

**anjec**

ASSOCIATION OF NEW JERSEY  
ENVIRONMENTAL COMMISSIONS

P.O. Box 157 • Mendham, NJ 07945 • Tel: 973-539-7547 • Fax: 973-539-7713 • Website: [www.anjec.org](http://www.anjec.org)

# The Environmental Resource Inventory: ERI

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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 Resources 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 part of the municipal master plan, either 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 protection plans, protection of water resources, and many other municipal functions.

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.S.A. 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 an index of all open marshlands, 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* (MLUL) (N.J.S.A. 40:55D-1 et seq.) requires municipalities to have a land use plan element in their master plan, “including but not necessarily limited to, topography, soil conditions, water supply, drainage, flood plain areas, marshes, and woodlands....” (N.J.S.A. 40:55D-28b(2)).

The MLUL also states that, “Whenever the environmental commission has prepared and submitted to the planning board and to the board of adjustment an index of the natural resources of the municipality, the planning board or the board of adjustment shall make available to the environmental commission an informational copy of every application for development submitted to either board.” (N.J.S.A. 40:55D-27b). Thus, preparing and submitting an ERI is one way to ensure that the commission receives copies of development proposals, so that it can review site plans and comment to the planning board or board of adjustment. However, the MLUL goes on to say, “Failure of the planning board or board of adjustment to make such informational copy available to the environmental commission shall not invalidate any hearing or proceeding.”

## What Does an ERI Include?

An ERI has text, maps, tables, figures, photographs, and other graphics that describe and compare information on the natural and environmental characteristics and features of an area. Although ERIs have no “required” table of contents or topic headings, most contain sections on climate, air quality, geology/geography, topography, soils, hydrology, vegetation, wildlife and habitat, critical areas, existing land use and transportation.

It is important to include a characterization of local relationships to regional resources such as open space, watersheds, surface waters, ground water and wetlands. A more comprehensive ERI might also include information on historic and cultural factors, scenic areas, infrastructure, noise, contaminated sites, and other environmentally significant characteristics of the municipality. In addition to text and maps, the ERI should include a bibliography of source materials. Examples of ERIs are found on the ANJEC website at [www.anjec.org/ERIs.htm](http://www.anjec.org/ERIs.htm).

## The Process

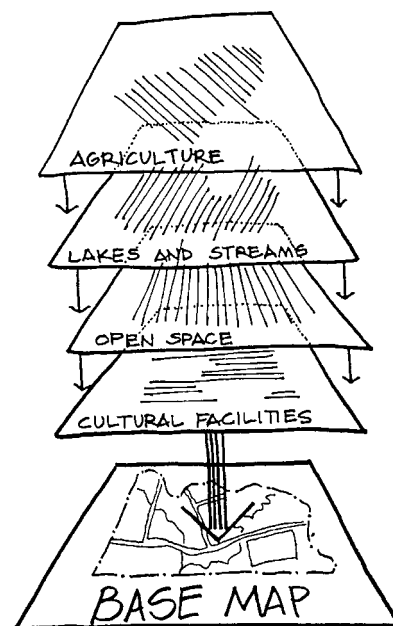
Creating an ERI is an educational process for environmental commission members. Knowing about the environmental attributes of the town, where they are and how they function, gives the commission knowledge to draw upon during site plan review, master plan preparation and other functions in which the commission acts as the

“environmental conscience” of the community. Working collaboratively on the document with town staff, boards and professionals will also strengthen the commission’s legitimacy within the municipal government.

When a consultant or other expert is doing some or all of the work on an ERI, commission members should still be engaged in the process. They can review drafts and provide feedback on all narrative material, make sure maps and labeling are correct and readable, and take advantage of the consultant’s expertise to learn more about local resources and how they function. While this may take longer than simply handing off the task to the consultant, the results of the commission taking “ownership” will be felt for years to come.

## Collecting Information for the ERI

Start your information search at town hall. Obtain the existing ERI or NRI (if any), master plan and other municipal plans such as open space, lakes or greenways, and reports on groundwater and other studies. The municipal engineer, town clerk, planning board secretary, members of the planning board, and town planner should be able to help you locate existing maps and documents. County planning offices can be extremely helpful, although they differ in their capabilities to provide digital information.



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Environmental commissions will find that the NJ Department of Environmental Protection (NJ DEP) and other state and federal agencies, as well as private groups and individuals, have already collected much of the basic information needed for an ERI. Regional agencies, including the Pinelands Commission and the Highlands Council, make a tremendous amount of digital and narrative environmental data available to the public at little or no cost.

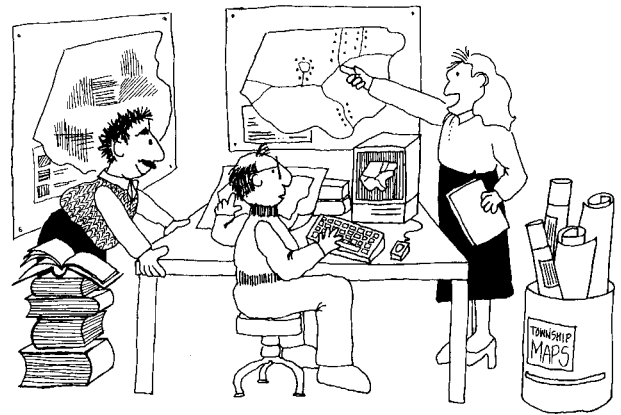
Environmental Impact Statements (EIS) from development projects are additional sources of local natural resource information. Federal and state agencies prepare these studies for major projects like roads, bridges and flood control systems, and municipalities with EIS ordinances require them from developers for major applications. Ask the planning board or municipal clerk for copies of EIS reports.

