Santa Fe County, New Mexico

Sustainable Land Development Plan

Volume III: Sustainable Land Development Suitability Analysis

Public Review Draft
October 1, 2009

Contents

Sustainable Land Development Suitability Analysis

suit·a·bil·i·ty: A measure of the relative usefulness of a land unit for some given purpose.
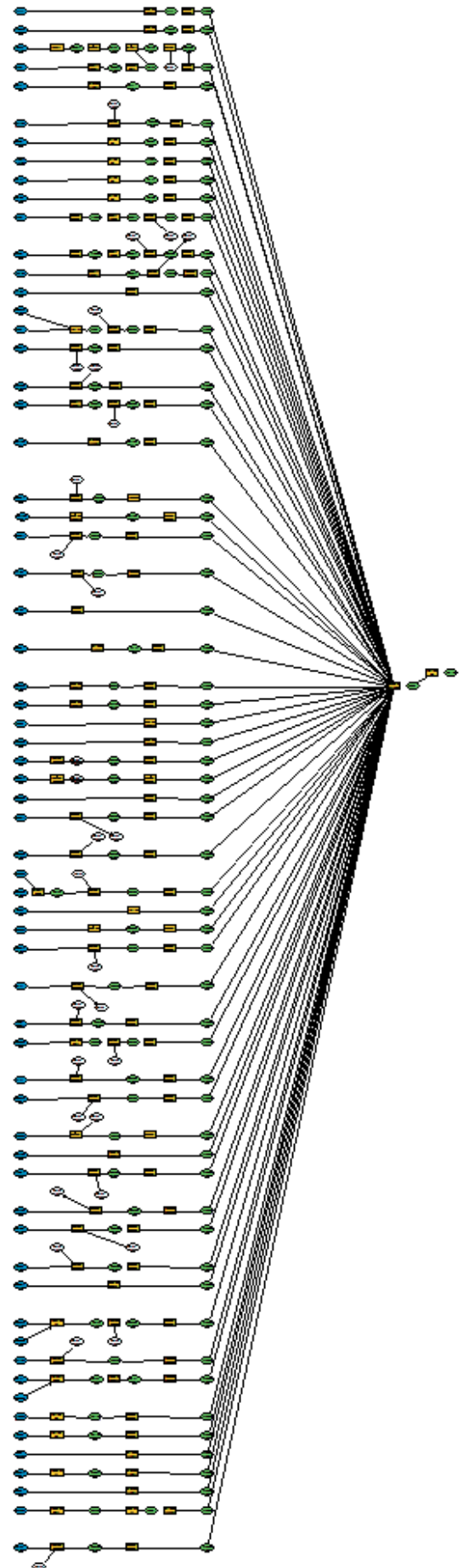
Introduction

The purpose of a land use suitability analysis is to provide a rational, systematic guide for identifying those areas which are more suitable for development, and identifying those areas which should be maintained for rural or agricultural uses, or protected as conservation areas. The suitability analysis is created using geographic information systems (GIS) data, which is data that is registered to a coordinate system. The fact that the data sets are registered to a coordinate system makes is possible to add up the values of the input data sets, to create an overall score that indicates the degree of development suitability at every point on the map within the study area (which in this case, is Santa Fe County).

A development suitability map is only one of many factors that are used in the preparation of a land use plan. A final land use plan generally cannot be simply generated directly from a suitability map; although it is possible to generate a conceptual-level map showing where development should occur from a suitability map (this has been done in the section that shows alternative future development scenarios for the County).

A suitability analysis is prepared by first identifying those available GIS data sets which contain factors that are relevant to land development suitability. The source GIS data generally needs to first be processed (i.e., re-coded) so that the coding of data reflects the suitability value that is attributed to information in the data set. In this exercise, all input datasets were set to a low (1), moderate (2) or high (3) suitability based upon staff, consultant and various other entities' expertise.

It is easier to conceptualize a suitability analysis by first grouping and summing the suitability factors into broad categories. 10 broad categories were used:

- Identify land suitable for crops
- Identify grazing land/ranches
- Identify sensitive native plant and animal species habitat areas
- Identify lands sensitive to surface and ground water vulnerability
- Identify lands with important physical characteristics
- Identify lands suitable for resource based recreation
- Identify areas of cultural, historical and archaeological importance
- Identify lands with priority scenic value
- Identify land suitable for commercial and residential development
- Identify land use compatibility

It should be noted that a number of factors were not used due to lack of geographical completeness. Because of this, there are gaps in the factor numbering system. The following is required to utilize or modify the model:

- Requires ArcGIS 9.3 with Spatial Analyst.
- NAD_1983_StatePlane_New_Mexico_Central_FIPS_3002_Feet must be set as the projection for all factors.

The various suitability factors were weighted first, before summing the values, by applying multipliers that reflect judgments regarding the relative importance of these factors. A total of fifty-eight suitability factors were used to create the development suitability map for Santa Fe County. The source and content of these input data sets, and their relevance to land development suitability, is described in the following sections.

Suitability Analysis Factors and Weighting

Factor Number	Factor Name	Weight	Percent of Total Weight
Factor Group 1	Identify lands suitable for crops		
1.1	Identify soils most suitable for irrigated crops	1	1.7%
1.2	Identify soils most suitable for low-intensity livestock \ Range Production	1	1.7%
1.3	Identify current areas of irrigated crops (Traditional Irrigated Valley, Modern Agricultural Areas)	1	1.7%
1.4	Precipitation	1	1.7%
Factor Group 2	Identify farms / ranches to be protected		
2.1	Identify farms / ranches production	1	1.7%
Factor Group 3	Identify lands suitable for protecting native plant and animal species		
3.1	Identify lands with high amphibian species richness	1	1.7%
3.2	Identify lands with high reptilian species richness	1	1.7%
3.3	Identify lands with high bird species richness	1	1.7%
3.4	Identify lands with high mammal species richness	1	1.7%
3.5	Identify lands with undisturbed natural grasslands	1	1.7%
3.6	Identify lands with undisturbed Pinon-Juniper Woodlands	1	1.7%
3.7	Identify lands with undisturbed forested areas	1	1.7%
3.8	Focal Species Richness	1	1.7%
Factor Group 4	Identify lands suitable for protecting surface and groundwater quality		
4.1	Identify lands proximal to natural springs	1	1.7%
4.2	Identify lands proximal permanent water bodies	1	1.7%
4.3	Identify lands proximal drainage buffers	1	1.7%
4.4	NM GAP Wetlands and Riparian areas	1	1.7%
4.5	D.R.A.S.T.I.C. Model	1	1.7%
4.7	Identify lands near existing domestic water wells	1	1.7%
4.8	Arsenic Contamination	1	1.7%
4.9	Water Fair Data	1	1.7%
Factor Group 5	Identify lands with important physical characteristics		
5.1	Identify lands within the 100-year floodplain	1	1.7%
5.2	Identify steep slopes	1	1.7%
5.4	Identify lands prone to fire (Fire Hazard)	1	1.7%
5.6	Identify lands with septic limitations	1	1.7%
5.7	Identify soils with high erodability	1	1.7%
5.8	Identify landslide hazards	1	1.7%
5.9	Earthquake Risk	1	1.7%
Factor Group 6	Identify lands suitable for resource based recreation		

6.1	Identify existing and potential trail corridors	1	1.7%
6.2	Identify existing resource-based parks and recreation (community parks)	1	1.7%
Factor Group 7	Identify areas of cultural, historical and archaeological importance		
7.1	Identify lands proximal to recorded archaeological, historical, and paleontological sites of demonstrated or potential significance , Identify lands proximal to major Pre-Columbian pueblo sites and zones of high archaeological or paleontological potential	1	1.7%
7.4	Proximity to National Register of Historical Places	1	1.7%
Factor Group 8	Identify lands with scenic value		
8.1	Identify scenic highways and railroads	1	1.7%
8.3	Identify lands within Delphi-based scenic landmarks, outcrops, peaks, gaps and geologic features (GWCI)	1	1.7%
8.4	Combined Scenic Quality - Visual Resources Inventory Analysis)	1	1.7%
Factor Group 9	Identify lands suitable for development		
9.1	Identify soils suitable for development (dwellings without basements)	1	1.7%
9.2	Identify lands proximal to community / public water system	1	1.7%
9.3	Identify lands proximal to community / public wastewater system	1	1.7%
9.4	Identify lands proximal to paved highway interchanges	1	1.7%
9.5	Identify lands proximal to paved roadway	1	1.7%
9.6	Identify lands proximal to fire station	1	1.7%
9.7	Identify lands proximal to public or private primary or secondary school	1	1.7%
9.8	Identify lands proximal to health care facilities	1	1.7%
9.9	Hydrologic Zones (Groundwater Availability)	1	1.7%
9.10	Proximity to Rail Runner Stops	1	1.7%
9.11	Proximity to Commuter Bus Routes	1	1.7%
9.12	Proximity to major non-interstate roads	1	1.7%
9.13	Proximity to local roads as defined by staff	1	1.7%
9.14	Groundwater Storage (Water Budget)	1	1.7%
Factor Group 10	Identify land use compatibility		
10.1	Identify lands proximal to designated conservation areas and open space	1	1.7%
10.2	Identify lands proximal to areas of anticipated annexation	1	1.7%
10.3	Identify lands proximal to areas designated as future growth areas	1	1.7%
10.5	Identify lands proximal to existing residential uses (structures) and churches	1	1.7%
10.6	Identify lands proximal to existing non-residential uses (structures) business	1	1.7%
10.7	Value of Land Improvements	1	1.7%
10.8	Parcel Density	1	1.7%
10.9	Identify lands proximal to areas of dense population	1	1.7%
10.10	Identify Areas of Jobs \ Housing Proximity	1	1.7%
10.12	Proximity to Municipal Boundaries	1	1.7%
Total		58	100%

DRAFT Composite Sustainable Land Development Suitability Map
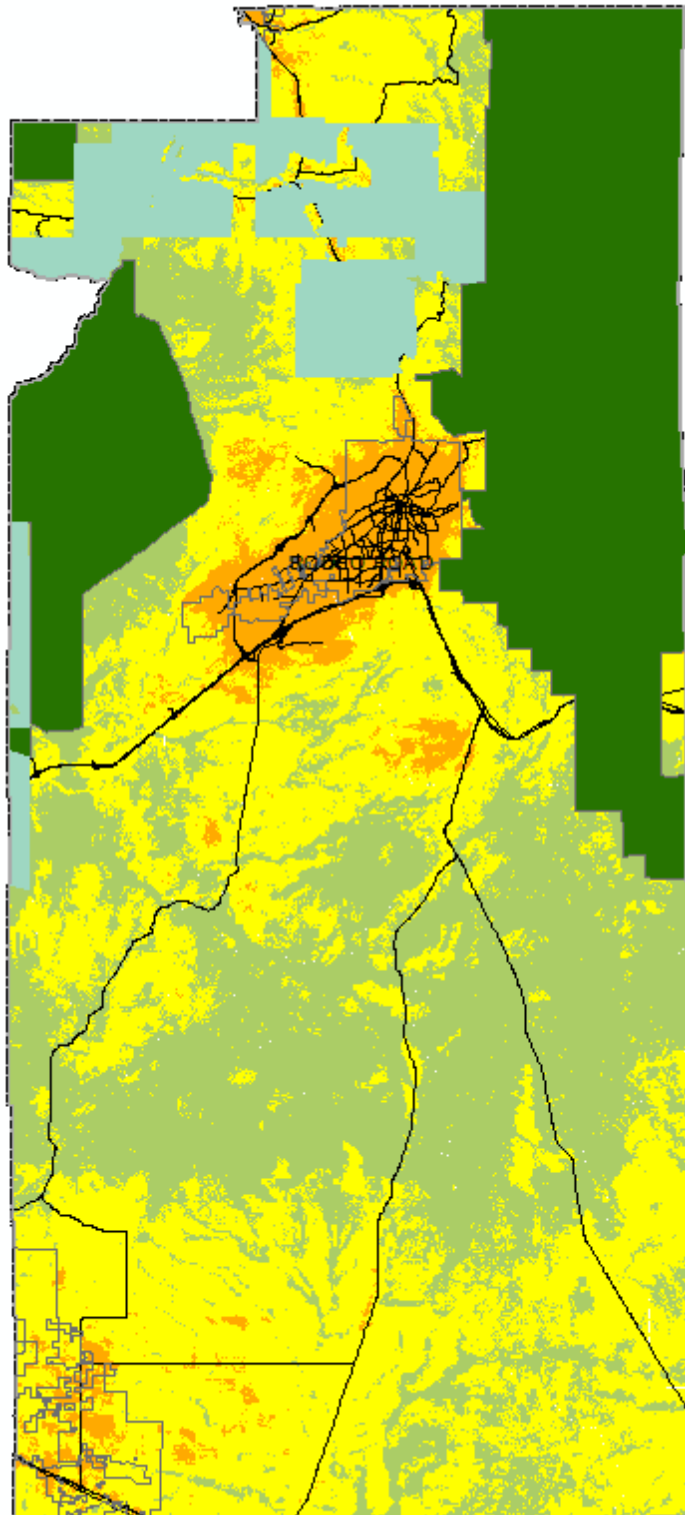
Legend

— Major Road

☐ Santa Fe County

Native American Lands

Federally Protected Land

Development Suitability

Low

Moderate

Most

Factor 1.1 Irrigated Soil Capability

..\Suitability_Models\Factors\Factor_01\Factor_01_01\irrigated_capability_class.shp

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Source: "Irrigated Capability Class", using the USDA/Natural Resources Conservation Service soils data viewer and the "soilmu_a_nm687.shp" shapefile. A shapefile containing the irrigated capability class attribute was exported from the data layer created with the soils data viewer.

Description: Land capability classification shows, in general, the suitability of soils for common species of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. There is relatively very little land suitable for crops within the County. The National Forest Land and other Federally Protected lands were not rated within the soils database and therefore are considered least suitable for development as well as class 2 soils in the southern portion of the County. The remainder of the County has severe limitations for crops.

Online linkage: http://www.ftw.nrcs.usda.gov/ssur_data.html

Point of Contact: USDA Natural Resources Conservation Service

Abstract: This data depicts the estimated average yields per acre that can be expected from selected irrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Relevance: Areas of high agriculture capability for soils are the areas where agriculture can be most profitably pursued. Development tends to fragment the agricultural landscape, which interferes with the economic viability of agriculture, and creates urban-rural land use conflicts.

Entity and Attribute Information

Soil Classification

- Class 1 soils have few limitations that restrict their use.
- Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
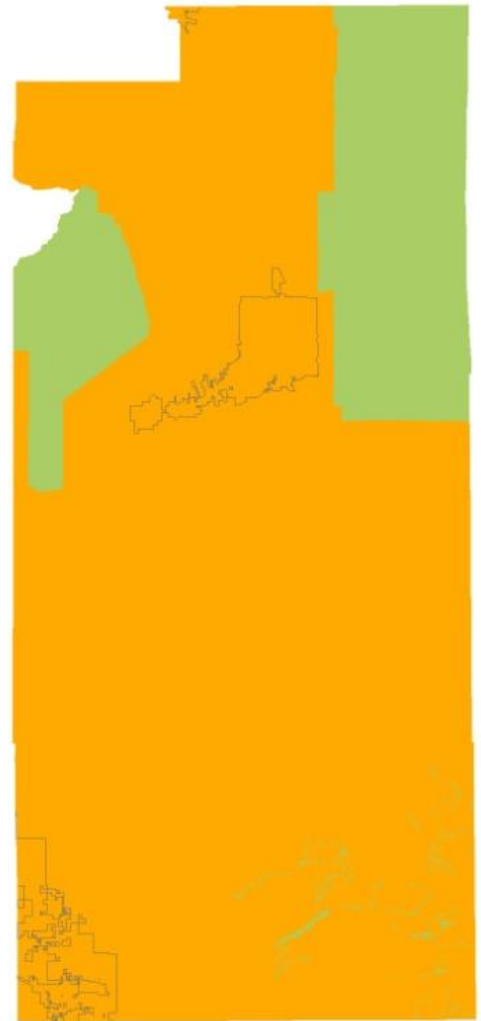
- Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.
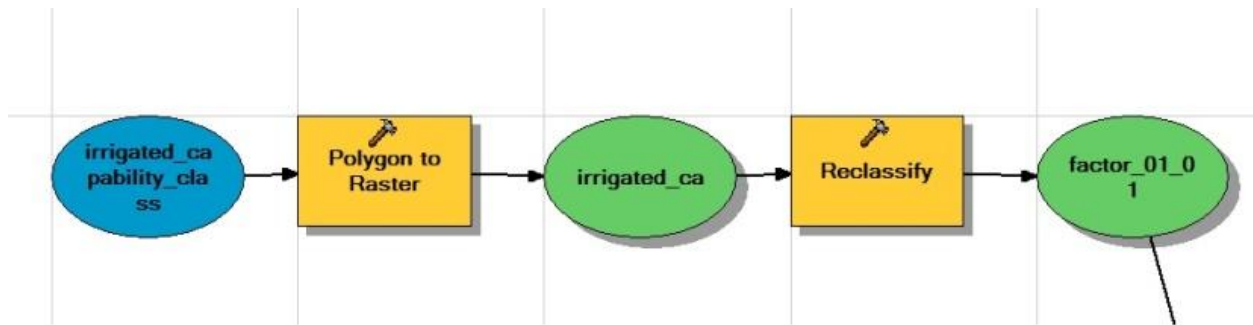
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_01_01

- -

Factor 1.2 Range Productivity of Soils

..\Suitability_Models\Factors\Factor_01\Factor_01_02\range_production.shp

- -

Source: "Range Production (Normal Year)", using the USDA/Natural Resources Conservation Service soils data viewer and the "soilmu_a_nm687.shp" shapefile. A shapefile containing the non-irrigated capability class attribute was exported from the data layer created with the soils data viewer.

Description: Total range production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation. In a normal year, growing conditions are about average. Yields are adjusted to a common percent of air-dry moisture content. Low Suitability areas have a high production value, while High Suitability areas have a low production value.

Online linkage: http://www.ftw.nrcs.usda.gov/ssur_data.html

Point of Contact: USDA Natural Resources Conservation Service

Abstract: This data depicts the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. All vegetation is included, and is expressed in pounds per acre of air-dry vegetation. In a normal year, growing conditions are about average. Yields are adjusted to a common percent of air-dry moisture content. This data presents regions which will likely produce higher yields of vegetation in order to serve as feed for grazing livestock.

Relevance: Areas of high capability of soils for grazing are the areas where ranching and pasture uses can be most profitably pursued. Development tends to fragment the agricultural landscape of these areas, which interferes with the economic viability of these areas for ranching or pasture, and creates urban-rural land use conflicts.
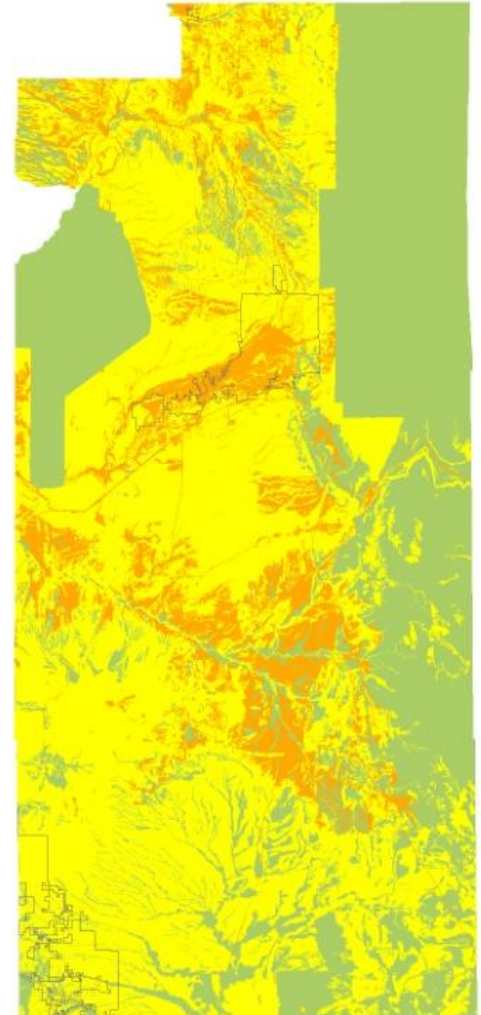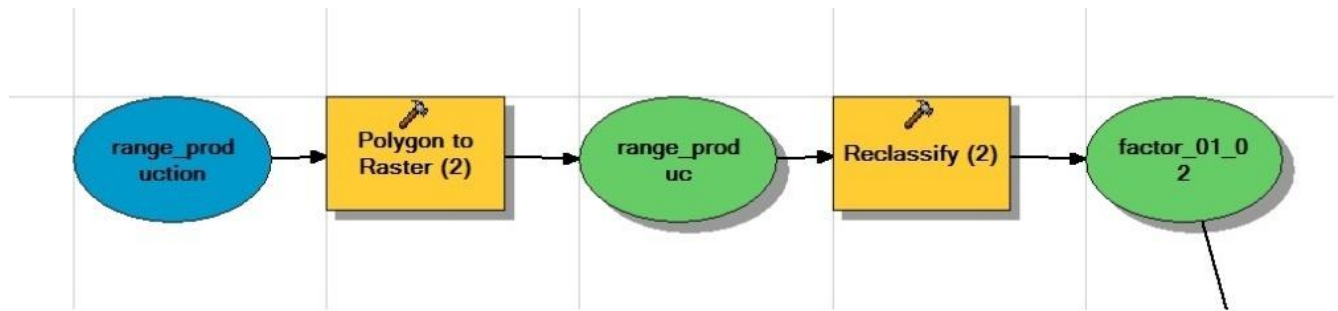
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_01_02

Factor 1.3 Current areas of Irrigated Crops

..\Suitability_Models\Factors\Factor_01\Factor_01_03\ lcharact_i

..\Suitability_Models\Factors\Factor_01\Factor_01_03\nmveggrd

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Source: Areas identified as "Traditional Irrigated Valley" in the "lcharact_i" raster data set. This is the data that is mapped as "Traditional Irrigated Valley" in TIM'S MAP 15. Landscape Character Types" in the document "Santa Fe County Visual Resources Inventory & Analysis" (Design Workshop, Inc. 1995). Areas identified as "Modern Irrigated Agriculture" in the "lcharact_i" raster data set.   This is the data that is mapped as "Modern Irrigated Agriculture" in TIM'S MAP 15. Landscape Character Types" in the document "Santa Fe County Visual Resources Inventory & Analysis" (Design Workshop, Inc. 1995).

Rating of irrigated crop land in the "nmveggrd" raster data set produced as a part of the "New Mexico Gap Analysis Project" prepared by the New Mexico Fish and Wildlife Research Unit at New Mexico State University (1996). Areas within 500 feet of irrigated crop land is determined to be least suitable for development while areas outside 1,000 feet were determined to be most suitable for development.

Description: Design Workshop in 1995 took an inventory of irrigated land using local knowledge and aerial photography. This data was merged with the New Mexico GAP (1996) dataset which contains areas of irrigated crop land as well. GAP data was also based upon aerial/satellite imagery. "High Constraints" are areas within 500 feet of irrigated crops. Moderate areas are within 500 feet and 1,000 feet from irrigated crops. "Low Constraints" are greater than 1,000 feet from natural springs and are most suitable for development.

Online linkage: Hardcopy / http://gapanalysis.nbii.gov/portal/server.pt

Point of Contact: Santa Fe County Land Use Dept.
102 Grant Avenue
Santa Fe, NM 87504-0276

NM Cooperative Fish and Wildlife Research Unit, New Mexico State University, Las Cruces

Relevance: These are areas in the northern and central portions of the County where traditional irrigated agriculture (using acequias) is currently being pursued while areas in the southern portions of the County where modern irrigated agriculture (using pivot irrigation) is currently being pursued.   Development tends to fragment the agricultural landscape, which interferes with the economic viability of agriculture, and creates urban-rural land use conflicts.
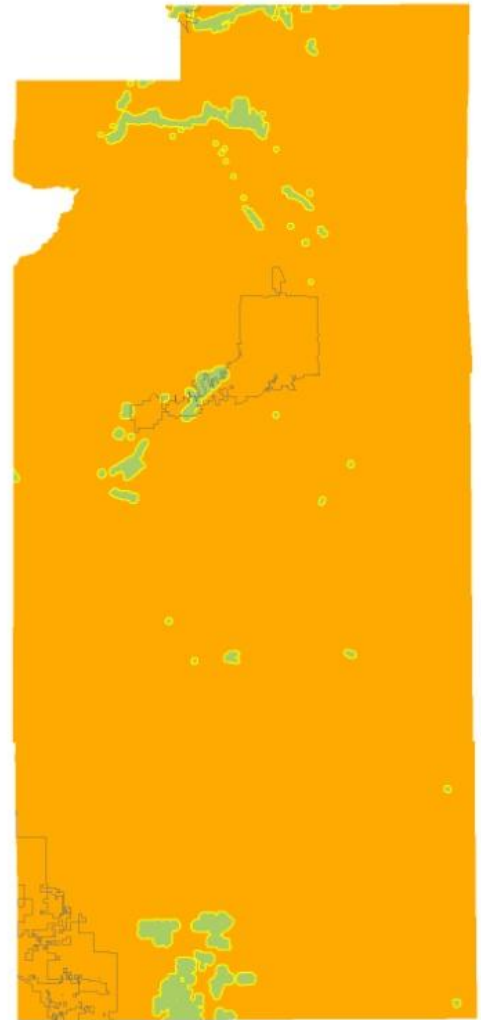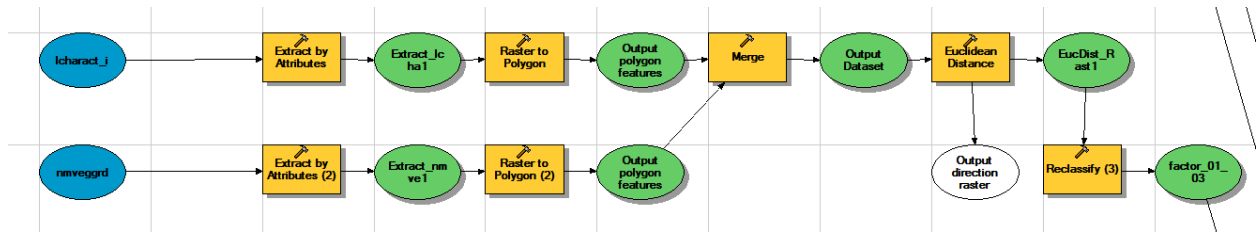
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_01_03

Factor 1.4 Precipitation Patterns
..\Suitability_Models\Factors\Factor_01\Factor_01_04\prism

*Source:* The attribute "Range" in the data set "precip_a_nm.shp" obtained from the New Mexico Resource Geographic Information System at the University of New Mexico ["Average Annual Precipitation, 1961 – 1990 (vector)"]. The original source of this data is the National Climatic Data Center (1991). The data in the "Range" field shows the average annual precipitation as inches per year.

Description: This map layer shows polygons of average annual precipitation in the contiguous United States, for the climatological period 1971-2000. Parameter-elevation Regressions on Independent Slopes Model (PRISM) derived raster data is the underlying data set from which the polygons and vectors were created. PRISM is an analytical model that uses point data and a digital elevation model (DEM) to generate gridded estimates of annual, monthly and event-based climatic parameters. Santa Fe County ranges from 27 inches to 95 centimeters per year over the timeframe provided by the database. GIS software using the natural breaks method was utilized to separate the dataset into three classes: most suitability is between 27 and 42 centimeters, moderate suitability is between 42 and 67 centimeters. Low suitability is over 68 centimeters.

Online linkage: http://www.prism.oregonstate.edu/

Point of Contact: Oregon State University, Strand Ag Hall Rm 326, Spatial Climate Analysis Service Corvallis OR 97331-2209
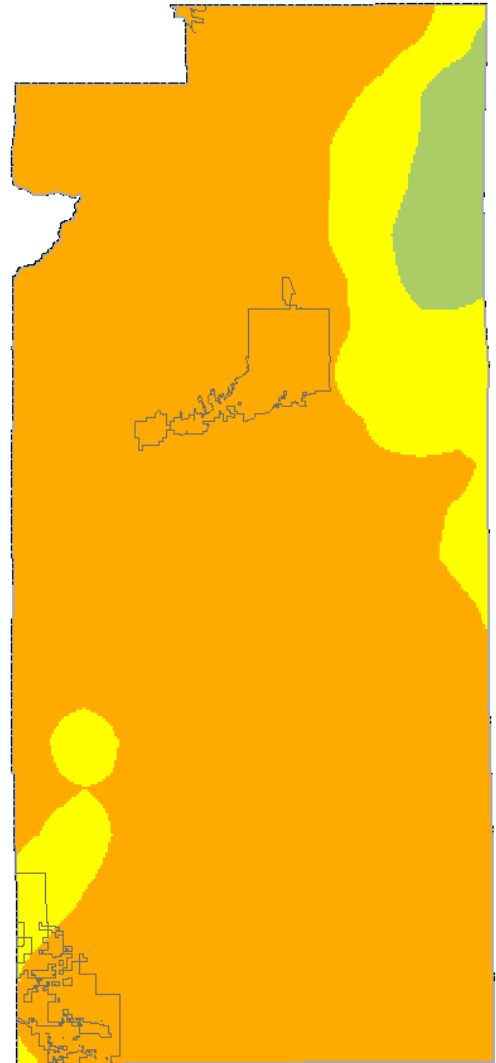
Abstract: PRISM is an analytical model that uses point data and a digital elevation model (DEM) to generate gridded estimates of monthly and annual precipitation (as well as other climatic parameters). PRISM is well suited to regions with mountainous terrain, because it incorporates a conceptual framework that addresses the spatial scale and pattern of orographic precipitation. Precipitation was modeled monthly. For this application, PRISM was parameterized to use existing 1971-2000 mean monthly precipitation grids as the predictor grids in the interpolation. The PRISM weighting functions for distance, "elevation" (now the 1971-2000 climatology), topographic facet, atmospheric layer, orographic effectiveness, and coastal proximity were all retained. This allowed observed deviations from normal to be interpolated with sensitivity to physiographic factors. An annual grid was produced by summing the monthly grids.

