APPENDIX F

GEOGRAPHIC INFORMATION SYSTEM AND DEMOGRAPHIC DATA COMPILATION

APPENDIX F

GEOGRAPHIC INFORMATION SYSTEM AND DEMOGRAPHIC DATA COMPILATION[a]

INTRODUCTION

This appendix describes the geographic information system (GIS) and demographic data compiled to support the Savannah River Site (SRS) dose reconstruction study. It also briefly describes the management activities for the demographic data at the South Carolina State University (SCSU) GIS Laboratory and the comprehensive database design developed to house data that can support population dose assessments.

GEOGRAPHIC INFORMATION SYSTEM DATA

The GIS component of this project focuses on compiling and formatting spatial data and identifying data sources pertinent to locating contaminant sources (air, water, and land); monitoring locations; contaminant transport pathways (surface water, air, and crops); and population distributions. GIS coverages were also developed to provide a boundary for the study area (Figure F-1) and to support public communication.

One of the objectives for this task was to provide a GIS coverage data directory structure (Figure F-2) and a database that will be compatible with future Centers for Disease Control and Prevention (CDC) GIS technology needs. As GIS technology continues to develop, it will become more important for storage, analysis, and communication of spatial data.

A reduction in the available funding to support GIS data compilation activities limited efforts to compile all relevant spatial data, conduct analyses on imagery, and complete data documentation to meet Federal Geographic Data Committee (FGDC) standards. What was collected, however, provides a solid foundation for future GIS activities and public communication for the project.

Data Acquisition

Data Acquisition Scope

A general study area was defined to focus data acquisition and limit the total amount of data to be obtained. The study area includes the real estate within a 50-mi buffer from the SRS boundary, plus all the counties on either side of the Savannah River downstream from the SRS. Columbia, South Carolina, was also included within the study area (Figure F-1). Development of this boundary is discussed at the end of this section.

The temporal period of interest for data collection was from the early 1950s through the early 1990s. Data for the beginning of each decade were identified if available. Numerous GIS coverages were obtained from various sources; however, documentation did not accompany some of the data and it could not be obtained. GIS data that lacked documentation regarding sources and accuracy are not included.

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[a] Authors of this appendix are Ronald C. Rope of Environmental Perspective, Inc.; Wei Yang of South Carolina State University; and Luke White and Patti McGuire of Teton Geographic Information Systems, Inc.

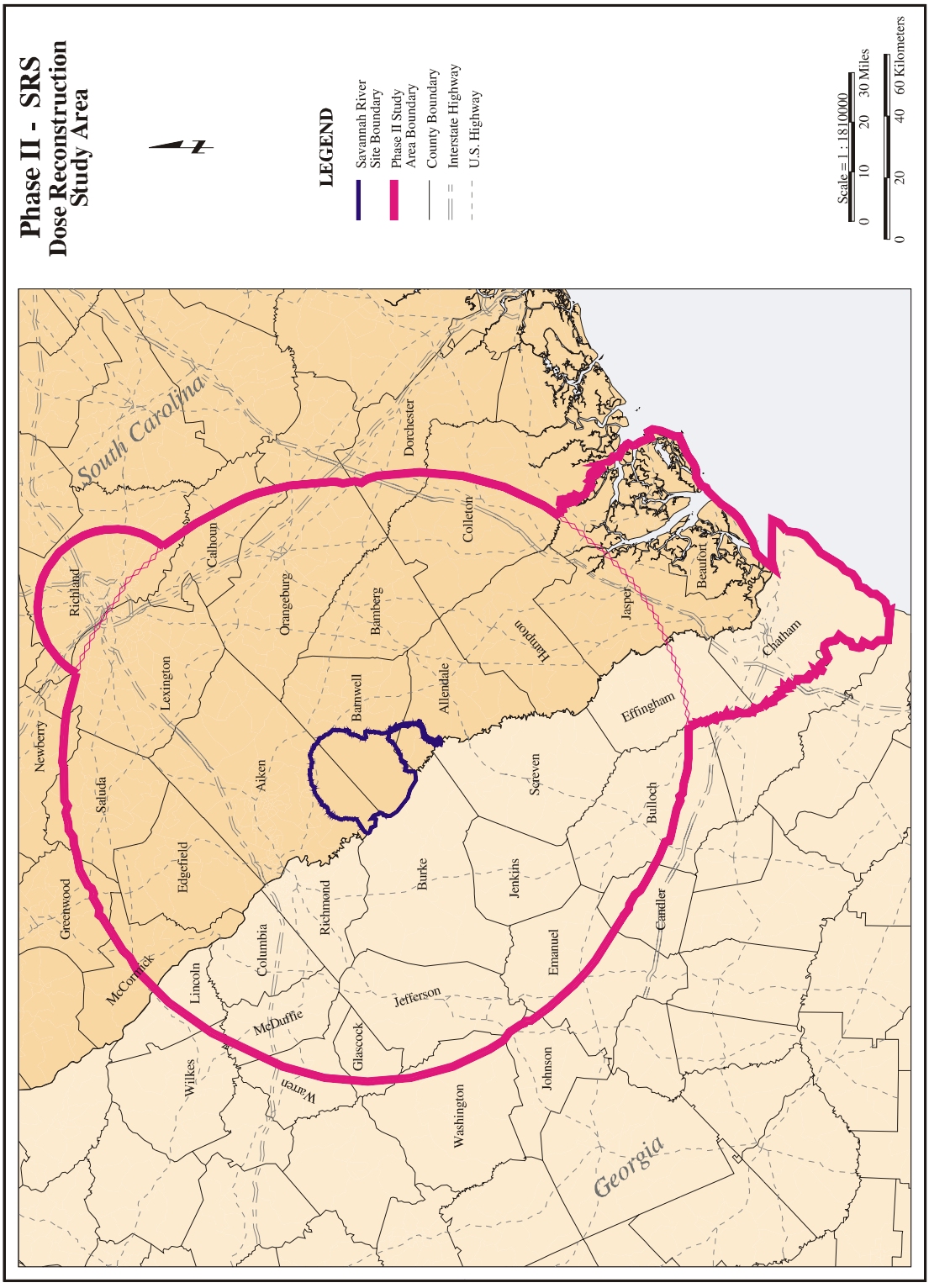


Figure F-1. Map of the project study area.

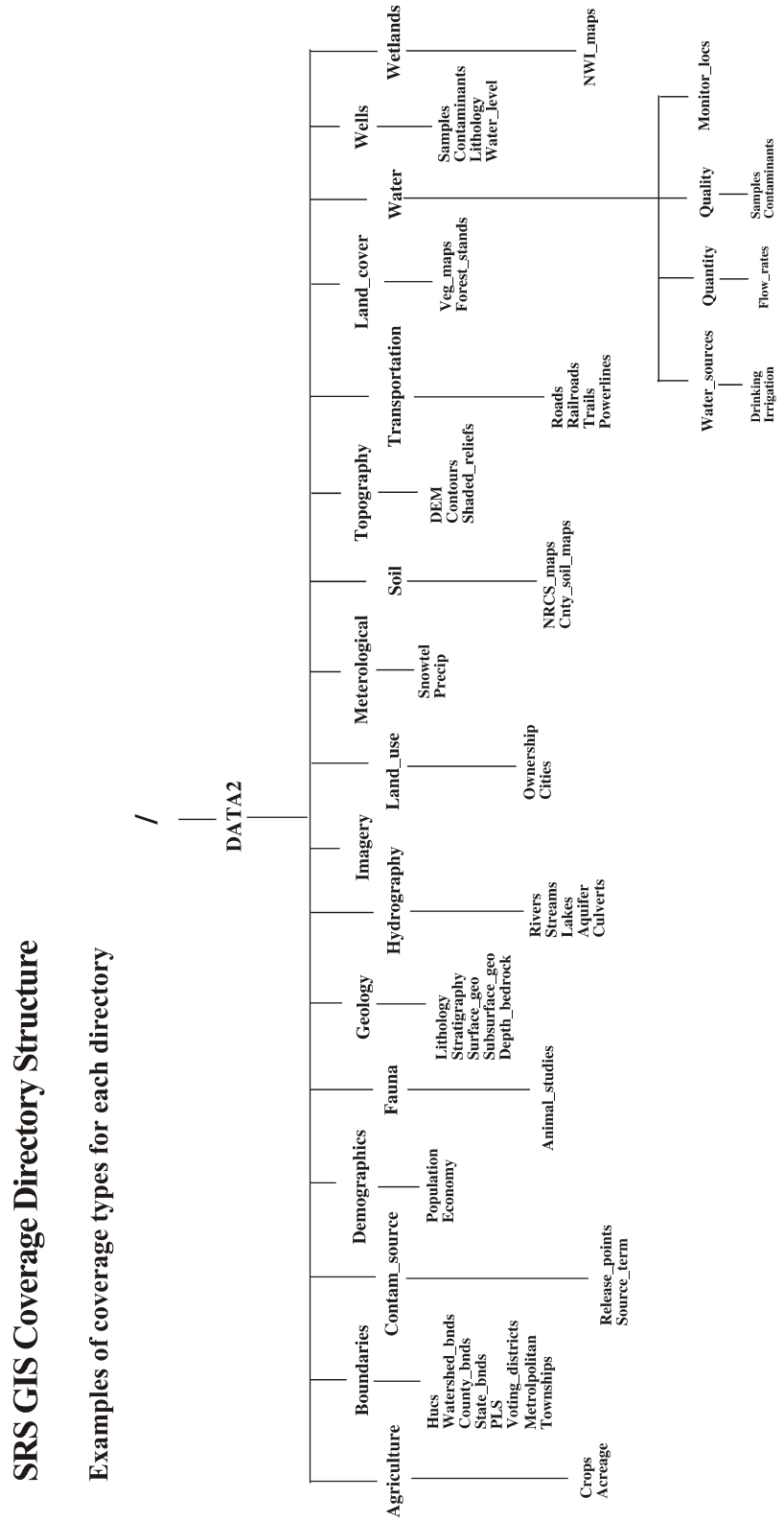


Figure F-2. Proposed GIS data directory structure.

Data Resolution

Generally, 1:100,000 scale data were collected for the area outside the SRS. However, larger scale data for the SRS and some adjacent lands were also obtained. Discussions among project investigators indicated that greater resolutions were not necessary to support analyses.

Data Types

The team attempted to obtain data that would support the following project needs:

1. Locating and mapping locations of chemical and radiological releases (effluents, emissions, spills, and disposal areas)
   - Facility drawings with stacks, drains, effluent pipes
   - Waste disposal areas
   - Storage/loading areas
   - Spill sites
   - Aerial photographs.
2. Identification and analysis of contaminant transport, and exposure pathways (air, surface, ground water, and biota)
   - U.S. Geological Survey (USGS) hydrography
   - SRS drainage patterns
   - United States Fish and Wildlife Service (USFWS) National Wetlands Inventory data
   - Fishing and hunting locations
   - Key habitats for game species
   - Ground cover
   - Digital Elevation Model (DEM) data
   - USGS orthophoto quads
   - Soil data
   - TIGER data or other census data
   - Remotely sensed data (aerial photographs and satellite imagery).
3. Locations where single samples were collected and/or monitoring station locations (historic or current)
   - SRS monitoring sites (current/historic)
   - Other state, federal, and university monitoring sites (EarthInfo data for USGS, NCDC, STORET)
4. General GIS base coverages
   - Transportation (roads, trails, and power lines)
   - Ownership, borders (e.g., counties, cities and towns, forests, recreation areas)
   - Land use.

Sources of GIS Data

The primary sources for GIS data were the SRS Legacy GIS Coverages CD, Version 1 and Version 2, American Digital Cartography Inc. (ADC) Cornerstone Data, U.S. Environmental Protection Agency (EPA) BASINS CD for Region 4, NASA, USGS and EPA North American Landscape Characterization Project.

GIS Coverages Obtained

Table F-1 is a list of the GIS coverages and imagery compiled to date. SRS recently released a new version of the SRS Legacy GIS Coverages that includes both GIS coverages and historic aerial photographs for the SRS. Coverages that were obtained, but do not have appropriate documentation are not included in this table.

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
Bizmuth	Bi91t	Arc	Monitoring	Bismuth present at the SRS, South Carolina in 1991. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Breakwaters	Bkwaters	Arc	Facilities	Twenty-two breakwaters along the Savannah River. Breakwaters are wooden poles placed vertically in a river in a line to divert water flow.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Boundrys	Boundrs	Polygon	Boundaries	Political boundaries	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Buildngs	Buildngs	Polygon	Facilities	Building outlines	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Cemetery	Cemetery	Polygon	Land use	Cemeteries	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Comps	comps	Polygon	Land use	Timber compartments	SRS	SRS Legacy Data, Ver. 1
Contours	contours	Arc	Topography	Contour lines 10-ft interval	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Ecoclass	ecoclass	Polygon	Land_cover	Ecosystem classification	SRS	SRS Legacy Data, Ver. 1
Fences	fences	Arc	Facilities	Fence boundaries	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Gross contours	grosscnt	Arc	Topography	Topographic contours	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
Historic wetlands	Histwet	Polygon	Wetlands	Historical wetlands before 1952 on the SRS, South Carolina	SRS	SRS Legacy Data, Ver. 1
Hollow creek	Hollowcr	Polygon	Geology	Geology map–Hollow Creek 1:24,000 quad	Hollow Creek quad	SRS Legacy Data, Ver. 1
Land cover	Landcov	Polygon	Land_cover	Land cover	SRS	SRS Legacy Data, Ver. 1
Mgmt_ar	mgmt_ar	Polygon	Boundaries	Timber management areas	SRS	SRS Legacy Data, Ver. 1
Npdes96	Npdes96	Point	Contam_source	National Pollutant Discharge Elimination System (NPDES) 1996 permit locations	SRS	SRS Legacy Data, Ver. 1
Openwells	opnwells	Point	Wells	Pre-1951 residential wells	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Pipes	pipes	Arc	Transportation	Pipes and power transmission lines	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Rails	rails	Arc	Transportation	Railroads	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Roads	roads	Arc	Transportation	Roads and trails	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Rsrch_su	rsrch_su	Polygon	Boundaries	Protected forest research	SRS	SRS Legacy Data, Ver. 1
Setaside	Setaside	Polygon	Boundaries	Coverage for Set-Aside boundary and vegetation communities	SRS	SRS Legacy Data, Ver. 1
Site grid	Site_grd	Polygon	Boundaries	Grid over SRS	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Snelling	Snelling	Polygon	Geology	Geology map–Snelling 1:24.000 quad	Snelling Quad	SRS Legacy Data, Ver. 1
Soils	soils	Polygon	Soils	Natural Resource Conservation service (NRCS) soil survey	SRS	SRS Legacy Data, Ver. 1
SRS bays	Srsbays	Polygon	Hydrography	Bay areas on the SRS	SRS	SRS Legacy Data, Ver. 1
SRS boundary	Srsbnd	Polygon	Boundaries	SRS boundary	SRS	SRS Legacy Data, Ver. 1
Stands	stands	Polygon	Land_cover	Timber comps and stand bound	SRS	SRS Legacy Data, Ver. 1

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
Streams	streams	Arc	Hydrography	Single line water courses	SRS and beyond the SRS boundary	SRS Legacy Data, Ver. 1
Trails	trails	Arc	Transportation	Trails maintained by SRFS	SRS	SRS Legacy Data, Ver. 1
Water bodies	waterbds	Polygon	Hydrography	Water bodies and major streams	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Wells95	wells95	Point	Wells	Monitoring wells 2Q 95	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Wells96	wells96	Point	Wells	Monitoring wells 2Q 96	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Willistn	Willistn	Polygon	Geology	Geology map–Williston 1:24,000 quad	Williston quad	SRS Legacy Data, Ver. 1
Wl_comps	wl_comps	Polygon	Land_cover	Wildlife compartments	SRS	SRS Legacy Data, Ver. 1
Wtreg195	wtreg195	Arc	Hydrography	Regional water table 1Q 95	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Wetsoils	Wetsoils	Polygon	Soils	Wetland soils	SRS	SRS Legacy Data, Ver. 1
Cobalt	Co91t	Arc	Monitoring	Cobalt present at the SRS, South Carolina. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Cesium	Cs91t	Arc	Monitoring	Cesium present at the SRS, South Carolina. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Gross counts	Gc91t	Arc	Monitoring	Gross count at the SRS, South Carolina. This coverage contains the gross count at SRS in 1991. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
Potassium	K91t	Arc	Monitoring	Potassium present at the SRS, South Carolina in 1991. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Man made gamma	Mm91t	Arc	Monitoring	Man-made gamma present at the SRS, South Carolina in 1991. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Natural background gamma	Nat91t	Arc	Monitoring	Natural background gamma present at the SRS, South Carolina in 1991. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Protactinium	Pa91t	Arc	Monitoring	Protactinium present at the SRS, South Carolina in 1991. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Thorium	Th91t	Arc	Monitoring	Thorium present at the SRS, South Carolina in 1991. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
Uranium	Ur91t	Arc	Monitoring	Uranium present at the SRS, South Carolina in 1991. An Aerial Radiological Survey of the SRS and Surrounding Area Oct.–Nov. 1991.	SRS and just beyond the SRS boundary	SRS Legacy Data, Ver. 1
1951 aerial photographs	Varies with photo	ERDAS lan files	Imagery	Browse Vertical Aerial Photography 1951	SRS	SRS Legacy Data, Ver. 2
1966 aerial photographs	Varies with photo	ERDAS lan files	Imagery	Browse Vertical Aerial Photography 1966. 301 frames of vertical, false color black and white, aerial photography scanned at browse quality (approximately 70 dots per inch(dpi)) at approximately 10 meter resolution.	SRS	SRS Legacy Data, Ver. 2

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
1974 aerial photographs	Varies with photo	ERDAS lan files	Imagery	Browse Vertical Aerial Photography 1974. 347 frames of vertical, black and white, aerial photography scanned at browse quality (approximately 70 dots per inch(dpi)) at approximately 10 meter resolution	SRS	SRS Legacy Data, Ver. 2
1991 aerial photographs	Varies with photo	ERDAS lan files	Imagery	Browse Vertical Aerial Photography 1991. 25 frames of vertical, normal color, aerial photography scanned at browse quality (approximately 70 dots per inch(dpi)) at approximately 30 meter resolution.	SRS	SRS Legacy Data, Ver. 2
1994 aerial photographs	Varies with photo	ERDAS lan files	Imagery	Browse Vertical Aerial Photography 1994. 55 frames of vertical, false color infrared, NAPP, aerial photography scanned at browse quality (approximately 70 dots per inch(dpi)) at approximately 30 meter resolution.	SRS	SRS Legacy Data, Ver. 2
Gnis	gnis	Point	Annotext	The Geographic Names Information System (GNIS). Features include schools, airports, bridges, canals, churches, dams, hospitals, parks, reservoirs, streams, lakes, etc.	SC and GA[b]	ADC
Hydro	hydro	Polygon, Arc	Hydrology	Includes lakes, reservoirs, streams, swamps, and water (seas). Includes arc and polygon coverages.	SC and GA	ADC
Misc	misc	Arc	Transportation	Airports, power lines, substations, pipelines, etc.	SC and GA	ADC
Quads	quads	Poly	Boundaries	1:100,000 quad boundaries and ID number	SC and GA	ADC
Rail	rail	Arc	Transportation	Railroads and railroad bridges	SC and GA	ADC

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
Roads	roads	Arc, annotext	Transportation	Roads (single line). Features include primary, secondary, under and overpasses, ferry, trails, etc. Includes annotation.	SC and GA	ADC
Roads_d	roads_d	Arc, annotext	Transportation	Roads, both sides of road. Features include primary, secondary, under and overpasses, ferry, trails, etc. Includes annotation.	SC and GA	ADC
Land use and land cover	L_"name"	Polygon	Land_uses	Land use and land cover: Boundaries associated with land use classifications such as residential, deciduous forest land, and forested wetland	SC and GA	EPA - Basins
Urbanized areas	urban	Polygon	Land_use	Urbanized areas: Boundaries of census-defined urbanized areas	SC and GA	EPA - Basins
Populated place locations	urban_nm	Point	Land_use	Populated place locations: locations of populated places as represented on USGS topographic maps	SC, GA	EPA - Basins
Reach File, version 1 (RF1)	rf1	Arc	Hydrology	Reach File, version 1 (RF1): Hydrographic database containing over 68,000 reaches to represent surface waters of the continental U.S.	SC and GA	EPA - Basins
Major roads	roads	Arc	Transportation	Major roads: Interstate and state highway network	SC and GA	EPA - Basins
USGS Hydrologic Unit Boundaries (accounting unit)	acc	Polygon	Boundaries	USGS hydrologic unit boundaries (accounting unit): Nationally consistent delineation of the hydrographic boundaries associated with major U.S. river basins	SC and GA	EPA - Basins
USGS Hydrologic Unit Boundaries (cataloging unit)	cat	Polygon	Boundaries	USGS hydrologic unit boundaries (cataloging unit): Nationally consistent delineation of the hydrographic boundaries associated with major U.S. watersheds	SC and GA	EPA - Basins