Seeking public input early in the process of creating an ERI can bring to light specific local information or sources that will enhance the document. It can also provide insight into community concerns and values that might indicate a need for particular resource information in the ERI. Contact the local press and provide information about the value of the ERI, the process, why the commission is preparing the ERI, and how the public can be involved. Use the municipal website as a communications tool to announce work sessions, as well as to provide updates and post draft maps and materials for public comment.

## Maps

An ERI should always include a series of maps, ideally at the same scale, and all maps should display a title, bar scale, scale ratio and key, as well as data sources. They should have clear, legible labeling.

One important element of any ERI is the “base map.” Generally a base map will include the outline of the municipality, surface water and roads, and may have lot lines from the tax map. Many municipalities and counties have digitized their lot lines using the centerlines of roads as a framework. Be cautious when using scanned non-digital tax maps since they often do not overlay with more accurate geo-referenced digital data. Check with your municipal tax assessor and/or your municipal engineer concerning the availability and quality of tax maps. Note that it may not be desirable to include the lot lines on every map in the ERI,



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particularly in very dense communities, because they can make the map too “busy” and hard to read when other features are added.

In an ERI, resources may be mapped individually (i.e., separate maps for wetlands, soils, historic properties, etc.); or grouped by related characteristics like “water and wetlands” that would show surface water streams, lakes, wetlands and transition areas, and watershed boundaries. A “critical areas” map might include steep slopes, recharge areas, priority habitat areas, wetlands and flood plains.

Municipalities and commissions are now replacing paper maps with computer-based maps, and creating digital ERIs that can be distributed as PDF files on CD and posted on a website. Digital mapping uses a geographic information system, or “GIS,” to store, manage, analyze and display geographic and associated data. GIS is a powerful tool designed specifically for integrating, analyzing and mapping all types of spatial information.

Digital mapping allows the overlay of any number of layers and the preparation of special custom maps. A GIS-based local database and maps for the ERI also facilitate a variety of analyses not possible with paper-based products. Possibilities include area measurements, percent calculations, change detection, proximity mapping, and the application of models to develop “what if” scenarios. For more information, go to [www.gis.com/](http://www.gis.com/).

NJ DEP has taken a leading role in the preparation and dissemination of high quality digital data, including environmental information, basic scientific information, and cartographic aids. NJ DEP is continually updating these data.

## Sources of mapping data:

### NJ DEP

[www.nj.gov/dep/gis/](http://www.nj.gov/dep/gis/)

### NJ GIS Data Clearinghouse

[https://njgin.state.nj.us/NJ\\_NJGINExplorer/index.jsp](https://njgin.state.nj.us/NJ_NJGINExplorer/index.jsp)

### US EPA

[www.epa.gov/region2/gis/data.htm](http://www.epa.gov/region2/gis/data.htm)

### Highlands Council (Highlands Region)

[www.highlands.state.nj.us/njhighlands/actmaps/maps/](http://www.highlands.state.nj.us/njhighlands/actmaps/maps/)

### NJ Dept. of Health and Senior Service GIS Data

[www.state.nj.us/health/chs/gis.htm](http://www.state.nj.us/health/chs/gis.htm)

### NJ Dept. of Transportation

[www.state.nj.us/transportation/gis/](http://www.state.nj.us/transportation/gis/)

### NJ Pinelands Commission (Pinelands region)

[www.state.nj.us/pinelands/landuse/gis/](http://www.state.nj.us/pinelands/landuse/gis/)

Mapping software can readily change the scale of digital data to produce maps of any size. However, before combining digital data in an overlay, carefully note whether the scale and resolution of the data layers are comparable.

Often, rather than developing in-house expertise, commissions opt to work with a consultant with GIS capability. When selecting a consultant it is important to establish beforehand that the municipality will receive all digital files and data associated with the ERI, in addition to the document itself. The county planning office, a local watershed association or a statewide land preservation organization might also be able and willing to assist a commission with GIS or produce maps for the ERI.

## GPS Data

Additional GIS data can be created, or existing data can be upgraded or augmented, by the use of global positioning system (GPS) technology. GPS can be used to pinpoint locations of specific features, such as a well, a septic system or stormwater outfall. A series of point locations may be combined to delineate an area that can represent a larger feature such as a wetland, wooded area, new development or a specific wildlife habitat. Using GPS systems, the commission or its consultant can

collect and prepare data to add to existing GIS files, producing new data. These new data may then be printed out in map format.

## Photographs

Photographs are useful in the ERI to show special features, break up large blocks of text, and give a feel for the landscapes and character of the municipality. Normal ground-level photography can illustrate particular conditions and can be keyed to maps to enhance the viewers' understanding.

