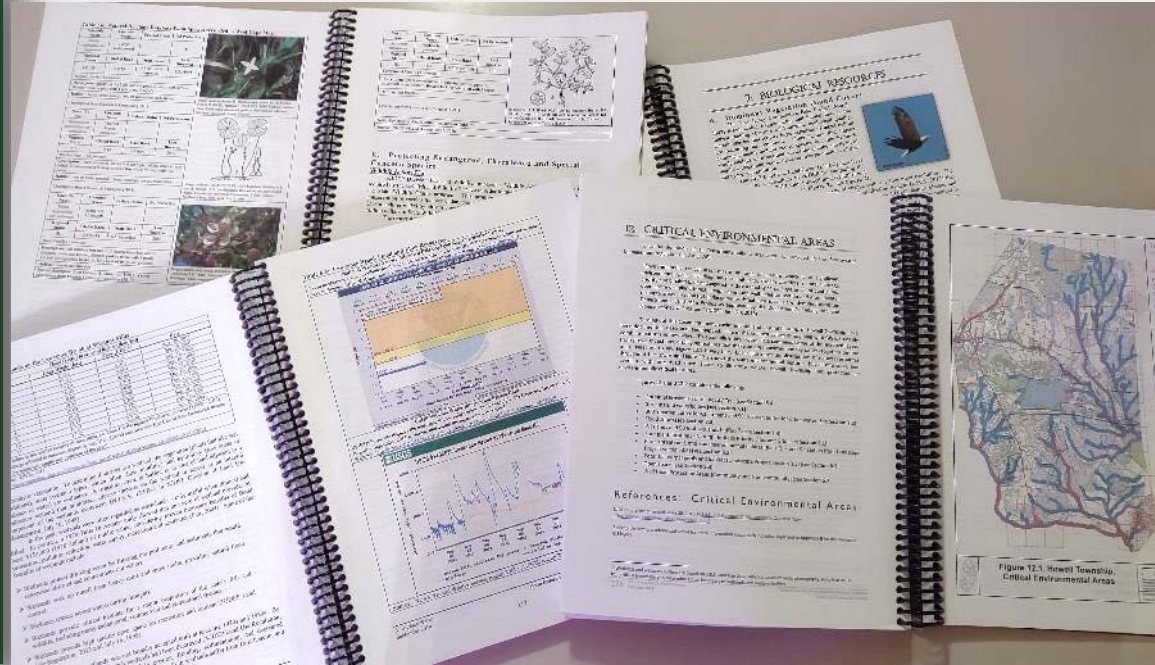
**Kratzer
Environmental
Services**



Outline

- 1. What is an ERI and why should you have one***
- 2. The process***
- 3. Tools and Data Sources***
- 4. Topics in an ERI***

An ERI is....



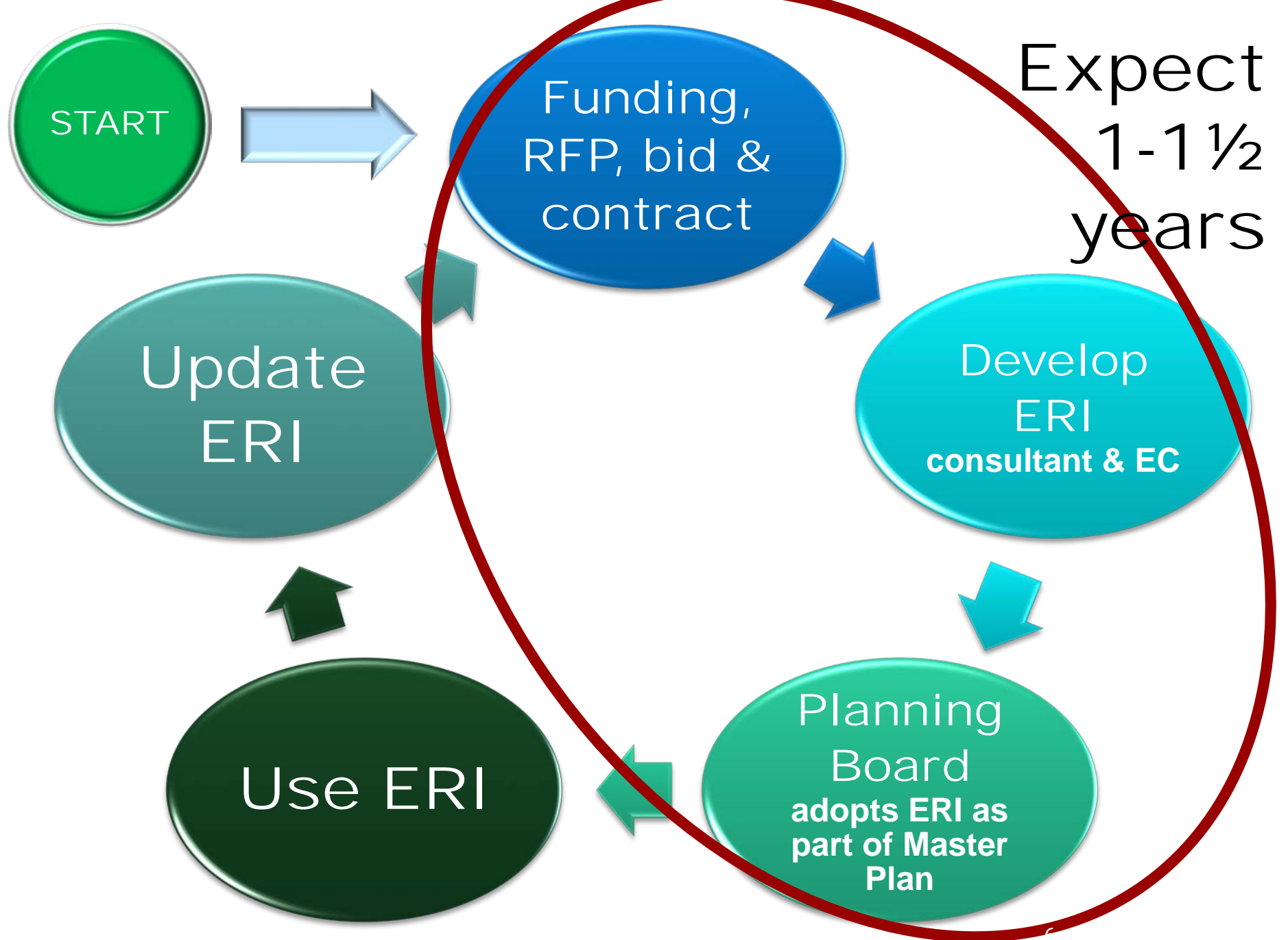
- ▶ documentation of natural resources
- ▶ an objective listing, rather than an interpretation or recommendation
- ▶ “Environmental Resource Inventory” and “Natural Resource Inventory” are used interchangeably.

The goals of the ERI

- ▶ to provide objective, reliable environmental data in one document to enable municipal officials to make more informed decisions
- ▶ to better protect the municipality's natural resources and the overall health and welfare of the community

Uses of an ERI

- ▶ The Municipal Land Use Law states that, when a municipality has an ERI, the planning board and board of adjustment shall make development applications available to the environmental commission
- ▶ Sustainable Jersey
 - NRI (20 points)
 - Municipal Water Story (20 or 25 points)
- ▶ Example: Kingwood Township used their ERI as a tool for fighting (and stopping) the PennEast pipeline.