Relevance: Development increases the rate and volume of runoff, which decreases the ability of soils to hold and slowly release water from precipitation, and decreases water quality downstream from the development site, due to siltation and other contaminants in runoff. The areas of highest precipitation in Santa Fe County are generally located in National Forests, however development throughout the County impacts erosion and drainage patterns.
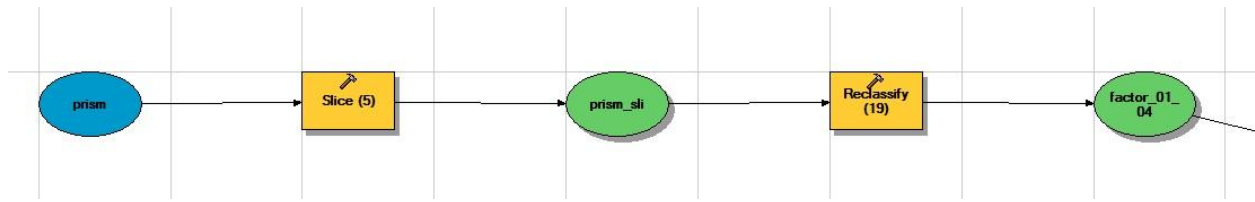
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_01_04

Factor 2.1 Ranch Activity

..\Suitability_Models\Factors\Factor_02\Factor_02_01\probable_sf co_grazing_lands.shp

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Source: Santa Fe County GIS department, Assessor Office and Planning Staff.

Description: Ranch sizes are commonly used in Land Evaluation and Site Assessment (LESA) for agricultural assessment. Ranch locations were identified by Santa Fe County staff and GIS software was used to calculate ranch sizes. "High Constraints" are areas within current ranch activity. Moderate areas are within one quarter mile from a ranch. "Low Constraints" are greater than one quarter mile from a ranch and are most suitable for development.

Online linkage: None

*Point of Contact:*   Santa Fe County Land Use Dept
                               102 Grant Ave
                               Santa Fe County, NM 87501

Abstract: This dataset was created by the Santa Fe County GIS department and depicts ranches and ranch activity within the county. The data was derived by selecting large parcels, and then manually classifying the parcels as ranch activity based on staff knowledge as well as from public input in the Charrette process.

Relevance: Ranch size and agricultural use classifications are commonly used in site assessments in order to preserve existing agri-business economy and prevent an encroachment on the land from future development.

Entity and Attribute Information

- Account Number: Account number associated with leased land.
- Locate Zip: Zip code where ranch is located.
- Owner Name: Owner name
- Owner_Add1: Owner address
- Owner_Add2: Owner second line of address
- Owner_City: Owner city
- Own_State: Owner State
- Mail_Zip: Owner zip
- Legal1: Legal address
- Legal2: Second line of legal address
- Activity:
    - Current: Current ranching taking place
    - None: No current ranching taking place
- Acres: Size of ranch in acres
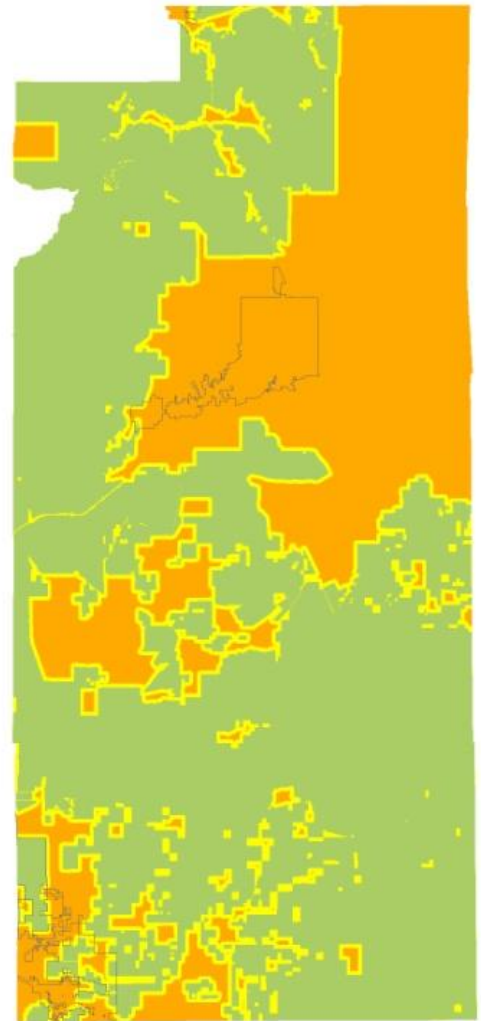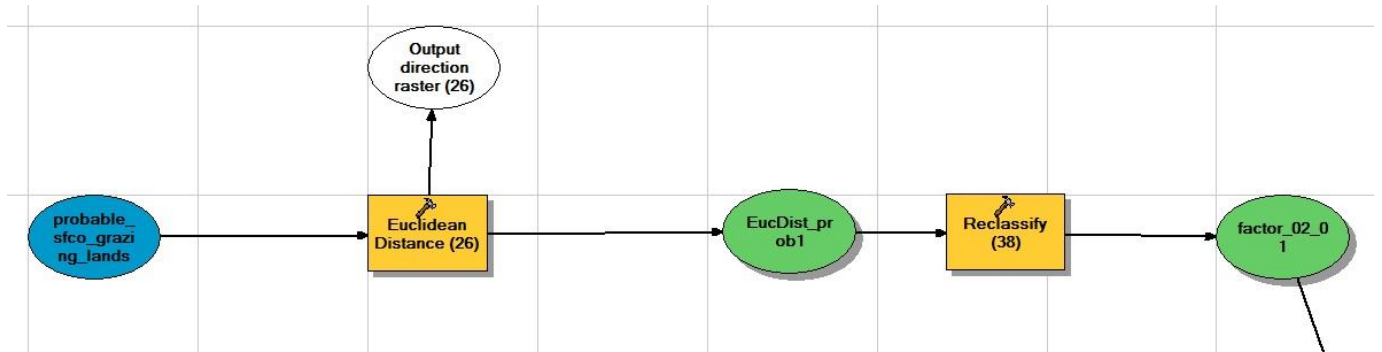
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_02_01

- -

Factor 3.1 Amphibian Richness
..\Suitability_Models\Factors\Factor_03\Factor_03_01\amphbrch

- -

Source: Rating of overall amphibian species richness (number of species) in the "ovralrch" raster data set was produced as a part of the "New Mexico Gap Analysis Project" prepared by the New Mexico Fish and Wildlife Research Unit at New Mexico State University (1996).

Description: GAP provides an assessment of the conservation status of native vertebrate species and natural land cover types. 26 different reptilian species were considered in GAP's reptilian richness dataset. "Low Constraints" are areas where few types of reptilian species are predicted to be located, while "High Constraints" represents an abundance of species types. Areas of "Low Constraints" are therefore preferred for development purposes, as the impact of such activities will be minimized in these areas.

Online linkage:
http://fwsnmcfwru.nmsu.edu/fwscoop/default.htm

Point of Contact: New Mexico Cooperative Fish and Wildlife Research Unit

New Mexico State University (Knox Hall)

P.O. Box 30003, Dept. 4901
Las Cruces, NM 88003
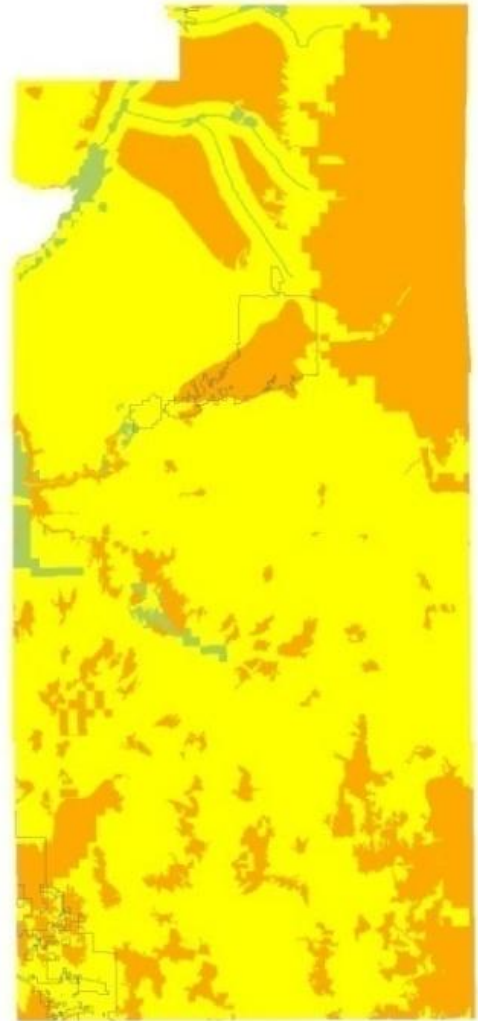
Abstract: This raster coverage displays amphibian species richness across the New Mexico landscape based on NM-GAP distribution predictions for 26 species. A richness value is assigned to each 1 ha grid cell.

Relevance: Land development tends to destroy and fragment wildlife habitat, which decreases the viability of wildlife populations, and increases the likelihood of species extinctions. Land development is also associated with higher noise and other pollution levels, which disturbs wildlife, harassment of wildlife by pets, higher levels of road kills, and conflicts between humans and predators.
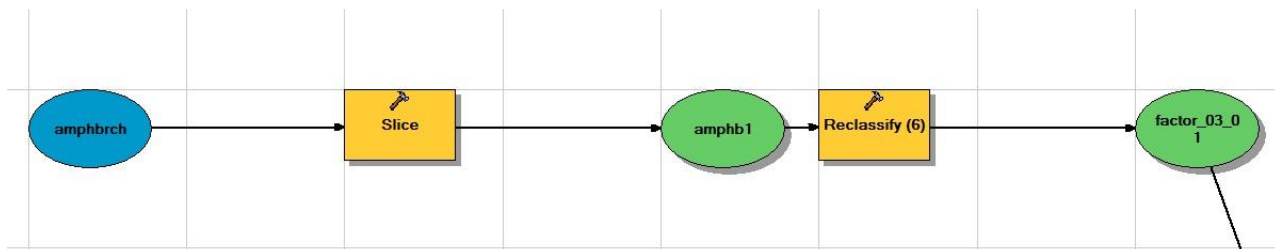
Resulting Raster File: ..\Suitability_Models\LDSA\Output\factor_03_01

Factor 3.2 Reptilian Richness
..\Suitability_Models\Factors\Factor_03\Factor_03_02\rptilrch

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Source: Rating of overall reptilian species richness (number of species) in the "ovralrch" raster data set produced as a part of the "New Mexico Gap Analysis Project" prepared by the New Mexico Fish and Wildlife Research Unit at New Mexico State University (1996).

Description: GAP provides an assessment of the conservation status of native reptilian species and natural land cover types. 26 different reptilian species were considered in GAP's reptilian richness dataset. "Low Constraints" are those areas where few reptilian species are predicted to be located, while "High Constraints" represents an abundance of species types. Areas of Low Constraints are therefore preferred for development purposes, as the impact of such activities will be minimized in these areas.

Online linkage: http://fws-nmcfwru.nmsu.edu/fwscoop/default.htm

Point of Contact: New Mexico Cooperative Fish and Wildlife Research Unit

New Mexico State University (Knox Hall)

P.O. Box 30003, Dept. 4901
Las Cruces, NM 88003
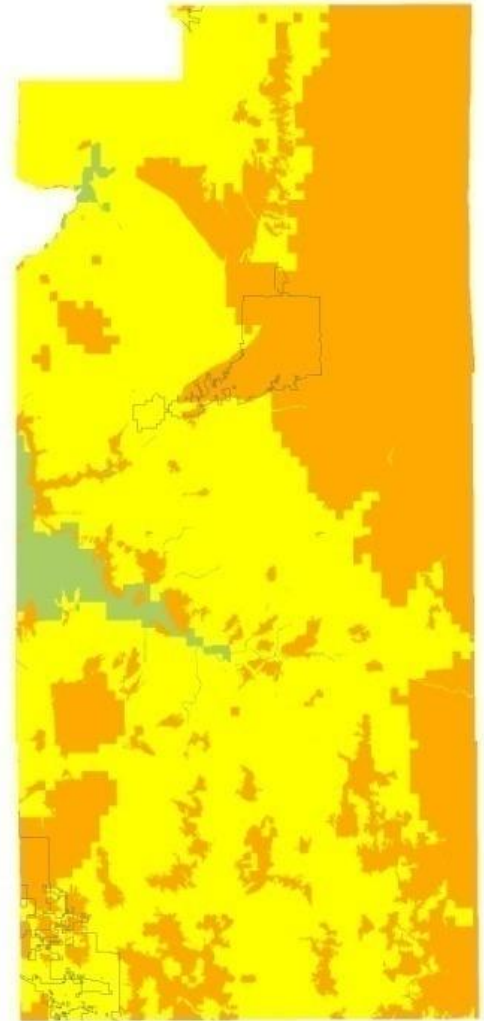
Abstract: This raster coverage displays reptile species richness across the New Mexico landscape based on NM-GAP distribution predictions for 96 species. A richness value is assigned to each 1 ha grid cell.

Relevance: Land development tends to destroy and fragment wildlife habitat, which decreases the viability of wildlife populations, and increases the likelihood of species extinctions. Land development is also associated with higher noise levels, which disturbs wildlife, harassment of wildlife by pets, higher levels of road kills, and conflicts between humans and predators.
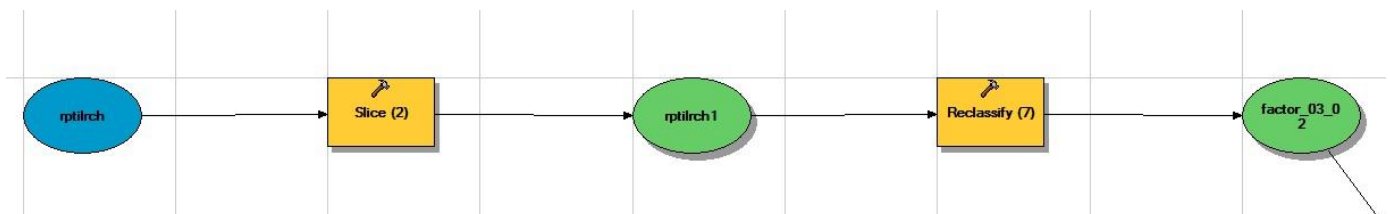
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_03_02

Factor 3.3 Bird Richness
..\Suitability_Models\Factors\Factor_03\Factor_03_03\birdrch

Source: Rating of overall bird species richness (number of species) in the "ovralrch" raster data set produced as a part of the "New Mexico Gap Analysis Project" prepared by the New Mexico Fish and Wildlife Research Unit at New Mexico State University (1996).

Description: GAP provides an assessment of the conservation status of native bird species and natural land cover types. 324 different bird species were considered in GAP's bird richness dataset. "Low Constraints" are areas where few bird species are predicted to be located, while "High Constraints" are locations of a predicted abundance of species types. Areas of "Low Constraints" are therefore preferred for development purposes, as the impact of such activities will be minimized in these areas.
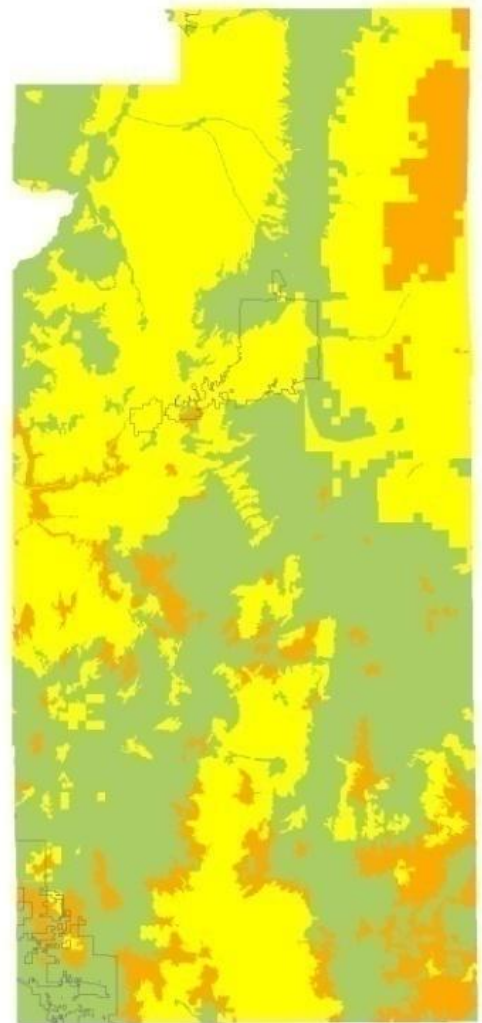
Online linkage: http://fws-nmcfwru.nmsu.edu/fwscoop/default.htm

Point of Contact: New Mexico Cooperative Fish and Wildlife Research Unit

New Mexico State University (Knox Hall)

P.O. Box 30003, Dept. 4901

Las Cruces, NM 88003

Abstract: This raster coverage displays species richness across the
New Mexico landscape based on NM-GAP distribution predictions for year round occurrence of 324 regularly occurring bird species. A richness value is assigned to each 1 ha grid cell.

Relevance: Land development tends to destroy and fragment wildlife habitat, which decreases the viability of wildlife populations, and increases the likelihood of species extinctions. Land development is also associated with higher noise and pollution levels, which disturbs wildlife, harassment of wildlife by pets, higher levels of road kills, and conflicts between humans and predators.
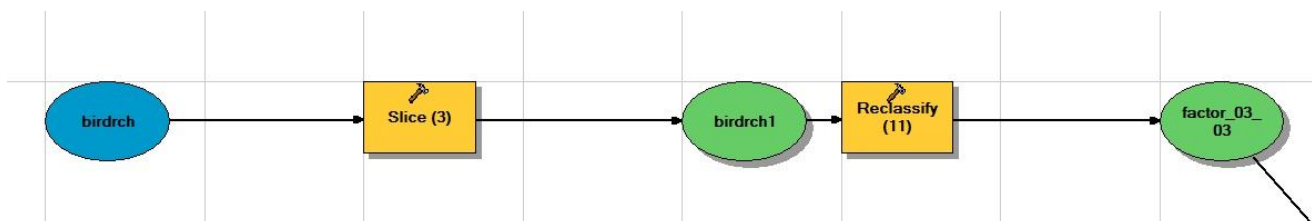
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_03_03

- -

Factor 3.4 Mammal Richness
..\Suitability_Models\Factors\Factor_03\Factor_03_04\mmamlrch

- -

Source: Rating of overall mammal species richness (number of species) in the "ovralrch" raster data set produced as a part of the "New Mexico Gap Analysis Project" prepared by the New Mexico Fish and Wildlife Research Unit at New Mexico State University (1996).

Description: GAP provides an assessment of the conservation status of native mammal species and natural land cover types. 138 different mammal species were considered in GAP's mammal richness dataset. "Low Constraints" are areas where few mammal species are predicted to be located, while "High Constraints" are locations of a predicted abundance of species types. Areas of "Low Constraints" are therefore preferred for development purposes, as the impact of such activities will be minimized in these areas.

Online linkage: http://fws-nmcfwru.nmsu.edu/fwscoop/default.htm

Point of Contact: New Mexico Cooperative Fish and Wildlife Research Unit

New Mexico State University (Knox Hall)

P.O. Box 30003, Dept. 4901
Las Cruces, NM 88003
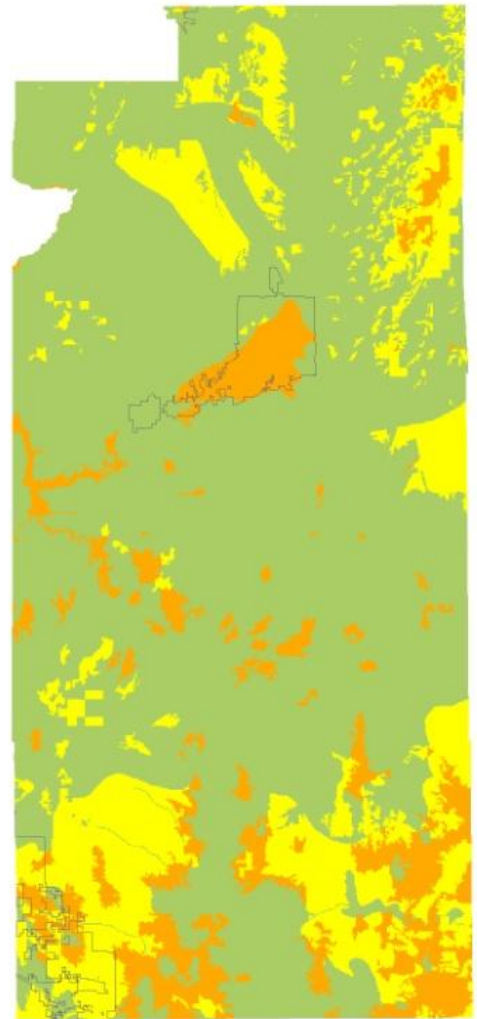
Abstract: This raster coverage displays mammal species richness across the New Mexico landscape based on NM-GAP distribution predictions for 138 species. A richness value is assigned for each 1 ha grid cell.

Relevance: Land development tends to destroy and fragment wildlife habitat, which decreases the viability of wildlife populations, and increases the likelihood of species extinctions. Land development is also associated with higher noise and pollution levels, which disturbs wildlife, harassment of wildlife by pets, higher levels of road kills, and conflicts between humans and predators.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_03_04

- -

Factor 3.5 Undisturbed Natural Grasslands
..\Suitability_Models\Factors\Factor_03\Factor_03_05\nmveggrd

- -

Source: New Mexico Cooperative Fish and Wildlife Research Unit.

Description: This coverage was prepared from Landsat TM imagery for integration in the national Gap Analysis Program. "High Constraints" are those areas where Grassland vegetation is very likely to exist. "Low Constraints" are areas where grassland vegetation is not likely to exist. Development activity is discouraged from areas of High Constraints; as such activities might harm the natural vegetation.

Online linkage: http://fws-nmcfwru.nmsu.edu/fwscoop/default.htm

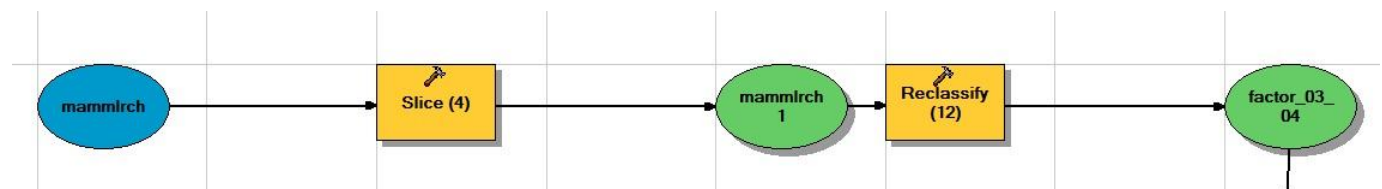*Point of Contact:*   New Mexico Cooperative Fish and Wildlife Research Unit
New Mexico State University
(Knox Hall)
P.O. Box 30003, Dept. 4901
Las Cruces, New Mexico 88003-0003
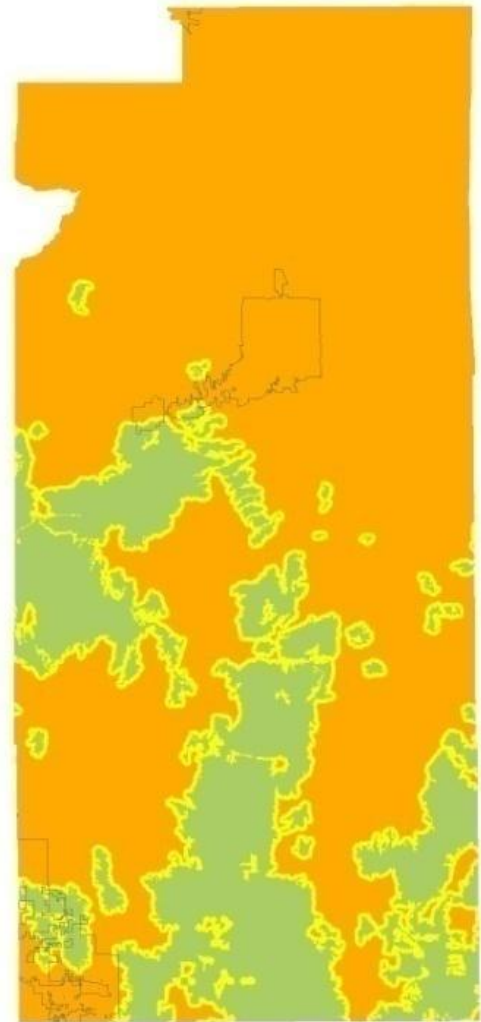
Abstract: This coverage is a raster version of the final land cover map in ARC/INFO grid format. This coverage was prepared from Landsat TM imagery for integration in national Gap Analysis Program. The coverage depicts 42 land cover classes describing natural terrestrial vegetation, riparian and wetland areas, agriculture, other disturbed ground, and urban areas. Minimum mapping unit (MMU) for most classes was 100 ha; 10 classes were specially processed at 2 ha or 16 ha MMU.

Relevance: Intensive land development is associated with a high level of disturbance. Preservation of natural grasslands protects native vegetation and wildlife habitat.

Entity and Attribute Information

Value	Land Cover Descriptor
1111	Rocky Mountain Alpine Graminoid Tundra
1112	Rocky Mountain Alpine Forb Tundra
2111	Subalpine Conifer Forest
2112	Subalpine Broadleaf Forest
2121	Rocky Mountain Upper Montane Conifer Forest
2122	Rocky Mountain Lower Montane Conifer Forest
2211	Madrean Lower Montane Conifer Forest

3111	Upper Montane Open Conifer Woodland
3121	Rocky Mtn/Great Basin Closed Conifer Woodland
3122	Rocky Mtn/Great Basin Open Conifer Woodland
3211	Madrean Closed Conifer Woodland
3222	Madrean Open Oak Woodland (Encinal)
4110	Rocky Mountain Montane Scrub & Interior Chaparral
4111	Rocky Mountain Montane Deciduous Scrub
4121	Broadleaf Evergreen Interior Chaparral
4131	Plains-Mesa Broadleaf Sand-Scrub
4211	Great Basin Microphyllous Desert Scrub
4212	Great Basin Broadleaf Deciduous Desert Scrub
4220	Chihuahuan Desert Scrub
4221	Chihuahuan Broadleaf Evergreen Desert Scrub
4222	Chihuahuan Broadleaf Deciduous Desert Scrub
5110	Rocky Mountain Subalpine and Montane Grassland
5121	Short Grass Steppe
5122	Mid-Grass Prairie
5123	Tall Grass Prairie
5211	Great Basin Foothill-Piedmont Grassland
5212	Great Basin Lowland/Swale Grassland
5220	Chihuahuan Desert Grassland
5221	Chihuahuan Foothill-Piedmont Desert Grassland
5222	Chihuahuan Lowland/Swale Desert Grassland
6110	Rocky Mountain Montane Forested/Shrub Wetlands
6120	Southwest & Plains Forested/Shrub Wetland
6211	Graminoid Wetlands
9110	Dryland Agriculture
9120	Irrigated Agriculture
9210	Barren
9220	Mine/Quarries
9230	Rock Outcrop
9310	Urban
9320	Urban Vegetated
9410	Riverine/Lacustrine
9420	Basin/Playa

Count: Number of cells containing the corresponding value.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_03_05

Factor 3.6 Pinon-Juniper Woodlands

..\Suitability_Models\Factors\Factor_03\Factor_03_06\nmveggrd

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Source: The Undisturbed Rocky Mountain Conifer Woodlands dataset, of which Pinon-Juniper Woodlands is a subset, came from the New Mexico Fish and Wildlife Research Unit.
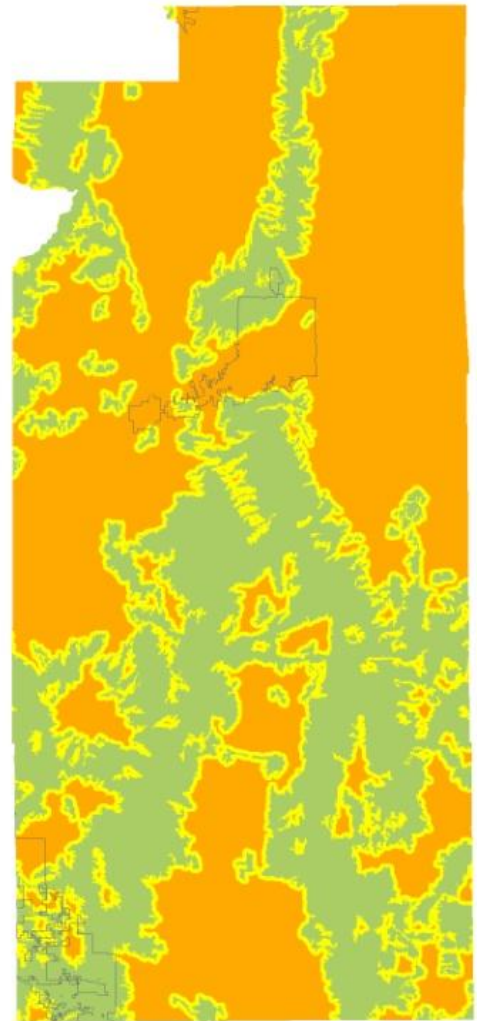
Description: This coverage was prepared from Landsat TM imagery for integration in the national Gap Analysis Program. "Low Constraints" are areas where Rocky Mountain Conifer Woodlands vegetation is not predicted likely to exist, while "High Constraints" are areas where Rocky Mtn Conifer Woodlands vegetation is predicted likely to exist. Areas of "High Constraints" are discouraged for development purposes; as such activities might harm the natural vegetation.

Online linkage: http://fwsnmcfwru.nmsu.edu/fwscoop/default.htm

Point of Contact: New Mexico Cooperative Fish and Wildlife Research Unit
New Mexico State University (Knox Hall)

P.O. Box 30003, Dept. 4901

Abstract: This coverage is a raster version of the final land cover map in ARC/INFO grid format. This coverage was prepared from Landsat TM imagery for integration in national Gap Analysis Program. The coverage depicts 42 land cover classes describing natural terrestrial vegetation, riparian and wetland areas, agriculture, other disturbed ground, and urban areas. Minimum mapping unit (MMU) for most classes was 100 ha; 10 classes were specially processed at 2 ha or 16 ha MMU.

Relevance: Intensive land development is associated with a high level of disturbance. Preservation of Pinon-Juniper woodlands protects native vegetation and wildlife habitat.