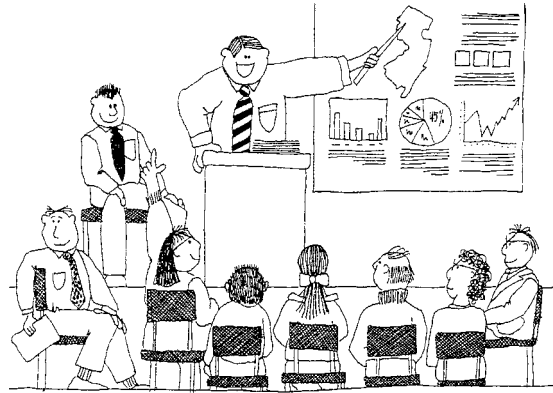
Aerial photographs are also useful. High resolution, geo-referenced, distortion-free aerials called orthophotos are available from many different sources covering different time periods. A series of digital photographs from different times can show changes in the landscape or the quality of a natural feature such as a forest. Custom digital aerial photography may also be purchased, but this is not generally necessary to complete an ERI. Other important data such as wetlands locations, impervious surface percentage and land cover can be derived from aerial photographs by expert aerial photo interpreters. These interpreted data and photographs are also available from NJ DEP [www.state.nj.us/dep/gis/](http://www.state.nj.us/dep/gis/).

## Online "GIS-Like" Data

Increasingly, environmental data are becoming available on the internet. These data can be combined, sorted, viewed as maps, and printed out, but cannot be altered or combined with other data (for example, to add names of streams, parcel mapping/lot lines, or other local information). Environmental commissions can use them as general guides for many functions like open space planning, site plan review and wildlife habitat management.

- NJ DEP offers a web-based interactive mapping system called NJ GeoWeb, which has the ability to link to other NJ DEP data on permits, contamination, water quality and other natural resources information. Access NJ GeoWeb and its precursor, i-MapNJ at [www.nj.gov/dep/gis/newmapping.htm](http://www.nj.gov/dep/gis/newmapping.htm)
- The Natural Resources Conservation Service (NRCS) has an online soils database (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>) that can supply digital data relating to soils and these data can be overlaid on aerial photographs.

- The New Jersey Highlands Council offers extensive data for the 88 Highlands municipalities on its website (<http://maps.njhighlands.us/hgis/>) including digital GIS downloads, interactive mapping, 3D and “birdseye view” aerial photographs and transfer of development rights estimates.
- Rowan University has an online information service for all New Jersey municipalities at <http://gis.rowan.edu/projects/njmap/>. It has information on land use change over a 21-year period, endangered species habitat, impervious surfaces and town statistics.



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## The Report

Good explanatory text is essential to enable ERI users to make effective use of the document. The text should be factual and objective. Any recommendations arising from the ERI should be published in a separate report that can also be adopted into the Master Plan.

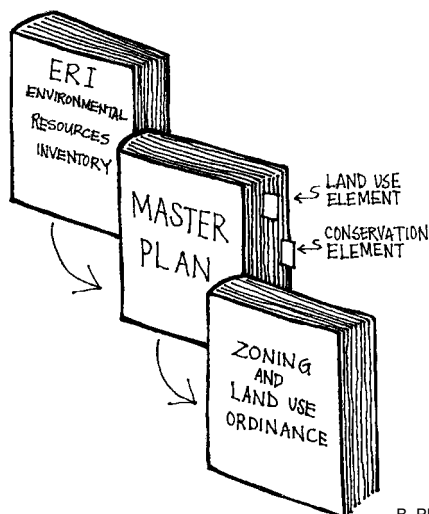
The text of an ERI starts with a general description of the region and the municipality’s place in it. Subsequent sections or chapters describe the natural and environmental characteristics and features of the municipality, with discussions keyed to the maps. The narrative should explain how the features relate to each other and the local environment. For example, riparian areas, wetlands, steep slopes and forests can be described in spatial terms and in terms of their function and impacts on the local and regional ecosystem. Some ERIs include general background information about the natural processes taking place in the area, such as the hydrologic cycle, erosion, sedimentation, soil formation, and the nitrogen cycle.

The report should also contain a complete bibliography. Digital information (such as that shown on GIS maps) requires a specific type of documentation called “metadata,” which is “data about the data” – how and when the data was collected and interpreted, and by whom.

## Open Space Index

The town’s open space index can be part of an ERI. An open space index is not an open space plan, but rather an inventory and description that is used in plan preparation. The location, amount and character of undeveloped private lands and preserved lands are vital information for land use management, planning and zoning purposes.

Parks, natural areas, camps, farms, historic sites, undeveloped real estate, ski trails, school complexes, golf courses, easements and abandoned railroad rights-of-way are some of the areas that should be listed and mapped in an open space index. ANJEC provides information on preparing an “Inventory of Open Lands” in its resource paper, “Open Space Plan,” available at [www.anjec.org/OpenSpace.htm](http://www.anjec.org/OpenSpace.htm).