► An ERI is usually initiated and overseen by the municipality's Environmental Commission

► Recommended (required) reading: 1. ANJEC's Resource Paper on ERIs

<https://anjec.org/publications/>

2. Sustainable Jersey Action: Natural Resource Inventory (20 points)

<http://www.sustainablejersey.com/action-s-certification/actions/#open/action/60>



The Environmental Resource Inventory: ERI

The Environmental Resource Inventory (ERI), or Index of Natural Resources, is a compilation of text, tables, maps and other visual information about the natural resource characteristics and environmentally significant features of an area. Traditionally called "Natural Resources Inventory," the title "Environmental Resource Inventory" is now commonly used, reflecting the addition of manmade features to the inventory, such as historic sites, brownfields and contaminated sites.

An ERI provides baseline documentation for measuring and evaluating resource protection issues. It is an objective index and description of features and their functions, rather than an interpretation or recommendation. Identifying significant environmental resources is the first step in their protection and preservation and in assuring that future development or redevelopment protects public health, safety and welfare.

The ERI is an important tool for governing bodies, environmental commissions, open space committees, planning boards and zoning boards of adjustment. The planning board should adopt the ERI as an appendix or as a part of a master plan conservation element. As part of the master plan, the ERI can provide the foundation and documentation for master plan updates, ordinances, legal defense, open space or agricultural

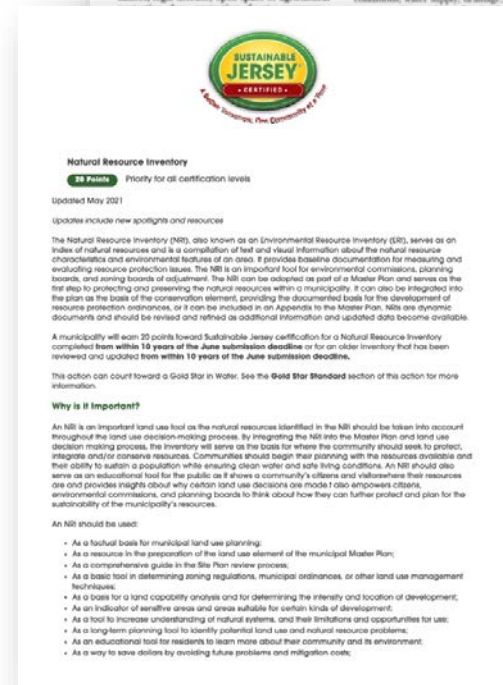
The ERI is a dynamic document, not cast in concrete. Like the municipal master plan, the ERI should be revised and re-adopted periodically to reflect new data and changed conditions. To inform this process, the environmental commission can maintain a running list of conditions and information that have changed for consideration during the next ERI update.

Legal Authority for ERIs

While nothing in law requires a municipality to prepare an ERI, two New Jersey statutes give environmental commissions the authority and responsibility for conducting them.

The Environmental Commission Enabling Legislation (N.J.A.C. 40:56A) states that "A...commission organized under this act shall have the power to conduct research into the use and possible use of the open land areas of the municipality... It shall keep on index of all open lands, swamps and other wetlands, in order to obtain information on the proper use of such areas, and may from time to time recommend to the planning board, or, if none, to the mayor and governing body of the municipality, plans and programs for inclusion in the municipal master plan and the development and use of such areas."

The Municipal Land Use Law (MULU) (N.J.A.C. 40:55D 1 et seq.) requires municipalities to have a land use plan element in their master plan, "including but not necessarily limited to, topographic, soil conditions, water supply, drainage, flood plain



Funding, RFP, bid & contract



► Funding?

- Municipal funds (e.g. EC budget or money set aside for Master Plan updates)?
- Sustainable Jersey?
- Other grant sources ?

► Consult with the appropriate municipal staff (e.g. financial officer, clerk) for specific procedures on accepting grant money, professional services contracts or bid contracts

► ANJEC's list of environmental consultants

- ▶ Designate a project leader/ manager/ contact (usually an EC chair or member)
- ▶ What resources are in the municipality?
- ▶ If you're updating, what needs to be updated?
- ▶ Who is your audience?
- ▶ Begin to assemble references and resources to get the consultant started (e.g. copies of Master Plan, old ERI, phone or email contacts)

Before you write the Request for Proposals (RFP)

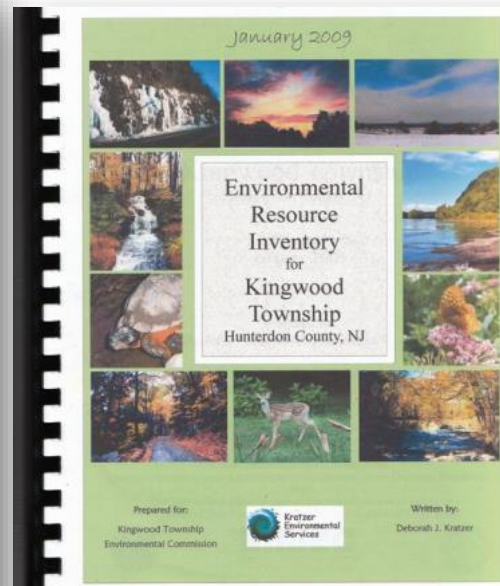


Write the RFP

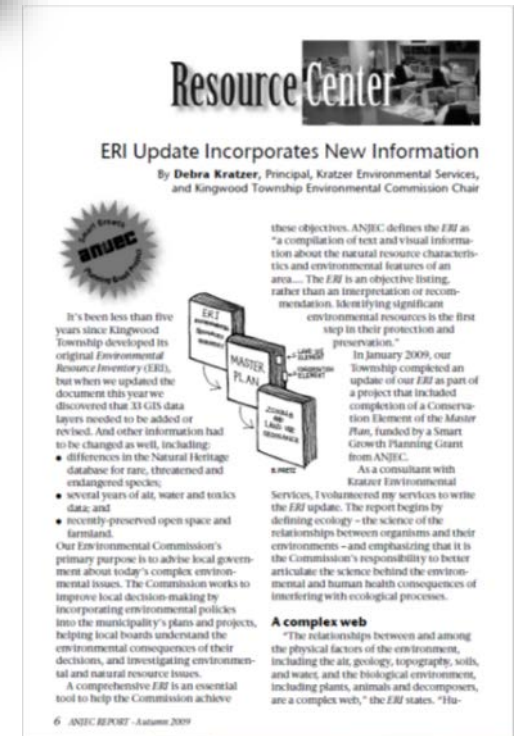
- ▶ Be specific. Include a table of contents, map list, deliverables, schedule and qualifications
- ▶ Use an existing ERI that you like as a guide
- ▶ Sample Table of Contents:
 - Overview
 - Land use & land use change
 - Climate & air quality
 - Infrastructure
 - Physiography, Geology & Topography
 - Soils
 - Ground water & drinking water
 - Surface water
 - Biological resources
 - Open space & recreation
 - Historical resources
 - Regional relationships
 - Environmentally critical areas

- ▶ Is this the municipality's first ERI or an update?
- ▶ If an ERI was done, how old is it?

Update
ERI



- 2009
- Time to Update!



For each resource, the ERI should include

- ▶ Narrative text
- ▶ Maps
- ▶ Graphs
- ▶ Tables
- ▶ References
- ▶ Internet resources

6: SURFACE WATER

A. Watersheds

A watershed (or basin) is the land area within the confines of a drainage divide in which all surface runoff will drain into a river, river system, or body of water. The Borough of Frenchtown is within the Delaware River watershed (see top left inset in Figure 6a). This watershed covers 11,539 square miles, draining parts of Pennsylvania, New Jersey, New York and Delaware (DRBC, 2017). The Delaware River watershed is made up of smaller watersheds, including the Musconetcong and Rancocas Rivers. Sub-watersheds are those smaller drainage areas that make up a larger watershed, including the Nishitankewick and Little Nishitankewick (see bottom right inset of Figure 6a and Figure 6b).