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
Drinking water supply (DWS) sites	dws	Point	Wells	Drinking Water Supply (DWS) sites: Location of public water supplies, their intakes, and sources of surface water supply	SC and GA	EPA - Basins
Dam sites	dam	Point	Facilities	Dam sites: Inventory of U.S. dams with associated data such as impoundment volume and maximum depth	SC and GA	EPA - Basins
EPA Region	epa_reg	Polygon	Boundaries	EPA region boundaries: Administrative boundaries	SC and GA	EPA - Basins
State boundaries	st	Polygon	Boundaries	State boundaries: Administrative boundaries	SC and GA	EPA - Basins
County boundaries	cnty	Polygon	Boundaries	County boundaries: Administrative boundaries	SC and GA	EPA - Basins
Water quality monitoring station summaries	wq_stat	Point	Water/quality	Statistical summaries of water quality monitoring for 50 physical and chemical-related parameters. Parameter-specific statistics computed by station for 5-year intervals from 1970 to 1994.	SC and GA	EPA - Basins
Bacteria monitoring station summaries	bac_stat	Point	Water/quality	Statistical summaries of water quality monitoring for 10 bacteria-related parameters. Parameter-specific statistics computed by station for 5-year intervals from 1970 to 1994.	SC and GA	EPA - Basins
National Sediment Inventory (NSI)	nsi	Point	Water/quality	Sediment chemistry, tissue residue, and benthic abundance monitoring data for freshwater and coastal sediments	SC and GA	EPA - Basins
Weather station sites	metpt	Point	Meterology	Location of first-order National Oceanic and Atmospheric Administration (NOAA) weather stations used by the SWRRB model	SC and GA	EPA - Basins
USGS gauging stations	gage	Point	Water/quantity	Inventory of surface water gauging station data including 7Q10 low and monthly mean stream flow	SC and GA	EPA - Basins

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
Permit Compliance System (PCS) sites and computed loadings	pcs	Point	Contam_source	NPDES permit-holding facility information. Contains parameter-specific loadings to surface waters computed using the EPA Effluent Decision Support System (EDSS).	SC and GA	EPA - Basins
Industrial Facilities Discharge (IFD) sites	ifd92	Point	Contam_source	Industrial Facilities Discharge (IFD) sites: Facility information on industrial point source dischargers to surface waters	SC and GA	EPA - Basins
Toxic Release Inventory (TRI) sites, 1992 Release	tri	Point	Contam_source	Facility information from the 1992 TRI public data release. Contains Yes/No flags for each facility indicating media-specific reported releases.	SC and GA	EPA - Basins
Superfund National Priority List Sites	Npl	Point	Contam_source	Superfund National Priority List sites: Location of Superfund National Priority List sites	SC and GA	EPA - Basins
Border Counties	brdrcnty	Arc	Boundaries	SRS P2 study are boundary for the counties downstream of the SRS and adjacent to the Savannah River	Part of the SRS phase 2 study area	RAC
SRS 50 mile buffer	SRS50buf	Arc	Boundaries	Boundary created from 50 mile buffer around the SRS boundary. Also includes Columbia, SC.	Part of the SRS phase 2 study area	RAC
SRS 30 mile circle	SRS30mi	Arc	Boundaries	Approximate 30 mile circle centered on the SRS	Part of the SRS phase 2 study area	RAC
SRS 1 mile buffer	SRS1mi	Arc	Boundaries	Boundary created from 1 mile buffer around the SRS boundary.	Part of the SRS phase 2 study area	RAC
SRS Facilities	SRSfacil	Polygon	Facilities	Polygons for the primary SRS facility areas.	SRS	RAC
USGS GW wells	Usgsgwwq	Point	Wells	USGS ground water monitoring wells within the study area	Entire SRSP2 study area	RAC

Table F-1. GIS Data Compiled

Coverage	Filename	Coverage type	Coverage category	Description	Extent[b]	Source[a]
Counties	Cntys50, cntys50.e00	Polygon	Boundaries	Counties within 50 miles of the center of SRS	Most of the SRSP2 study area	SRS
Polar section grid for SRS area	Srspie, srspie.e00	Polygon	Boundaries	50 mile radius and a 16 section polar grid centered on SRS. See srspiecp.xls for attributes for each section	50 mile from center of SRS	GA Tech. and SRS
Clipped land cover data	Srspieclip, srspieclip.e00	Polygon	Land_use	Clip polygon for crop production within 50 mile buffer of SRS, See srspiecp.xls	50 mi from center of SRS	GA Tech. and SRS
1970 NALC data	102174.lan	Imagery	Imagery	10/21/74 EPA North American Landscape Characterization (NALC) imagery, Landsat MSS data resampled to 60-m resolution	Most of the study area	NASA, USGS, EPA
1980 NALC data	101886.lan	Imagery	Imagery	10/18/86 EPA (NALC) imagery, Landsat MSS data resampled to 60-m resolution	Most of the study area	NASA, USGS, EPA
1990 NALC data	92790.lan	Imagery	Imagery	9/27/90 EPA NALC imagery, Landsat MSS data resampled to 60-m resolution	Most of the study area	NASA, USGS, EPA
NALC DEM	Nalc.dem	DEM	Topography	DEM data for NALC imagery	Most of the study area	NASA, USGS, EPA

[a] SRS Legacy Data = Legacy GIS Coverages, Version 1; Version 2
ADC = GA and SC Cornerstone data obtained from American Digital Cartography, Inc.
EPA Basins = USEPA data from Region 4 BASINS CD, Version 1.
GA Tech. and SRS = Twining 1998
NASA, USGS, EPA = NASA Pathfinder data, North American Landscape Characterization Project
[b] SC = South Carolina, GA = Georgia.

Map Development

A number of maps have been developed to support the project investigators and communication with the public. Table F-2 is a list of these maps.

Table F-2. Maps Produced for the SRS Project

File name	Description of map or figure	Paper Size
census_blk_base_map_a-p.ps	Census blocks: old study area boundary; doesn't include all of Beaufort CO.	a
census_blk_base_map_d-p.ps	Census blocks: old study area boundary; doesn't include all of Beaufort CO.	d
census_blk_base_map_e-p.ps	Census blocks: old study area boundary; doesn't include all of Beaufort CO.	d
feed_past_25mile_a-l.ps	Feedlots/croplands and pasture approximately 25 miles beyond SRS boundary	a-l
med_25mile_gt50k_a-l.ps	SRS with 25 mile buffer; example query of census blocks with median family income greater than $50,000	a-l
pop_25mile_gt3000_a-l.ps	SRS with 25 mile buffer, example query of census blocks with greater than 3,000 people	a-l
sc_road_city-a.ps	SRS and surrounding towns with major roads, 35 mile buffer around SRS	a
sc_road_city-d.ps	SRS and surrounding towns with major roads, 35 mile buffer around SRS	d
Srs_basemap_a-l.ps	B&W basemap of SC and GA, county boundaries, and 50 mile buffer around SRS.	
srs_hydro_wet-a.ps	SRS - hydrography, wetlands, facility areas and major roads	a
srs_hydro_wet-d.ps	SRS - hydrography, wetlands, facility areas and major roads	d
srs_hydro-a.ps	SRS - hydrography, wetlands, facility areas and major roads	a
srs_hydro-d.ps	SRS - hydrography, wetlands, facility areas and major roads	d
srs_landuse_map.ps	Land use for the study area	c
srs_landuse_map_c-l.ps	Land use for the study area	c-l
srs_landuse_map_e-l.ps	Land use for the study area	e-l
srs_road-a.ps	SRS - major roads, facility areas, and hydrography	a
srs_road-d.ps	SRS - major roads, facility areas, and hydrography	d
srs_road2-d.ps	SRS - all roads, buildings, and hydrography	d
srs_samp_grid_map_a-l.ps	SRS map with sample grid	a-l
srs_samp_grid_map_c-l.ps	SRS map with sample grid	c-l
srs_samp_grid_map_e-l.ps	SRS map with sample grid	e-l
srs_shaded_relief_map-24x28.ps	Shaded relief map of SRS	24 × 28 in.

File name	Description of map or figure	Paper Size
srs_shaded_relief_map-e-90.ps	Shaded relief map of SRS	e
srs_study_area_a-p.ps	Entire study area	a
srs_study_area_d-p.ps	Entire study area – old study area map, doesn't include all of Beaufort CO	d
srs_study_area_e-p.ps	Entire study area – old study area map, doesn't include all of Beaufort CO	e

RAC CD-ROM Production

A CD-ROM has been produced that includes data compiled for this study. The list below provides a general description of the GIS and demographic data directories and files housed on the CD. Several GIS data sets compiled by *RAC* are not included on the *RAC* CD because the data are copyrighted; these are the American Digital Cartography Cornerstone Data and the SRS Legacy GIS Coverages. These files were transmitted to the CDC on their original CDs with the Preliminary Draft Report, in September 1998. Other data compiled and reviewed may not be included because there was no documentation for the data. Figure F-3 illustrates the GIS and demographic data directories and files found on the Final SRSDRP2-CD.

Title: "Final SRSDRP2-CD"
GIS and demographic data directories include:

ADCsupport
This folder contains a help file that discusses some of the files obtained from American Digital Cartography. The file provides background information on numerous types of GIS data, only some of which were obtained for this study.

arcexplorer
This folder contains ArcExplorer software developed by Environmental Systems Research Institute, Inc. (ESRI). This freeware executable file will setup an application that allows the user to view the GIS coverages on the *RAC* CD. This software is discussed further in the "readme.doc" file on the CD.

demog
These are the SCSU demographics data collected and entered into Excel tables. The file names used are the same as those in the Demographic Data Table (Table F-3) that documents data types and sources. This directory also includes the food and lifestyle survey data and the oracle database export file.

earthinfo_files
These files are export files obtained from EarthInfo. They are primarily .dbf and .xls files that were extracted to support development of monitoring station GIS coverages. Only the groundwater station location data were developed into a GIS coverage. The remainder of the files can be readily converted to GIS coverages if desired.

map_files
These are map postscript files developed for the project (see Table F-2).

srs_gis_data
This directory has several subdirectories containing GIS data that can be viewed by ArcExplorer software provided on this CD. This entire directory must be copied to the correct drive on your computer for the GIS project .aep files to work correctly. See the "readme.doc" file on the CD for an explanation regarding how to view the GIS data.

aep_files
This folder contains one or more .aep files that will be used to view GIS data.

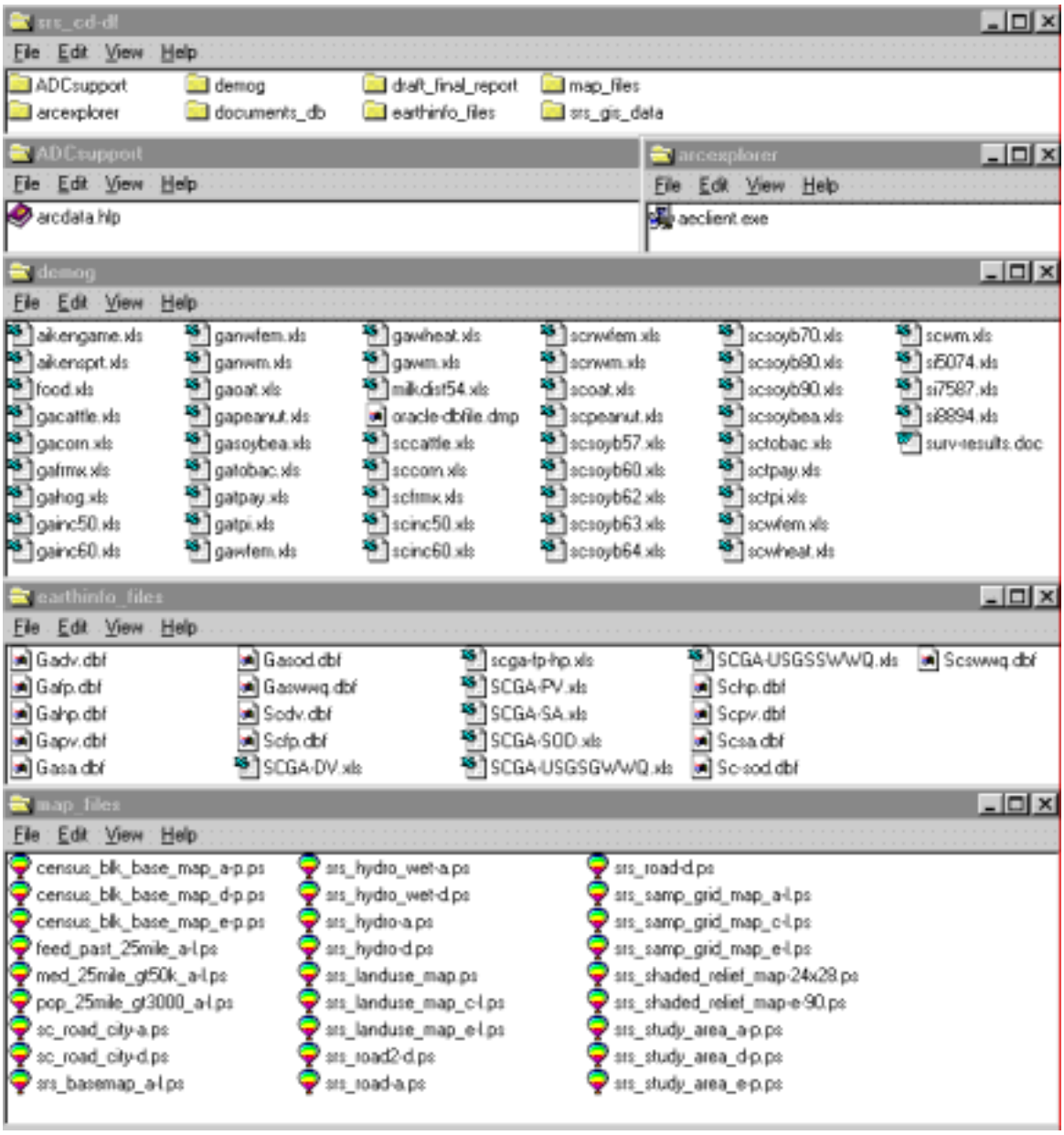
basins-data
These data are from the EPA Region 4, Better Assessment Science Integrating Point and Nonpoint Sources (BASINS)

imagery
USEPA-USGS North American Landscape Characterization (NALC) data. This is Landsat MSS data from the early 70's, 80's, and 90's. These data are in ERDAS .lan file format, so they can be viewed using ArcView or ArcExplorer.

misc_covs
These are several coverages generated by RAC.

srs_landuse
These are files from SRS, originally generated by Georgia Tech to support food production and food chain analysis for the area within fifty miles from the center of SRS.

srsbasin
These are several SRS boundary and other coverages that have been projected to be compatible with the EPA BASINS GIS data.


srs_cd-dl
File Edit View Help
ADCsupport
arcexplorer
demog
documents_db
draft_final_report
earthinfo_files
map_files
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ADCsupport
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File Edit View Help
aeclient.exe
demog
File Edit View Help
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aikensprt.xls
food.xls
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gacorn.xls
gafrmx.xls
gahog.xls
gainc50.xls
gainc60.xls
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sccorn.xls
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sctpi.xls
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scwm.xls
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si7587.xls
si8894.xls
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SCGA-SA.xls
SCGA-SOD.xls
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SCGA-USGSSW/WQ.xls
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Scsa.dbf
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Scswwq.dbf
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med_25mile_gt50k_a-l.ps
pop_25mile_gt3000_a-l.ps
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sc_road_city-d.ps
srs_basemap_a-l.ps
srs_hydro_wet-a.ps
srs_hydro_wet-d.ps
srs_hydro-a.ps
srs_hydro-d.ps
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srs_landuse_map_c-l.ps
srs_landuse_map_e-l.ps
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srs_road-a.ps
srs_road-d.ps
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srs_samp_grid_map_c-l.ps
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srs_study_area_e-p.ps
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misc_covs
srs_landuse
srsbasin
aep_files
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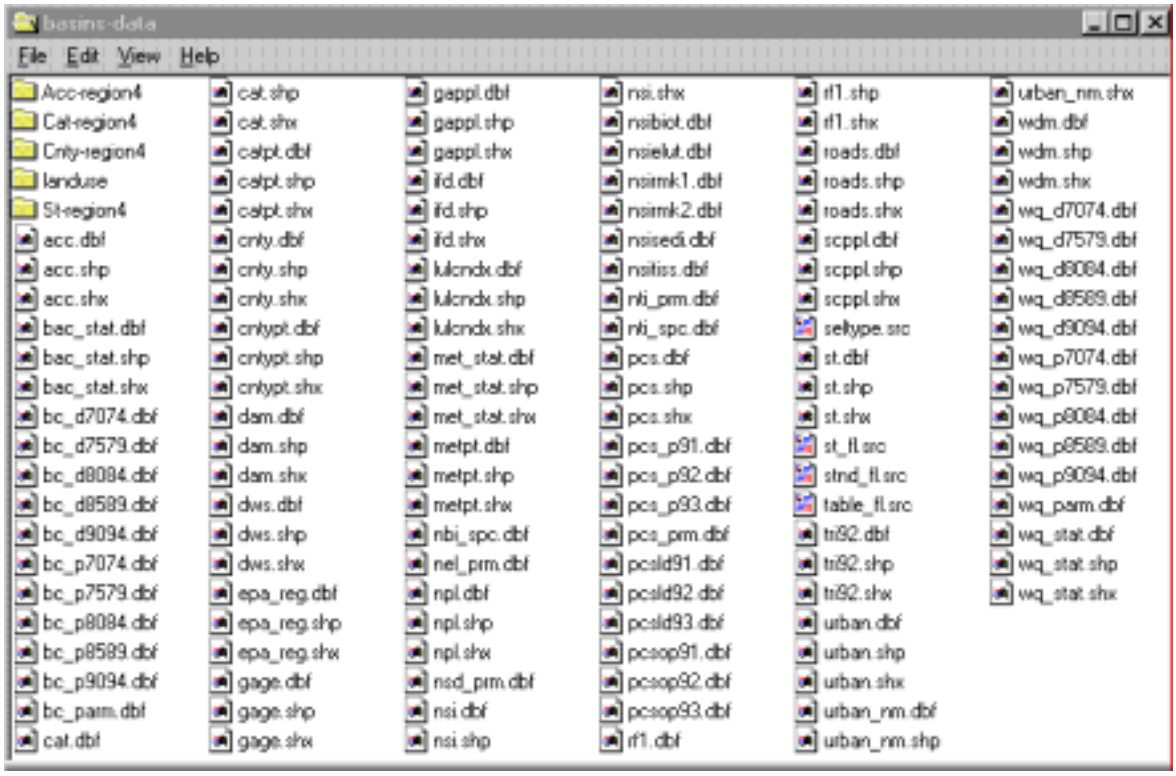
srslegacy.aep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Cat-region4
Cnty-region4
landuse
St-region4
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acc.shp
acc.shx
bac_stat.dbf
bac_stat.shp
bac_stat.shx
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bc_d9094.dbf
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bc_p7579.dbf
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cat.shp
cat.shx
catpt.dbf
catpt.shp
catpt.shx
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cnty.shp
cnty.shx
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cntypt.shp
cntypt.shx
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dam.shp
dam.shx
dws.dbf
dws.shp
dws.shx
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epa_reg.shp
epa_reg.shx
gage.dbf
gage.shp
gage.shx
gappl.dbf
gappl.shp
gappl.shx
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ifd.shp
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lulcndx.shp
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met_stat.dbf
met_stat.shp
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npl.dbf
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npl.shx
nsd_prm.dbf
nsi.dbf
nsi.shp
nsi.shx
nsibiot.dbf
nsielut.dbf
nsimk1.dbf
nsimk2.dbf
nsisedi.dbf
nsitiss.dbf
nti_prm.dbf
nti_spc.dbf
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pcs.shp
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roads.shp
roads.shx
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scppl.shp
scppl.shx
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st.shp
st.shx
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stnd_fl.src
table_fl.src
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tri92.shp
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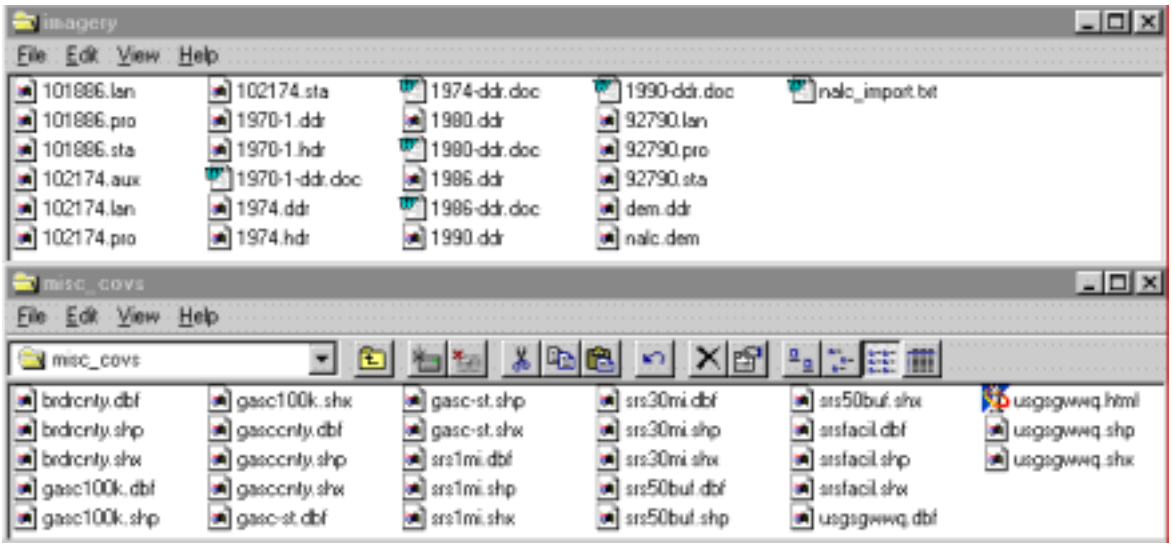
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1986-ddr.doc
1990.ddr
1990-ddr.doc
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nalc.dem
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misc_covs
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brdrcnty.shx
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gasc100k.shx
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gasccnty.shx
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gasc-st.shp
gasc-st.shx
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srs1mi.shp
srs1mi.shx
srs30mi.dbf
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srs50buf.shp
srs50buf.shx
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srsfacil.shp
srsfacil.shx
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usgsgwwq.shp
usgsgwwq.shx