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As part of the subdivision process, towns may acquire conservation easements that cover parts of individual lots. These are established to protect a critical area and its natural functions, and the municipality has a responsibility to monitor and enforce the easement to protect those functions. Easements should be listed and/or flagged or mapped on the open space index or elsewhere in the ERI. However, inventorying easements can be a big project in towns that have not kept careful records; if there is no inventory, the easement information can be added to a later revision of the ERI. The ANJEC website has information on inventorying and monitoring easements at [www.anjec.org/ConservationEasements.htm](http://www.anjec.org/ConservationEasements.htm).

## What Are the Uses of an ERI?

- As a tool to increase the understanding of natural systems and their limitations and opportunities for use;
- as a basis for a land capacity analysis, for determining the intensity and location of development;
- as a factual basis for municipal land use planning, including preparation of the land use element of the municipal master plan;
- as a guide in the site plan review process;
- as a reference for developing municipal ordinances and establishing management practices for public lands and infrastructure;
- as a means to help identify priority areas for open space, historic and farmland preservation;
- as an educational tool for residents to learn more about their community and its environment;
- as a way to save dollars by avoiding future problems such as flooding and degradation of water quality;
- as a guide for the environmental commission on where more research is needed to supplement existing data and studies.



converted to development since the original ERI was completed. In some cases, new information may be available about a particular resource, or the laws or regulations that govern its use might have changed. For example, NJ DEP regulations now require a 300-foot buffer on either side of a Category 1 (C-1) stream. In the revised ERI the surface waters narrative and map can be updated to indicate the C-1 status of streams and show their 300-foot buffers.

## Who Uses an ERI?

- environmental commissions
- planning and zoning boards
- developers
- planners and engineers
- environmental consultants
- open space committees
- elected officials
- residents and property owners
- educators

## Updating an Existing ERI

If the town has an older ERI, the commission will need to decide whether to simply update and correct the old one and add new maps, or create a totally new document, using the old ERI as a primary reference. If the previous ERI was done with paper maps, creating a new set of GIS maps for the updated ERI is recommended, because GIS mapping is high quality, standardized, and can be manipulated to combine features.

The updated ERI will reflect resources that have changed, such as forested or agricultural lands

Request help from local volunteers who might have special technical knowledge. You might want to include non-commission members on a special ERI committee. Write articles or press releases for the local newspaper or town newsletter/website explaining the purposes of the ERI and asking for community participation. Ask your county college or a nearby university for a student intern to assist with the ERI as an independent study project, class project, or work study program. Ask community groups for help.

It is a good idea to have outside experts review the finished draft. The town planner, members of the academic community, government environmental or planning officials, staff of watershed associations and other environmental experts may serve in this capacity. Don't overlook the wealth of knowledge of long-time residents.

## Inform the public

It is important to educate and inform the community about what you are doing and why. Local publicity such as newspaper articles or postings on the town website can help educate residents about

environmental issues, and also may turn up some local experts who can help you locate important data or help the commission with other activities. Increased knowledge and understanding of your community's natural resources promotes more responsible use of those resources, and builds support for good land use planning by the municipality.

## Creating the ERI

Most ERIs cover at a minimum, these categories: Climate, Air Quality, Geology, Geography/Topography, Soils, Hydrology, Vegetation, Wildlife, Existing Land Use, Transportation and Critical Areas. The inclusion of Lot Lines and Zoning District Boundaries on at least some of the maps will greatly enhance the utility of the ERI for site plan review.

A more comprehensive inventory might also include information on: History, Historic and Archaeological Sites, Scenic Resources, Noise, Infrastructure (Sewer/Water/Stormwater), Coastal and Marine Areas and Known Contaminated Sites.

Spatially, the ERI should include the entire municipality, but smaller sections, such as river corridors, agricultural preservation areas, highway interchanges, redevelopment areas or even downtown neighborhoods, can be highlighted for special treatment. It may also be useful to include areas outside the municipality such as contributing watersheds and surface waters, adjacent open space, or nearby wellhead areas.

In addition to text, tabular data and maps, the ERI should also contain a bibliography of source materials.

Recent concerns with global climate change and energy may require changing the traditional components of an ERI. Some commissions are adding sections that characterize municipal or community energy use, capacity for renewable energy (wind resources, solar orientations), and greenhouse gas inventories.

## ERI Contents

### A. Regional Relationships

1. NJ *State Plan* and *State Strategic Plan* designation
2. County master plan and open space plan
3. NJ Physiographic Province
4. Regional plans (e.g., Pinelands, Highlands, Hackensack Meadowlands, D&R Canal)
5. Watersheds

#### Data sources:

For information on the *State Plan*, contact NJ Office for Planning Advocacy, 609-292-7156, or [www.nj.gov/state/planning/](http://www.nj.gov/state/planning/).

For county master plan and open space plan, contact your county planning board.

