

## Appendix C: GIS Software and Coverages Used

ARCView 3.1 software was used to manipulate the updated endangered plant population data. Locations and attribute data of these plant populations were obtained from a point coverage derived from the Natural Heritage Database of the Office of Natural Lands Management, NJDEP. With this point coverage, centrum points of all extirpated populations were used, and centrum points of all other precisely located (accurate within 1 second latitude or longitude) endangered plant species populations were incorporated into the GIS analysis. These data were then analyzed by various coverages, including habitat type, physiographic province, watershed, land use/land cover, county, and public open space.

All GIS coverages of New Jersey were obtained from CD-ROMs (NJDEP GIS CD-ROM Series 1), with the exception of watershed data, which were obtained separately from the NJDEP GIS office. The CD-ROMs provided spatial data about New Jersey (Pinelands, open space Green Acres 1991) and its 21 counties (land use) that were not in the Natural Heritage Database. The data provided on these CD-ROMs were uncompact, single precision ARC/INFO 7.0.3 EXPORT files in MS-DOS on a UNIX CD. All data were in North American Datum 1983 (NAD83) in New Jersey State Plane Feet. With regard to mapping accuracy and data limitations, base map feature positions were accurate to about +/- 20 feet or better. Delineated lines were accurate to about +/- 20 feet from locations.

Land use/land cover data layers used in each of the counties were extracted from countywide data sets called Integrated Terrain Unit Maps (ITUM). Land use/land cover was mapped using a modified Anderson et al. (1976) classification system with a minimum mapping unit equal to 2.5 acres. This data was interpreted from 1986 JSSCIR

(1:58000) photos. Geology was recompiled from 1906 (1:63360) atlas sheets.

Three statewide coverages of public open space were used and included NJDEP Natural Heritage Priority Sites (published in 2001), the NJDEP Green Acres Program Sites (1999 edition), and NJDEP Landscape Project Sites (published in 2001). Natural Heritage Priority Sites were, "created to identify the best habitats for rare plant and animal species and natural communities through analysis of information in the NJ Natural Heritage Database." These sites contain, "some of the best and most viable occurrences of endangered and threatened species and natural communities, but they do not cover all known habitat for endangered and threatened species in New Jersey." Each priority site is ranked according to its significance for biological diversity using a scale developed by The Nature Conservancy and the network of Natural Heritage Programs. The NJDEP Green Acres Program sites represent state owned, protected open space and recreation sites in New Jersey. The NJDEP Landscape Project, "identifies, delineates and ranks (based on the conservation status of species present) critical ...habitat statewide." Critical habitat categories included forest, beach, emergent wetlands, forested wetlands, and grasslands. Sites are coded for the number of special concern, state threatened, state endangered, and federally listed species present.

A statewide watershed map was created with the Watershed Management Area (wma) coverage. Again, this coverage was not included in the CD-ROM series but was also created by the NJDEP GIS department. These WMA's (20) were numbered and grouped into 5 color-coded water regions. Major rivers and streams were displayed by merging stream coverages for all 21 counties and selecting for waterways with rank 3 or greater. Extirpated and extant point feature coverage was displayed on two separate maps.