Delaware River at Frenchtown Bridge

Watershed Management Areas



USGS 01458500 Delaware River at Frenchtown NJ

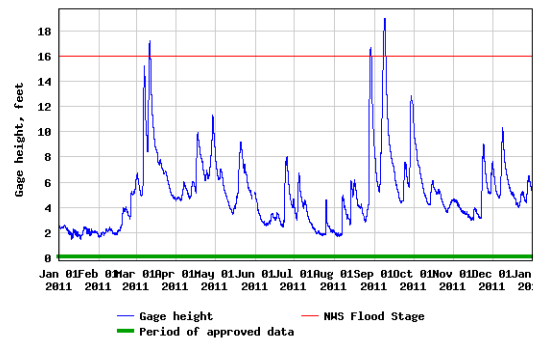


Table 6.5: 2014 (draft) Integrated List (Overview)

Assessment Unit (HUC14)	Sub-watershed	Designated Use*					
		Aquatic Life: General	Aquatic Life: Trout	Primary Contact Recreation	Public Drinking Water Supply	Public Water Supply	Fish Consumption
0204010010000	Nishitankewick Creek (and to Nishitankewick Creek)	N	F	N	F	F	F
0204010020000	Nishitankewick Creek (above 404.33m)	F	NA	F	F	F	F
0204010030000	Nishitankewick Creek (below 404.33m)	F	NA	F	F	F	F
0204010040000	Rancocas River (Watershed: Rancocas)	N	NA	N	F	F	F
0204010050000	Delaware River (Zone 1E)	N	NA	F	N	N	N

*Designated Use: F = Fully Supporting, N = Not Supporting, I = Insufficient Information.
Minimum Suite of Parameters Needed to Determine if Water Quality is "Fully Supporting" a Use:
Aquatic Life - General: Biological data
Aquatic Life - Trout: Biological data, Temperature and Dissolved Oxygen (DO)
Fish Consumption: Fish tissue data
Primary Contact Recreation: Pathogenic Indicator Bacteria
Public Drinking Water Supply: Nitrate and Total Dissolved Solids (TDS)
Public Water Supply: Nitrate and Total Dissolved Solids (TDS)
*Delaware River is assessed by Delaware River Basin Commission and uses different methods and needs were the case for 2014 and 2014 (DRBC, August 2016)
Source: DRBC, August 2016, 2016 REAP, June 2016/2017

References: Surface Water

A. Watersheds

Delaware River Basin Commission (DRBC). April 13, 2017. [Basin Information](#). Accessed 7/23/2017.

NJDEP Land Use Management, Water Monitoring and Standards. [Occurrence and Quality Standards](#). 114 pages. Re-adopted October 17, 2016. [http://www.nj.gov/dep/water/landuse/standards/](#)

NJDEP Office of Environmental Planning. January 1997. [Draft State Water Quality Document for the State of New Jersey](#). [http://www.nj.gov/dep/water/landuse/standards/](#)

NJDEP Geological Survey (NUGS). February 25, 2011. [NJDEP 14D New Jersey \(DEPHUC14\) \(Version 20110225\)](#). GIS data. [http://www.state.nj.us/dep/eis/dig/download/zips/statewide/depuc14/](#)

Internet Resources: Surface Water

General Water Resources Protection

SEEDS: The NJ Environmental Education Directory Website: [http://www.nj.gov/dep/water/landuse/standards/](#)

Basic Watershed Information (Watershed Restoration Section): [http://www.nj.gov/dep/water/landuse/standards/](#)

The Clean Water Book: Choices for Watershed Protection: [http://www.nj.gov/dep/water/landuse/standards/](#)

NJDEP Laws & Rules: [http://www.nj.gov/dep/landuse/lawsregs/](#)

Water Quality Fact Sheets and Bulletins (NJ Agricultural Experiment Station): [http://njaes.rutgers.edu/pubs/subcategory.asp?cat=6&s=](#)

Who does what?

- ▶ Environmental Commission (or subcommittee)
 - guides project, provides any known information sources/reports/maps/etc., reviews and comments
- ▶ Designated project lead/contact
 - the primary point of contact between the municipal staff, elected officials, other boards, public and the consultant, keeps project on track
- ▶ Municipal staff (e.g. financial officer, clerk)
 - responsible for any bidding, financial and contract tasks
- ▶ Consultant – creates the ERI



Planning / Land Use Board

► Goal is for the Board to adopt ERI as part of the Master Plan



- Solicit input
 - Don't wait until ERI is final
 - Planning/Land Use Board
 - Municipal elected officials
 - Municipal professionals
- Give enough time but set deadlines
- Provide a presentation at a Board meeting
- Board holds a hearing for adoption of ERI as part of Master Plan
 - Municipal Land Use Ordinances must be consistent with the Master Plan
 - EC should be provided with copies of site plans and proposals



Sources of mapped data




► NJDEP

<https://gisdata-njdep.opendata.arcgis.com/>

► NJDEP Geological Survey

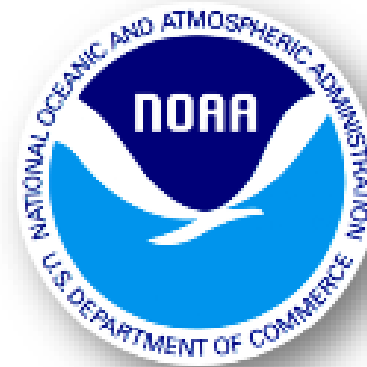
<https://www.nj.gov/dep/njgs/geodata/index.htm>



A screenshot of the NJGIN Open Data portal. The header features a large image of a dense green forest under a blue sky with white clouds. The title "NJGIN Open Data" is centered in large white letters. Below the title is a white search bar with a magnifying glass icon and the text "Search Open Data". A dark blue banner below the search bar contains the text "Looking for remotely sensed data?" in white. Underneath this banner are two buttons: "Elevation Data" and "Imagery", both of which are circled in red. Below the banner is a large white text area that reads "Welcome to the New Jersey Geographic Information Network (NJGIN) Open Data portal!". At the bottom of this area is a smaller line of text: "Here you can explore hundreds of spatial datasets across the state. Search by keyword above or browse data from our partners below to get started." At the very bottom of the page is a dark blue button with the text "Share Your Data" in white.



Other sources of mapped data



Mapping Tool: NJ-GeoWeb

<https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=02251e521d97454aabadfd8cf168e44d>

NJ-GeoWeb New Jersey Department of Environmental Protection BGIS

Find address or place

Sussex County
Passaic County
Bergen County
Morris County
Essex County
Hudson County
Union County
Somerset County
Middlesex County
Monmouth County
Ocean County
Camden County
Gloucester County
Salem County
Atlantic County
Cumberland County
Cape May County

30mi

About

Questions or comments please contact BGIS at:
Phone: (609) 777-0672
Email: gisnet@dep.nj.gov

[NJ-GeoWeb Quick Start User Guide](#)

[NJ-GeoWeb Full User Guide](#)

[NJ-GeoWeb FAQ's](#)

[Layer List Groupings](#)

[Instructional Video Playlist](#)

Featured functionality includes:

Add Data

- Users can search through ArcGIS Online or upload their own data to be used within the application.
- Data can be uploaded in Shapefile, CSV, KML, GPX, and GeoJSON formats.

Mapping Tool: NJ MAP

<https://www.njmap2.com/>

NJ Map is an interactive atlas for ecological resources, environmental education and sustainable communities. The Geospatial Research Lab at Rowan University's [Department of Geography, Planning and Sustainability](#) created this free online map viewer to connect NJ citizens, municipalities and advocacy groups with real time geospatial tools to support their planning and conservation efforts.