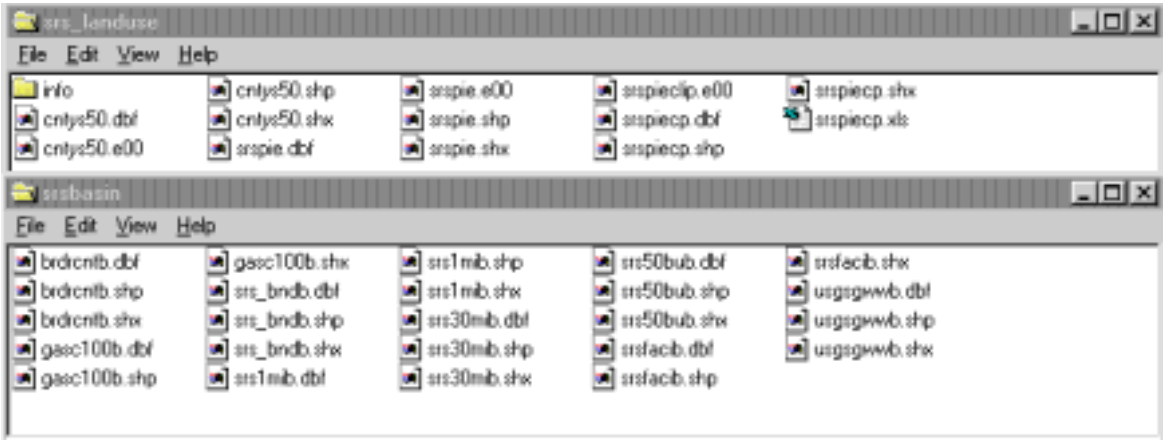


Figure F-3. Directories and files found on the Final SRSDRP2-CD.

Selecting the Study Area Extent

Phase II of the SRS dose reconstruction study required reviewing the thousands of documents collected during the study's first phase and collecting the information to be used to estimate offsite historical radiation and chemical doses and risks. Much of the information collected was geographically based (map-based). We needed to find information showing where groups of people lived while SRS releases were occurring and what food crops and animals were being grown in the region. We also needed to know what water supplies were being used and in which directions the winds were blowing during the years of the releases. Much of this information can be recorded as numbers on a map (for example, the number of people living in a certain town or county during 1960). *RAC* has collected such information in great detail, and we decided, with the help of the SRS Citizens' Health Effects Subcommittee, how large the area being studied should be. *RAC* recommended to the CDC and to the HES that the study area for such data collection be limited to a 50-mi distance from the center of the SRS. While it would be reasonable to select either larger or smaller study areas, our experience performing similar studies in Ohio, Colorado, Utah, and Washington State lead us to recommend a limited radius for several reasons.

One of these reasons has to do with the ways in which past radiation and chemical exposures of people who lived near the Site will be determined. There are several methods used to make such calculations, and some are much more accurate than others. The better methods require more detailed information than is usually available, however.

Radiation or chemical doses are best reconstructed from a series of measurements of the concentrations of specific radionuclides or chemicals in the bodies of those people exposed. If the quantity of a radioactive material in a person's body over time is known, a reasonably accurate calculation of the radiation dose can be made and the risk that material would produce over time. While such measurements are occasionally available (perhaps for some time after an accidental release occurred), such information is not routinely collected when exposures are likely to be low.

In the absence of such data, scientists responsible for estimating historical doses use other, less accurate approaches. For example, there may be measurements from air samplers running at various offsite locations that recorded the concentrations of airborne radionuclides or chemical to which people near the samplers were exposed. There may also be similar information from the

analysis of water, soil, vegetation, crops, animals, and animal products. Such information may be used to estimate the human uptake (from breathing, eating, or drinking) of the measured radionuclides. Once estimates of uptake are made, we can calculate how much of the radionuclide or chemical accumulated within people living in the area and then estimate dose and risk. Estimates of accumulation in the body are, in general, less accurate using this approach than if direct, in-the-body measurements were available.

When measurements of radionuclides or chemicals in air, water, and foods are not available, it is usually necessary to use estimates of the facility's releases, both routine and accidental, to calculate offsite human exposure. These release estimates (called the source term) can be used by computer models of the movement of materials in the environment to estimate offsite air, water, and food concentrations of released materials. Calculations of exposure, dose, and risk can then be made; however, they are less accurate than would be the case if actual, offsite measurements had been taken. Most radiation and chemical dose assessments rely heavily on this last approach because better information is rarely available over an extended period of time.

While dose calculations could be made for people living at any distance from a site, the estimates are usually limited to a specific area. This is because as released chemicals or radionuclides releases drift away from a site, they disperse, deposit, and become less concentrated in the air. Smaller doses are, thus, calculated to occur at increasing distances. The decision is usually made to limit a study's area to avoid spending time calculating very small doses at very large distances. For specific cases, doses might be calculated for greater distances, such as when an accident results in the release of larger than usual quantities of radionuclides for a short period.

This general decrease in dose at increasing distance has been studied carefully and is well understood. For example, researchers have performed experiments to examine the accuracy of computer models used to predict doses at increasing distances from a release site (Fields, et al. 1984). One conclusion of these studies is that doses are relatively small and increasingly inaccurate at great distances from the site of release. It is reasonable to exclude from the study area those regions in which very small dose and risk are likely.

The large set of detailed, geographically based data and satellite imagery necessary to support this study requires a significant amount of time to acquire, format, and document properly. Developing information sets for regions beyond a 50-mi radius from the SRS would add little value to the overall dose assessment and would use resources (staff, time, and money) better spent focusing closer to the Site.

For these reasons, *RAC* recommended limiting the assessment area for the SRS dose reconstruction research to a 50-mi buffer from the Site's boundary. Communities located outside this radius but potentially using drinking water from the Savannah River are also included in the study area. Figure F-1 shows this recommended study area.

DEMOGRAPHIC DATA COMPILATION

Introduction

The ultimate goal of a dose reconstruction project is an estimation of expected numbers of health effects that would be associated with exposure of members of a particular population to contaminants from the facility or process under study. The purpose of establishing a demographic database is to compile information for those populations that may have been affected by releases of chemicals and/or radionuclides from the SRS. The task for the GIS Laboratory at SCSU is to design and implement a relational database showing where to find and how to retrieve information about the population dynamics, agricultural practices, and human lifestyles for all counties in the Savannah River region.

The data collection process is relatively straightforward for the years since 1980 because the data are available and accessible in a digital format. However, before 1965 demographic and agricultural data are incomplete, documented on paper and, therefore, more difficult to retrieve. Some statistical methods have been used to generate the estimates for data before 1965.

It has been difficult identifying lifestyle data consisting of eating habits, time spent outdoors, and time spent indoors for the population living in the Savannah River region from the 1950s to the present. To obtain the most accurate account of such lifestyle data, a survey was conducted to determine the most appropriate and valid estimates for this area. All the data are for the targeted counties within South Carolina and Georgia within the study area.

To document data sources and provide easy access to the metadata, a data set catalogue containing the names and phone numbers of each individual that aided in collecting the data sets was developed. This catalogue is maintained and updated upon the arrival and retrieval of new data. Each data set includes a data dictionary that allows easy access to the tables and their field names.

Demographic Database

The data sets in the database include agriculture, economic, lifestyle, and demographic data for counties within the study area. The information has been acquired from various sources but primarily from government agencies that are believed to be reliable.

The data collection and database development followed a systematic and functional approach. Generally, the following components were considered during the database development:

- The project tasks
- Logical translation into a GIS database
- GIS system standards (hardware and software)
- GIS database design and standards.

The following components and factors were considered during the database design process:

- File system organization
- Naming conventions
- Spatial data automation standards
- Coordinate system and scale

- Data description
- Access and security
- Maintenance and updates
- Integration with GIS.

System Standards

Software

ESRI's Arc/INFO, GRID, TIN, NETWORK, ARCEDIT, ARCPLOT, TABLES, INFO, ARC Macro language (AML), DATABASE INTEGRATOR, IMAGE INTEGRATOR, ArcStorm, ArcView, ArcDoc, ArcPress, ArcScan, and MapObjects are standard vector based GIS software products for the database.

ERDAS IMAGINE is raster based, standard GIS and image processing software for the database.

Oracle, dBASE, FoxPro are standard database management systems (RDBMS) used to support the database and application development.

Microsoft NT, Window95, and Solaris 2.5 are standard operation systems.

Naming Conventions

1. The demographic database for the project in the GIS Laboratory at SCSU is designed to ensure compatibility with DOS and CD-ROM drives. It is defined as up to eight characters, followed by a period and up to three characters as a file extension.
2. The database has been designed by assigning an abbreviation code for each data set. It is used in associated names. Normally, the code is a combination of the state name and the first character of each word of the data set's names; they are designed to be as meaningful as possible. The abbreviation code may vary from two to seven characters depending on practical situations. A typical example is GAFPT, a code for a data set called "Georgia Full-Part Time Employment."
3. A two-digit number is used to describe the temporal data sets. For example, "1980 Population Dynamics for South Carolina" has an abbreviation of "scpop80" and "1950 Population Dynamics for Georgia" is abbreviated "gapop50."
4. Standard file extensions are used. This includes Oracle file extensions, dBASE file extensions, Microsoft Excel extension, Arc/INFO related file extension, ArcView file extensions, ERDAS IMAGINE extensions, and ordinary ASCII text file extensions.

Data Automation Standards

The SCSU GIS Laboratory automates data with three approaches: data collection, data conversion, and data entry. The data automation plan usually follows this order for a new data set generation:

- Identify automation need based on the tasks
- Determine automation methods (conversion, collection, or entry)
- Implement data quality control procedure.

Data Collection, Conversion, and Entry

The GIS Laboratory is responsible for identifying automation and update needs for new and existing data and their contents. This effort implements standards for quality, content, and transferability. The GIS Laboratory is also responsible for determining data automation methods. For example, data conversion from existing ASCII text, data collection using government files, field survey or other statistical and mathematical methods, and data entry by scan or manual. The Laboratory is responsible for implementing the automation plan and performing the data quality control procedures.

Data Quality Control Procedures

The GIS Laboratory implements a combined quality assurance (QA) procedure for data QA and is responsible for performing and overseeing all data –quality control procedures and activities for the SRS dose reconstruction project at SCSU.

The GIS Laboratory uses the following quality control (QC) procedures to verify accuracy and completeness of the data collected:

- Assess the quality of data if it is in hard copy format
- Check for omissions, incomplete numbers, and copying visibility
- Scan the hard copy data
- Review the scanned data for accuracy in the scan process
- Arrange data in the appropriate format to be entered
- Double check data for errors and accuracy against the original hard copy
- Construct the Database structure
- Enter the completed data into the database table
- Document the source from which the data was obtained
- Keep tracking and reporting progresses of data automation process, make necessary data quality upgrades, enforce consistently the data quality control procedures.

Data and File System Backup

The GIS Laboratory is responsible for the custodianship, retention, protection and backup of all the collected data and file systems currently. To ensure the protection of all data, the Laboratory follows the GRANDFATHER, FATHER, SON scheme for the backup of both file system and data files.

Each Monday through Wednesday and Friday, all the data that have been created or modified will be backed up using the appropriate tape backup unit (TBU). This backup tape is referred to as the SON. Each SON tape will be kept for a minimum of 1 month. Each Thursday a complete backup of all system and data files is completed using the appropriate TBU. This backup tape is referred to as the FATHER. Each FATHER tape will be kept for a minimum of 1 month. On the last Thursday of the month, a complete backup of all system and data files is to be completed using the appropriate TBU. This backup tape is referred to as the GRANDFATHER. Each GRANDFATHER tape will be kept for a minimum of 2 years. All GRANDFATHER tape(s) are stored at an approved offsite location.

Data Sets in the Database

In the dose reconstruction database, data sets are grouped into four primary groups: agricultural data, economic data, demographic data, and lifestyle data. Summary information for each data set is provided in Table F-3, which includes a description of items listed in the data table and source contacts. These files are found in the "demog" directory on the Final SRSDRP2-CD.

Table F-3. Description of Demographic Data Files

File Name (xls)	Data Description	Data Source	Analyses Performed on Data
Aikengame	Hunting Practices in Crackerneck Wildlife Management Area (Aiken County)	Mike Caudell SC Department of Natural Resources (803) 734-3886	
Aikensprt	Sportsman Type in Crackerneck Wildlife Management Area (Aiken County)	Mike Caudell SC Department of Natural Resources (803) 734-3886	
Food	Results of Food Surveys Taken in 10 Targeted Counties for SC & GA	Wei Yang/Leonard Gore 1890 Research & Extension SC State GIS Lab (803) 536-8461	Statistical (frequency distributions)
Gacattle	Cattle Inventory for Georgia	Al Smith, Univ. of GA (Athens), College of Agriculture and Environmental Sciences (706) 542-0900 Jim Brueggen, National Agriculture Statistics Service (202) 720-488	
Gacorn	Corn Grain Harvested And Yield	Al Smith, Univ. of GA (Athens), College of Agriculture and Environmental Sciences (706) 542-0900 Jim Brueggen, National Agriculture Statistics Service (202) 720-488	
GAFRMX	GA Econ Data (Farm Expenditures)	N/A U.S. Bureau of the Census- Bureau of Economic Analysis (202) 606-5360	

File Name (xls)	Data Description	Data Source	Analyses Performed on Data
Gahog	Georgia Hog Inventory	Al Smith, Univ. of GA (Athens), College of Agriculture and Environmental Sciences (706) 542-0900 Jim Brueggen, National Agriculture Statistics Service (202) 720-488	
Gainc50	1950 Econ and Estimates for GA	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	Yes - Estimates are interpolated. The estimates were derived from economic formulation recommended by SC State Univ. School of Business.
Gainc60	1960 Econ Data and Estimates for GA	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	Yes - Estimates are interpolated. The estimates were derived from economic formulation recommended by SC State Univ. School of Business.
Ganwfem	Population Dynamics for Georgia non-white Female by age	Marty Sik Georgia Office of Planning and Budget (Office of Research and Statistical Services) (404) 656-0911 Wei Yang 1890 Research GIS Lab (803) 536-8921	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added to prior decennial census year
Ganwm	Population Dynamics for Georgia non-white Male by age	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added to prior decennial census year
Gaoat	Georgia Oats Harvested and Yield	Al Smith, Univ. of GA (Athens), College of Agriculture and Environmental Sciences (706) 542-0900 Jim Brueggen, National Agriculture Statistics Service (202) 720-488	

File Name (xls)	Data Description	Data Source	Analyses Performed on Data
Gapeanut	Peanut Harvested And Yield	Al Smith, Univ. of GA (Athens), College of Agriculture and Environmental Sciences (706) 542-0900 Jim Brueggen, National Agriculture Statistics Service (202) 720-488	
Gasoybea	Georgia Soybeans Harvested and Yield	Al Smith, Univ. of GA (Athens), College of Agriculture and Environmental Sciences (706) 542-0900 Jim Brueggen, National Agriculture Statistics Service (202) 720-488	
Gatobac	Georgia Tobacco Harvested and Yield	Al Smith, Univ. of GA (Athens), College of Agriculture and Environmental Sciences (706) 542-0900 Jim Brueggen, National Agriculture Statistics Service (202) 720-488	
GATPAY	GA Econ Data (Transfer of Payments)	N/A U.S. Bureau of the Census- Bureau of Economic Analysis (202) 606-5360	
GATPI	GA Econ Data (Total Personal Income)	N/A U.S. Bureau of the Census- Bureau of Economic Analysis (202) 606-5360	
Gawfem	Population Dynamics for Georgia white female by age	Marty Sik Georgia Office of Planning and Budget (Office of Research and Statistical Services) (404) 656-0911	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added to prior decennial census year

File Name (xls)	Data Description	Data Source	Analyses Performed on Data
Gawheat	Georgia Wheat Harvested and Yield	Al Smith, Univ. of GA (Athens), College of Agriculture and Environmental Sciences (706) 542-0900 Jim Brueggen, National Agriculture Statistics Service (202) 720-488	
Gawm	Population Dynamics for Georgia white Male by age	Marty Sik Georgia Office of Planning and Budget (Office of Research and Statistical Services) (404) 656-0911 Wei Yang 1890 Research GIS Lab (803) 536-8921	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added to prior decennial census year.
Milkdist	Milk Distribution in 1950's for Georgia and South Carolina	Andrew Bouville National Cancer Institute (301) 496-9326	
Sccattle	Cattle Inventory for South Carolina	Steve Pavlesek S.C Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
Sccorn	South Carolina Corn Harvested and Yield	Steve Pavlesek S.C Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
SCFRMX	SC Econ Data (Farm Expenditures)	N/A U.S. Bureau of the Census- Bureau of Economic Analysis (202) 606-5360	
Scinc50	1950 Econ and Estimates for SC	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10

File Name (xls)	Data Description	Data Source	Analyses Performed on Data
		(803) 536-8461	years and divides them by 10. The number of years for current estimate is then added to prior decennial census year.
Scinc60	1960 Econ and Estimates for SC	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added to prior decennial census year.
Scnwfem	Population Dynamics for South Carolina non-white female by age	Diane Tester South Carolina Budget and Control Board (Census Data Center) (803) 734-3782 Wei Yang 1890 Research GIS Lab (803) 536-8921	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added to prior decennial census year.
Scnwm	Population Dynamics for South Carolina non-white by age	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added to prior decennial census year.
Scoat	South Carolina Oat Harvested and Yield	Steve Pavlesek S.C. Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
Scpeanut	South Carolina Peanut Harvested and Produced	Steve Pavlesek S.C Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	

File Name (xls)	Data Description	Data Source	Analyses Performed on Data
Scsoyb57	South Carolina Soybeans Harvested and Yield in 1957	Steve Pavlesek S.C Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
Scsoyb60	South Carolina Soybeans Harvested And Yield in 1960	Steve Pavlesek S.C Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
Scsoyb62	South Carolina Soybeans Harvested And Yield in 1962	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	
Scsoyb63	South Carolina Soybeans Harvested and Yield in 1963	Marty Sik Georgia Office of Planning and Budget (Office of Research and Statistical Services) (404) 656-0911 Wei Yang 1890 Research GIS Lab (803) 536-8921	
Scsoyb64	South Carolina Soybeans Harvested and Yield in 1964	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	
Scsoyb70	South Carolina Soybeans Harvested and Yield in 1970	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	

File Name (xls)	Data Description	Data Source	Analyses Performed on Data
Scsoyb80	South Carolina Soybeans Harvested and Yield in 1980	Diane Tester South Carolina Budget and Control Board (Census Data Center) (803) 734-3782 Wei Yang 1890 Research GIS Lab (803) 536-8921	
Scsoyb90	South Carolina Soybeans Harvested and Yield in 1990	Wei Yang 1890 Research & Extension SC State GIS Lab (803) 536-8461	
Scsoybea	South Carolina soybean data, all years	Steve Pavlesek S.C Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
Sctobac	South Carolina Tobacco Harvested and Yield	Steve Pavlesek S.C Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
SCTPAY	SC Econ Data (Transfer of Payment)	N/A U.S. Bureau of the Census- Bureau of Economic Analysis (202) 606-5360	
SCTPI	SC Econ Data (Total Personal Income)	N/A U.S. Bureau of the Census- Bureau of Economic Analysis (202) 606-5360	
Scwfem	Population Dynamics For South Carolina White female by age	Diane Tester South Carolina Budget and Control Board (Census Data Center) (803) 734-3782 Wei Yang 1890 Research GIS Lab (803) 536-8921	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added

File Name (xls)	Data Description	Data Source	Analyses Performed on Data
		(803) 536-8921	to prior decennial census year.
Scwheat	South Carolina Wheat Harvested and Yield	Steve Pavlesek S.C Agricultural Statistics Service (803) 765-5333 Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
Scwm	Population Dynamics for South Carolina white male by age	Diane Tester South Carolina Budget and Control Board (Census Data Center) (803) 734-3782	Yes - Estimates are interpolated. The formula for deriving estimates subtracts the two decennial census years and divides them by 10. The number of years for current estimate is then added to prior decennial census year.
Si5074	Corn Grain Silage Yield and Production (1950-1974)	Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
Si7587	Corn Grain Silage Yield and Production (1975-1987)	Jim Brueggen National Agriculture Statistics Service (202) 720-4889	
Si8894	Corn Grain Silage Yield and Production (1988-1994)	Jim Brueggen National Agriculture Statistics Service (202) 720-4889	

Database Security and Access

The dose reconstruction project database security involves protecting the whole database file system. Generally, there is no direct public access to the project database file system. The access to the data, as stored in the project file system, is restricted using operating system security tools.