Value	Land Cover Descriptor
1111	Rocky Mountain Alpine Graminoid Tundra
1112	Rocky Mountain Alpine Forb Tundra
2111	Subalpine Conifer Forest
2112	Subalpine Broadleaf Forest
2121	Rocky Mountain Upper Montane Conifer Forest
2122	Rocky Mountain Lower Montane Conifer Forest
2211	Madrean Lower Montane Conifer Forest
3111	Upper Montane Open Conifer Woodland

3121	Rocky Mtn/Great Basin Closed Conifer Woodland
3122	Rocky Mtn/Great Basin Open Conifer Woodland
3211	Madrean Closed Conifer Woodland
3222	Madrean Open Oak Woodland (Encinal)
4110	Rocky Mountain Montane Scrub & Interior Chaparral
4111	Rocky Mountain Montane Deciduous Scrub
4121	Broadleaf Evergreen Interior Chaparral
4131	Plains-Mesa Broadleaf Sand-Scrub
4211	Great Basin Microphyllous Desert Scrub
4212	Great Basin Broadleaf Deciduous Desert Scrub
4220	Chihuahuan Desert Scrub
4221	Chihuahuan Broadleaf Evergreen Desert Scrub
4222	Chihuahuan Broadleaf Deciduous Desert Scrub
5110	Rocky Mountain Subalpine and Montane Grassland
5121	Short Grass Steppe
5122	Mid-Grass Prairie
5123	Tall Grass Prairie
5211	Great Basin Foothill-Piedmont Grassland
5212	Great Basin Lowland/Swale Grassland
5220	Chihuahuan Desert Grassland
5221	Chihuahuan Foothill-Piedmont Desert Grassland
5222	Chihuahuan Lowland/Swale Desert Grassland
6110	Rocky Mountain Montane Forested/Shrub Wetlands
6120	Southwest & Plains Forested/Shrub Wetland
6211	Graminoid Wetlands
9110	Dryland Agriculture
9120	Irrigated Agriculture
9210	Barren
9220	Mine/Quarries
9230	Rock Outcrop
9310	Urban
9320	Urban Vegetated
9410	Riverine/Lacustrine
9420	Basin/Playa

Count: Number of cells containing the corresponding value.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_03_06

- -

Factor 3.7 Undisturbed Forested Areas

..\Suitability_Models\Factors\Factor_03\Factor_03_07\lulc_prj

- -

Source: The dataset is a generalized and nationally consistent land cover data layer for the United States. These data can be used as a layer in a geographic information system (GIS) for any number of purposes such assessing wildlife habitat, water quality and pesticide runoff, land use change, etc . U.S. Geological Survey (USGS); National Land Cover Database.

Description: This coverage was prepared from Landsat TM imagery for integration in the national Gap Analysis Program. "High Constraints" are areas where Forests are predicted likely to exist, while "Low Constraints" represents areas where Forest vegetation is predicted less likely to exist. "High Constraint" areas are discouraged for development purposes, as such activities might harm the natural vegetation.

Online linkage: http://fwsnmcfwru.nmsu.edu/fwscoop/default.htm

Point of Contact: New Mexico Cooperative Fish and
                          Wildlife Research Unit
                          New Mexico State University
                          (Knox Hall)
                          P.O. Box 30003, Dept. 4901

Abstract: U.S. Geological Survey, 1999. Land use and land cover digital data from 1:250,000 – 1:100,000- scale maps.

Relevance: Intensive land development is associated with a high level of disturbance. Preservation of undisturbed forested areas protects native vegetation and wildlife habitat.
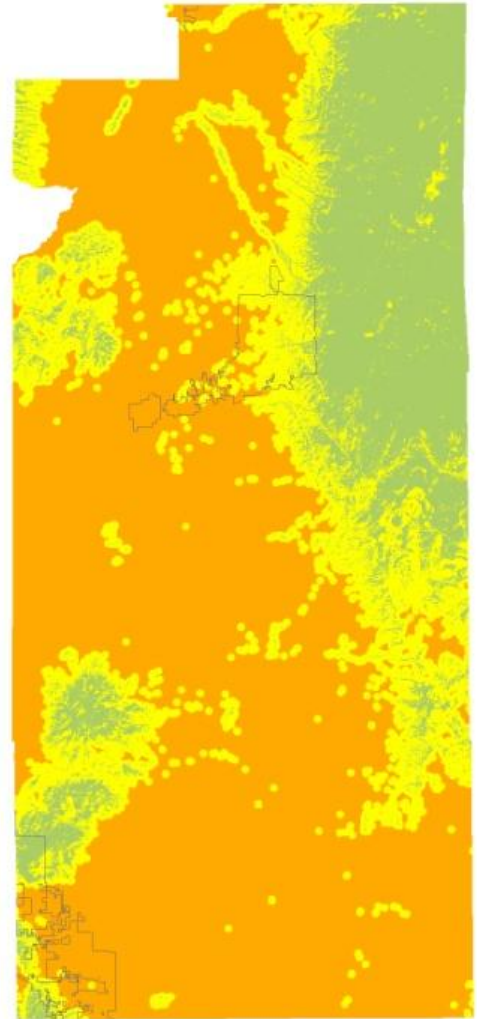
Entity and Attribute Information

Value: Associated with one of the following Land Use Values:
Class Value - Class Name

 Water
  11. Open Water
  12. Perennial Ice/Snow

 Developed
  21. Developed, Open Space
  22. Developed, Low Intensity

23. Developed, Medium Intensity
24. Developed, High Intensity

Barren
31. Barren Land (Rock/Sand/Clay)
32. Unconsolidated Shore*

Vegetated; Natural Forested Upland
41. Deciduous Forest
42. Evergreen Forest
43. Mixed Forest

Vegetated; Natural Shrubland
51. Dwarf Scrub
52. Shrub/Scrub
61. Nurseries

Herbaceous Upland Natural/Seminatural Vegetation
71. Grassland/Herbaceous
72. Sedge/Herbaceous
73. Lichens
74. Moss

Herbaceous Planted/Cultivated
81. Pasture/Hay
82. Cultivated Crops

Wetlands
90. Woody Wetlands
91. Palustrine Forested Wetland*
92. Palustrine Scrub/Shrub Wetland*
93. Estuarine Forested Wetland*
94. Estuarine Scrub/Shrub Wetland*
95. Emergent Herbaceous Wetlands
96. Palustrine Emergent Wetland (Persistent)*
97. Estuarine Emergent Wetland*
98. Palustrine Aquatic Bed*
99. Estuarine Aquatic Bed*

Count: Number of cells containing the corresponding value.
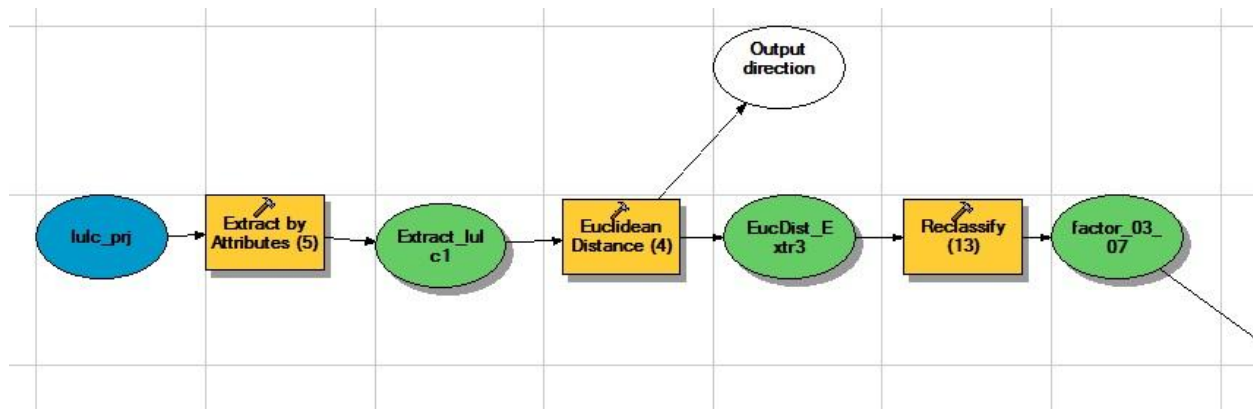
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_03_07

- -

Factor 3.8 Focal Species Richness

..\Suitability_Models\Factors\Factor_03\Factor_03_08\richness30m 1

- -

Source: A GIS Workshop was held to further SF County's objective of cooperating with state and local governments, NGOs and the community, to identify, prioritize and protect important wildlife habitats and corridors.

Description: The GIS Workshop will model wildlife habitat (Key Patches) for the 20 Focal Species identified by the greater community. Participants learned how to use ArcGIS and SWReGAP data to model and map individual and composite species habitats. The resulting maps and the process to develop them will be used to identify conservation priorities to guide SF County in: 1) General growth management planning, 2) Potential open space & trails planning and acquisition, and 3) Specific development project reviews.

Online linkage: http://fws-case-12.nmsu.edu/case/santafe/index.htm

*Point of Contact:*   Department of Fish, Wildlife, and
                          Conservation Ecology
                          New Mexico State University
                          Box 30003, MSC 4901
                          Las Cruces, NM 88003
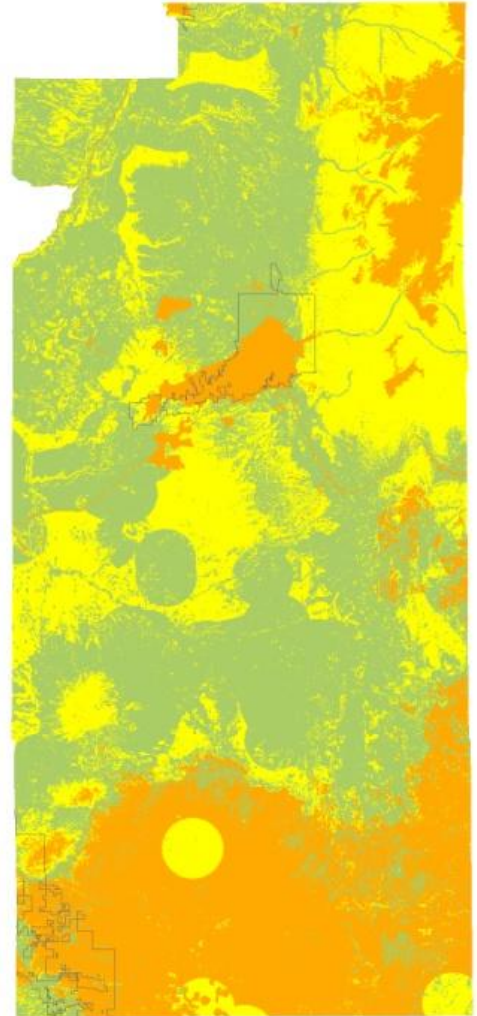
Abstract: A list of initial species was developed by using Biota Information System of New Mexico to identify all endangered, threatened, culturally important and species of greatest conservation need in Santa Fe County. That list was refined to 59 species that were demonstrably secure in New Mexico. Workshop participants added 8 and deleted 16 species from that initial list through majority agreement resulting in 51 species. All participants then were given the opportunity to rate each of the 51 wildlife species with 27 participants providing ratings on the following three criteria using a four-point scale: 1) Vulnerability, 2) Ecological Significance, and 3) Cultural and Economic Importance.

Relevance: The focal species richness factor preserves wildlife and environmental by: 1) Preserving wildlife habitat and migration corridors, 2) Promoting biodiversity in rural areas of the County, and 3) Increasing data on wildlife and its habitat resources. Focal species richness identifies threatened, endangered or culturally important species habitats within Santa Fe County utilizing the SWReGAP dataset.
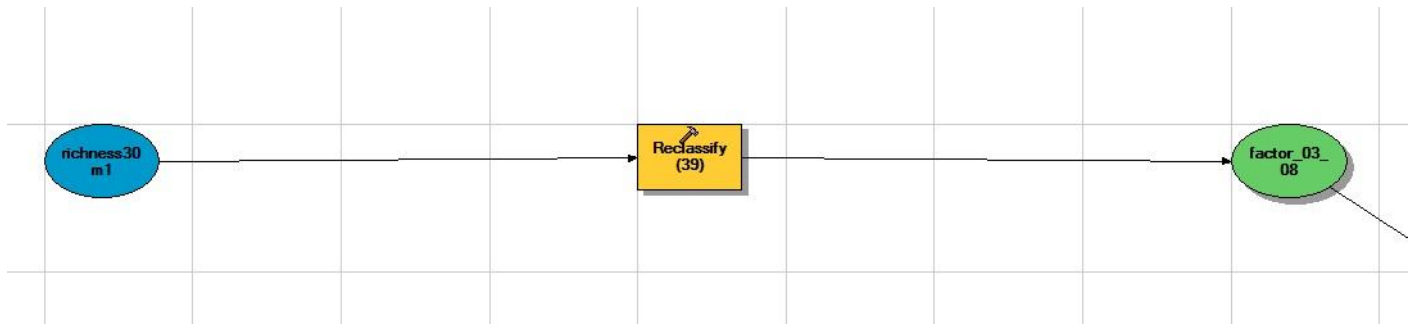
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_03_08

Factor 4.1 Natural Spring Buffer

..\Suitability_Models\Factors\Factor_04\Factor_04_01\points_Project.shp

*Source:* U.S. Geological Survey; Horizon Systems' NHDPlus national dataset.

Description: NHDplus is a high resolution data set and was used to identify natural springs or sources of water in need of protection. "High Constraints" are areas within 500 feet of natural springs. Moderate areas are within 500 feet and one quarter mile from natural springs. "Low Constraints" are greater than one quarter mile from natural springs and are most suitable for development.

Online linkage: http://www.horizon-systems.com/nhdplus/index.php

Point of Contact: Horizon Systems
                          P.O. Box 5084
                          Herndon, VA 20170

Abstract: The NHDPlus Version 1.0 is an integrated suite of application-ready geospatial data sets that incorporate many of the best features of the National Hydrography Dataset (NHD) and the National Elevation Dataset (NED). The NHDPlus includes a stream network (based on the 1:100,000-scale NHD), improved networking, naming, and "value-added attributes" (VAA's). NHDPlus also includes elevation-derived catchments (drainage areas) produced using a drainage enforcement technique first broadly applied in New England, and thus dubbed "The New-England Method". This technique involves "burning-in" the 1:100,000-scale NHD and when available building "walls" using the national Watershed Boundary Dataset (WBD). The resulting modified digital elevation model (HydroDEM) is used to produce hydrologic derivatives that agree with the NHD and WBD. An interdisciplinary team from the U. S. Geological Survey (USGS), U.S. Environmental Protection Agency (USEPA), and contractors, over the last two years has found this method to produce the best quality NHD catchments using an automated process.

The NHD is a national framework for assigning reach addresses to water-related entities, such as industrial discharges, drinking water supplies, fish habitat areas, wild and scenic rivers. Reach addresses establish the locations of these entities relative to one another within the NHD surface water drainage network, much like addresses on streets. Once linked to the NHD by their reach addresses, the upstream/downstream relationships of these water-related entities--and any associated information about them--can be analyzed using software tools ranging from spreadsheets to geographic information systems (GIS). GIS can also be used to combine NHD-based network analysis with other data layers, such as soils, land use and population, to help understand and display their respective effects upon one another. Furthermore, because the NHD provides a nationally consistent framework for addressing and analysis, water-related information linked to reach addresses by one organization (national, state, local) can be shared with other organizations and easily integrated into many different types of applications to the benefit of all.
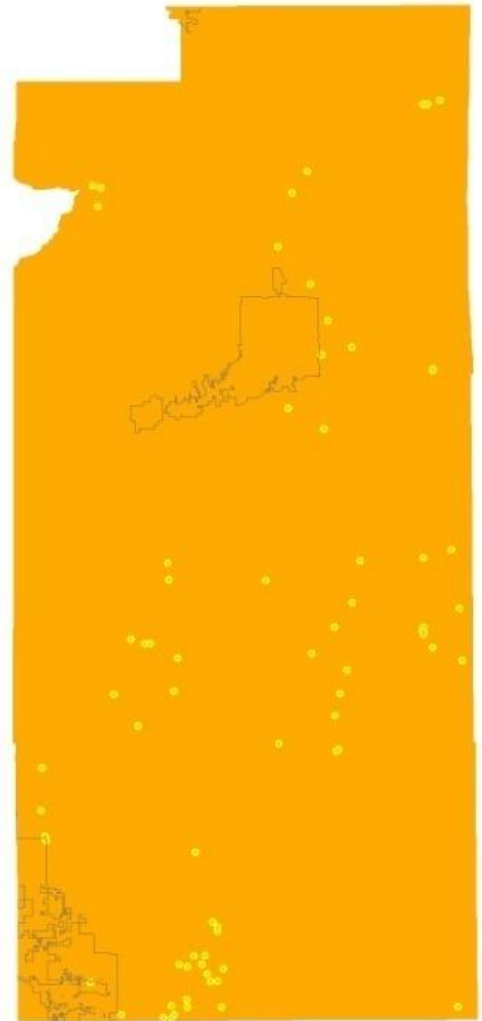
Relevance: The drinking water we receive from our local drinking water utilities or individual wells comes from ground water, streams, rivers, springs or lakes in a watershed. Although most water requires some treatment before use, protecting this source water is an important part of providing safe drinking water to the public. Protecting drinking water sources is always a high priority for sustainable development.
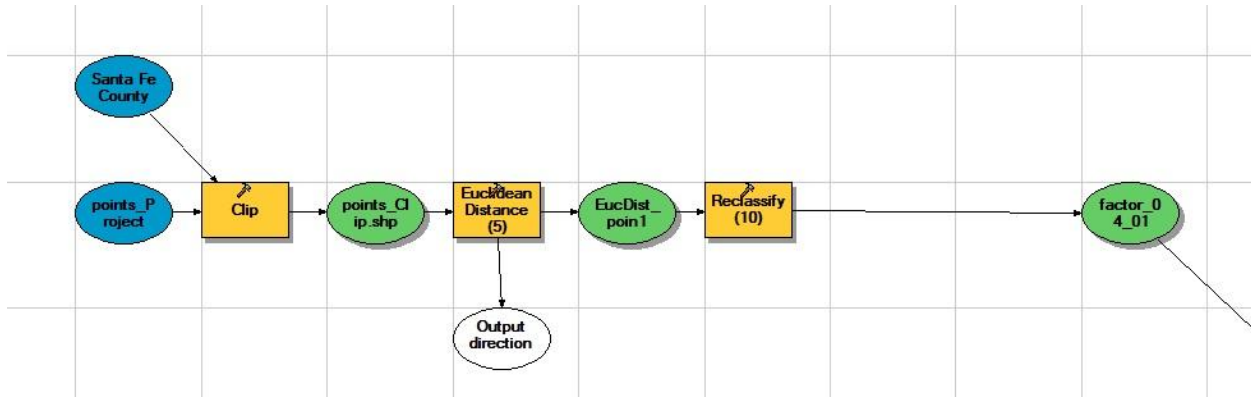
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_04_01

Factor 4.2 Proximity to Water Bodies

..\Suitability_Models\Factors\Factor_04\Factor_04_02\waterbody_Project.shp

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Source: Source: U.S. Geological Survey; Horizon Systems' NHDPlus national dataset.
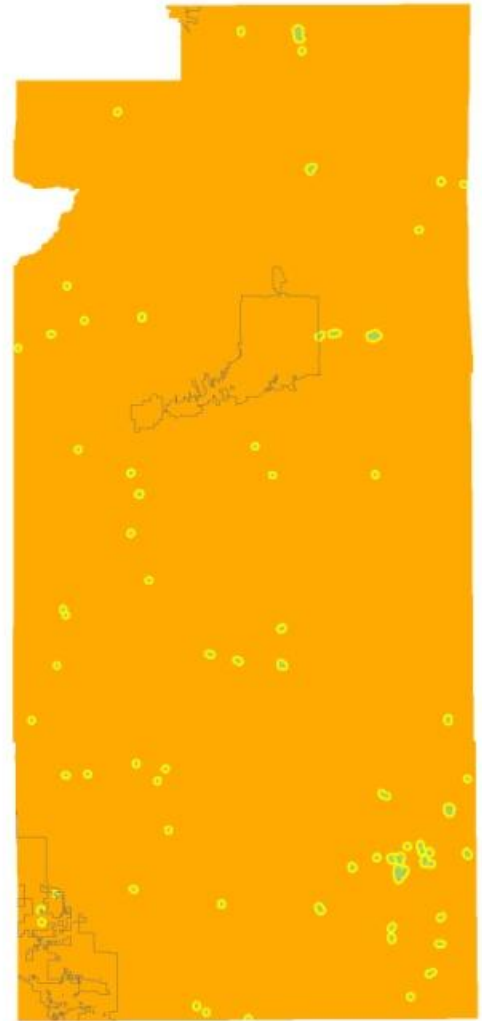
Description: NHD is a high resolution data set and was used to identify water bodies which should be protected. "High Constraints" are locations within 500 feet of water bodies. "Moderate Constraints" are within 500 feet and one quarter mile from a water body. "Low Constraints" are greater than one quarter mile from water bodies and are most suitable for development.
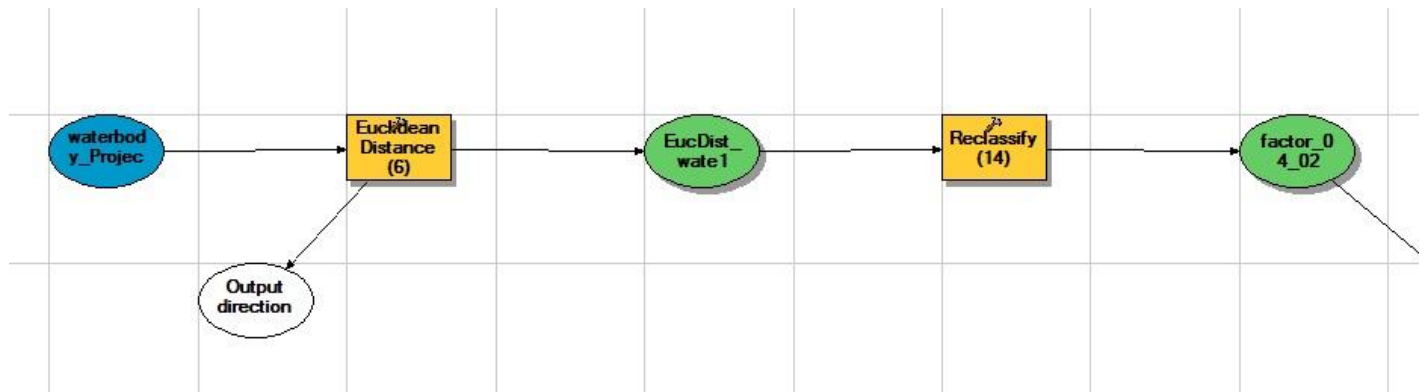
Online linkage: http://www.horizon-systems.com/nhdplus/index.php

Point of Contact: Horizon Systems
                          P.O. Box 5084
                          Herndon, VA 20170

Abstract: The NHDPlus Version 1.0 is an integrated suite of application-ready geospatial data sets that incorporate many of the best features of the National Hydrography Dataset (NHD) and the National Elevation Dataset (NED). The NHDPlus includes a stream network (based on the 1:100,000-scale NHD), improved networking, naming, and "value-added attributes" (VAA's). NHDPlus also includes elevation-derived catchments (drainage areas) produced using a drainage enforcement technique first broadly applied in New England, and thus dubbed "The New-England Method". This technique involves "burning-in" the 1:100,000- scale NHD and when available building "walls" using the national Watershed Boundary Dataset (WBD). The resulting modified digital elevation model (HydroDEM) is used to produce hydrologic derivatives that agree with the NHD and WBD. An interdisciplinary team from the U. S. Geological Survey (USGS), U.S. Environmental Protection Agency (USEPA), and contractors, over the last two years has found this method to produce the best quality NHD catchments using an automated process.

Relevance: Areas in close proximity to surface waters have a higher degree of impact on these surface waters from storm-water runoff contaminants, siltation, septic tank effluent, and leaks and spills of chemicals and petroleum products. Areas in close proximity to streams and arroyos are also more prone to flash flooding, and often contain significant wildlife habitat and wildlife movement corridors. Protecting drinking water sources is always a high priority for sustainable development.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_04_02

Factor 4.3 Drainage
..\Suitability_Models\Factors\Factor_04\Factor_04_03\nhdflowline_ Project.shp

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Source: Source: U.S. Geological Survey; Horizon Systems' NHDPlus national dataset.

Description: NHD is a high resolution data set and was used to identify water bodies which should be protected. "High Constraints" are locations within 500 feet of stream or river. "Moderate Constraints" are within 500 feet and one quarter mile from a water body. "Low Constraints" are greater than one quarter mile from water bodies and are most suitable for development.
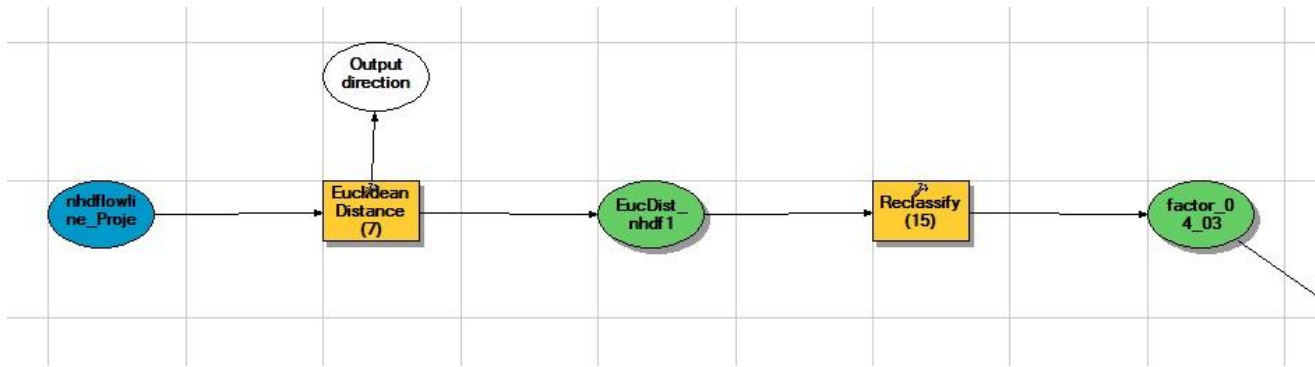
Online linkage: http://www.horizon-systems.com/nhdplus/index.php

Point of Contact: Horizon Systems
                          P.O. Box 5084
                          Herndon, VA 20170

Abstract: The NHDPlus Version 1.0 is an integrated suite of application-ready geospatial data sets that incorporate many of the best features of the National Hydrography Dataset (NHD) and the National Elevation Dataset (NED). The NHDPlus includes a stream network (based on the 1:100,000-scale NHD), improved networking, naming, and "value-added attributes" (VAA's). NHDPlus also includes elevation-derived catchments (drainage areas) produced using a drainage enforcement technique first broadly applied in New England, and thus dubbed "The New-England Method". This technique involves "burning-in" the 1:100,000- scale NHD and when available building "walls" using the national Watershed Boundary Dataset (WBD). The resulting modified digital elevation model (HydroDEM) is used to produce hydrologic derivatives that agree with the NHD and WBD. An interdisciplinary team from the U. S. Geological Survey (USGS), U.S. Environmental Protection Agency (USEPA), and contractors, over the last two years has found this method to produce the best quality NHD catchments using an automated process.

Relevance: Areas in close proximity to surface waters have a higher degree of impact on these surface waters from stormwater runoff contaminants, siltation, septic tank effluent, and leaks and spills of chemicals and petroleum products. Areas in close proximity to streams and arroyos are also more prone to flash flooding, and often contain significant wildlife habitat and wildlife movement corridors. Protecting drinking water sources is always a high priority for sustainable development.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_04_03

Factor 4.4 GAP Wetlands and Riparian Areas

..\Suitability_Models\Factors\Factor_04\Factor_04_04\landc_proj

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Source: Areas in the "landcover" raster data set produced as a part of the "New Mexico Gap Analysis Project" which was prepared by the New Mexico Fish and Wildlife Research Unit at New Mexico State University (1996).

Description: Areas of wetland and riparian habitat consist of the following vegetative communities in the above data set:

- North American Arid West Emergent Marsh
- Open Water
- Rocky Mountain Alpine-Montane Wet Meadow
- Rocky Mountain Lower Montane Riparian Woodland and Shrubland
- Western Great Plains Riparian Woodland and Shrubland

Land within 500 feet of these designations were determined to be least suitable for development, while lands outside 1/4 miles were determined to be most developable.

Online linkage: http://fws-nmcfwru.nmsu.edu/fwscoop/default.htm

Point of Contact: New Mexico Cooperative Fish and Wildlife Research Unit

New Mexico State University (Knox Hall)
P.O. Box 30003, Dept. 4901
Las Cruces, NM 88003

Abstract: This coverage was prepared from Landsat TM imagery for integration in the national Gap Analysis Program. "High Constraints" are areas where Riparian are predicted likely to exist, while "Low Constraints" represents areas where Riparian areas are predicted less likely to exist. "High Constraint" areas are discouraged for development purposes, as such activities might harm the natural vegetation and species habitat, as well as groundwater protection.

Relevance: Wetland and riparian areas are highly susceptible to degradation of these vegetative communities due to disruption of the hydrologic regime, loss of vegetation to development, and siltation and stormwater runoff impacts resulting from development. Wetland and riparian areas serve important hydrologic and ecological functions related to water quality protection, groundwater recharge, flood protection, stream bank protection, and wildlife habitat and corridors.
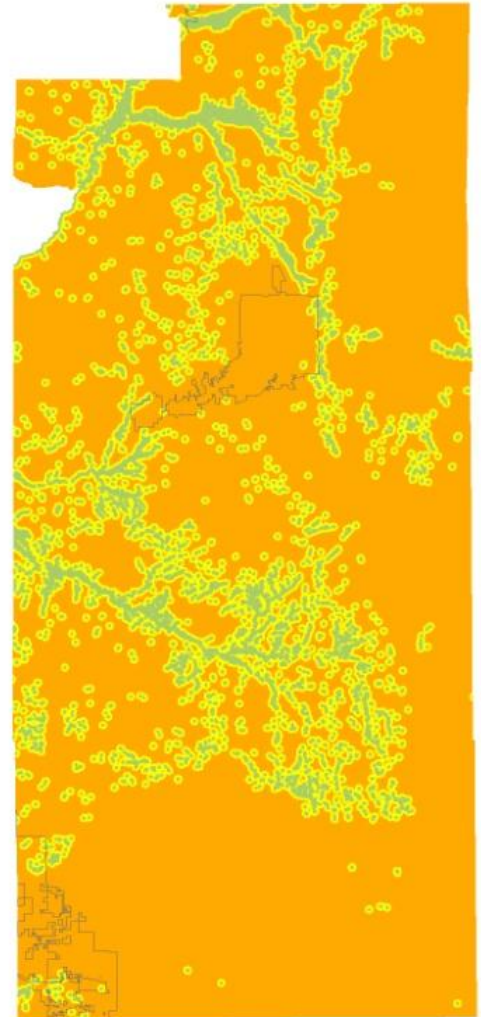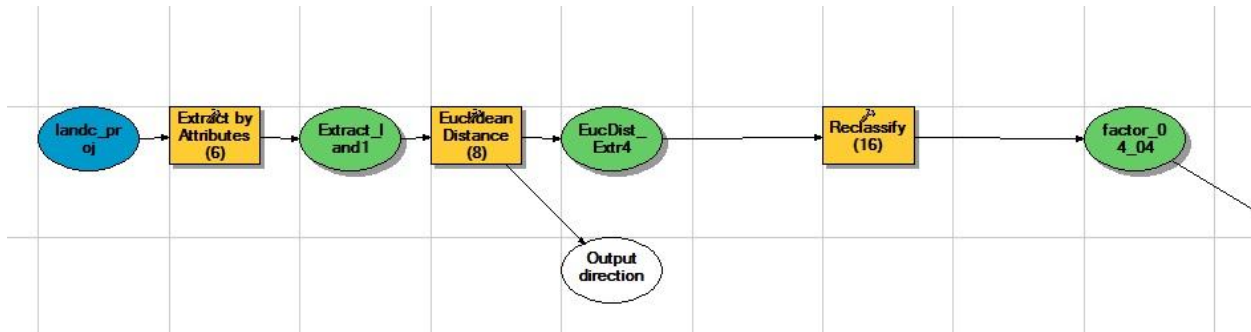
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_04_04

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Factor 4.5 D.R.A.S.T.I.C.
..\Suitability_Models\Factors\Factor_04\Factor_04_05\drastic1

– –

Source: County staff along with state staff created a localized DRASTIC model suitable for use in a local County-wide model.