Highlands ERI


<https://www.nj.gov/njhighlands/gis/>

NJ Home | Services A to Z | Departments/Agencies | FAQs

Search

 New Jersey
Highlands Council

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Highlands Act
Regional Master Plan (RMP)
Project Review
Plan Conformance
Grant Programs
News
Highlands Development Credits (TDR Program)
Interactive Maps & GIS Data



[Home](#) > [Interactive Maps & GIS Data](#)

Interactive Maps & GIS Data

The Highlands Council Geographic Information Systems (GIS) staff provides access to its GIS data in a variety of formats for use by the general public as well as GIS professionals.

Interactive Map

The Highlands Interactive Map is an online tool that allows users to explore various features of the New Jersey Highlands Region using Highlands-specific as well as state-wide data sources. Users can also generate custom maps and reports for use by planning, engineering, and/or GIS professionals.

- [Interactive Map](#)

Interactive ERI

The Highlands Interactive Environmental Resource Inventory (ERI) is a map-based application that provides access to municipal ERIs. The application can be used to view and export maps and associated narrative and other resource data for the Highlands Region.

The application pulls data directly from a variety of sources, ensuring the best currently available data is always being presented.

- [Highlands Region Interactive ERI](#)
- [List of Municipal Portal Links](#) (pdf)

Highlands Region Interactive ERI Overview Training, May 2022

A 30-minute introduction to the Interactive ERI. Recording provides an overview of application content, features, navigation and tools and demonstrations on how to use the application for a site-specific reviews and to build the foundation for a site-specific ERI.

- VIDEO: [Highlands Region Interactive ERI Overview Training](#)
- [Slides Only](#) (pdf)

Land Preservation Data Updates Survey

Designed specifically for use by land preservation professionals, this ArcGIS survey tool allows users to enter information about missing, incomplete or incorrect preserved parcel data on the Highlands Council Interactive Map.

- [NJ Highlands Land Preservation Data Updates](#)

GIS Data

The Highlands Council provides the following data and tools for use by GIS professionals.

- [NJ Highlands Open Data](#)
- [NJ Highlands ArcGIS Online](#)
- [LiDAR Contour Data](#)

Interactive ERI

- Highlands Region Interactive ERI
- List of municipal portal links

- Video Overview

- GIS Data

StoryMaps & Apps: GALLERY FOR NJDEP BUREAU OF GIS

<https://njdep.maps.arcgis.com/home/gallery.html>

Search gallery

Grid

Date Modified

Filter

> Item type

> Location

> Date modified

> Tags

> Status

Dashboard



NJDEP

NJDEP Harmful Algal B...

The NJDEP HAB Dashboard is an interactive mapping product designed to

✓ ...

Dashboard



NJDEP

New Jersey RGGI Clim...

This dashboard will serve as a public-facing tracking mechanism for projects this

✓ ...

Story Map



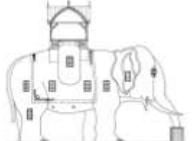
NJDEP

Seabeach Amaranth - A...

Once considered lost from New Jersey, this species has made an incredible

✓ ...

Application



NJDEP

LUCY: NJDEP CRGIS O...

NJ Historic Preservation Office online map viewer for Cultural Resources GIS

✓ ...

Application



NJDEP

Connecting Habitats A...

Connecting Habitats Across NJ (CHANJ) Web Viewer

✓ ...

Story Map



NJDEP

NJDEP AmeriCorps Wa...

This interactive map allows you to locate your current AmeriCorps NJ Watershed

✓ ...

Application



NJDEP

NJDEP Nssp Monitorin...

Nssp Interactive map provides station location information and download

✓ ...

Dashboard




NJDEP

NJ County Solar PV Da...

This interactive dashboard provides a summary of solar PV installations in New

✓ ...

Web Map



NJDEP

Application



NJDEP

Story Map



NJDEP

Story Map



NJDEP

Mapping Software: ArcGIS

<https://www.esri.com/en-us/home>



Products

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Mapping

CAPABILITIES

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LOCATION ANALYTICS

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Foundational system for GIS and mapping

ArcGIS Developer

Develop your own apps

ArcGIS Platform

PaaS to build with location services

Smart Mapping

Contact Sales

Map

Software to visualize and understand your data spatially

Climate Toolkit

<https://toolkit.climate.gov/tool/resilient-nj-local-planning-climate-change-toolkit>

OVERVIEW ▾

1. INITIATE & ENGAGE ▾

2. UNDERSTAND YOUR VULNERABILITY ▾

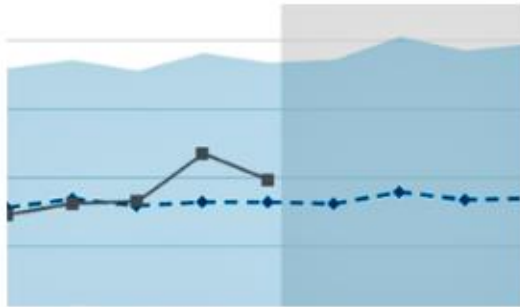
3. DEVELOP A STRATEGY ▾

- A Municipal Land Use Law update was signed into law in February 2021
- Requires climate vulnerability assessments to be integrated into land use plan elements of future municipal master plan updates.
- Requires:
 - Build-out analysis of all future development in the municipality
 - Current and future threats and vulnerabilities
 - including increased temperatures, drought, flooding, hurricanes, and sea-level rise
 - Strategies to reduce the risks of climate change-related natural hazards.

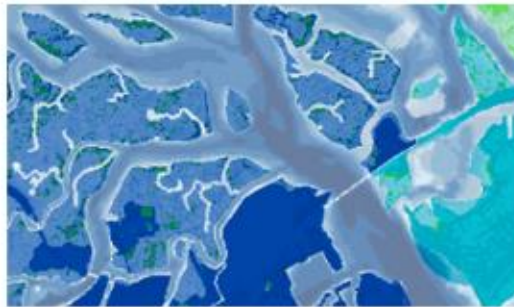
NJADAPT

<https://njclimateresourcecenter.rutgers.edu/nj-adapt/>

- A suite of online tools for planners and practitioners
- Developed by Rutgers University



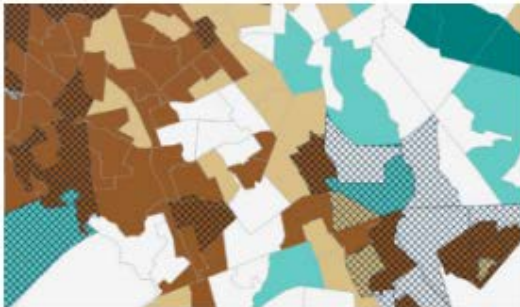
Climate Dashboard



NJ FloodMapper



Climate Snapshots



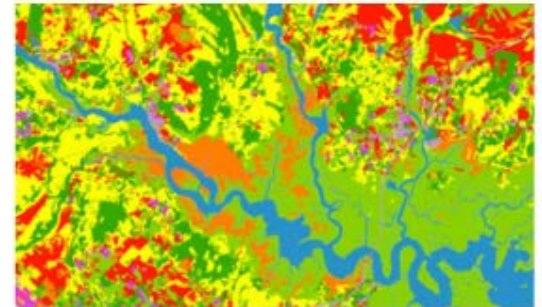
NJ HazAdapt

Data for hazard planners



Climate Planning Tool

A guide to using coastal flooding data



NJ Forest Adapt

Forest management tool

- ▶ Metadata is data about data
- ▶ For all mapped data layers, record:
 - Author/source
 - Name of data layer
 - Year
 - Scale
 - Data use agreements, if necessary
 - Include in the ERI as an appendix