The file system access rights are controlled by the host computer (UNIX, NT) administrator. Usually, there is no limitation for any internal GIS staff who have access to the UNIX and NT environment and want to view the file system. However, access (write and execute) rights are

restricted to the limited staff working on the dose reconstruction project. The access rights to the user account area is defined based on the operating system security by the system administrators.

There are four levels of access rights to the *RAC* project database file system:

- *Administrator* (GIS manager and host computer administrator): Can create, destroy, or modify the file system; define database structure and tile system; begin and end transactions; and set user access rights.
- *Manager* (GIS manager): Has read and write access to the database; controls transactions; creates and updates data; and can reassign transactions owned by an operator.
- *Operator* (GIS developers and analysts): Has read and limited write access to the database.
- *None* (all other internal and external users): No access to the database and file system.

Food and Lifestyle Survey

A food and lifestyle survey was conducted to learn about the dietary habits of people in the Georgia and South Carolina study area. The survey was designed to collect information on lifestyle activities (food intake, leisure time and work obligations). It is important to survey dietary habits so that estimates of human doses or exposure from ingestion can be based on where food was grown and how much was consumed. For example, for a particular population group (i.e., black males) within the study area, surveys can provide information on their eating habits and about the specific foods they may have consumed. This information is important because eating habits of certain population groups may yield a greater chance of exposure to potentially contaminated foods. The specific results of the survey are in surv-results.doc.

Approach and Methods

Numerous surveys have been conducted to study food habits and consumption of particular food groups (Rupp 1980; Pao 1982; Pennington 1983; EPA 1984a, 1984b). Some studies have involved assessing radionuclide intake. These studies have included distributions by race, sex, age, and occasionally, income levels. The USDA (USDA 1987, 1993) and USDA and U.S. Department of Health, Education, and Welfare (HEW) conducted these surveys (USDHEW 1963). Literature reviews were conducted to determine appropriate survey methods for the target population. Food and nutrition scientists were contacted from South Carolina State University Family Consumer Sciences Department, U.S. Department of Agriculture (USDA) Food & Nutrition Information Center, and USDA Agriculture Research Service to gather information to help design the consumption survey. After reviewing literature and obtaining information from these agencies, the lifestyle and food survey questionnaire for local populations was produced. The following steps were used to estimate food consumption:

1. Determine the most appropriate previously produced estimates
2. Use sub-population distribution from data obtained to weight for the local population
3. Adjust estimates with supplementary local data
4. Create an annual index of change based on USDA-ERS per capita food consumption data
5. Use the series to create annual estimates from 1950 onward.

Previous study estimates that were reviewed contained detailed information on bioclinical and clinical data. They focused more on actual chemical nutrients consumed than eating habits broken down by age, race, and gender. In addition, many of these estimates were regional or statewide. Based on the available information, obtaining local data through surveys was determined to be the most direct and practicable approach and the surveys would satisfy steps 1 through 3 above.

In producing the surveys, the distribution of specific ages (people 18-years old and older), genders, and races in the sample for the 50-county area were determined. Public locations, such as grocery stores, were chosen as good areas to conduct the surveys because the locations could be categorized (e.g., county/town, urban/rural, and affluent/not so affluent) and provide a good survey distribution. After the surveys were produced, student workers went in pairs to each of the targeted counties. Surveys were conducted in Georgia and South Carolina counties. Five counties for each state served as sample areas. The counties for South Carolina were Aiken, Allendale, Barnwell, Edgefield, and Hampton. Georgia counties included Burke, Columbia, Effingham, Richmond, and Screven. A sample size of 500 (250 for South Carolina and 250 for Georgia) was used to represent the population of all targeted counties. These counties were chosen because of their proximity to the SRS, and their location adjacent to the Savannah River. It was felt that people living in these counties would be most likely to have the greatest chance of exposure in the study area. Using the survey forms, the surveyors collected the name of the main contact, name of person conducting interview, date of interview, time of interview, and county of residence for each respondent. The questionnaire contained two main sections: one section focused on food intake and the other focused on demographic information. Each respondent was informed that their personal answers would be kept confidential and used in combination with other survey data only.

Results

A large majority (72.5%) of the respondents used a community water supply, while only (19%) used private wells. The main source of drinking water came from the community water supply. A very small amount (4.4%) of respondents drank bottled water. Over 75% of the respondents ate green vegetables such as broccoli, okra, and spinach. Only 30% of the individuals ate asparagus. Over 70% of the respondents ate yams and turnips, while 47% ate winter squash. Of the melons consumed, 70% of the respondents ate cantaloupes and watermelons. The vast majority of respondents ate pears and plums. There was a big disparity in the type of meat eaten. Individuals chose to consume beef, veal, or pork (77%) and chicken liver (64%) over lamb (31%). As for fish, 76% of the respondents ate fish and 24% did not. Of those eating fish, 37% stated that the fish they ate, were caught by someone they knew, and therefore, they probably came from a local source. Twenty-four percent ate fish from an unknown source, and 38% of the respondents did not answer this question.

Of the demographic responses obtained, approximately 32.5% were white, 57.2% were black, 2.6% were American Indian, 1.8% were Asian or Pacific Islander, and 3.0% were other. Approximately 51% of the respondents were in the 20 through 35 years category and 30% were 36-years old or older. A majority of the respondents worked full-time. Thirty-three percent had a

high school degree and 26% had college degrees. Respondents spent most of their time outdoors in their yards. A very small number spent time hunting and camping.

Discussion

The data that were gathered in the food and lifestyle surveys appear to be a good source of information to understand food distribution patterns assuming local demand is satisfied with local production. However, the data are only useful for the year 1997. In addition, statistical breakdowns will be needed to estimate percentages for each individual county surveyed. Estimates for prior years will have to be derived by using advised sources of prior surveys. Diet variation through time is a complicated problem because the two regional surveys that have been conducted do not cover the time period of interest for this study. Most of the data available from these surveys are from 1980 onward. USDA-ERS data are available for food consumption and food spending. The years for these data are only 1977–1978 and 1987–1988. Sub-populations from past estimates need to be identified and used with local data (including the data from this survey). An annual index of change needs to be developed and used to create annual local estimates from 1950 onward. Additional expertise in the area of food consumption will be sought for this effort. Other food groups including milk products and leafy vegetables need to be considered further along with more information on home-grown food. After estimates of food consumption are derived for the years of interest, they will serve as a primary source to identify populations that may have ingested radionuclides or chemicals released from the Site.

Survey Form

LIFESTYLE SURVEY FOR DOSE RECONSTRUCTION
AT SAVANNAH RIVER SITE

Main Contact: GIS Lab
South Carolina State University
1890 Research and Extension
300 College Street
Orangeburg, SC 29115
536-8921 or 7175

Name of Person(s) Conducting Interview: _____

Date of Interview: _____ Time of Interview: _____ am _____ pm

County of Residence for respondent (please circle one):
1) South Carolina - Aiken, Allendale, Barnwell, Edgefield, Hampton
2) Georgia - Burke, Columbia, Effingham, Richmond, Screven

Purpose: This survey is designed to collect information on lifestyle activities (food intake, leisure time, work obligations). The information will help us identify pathways for radioactive elements from the Savannah River Site nuclear facility. Your responses to this survey are important for establishing which exposure pathways might have affected air, water, and land area. In order to estimate the radioactive exposure to human populations, data for food consumption, outdoor activities and work obligations are necessary. This survey will be used to collect information from surrounding counties of the Savannah River Site.

Your cooperation and participation in this survey are very important. The information that you provide in this survey will be kept confidential and will be used in combination with other survey data only. Should you have concerns or questions, please feel free to contact the SCSU GIS Lab.

FOOD INTAKE

1) What is the main source of the water used for cooking in your home? Is it:

the community water supply, …… 01
your own well or rain cistern , …….. 02
your own spring or a public spring, ….. 03
bottled water your purchase, or …… 04
something else? (SPECIFY) …… 05
_____

2) What is the main source of the water used in your home for preparing beverages such as coffee, tea, juices, and baby formula? Is it:

the community water supply, …….. 01
your own well or rain cistern,……..02
your own spring or a public spring, … 03
bottled water you purchase, or …… 04
something else? (SPECIFY)
_____

3) What is the main source of plain drinking water in your home? Is it:

the community water supply, …… 01
your own well or rain cistern, …… 02
your own spring or a public spring, …… 03
bottled water you purchase, or
something else? (SPECIFY)…… 04
_____

SUGGESTED COMMENT: [You may paraphrase this] Now let's go to yesterday and talk about where you, or other people who live here, obtained the food you ate and where you ate it. (Ask following questions)

4) Where did you obtain most of the ingredients for this food? (please circle all that apply)

01 Store, such as
Supermarket, Grocery Store, or Warehouse,
Convenience Store, Drug Store, or Gas Station
Specialty Store such as:
Bakery, Deli, Seafood, Ethnic Food, Health Food
Commissary
Produce Stand or Farmer's Market
02 Restaurant with waiter/waitress Service
03 Fast Food Place, Pizza Place
04 Bar Tavern
05 School Cafeteria
06 Other Cafeteria
07 Vending Machine
08 Child Care Center, Family Day Care Home, Adult Day Care
09 Soup Kitchen Shelter, Food Pantry
10 Meals on Wheels
11 Other Community Food Program
12 Grown or *Caught by you or someone you know

* IF FISH OR SEAFOOD, ASK: Did it come from a:
41 Freshwater lake, pond, or river
42 The ocean, or
43 A bay, sound, or estuary?
44 Don't know type of water

13 Someone else/gift

Some Other Place (please circle)
14 Mail Order Purchase
15 Common Coffee Pot Or Snack Tray
16 Residential Dining Facility
17 Other (Specify)
98 Don't know

5) Did you eat/drink this food/beverage at your home?

Yes …….. 01
No …… 02

6) Before you ate/drank this particular food/beverage, was it ever at your home?

Yes …….. 01
No ……02

7) Was the amount of food that you ate yesterday about usual, less than usual, or more than usual?

Usual ……. 01
Less Than Usual …….. 02
More Than Usual …… 03

8) What is the main reason the amount you ate yesterday was less than usual? (please circle all that apply)

Sickness …… 01
Short Of Money ……. 02
Traveling …… 03
At a Social Occasion Or
On a Special Day …… 04
On Vacation …… 05
Too Busy …… 06
Not Hungry ……. 07
Dieting …… 08
Fasting …… 09
Bored Or Stressed …… 10
Some Other Reason (Specify)
_____

9) What is the main reason the amount you ate yesterday was more than usual? (please circle all that apply)

Traveling …….. 01
At a Social Occasion Or
On a Special Day …… 02
On Vacation …….. 03
Very Hungry …… 04
Bored Or Stressed…… 05
Some Other Reason

(SPECIFY) _____

SUGGESTED COMMENT: Now I'd (or we) would like you to think about all the plain drinking water that you had yesterday, regardless of where you drank it. By plain drinking water, I mean tap water or any bottled water that is not carbonated, with nothing added to it, not even lemon.

10) How many glasses of plain drinking water did you drink yesterday?

# of glasses _____
None …… 000

11) How much of this plain drinking water came from your home? Would you say all, most, some, or none?

All …… 01
Most …… 02
Some …… 03
None ……. 04

12) What was the main source of plain drinking water that did not come from your home?
Was it tap water, water from a drinking fountain, bottled water, or something else?

Tap Water And/Or Drinking 01
Bottled Water ……..……. 02
Other Source…….…… 03
(SPECIFY) _____
Don't Know…..……. 04

13) During the past 12 months, that is, since last June, have you eaten any of these foods listed below? Please circle all that apply.

	YES	NO
Artichokes …… ……	1	2
Asparagus …….	1	2
Broccoli ……	1	2
Brussels sprouts ……	1	2
Cauliflower ……	1	2
Eggplant …….	1	2
Kale ……	1	2
Swiss chard ……	1	2
Okra ……	1	2

Spinach ……	1	2
Summer squash (thin skin) …….	1	2
Winter squash …….	1	2
Sweet potato or yams …….	1	2
Turnips, other than greens …….	1	2
Avocado or guacamole ……..	1	2
Grapefruit, other than juice ……	1	2
Cantaloupe …….	1	2
Honeydew melon ……	1	2
Watermelon ……	1	2
Nectarines ……..	1	2
Pears ……..	1	2
Plums …….	1	2
Rhubarb …….	1	2
Chicken liver …….	1	2
Beef, veal or pork liver …….	1	2
Lamb …….	1	2
Shellfish ……	1	2
Fish, other than shellfish or canned fish ……	1	2
IF YES: Was any of the fish you ate caught by you or someone you know? …….	1	2

DEMOGRAPHIC INFORMATION

1) Circle gender of individual.

Male…….. 01
Female……..02

2) What race do you identify yourself as? (Circle one)

White……	01
Black……	02
American Indian, Eskimo, or Aleutian..	03
Asian or Pacific Islander..	04
Other……	05

3) What is your age range? (Circle one)
0-5 yrs 6-10 yrs 11-15 yrs 16-20 yrs 21-25 yrs 26-30 yrs 31-35 yrs 36-40 yrs
41-45 yrs 46-50 yrs 51-55 yrs 56-60 yrs 61-65 yrs 66-70 yrs 71-75 yrs 76+

4) What is the highest level of education that you obtained? (Circle response)

Never Attended School Or Kindergarten : 00

Elementary:
01 02 03 04 05 06 07 08

High School:
09 10 11 12 or GED

College:
01 02 03 04+

5) Are you presently: (Skip questions 5-9, if response is given for this question)

Looking For Work ....…… 01
Going To School ...…… 02
Keeping House ....…….. 03
Retired …...……. 04
Unable To Work….……. 05
Other (SPECIFY) …… 06
_____

6) Last week, did you work at all at a paid job or in your own business or farm?

Yes…… 1
No…….. 2

7) Do you have a paid job from which you were temporarily absent?

Yes…… 1
No…….. 2

8) How many hours did you work at all jobs in the last week? Include all overtime hours that you worked and hours on any part-time jobs as well as your principal job.

Of Hours _____

9) How many hours a week do you usually work?

OF Hours _____

10) In your best estimation, how many hours did you spend outdoors? Include outside related work and leisure.

OF Hours _____

11) Of your time spent outdoors, what is it mostly in?

Working (job occupation) …….. 01
Yard activities (gardening, mowing, cleaning, etc…) …… 02
Athletic events or games ……. 03
Hunting/Fishing …… 04
Camping/Hiking …… 05

12) How active do you consider yourself?
Extremely active …… 01
Somewhat active …… 02
Not active …… .. 03

13) In regard to this household, is the property owned or being bought by:
someone living in this household …….. 01
rented with payment required, or …….. 02
occupied without payment of rent
required …….. 03

SUGGESTED ENDING COMMENT: Thank you kindly for allowing me (if applicable, us) this time to interview you. The information that you have provided is of extreme importance to our project. We need this information, along with others, in order to do our calculations. No person will be identified. Again, thank you, and have a nice (morning/afternoon/evening).

Structures for Demographic Database Tables

Structures for all the demographic database tables are provided below.

Structure for database: **food**
Description: Results of Food Survey taken in 10 Targeted Counties for SC & GA (5 in GA / 5 in SC)

Item_Name	Width	Output	N.Dec	Type	Description
STATE	2	2		Numeric	State
COUNTY	2	2		Numeric	County
SEX	4	4	2	Numeric	Sex
AGE	4	4	2	Numeric	Age
RACE	4	4	2	Numeric	Race
EDUC	4	4	2	Numeric	Education
NFRUITS	1	1		Numeric	Number of People Who Eat Fruits
NMEATS	1	1		Numeric	Number of People Who Eat Meats
NVEGS	1	1		Numeric	Number of People Who Eat Vegetables
NFISH	1	1		Numeric	Number of People Who Eat Fish
NCOMM1		1		Numeric	"Community Water, Main Source"
NWELL	1			Numeric	"Well Water, Main Source"
NSPRING	1	1		Numeric	"Spring Water, Main Source"
NBOTTLE	1	1		Numeric	"Bottle Water, Main Source"
NSELSE	1	1		Numeric	"Something Else, Main Source"

NOTES:

THE CODES FOR THE DEMOGRAPHIC VARIABLES ARE AS FOLLOWS:

STATE	13 ='GEORGIA' 45 ='SOUTH CAROLINA'
COUNTY	3 ='AIKEN' 5='ALLENDALE' 11='BARNWELL' 33='BURKE' 37='EDGEFIELD' 49='HAMPTON' 73='COLUMBIA' 103='EFFINGHAM' 245='RICHMOND' 251='SCREVEN'
SEX	1='MALE' 2='FEMALE'
AGE	1='0-5 YEARS' 2='6-20 YEARS' 3='21-35 YEARS' 4='36-65 YEARS' 5='OVER 65'
RACE	1='WHITE' 2='BLACK' 3='AMERICAN INDIAN' 4='ASIAN OR PACIFIC ISLANDER' 5='OTHER'
EDUC	1='ELEMENTARY' 2='HIGH SCHOOL' 3='COLLEGE' 0 - 8 YEARS 9 - 12 YEARS 13 YEARS & OVER

Source of data is GIS Laboratory (South Carolina State University, 1890 Research & Extension)

Structure for Database: **Gacattle**
Description: Cattle Inventory for Georgia

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year

FIPS	5	5	Numeric	Federal	Information	Processing	Standard
COUNTY	15	15	String	County			
CTLCVIN	6	6	Numeric	Cattle-calf inventory			
BFCOWIN	6	6	Numeric	Beef-cow inventory			
MKCOWIN	5	5	Numeric	Milk-cow inventory			
OTCTIN	6	6	Numeric	Other-cattle excluding calves			

NOTES:
- The source for data is Georgia Agricultural Statistics Service County Estimates
- Years included are 1962, 1963, 1964, 1970, 1980, and 1990

Structure for Database: **Gacorn**
Description: Corn Grain Harvested and Yield

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
FIPS	5	5		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
CNGRHAR	6	6		Numeric	Corn Grain Harvested
CNGRYIEL	6	6		Numeric	Corn Grain Yield
CNGRPROD	8	8		Numeric	Corn Grain Produced

NOTES:
- The sources for data are Georgia Agricultural Statistics Service County Estimates and NASS
- Years included are 1950, 1957, 1960, 1962, 1963, 1964, 1970, 1980, 1990

Structure for Database: **Gahog**
Description: Georgia Hog Inventory

Item_Name	Width	Output	N.Dec	Type	Description			
YR	5	5		Numeric	Year			
FIPS	5	5		Numeric	Federal	Information	Processing	Standard
COUNTY	15	15		String	County			
HGPGINV	5	5		Numeric	ALL Hog and Pig Inventory			

NOTES:
- The source for data is Georgia Agricultural Statistics Service County Estimates
- Years included are 1960, 1962, 1963, 1964, 1970, 1980, and 1990