Description: Groundwater sensitivity data was derived using the DRASTIC model. The DRASTIC model for assessing groundwater sensitivity requires seven criteria: Depth to water table, Recharge rates, Aquifer permeability, Soil type, Topography, Impact of the Vadose Zone, and Conductivity of the Vadose Zone (Aller, 1985). Development suitability was determined using GIS software and "natural breaks" in the data. Area of highest vulnerability is considered least suitable for development, while areas of lowest suitability were considered most suitable for development.

Online linkage: None

*Point of Contact:*   **Santa Fe County Land Use Dept.**
                             102 Grant Avenue
   Santa Fe, NM 87504-0276

Abstract: The DRASTIC model evaluates pollution potential based on weighted combination of hydrogeologic settings. The DRASTIC method considers a generic contaminant introduced at the surface and moving downward at a rate equal to that of water. (Aller et al 1987) DRASTIC is an acronym for each of the seven input characteristics:

- Depth to Water (weight = 5)
- Net Recharge (weight = 4)
- Aquifer Media (weight = 3)
- Soil Media (weight = 2)
- Topography (weight = 1)
- Impact of the Vadose Zone (weight = 5)
- Hydraulic Conductivity (weight = 3)

Values within each of the seven input characteristics are grouped into ranges and assigned a rating from one (the lowest vulnerability) to ten (the highest vulnerability). The final vulnerability if calculated by multiplying the characteristic rating by the assigned weight then adding all the weighted scores together for a final score. The result is a relative measure of the pollution potential of that area, ranging from 23 (low vulnerability) to 230 (high vulnerability)

Relevance: It is generally recommended that in areas having high vulnerability requires a targeted site specific investigation be conducted prior to development planning. Such a targeted investigation will result in an Aquifer Susceptibility Evaluation.

Not for Quotation or Attribution
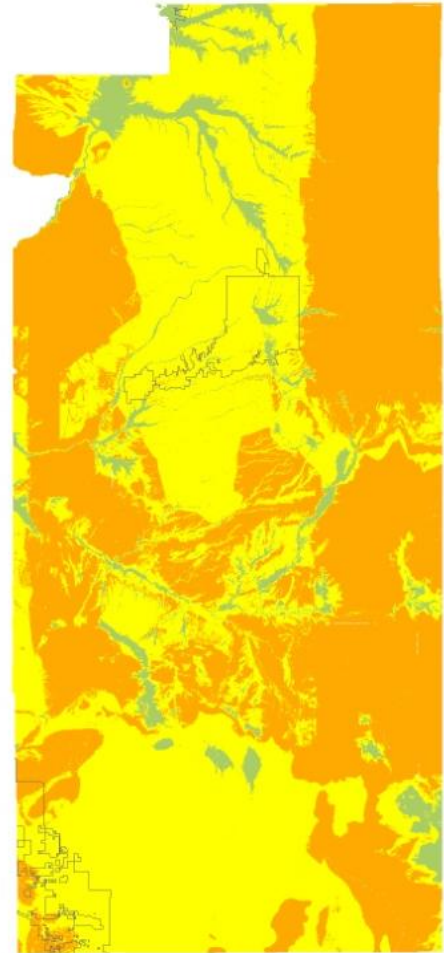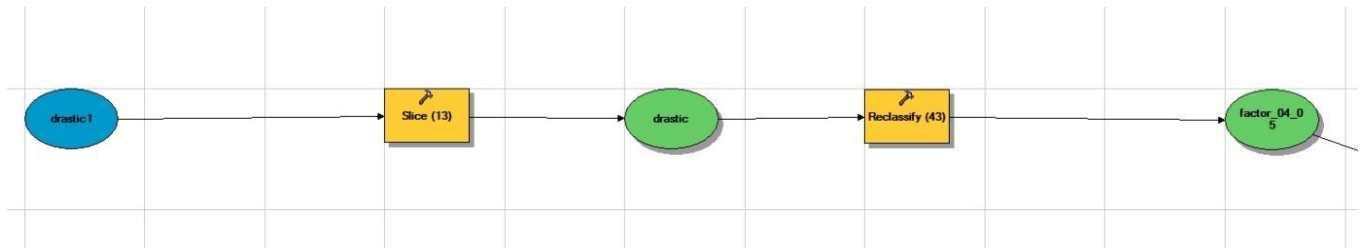
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_04_05

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Factor 4.7 Existing Water Wells
..\Suitability_Models\Factors\Factor_04\Factor_04_07\wells_cnty.shp

- -

Source: The NM Office of the State Engineer (OSE) "Point of Diversions" (POD) layer includes well locations, surface declarations, or surface permits.

Description: Most of the wells within this dataset are private residential wells. Proximity to wells should balance the fact that points of water diversion and groundwater should be protected from adverse effects of development such as run off. Area within 500 feet of an existing well has been determined to be least suitable for development while areas outside 1/4 mile have been determined to be most suitable for development.

Online linkage: http://www.ose.state.nm.us/water_info_data.html

Point of Contact: **Office of the State Engineer**
                             130 South Capitol Street
                             Concha Ortiz y Pino Building
                             P.O. Box 25102
                             Santa Fe, NM 87504-5102

Abstract: The water well data was extracted from the OSE W.A.T.E.R.S. (Water Administration Technical Engineering Resource System) database and geo-located. The well site locations are declared by legal description.

Relevance: The densities that can be supported by development on individual private wells and local community water systems are largely a function of groundwater availability. Also, the availability of water supplies for public waters systems is correlated to a large degree with the geographic distribution of groundwater availability.
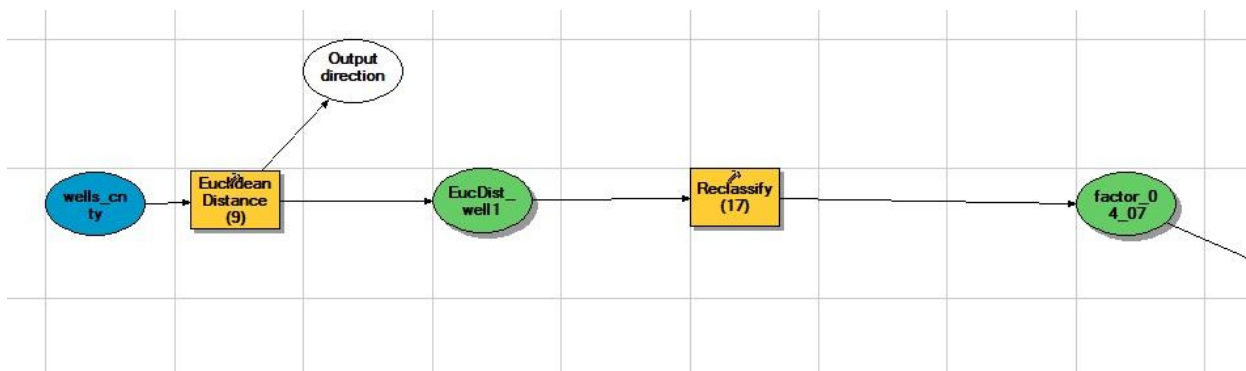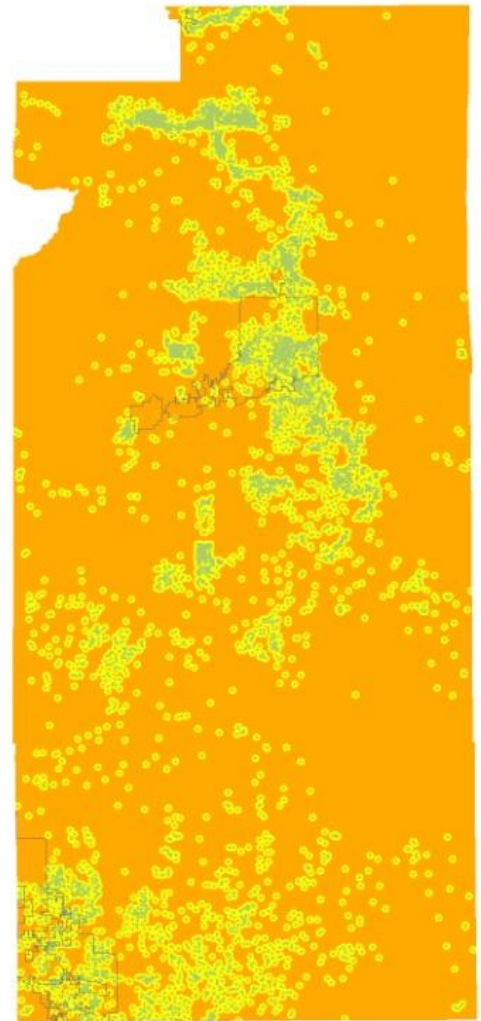
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_04_07

Factor 4.8 Arsenic Contamination

..\Suitability_Models\Factors\Factor_04\Factor_04_08\arsenic_Project.shp

Source: New Mexico Bureau of Geology & Mineral Resources "Arsenic_Contour " layer includes isotopic data and arsenic content.

Description: Areas of elevated arsenic levels above the Maximum Contaminant Level (MCL) as set by the EPA, 0.01 ppm, were considered least suitable for development, while areas less than .005ppm were considered to be most suitable for development.

Online linkage: None

Point of Contact: New Mexico Bureau of Geology & Mineral Resources
New Mexico Tech
801 Leroy Place
Socorro, NM   87801

Abstract: Chemistry and isotopic data from ground water and surface water in the southern Española Basin and Santa Fe embayment were compiled from existing sources, and supplemented with data obtained from new sampling events in 2005. Existing records from the City and County of Santa Fe, the New Mexico Office of the State Engineer (NMOSE), the New Mexico Environment Department (NMED), the U.S. Geological Survey (USGS), the Metropolitan Water Board, and libraries of private consultants provide baseline chemistry data spanning 50 years and over 300 locations. In 2005, ground water from 50 new sample locations was analyzed for major and minor ion and trace element chemistry (38 elements), oxygen-18 and deuterium, and field measurements of specific conductance, dissolved oxygen, pH and temperature. The data are derived from wells, streams and springs, including municipal, commercial, and private domestic wells, and the NMOSE multi-level piezometers. The large size and mixed origin of the data set present data quality challenges. Quality control filters provide a high degree of confidence in the precision of the data, but temporal inconsistencies are inherent in the data set. Data analysis included mapping the spatial distribution of chemical parameters in relation to streams, hydrogeologic and structural features, geologic formations and hydrologic boundaries. Statistical correlation methods were applied to quantify chemical relationships. The approach is useful in evaluating basin-scale hydrologic processes, such as recharge sources, geologic controls on ground water flow, aquifer compartments, ground water flow patterns, areas of ground water mixing, and the degree to which ground water is stratified chemically and with respect to age.

A variety of ground water types occurs, with the most common being calcium-bicarbonate, sodium-bicarbonate, and mixed calcium-sodium water. Calcium-depleted, sodium-rich waters dominate the basin west of the Barrancos structure zone, near the Buckman well field, the Las Dos and Jacona fault systems, and in shallow discharge zones at La Cienega. Sodium-rich waters are dominant in deep ground water from the Tesuque and Espinaso Formations. Bicarbonate waters enriched with chloride and sulfate are associated with mountain-front bedrock aquifers, which also possess relatively elevated bromide and dissolved ion content. Concentrations of these chemical parameters decrease west from the mountain front. Ground water in the vicinity of the Santa Fe River and Arroyo Hondo has the lowest concentration of TDS and major ions,
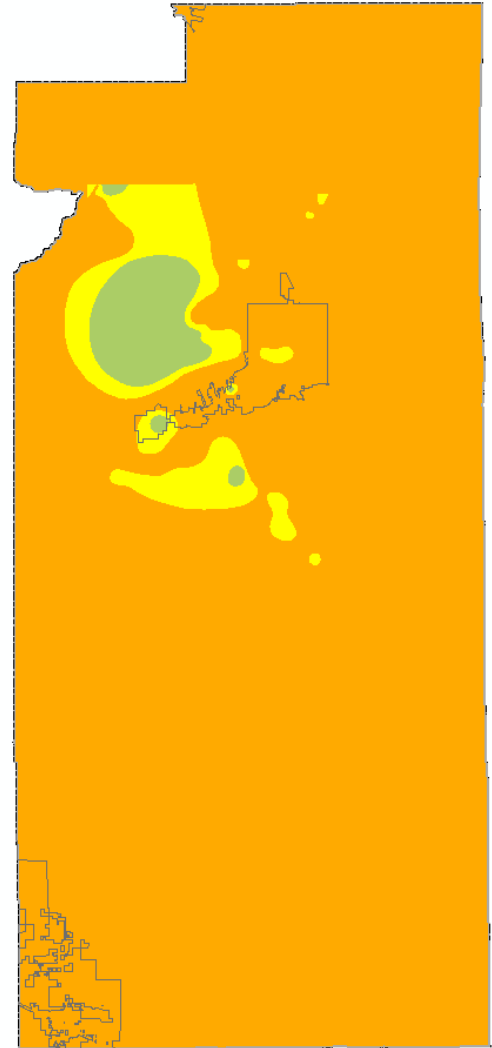
reflecting the influence of channel infiltration and recharge. Elevated chloride and chloride-to-bromide ratios in shallow wells beneath urban areas of Santa Fe are consistent with anthropogenic sources. Changes in the distribution of some chemical ions (barium and magnesium) across the San Isidro fault are consistent with hydrologic data that suggest the fault is an impediment to horizontal ground water movement. An area of elevated arsenic, with concentrations ranging from 7 to 54 ?g/L, occurs west of Santa Fe in warm, sodium-rich waters. Elevated arsenic concentrations conjunct with basement structures including the northern axis of the basin syncline, the Santa Fe flexure, and a graben formed west of El Dorado in the Santa Fe platform by a southern extension of the San Isidro Crossing fault. Concentrations of arsenic exceeding 10 ?g/L are independent of well depth and are observed across the upper 1700 feet of saturated aquifer.

Relevance: Soils and groundwater contaminated by arsenic, depending on its concentration will need to be assessed further and is generally unfit for development. Elevated levels of arsenic in the soil can easily contaminate drinking water, which causes arsenic poisoning and becomes a health risk for residents in the development.
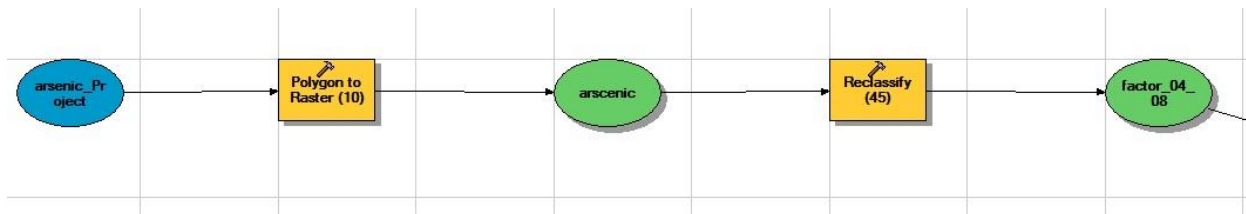
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_04_08

- -

Factor 4.9 Water Fair Data

..\Suitability_Models\Factors\Factor_04\Factor_04_09\water_fair_04_09.shp

- -

Source: Los Alamos Nation Laboratory for the laboratory analysis. Various staff for the well location and field parameters.

Description: Complete Water Fair data set for the 2004 Espanola Basin Water Fair and a partial data set for the 2009 Santa Fe Basin Water Fair. Various pollutants were tested for and the following EPA guidelines were used when creating the least suitable buffers:

MCL = Maximum Contaminant Level as set for the by the EPA:

- Nitrate = NO3-N   MCL = 10 ppm or mg/L   = parts per million or milligrams per liter
- Nitrite = NO2-N   MCL = 1 ppm or mg/L
- Arsenic = As   MCL = 0.01 ppm or mg/L
- Uranium = U   MCL = 0.03 ppm or mg/L

Each point that exceeds one or more of these MCLs was buffered 500 feet and was determined to be least suitable for development while areas outside 1,000 feet were determined to be most suitable.

Abstract: 2004 Water Fair: This water fair was a collaboration between Santa Fe County, New Mexico Environment Department (NMED) and Los Alamos National Laboratory (LANL). Water samples were obtained from domestic well owners who brought in samples for analysis. Field parameters including pH, temperature and specific conductance were recorded and the sample was split. LANL analyzed the samples for trace elements, trace metals and general chemistry. Field testing for fluoride, iron, nitrate and sulfate was conducted by NMED. Well were located remotely by Santa Fe County using aerial photography. This water fair was focused primarily in the Rio Pojoaque, Rio Nambe and Rio Tesuque watersheds.

2009 Water Fair (partial dataset): In 2009 Santa Fe County, City of Santa Fe, NMED and LANL collaborated to do an on-site water fair where staff obtained samples from the well via an out-door spigot and took field parameters for pH, temperature and specific conductance as well as a GPS reading of the well. This event took place in the greater City of Santa Fe area. There were over 500 requests for water sampling; this data set is the first 90 samples analyzed.

Relevance: Such a widespread dataset helps determine sources of groundwater contamination and give information to well owners to protect public welfare.
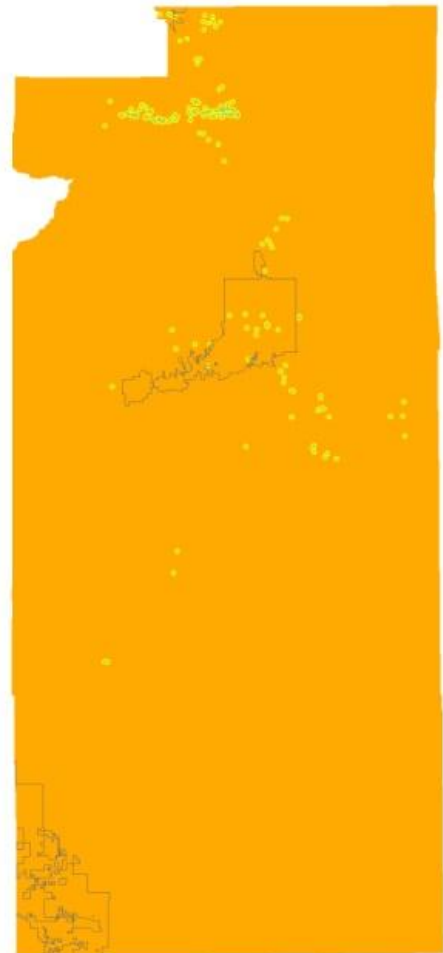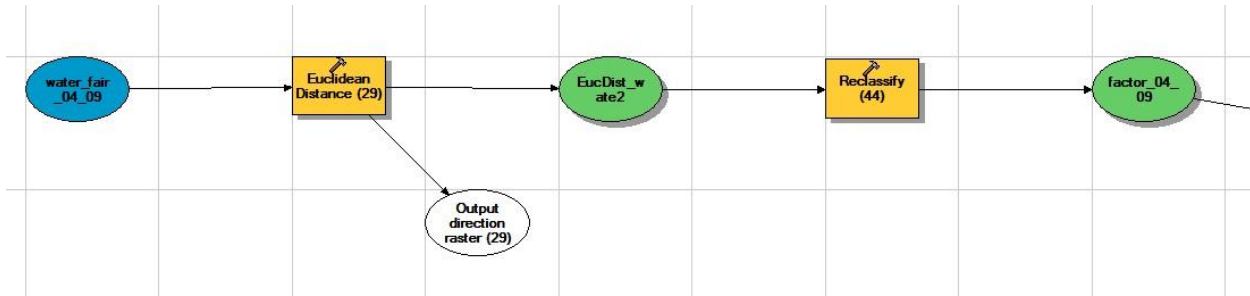
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_04_09

- -

Factor 5.1 Flood Zone (100-year floodplain)

..\Suitability_Models\Factors\Factor_05\Factor_05_01\floodplain.shp

- -

Source: Federal Emergency Management Flood Insurance Rate Map datasets.

Description: FEMA defines a 100 year year flood as: a flood that has a 1% chance of being equaled or exceeded in any given year. The 100-year flood, which is the standard used by most Federal and State agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management and to determine the need for flood insurance. A structure located within a special flood hazard area shown on a NFIP map has a 26% chance of suffering flood damage during the term of a 30 year mortgage. Mortgaged property within areas designated in the 100 year floodplain are required to carry flood insurance.

"Least Suitable" locations represent those areas within FEMA's 100 year floodplain "Moderate Suitability" are within a 1/4 mile buffer of the 100 year floodplain, and "Most Suitable" are outside the 1/4 mile buffer.

Online linkage: http://www.fema.gov/

Point of Contact: Federal Emergency Management Agency

500 C Street, S.W.
Washington, District of Columbia 20472

Abstract: The Digital Flood Insurance Rate Map (DFIRM) Database depicts flood risk information and supporting data used to develop the risk data. The primary risk classifications used are the 1-percent-annual-chance flood event, the 0.2-percent-annual- chance flood event, and areas of minimal flood risk. The DFIRM Database is derived from Flood Insurance Studies (FISs), previously published Flood Insurance Rate Maps (FIRMs), flood hazard analyses performed in support of the FISs and FIRMs, and new mapping data, where available. The FISs and FIRMs are published by the Federal Emergency Management Agency (FEMA).

Relevance: The 100-year floodplain consists of those areas that are most susceptible to inundation from floods. Development in floodplains has a high level of susceptibility for damage to life and property.
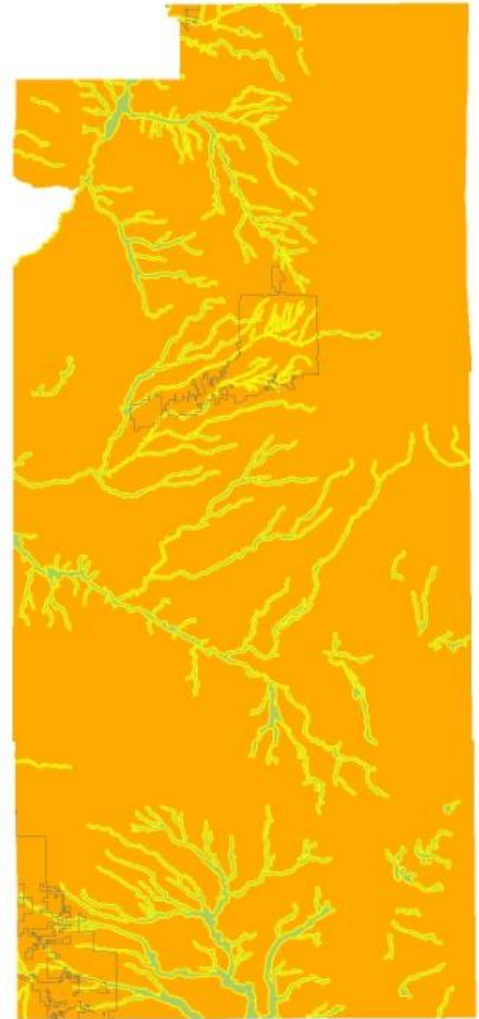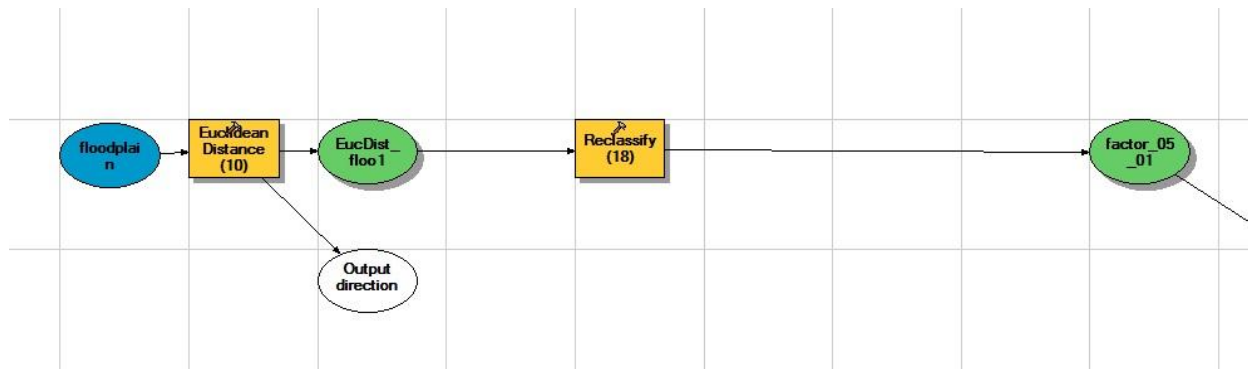
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_05_01

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Factor 5.2 Steep Slopes

..\Suitability_Models\Factors\Factor_05\Factor_05_02\slopeper_prj

- -

Source: A slope map was created using ArcView GIS software, Digital Elevation Model (DEM).

Description: Steep slopes are commonly used in LESA models throughout the Country. Slopes greater than 25% were determined to be least suitable for development, while slopes less than 10% were determined to be most suitable for development.

Online linkage: http://rgis.unm.edu/intro.cfm

Point of Contact: RGIS Program
                             Earth Data Analysis Center
                             MSCO1 1110
                             1 University of New Mexico
                             Albuquerque, NM 87131

Abstract: Digital Elevation Model (DEM) is the terminology adopted by the USGS to describe terrain elevation data sets in a digital raster form. The standard DEM consists of a regular array of elevations cast on a designated coordinate projection system. The DEM data are stored as a series of profiles in which the spacing of the elevations along and between each profile is in regular whole number intervals. The normal orientation of data is by columns and rows. Each column contains a series of elevations ordered from south to north with the order of the columns from west to east. The DEM is formatted as one ASCII header record (A-record), followed by a series of profile records (B- records) each of which include a short B-record header followed by a series of ASCII integer elevations per each profile. The last physical record of the DEM is an accuracy record (C-record). 15-minute DEM are collected with a 2- x 3-arc-second spacing in latitude and longitude, respectively. This product consists of a regular array of elevations referenced horizontally onto the geographic (latitude/ longitude) coordinate system of NAD 27 or NAD 83.

Relevance: Steep slope areas are more prone to erosion, subsidence, and landslide hazards, as well as high wildfire hazards (wildfire spread rapidly up steep slopes). Erosion on steep slopes contributes to siltation and other water quality problems in water bodies that are fed by runoff from these slopes. In addition, most of the scenic landscape features in the County (canyons, escarpments, prominent peaks and ridges) are characterized by steep slope areas.
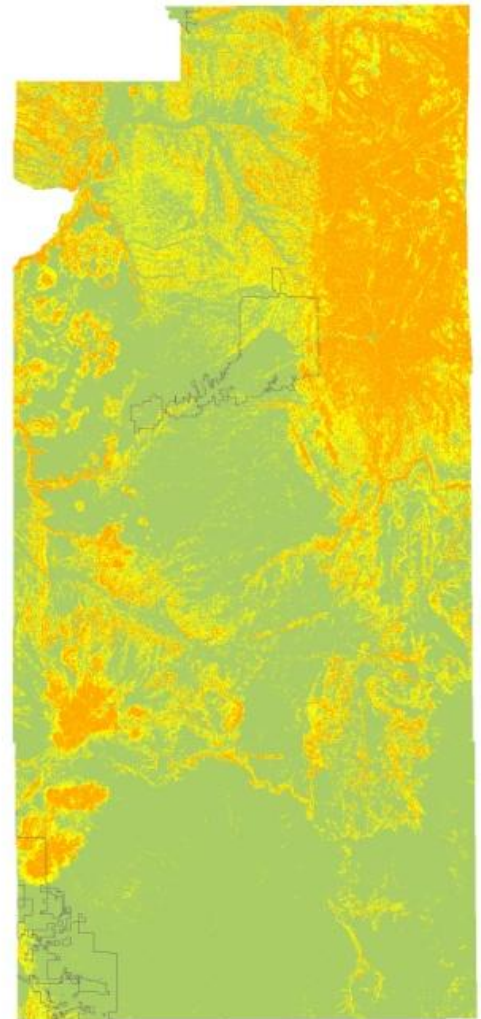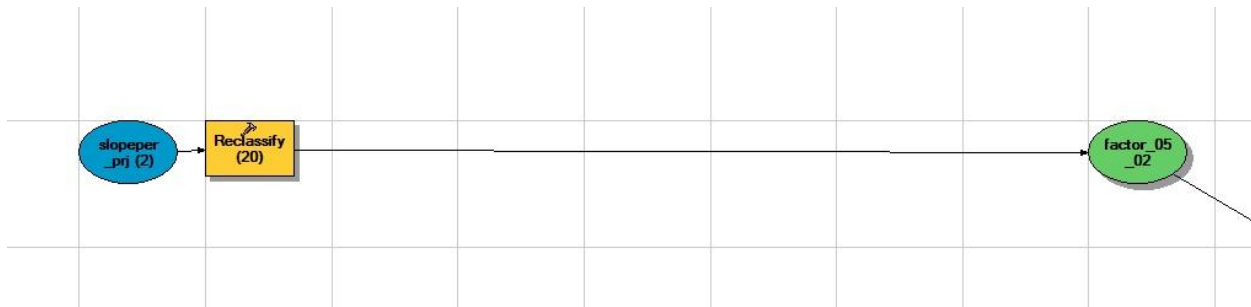
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_05_02

Factor 5.4 Fire Hazards
..\Suitability_Models\Factors\Factor_05\Factor_05_05\calc12

Source: The Fire Hazards raster data was created based upon a model outlined by Kenneth G. Boykin in the publication "Fire Management over Large Landscapes: A Hierarchical Approach".

Description: Modeling potential fire risk is dependent on basic coverages that include vegetation, slope and aspect. The vegetation can then be associated with particular fire behavior models. Areas that were determined by the model to be most susceptible to fire risk were determined to be least suitable for development, while areas modeled to be least susceptible were determined to be most suitable for development.