Document Metadata of Mapped Data



Topics to cover in the ERI

- Describe changes over time
- Aerial photos from different years



- Land use change



Table 1.2: Change in Land Use Type from 1986 to 2012*

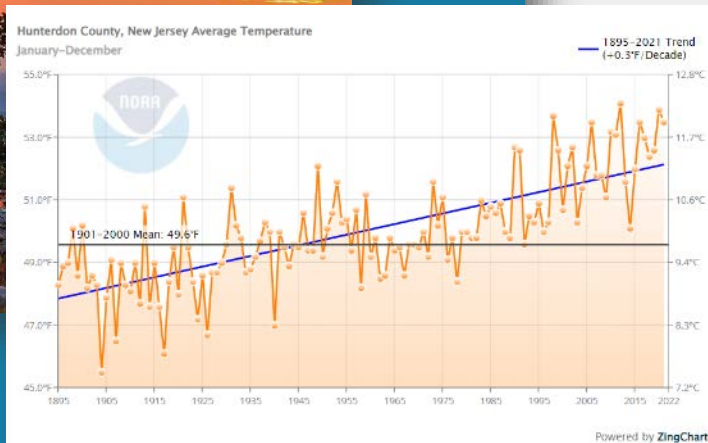
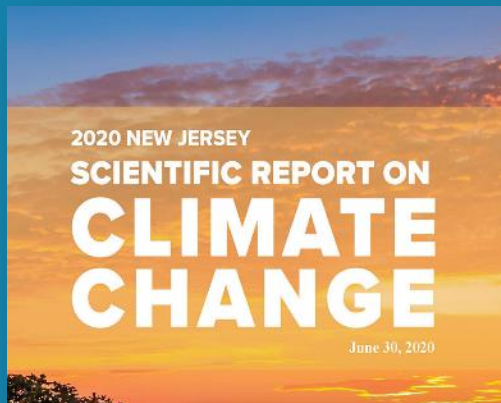
Land Use Type	26 year change (Acres)	26 year change (Percent)
Agriculture	-19.1	-2%
Barren Land	0.0	0%
Forest	-4.7	-1%
Urban	5.0	1%
Water	17.8	2%
Wetlands	1.0	0%
Total:		

*Some changes may be artifacts rather than actual changes, such as due to the increase in resolution in 1995 and 2002 or changes in definitions. Red text indicates decreased percent from the preceding assessment, while blue indicates increased percent.

Source: NJDEP, 2015; NJDEP, 2010; NJDEP, 2008; NJDEP, 2000; NJDEP, 1998

Climate and weather

- ▶ Why does it matter?
- ▶ This section is a required part of ERIs by Sustainable Jersey.
- ▶ Difference between climate and weather
- ▶ Climate trends
- ▶ Normal and extreme weather
- ▶ A couple of sources:



- <https://www.nj.gov/dep/climatechange/data.html>
- <https://www.ncdc.noaa.gov/cag/>

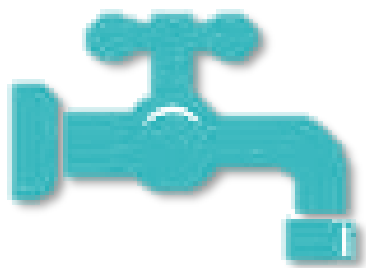


Air quality

- ▶ Several air pollutants are among the highest risks to human health & have socioeconomic & ecological impacts.

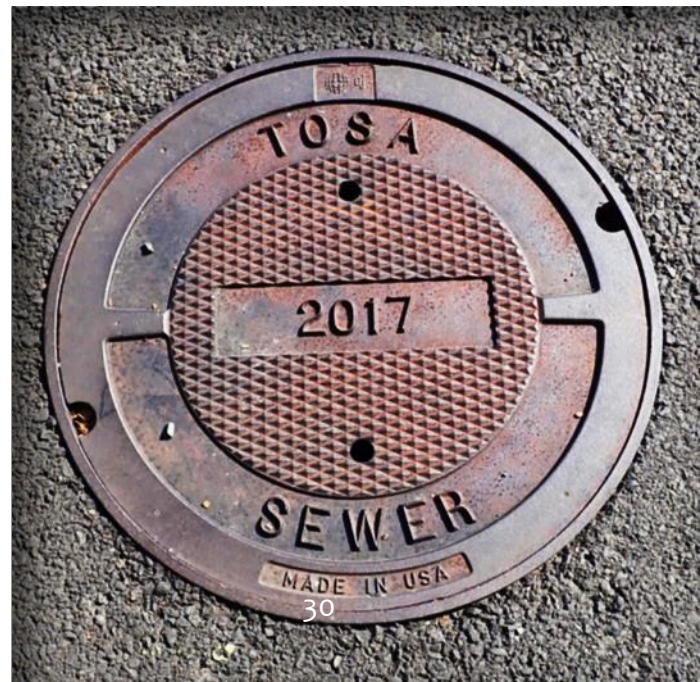


Describe infrastructure



- ▶ Where does drinking water come from?
 - Is it safe?
 - Is it sustainable?

- ▶ Where does waste water go?
- ▶ Where does stormwater go?



► Why does topography matter?

- Over 15% slope is considered a ***steep slope***
- Steep slopes present difficulties for construction
- Vulnerable to erosion

Elevation and steep slopes



Soils

<https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

► Why are soils important?

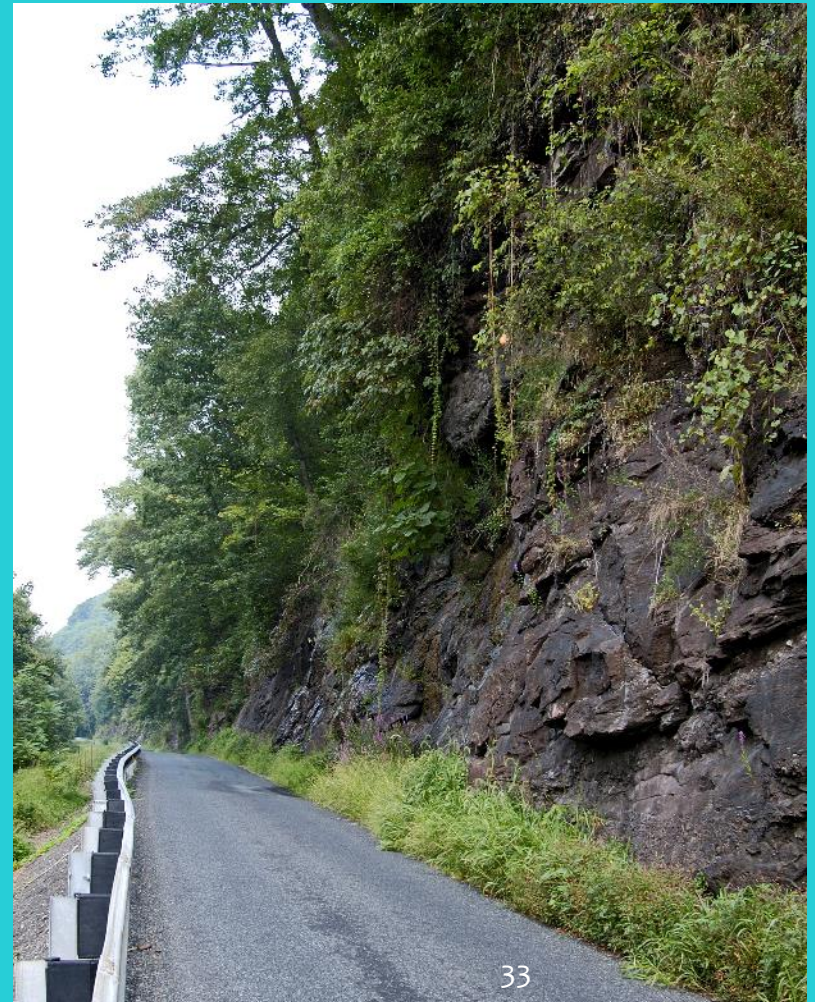
- Soils influence the capacity of land to support plant life and human uses such as roads, buildings and agriculture.
- Map soil characteristics, for example:
 - Farmland soils
 - Septic Limitations



► Why is geology important?