For NJ Physiographic Provinces: [www.nj.gov/dep/njgs/enviroed/infocirc/provinces.pdf](http://www.nj.gov/dep/njgs/enviroed/infocirc/provinces.pdf)

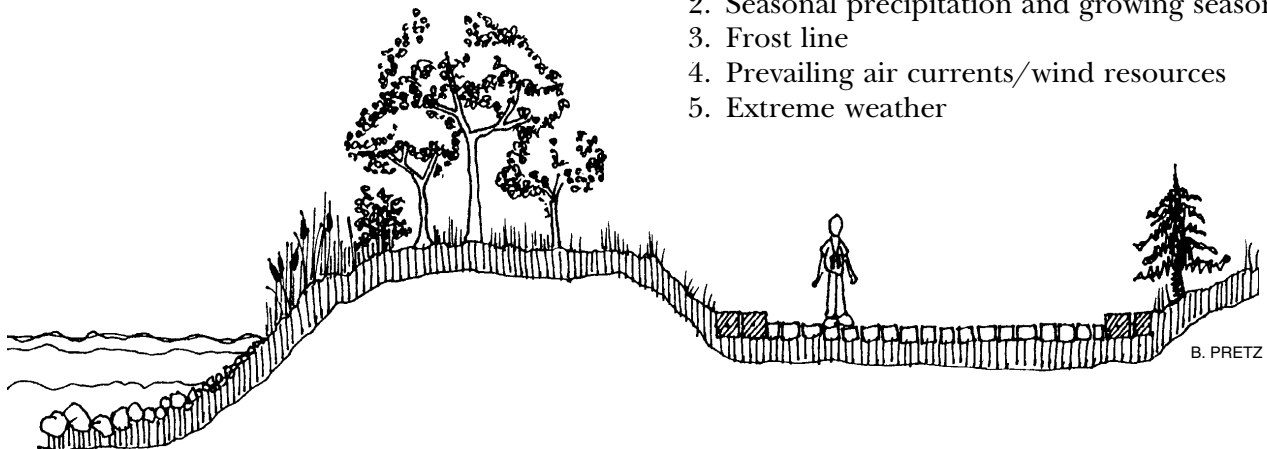
For Regional Plans, Pinelands Commission: 609-894-7300 or <http://nj.gov/pinelands>; Highlands Council: 908-879-6737 or [www.highlands.state.nj.us/](http://www.highlands.state.nj.us/); Hackensack Meadowlands — New Jersey Meadowlands Commission: 201-460-1700 or [www.njmeadowlands.gov/](http://www.njmeadowlands.gov/); D&R Canal Commission: 609-397-2000 or [www.dandrcanal.com/drcc/](http://www.dandrcanal.com/drcc/)

For watersheds, contact the NJ DEP Division of Watershed Management, [www.nj.gov/dep/watershedmgt/](http://www.nj.gov/dep/watershedmgt/).

### B. Climate

The discussion of climate in an ERI could include:

1. Temperature ranges and trends
2. Seasonal precipitation and growing season
3. Frost line
4. Prevailing air currents/wind resources
5. Extreme weather





#### **Data sources:**

Contact your county library or airport weather services. The Office of the NJ State Climatologist is located at Rutgers University, Cook College (<http://climate.rutgers.edu/stateclim/>). The NOAA National Climatic Data Center (NCDC) has data that can be ordered through its website [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov).

Our climate is changing. The ERI can include a discussion of climate projections for changes in temperature, precipitation, extreme weather events, and sea level rise. For more information sources, see Chapter 4 of the *Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments* website at [www.cses.washington.edu/db/pdf/snoveretalgb574.pdf](http://www.cses.washington.edu/db/pdf/snoveretalgb574.pdf).

For coastal communities, see the *Vulnerability of New Jersey's Coastal Habitats to Sea Level Rise* website at [www.crssa.rutgers.edu/projects/coastal/sealevel/index.html](http://www.crssa.rutgers.edu/projects/coastal/sealevel/index.html).

### **C. Air Quality**

1. National clean air standards (NAAQS)
2. Monitoring sites/exceedances
3. Stationary emission sources
4. Radon
5. Vehicular air pollution/ozone areas

#### **Data sources:**

Air Research from NJ DEP Division of Science [www.state.nj.us/dep/dsr/air/air.htm](http://www.state.nj.us/dep/dsr/air/air.htm)

Air Toxics, NJ DEP, [www.nj.gov/dep/airtoxics/](http://www.nj.gov/dep/airtoxics/)  
Air Quality monitoring, phone 609-292-6722  
[www.nj.gov/dep/baqp/](http://www.nj.gov/dep/baqp/)

Radon, NJ DEP phone 609-984-5425 or  
[www.nj.gov/dep/rpp/radon/](http://www.nj.gov/dep/rpp/radon/)

### **D. Geology**

An understanding of the geologic framework underlying a municipality is basic to understanding many other environmental features and processes. Topography, steep slopes, groundwater availability, soils, vegetation and wildlife habitat are all heavily influenced by geology. Geology also impacts engineering concerns such as excavation, structural stability and cost estimation for building projects.

Typically, a Geology section will include information on:

1. Geologic history
2. Bedrock characteristics (type, structure, age)
3. Surficial geology
4. Mineral resources including active or abandoned mines and quarries
5. Depth to bedrock
6. Faults, earthquake epicenters and landslide hazard
7. Geologic cross sections (if available)
8. Natural geologic hazards – can include cavernous bedrock, limestone, arsenic, asbestos, and radioactive materials.

#### **Data sources:**

New Jersey Geological and Water Survey (NJGS) website, [www.nj.gov/dep/njgs](http://www.nj.gov/dep/njgs). In addition to geologic information, the site contains geographic, topographic, hydrologic and historic information. The website is also an excellent source of reports, research results and educational materials.