Structure for Database: **Gaoat**
Description: Georgia Oats Harvested and Yield

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
FIPS	5	5		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
PLPRAC	5	5		String	Acres Planted for All Purposes
GRHRAC	5	5		Numeric	All Grain Harvested Acres
GRYLAC	5	5	2	Numeric	All Grain Yield/Harvested Acre (Bushel)
GRPRAC	7	7		Numeric	All Grain Production Bushels

NOTES:
- The source for data is Georgia Agricultural Statistics Service County Estimates and NASS
- Years included are 1980 and 1990

Structure for Database: **Gapeanut**
Description: Peanut Harvest and Yield

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
FIPS	5	5		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
ALLHVAC	7	7		Numeric	All Harvested Acres
ALPHVAC	7	7		Numeric	All Per Harvested Acres
GRPRDAC	10	10		Numeric	All Per Harvested Acre (lbs)

NOTES:
- The sources for data are Georgia Agricultural Statistics Service County Estimates and NASS
- Years included are 1950, 1957, 1960, 1962, 1963, 1964, 1970, 1980, 1990

Structure for Database: **Gasoybea**
Description: Georgia Soybeans Harvested and Yield

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
FIPS	7	7		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
BEHRVAC	6	6		Numeric	All Beans Harvested Acres

BEYLAC	5	5	2	Numeric	All Beans Yield/Harvested Acres
BEPRDAC	6	6		Numeric	All Beans Production Bushels

NOTES:
- The source for data is Georgia Agricultural Statistics Service County Estimates and NASS
- Years included are 1950, 1957, 1960, 1962, 1963, 1964, 1972, 1980, 1990

Structure for Database: **Gatobac**
Description: Georgia Tobacco Harvested and Yield

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
FIPS	5	5		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
ALHVAC	4	4		Numeric	All Type-14 Harvested Acres
ALHVACP	4	4		Numeric	All Type-14 Per Harvested Acres (lb)
ALPRD	7	7		Numeric	All Type-14 Production Pounds

NOTES:
- The sources for data are Georgia Agricultural Statistics Service County Estimates and NASS
- Years included are 1950, 57, 60, 62, 63, 64, 70, 80, and 90

Structure for Database: **Gawheat**
Description: Georgia Wheat Harvested and Yield

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
FIPS	5	5		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
GRHAAC	5	5		Numeric	All Grain Harvested Acres
GRYIEL	5	5	2	Numeric	All Grain Yield/Harvested Acres (bushels)
GRPROD	7	7		Numeric	All Grain Produced (bushels)

NOTES:
- The sources for data are Georgia Agricultural Statistics Service County Estimates and NASS
- Years included are 1950, 1957, 1960, 1962, 1963, 1964, 1970, 1980,and 1990

Structure for database: **milkdist54**
Description: Milk Distribution in 1950s for Georgia and South Carolina

Item_Name	Width	Output	N.Dec	Type	Description
SURST	2	2		String	Surplus State
SURNUM	2	2		Numeric	Surplus Region Number
DEFST	2	2		String	Deficit State
DEFNUM	2	2		Numeric	Deficit Region Number
ETR	5	5		Numeric	Estimated Transfer Rate (kL y-1)
SOI	27	27		String	Source of Information
DR	1	1		Numeric	Degree of Reliability

NOTES:

- Milk Region # - South Carolina Counties

76 Anderson Co., Cherokee Co., Greenville Co., Laurens Co., Oconee Co., Pickens Co., Spartanburg Co., Union Co.
77 Chester Co., Fairfield Co., Kershaw Co., Lancaster Co., York Co.
78 Chesterfield Co., Darlington Co., Dillon Co., Florence Co., Georgetown Co., Horry Co., Marion Co., Marlboro Co., Williamsburg Co.,
79 Calhoun Co., Clarendon Co., Lee Co., Lexington Co., Orangeburg Co., Sumter Co., Richland Co.,
80 Abbeville Co., Aiken Co., Edgefield Co., Greenwood Co., Laurens Co., McCormick Co., Saluda Co.
81 Allendale Co., Bamberg Co., Barnwell Co., Beaufort Co., Berkeley Co., Charleston Co., Colleton Co., Dorchester Co., Hampton Co., Jasper Co.,

- Milk Region # - Georgia Counties

82 Banks Co., Elbert Co., Franklin Co., Habersham Co., Hart Co., Lincoln Co., Madison Co., Oglethorpe Co., Rabun Co., Stephens Co., Wilkes Co.,
83 Barrow Co., Cherokee Co., Clarke Co., Cobb Co., Dawson Co., Dekalb Co., Fannin Co., Forsyth Co., Gilmer Co., Gwinnett Co., Hall Co., Jackson Co., Lumpkin Co., Oconee Co., Pickens Co.,Towns Co., Union Co., Walton Co.
84 Burtow Co., Catoosa Co., Chattooga Co., Dade Co., Floyd Co., Gordon Co., Murray Co., Paulding Co., Polk Co., Walker Co., Whitfield Co.
85 Fulton Co.
86 Appling Co., Brantley Co., Bryan Co., Bulloch Co., Burke Co., Camden Co., Candler Co., Charlton Co., Chatham Co., Columbia Co., Effingham Co., Emanuel Co., Evans Co., Glascock Co., Glynn Co., Jefferson Co., Jenkins Co., Liberty Co., Long Co., McDuffie Co., McIntosh Co., Pierce Co., Richland Co., Screven Co., Tatnall Co., Toombs Co., Ware Co., Warren Co.
87 Baldwin Co., Bibb Co., Bleckney Co., Butts Co., Crawford Co., Dodge Co., Greene Co., Hancock Co., Houston Co., Jasper Co., Johnson Co., Jones Co., Laurens Co., Monroe Co., Montgomery Co., Morgan Co., Newton Co., Peach Co., Pulaski Co., Putnam Co., Rockdale Co., Taliaferro Co., Truetlen Co., Twiggs Co., Washington Co., Wheeler Co., Wilkinson Co.
88 Carroll Co., Chattahoochee Co., Clayton Co., Coweta Co., Douglass Co., Fayette Co., Haralson Co., Harrison Co., Heard Co., Henry Co., Lamar Co., Macon Co., Marion Co., Meriwether Co., Muscogee Co., Pike Co., Schley Co., Spaulding Co., Talbot Co.,

Taylor Co., Troup Co., Upson Co.

89 Atkinson Co., Ben Hill Co., Berrien Co., Brooks Co., Clinch Co., Coffee Co., Colquitt Co., Cook Co., Crisp Co., Dooly Co., Echois Co., Irwin Co., Jeff Davis., Lanier Co., Lowndes Co., Telfair Co., Tift Co., Turner Co., Wilcox Co., Worth Co.

90 Baker Co., Calhoun Co., Clay Co., Decatur Co., Dougherty Co., Early Co., Grady Co., Lee Co., Miller Co., Mitchell Co., Randolph Co., Seminole Co., Stewert Co., Sumter Co., Terrell Co., Thomas Co., Webster Co., Quitman Co.

Milk marketing orders (mmo's) constituted main source of information.
Georgia MMO: Atlanta, Columbus, and Savannah
South Carolina MMO: Anderson, Columbia, Florence, Greenville, and Spartanburg

Structure for table: **Sccattle**

Description: Cattle Inventory for South Carolina

Item_Name	Width	Output	N.Dec	Type	Description
YEAR	5	5		Numeric	Year
FIPS	5	5		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
CTLCVIN	6	6		Numeric	Cattle-calf inventory

NOTES:

The source for data is SC Agricultural Statistics Service County Estimates

Structure for Database: **Sccorn**
Description: South Carolina Corn Harvested and Yield

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
FIPS	5	5		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
CNGRHAR	6	6		Numeric	Corn Grain Harvested
CNGRYIEL	4	4		Numeric	Corn Grain Yield
CNGRPROD	7	7		Numeric	Corn Grain Produced

NOTES:

- The sources for data are S.C. Agricultural Statistics Service, Clemson Dept. of Agricultural Economics, and NASS
- Years included are 1950, 1957, 1960, 1962, 1963, 1964, 1970, 1980, and 1990

Structure for Database: **aikengame**
Description: Hunting Practices in Crackerneck Wildlife Management Area (Aiken County)

Item_Name	Width	Output	N.Dec	Type	Description
YEAR	5	5		String	YEAR
DEER	3	3		Numeric	DEER
HOGS	2	2		Numeric	HOGS
GSQUIR	3	3		Numeric	Gray_Squirrels
FSQUIR3	3			Numeric	Fox_Squirrels
BOBWHITE	3	3		Numeric	Bobwhite
WOODCOCK3	3			Numeric	Woodcock
DUCKS	3	3		Numeric	Ducks
RABBIT	3	3		Numeric	Rabbit
RACCOON	3	3		Numeric	Raccoon
TURKEY	3	3		Numeric	Turkey
DOVE	3	3		Numeric	Dove
COYOTE	3	3		Numeric	Coyote
FISH	3	3		Numeric	Fish

NOTES:
- The source for data is South Carolina Dept. of Natural Resources
- Division of Wildlife and Freshwater Fisheries

Structure for Database: **Scoat**
Description: South Carolina Oats Harvested and Yield

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	4	4		Numeric	Year
ACRHRV	5	5		Numeric	Acres harvested
YLDACRBU	5	5	2	Numeric	Yield per acre bushels
PROD	8	8		Numeric	Production

Structure for Database: **Scpeanut**
Description: South Carolina Peanuts Harvested and Produced

Item_Name	Width	Output	N.Dec	Type	Description

YR	5	5	Numeric	Year
FIPS	5	5	Numeric	Federal Information Processing Standard
COUNTY	15	15	String	County
ALLHVAC	4	4	Numeric	Peanuts Harvested
ALLPHVAC	5	5	Numeric	Peanuts harvested in Pounds
GRPRDAC	7	7	Numeric	Peanuts Produced

NOTES:

- The sources for data is S.C. Agricultural Statistics Service, Clemson Univ. Dept. of Agricultural Economics and NASS
- Years included are 1950, 1957, 1960, 1962, 1963, 1964, 1970, 1980, 1990

Structure for table: **Scsoyb57**
Description: South Carolina Soybeans Harvested and Yield in 1957

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
ACRES57	8	8		Numeric	All Planted All Purpose Acres
PERYIELD57	7	7		Numeric	Yield Per Acres
PROD57	9	9		Numeric	Total Production

Notes:

"The source for data is S.C. Agricultural Statistics Service, Clemson Univ. Dept. of Agricultural Economics and NASS"

Structure for table: **Scsoyb60**
Description: South Carolina Soybeans Harvested and Yield in 1960

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
ACRES60	8	8		Numeric	All Planted All Purpose Acres
PERYIELD60	7	7	2	Numeric	Yield Per Acres
PROD60	9	9		Numeric	Total Production

NOTES:

"The source for data is S.C. Agricultural Statistics Service, Clemson Univ. Dept. of Agricultural Economics and NASS

Structure for table: **Scsoyb62**
Description: South Carolina Soybeans Harvested and Yield in 1962

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
ACRES62	8	8		Numeric	All Planted All Purpose Acres
PERYIELD60	7	7	2	Numeric	Yield Per Acres
PROD60	9	9		Numeric	Total Production

NOTES:

"The source for data is S.C. Agricultural Statistics Service, Clemson Univ. Dept. of Agricultural Economics and NASS"

Structure for table: **Scsoyb63**
Description: South Carolina Soybeans Harvested and Yield in 1963

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
ACRES63	8	8		Numeric	All Planted All Purpose Acres
PERYIELD63	7	7		Numeric	Yield Per Acres
PROD63	9	9		Numeric	Total Production

NOTES:

"The source for data is S.C. Agricultural Statistics Service, Clemson Univ. Dept. of Agricultural Economics and NASS"

Structure for table: **Scsoyb64**
Description: South Carolina Soybeans Harvested and Yield in 1964

Item_Name	Width	Output	N.Dec	Type	Description

FIPS	5	5		Numeric	Federal Information Processing Standards
ACRES64	8	8		Numeric	All Planted All Purpose Acres
PERYIELD64	7	7	2	Numeric	Yield Per Acres
PROD64	9	9		Numeric	Total Production

NOTES:

"The source for data is S.C. Agricultural Statistics Service, Clemson Univ. Dept. of Agricultural Economics and NASS"

Structure for table: **Scsoyb70**
Description: South Carolina Soybeans harvested and Yield in 1970

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standards
ACRES70	8	8		Numeric	All Planted All Purpose Acres
PERYIELD70	7	7	2	Numeric	Yield Per Acre
PROD70	9	9		Numeric	Total Production

NOTES:

"The source for the data is S.C. Agricultural Statistics Service, Clemson Univ. Dept. of Agricultural Economics and NASS"

Structure for table: **Scsoyb80**
Description: South Carolina Soybeans Harvested and Yield in 1980

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
ACRES80	8	8		Numeric	All Planted All Purpose Acres
PERYIELD80	7	7	2	Numeric	Yield Per Acres
PROD80	9	9		Numeric	Total Production

NOTES: The source for data is S.C. Agricultural Statistics Service, Clemson Univ. Dept. of Agricultural Economics and NASS"

Structure for table: **Scsoyb90**
Description: South Carolina Soybeans Harvested and Yield in 1990

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
ACRES90	8	8		Numeric	All Planted All Purpose Acres
PERYIELD90	7	7	2	Numeric	Yield Per Acres
PROD90	9	9		Numeric	Total Production

Structure for Database: **Aikensptmn**
Description: Sportsman Type in Crackerneck Wildlife Management Area (Aiken County)

Item_Name	Width	Output	N.Dec	Type	Description
Year	5	5		Numeric	Year
HUNTERS	4	4		Numeric	Number of Hunters
FISHERMEN	3	3		Numeric	Number of Fishermen

NOTES:

The source for data is South Carolina Dept. of Natural Resources
Division of Wildlife and Freshwater Fisheries

Structure for Database: **Scwheat**
Description: South Carolina Wheat Harvested and Yield

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
FIPS	7	7		Numeric	Federal Information Processing Standard
COUNTY	15	15		String	County
GRHAAC	6	6		Numeric	All Grain Harvested Acres
GRYIEL	5	5	2	Numeric	All Grain Yield/Harvested Acres (bushels)
GRPROD	7	7		Numeric	All Grain Produced (bushels)

NOTES:

- The sources for data is S.C. Agricultural Statistics Service, Clemson Dept. of Agricultural Economics, and NASS
- Years included are 1950, 1957, 1960, 1962, 1963, 1964, 1970, 1980, and 1990

Structure for Database: **si5074**
Description: Corn Grain Silage Yield and Production (1950–1974)

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
STATE	2	2		String	Federal Information Processing Standard
PLPRAC	5	5		Numeric	Planted for All Purposes Acres
GRHRAC	7	7		Numeric	Harvested Grain Acres
YLDPAC	5	5	1	Numeric	Yield Per Acre (bushels)
PROD	9	9		Numeric	Production Bushels
HRSIAC	5	5		Numeric	Harvested Silage Acres
YLDPACT	5	5	1	Numeric	Yield Per Acre Tons
PRODT	5	5		Numeric	Production Tons

NOTES:
- The source for data is the National Agriculture Statistics Service
- Years included are 1950 through 1974

Structure for Database: **si7587**
Description: Corn Grain Silage Yield and Production (1975–1987)

Item_Name	Width	Output	N.Dec	Type	Description
YR	5	5		Numeric	Year
STATE	2	2		String	Federal Information Processing Standard
PLPRAC	5	5		Numeric	Planted for All Purposes Acres
GRHRAC	7	7		Numeric	Harvested Grain Acres
YLDPAC	5	5	1	Numeric	Yield Per Acre (bushels)
PROD	9	9		Numeric	Production Bushels
HRSIAC	4	4		Numeric	Harvested Silage Acres
YLDPACT	5	5	1	Numeric	Yield Per Acre Tons
PRODT	5	5		Numeric	Production Tons

NOTES:
- The source for data is the National Agriculture Statistics Service
- Years included 1975 through 1980

Structure for Database: **si8894**
Description: Corn Grain Silage Yield and Production (1988–1994)

Item_Name	Width	Output	N.Dec	Type	Description

YR	5	5		Numeric	Year
STATE	4	4		String	Federal Information Processing Standard
PLPRAC	5	5		Numeric	Planted for All Purposes Acres
GRHRAC	7	7		Numeric	Harvested Grain Acres
YLDPAC	5	5	2	Numeric	Yield Per Acre (bushels)
PROD	9	9		Numeric	Production Bushels
HRSIAC	4	4		Numeric	Harvested Silage Acres
YLDPACT	5	5	2	Numeric	Yield Per Acre Tons
PRODT	5	5		Numeric	Production Tons

NOTES:
- The source for data is the National Agriculture Statistics Service
- Years included are 1988 through 1994

Structure for Database: **GAFRMX**
Description: Farm expenses for Georgia

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
ITEM	4	4		String	Item
CRFM	5	5		Numeric	Cash receipts from marketings
TLP	5	5		Numeric	Total livestock and products
TC	5	5		Numeric	Total crops
OI	5	5		Numeric	Other income
GP	5	5		Numeric	Government payments
IIRR	5	5		Numeric	Imputed income and rent received
PE	5	5		Numeric	Production expenses
FP	5	5		Numeric	Feed purchased
LP	5	5		Numeric	Livestock purchased
SP	5	5		Numeric	Seed purchased
FL	5	5		Numeric	Fertilizer and lime (incl. chem.)
PPRR	5	5		Numeric	Petroleum products purchased
HFLE	5	5		Numeric	Hired farm labor expenses
AOPE	5	5		Numeric	All other production expenses
VIC	5	5		Numeric	Value of inventory change
LV	5	5		Numeric	Livestock
CR	5	5		Numeric	Crops
TCR	5	5		Numeric	Total cash receipts
LTPE	5	5		Numeric	Less: total prod. expense
RNI	5	5		Numeric	Realized net income
PVIC	5	5		Numeric	Plus: value of inventory change

TNIC	5	5	Numeric	Total net income incl. corporate
LCF	5	5	Numeric	Less: corporate farms
PSA	5	5	Numeric	Plus: farm wages and prerequisite
TNFP	5	5	Numeric	Total Net Farm proprietors
PFWP	5	5	Numeric	Plus: Farm wages and prerequisite
PFOL	5	5	Numeric	Plus: farm other labor income
TFLP	5	5	Numeric	Total farm labor and proprietors

Structure for Database **GATPAY**
Description: Farm Expenses for Georgia

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
TTP	6	6		Numeric	Total transfer payments
GPI	6	6		Numeric	Government payments to individuals
RDIP	6	6		Numeric	Retired & disabled insurance benefits payments
ODIP	6	6		Numeric	"Old-age, surveillance & disability insurance payment"
RRDP	5	5		Numeric	Railroad retirement & disability payments
FCED	5	5		Numeric	Federal civil employee retirement payment
MRP	5	5		Numeric	Military retirement payments
SLED	5	5		Numeric	State & local govt. employee retirement payments
WCP	5	5		Numeric	Workers comp. payments (federal & state)
OGIP	5	5		Numeric	Other govt. disability insurance & retirement payments
MP	6	6		Numeric	Medical payments
IMBP	5	5		Numeric	Income maintenance benefit payments
SSIP	5	5		Numeric	Suppl. security income (SSI) payments
AFDC	5	5		Numeric	Aide to families with dependent children (AFDC)
FS	5	5		Numeric	Food stamps
OIM	5	5		Numeric	Other income maintenance
UIBP	5	5		Numeric	Unemployment insurance benefit payments
SUIC	5	5		Numeric	State unemployment insurance compensation

UCFE	5	5	Numeric	Unemp. comp for fed civilian employees (UCFE)
UCRE	5	5	Numeric	Unemp. comp for railroad employees
UCX	5	5	Numeric	Unemp. comp for veterans (UCX)
VBP	5	5	Numeric	Veteran benefit payments
VPCP	5	5	Numeric	Veteran pensions & compensation payments
EVDS	5	5	Numeric	"Education. asst to vets, dependant, and survivors"
VLBP	5	5	Numeric	Veterans life insurance benefit payments
OAV	5	5	Numeric	Other assistance to veterans
FETP	5	5	Numeric	Fed. educ. & trng. asst. pay (excl. vets)
OPL	5	5	Numeric	Other payments to individuals
PNI	5	5	Numeric	Payment to nonprofit institutions
FGP	5	5	Numeric	Federal govt. payments
SGP	5	5	Numeric	State and local govt. payments
BP	5	5	Numeric	Business payments
BPI	5	5	Numeric	Business payments to individuals