- Bedrock is the solid rock beneath the soil and surficial rock.
- It's the source of soil and defines the aquifer
- Rock outcrops?
- Historic fill?

Geology



Ground Water & Drinking Water Resources

- ▶ What is an aquifer?
- ▶ Where do residents get their potable water from?
- ▶ Quality
 - Private wells (Private Well Testing Act)
<https://njdep.maps.arcgis.com/apps/MapSeries/index.html?appid=826ec9fae77543caa582a787d5f088e7>
 - Public water systems https://www9.state.nj.us/DEP_WaterWatch_public/index.jsp
- ▶ Quantity (e.g. Water Supply Plan)
 - <https://www.state.nj.us/dep/watersupply/wsp.html>

Surface Water Resources



- ▶ What is a watershed?
- ▶ Water quality
 - Surface water quality standards designations
 - Integrated WQ Assessment Results
 - Are there TMDLs that require pollutant reductions?
- ▶ Floodplains
- ▶ Wetlands

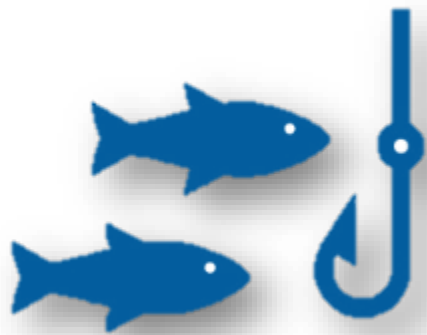
- ▶ Why do RT&E species matter?
- ▶ Descriptions and habitat requirements
- ▶ Report sightings:
<https://dep.nj.gov/njfw/wildlife/new-jerseys-endangered-and-threatened-wildlife/>
- ▶ Map
 - Landscape project mapping for animals
 - Natural Heritage Grid Map for plants
 - Natural Heritage Sites for exceptional habitats
 - Other, such as Important Bird Areas

Rare,
threatened
and
endangered
plant and
animal
species



Anthropogenic impacts

- ▶ Discharges - NJ Pollutant Discharge Elimination System (NJPDES)
- ▶ Surface, ground & drinking Water Quality
- ▶ Known Contaminated Sites List (KCSL)



- ▶ Contaminated ground water – CKE and CEA
- ▶ Fish consumption advisories

Impervious Surface



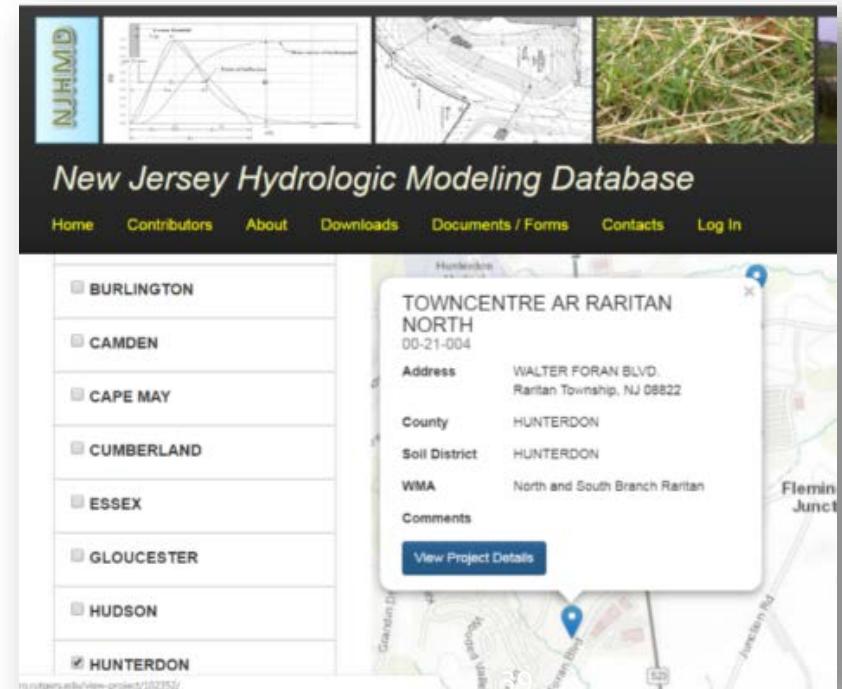
► Why does IS matter?

- Areas with high proportion of impervious surface contribute greater non-point source (NPS) pollution
- NPS is the leading cause of water pollution
- Watersheds with $> 10\%$ impervious surface begin to show signs of degraded biological communities

Stormwater

► Why does stormwater matter?

- Increases erosion, flooding and NPS pollution
- Stormwater regulations
 - https://www.nj.gov/dep/dwq/msrp_home.htm
 - <https://njstormwater.org/>
- Stormwater basin inventory
 - Municipal inventory?
 - <https://hydro.rutgers.edu/>



Invasive species

- ▶ Why are invasive species considered one of the state's top environmental problems?
- ▶ What invasives are of particular concern in the municipality?
- ▶ Examples of impacts on forest health and agriculture

Example:
Japanese barberry
(close up and forest view)



Example:
spotted lanternfly



Open Space, Recreation, Farmland Resources

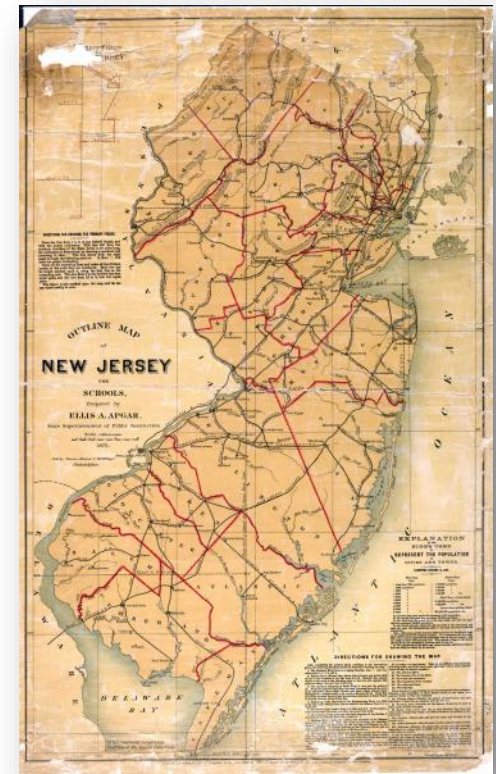


- ▶ Is there an Open Space, Recreation and Farmland plan?
- ▶ Is the inventory up to date?
- ▶ Decide whether to include in ERI before the RFP is developed



Historic & Archeological Resources

- ▶ Are historical or archeological resources important in the municipality?
- ▶ Is there an existing up to date inventory?
- ▶ Decide whether to include in the ERI before the RFP is developed



Something specific to your municipality...

► Example: Tewksbury Scenic Roads



Scenic Roads

The Scenic Roads Commission is charged with monitoring the preservation of 33 Township designated scenic roads. Scenic roads are shown on **Figure 2e**.