U.S. Geologic Survey (USGS) ([www.usgs.gov/](http://www.usgs.gov/)) offers geologic information ranging from simple educational materials to extremely technical information designed for specialist use.



*The Geology and Geography of New Jersey*, by Kemble Widmer (1964), should be available at major libraries.

## E. Topography

1. Elevations
2. Steep slopes (keyed to steep slopes ordinance thresholds, if your town has passed one)
3. Viewsheds

### Data sources:

NJ DEP digital downloads for elevation contours, USGS 7.5 minute quadrangle maps, [www.usgs.gov/pubprod/](http://www.usgs.gov/pubprod/) or NJGS Base Maps [www.nj.gov/dep/njgs/](http://www.nj.gov/dep/njgs/)

## F. Soils

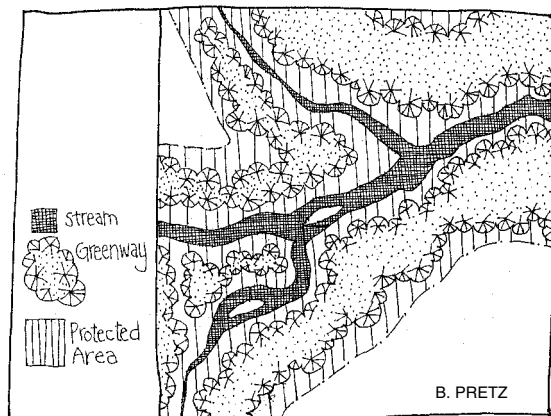
Soil data are valuable for many municipal purposes ranging from site plan review to farmland preservation planning.

The Soils section of an ERI might include:

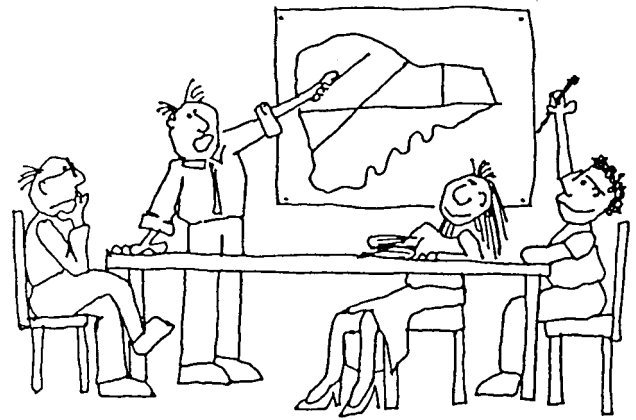
1. Soil associations
2. Soil types
3. Seasonal high water
4. Hydric soils
5. Alluvial soils
6. Permeability
7. Erodibility
8. Interpretations for use/limitations:
  - a. Septic systems
  - b. Lawns and landscaping
  - c. Local roads and streets
  - d. Foundations ( with or without basements)
9. NJ Dept of Agriculture soils classifications (Prime, Statewide Importance, etc.)

### Data sources:

The NRCS is the recognized source for soil information. The NRCS Web Soil Survey <http://websoilsurvey.nrcs.usda.gov/app/> can be used to view



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soils types for areas under 10,000 acres. The full set of data from the Soil Survey Geographic Database for use in GIS may be downloaded from <http://datagateway.nrcs.usda.gov/>.

## G. Hydrology

Often this section begins with a discussion of the hydrologic cycle that conceptually unites all three areas where water is present – the atmosphere, surface and under ground.

### Groundwater

1. Aquifers
2. Direction and rate of groundwater movement
3. Groundwater recharge areas and rates
4. Prime groundwater recharge areas
5. Depth to groundwater
6. Public community and non-community well-head protection areas
7. Areas served by individual onsite wells
8. Groundwater quality, including known contaminated sites and remediation areas
9. Permitted groundwater discharges
10. Areas served by individual onsite septic systems

### Data sources:

Aquifers, *Major Aquifers in New Jersey*, <http://nj.usgs.gov/infodata/aquifers/>

Recharge: "A method for evaluating groundwater recharge areas in New Jersey," Geological Survey Report, *GSR 32*, available for purchase at the Maps and Publications Sales Office, [www.state.nj.us/dep/njgs/pricelst/njgsrprt.htm](http://www.state.nj.us/dep/njgs/pricelst/njgsrprt.htm)

NJ DEP has digital data for groundwater recharge, contamination, and wellhead protection on GeoWeb and data for download on [www.state.nj.us/dep/njgs/geodata/](http://www.state.nj.us/dep/njgs/geodata/).

## Surface Water

Maps and information on water bodies is an essential part of an ERI.