Structure for Database **GATPl**
Description: Total Personal Income for Georgia

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
TPI	8	8		Numeric	Total personal income
NPI	7	7		Numeric	Nonfarm personal income
FI	6	6		Numeric	Farm income
POP	6	6		Numeric	Population
PCPI	6	6		Numeric	Per capita personal income
EPW	8	8		Numeric	Earnings by place of work
LPSI	6	6		Numeric	Less: Personal cont. for social security insurance
PAR	7	7		Numeric	Plus: adjustment for residence
ENPR	8	8		Numeric	Equals: Net earn. by place of residence
PDIR	8	8		Numeric	Plus: Dividends, interest and rent
PTP	6	6		Numeric	Plus: Transfer payments
WS	8	8		Numeric	Wages and salaries
OLI	6	6		Numeric	Other labor income
PI	6	6		Numeric	Proprietors income
FARM	6	6		Numeric	Farm

NF	6	6	Numeric	Nonfarm
FXX	6	6	Numeric	Farm
NFXX	8	8	Numeric	Nonfarm
PRIVATE	8	8	Numeric	Private
ASFO	6	6	Numeric	Ag., Serv., fish and other
MIN	6	6	Numeric	Mining
CNST	6	6	Numeric	Construction
MANU	6	6	Numeric	Manufacturing
NDG	6	6	Numeric	Nondurable goods
DG	6	6	Numeric	Durable goods
TPU	6	6	Numeric	Transportation and public utilities
WT	6	6	Numeric	Wholesale trade
RT	6	6	Numeric	Retail trade
FRE	6	6	Numeric	Finance., insurance and real estate
SERV	6	6	Numeric	Services
GGE	6	6	Numeric	Government and government enterprises
FC	6	6	Numeric	Federal, Civilian
MIL	6	6	Numeric	Military
SLC	6	6	Numeric	State and local

Structure for Database **SCFRMX**
Description: Farm Expenses for South Carolina

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
CRFM	5	5		Numeric	Cash receipts from marketings
TLP	5	5		Numeric	Total livestock and products
TC	5	5		Numeric	Total crops
OI	5	5		Numeric	Other income
GP	5	5		Numeric	Government payments
IIRR	5	5		Numeric	Imputed income and rent received
PE	5	5		Numeric	Production expenses
FP	5	5		Numeric	Feed purchased
LP	5	5		Numeric	Livestock purchased
SP	5	5		Numeric	Seed purchased
FL	5	5		Numeric	Fertilizer and lime (incl. chem)
PPRR	5	5		Numeric	Petroleum products purchased
HFLE	5	5		Numeric	Hired farm labor expenses
AOPE	5	5		Numeric	All other production expenses
VIC	5	5		Numeric	Value of inventory change
LV	5	5		Numeric	Livestock
CR	5	5		Numeric	Crops

TCR	5	5	Numeric	Total cash receipts
LTPE	5	5	Numeric	Less: total prod. expense
RNI	5	5	Numeric	Realized net income
PVIC	5	5	Numeric	Plus: value of inventory change
TNIC	5	5	Numeric	Total net income include corporate
LCF	5	5	Numeric	Less: corporate farms
PSA	5	5	Numeric	Plus: farm wages and prerequisite
TNFP	5	5	Numeric	Total Net Farm proprietors
PFWP	5	5	Numeric	Plus: Farm wages and prerequisite
PFOL	5	5	Numeric	Plus: farm other labor income
TFLP	5	5	Numeric	Total farm labor and proprietors

Structure for Database **SCTPAY**
Description: Farm Expenses for South Carolina

Item_Name	Width	Output	N.Dec	Type	Description
YEAR	5	5		Numeric	Year
TTP	8	8		Numeric	Total transfer payments
GPI	8	8		Numeric	Government payments to individuals
RDIP	8	8		Numeric	Retired & disabled insurance benefits payments
ODIP	8	8		Numeric	Old-age, surveillance & disability insurance payment
RRDP	8	8		Numeric	Railroad retirement & disability payments
FCED	8	8		Numeric	Federal civil employee retirement payment
MRP	8	8		Numeric	Military retirement payments
SLED	8	8		Numeric	State & local govt. employee retirement payments
WCP	8	8		Numeric	Workers comp. payments (federal & state)
OGIP	8	8		Numeric	Other govt. disability insurance & retirement payments
MP	8	8		Numeric	Medical payments
IMBP	8	8		Numeric	Income maintenance benefit payments
SSIP	8	8		Numeric	Suppl. security income (SSI) payments
AFDC	8	8		Numeric	Aide to families with dependent children (AFDC)
FS	8	8		Numeric	Food stamps
OIM	8	8		Numeric	Other income maintenance
UIBP	8	8		Numeric	Unemployment insurance benefit payments
SUIC	8	8		Numeric	State unemployment insurance compensation
UCFE	8	8		Numeric	Unemp. comp for fed civilian employees (UCFE)

UCRE	8	8	Numeric	Unemp. comp for railroad employees
UCX	8	8	Numeric	Unemp. comp for veterans (UCX)
VBP	8	8	Numeric	Veteran benefit payments
VPCP	8	8	Numeric	Veteran pensions & compensation payments
EVDS	8	8	Numeric	"Education. asst. to vets, dependant, and survivors"
VLBP	8	8	Numeric	Veterans life insurance benefit payments
OAV	8	8	Numeric	Other assistance to veterans
FETP	8	8	Numeric	Fed. educ. & trng. asst. pay (excl. vets)
OPL	8	8	Numeric	Other payments to individuals
PNI	8	8	Numeric	Payment to nonprofit institutions
FGP	8	8	Numeric	Federal govt. payments
SGP	8	8	Numeric	State and local govt. payments
BP	8	8	Numeric	Business payments
BPI	8	8	Numeric	Business payments to individuals

Structure for Database: **SCTPl**
Description: Total Personal Income for South Carolina

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
IPR	5	5		Numeric	Income by place of residence
TPI	7	7		Numeric	Total personal income
NPI	7	7		Numeric	Nonfarm personal income
FI	7	7		Numeric	Farm income
POP	8	8		Numeric	Population
PCPI	7	7		Numeric	Per capita personal income
EPW	7	7		Numeric	Earnings by place of work
LPSI	7	7		Numeric	Less: Personal contribution for social insurance
PAR	9	9		Numeric	Plus: adjustment for residence
ENPR	7	7		Numeric	Equals: Net earnings by place of residence
PDIR	7	7		Numeric	Plus: Dividends, interest, and rent
PTP	7	7		Numeric	Plus: Transfer payments
WS	7	7		Numeric	Wages and salaries
OLI	7	7		Numeric	Other labor income
PI	7	7		Numeric	Proprietors income
FARM	7	7		Numeric	Farm
NF	7	7		Numeric	Nonfarm

FXX	7	7		Numeric	Farm
NFXX	7	7		Numeric	Nonfarm
PRIVATE	7	7		Numeric	Private
ASFO	7	7		Numeric	Ag., Serv., fish and other
MIN	7	7		Numeric	Mining
CNST	7	7		Numeric	Construction
MANU	7	7		Numeric	Manufacturing
NDG	7	7		Numeric	Nondurable goods
DG	7	7		Numeric	Durable goods
TPU	7	7		Numeric	Transportation and public utilities
WT	8	8		Numeric	Wholesale trade
RT	7	7		Numeric	Retail trade
FRE	7	7		Numeric	Finance, insurance and real estate
SERV	7	7		Numeric	Services
GGE	7	7		Numeric	Government and government enterprises
FC	7	7		Numeric	Federal, Civilian
MIL	7	7		Numeric	Military
SLC	7	7		Numeric	State and local

Structure for database: **Gawmal**
Description: Population Dynamics for Georgia white male by age

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
ALLAGE	6	6		Numeric	Number of male for all ages
GUN5	5	5		Numeric	Number of male under 5
G5T9	5	5		Numeric	Number of male age 5-9
G10T14	4	4		Numeric	Number of male age 10-14
G15T19	4	4		Numeric	Number of male age 15-19
G20T24	5	5		Numeric	Number of male age 20-24
G25T29	4	4		Numeric	Number of male age 25-29
G30T34	4	4		Numeric	Number of male age 30-34
G35T39	4	4		Numeric	Number of male age 35-39
G40T44	4	4		Numeric	Number of male age 40-44
G45T49	4	4		Numeric	Number of male age 45-49
G50T54	4	4		Numeric	Number of male age 50-54
G55T59	4	4		Numeric	Number of male age 55-59
G60T64	4	4		Numeric	Number of male age 60-69
G65T69	4	4		Numeric	Number of male age 65-69
G70T74	4	4		Numeric	Number of male age 70-74
G75T84	4	4		Numeric	Number of male age 75-84

G85OV	4	4		Numeric	Number of male age over85

Structure for database: **Gawfmal**
Description: Population Dynamics for Georgia white female by age

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
ALLAGE	6	6		Numeric	Number of female for all ages
GUN5	4	4		Numeric	Number of female under 5
G5T9	4	4		Numeric	Number of female age 5-9
G10T14	4	4		Numeric	Number of female age 10-14
G15T19	4	4		Numeric	Number of female age 15-19
G20T24	4	4		Numeric	Number of female age 20-24
G25T29	4	4		Numeric	Number of female age 25-29
G30T34	4	4		Numeric	Number of female age 30-34
G35T39	4	4		Numeric	Number of female age 35-39
G40T44	4	4		Numeric	Number of female age 40-44
G45T49	4	4		Numeric	Number of female age 45-49
G50T54	4	4		Numeric	Number of female age 50-54
G55T59	4	4		Numeric	Number of female age 55-59
G60T64	4	4		Numeric	Number of female age 60-64
G65T69	4	4		Numeric	Number of female age 65-69
G70T74	4	4		Numeric	Number of female age 70-74
G75T84	4	4		Numeric	Number of female age 75-84
G85OV	4	4		Numeric	Number of female age over85

Structure for database: **Ganwmal**
Description: Population Dynamics for Georgia non-white male by age

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
ALLAGE	6	6		Numeric	Number of male for all ages
GUN5	5	5		Numeric	Number of male under 5
G5T9	5	5		Numeric	Number of male age 5-9
G10T14	4	4		Numeric	Number of male age 10-14
G15T19	4	4		Numeric	Number of male age 15-19
G20T24	5	5		Numeric	Number of male age 20-24
G25T29	4	4		Numeric	Number of male age 25-29
G30T34	4	4		Numeric	Number of male age 30-34

G35T39	4	4	Numeric	Number of male age 35-39
G40T44	4	4	Numeric	Number of male age 40-44
G45T49	4	4	Numeric	Number of male age 45-49
G50T54	4	4	Numeric	Number of male age 50-54
G55T59	4	4	Numeric	Number of male age 55-59
G60T64	4	4	Numeric	Number of male age 60-64
G65T69	4	4	Numeric	Number of male age 65-69
G70T74	4	4	Numeric	Number of male age 70-74
G75T84	4	4	Numeric	Number of male age 75-84
G85OV	4	4	Numeric	Number of male age over85

Structure for database: **Ganwfmal**
Description: Population Dynamics for Georgia non-white female by age

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	11	11		Numeric	Year
ALLAGE	5	5		Numeric	Number of male for all ages
GUN5	5	5		Numeric	Number of male under 5
G5T9	5	5		Numeric	Number of male age 5-9
G10T14	4	4		Numeric	Number of male age 10-14
G15T19	4	4		Numeric	Number of male age 15-19
G20T24	5	5		Numeric	Number of male age 20-24
G25T29	4	4		Numeric	Number of male age 25-29
G30T34	4	4		Numeric	Number of female age 30-34
G35T39	4	4		Numeric	Number of female age 35-39
G40T44	4	4		Numeric	Number of female age 40-44
G45T49	4	4		Numeric	Number of female age 45-49
G50T54	4	4		Numeric	Number of female age 50-54
G55T59	4	4		Numeric	Number of female age 55-59
G60T64	4	4		Numeric	Number of female age 60-64
G65T69	4	4		Numeric	Number of female age 65-69
G70T74	4	4		Numeric	Number of female age 70-74
G75T84	4	4		Numeric	Number of female age 75-84
G85OV	4	4		Numeric	Number of female age over85

Structure for database: **Scwmal**
Description: Population Dynamics for South Carolina white male by age

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing

					Standard
YEAR	5	5		Numeric	Year
ALLAGE	6	6		Numeric	Number of male for all ages
SCUN5	4	4		Numeric	Number of male under 5
SC5T9	4	4		Numeric	Number of male age 5-9
SC10T14	4	4		Numeric	Number of male age 10-14
SC15T19	6	6		Numeric	Number of male age 15-19
SC20T24	6	6		Numeric	Number of male age 20-24
SC25T29	4	4		Numeric	Number of male age 25-29
SC30T34	4	4		Numeric	Number of male age 30-34
SC35T39	4	4		Numeric	Number of male age 35-39
SC40T44	4	4		Numeric	Number of male age 40-44
SC45T49	4	4		Numeric	Number of male age 45-49
SC50T54	4	4		Numeric	Number of male age 50-54
SC55T59	4	4		Numeric	Number of male age 55-59
SC60T64	4	4		Numeric	Number of male age 60-64
SC65T69	4	4		Numeric	Number of male age 65-69
SC70T74	4	4		Numeric	Number of male age 70-74
SC75T84	4	4		Numeric	Number of male age 75-84
SC85OV	4	4		Numeric	Number of male age over85

Structure for database: **Scwfmal**
Description: Population Dynamics for South Carolina white female by age

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
ALLAGE	6	6		Numeric	Number of female for all ages
SCUN5	4	4		Numeric	Number of female under 5
SC5T9	4	4		Numeric	Number of female age 5-9
SC10T14	4	4		Numeric	Number of female age 10-14
SC15T19	4	4		Numeric	Number of female age 15-19
SC20T24	5	5		Numeric	Number of female age 20-24
SC25T29	4	4		Numeric	Number of female age 25-29
SC30T34	4	4		Numeric	Number of female age 30-34
SC35T39	4	4		Numeric	Number of female age 35-39
SC40T44	4	4		Numeric	Number of female age 40-44
SC45T49	4	4		Numeric	Number of female age 45-49
SC50T54	4	4		Numeric	Number of female age 50-54
SC55T59	4	4		Numeric	Number of female age 55-59
SC60T64	4	4		Numeric	Number of female age 60-64
SC65T69	4	4		Numeric	Number of female age 65-69
SC70T74	4	4		Numeric	Number of female age 70-74

SC75T84	4	4		Numeric	Number of female age 75-84
SC85OV4	4	4		Numeric	Number of female age over85

Structure for database: **Scnwmal**
Description: Population Dynamics for South Carolina non-white male by age

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
ALLAGE	6	6		Numeric	Number of male for all ages
SCUN5	4	4		Numeric	Number of male under 5
SC5T9	4	4		Numeric	Number of male age 5-9
SC10T14	4	4		Numeric	Number of male age 10-14
SC15T19	4	4		Numeric	Number of male age 15-19
SC20T24	4	4		Numeric	Number of male age 20-24
SC25T29	4	4		Numeric	Number of male age 25-29
SC30T34	4	4		Numeric	Number of male age 30-34
SC35T39	4	4		Numeric	Number of male age 35-39
SC40T44	4	4		Numeric	Number of male age 40-44
SC45T49	4	4		Numeric	Number of male age 45-49
SC50T54	4	4		Numeric	Number of male age 50-54
SC55T59	4	4		Numeric	Number of male age 55-59
SC60T64	4	4		Numeric	Number of male age 60-64
SC65T69	4	4		Numeric	Number of male age 65-69
SC70T74	4	4		Numeric	Number of male age 70-74
SC75T84	4	4		Numeric	Number of male age 75-84
SC85OV4	4	4		Numeric	Number of male age over85

Structure for database: **Scnwfmal**
Description: Population Dynamics for South Carolina non-white female by age

Item_Name	Width	Output	N.Dec	Type	Description
FIPS	5	5		Numeric	Federal Information Processing Standard
YEAR	5	5		Numeric	Year
ALLAGE	6	6		Numeric	Number of female for all ages
SCUN5	4	4		Numeric	Number of female under 5
SC5T9	4	4		Numeric	Number of female age 5-9
SC10T14	4	4		Numeric	Number of non-white female age 10-14
SC15T19	4	4		Numeric	Number of non-white female age 15-19
SC20T24	4	4		Numeric	Number of non-white female age 20-24

SC25T29	4	4	Numeric	Number of non-white female age 25-29
SC30T34	4	4	Numeric	Number of non-white female age 30-34
SC35T39	4	4	Numeric	Number of non-white female age 35-39
SC40T44	4	4	Numeric	Number of non-white female age 40-44
SC45T49	4	4	Numeric	Number of non-white female age 45-49
SC50T54	4	4	Numeric	Number of non-white female age 50-54
SC55T59	4	4	Numeric	Number of non-white female age 55-59
SC60T64	4	4	Numeric	Number of non-white female age 60-64
SC65T69	4	4	Numeric	Number of non-white female age 65-69
SC70T74	4	4	Numeric	Number of non-white female age 70-74
SC75T84	4	4	Numeric	Number of non-white female age 75-84
SC85OV	4	4	Numeric	Number of non-white female age over85

ENTITY RELATIONSHIPS DIAGRAM, PHYSICAL DATA DIAGRAM, AND DATA DICTIONARY

Introduction

This section describes a general data model for building a GIS-based data repository for use in computing dose-to-man amounts. The model is based on the simplest form of dose-to-man: source term is transported via pathways to the target receptor, man. The logic is graphically represented in level 0.0 of the included entity-relationship diagrams. The first level below this (0.1, 0.2 etc.) reference a rough physical model for each major component.

This data model is high level, only. Additional work needs to be done to refine the data elements within each entity to assure that temporal and geographic scale descriptors are adequate for the scale of the project. For instance, the entities currently contain a reference to area or acreage location. This may become a county reference, if that is appropriate to the modeling scale and the available data. It may become more highly focused if a census-tract identifier is deemed usable for the particular data element. Note that the groundwater pathway is not modeled in this design.

Implicit Relationships

The next section describes, generically, the data layers that are contained in the GIS repository. The collected entity-relationship (ER) diagrams and data dictionary (Table F-4) represent the underlying data layers that are associated with but not part of the GIS data collection. The underlying data layers can be collected and used without involving the GIS model. As well, any GIS data layers may be used in spatial analysis without invoking other database engines.

The term “clipping,” used in describing the data layers below, refers to the GIS process of excluding all data not within a specified study area. A base data layer determining this study area is implied in the other data set descriptions.

Part of the power of the GIS approach, however, is that the data can be selected from the database using implicit relationships: primarily geographic coordinate and secondarily time. Most of the tables modeled in the collected ER diagrams have both spatial and temporal components; each has been keyed to the GIS data layers where appropriate.

Base Geographic Data Layers

Census Tract Data

This data layer consists of a corrected Topologically Integrated Geographic Encoding and Referencing (TIGER) line file clipped to the extent of the study area, as provided by the U.S. Census Bureau. TIGER line files are known to have internal consistency errors, and the layer must be, at minimum, built as a polygon layer with no label errors. Corrected TIGER line files may be available commercially, and this alternative should be considered before attempting to manually correct the errors.

With the TIGER line files built consistently, the TIGER database is accessible for the area of interest. The census database has many useful statistics about the demographics of an area. These statistics are represented by the entity labeled receptor in the receptor ER diagram, 0.4. Additional information will be keyed to this file.

Boundary

This data layer consists of, at minimum, the USGS 1:24000 scale boundary information from the Digital Line Graph (DLG) database clipped to the area of interest. Boundaries have a strong temporal component, and each useful time frame should be represented in a separate data layer. Modelers will find hunting unit boundaries and forest service boundaries to be useful, and these may need to be acquired and added to this data layer in addition to the USGS data.

Migratory Ranges

As available, migratory ranges of large game animals will be captured to be compatible with 1:24000 scale base layers. These ranges will be used primarily as a reference to determine the likelihood of wild game uptake by local population.

Land Cover Data Layer

This file consists of a polygonal representation of the all types of land cover in the study area. This data layer can be extracted from image classification if the data set has not been developed. The strength of the temporal component of this data set is unknown. A brief overview of agricultural practices and development in the study area should indicate the importance of the temporal component. Gradients of urbanization and pasture and grazing lands should be identified on this data layer. The scale of the data available for modeling is not known, and the key value between the GIS data layer and, thus, the tabular data is not clearly defined.

Surface Hydrology

These files consist of, at minimum, the hydrology DLG data from the USGS 1:24000 scale maps, clipped (as appropriate) to the study area; any additional standing water body information as polygons; and the National Wetlands Inventory information represented at the same scale. Stream segments and associated information (flow direction and stream reach magnitude) are also useful for hydrologic modeling, if available. Flow direction can be corrected using utilities provided with ArcINFO. These data are keyed to information in the ER model through the entity RIVERS or the entity LAKES, using the arc and polygon identifiers for the keys to the underlying data.