Online linkage: None

Point of Contact: Planning Works
                       8000 Lee Blvd.
                       Leawood, KS 66206

Abstract: Using this hierarchy, a large-scale vegetation map, and GIS, we were able to incorporate simplistic risk models based on fuel models, topography, and sites of concern for natural resource managers. The resulting map provides a view of the fire risk to natural and human resources and allows land managers to take a heads up approach in preventative fire management.

Relevance: High wildfire fuel loads is associated with a high level of hazard for wildfire damage to property and injuries to persons, and high costs to the public for fighting wildfires.
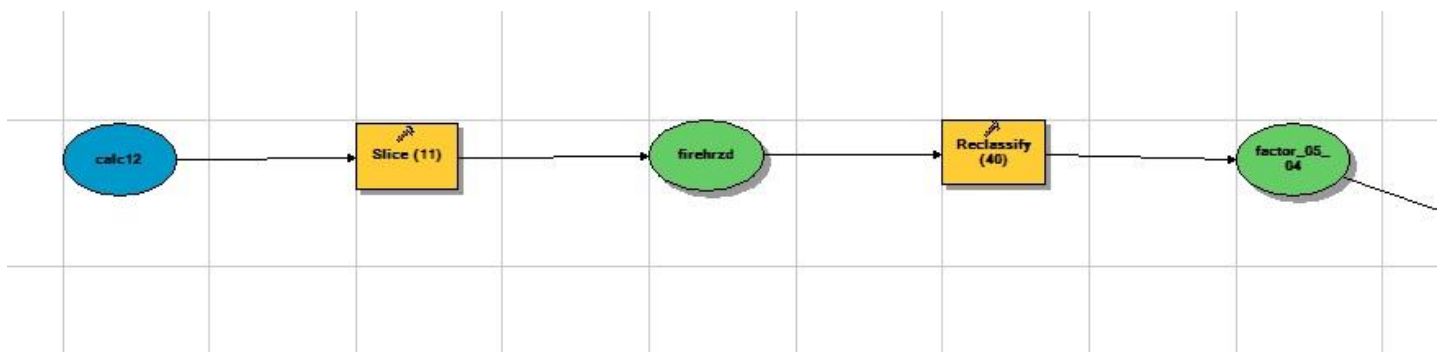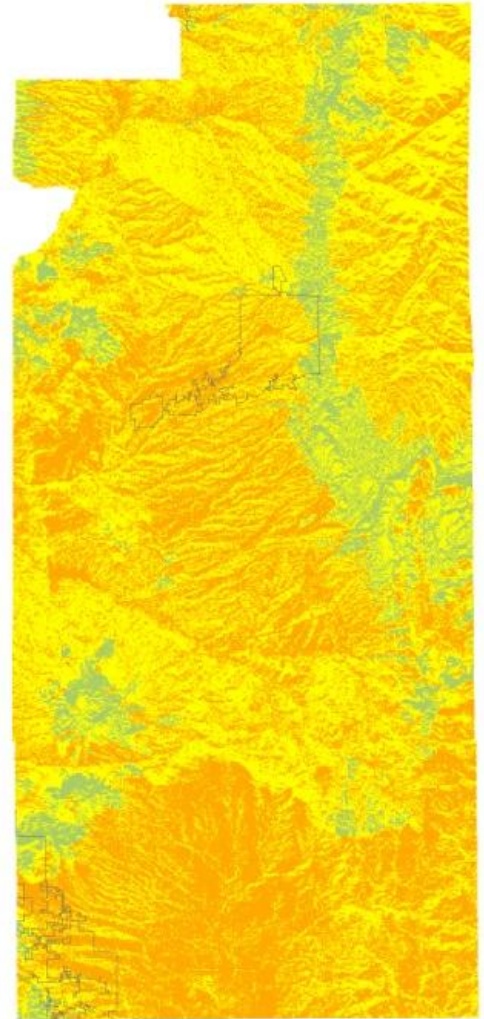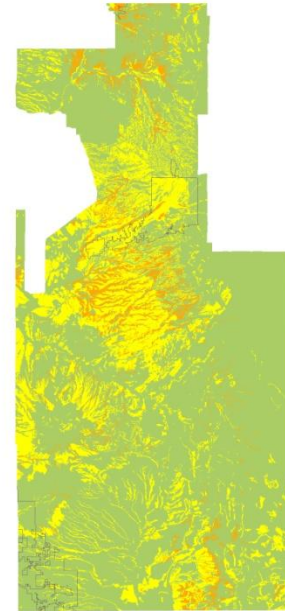

Resulting Raster Layer:
..\Suitability_Models\LDSA\Output\factor_05_04

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Factor 5.6 Septic Limitations

..\Suitability_Models\Factors\Factor_05\Factor_05_06\septic_tank_absorbtion_field.shp

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Source: Soils limitations for septic tank absorption fields, using the USDA/Natural Resources Conservation Service soils data viewer. A shapefile containing the septic tank limitations data was exported from the data layer created with the soils data viewer.

Description: Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Online linkage: http://www.ftw.nrcs.usda.gov/ssur_data.html

Point of Contact: USDA Natural Resources Conservation Service

Abstract: This data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information. This data set consists of geo-referenced digital map data and computerized attribute data. The map data are in a soil survey area extent format and include a detailed, field verified inventory of soils and miscellaneous areas that normally occur in a repeatable pattern on the landscape and that can be cartographically shown at the scale mapped. A special soil features layer (point and line features) is optional. This layer displays the location of features too small to delineate at the mapping scale, but they are large enough and contrasting enough to significantly influence use and management. The soil map units are linked to attributes in the National Soil Information System relational database, which gives the proportionate extent of the component soils and their properties.

Relevance: Areas with soils that are poorly suited to septic tank use are more prone to surface and groundwater contamination from septic tanks, higher costs of septic tank installation and maintenance, and higher risks of septic tank failure.
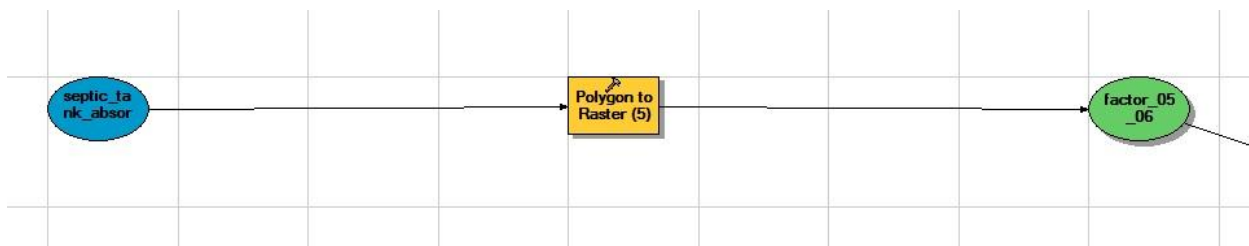
Entity and Attribute Information

SepticSuit: Septic Tank Suitability limitations.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use.

- "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected.
- "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected.
- "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_05_06

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Factor 5.7 Erodible Soils

..\Suitability_Models\Factors\Factor_05\Factor_05_07\k_factor_Project.shp

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Source: "K Factor, Whole Soil", using the USDA/Natural Resources Conservation Service soils data viewer and the "soilmu_a_spf.shp" shapefile. A shapefile containing the soils erodability attribute was exported from the data layer created with the soils data viewer.

Description: Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity. Values of K range from 0.02 to 0.69. Other factors being equal, the higher value, the more susceptible the soil is to sheet and rill erosion by water. "Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

*Online linkage*: http://www.ftw.nrcs.usda.gov/ssur_data.html

Point of Contact: USDA Natural Resources Conservation Service

Abstract: This data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information. This data set consists of geo-referenced digital map data and computerized attribute data. The map data are in a soil survey area extent format and include a detailed, field verified inventory of soils and miscellaneous areas that normally occur in a repeatable pattern on the landscape and that can be cartographically shown at the scale mapped. A special soil features layer (point and line features) is optional. This layer displays the location of features too small to delineate at the mapping scale, but they are large enough and contrasting enough to significantly influence use and management. The soil map units are linked to attributes in the National Soil Information System relational database, which gives the proportionate extent of the component soils and their properties.

Relevance: Land development is associated with vegetation removal and scarring of terrain, which, if located within areas of highly erodible soils, leads to increased stormwater runoff into and siltation of water bodies, and may ultimately lead to undermining and failure of structures and roads from erosion.

Wind erodibility index is a numerical value indicating the susceptibility of soil to erosion, or the tons per acre per year that can be expected to be lost to erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.
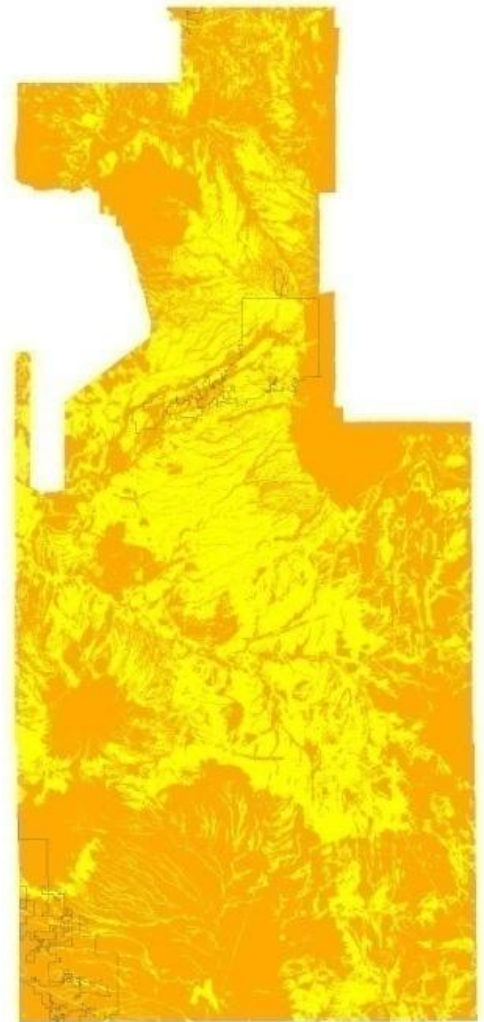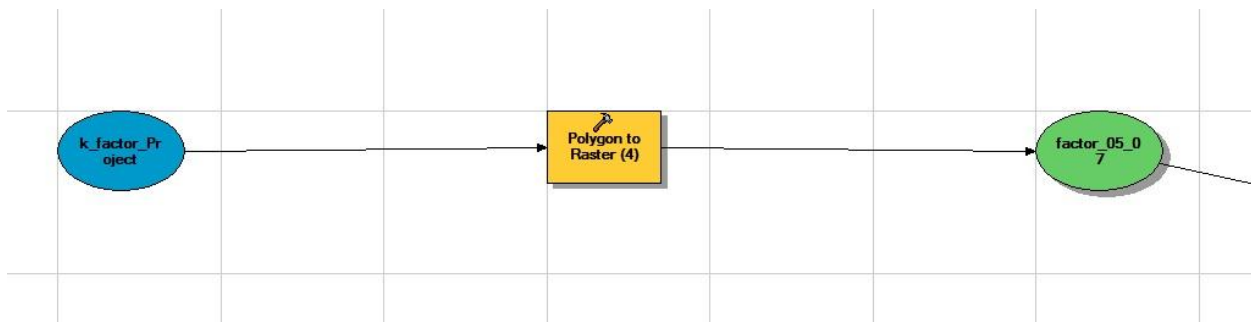
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_05_07

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Factor 5.8 Landslide Hazards
*..\Suitability_Models\Factors\Factor_05\Factor_05_08\lsoverp020_*
Clip1_Project.shp

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Source: The source of this data is the "Landslide Incidence and
Susceptibility in the Conterminous United States" prepared by the
United States Geological Survey (file name "lsoverp020.shp").

Online linkage: http://www-atlas.usgs.gov/mld/lsoverp.html

Point of Contact: U.S. Geological Survey
                             345 Middlefield Road
                             Menlo Park, CA 94025, USA

Description: Susceptibility:
          High: More than 15% of the area involved
          Moderate: 15% - 1.5% of the area involved
          Low: Less than 1.5% of the area involved

Abstract: The Landslide Hazards data is a digital version of U.S.
Geological Survey Professional Paper 1183, Landslide Overview Map
of the Conterminous United States. The map and digital data
delineate areas in the conterminous United States where large
numbers of landslides have occurred and areas which are
susceptible to landsliding. The map delineates areas where large
numbers of landslides exist and areas which are susceptible to landsliding. It was prepared by evaluating the geologic map
of the United States and classifying the geologic units according to high, medium, or low landslide incidence (number) and
high, medium, or low susceptibility to landsliding.

Relevance: High levels of incidence and susceptibility are associated with high risks of damage to structures, roads, and
infrastructure generally, due to landslides, and high costs to the public for response to and recovery from landslide
incidents.
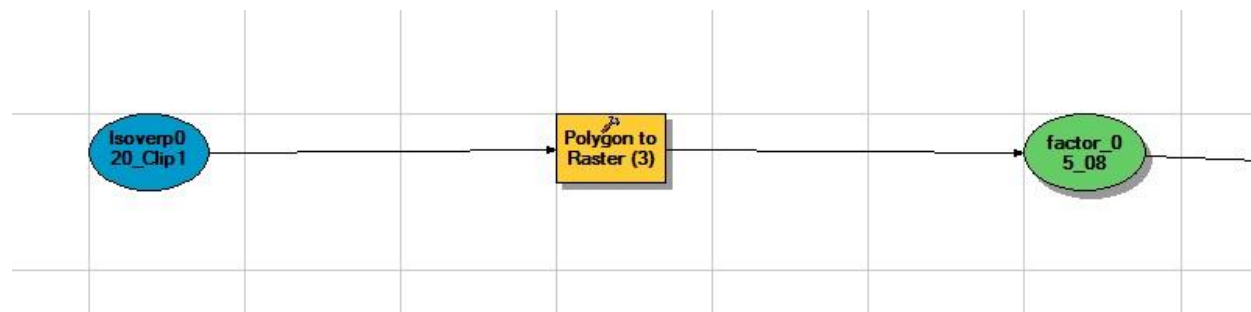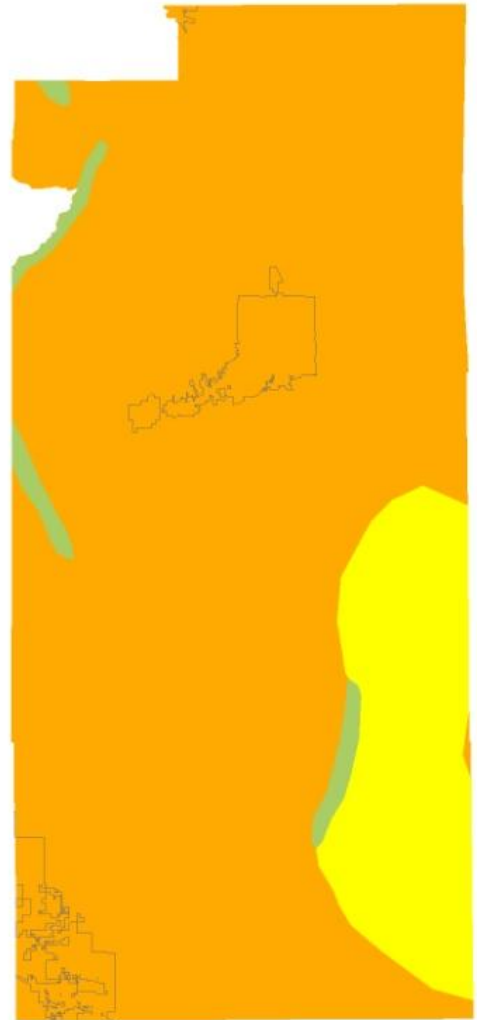
Resulting Raster File:..\Suitability_Models\LDSA\Output\factor_05_08

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Factor 5.9 Earthquake Risk

..\Suitability_Models\Factors\Factor_05\Factor_05_09\pga2pct_p_Clip_Project.shp

‒ ‒

Source: The USGS National Seismic Hazard Mapping Project developed this data by incorporating information on potential earthquakes and associated ground shaking obtained from interaction in science and engineering workshops involving hundreds of participants, review by several science organizations and State surveys, and advice from two expert panels.

Online linkage:
http://earthquake.usgs.gov/regional/states/new_mexico/hazards.php

Point of Contact:

> U.S. Geological Survey
> 345 Middlefield Road
> Menlo Park, CA 94025, USA

Description:

Abstract: Earthquake Risk derived from 2008 U.S. Geological Survey National Seismic Hazard Maps. These figures are probabilistic ground motion maps for Peak Ground Acceleration (PGA), 1Hz (1.0 second SA), and 5Hz (0.2 second SA). The figures correspond to the 2% in 50 year probability of exceedance. All ground motion probabilities are computed for the B/C Boundary (V_s^{30} = 760 m/s).

Relevance: High levels of incidence and susceptibility are associated with high risks of damage to structures, roads, and infrastructure generally, due to earthquakes, and high costs to the public for response to and recovery from earthquake incidents.
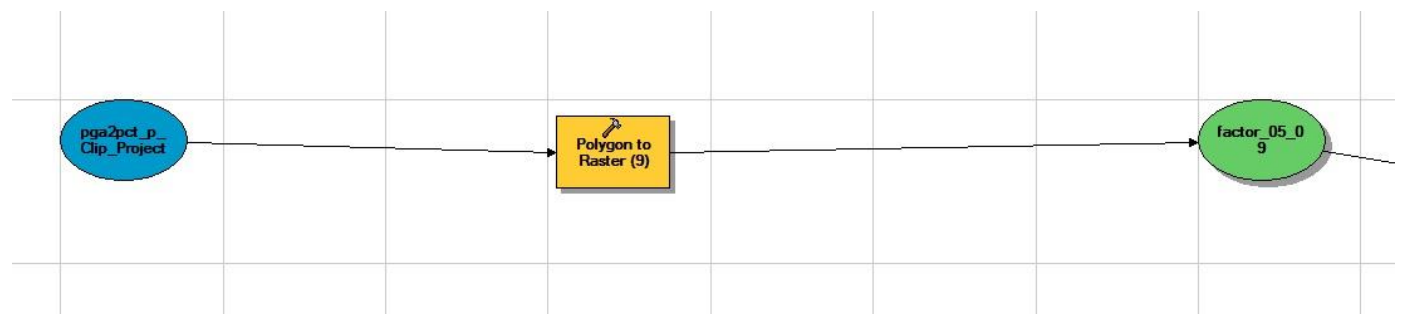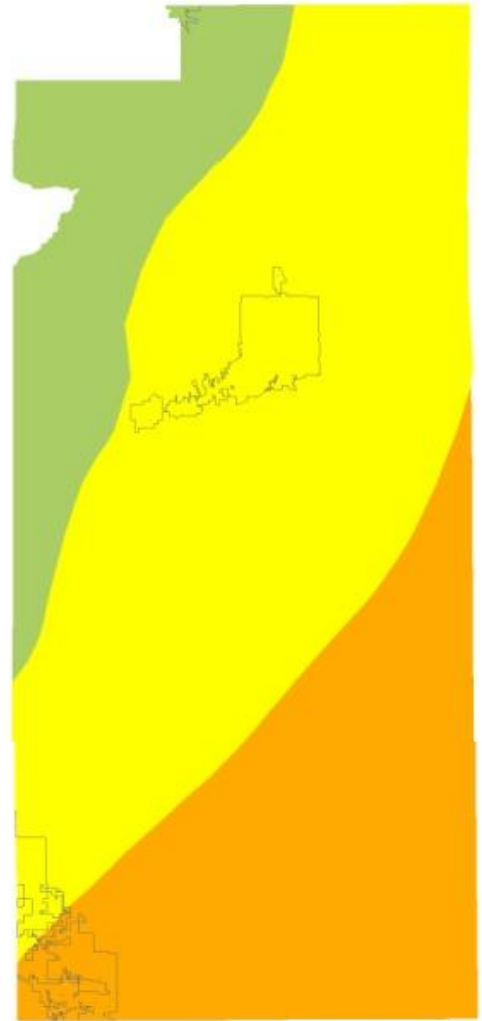
Resulting Raster File:..\Suitability_Models\LDSA\Output\factor_05_09

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Factor 6.1 Trail Corridor Buffers
..\Suitability_Models\Factors\Factor_06\Factor_06_01\trails_merge.shp

- -

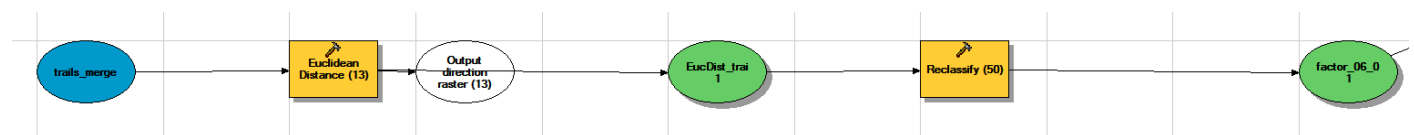*Source:* Santa Fe County; Santa Fe County Trails Inventory Project

Online linkage: None

Point of Contact: County Open Space and Trails
Department
102 Grant Avenue
Santa Fe, NM 87501

Description: Areas within 1/4 miles of trail facilities are considered most suitable for development while areas outside 1/2 mile are considered least suitable for development.

Abstract: Trails are taken from the Santa Fe County Trails Inventory Project, an ongoing project of Santa Fe County Open Space and Trails Program.   The mission of the Open Space and Trails Program is to create a network of cultural, historical, recreational and natural open spaces and trails throughout Santa Fe County that achieve the goals outlined in the Open Land and Trails Plan to benefit current and future generations.

The program aims to develop open space and trails planning and management based on integration with existing regulations and requirements as well as cooperative efforts between private entities, non-profit organizations and governmental agencies. Based on existing conditions of individual sites, open space and trail facilities are to be developed with an emphasis on multi-purpose functionality, cost effectiveness, community stewardship and affordable maintenance. Acquisition of property is based on voluntary participation from land owners.

Relevance: Proximity to trails facilities provides residents with opportunities for active recreation which helps to encourage and facilitate healthy lifestyles. Development proximal to trails gives residents greater access to transportation alternatives. Trails may also provide secondary environmental benefits of preserved natural areas.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_06_01

Factor 6.2 Parks and Recreation Proximity

..\Suitability_Models\Factors\Factor_06\Factor_06_02\Parks_Merge d.shp

Source: Santa Fe County

Online linkage: None

Point of Contact: County Open Space and Trails Department
102 Grant Avenue
Santa Fe, NM 87501

Description:

Abstract:

Relevance: Proximity to parks and recreation facilities provides residents with opportunities for active recreation which helps to encourage and facilitate healthy lifestyles. Parks and recreation areas may also provide secondary environmental benefits of preserved natural areas.
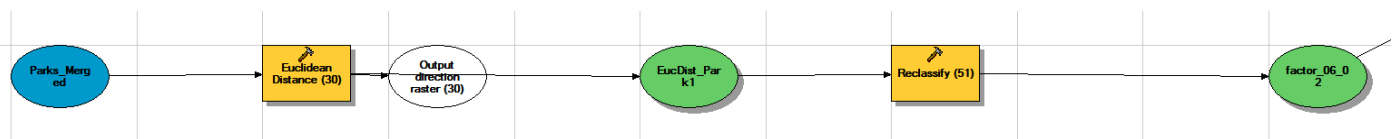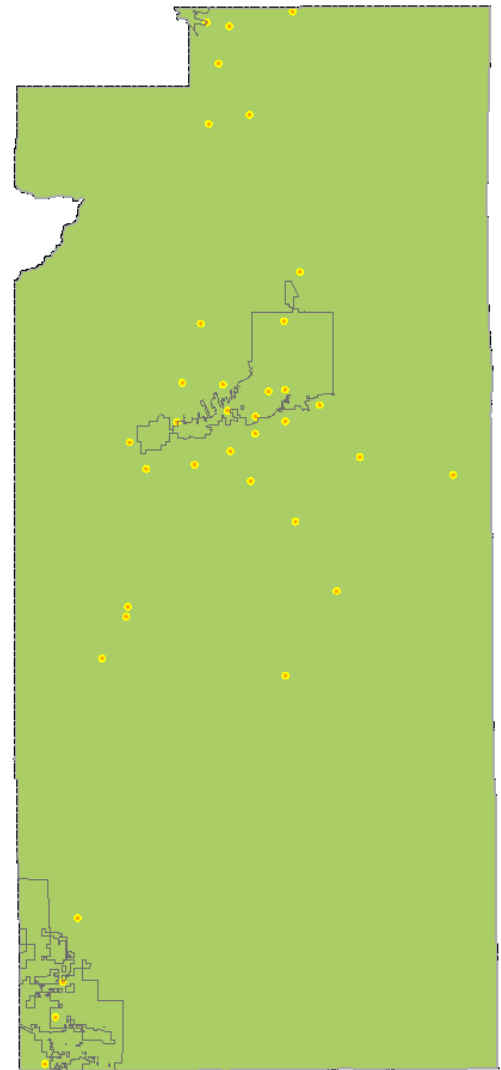
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_06_02

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Factor 7.1 Historical and Archaeological Sites

.. \Suitability_Models\Factors\Factor_07\Factor_07_01\svc03_prj

‒ ‒

Source: The source of this data is the GIS data set prepared by the New Mexico Department of Cultural Affairs Historic Preservation Division, showing areas where archaeological sites have a high level of concentration. This dataset only covers the Galisteo Growth Management Area. The map is not provided due to sensitivity of the data.

Description: At the scale of the southwestern U.S., the Galisteo watershed is an important hub of cultural and archaeological resources, consisting of many prehistoric Native American sites dating from the 8th to the 17th centuries and of historical—and historic--Hispanic agricultural settlements and mining districts. The watershed area is also of importance to many of today's Southwestern Pueblo Indian tribes both as ancestral heritage land and as a travel corridor between historic and contemporary settlements). The federal government recognized and protected the pre-historic Native American archaeological value of the watershed in the Galisteo Basin Archaeological Sites Protection Act (S.210, H.R.506) of March 19, 2004.[1] The Act specifically seeks protection for 24 sites of immense prehistoric significance, including several large pueblo ruins and petroglyph sites. Implementation of the act currently resides with the state office of the BLM in New Mexico. The 24 sites are the best examples among thousands of other sites scattered throughout the watershed. The GWCI analysis was copied for this analysis.

 Online linkage: None

Point of Contact: The New Mexico Department of
                          Cultural Affairs Historic
                          Preservation Division

                          Earth Works

Abstract: The Historical and Archaeological data was created using a model from the "Galisteo Watershed Conservation Initiative" which combines existing archaeological and historical areas, with registered properties and Galisteo APA sites. This is done by taking four categories of archaeological/historical features, buffers each based on data-specific parameters.

Relevance: Intensive land development is associated with a high level of disturbance and to archaeological sites, and reduces the possibility of preserving archaeological sites. Protection of such sites is important in the context of historic and cultural preservation as well as related tourism activity.

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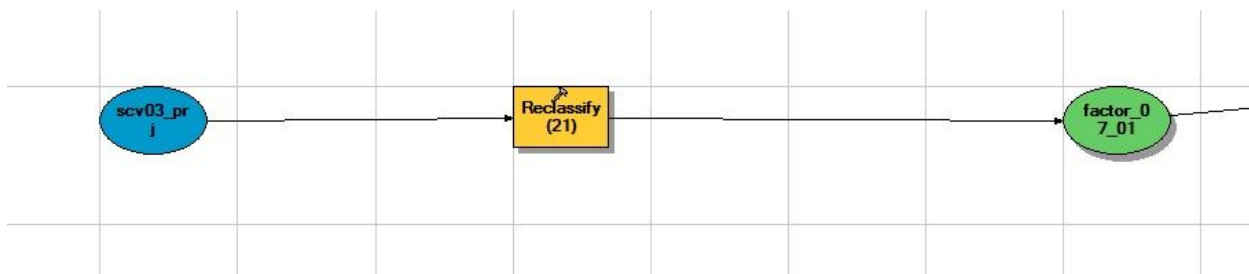
[1] U.S. Bureau of Land Management. 2004. Galisteo Basin Archaeological Sites Protection Act and Planning Effort. Taos Field Office. (Document includes Summary of the Act, copy of the Act, area map, and list of sites with ownership listing).

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_07_01

Factor 7.4 National Register of Historical Places

..\Suitability_Models\Factors\Factor_07\Factor_07_04\NatRegHistorical.shp

----

Source: U.S. Department of the Interior, National Park Service, National Register of Historical Places Program, West Region.

Description:

Online linkage:

http://nrhp.focus.nps.gov/natreg/docs/Download.html

Point of Contact: National Register of Historic Places
National Park Service
1839 C St., NW (MS 2280)
Washington, DC 20240

Abstract: The National Historic Places program now serves location and attribute information of historic places via KML files. The KML file was downloaded, the points were clipped to the county, and the attribute information was maintained in this shapefile.

Purpose: Intensive land development is associated with a high level of disturbance and to historic sites. Protection of such sites is important in the context of historic and cultural preservation as well as related tourism activity.
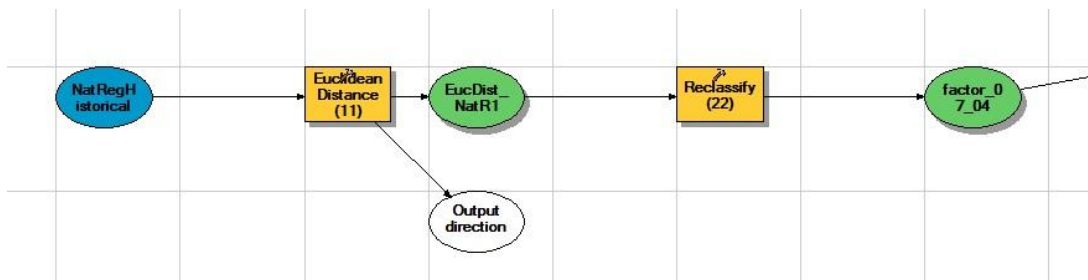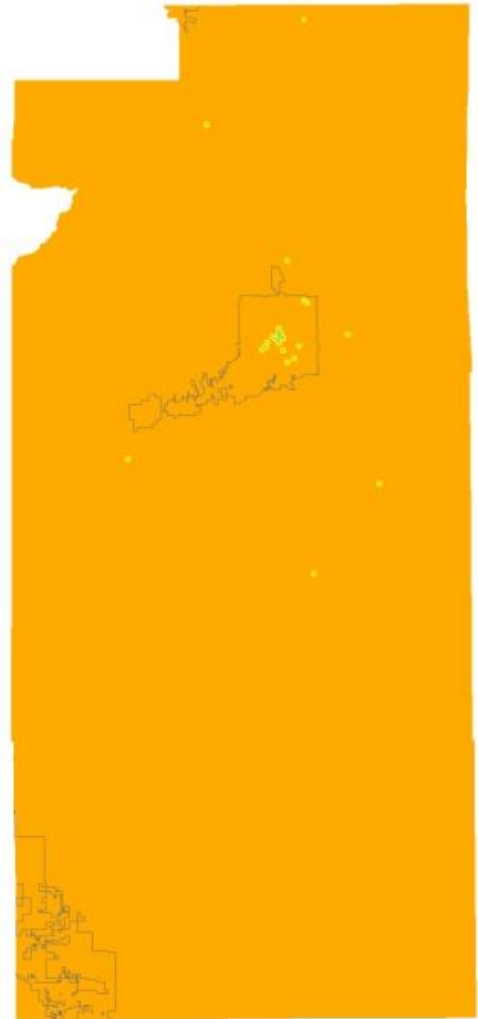
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_07_02

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Factor 8.1 Scenic Highways
Suitability_Models\LDSA\Output\factor_08_01

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Source: The America's Byways Program is part of the U.S. Department of Transportation, Federal Highway Administration, and was established to help recognize, preserve, and enhance selected roads throughout the states.