Table 2.5: Designated Scenic Roads (alphabetical list)

Beavers Road (upper portion)	Flint Hill Road	Philhower Road
Bissell Road	Fox Hill Road	Potterstown Road (portion of)
Black River Road	Frog Hollow Road	Ridge Road
Boulder Hill Road	Guinea Hollow Road	Rockaway Road
Burrell Road	Hill and Dale Road	Saw Mill Road
Church Street	Hollow Brook Road	Still Hollow Road
Cold Brook Road	Homestead Road	Sutton Road (portion of)
Cold Spring Road	McCan Mill Road	Vlietown Road
Deer Hill Road	Meadow Lane	Water Street
Farmersville Road	Mountain Road	Welsh Road
Felmley Road (portion of)	Palatine Road	Wildwood Road

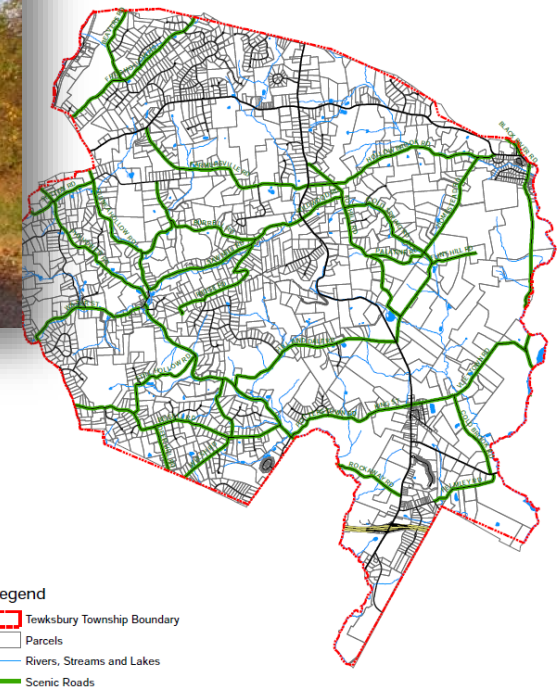


Figure 2e: Scenic Roads

Something specific to your municipality...

► Example: Highland Park Street Trees

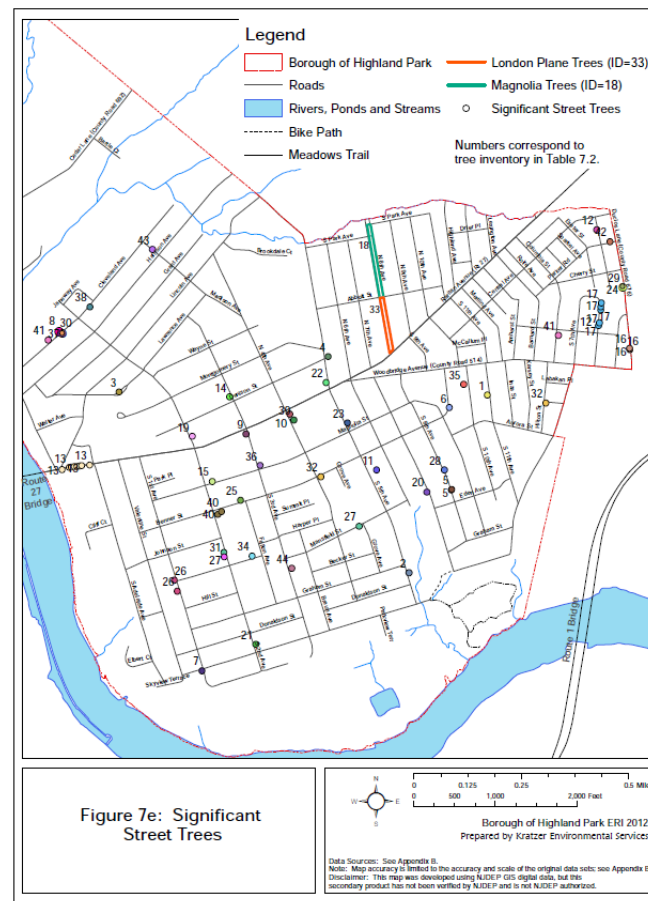


Table 7.2: Significant Street Trees

Map ID	Common Name	Scientific Name	Address
1	Ailanthus (tree of heaven)	<i>Ailanthus altissima</i>	224 S. 11th Ave. left
2	Apple	<i>Malus</i>	609 S. 5th Ave (n=3)
3	Beech, American	<i>Fagus grandifolia</i>	Opposite 55 Lawrence Ave in Median
4	Beech, Copper (European beech)	<i>Fagus sylvatica</i>	31 N. 3rd Ave (Library) on right
5	Catalpa	<i>Catalpa</i>	265 S. 8th Ave
6	Cedar	<i>Juniperus virginiana</i>	239 Volkert Street, left
7	Cherry, Kwanzan (Japanese flowering cherry)	<i>Prunus serrulata</i>	Corner of Valentine and 802 1st Ave
8	Dawn Redwood	<i>Metasequoia glyptostroboides</i>	53 Cleveland Ave
9	Dogwood, Flowering	<i>Cornus florida</i>	Corner of S. 4th and Raritan Ave
10	Dogwood, Japanese	<i>Cornus kousa</i>	Side of bank on S. 4th and Raritan Ave
11	Eastern Redwood	<i>Sequoia sempervirens</i>	Senior Center, S. 6th Ave
12	Elm, American	<i>Ulmus americana</i>	10 Alcazar Street
13	Ginkgo	<i>Ginkgo biloba</i>	Lower Raritan Ave, bridge to S. Adelaide (n=8)
14	Hemlock, Canadian (eastern hemlock)	<i>Tsuga canadensis</i>	102 N 3rd Ave
15	Horsechestnut, red (red buckeye)	<i>Aesculus pavia</i>	Magnolia St around corner from 31 S 2nd
16	Locust, Black	<i>Robinia pseudoacacia</i>	202 Duclou Lane (n=3)
17	Locust, Honey	<i>Gleditsia triacanthos</i>	155-159 Exeter Street (n=5)
18	Magnolia	<i>Magnolia</i>	N. 8th Ave between Abbot & S. Park Ave
19	Magnolia, Saucer	<i>Magnolia x soulangeana</i>	N 2nd at Raritan (Baptist church property)
20	Maple, ash-leaved (boxelder)	<i>Acer negundo</i>	258 S. 7th Ave
21	Maple, Japanese	<i>Acer palmatum</i>	713 S 2nd Ave
22	Maple, Norway	<i>Acer platanoides</i>	N 5th and Raritan Ave
23	Maple, Sugar	<i>Acer saccharum</i>	35 S. 5th Ave
24	Oak, Black	<i>Quercus velutina</i>	144 Duclou Lane
25	Oak, English	<i>Quercus robur</i>	225 Benner Street (n=2)
26	Oak, Pin	<i>Quercus palustris</i>	402-414 S. 1st Ave
27	Oak, Sawtooth	<i>Quercus acutissima</i>	306 S 2nd Ave
28	Oak, Scarlet	<i>Quercus coccinea</i>	420 Mansfield opposite Bartle School
29	Oak, White	<i>Quercus alba</i>	251 S. 8th Ave, left
30	Parrotia (Persian parrotia)	<i>Parrotia persica</i>	144 Duclou Lane
31	Pear	<i>Pyrus</i>	55 Cleveland Ave
32	Pine, white	<i>Pinus strobus</i>	308 S 2nd Ave
33	Pine, white	<i>Pinus strobus</i>	235 Hilton
34	Plane, London	<i>Platanus hybrida</i>	Corner of Berner St & S 4th
35	Plum, flowering	<i>Prunus triloba</i>	N. 8th Ave between Raritan Ave & Abbot St
36	Redbud	<i>Cercis canadensis</i>	221 Harper Street
37	Scholar	<i>Sophora japonica</i>	212 S. 10th
38	Seven Sons Flower Tree	<i>Heptacodium miconioides</i>	35 S 3rd Ave
39	Smoke tree	<i>Cotinus</i>	55 Cleveland Ave
40	Sourwood	<i>Oxydendrum arboreum</i>	216 Cleveland Ave
41	Spruce, Norway	<i>Picea abies</i>	Rear of bank on corner S 4th and Raritan Ave
42	Spruce, Norway	<i>Picea abies</i>	201 S 2nd Lafayette condos
43	Sweet Gum	<i>Liquidambar styraciflua</i>	201 S 2nd Lafayette condos
44	Sweet Gum	<i>Liquidambar styraciflua</i>	209 Columbia
45	Sycamore	<i>Platanus occidentalis</i>	45 Cleveland Ave
46	Tulip tree	<i>Liriodendron tulipifera</i>	1800 Park Street
47	Zelkova	<i>Zelkova serrata</i>	Madison Ave between Cleveland Ave & Harrison Ave, west side of street
48	Zelkova	<i>Zelkova serrata</i>	425 S 3rd Ave, left

