Erie County Farmland Protection Plan

Parcel Rating System and Resource Mapping Description and Methodology

The maps and database prepared for Erie County during the preparation of the Erie County Agricultural & Farmland Protection Plan identify agricultural parcels in Erie County and several attributes relating to their potential suitability for permanent protection.

The following maps were prepared:

- Agricultural Soils
- Natural Resource Value
- Agricultural Districts
- Relationship to Regional Growth Policy Areas (proxy for development pressures)
- Proximity to Protected Land
- Clustering of Agricultural Parcels

The Agricultural Parcel database, provided to Erie County as an Excel file, includes a list of Agricultural Parcels, the attributes used to prepare the maps and additional information for use in evaluating parcels for suitability for preservation. The database includes a row for each Agricultural Parcel. Columns include parcel data from the real property database as well as information derived from each of the maps.

This document describes the methodology used to generate the maps and rate and/or assign data to each parcel. Additional descriptions and illustrations are provided in the attached summary.

The gray text boxes present technical information relating to how the Geographic Information System (GIS) and other software were used to create the maps and the database.

Agricultural Parcels

The list of Agricultural Parcels was created using the following method:

1) Utilize GIS software to overlay the cropland and pasture coverage (Common Land Unit database) provided by NRCS onto a parcel base map.

2) Select all parcels that include cropland or pasture.

3) Remove parcels with a negligible (<1 acre) amount of cropland, unless the parcels had been assigned an agricultural property classification code in assessment records.

4) Remove parcels known to be non-agricultural, including parks and other public facilities

This method selected 5,471 parcels.

Acreage of cropland within each Agricultural Parcel was used to calculate Agricultural Soils Value. However, confidentiality requirements associated with the NRCS data prohibit the cropland shapefiles data from being published or attributed to a specific location.

As the parcel data incorporated into the GIS database includes duplicate records for many tax parcels (such as when the parcel consists of two or more non-contiguous parts), the parcel database was processed using Microsoft Access to remove duplicate records. A field was added to the master database to indicate total calculated acreage of the parcel.

Agricultural Soils Rating

The Agricultural Soils Rating was based on the quality of the agricultural soils in the cropland and pasture delineated within each Agricultural Parcel.

For each parcel, GIS software was used to calculate the number of acres of cropland or pasture within each parcel with soils that are classified as Prime, Prime if Drained, and Soils of Statewide Significance based on the USDA Soil Survey. The number of acres in each category was multiply by the following weighting factors:

- Prime Soils: 2
- Prime When Drained: 1.5
- Soils of Statewide Importance: 1

The sum of the three scores is the Agricultural Soils rating.

The Clip tool in ArcGIS 9.3 created a shapefile for each soil category (Prime, Prime if Drained, Statewide Importance) within the cropland/ pasture portions of agricultural parcels. X-Tools Pro for ArcGIS Desktop calculated the acreage of each feature. The resulting data (SBL, calculated acreage) was exported to Excel, using X-Tools Pro. As multiple features were generated for many of the Agricultural Parcels, Microsoft Access was used to calculate the total number of acres of land within each agricultural soils classification for each Agricultural Parcel and generate a database of Agricultural Parcels without any duplicates, apply the weighting factors and calculate the Agricultural Soils Rating for each parcel. The updated parcel database was joined to the Agricultural Parcel shapefile. The thematic map based on the Agricultural Soils Rating value for each parcel was prepared using ArcGIS 9.3.

Agricultural District

The Agricultural District Map depicts each of the Agricultural Districts in Erie County. Parcels located within in a certified County Agricultural District were identified by using the GIS software. The database includes a column that indicates whether a parcel is included in a certified Agricultural District.

Natural Resource Value Rating

The Natural Resource Value Rating was based on the number of acres within each Agricultural Parcel that contained:

- A State- or Federally-regulated wetland, including a 100-foot buffer from wetlands regulated by the NYS Department of Environmental Conservation
- Land within 75 feet of a mapped stream or lake
- Land within 500 feet of the Lake Erie shoreline.

The acreage in each of these categories was added together to return the Natural Resource Value Rating.

The Intersect tool and the Buffer tool in ArcGIS 9.3 were used to create shapefiles for areas within wetlands and stream corridors located in Agricultural Parcels. The Union tool was used to combine the shapefiles for the NYS and Federal wetlands to avoid double-counting areas that are classified both as State and Federal wetlands. X-Tools Pro for ArcGIS Desktop was used to calculate the acreage of these shapefiles. The resulting data was exported to Excel, using X-Tools Pro, and incorporated into the master database using Microsoft Access.

Development Pressure

The Regional Growth Policy Areas map depicts the location of Agricultural Parcels in relation to the Regional Growth Policy Areas identified in the Erie/Niagara Regional Framework for Regional Growth. This 2006 study delineated Developed Areas, Developing Areas, and Rural Areas as well as overlays for Development Centers and Corridors. This map is intended to indicate development pressure and to inform decisions regarding long-term preservation in the context of regional development policies.

The Parcel Database includes columns that contain Yes or No values for each of the five Policy Area categories.