Description: The State Highway 14 corridor, a.k.a. the Turquoise Trail Scenic Byway, runs north-south through the western part of the Galisteo watershed and already serves as a regional tourism corridor between Albuquerque and Santa Fe. Additionally, other basin highways, although not designated as scenic or tourist routes, provide spectacular views and interesting stopping points, as does Amtrak service along the Burlington-Northern-Santa Fe Railway, which stops in Lamy.

Online linkage:
http://www.newmexico.org/explore/scenic_byways/bywaymap.php

Point of Contact: New Mexico Department of Transportation
1120 Cerrillos Road
Santa Fe, NM, 87504-1149
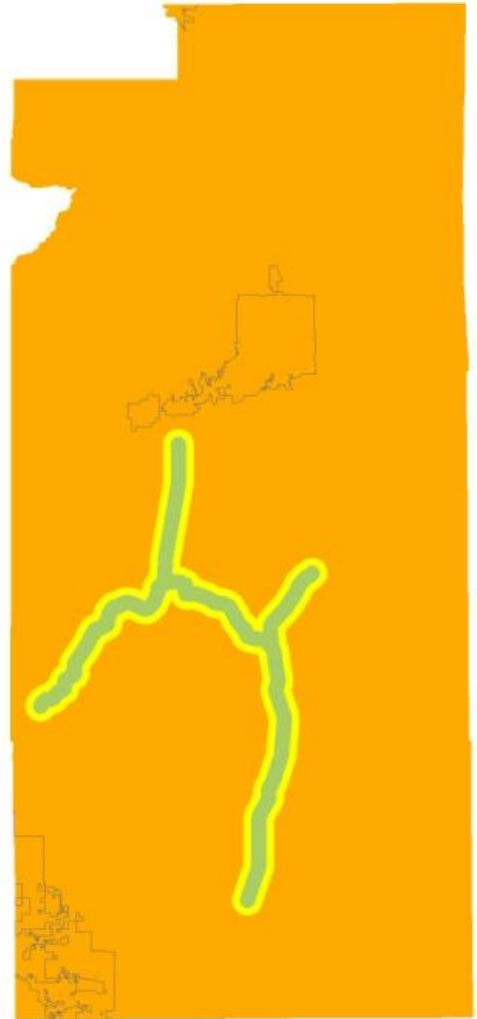
Abstract: The America's Byways Program is part of the U.S. Department of Transportation, Federal Highway Administration, and was established to help recognize, preserve, and enhance selected roads throughout the states. The U.S. Secretary of Transportation recognizes these designated roads based on one or more intrinsic qualities - archaeological, cultural, historic, natural, recreational, or scenic.

Relevance: Areas of high scenic quality are more susceptible to perceived degradation of the visual quality of the landscape due to development. Preservation of these areas is important in terms of cultural and character preservation, tourism and the film industry.
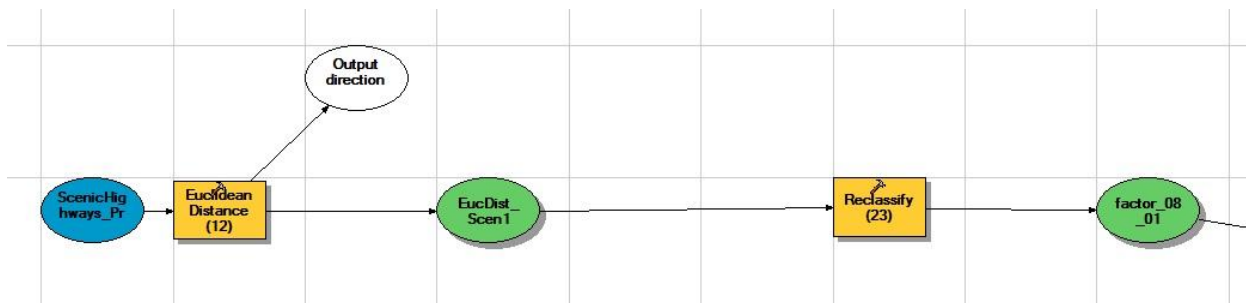
Resulting Raster File:..\Suitability_Models\LDSA\Output\factor_08_01

- -

Factor 8.3 Delphi Scenic Areas
..\Suitability_Models\Factors\Factor_08\Factor_08_03\scenic_prior ity_areas_sfco_1995.shp

- -

Source: Visual Inventory and Analysis was performed for the County in 1995 by Design Workshop.

Description: It is hard to indentify scenic priorities in a county with scenic resources as significant as Santa Fe. This data layer targets areas of very high scenic value by locating vistas based on an analysis of elevation, viewshed, aspect, and scenic potential. The following areas were determined to be of high scenic quality. These areas were buffered 1/4 mile to show areas of moderate development suitability. Land outside 1/4 mile was determined to be highest suitability.

- *Mountain / Foothill Complex*
- *Traditional Irrigated Valleys*
- *Lower Galisteo Basin*
- *Southern Mountains*
- *Galisteo Dike*
- *Santa Fe River Corridor*
- *Northern Canyon Lands*
- *Cerrillos Hills*
- *Garden of the Gods*

Online linkage: None

Point of Contact:

Abstract:

Relevance: Areas of high scenic quality are more susceptible to perceived degradation of the visual quality of the landscape due to development. Preservation of these areas is important in terms of cultural and character preservation, tourism and the film industry.
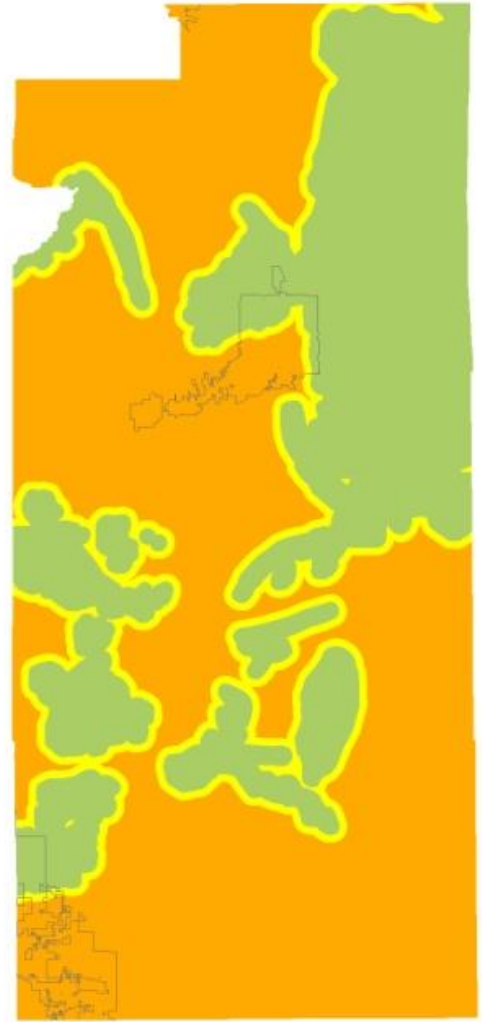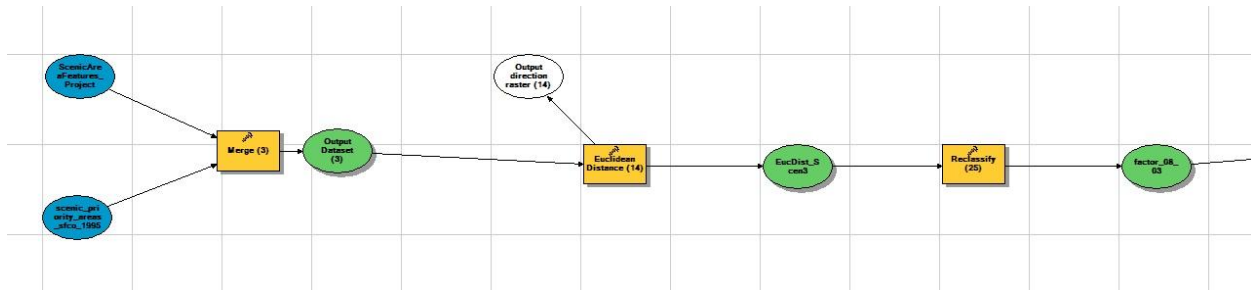
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_08_03

Factor 8.4 Combined Scenic Quality

\Suitability_Models\Factors\Factor_08\Factor_08_03\scenic_priority_areas_sfco_1995.shp

\Suitability_Models\Factors\Factor_08\Factor_08_03\ScenicAreaFeatures_Project.shp

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Source: "Combined Scenic Quality" using the "comvisq_i" raster data set. This is the data that is mapped as "Figure 6. Combined Scenic Quality" in the document "Santa Fe County Visual Resources Inventory & Analysis" (Design Workshop, Inc. 1995).

Description:

Online linkage: None

Point of Contact:

Abstract: It is hard to indentify scenic priorities in a county with scenic resources as significant as Santa Fe. This data layer targets areas of very high scenic value by locating vistas based on an analysis of elevation, viewshed, aspect, and scenic potential.

Relevance: Areas of high scenic quality are more susceptible to perceived degradation of the visual quality of the landscape due to development. Preservation of these areas is important in terms of cultural and character preservation, tourism and the film industry.
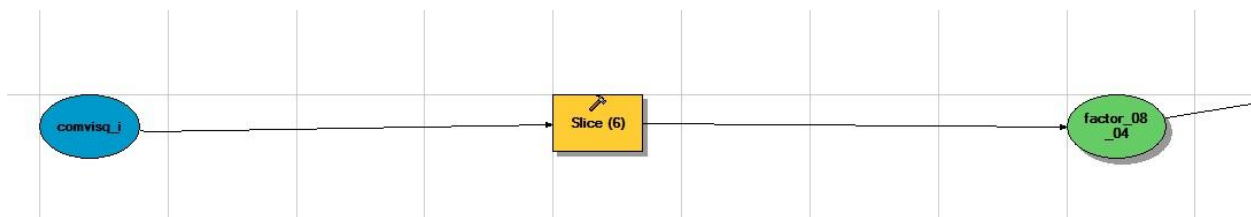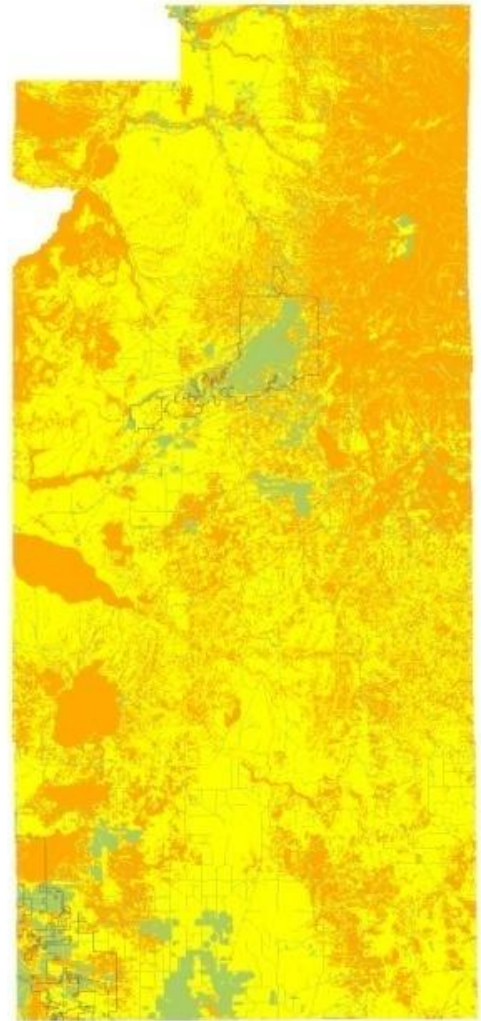
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_08_04

Factor 9.1 Dwelling Development Limitations of Soil

..\Suitability_Models\Factors\Factor_09\Factor_09_01\dwellings_ without_basements_.shp

Source: Soils suitability rating for development of dwellings without basements, using the USDA/Natural Resources Conservation Service soils data viewer and the "soilmu_a_spf.shp" shapefile. A shapefile containing the dwelling development suitability attribute was exported from the data layer created with the soils data viewer. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, *ponding, flooding, slope, depth to bedrock or a cemented* pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Description:

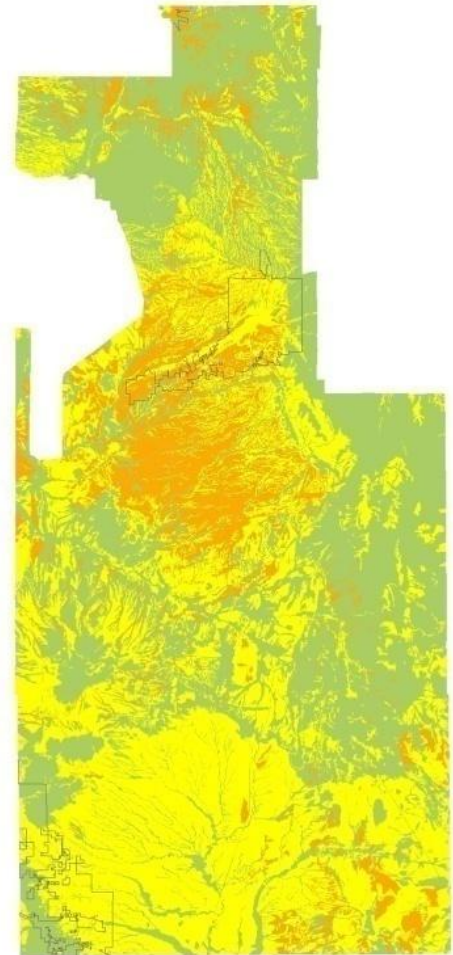*Online linkage*: http://www.ftw.nrcs.usda.gov/ssur_data.html

Point of Contact: USDA Natural Resources Conservation Service

Abstract: This data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information. This data set consists of geo-referenced digital map data and computerized attribute data. The map data are in a soil survey area extent format and include a detailed, field verified inventory of soils and miscellaneous areas that normally occur in a repeatable pattern on the landscape and that can be cartographically shown at the scale mapped. A special soil features layer (point and line features) is optional. This layer displays the location of features too small to delineate at the mapping scale, but they are large enough and contrasting enough to significantly influence use and management. The soil map units are linked to attributes in the National Soil Information System relational database, which gives the proportionate extent of the component soils and their properties.

Relevance: Areas with low bearing strength and stability of soils for structure are associated with higher development costs and potential failure of structures, roads, and water and sewer lines from subsidence.
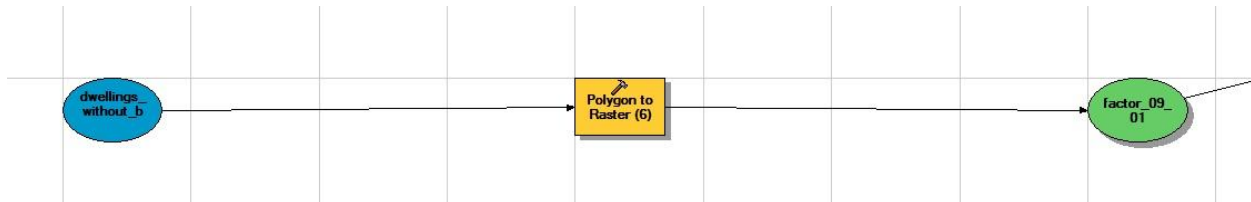
DwellWOB: Dwellings without basement limitations.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil

has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_01

Factor 9.2 Water Availability

..\Suitability_Models\Factors\Factor_09\Factor_09_09\sfc_hydrozn
80.shp

Source: The data sets used to indicate location within public or
franchise water or sewer service areas are named "sfch2osa",
"sfwaurb", "sfwsabe", and "pvth2osa", which represent Santa Fe
County, City of Santa Fe, and private water or sewer service areas.
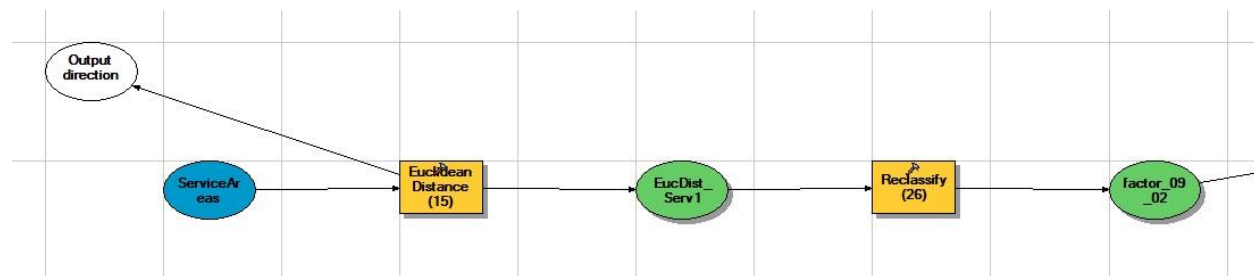
Description:

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept.
                           102 Grant Avenue
                           Santa Fe, NM 87504-0276

Abstract: In the judgment of the County planning staff, the Eldorado
water systems does not have the capacity to serve the area south
and east of the Lamy valley, so this area was not included.

GIS data for the water and sewer systems serving the City of
Espanola and the Town of Edgewood were not available, so the
boundaries of these municipalities (including unincorporated
enclaves surrounded by Edgewood) were used as an approximation.
The name of this data set is "incorp_areas". The portion of
Edgewood north of State Road 344/South Mountain Road extended
is not presently served by water or sewer systems, however, and
was therefore excluded.

Relevance: Proximity to central water and sewer lines is associated with the feasibility of providing central water and sewer
to new development, which impacts service efficiency and cost.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_02

Factor 9.3 Sewer Availability

..\Suitability_Models\Factors\Factor_09\Factor_09_03\city_sewer.shp

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Source: The data sets used to indicate central water and sewer lines are named "ewipipe", "sfcpipe", "sfch2oln", and "sfsewer".

Description:

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept.
                              102 Grant Avenue
                              Santa Fe, NM 87504-0276

Abstract: distance to the features in data sets which represent water or sewer lines Santa Fe County.   For the City of Espanola, a dataset consisting of the streets in the City was used as an approximation of water and sewer line locations, since GIS data for water and sewer lines was not available. The values in the output raster data set are determined from the following expression:

Relevance: Proximity to central water and sewer lines is associated with the feasibility of providing central water and sewer to new development, which impacts service efficiency and cost.
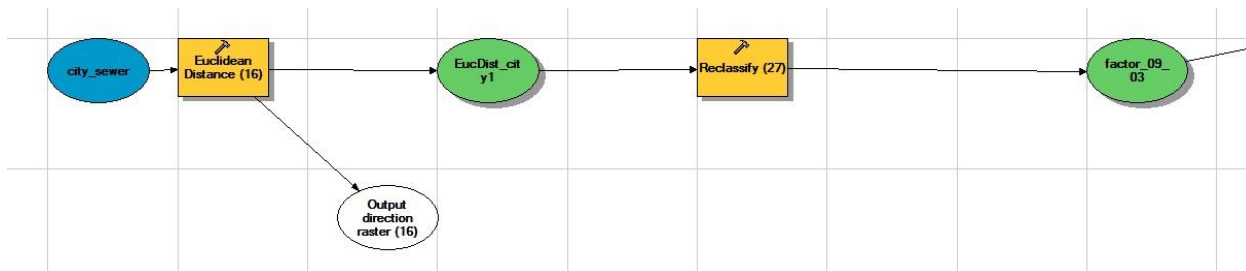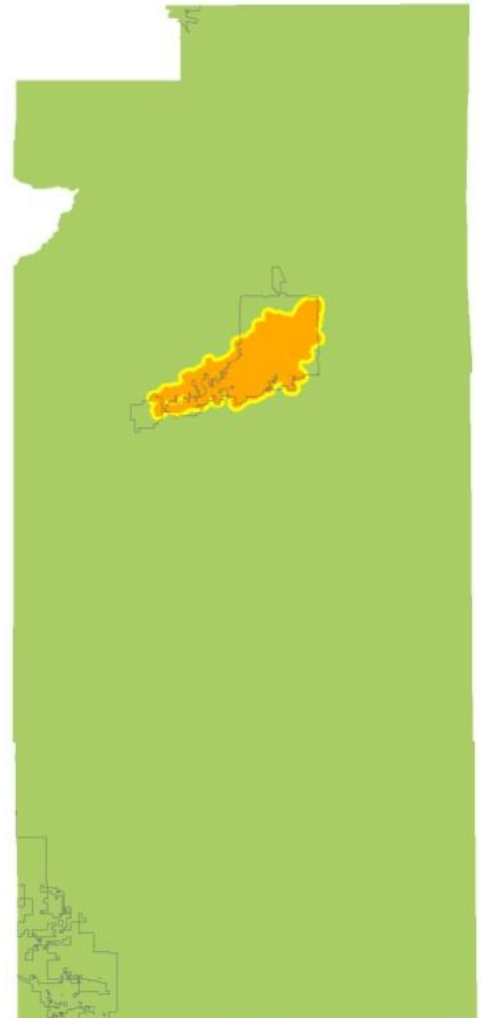
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_03

- -

Factor 9.4 Proximity to Freeway Interchanges

..\Suitability_Models\Factors\Factor_09\Factor_09_04\nmdot_interchanges_Project.shp

- -

Source: The data set used consists of the point features in the "interch.shp" file prepared by the New Mexico Department of Transportation.
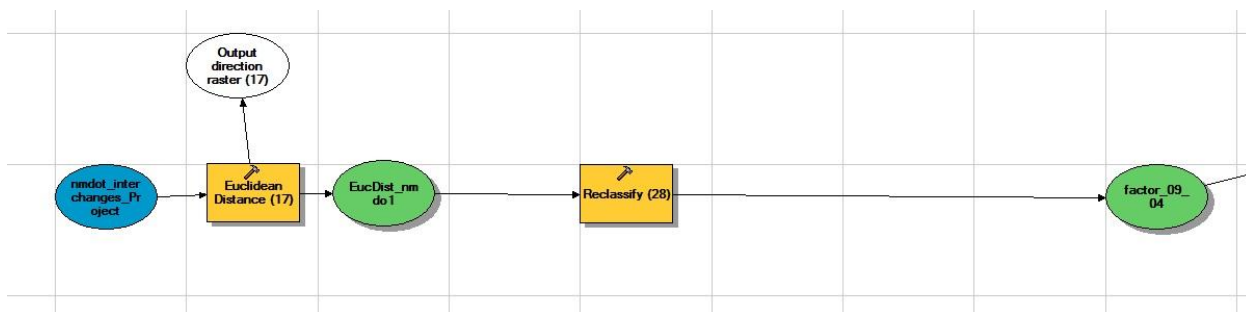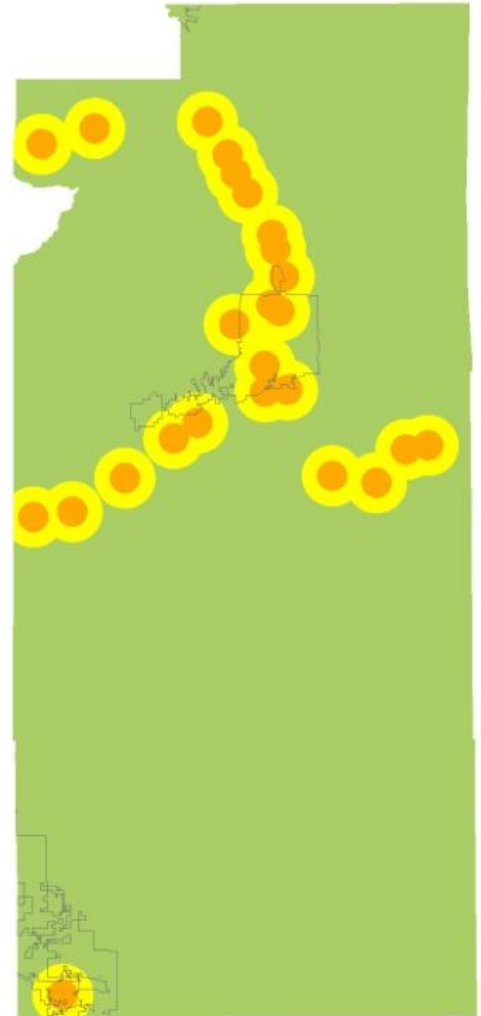
Online linkage: None

Point of Contact: New Mexico Department of Transportation

Description:

Abstract: This point shapefile was digitized from the New Mexico Department of Transportation's Functional Road Classification shapefile. Inverse distance to the features in the data set which represents freeway interchanges. Proximity to interchanges should be used for limited access freeways, rather than proximity to the freeway road segments. The values in the output raster data set are determined from the following expression:

Relevance: Proximity to freeway interchanges is an indicator of the degree of access of land to the thoroughfare network and the regional transportation system.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_04

Factor 9.5 Paved Road Buffer

Suitability_Models\Factors\Factor_09_05\RoadsCounty.shp

Source: Santa Fe County GIS

Description:

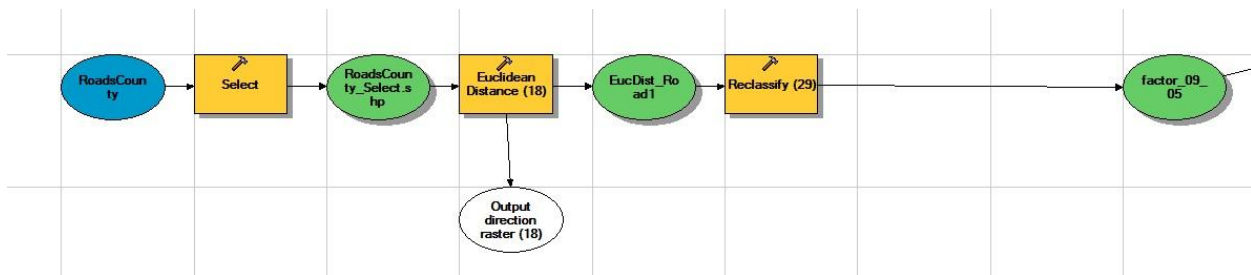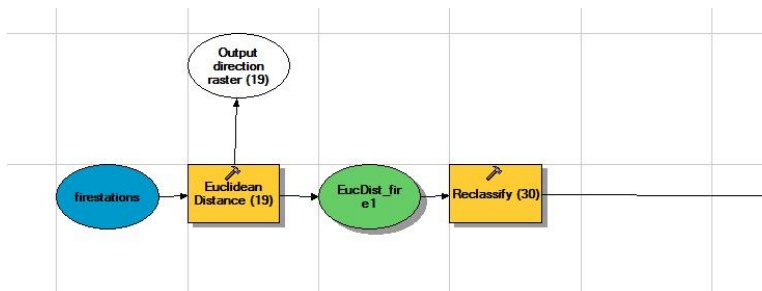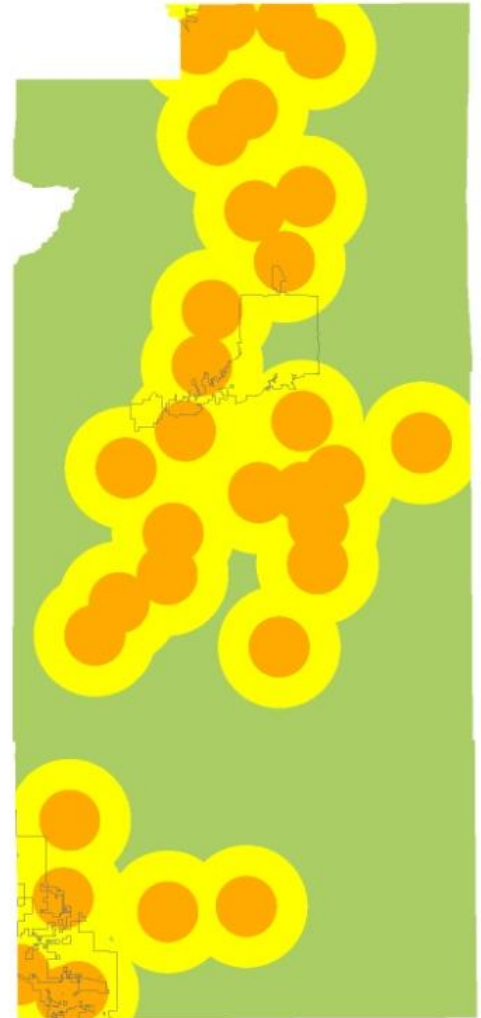*Online linkage*: None

Point of Contact: Santa Fe County Land Use Dept.
                            102 Grant Avenue
                            Santa Fe, NM 87504-0276

Abstract: Inverse distance to the features in the data set which represents paved roads in Santa Fe County. The data set that was used is the "gpsrdsall" file that is maintained by the Santa Fe County GIS Division.

Relevance: Proximity to existing paved roads is an indicator of the cost of building or improving/maintaining local roads to serve development sites, and is often an indicator of the overall of level of access of land to the transportation network.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_04

- -

Factor 9.6 Fire and Emergency Response

..\Suitability_Models\Factors\Factor_09\Factor_09_06\firestations.shp

- -

Source: The data used consists of the points coded as "fire stations" in the field named "FAC-TYPE" in dataset "sfcfac_pt" maintained by the Santa Fe County GIS Division.