1. Types, locations and names of surface waters
2. Direction of flow
3. Watershed (HUC 11) and subwatershed (HUC 14) boundaries
4. Surface water quality standards (C1, FW1, FW2, etc.)
5. Regulated riparian buffers
6. Regulated flood hazard areas (NJ DEP, FEMA)
7. Wetlands:
  - a. Identifying vegetation, soils, hydrology
  - b. Types: Saltwater, freshwater, vernal pools, engineered
  - c. Resource value: Exceptional, Intermediate, Ordinary
8. Percent impervious cover
9. Intakes and outfalls
10. Discharges
11. Dams and weirs
12. Monitoring and sampling locations
13. Fish consumption advisories
14. Impaired waters

### Data sources:

“Protecting Our Streams,” ANJEC resource paper, [www.anjec.org/pdfs/StreamsRP-2010.pdf](http://www.anjec.org/pdfs/StreamsRP-2010.pdf)

NJ DEP has digital data for streams, water bodies, monitoring sites, groundwater contamination, ground and surface water, flood hazard areas, surface water quality standards, wellhead protection areas, watershed boundaries and wetlands. Most datasets are available for download from the NJ DEP web site [www.state.nj.us/dep/gis/](http://www.state.nj.us/dep/gis/). They can be viewed through the interactive mapping applications as data layers at [www.state.nj.us/dep/gis/newmapping.htm](http://www.state.nj.us/dep/gis/newmapping.htm)

For surface water classifications and surface water quality criteria, see NJ DEP Water Monitoring and Standards ([www.state.nj.us/dep/wms/](http://www.state.nj.us/dep/wms/)) or call 609-292-1623.

For information on flood-prone areas, contact the Federal Emergency Management Agency (FEMA), Map Service Center, P.O. Box 1038, Jessup, Maryland 20794-1038, phone 877-336-2627 or [www.fema.gov](http://www.fema.gov). FEMA has done new mapping of coastal flood areas, covering two thirds of New Jersey; see [www.region2coastal.com/](http://www.region2coastal.com/). National Flood Insurance Program [www.floodsmart.gov/](http://www.floodsmart.gov/).

General regulatory information on land use, [www.nj.gov/dep/landuse/](http://www.nj.gov/dep/landuse/)

For facilities having a permit to discharge (a NJ Pollution Discharge Elimination System – NJPDES – permit) into local surface or ground water, visit the NJ DEP Division of Water Quality at <http://nj.gov/dep/dwq/database.htm> or call NJ DEP Office of Permit Management at 609-984-4428.

## H. Vegetation and Wildlife

A “Biological Resources” section can include information on vegetation, wildlife and more detailed wetlands vegetation information, supplementing the wetlands maps in the hydrology section.

Biological Resources topics include:

1. Dominant vegetation types: land cover
2. Native species
3. Street trees
4. Fire hazard, history of wildfire
5. Wildlife: species inventory, including aquatic species
6. Endangered, Threatened and Species of Special Concern (animals)
7. Endangered, Threatened and Species of Special Concern (plants)
8. Special Wildlife Habitats: e.g., vernal pools, bald eagle foraging areas
9. Invasive exotic species/nuisance species
10. Economically valuable species.

### Data sources:

Significant habitats: NJ DEP Natural Heritage Program at 609-984-1339,

[www.nj.gov/dep/parksandforests/natural/heritage/](http://www.nj.gov/dep/parksandforests/natural/heritage/)

Critical habitat areas: The NJ DEP Landscape Project, [www.state.nj.us/dep/fgw/ensp/landscape/](http://www.state.nj.us/dep/fgw/ensp/landscape/)

Native and invasive plants: Bowman’s Hill Wildflower Preserve, [www.bhwp.org](http://www.bhwp.org)

Native Plant Society of New Jersey: [www.npsnj.org](http://www.npsnj.org)

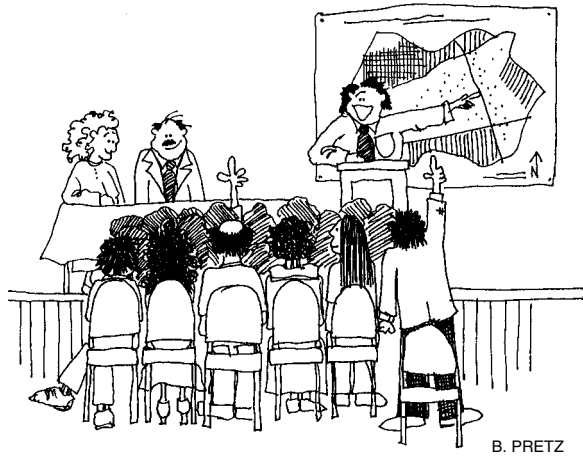
NJ Invasive Species Strike Team: [www.njisst.org/](http://www.njisst.org/)

NJ Endangered Plant Species: [www.state.nj.us/dep/parksandforests/natural/endplants.html](http://www.state.nj.us/dep/parksandforests/natural/endplants.html)

Plants of special concern: [www.plants.usda.gov](http://www.plants.usda.gov)

Animals of special concern and locations: contact NJ DEP’s Endangered and Nongame Species Program, 609-292-2965 or [www.njfishandwildlife.com/ensphome.htm](http://www.njfishandwildlife.com/ensphome.htm)

Birds: NJ Audubon Society, [www.njaudubon.org](http://www.njaudubon.org)  
Cape May Bird Observatory tracks migrating birds, [www.birdcapemay.org/](http://www.birdcapemay.org/) or 609-884-2736. Local Audubon chapters often will help you survey birds.