Source: Highland Park Environmental Commission, 2011

7. Biological Resources
February 2012

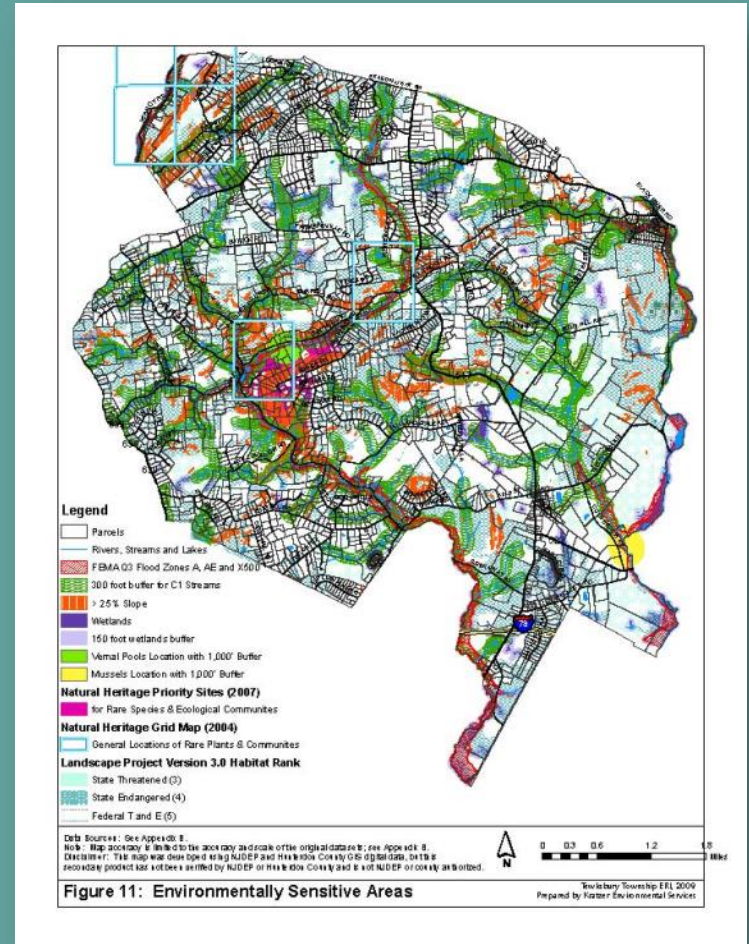
Highland Park Environmental Resource Inventory
Kratzer Environmental Services

130

► May include:

- Steep slopes
- Floodplains
- Wetlands & wetland buffers
- 300' C1 riparian buffers
- Landscape Project Rank 3-5
- Vernal pools
- Natural Heritage Priority Sites
- Open space
- Well Head Protection Areas

Environmentally Critical Areas

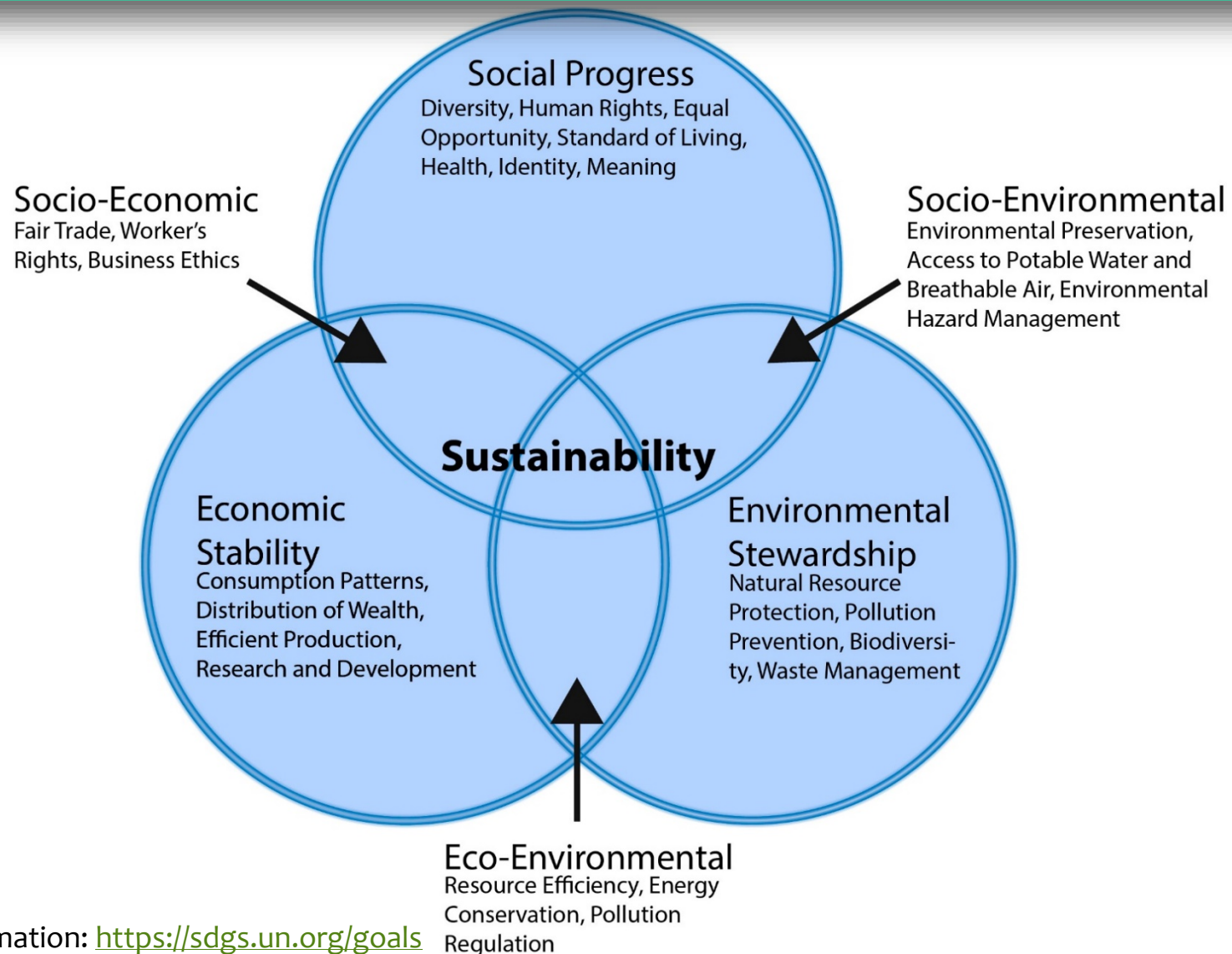


Good communication is key!



www.PS

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”



More information: <https://sdgs.un.org/goals>

Image source: <https://sites.google.com/site/brooklynascendbiology/sustainability>

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Kratzer
Environmental
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