Description:

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept.
                                 102 Grant Avenue
                                 Santa Fe, NM 87504-0276

Abstract: Inverse distance to the features in the data set which represents fire stations Santa Fe County. The values in the output raster data set are determined from the following expression:

Relevance: Proximity to fire stations is associated with adequate emergency response times, and are associated with the cost to the public of maintaining adequate levels of fire protection.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_06

Factor 9.7 School Proximity

..\Suitability_Models\Factors\Factor_09\Factor_09_07\schools_spn ad83nm.shp

Source: The data used consists of the points in the dataset "schools.shp", which was obtained from the U.S. Department of Education National Center for Education Statistics.
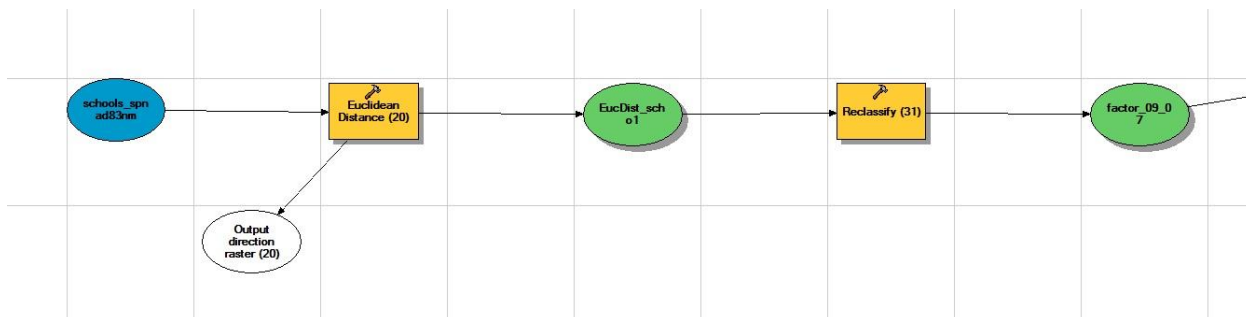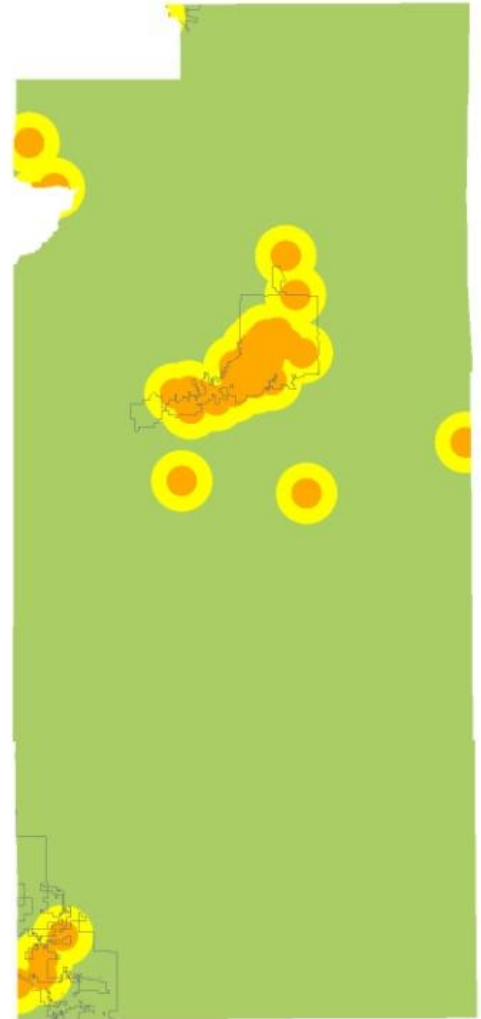
Description:

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept.
102 Grant Avenue
Santa Fe, NM 87504-0276

Abstract: Inverse distance to the features in the data set which represents public schools in Santa Fe County. The values in the output raster data set are determined from the following expression:

Relevance: Proximity is schools is associated with the desirability of land for residential development (parents generally prefer to be close to schools), and is associated with the costs to the public of transporting children to and from schools.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_07

Factor 9.8 Health Care Facilities

..\Suitability_Models\Factors\Factor_09\Factor_09_08\healthcare_ Project.shp

Source: The data set used to indicate public health care facilities is named "healthcare.shp".

Description:

Online linkage: None
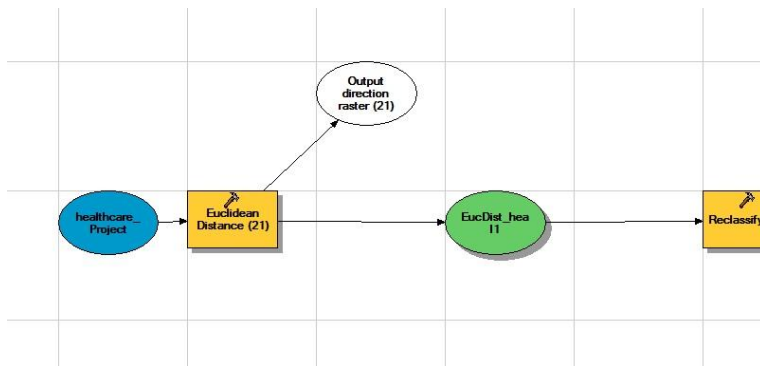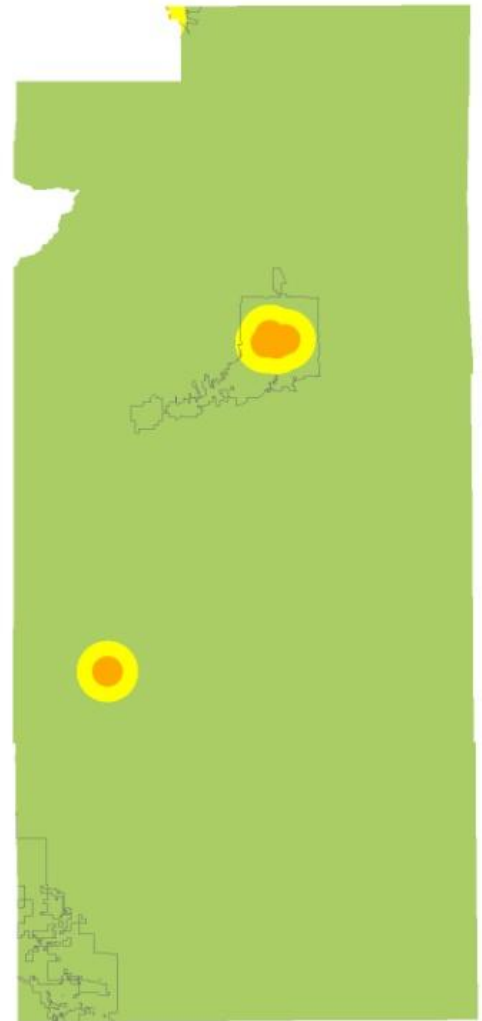
Point of Contact: Santa Fe County Land Use Dept.
                                 102 Grant Avenue
                                 Santa Fe, NM 87504-0276

Abstract: The health care facilities data used for this factor is public healthcare facilities only, and does not include private clinics. The data is maintained by the county.

Relevance: Proximity to healthcare professionals is associated with the desirability of land for residential development and is associated with the safety of the public in an emergency.

Resulting Raster File
..\Suitability_Models\LDSA\Output\factor_09_08

- -

Factor 9.9 Groundwater Availability

..\Suitability_Models\Factors\Factor_09\Factor_09_09\sfc_hydrozn 80.shp

- -

Source: Santa Fe County "Hydrologic zones" dataset file name "hydrozn80".

Description:

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept.
102 Grant Avenue
Santa Fe, NM 87504-0276

Abstract: Groundwater availability was assumed to be related to the base density (dwelling per acre) allowed by the County's zoning regulations; therefore, the following values were used for each hydrologic zone:

- Basin: 0.1   (base density is 1 dwelling per 10 acres)
- Basin Fringe: 0.02   (base density is 1 dwelling per 50 acres)
- Mountain: 0.0125   (base density is 1 dwelling per 80 acres)
- Homestead: 0.00625   (base density is 1 dwelling per 160 acres)

The values in this data set were then further processed so that land within the Homestead hydrologic zone had a value of -1 (indicating the lowest degree of suitability), prior to being summed with the other data sets to create the map of environmental suitability.

Relevance: The densities that can be supported by development on individual private wells and local community water systems are largely a function of groundwater availability. Also, the availability of water supplies for public waters systems is correlated to a large degree with the geographic distribution of groundwater availability.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_09
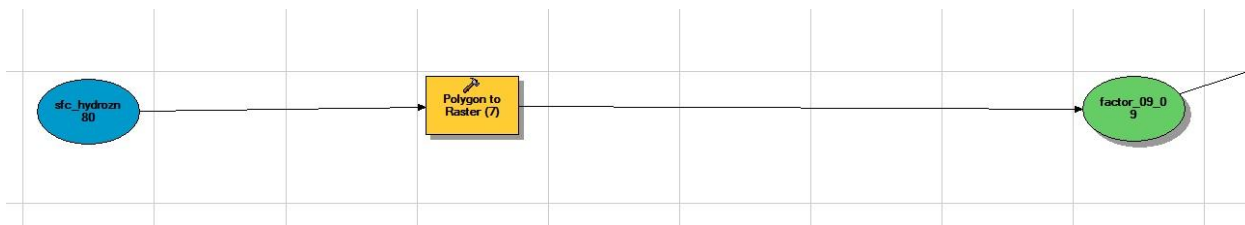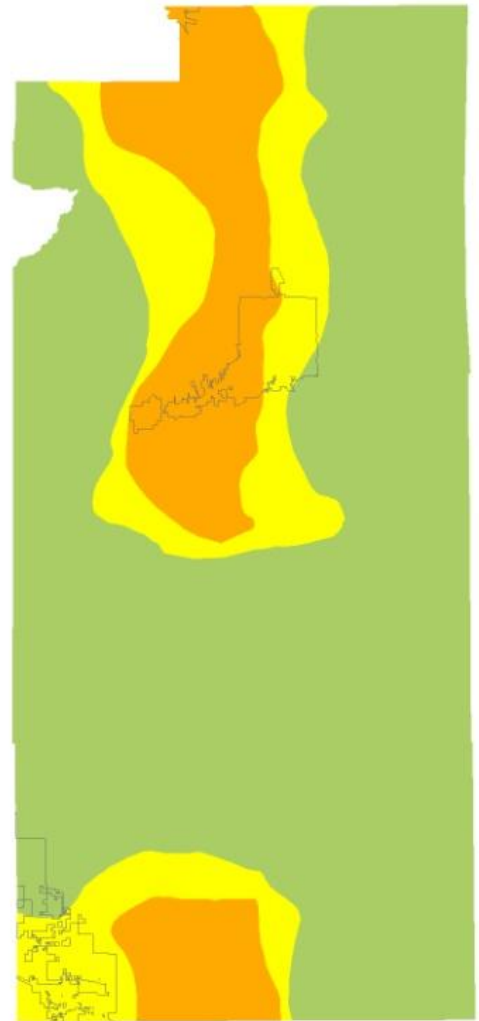
Factor 9.10 Rail Runner Transit Stops

..\Suitability_Models\Factors\Factor_09\Factor_09_10\railrunner_st ops.shp

Source: The Santa Fe County Growth Management Department staff created point GIS data representing Rail Runner stops, from a map provided on the New Mexico Rail Runner Express web site.
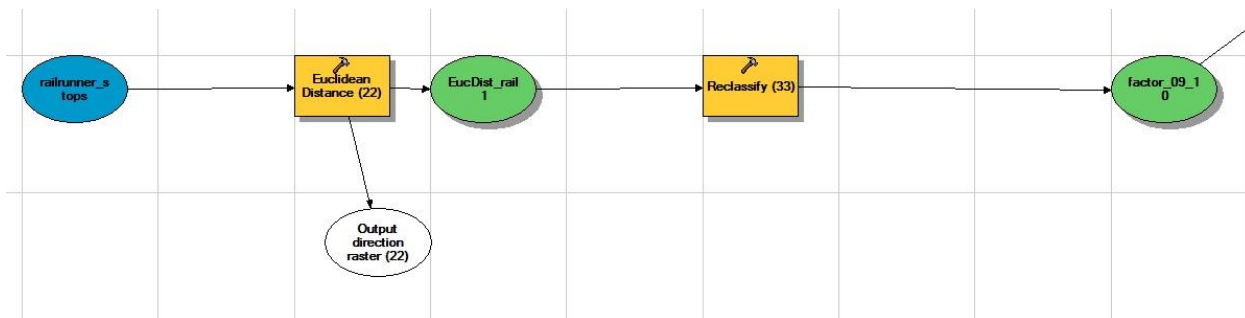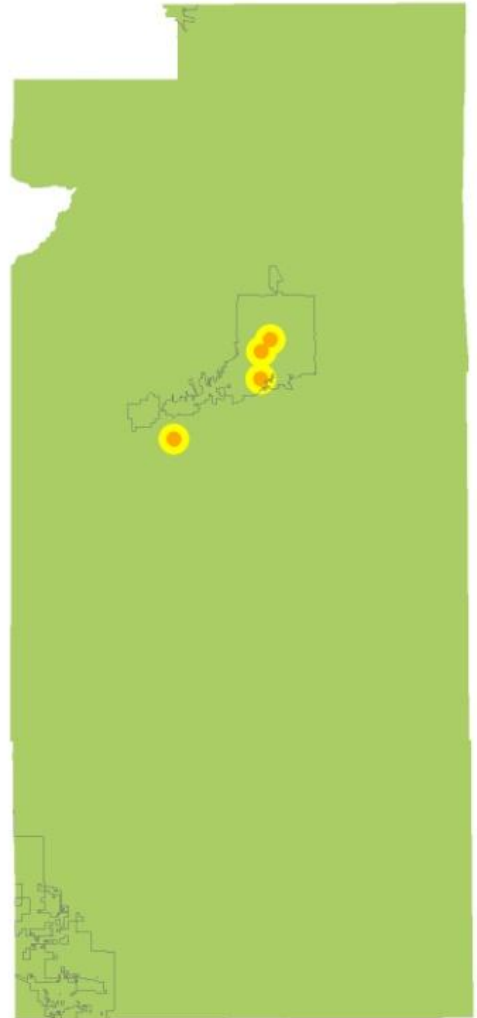
Description:

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept.
102 Grant Avenue
Santa Fe, NM 87504-0276

Abstract: Inverse distance to the features in the data set which represents Rail Runner Transit stops in Santa Fe County.   The values in the output raster data set are determined from the following expression:

Relevance: Proximity to commuter rail stops is associated with the costs and convenience to commuters of travelling between these rail stops and their residences. Areas in close proximity to commuter rail stops are often highly suitable for intensive mixed-use development and other higher density development types.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_10

Factor 9.11 Commuter Bus Routes

..\Suitability_Models\Factors\Factor_09\Factor_09_11\sfco_bus_ro utes.shp

Source: The data sets that were used are named "transit_test.shp" and "busrte.shp", and represent bus routes operated by the North Central Regional Transit District and the City of Santa Fe, respectively.
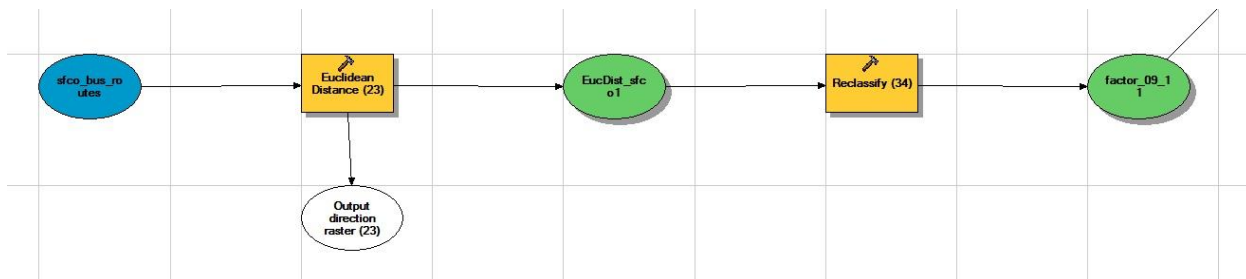
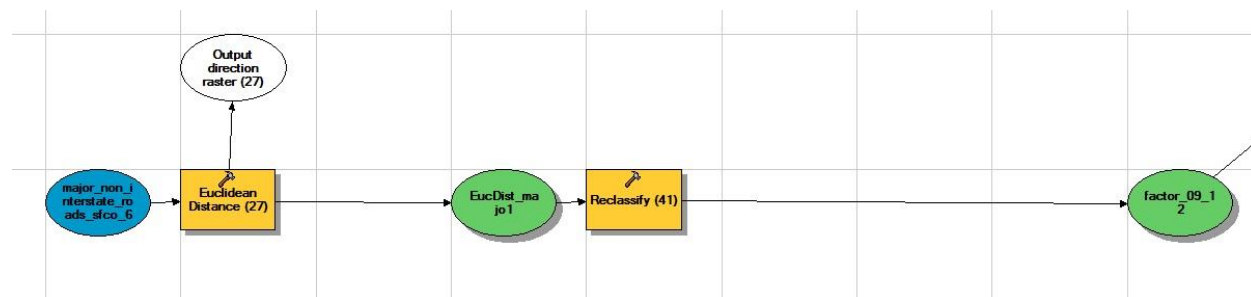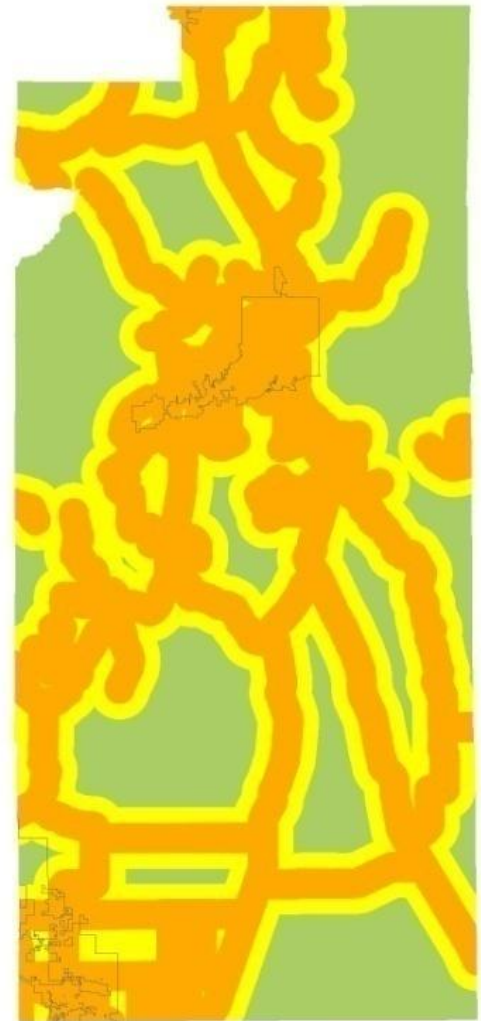*Description:*

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept.
                          102 Grant Avenue
                          Santa Fe, NM 87504-0276

Abstract: Inverse distance to the features in the data set which represents commuter bus routes.   The Planning Division staff decided to limit the bus routes to those which are located within municipalities or within the four highest-intensity growth management tiers that are proposed, however, in order to discourage strip development along roads within rural areas. The values in the output raster data set are determined from the following expression:

Relevance: Proximity to commuter bus routes is associated with the costs and convenience to commuters, and the likelihood that people will use bus transit. Areas in close proximity to commuter rail stops are often highly suitable for mixed use, higher density residential development, and employment centers.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_11

Factor 9.12 Major Non-Interstate Roads

..\Suitability_Models\Factors\Factor_09\Factor_09_12\major_non_i nterstate_roads_sfco_6_25_09.shp

----

Source: The data set that was used is the "gpsrdsall" file that is maintained by the Santa Fe County GIS Division.

Description:

*Online linkage*: None

Point of Contact: Santa Fe County Land Use Dept.
                             102 Grant Avenue
                             Santa Fe, NM 87504-0276

Abstract: Inverse distance to the features in the data set which represents highways and other major roads in Santa Fe County. Only roads that were coded with a "1" in the "DSP-CODE" field (indicating that they are highways or other major roads) were used. Interstate highways were not used however – proximity to interstate highways was measured, instead, using distance to interchanges (see discussion of "Proximity to Freeway Interchanges" below). The values in the output raster data set are determined from the following expression:

Relevance: Proximity to highways and other major roads is an indicator of the degree of access of land to the thoroughfare network and the regional transportation system, and the cost of building and maintaining local roads between major roads and development sites.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_12

- -

Factor 9.13 Local Roads
..\Suitability_Models\Factors\Factor_09\Factor_09_13
\local_roads_sfco_6_25_09.shp

- -

Source: The data set that was used is the "gpsrdsall" file that is maintained by the Santa Fe County GIS Division.

Description:

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept.
                              102 Grant Avenue
                              Santa Fe, NM 87504-0276

Abstract: Inverse distance to the features in the data set which represents local roads in Santa Fe County Only roads that were coded with a "0" in the "DSP-CODE" field (indicating that they are minor roads) were used. Minor roads that were classified as "DIRT 2-TRACK" in the "Rcltype" field were not used, however, since these are primitive roads. The values in the output raster data set are determined from the following expression:

Relevance: Proximity to existing local roads is an indictor of the cost of building or improving/maintaining local roads to serve development sites, and is often an indicator of the overall of level of access of land to the transportation network.
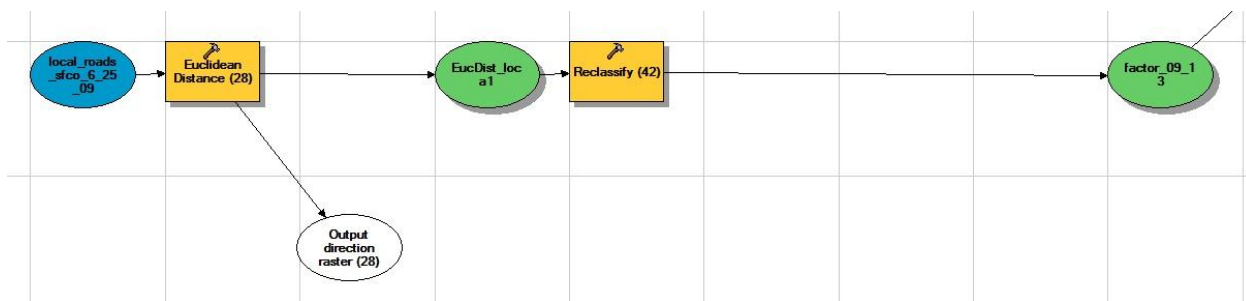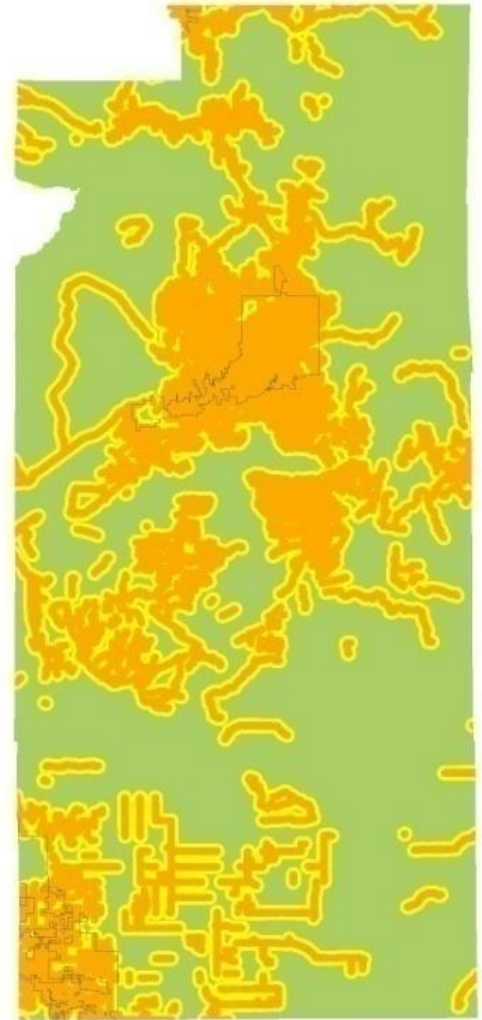
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_09_13

Factor 9.14 Groundwater Storage Availability

..\Suitability_Models\Factors\Factor_09\Factor_09_14\water_budget.shp

*Point of Contact:* Karen Torres, Santa Fe County

Description: The purpose of estimating a ground water budget is to get an idea of the relative quantities of water that enter and leave an area each year and to estimate if water is being depleted from or added to the aquifer. The ground water budgets estimated for this plan are based the principle of mass balance where the inflow will equal the outflow plus or minus the change in storage.

Abstract: Inflow for ground water consists of mountain-front recharge, limited areal recharge, infiltration from streams and inflow from up-gradient districts. Outflow consists of ground water pumping; gaining reaching of streams, springs and outflow to adjacent districts. Data for inflow and outflow for each district was taken from the Santa Fe County Regional Ground Water Model and the OSE Estancia Basin Ground Water Flow Model (Intera, Keyes).

To estimate the current available water in storage the specific yields for varying geologic units were taken from the available ground water models and a saturated thickness of 500 feet was estimated for most of the planning areas. In the Estancia Planning Area the Valley Fill was estimated at 100 feet. Specific yield is the volume of water that drains from saturated material due to gravity. To arrive at an estimated water in storage the surface area of each district was multiplied by 500 feet and the appropriate specific yield.

The change in storage estimated from the water budget analysis was subtracted from to the estimated water in storage to arrive at a percentage of water remaining in storage for future use.

Relevance: The importance of ground water in Santa Fe County is emphasized by the fact ground water represents a water source that can be relied upon year to year, whereas surface water supplies tend to fluctuate due to variations in climate. In the El Centro Planning Area water supplies for new growth will be served conjunctively by the Buckman Direct Diversion Project and back-up wells (Ross et. al.). Within the El Norte Planning Area the proposed Pojoaque Regional Water System will serve existing and new growth conjunctively as well. For the rest of Santa Fe County the only source of water is ground water. In areas where recharge is low, the ground water in storage is all the water that will ever be available for current and future water demand.
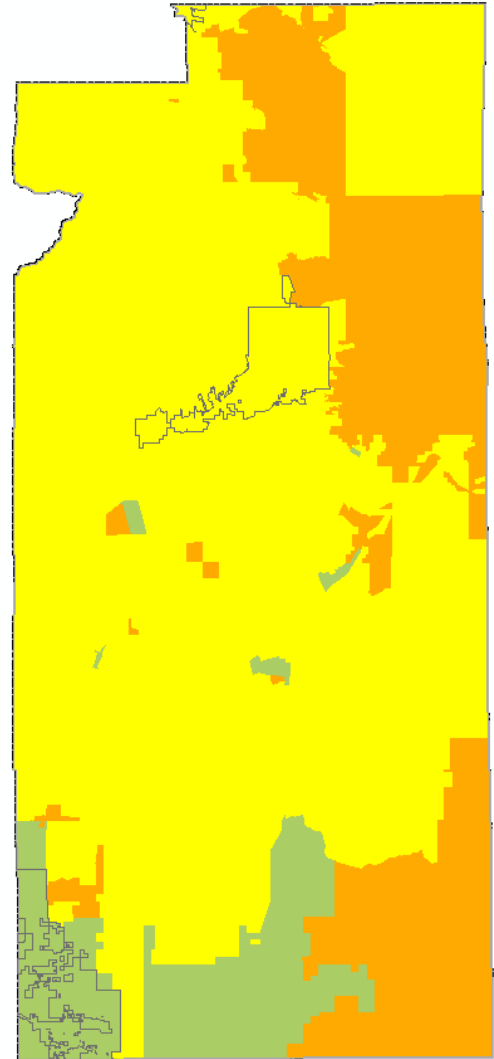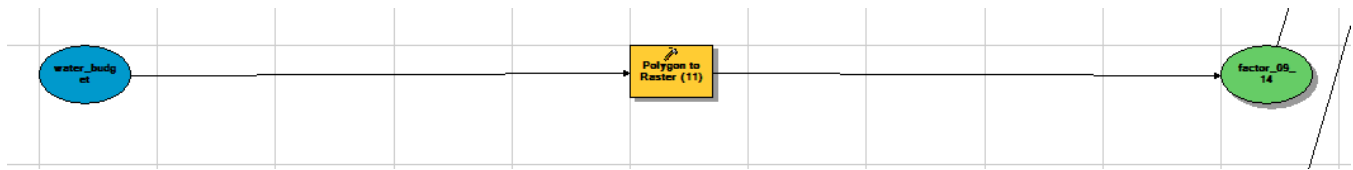
Resulting Raster File:

..\Suitability_Models\LDSA\Output\factor_09_14

Factor 10.1 Open Space

..\Suitability_Models\Factors\Factor_10\Factor_10_01\CountyOpen Space_Project.shp
..\Suitability_Models\Factors\Factor_10\Factor_10_01\SFCOOpenSpaceParcels2006_Pro.shp

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Source: Earth Works, for the Galisteo Watershed Conservation Initiative, identified areas of Open and Space and Conservation within the Galisteo Basin area.

Description: "Low Suitability" areas are located within these conservation areas. "Moderate Suitability" are areas between $1/8^{th}$ and 1/4 mile of these areas and "High Suitability" areas are located outside a one quarter mile buffer.