Gauging Station

This information is often available from the USGS as a point coverage that can be subsequently clipped to the study area. This is really the accurate representation of the water balance numbers provided by the USGS. These data are keyed to the tabular data in the ER diagram through the GAUGING STATION entity.

Meteorology Stations

A data set similar to the gauging stations data set can be acquired through the National Oceanic and Atmospheric Administration (NOAA), indicating where the meteorology stations are located and keying their station identifiers. These data are keyed to the database through the entity MET STATION.

Transportation Data Layer

This data layer consists of the best representation of the public roadways available in the study area. These data may be extracted from the TIGER line files, but much additional information needs to be appended to the data layer to make this a useful approach. Other sources may provide a more useful data layer. These data are useful to define old political boundaries and historical development. The data are represented in the ER model as the ROUTES entity.

Releases Data Layer

This layer will consist of point and polygon releases as they are identified by the research team. These data are related to the ER model through the SOURCE TERM tables.

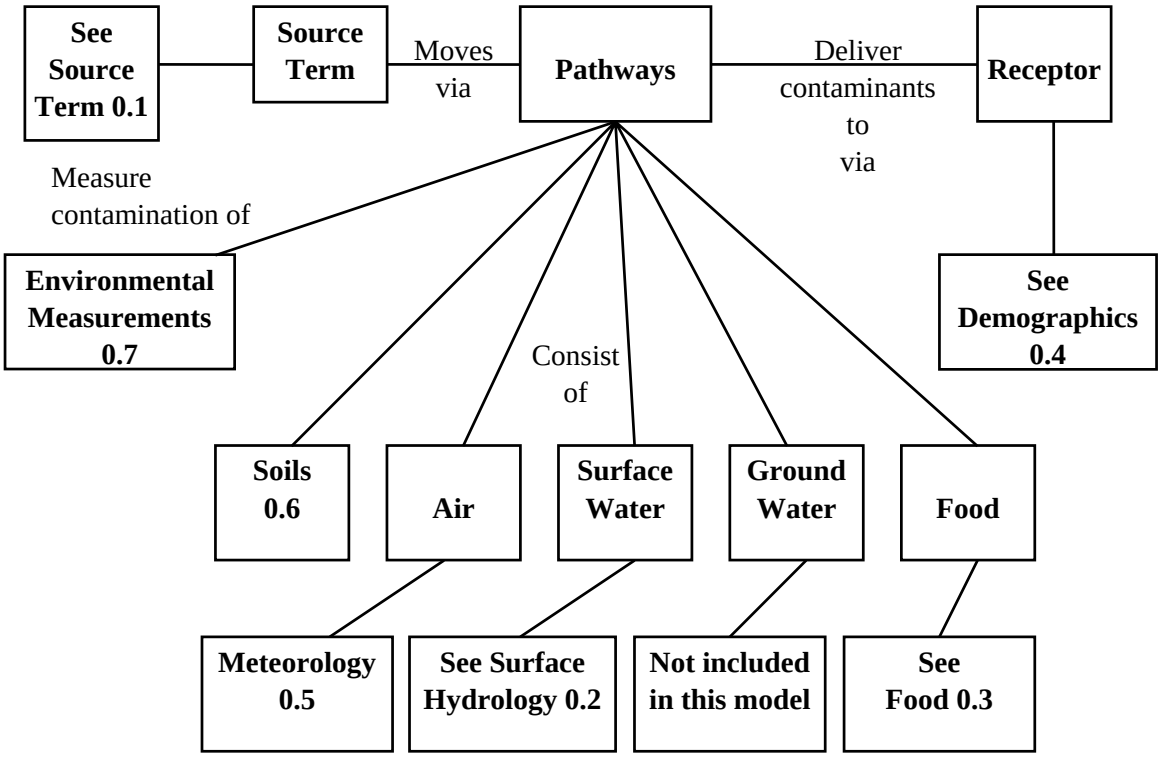
Available Photographs

Available photographs, such as soil conservation service aerials, will be digitized and stored online if deemed necessary for ongoing research. There will be no attempt to georeference this data until the photos are actually used.

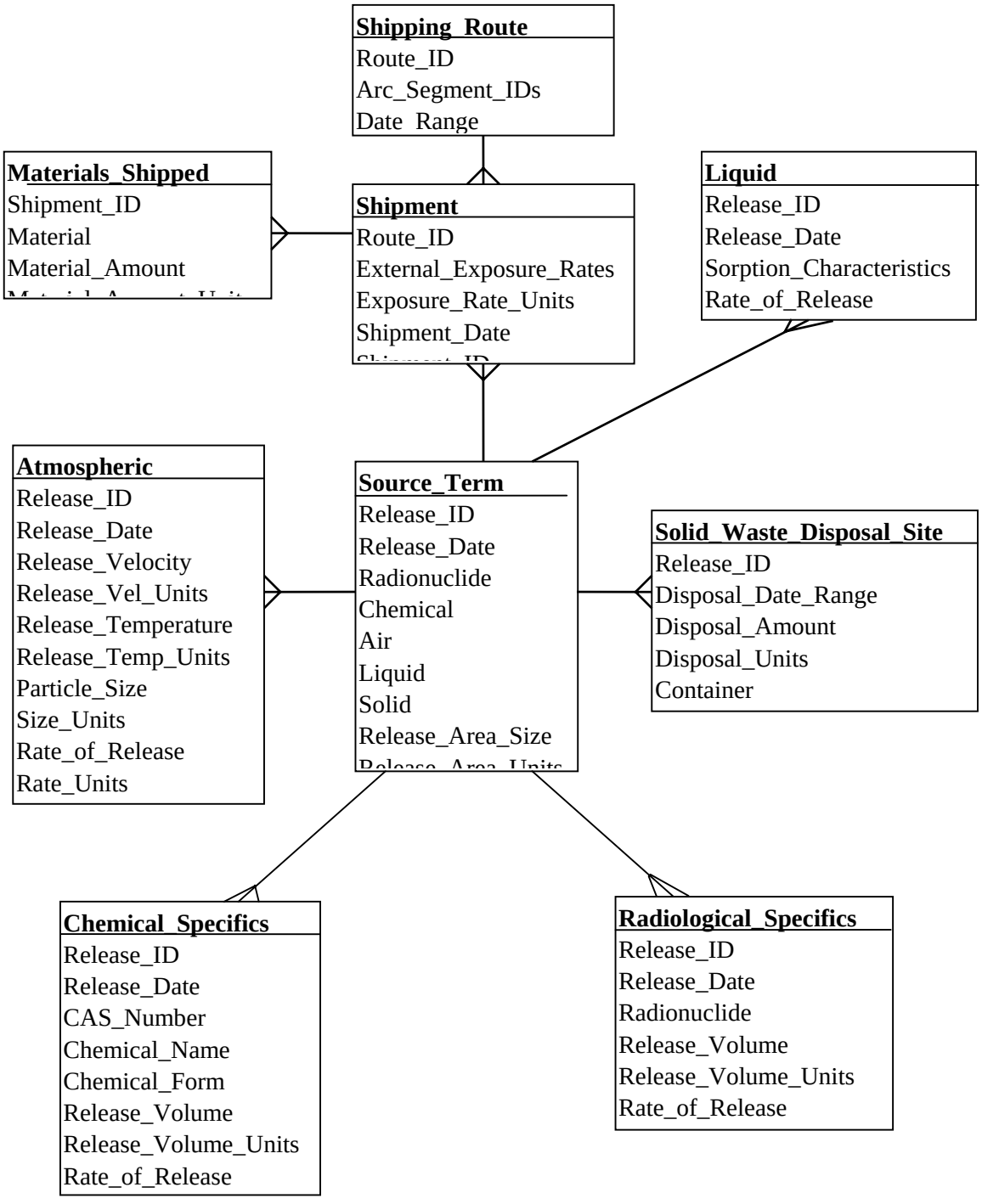
Entity Relationship Diagrams

The following section details the ER diagrams, beginning with level 0.0 and extending down vertically one level. The physical implementation of this model would require two or more additional vertical levels to account for cross-reference tables and foreign key relationships.