The Parcel Database also includes a column that indicates the number of feet of road frontage along each Agricultural Parcel.

Proximity to Protected Land

The Proximity to Protected Land map depicts parcels located within 500 feet of protected farmland, a public park, or other preserved land. Protected farmland includes land that is restricted from development due to a permanent conservation easement or owned by a municipality and leased for agricultural use.

The Parcel Database identifies those Agricultural Parcels that are permanently preserved. It also includes two columns that indicate (Yes or No) to indicate whether the Agricultural Parcel is located within 500 feet of: 1) a public park or natural area or 2) protected farmland.

The Western New York Land Conservancy provided a list of parcels, by SBL number, that are permanently protected. The selected parcels were exported to a separate shapefile. A new field was added to the database to designate these parcels as Preserved.

Parks and other publicly owned land were identified in the parcel shapefile database based on ownership and property classification code. These parcels were exported to a new shapefile. A new field was added to the database to designate these parcels as Preserved.

The two shapefiles were combined using the Merge Tool. The Buffer tool was used to identify Agricultural Parcels located within 500 feet of public or protected land.

To generate the Preserved Land columns in the Agricultural Parcels Database, XTools Pro was used to generate three Excel files with the SBL numbers of 1) preserved parcels, 2) parcels within 500 feet of a park or other public land, and 3) parcels within 500 feet of preserved land. Column headings were added and Y entered in each row. The three Excel files were incorporated as three columns of the Agricultural Parcel Database using Microsoft Access.

Clustering of Cropland Acreage

The Clustering of Cropland Acreage map graphically depicts the proximity of agricultural parcels with high and low acreages of cropland. A mathematical tool in the GIS software(ESRI Hot Spot Analysis GiZ Score) analyzed proximity and generated a thematic map.

Agricultural Parcel Database

The final table was exported to Excel for use by decision-makers, in conjunction with the maps, to evaluate individual parcels for agricultural and natural resource value and suitability for protection.

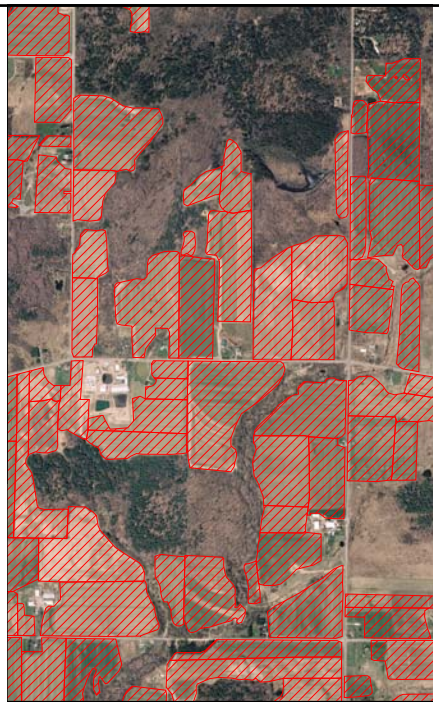
Erie County Agricultural & Farmland Protection Plan

Methodology for Determining Agricultural Soils and Natural Resource Ratings

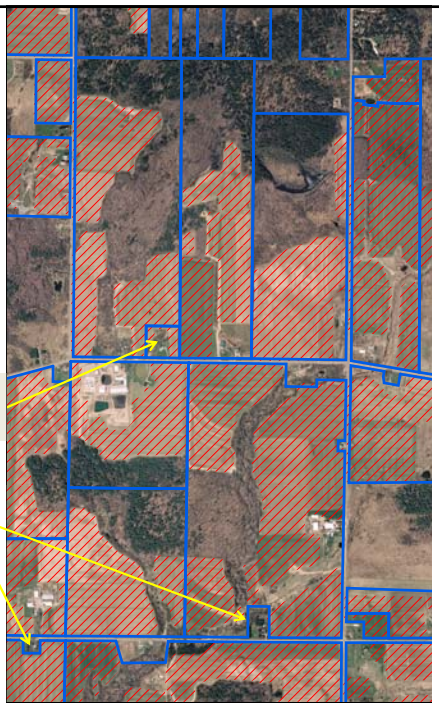
Stuart I. Brown Associates, Inc.
A LaBella Company

This document demonstrates how the rating system methodology applies to a small area within Erie County. Due to confidentiality of the cropland data, the area is not identified.