## I. Land Use

1. Residential/Commercial/Industrial
2. Infrastructure (water, sewer, transportation, pipelines, reservoirs)
3. Waste collection/treatment areas
4. Open space
5. Zoning districts
6. Changes in land use

### Data sources:

Much of this information may be in the municipal master plan, and so could be referenced there, rather than repeated in the ERI.

“Open Space Plan,” ANJEC Resource Paper, [www.anjec.org/pdfs/OpenSpacePlan.pdf](http://www.anjec.org/pdfs/OpenSpacePlan.pdf)

## J. Historical & Cultural

1. Historic sites, districts, areas
2. Historic roads, bridges and trusses
3. Existing or possible archaeological sites
4. Scenic qualities, viewsheds

### Data sources:

Local and county historic commissions and historical societies, municipal and county master plans and NJ DEP’s Historic Preservation Office at 609-984-0176 or [www.nj.gov/dep/hpo/](http://www.nj.gov/dep/hpo/).

Preservation New Jersey [www.preservationnj.org](http://www.preservationnj.org).

## K. Existing & Planned Infrastructure

1. Transportation
2. Drinking water
3. Stormwater
4. Sewage
5. Waste treatment, disposal, recycling facilities
6. Energy utilities
7. Communications towers
8. Educational facilities

### Data sources:

Municipal and county health and planning departments, municipal engineers, municipal and county master plans, the local board of education, utility companies and authorities, transit organizations

## L. Noise

1. Noise-sensitive areas in community
2. Significant sources of noise
3. Day/night permitted sound levels
4. Decibel equivalents of typical sounds

### Data sources:

Local and county boards of health

## M. Contaminated Sites and Sources of Pollution

Some areas will have multiple sources of pollution. Cumulative impacts can result from additions over time of pollutants or routes of impact. The ERI should give information on contaminated sites and sources of pollution as well as sensitive receptors – schools, day care centers and hospitals. Cumulative impacts are usually more profound in urban areas, resulting from:

1. Superfund or other contaminated sites
2. Incinerators/resource recovery facilities
3. Hazardous substance storage and use
4. Leaking underground storage tanks
5. Groundwater contamination areas
6. Deed notice areas
7. Gas stations, auto body shops
8. Dry cleaners

### Data sources:

NJ DEP’s Environmental Justice Program [www.nj.gov/dep/ej/](http://www.nj.gov/dep/ej/)

US EPA, EJ View online mapping tool, [www.epa.gov/environmentaljustice/mapping.html](http://www.epa.gov/environmentaljustice/mapping.html)

## N. Critical Environmental Areas

A separate critical environmental areas map, showing environmental features that merit special consideration or protection, can be compiled to help with your town’s resource planning. Features that can be displayed on one or more maps include:

1. Wetlands and wetlands buffers
2. Steep slopes
3. Floodplains, floodways, riparian buffers

4. Aquifer recharge areas
5. Prime agricultural soils
6. Soil limitation areas
7. Endangered/threatened species habitat
8. Trout associated waters
9. Water supply – surface waters and ground water

## Sample ERIs

Copies of printed ERIs are available in ANJEC's Resource Center in Mendham. Most are now in digital format so that ANJEC can send you copies of ERIs from towns with similar characteristics to yours. The ANJEC website has some sample ERIs at [www.anjec.org/ERIs.htm](http://www.anjec.org/ERIs.htm). In addition, many towns have put their ERIs on their websites. Links to these municipal websites are on the ANJEC website [www.anjec.org/NJcommlist.htm](http://www.anjec.org/NJcommlist.htm).

The **ANJEC RESOURCE CENTER** offers the following services to all citizens:

- reference collection of more than 7,000 books, pamphlets, documents and government publications ranging from academic texts to Environmental/Natural Resource Inventories;
- more than 1,200 material files covering topics from acid rain to zoning;
- extensive materials on state and federal laws including current legislation and regulations;
- extensive file of municipal and model ordinances on topics such as light and noise pollution, critical areas protection and stormwater management;
- response and referral for information requests and questions on local, state and national environmental issues, problems and projects.

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Founded in 1969 at the beginning of the environmental movement, the Association of New Jersey Environmental Commissions is a statewide, nonprofit organization with a unique mission. We provide leadership, training, information, tools and support to our State's local environmental commissions, green teams and elected officials who are working to safeguard natural resources and promote sustainable land use in their communities.



P.O. Box 157, Mendham, NJ 07945 • Tel 973-539-7547 • Fax 973-539-7713

Email: [info@anjec.org](mailto:info@anjec.org) • Web site: [www.anjec.org](http://www.anjec.org)

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### MIMI UPMEYER RESOURCE PAPER COLLECTION



ANJEC dedicates its collection of Resource Papers to Mimi Upmeyer, who worked for ANJEC for 10 years and later served as a board trustee. As our State Plan project director, she worked with environmental commissioners and local officials in towns across New Jersey and provided them with information and contacts to help implement good land use planning and zoning. To help local officials deal with these issues, she conceived the idea for ANJEC's Resources Papers – and wrote the first three. Packed with concise, practical information on specific topics for local environmental protection, ANJEC's ever expanding stock of Resource Papers has become a standard element of our educational program. For a list of all our Resource Papers, contact ANJEC at 973-539-7547 or visit the Publications page on [www.anjec.org](http://www.anjec.org).