Online linkage: None

Point of Contact: Santa Fe County Trails and Open Space Dept.
103 Grant Ave
Santa Fe County, NM 87501

Abstract: Open space is vital to community health, economy and well-being. Public and private lands, including wilderness and working land, provide public benefits and ecosystem services including:

- Clean water
- Natural flood control
- Wildlife habitat and biodiversity
- Recreation and relaxation

Relevance: The mission of the Open Space and Trails Program is to create a network of cultural, historical, recreational and natural open spaces and trails throughout Santa Fe County that achieve the goals outlined in the Open Land and Trails Plan to benefit current and future generations. Protections of existing Open Space areas from encroaching development help maintain community character and provide environmental and economic benefits.
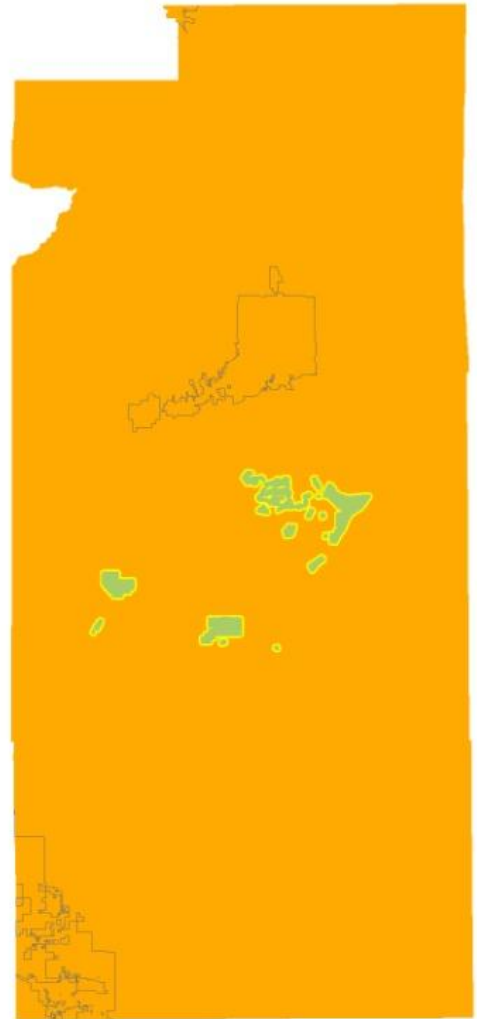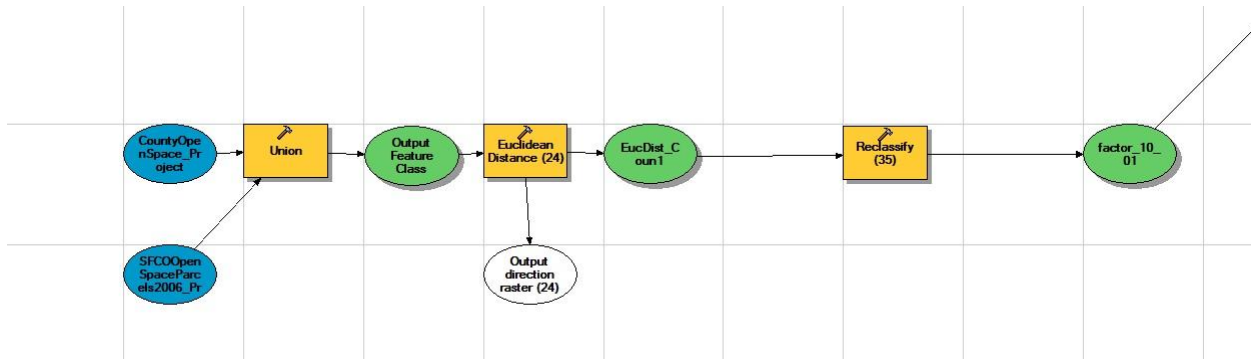
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_01

- -

Factor 10.2 Anticipated Annexation Area

..\Suitability_Models\Factors\Factor_10\Factor_10_02\propanxpwc
.shp

- -

Source: The data set used to indicate locations which are anticipated to be annexed is "propanxpwc.shp". The data is developed and maintained by Santa Fe County staff.

Description: Areas within 1/4 mile of the Annexation Agreement area are most suitable for development while areas outside a 1/2 mile buffer are considered least suitable for development for this factor.

Online linkage:
http://www.santafenm.gov/index.aspx?NID=1776&PREVIEW=YES

Point of Contact: Santa Fe County Land Use Dept
                            102 Grant Ave
                            Santa Fe County, NM 87501

Abstract: In 2008 the City of Santa Fe and Santa Fe County reached a historic Settlement Agreement under which the City will annex certain land within the next five years creating clear, readily identifiable City boundaries. The land to be annexed is defined by existing major roadways, State Route 599 and Interstate I-25, to the north, west and south, and the National Forest to the east. The annexation process will occur in three phases beginning in 2009 and ending in December 2012.

The main purpose of annexation is to provide orderly and controlled growth through consistent policies and a single, unified set of regulatory controls. Other advantages to annexation include planned and efficient infrastructure expansion, as well as a municipal water supply for better resource conservation.

Relevance: The City and County have entered into an agreement outlining the extent of planned annexation parcels for the City of Santa Fe. It should be assumed that these areas will have access to the City's infrastructure, therefore allowing these parcels to develop at greater intensities than would otherwise be permissible in the County.
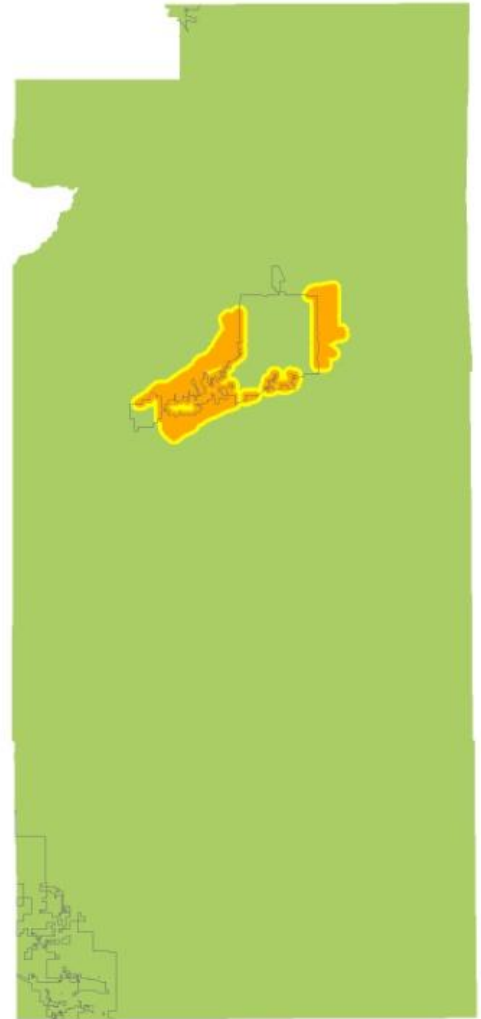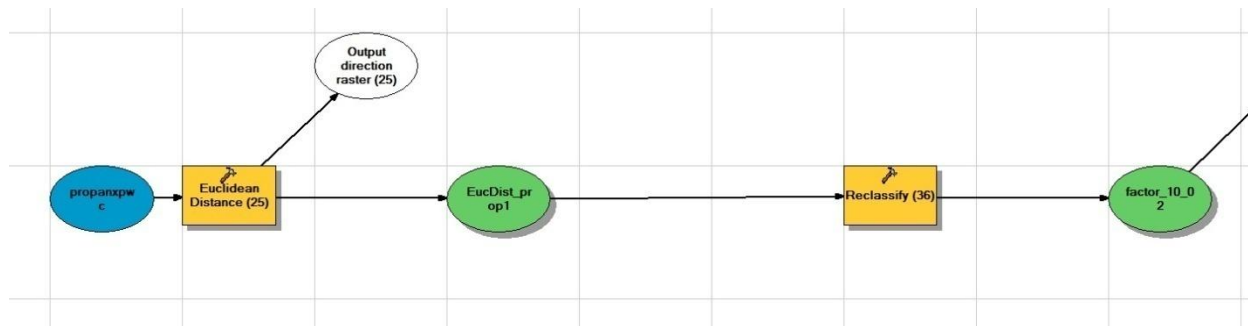
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_02

Factor 10.3 Future Growth Areas

..\Suitability_Models\Factors\Factor_10\Factor_10_03\airport_dist.shp

..\Suitability_Models\Factors\Factor_10\Factor_10_03\ccd.shp

Source: The data sets used to indicate locations which are indentified as future growth area are the Airport Development Districts and the Community College District. The data is developed and maintained by Santa Fe County staff.

Description: The Airport and Community College Districts have been identified by staff as two areas where growth will most likely occur. It is also widely felt these areas have the greatest overall suitability for new development with the County due to their favorable geography and current land use mix.

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept
                           102 Grant Ave
                           Santa Fe County, NM 87501

Abstract: The future growth area data is derived by selecting districts from the parcels data. The districts that were selected, and which will serve as the future growth area are the Community College District and the Airport District.

Relevance: Development is most likely to increase in this area. Future development will be directed toward these districts to achieve land use and service efficiencies.
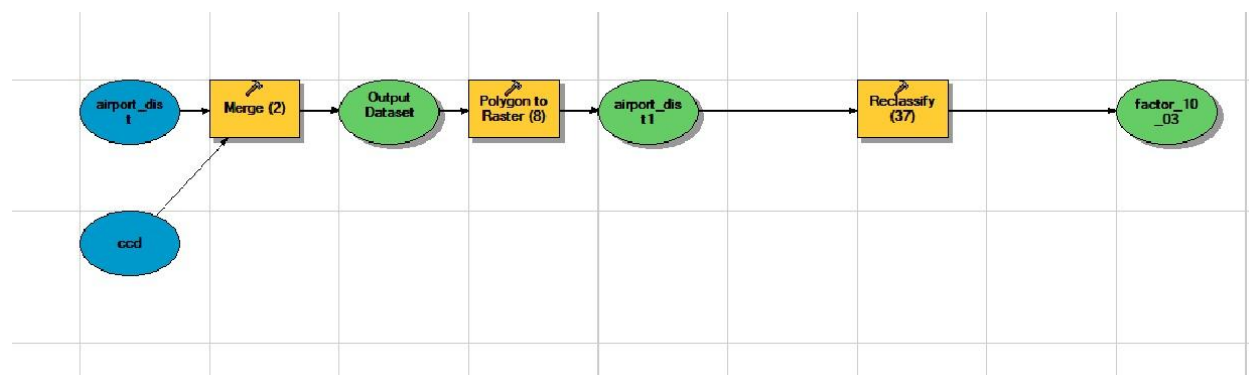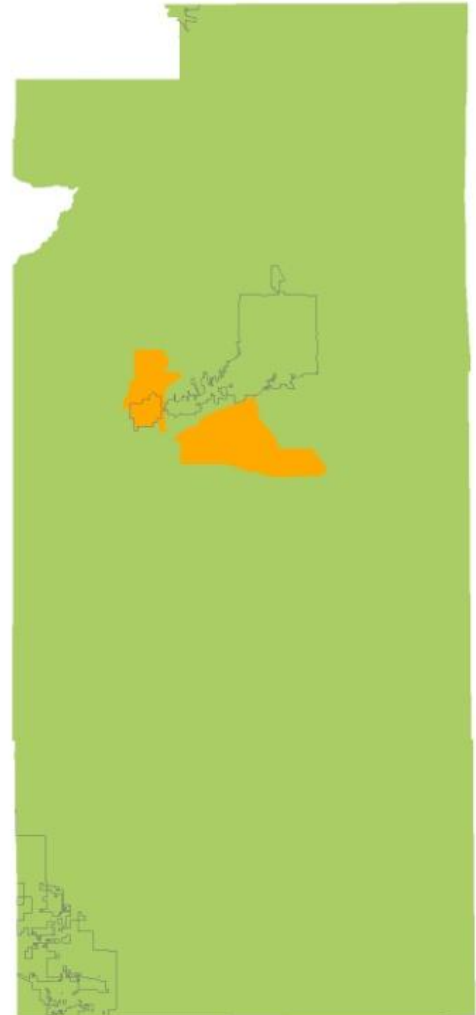
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_03

Factor 10.5 Lands Proximal to Residential Uses
..\Suitability_Models\Factors\Factor_10\Factor_10_05\res_chur_den

Source: County staff maintains a GIS database of all structures and their usage type within the County.
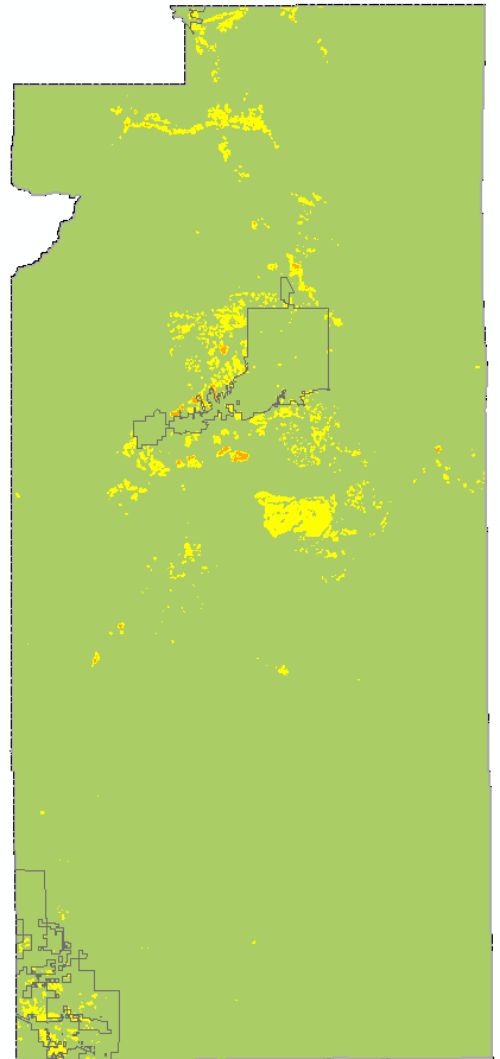
Description: Unincorporated Residential and corresponding institutional uses, such as churches, were extracted and buffered to create residential use suitability. These points were then buffered and rated for suitability. Land within a 1/4 mile of a structure was determined to be most suitable while land outside 1/2 mile was determined to be least suitable for development.

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept
                          102 Grant Ave
                          Santa Fe County, NM 87501

Abstract: Most often Cities are best equipped to provide orderly and controlled growth through consistent policies and a single, unified set of regulatory controls. Other advantages to Cities over unincorporated County areas include planned and efficient infrastructure expansion, as well as a municipal water supply for better resource conservation.

Relevance: Proximity to areas of higher residential density is associated with the availability of public facilities and services, and nearness to shopping and employment centers. Encouraging development within and close to areas of higher residential density promotes compact and efficient development patterns, which decreases the costs of public facilities and services and transportation.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_05

Factor 10.6 Lands Proximal to Non-Residential Structures

..\Suitability_Models\Factors\Factor_10\Factor_10_06\con_dens

Source: County staff maintains a GIS database of all structures and their usage type within the County.

Description: Unincorporated Non-residential uses were extracted and buffered to create residential use suitability. These points were then buffered and rated for suitability. Land within a 1/4 mile of a structure was determined to be most suitable while land outside 1/2 mile was determined to be least suitable for development.

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept
102 Grant Ave
Santa Fe County, NM 87501

Abstract:

Relevance: Consistent Proximity to areas of higher non-residential density is associated with the availability of public facilities and services, and nearness to shopping and employment centers. Encouraging development within and close to areas of higher non-residential density promotes compact and efficient development patterns, which decreases the cost of public facilities and services and transportation.
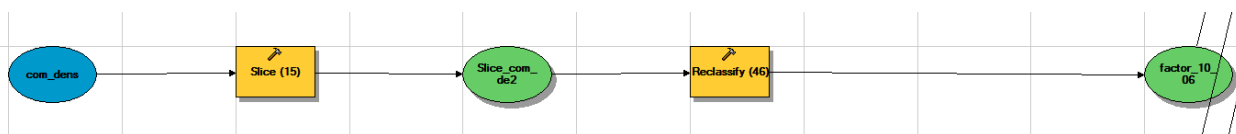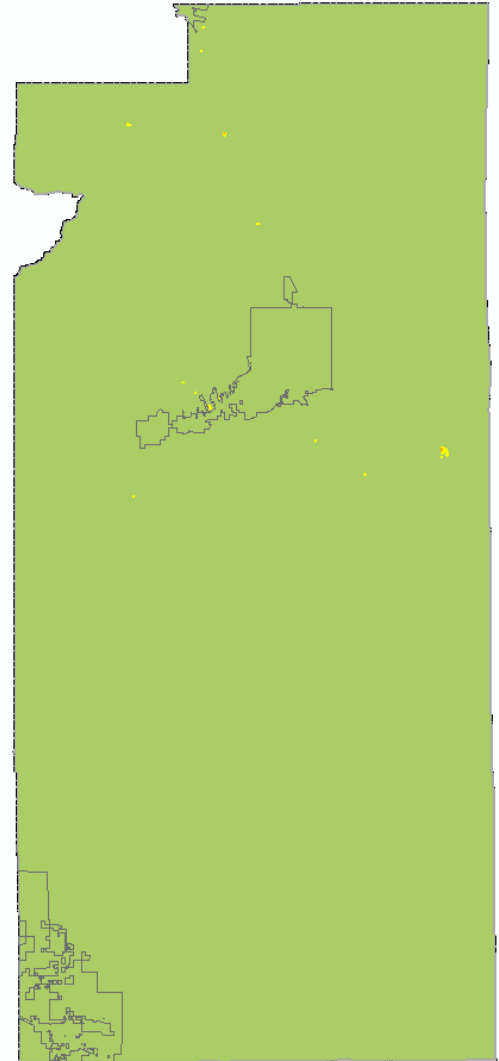
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_06

Factor 10.7 Value of Land Improvements
..\Suitability_Models\Factors\Factor_10\Factor_10_07\calc10

Source: Parcel data set maintained by the Santa Fe County GIS Division and the Santa Fe County Assessor's office.
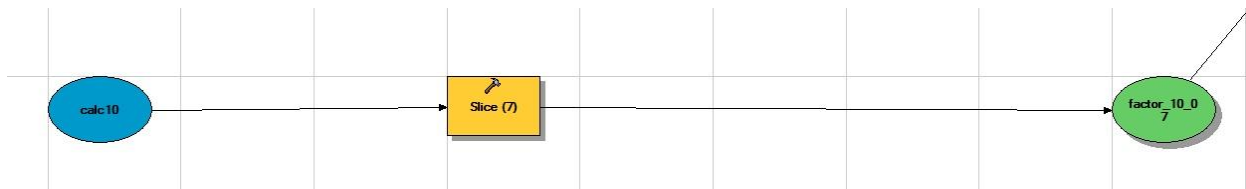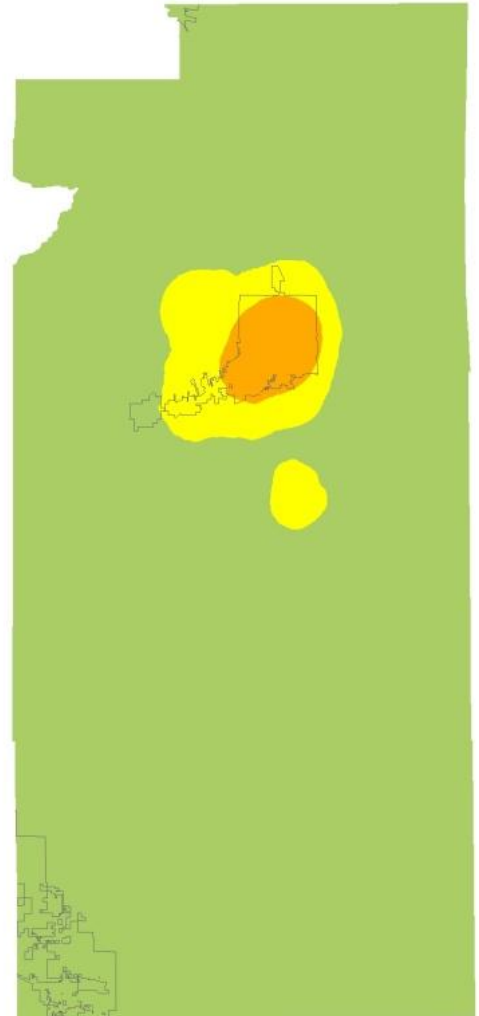
Description:

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept
102 Grant Ave
Santa Fe County, NM 87501

Abstract: A field was created for this data which contains the value of land improvements per acre for each parcel (using the value from the "IMPRAPPR_0" field. ArcView Spatial Analyst software was then used to generate a map showing the average value of land improvements per acre within a 1-mile radius of each point on the map.

Relevance: Proximity to areas of higher land improvement value per acre is associated with the availability of public facilities and services and nearness to shopping and employment centers, which are more commonly found within areas with a high value of land improvements. Encouraging development within and near to such areas promotes a compact and efficient pattern of development, which decreases the cost of public facilities and services and transportation.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_07

- -

Factor 10.8 Parcel Density
..\Suitability_Models\LDSA\Output\parcels_to_points.shp

- -

Source: Parcel data set maintained by the Santa Fe County GIS Division and the Santa Fe County Assessor's office.

Description: Parcel polygons were converted to points. Density was then calculated using GIS software. Areas of greatest parcel density were deemed to be most suitably for development, while areas with the least amount of parcel density was deemed least suitable for development.

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept
                             102 Grant Ave
                             Santa Fe County, NM 87501

Abstract: This dataset was created by the Santa Fe County GIS department and subdivision activity. The greater the parcel density is an indicator of more intensive development. These areas generally have infrastructure readily available.

Relevance: Parcel density is an indicator whether a parcel is still usable for rural land uses. Rural land uses (farming, ranching, timber, and conservation) typically need larger parcels than urban or community land uses in order to be viable.
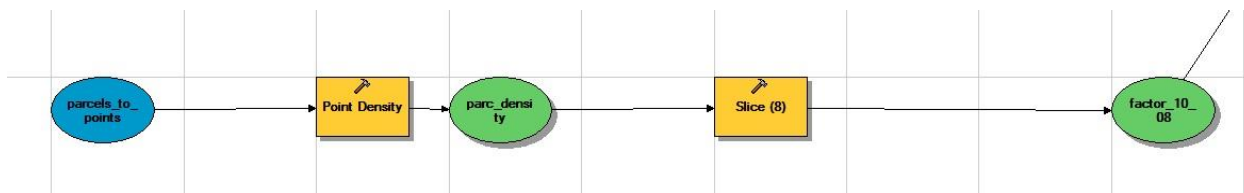
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_08

Factor 10.9 Dense Populations
..\Suitability_Models\Factors\Factor_10\Factor_10_09\calc9

*Source:* United States 2000 Census Block data.

Description: The population density was derived using United States 2000 Census Block data for Santa Fe County (using values in from the "POP2000" field in "blocks.shp" data set, and the computed area of each Census block). ArcView Spatial Analyst software was then used to generate a map showing the average population density (per square mile) within a 1-mile radius of each point on the map.

Online linkage: None

Point of Contact: Santa Fe County Land Use Dept
                              102 Grant Ave
                              Santa Fe County, NM 87501

Abstract: Planners commonly use population density maps to provide decision makers with information regarding locations of dense population activity. This usually indicates areas where investment in infrastructure is greatest. Building upon and utilizing existing infrastructure is generally regarded as a more sustainable approach to new development.

Relevance: Proximity to areas of higher population density is associated with the availability of public facilities and services, and nearness to shopping and employment centers, which are more commonly found within areas of higher population density. Encouraging development within and close to areas of higher population density promotes compact and efficient development patterns, which decreases the cost of public facilities and services and transportation.
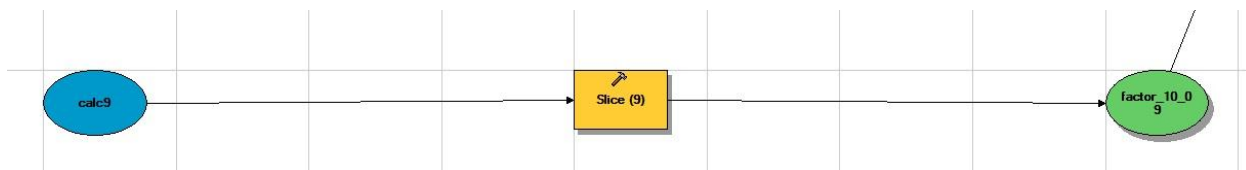
Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_09

Factor 10.10 Housing / Employment Proximity

..\Suitability_Models\Factors\Factor_10\Factor_10_10\gpsstruc.shp

Source: County staff maintains a GIS database of all structures and their usage type within the County.

Description: Unincorporated housing and employment structures were heat mapped. These points were then buffered and rated for suitability. Land within a 1/4 mile of a structure was determined to be most suitable while land outside 1/2 mile was determined to be least suitable for development.
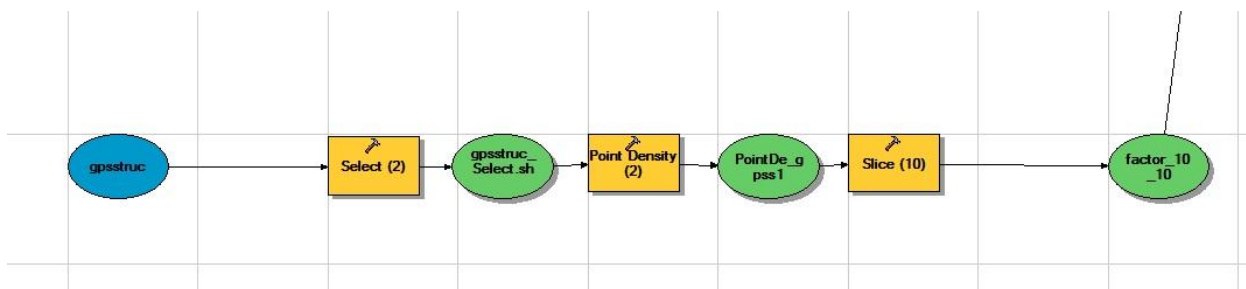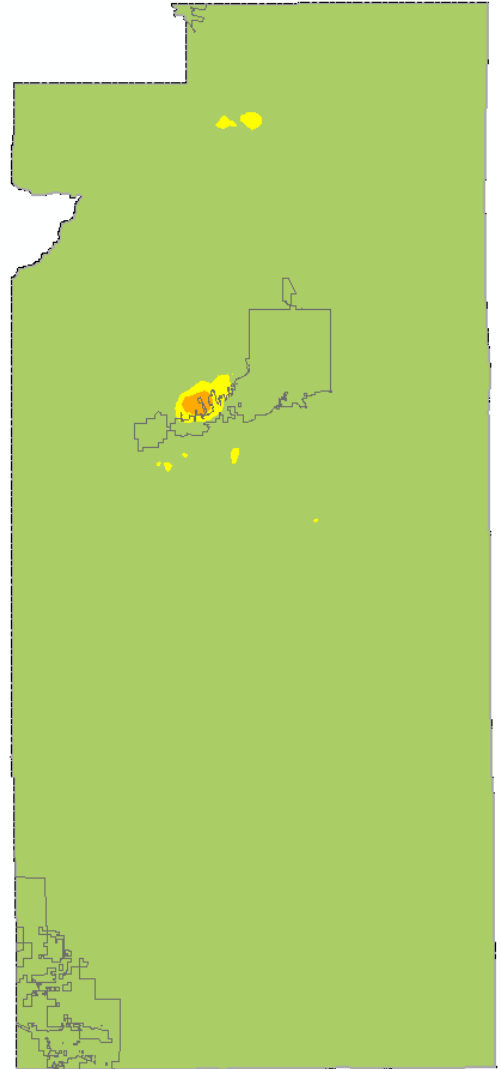
Online linkage: None

Point of Contact: Santa Fe County Land Use Dept
                          102 Grant Ave
                          Santa Fe County, NM 87501

Abstract: According to a study produced by the CDC, people that reduce auto dependence by providing jobs and services that are accessible by foot, bicycle or public transit tend to be less obese and overall enjoy a healthier lifestyle. The findings included the following:

- Reduced risk of obesity, heart disease and hypertension
- Reduced risk of asthma and other respiratory diseases
- Increase social connection and sense of community
- Improved mental health
- Encourages healthier diet

Relevance: Sustainable development should encourage healthier lifestyles and reduced pollution. Fiscally, reduction of auto dependence reduces that tax burden due to maintenance of local infrastructure.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_10

Factor 10.12 Proximity to Municipal Boundaries
..\Suitability_Models\Factors\Factor_10\Factor_10_12\muni_annx.shp

- -

Source: County staff maintains a GIS database of Incorporated Cities within the County.
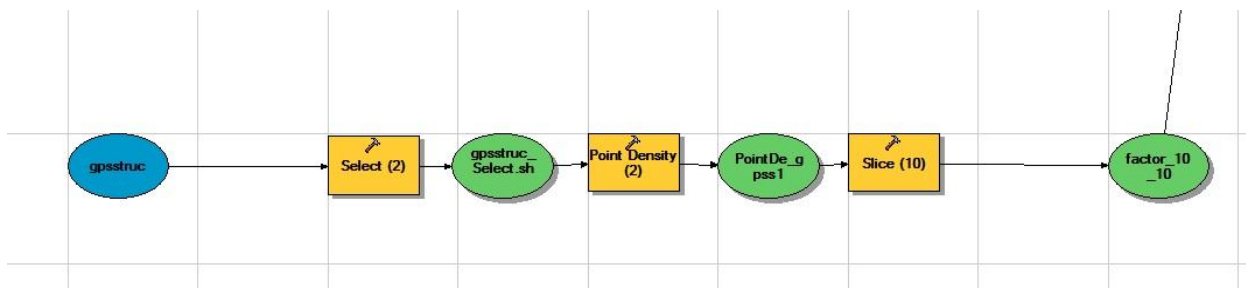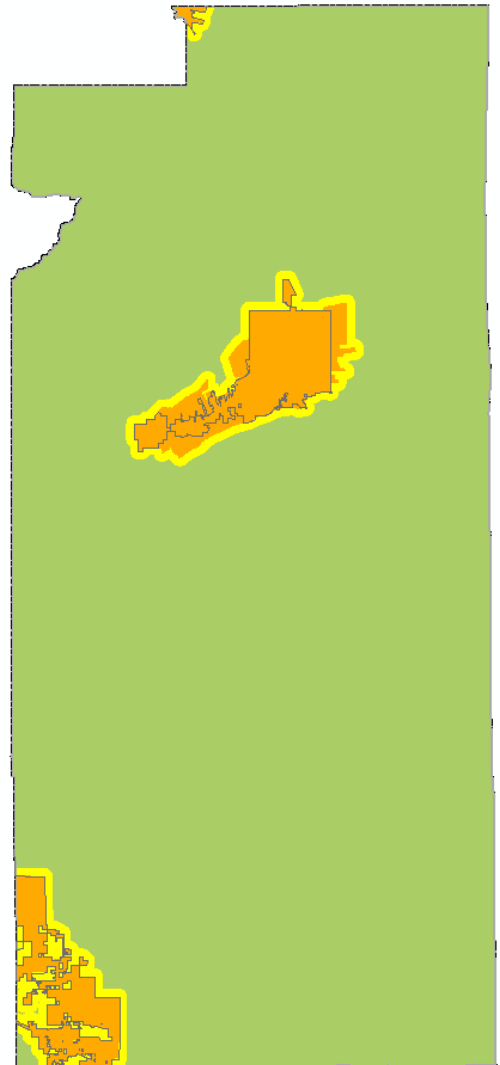
Online linkage: None

*Description: D*istance to the features in data sets which represent municipal boundaries. Areas within incorporated areas were determined to be most suitable for development activity, while areas outside of half mile were determined to be least suitable for development.

Point of Contact: Santa Fe County Land Use Dept
102 Grant Ave
Santa Fe County, NM 87501

Abstract: Municipal Boundary proximity is commonly used in LESA systems throughout the County. Current municipal boundaries usually indicates areas where investment in infrastructure is greatest. Building upon and utilizing existing infrastructure is generally regarded as a more sustainable approach to new development.

Relevance: Proximity to existing municipalities associated with the availability and efficiency of public facilities and services, and proximity to employment and retail centers which are more commonly found within municipalities, as opposed to outlying areas. Encouraging development within areas close to existing municipalities promotes a compact and efficient pattern of development, which decreases the cost of public facilities and services and transportation.

Resulting Raster File:
..\Suitability_Models\LDSA\Output\factor_10_1