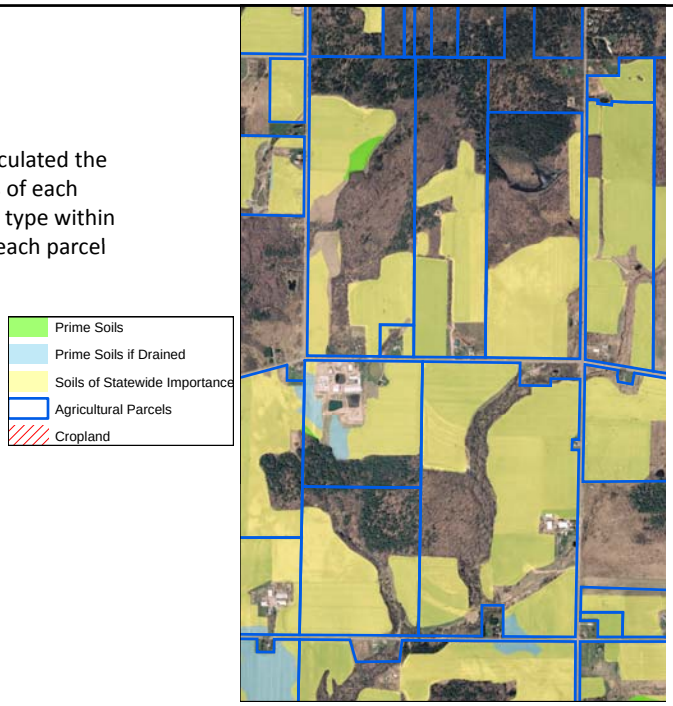
The cropland shapefiles provided by NRCS very closely follow the outlines of fields and pastures that are visible from aerial photographs.



Parcels that include less than one acre of cropland/ pasture were deleted from the Agricultural Parcels list and shapefile



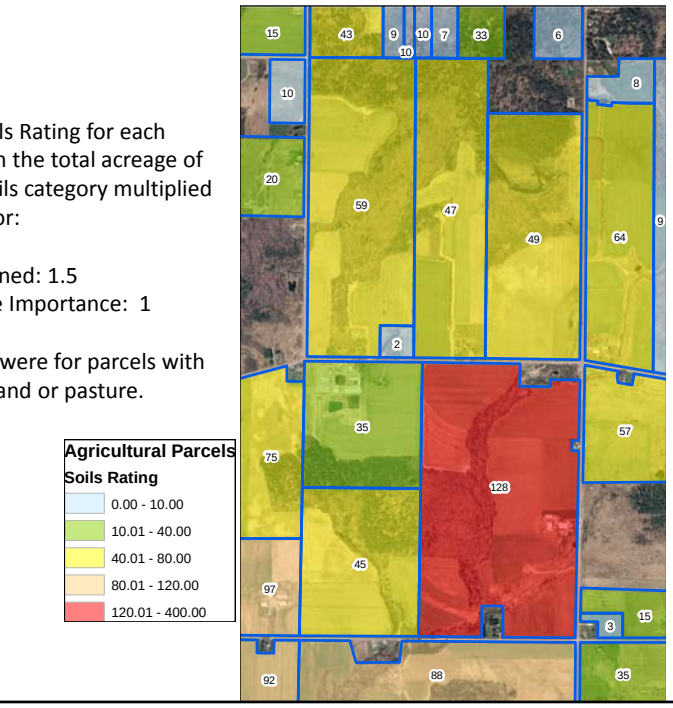
GIS software calculated the number of acres of each agricultural soils type within the cropland in each parcel



The Agricultural Soils Rating for each parcel was based on the total acreage of cropland in each soils category multiplied by a weighting factor:

- Prime Soils: 2
- Prime When Drained: 1.5
- Soils of Statewide Importance: 1

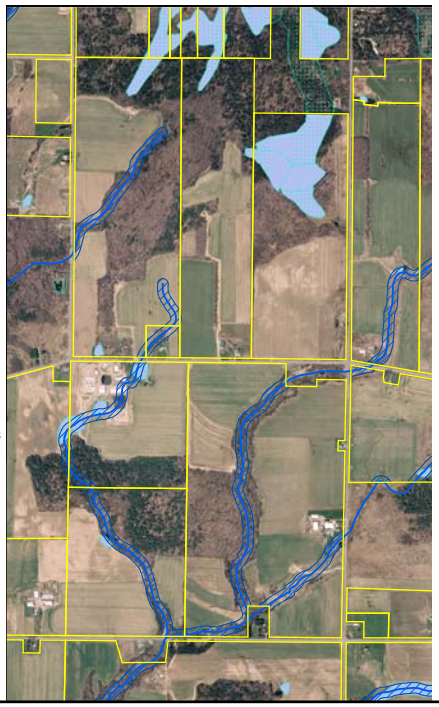
The highest ratings were for parcels with large areas of cropland or pasture.



The Natural Resources Rating was based on the number of acres within each parcel of the following natural resource features:

- Within 75 feet of a mapped stream
- Federal or State Wetland, including 100' buffer from NYS wetlands
- Within 500 feet of Lake Erie shoreline

State or Federal Wetland + 100' Buffer, within Agricultural Parcels
DEC Wetlands
Federal Wetlands
75' Stream Buffer within Agricultural Parcels
Streams
Agricultural Parcels



Need to update to include Federal wetland info

The sum of the acreage within each natural feature (wetlands, stream corridor, Lake Erie buffer) constitutes the Natural Resources Rating. No weighting factors were used.

Parcels with higher Natural Resources ratings have more land within a stream corridor or wetland. In areas outside of the one shown, highly ranked parcels are located near Lake Erie.

Agricultural Parcels
Natural Resources Rating
0.00 - 4.00
4.01 - 8.00
8.01 - 20.00
20.01 - 40.00
40.01 - 600.00