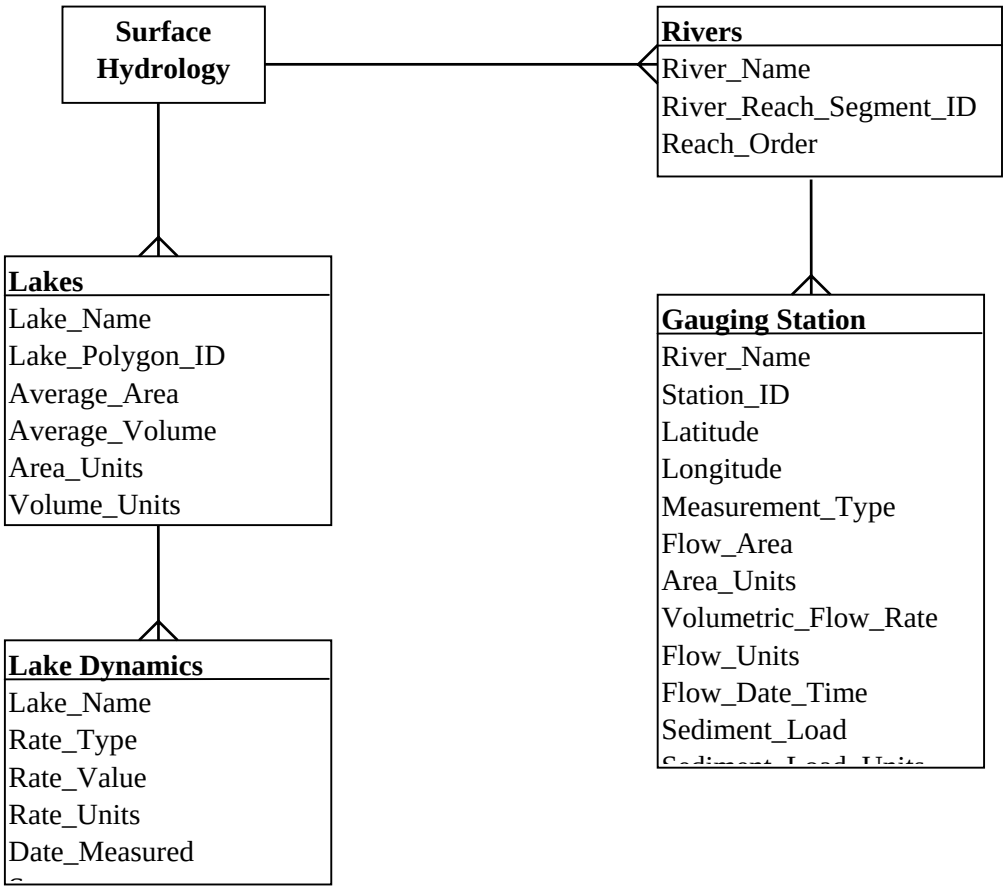
Dose to Man Data Model 0.0



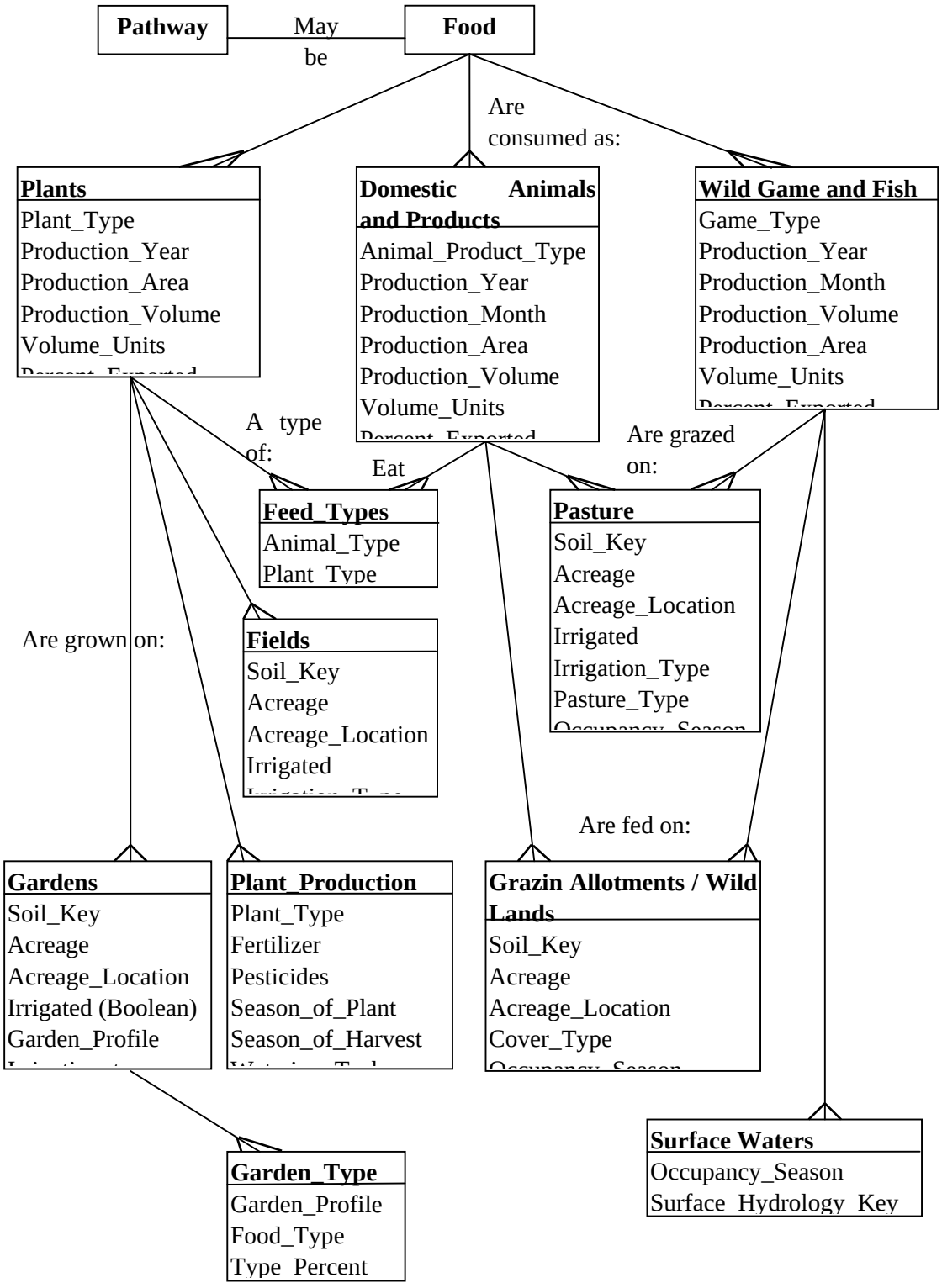
Dose to Man - Source Term - 0.1



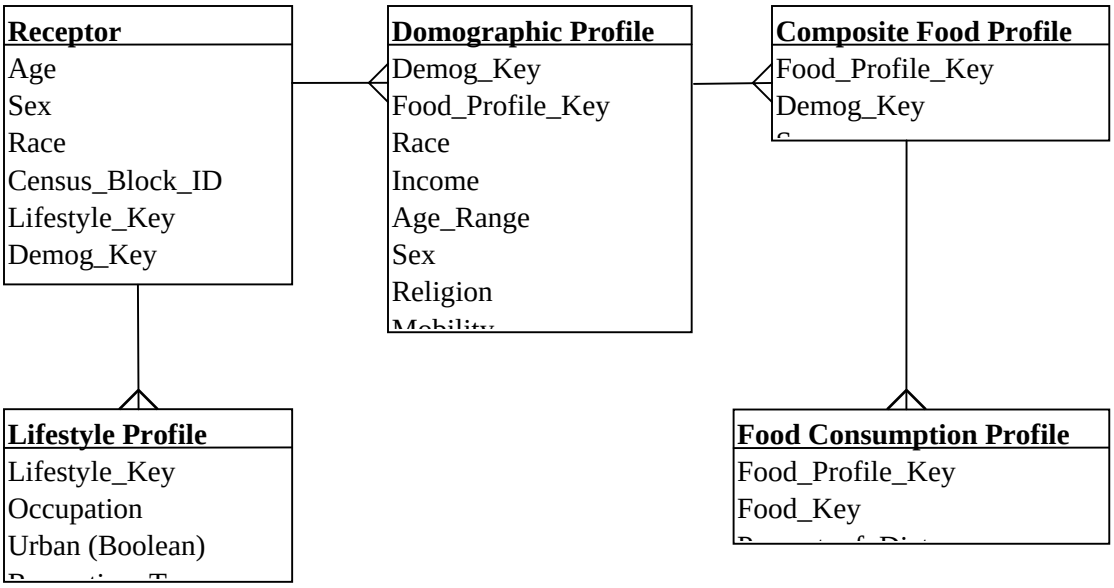
Surface Hydrology - 0.2



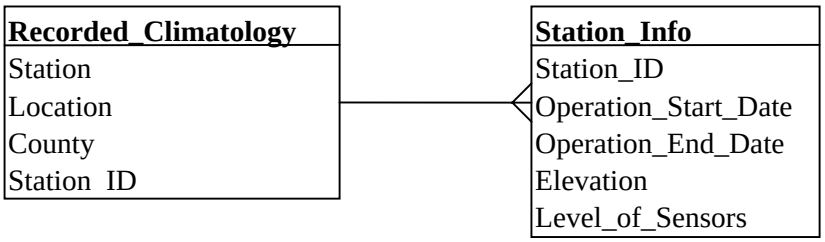
Dose to Man - Food - 0.3



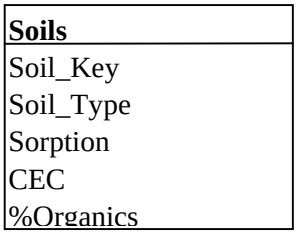
Dose to Man - Receptor - 0.4



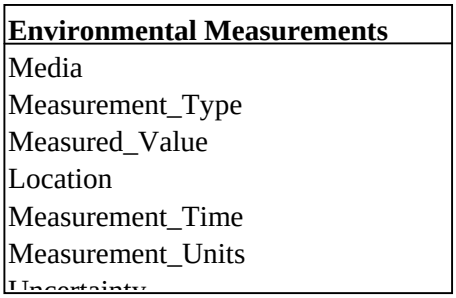
Dose to Man - Meteorology - 0.5



Soils - 0.6



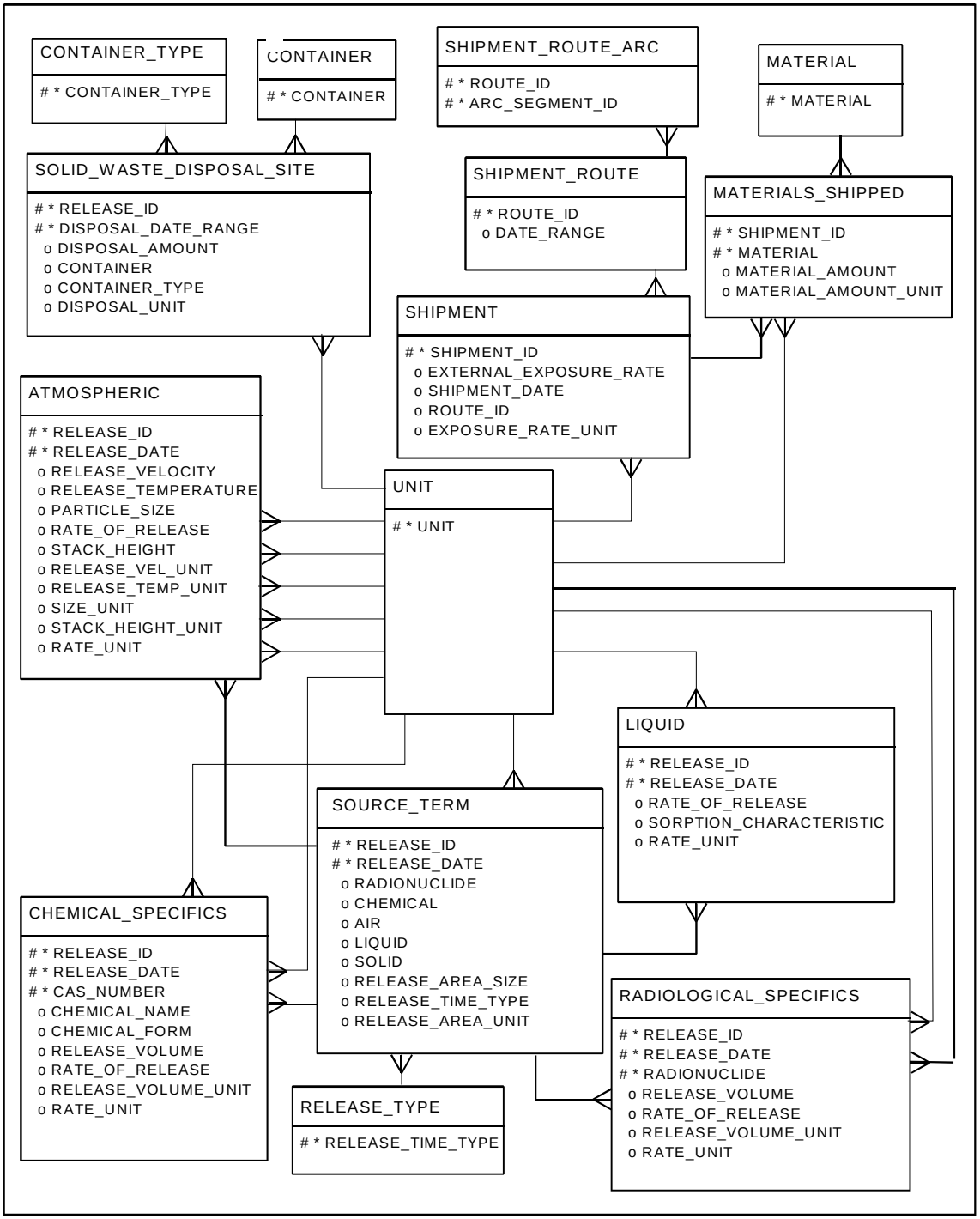
Environmental Measurements - 0.7



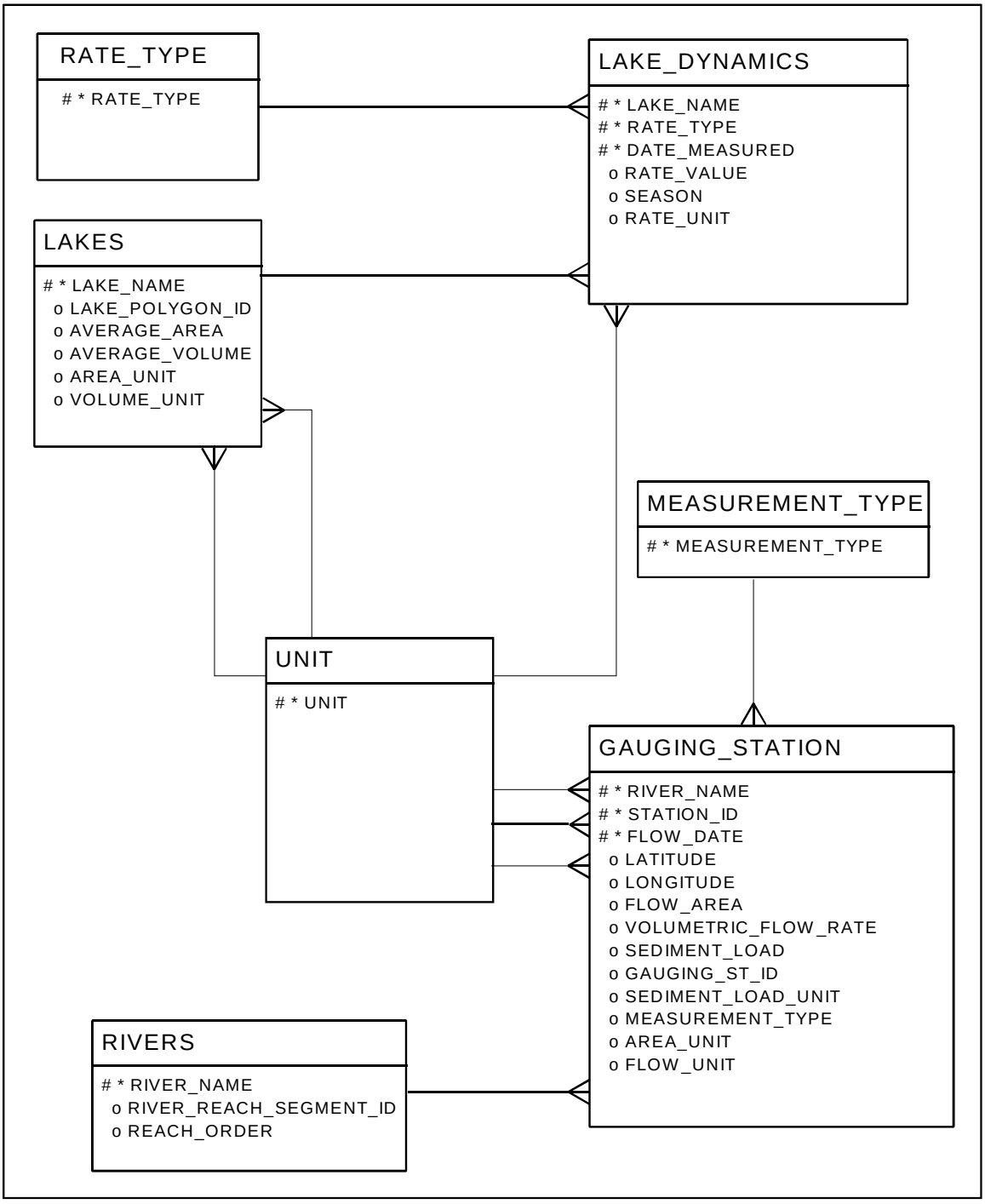
Physical Data Diagrams

This section contains the physical data for the ER diagram presented above.

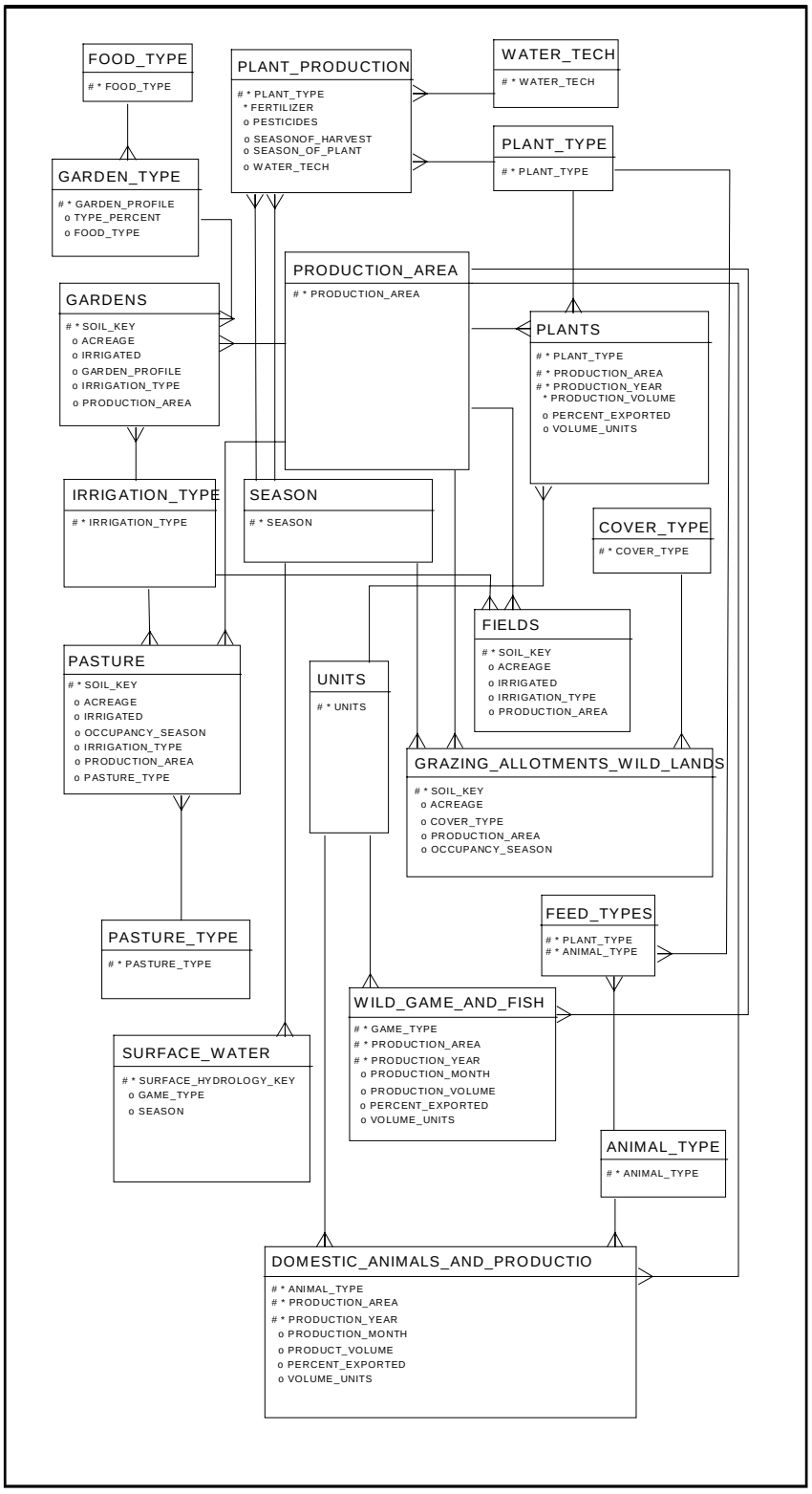
Dose to Man - Source4 Term 0.1



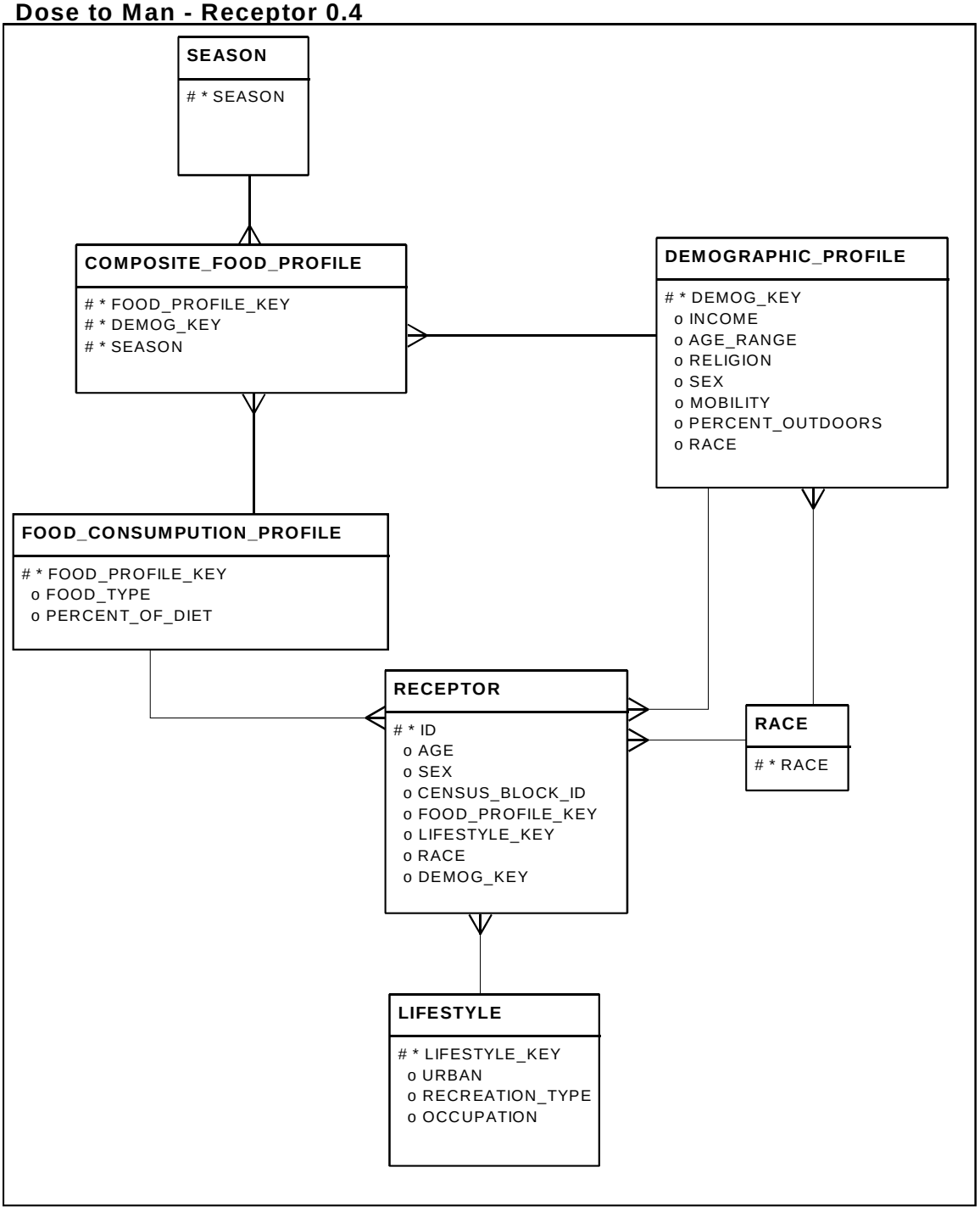
Surface Hydrology - 0.2



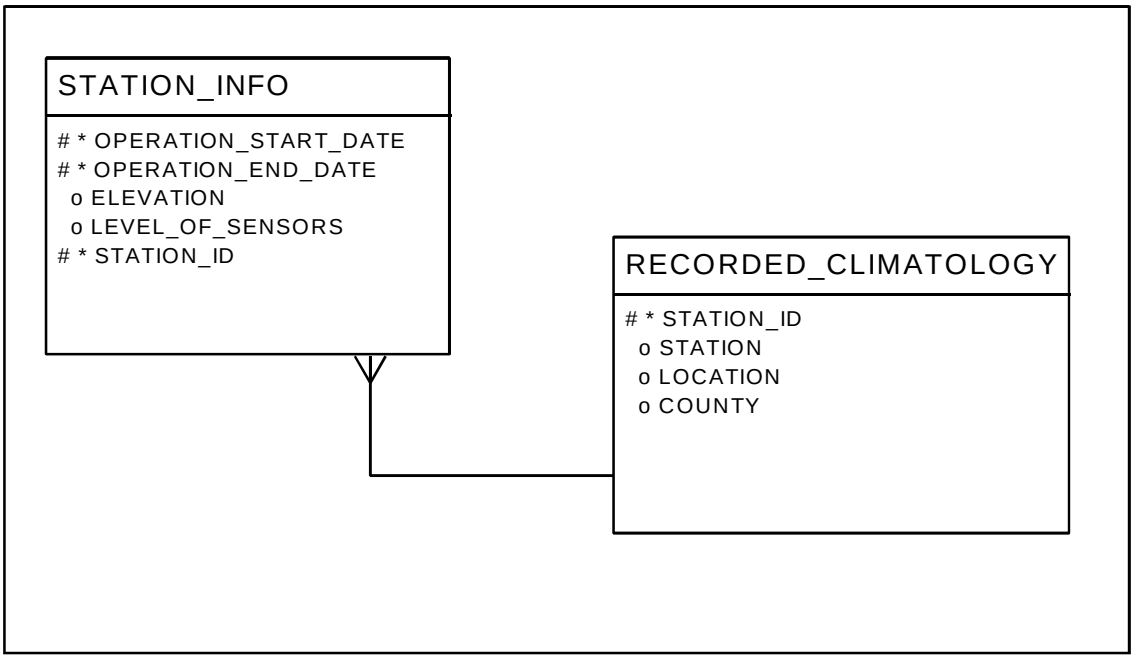
Dose to Man - Food - 0.3



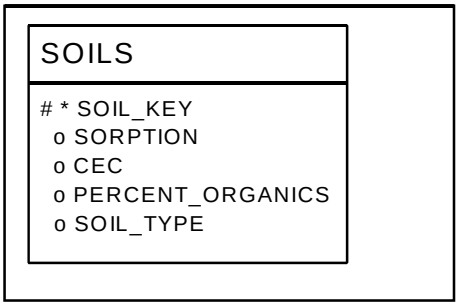
Dose to Man - Receptor 0.4



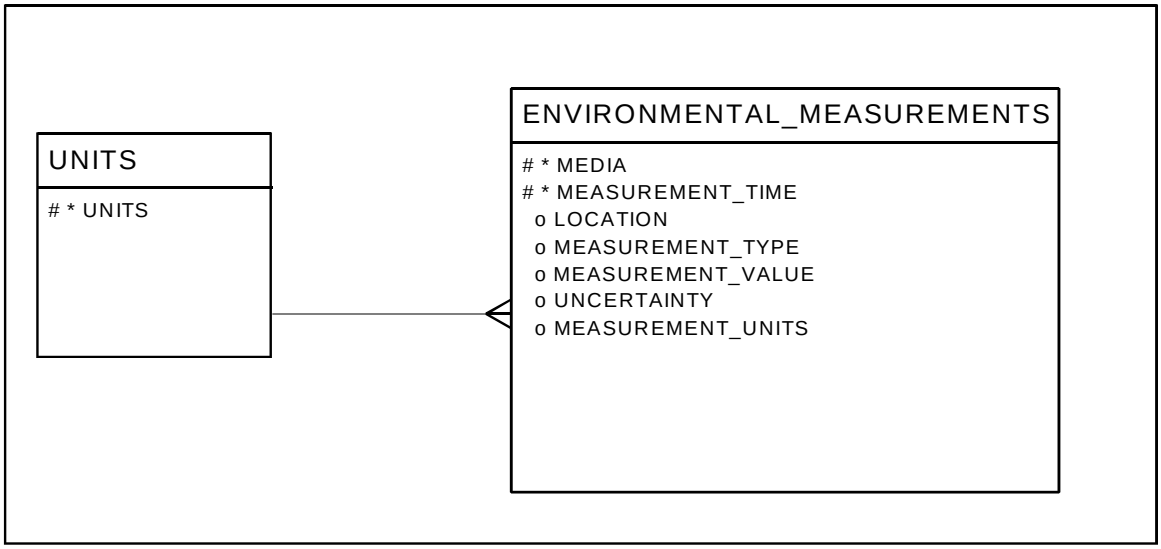
Does to Man Meteorology - 0.5



Soils - 0.6



Environmental Mesurements - 0.7



Data Dictionary

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
LAKES TBL			
LAKE_NAME	C	40	Official USGS lake name, if available. This is the generic key value for all still bodies of water (exclusive of smaller wetlands).
LAKE_POLYGON_ID	I	10	User-assigned feature number in the Arc/INFO coverage used to relate the table with the coverage. Must be defined the same in the table and in the coverage.
AVERAGE_AREA	N		Arc/INFO computed area of the polygon defined as the lake, based on the average area determined from the USGS topography
AVERAGE_VOLUME	N		Arc/INFO computed volume of the defined lake if bottom profiles are available
AREA_UNITS	C	10	Unit of measure used to determine area (meters, feet, etc.)
VOLUME_UNITS	C	10	Unit of measure used to determine volume (cubic meters, acre feet, etc.)
RIVERS TBL			

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
RIVER_NAME	C	40	Official USGS river name, as available. This is the generic key value for an identified river, stream, or branch.
RIVER_REACH_SEGMENT_ID	I	10	User-assigned feature number in the Arc/INFO coverage used to relate the table with the coverage. Must be defined the same in the table and in the coverage. A river consists of many riv_seg_ids.
REACH_ORDER	N		River segment reach (USGS-assigned reach number)
LAKE_DYNAMICS TBL			
LAKE_NAME	C	40	Official USGS lake name. Key value, relates to Lakes tbl above.
RATE_TYPE	C	50	Rate category, such as sedimentation, evaporation, or infiltration rates, used to define water balance and sedimentation dynamics (in- and out-flow rates)
RATE_VALUE	N		The rate of elevation change in the lake
RATE_UNITS	C	10	Unit of measure associated with rate measurements
DATE_MEASURED	D	8	Date the rate was calculated or measured
SEASON	C	12	Time of year (fall, spring, etc.) the data were gathered
GAUGING_STATION TBL			
RIVER_NAME	C	40	Official USGS river name. Key value.
STATION_ID	C	40	A unique string identifying the gauging station (name of the gauging station)
LATITUDE	N		Geographic coordinate of the gauging station on the surface of the earth
LONGITUDE	N		Geographic coordinate of the gauging station on the surface of the earth
MEASUREMENT_TYPE	C	40	Text string describing measurement categories, for example, flow meter, measured cross-section and strip chart, etc.
FLOW_AREA	N		Area of the measurement cross-section as determined by the measuring entity
AREA_UNITS	C	10	Unit of measure used to determine area
VOLUMETRIC_FLOW_RATE	N		Flow volume as measured for this gauging stream and this record

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
FLOW_UNITS	C	10	Unit of measure associated with volumetric flow rate
FLOW_DATE	D	8	Date the data were gathered from the gauging station. Date format MM/DD/YY and time.
SEDIMENT_LOAD	N	10	The sediment load measured for this reach
SEDIMENT_LOAD_UNITS	C	10	Unit of measure used to determine sediment load
GAUGING_ST_ID	I	10	User-assigned feature number in the Arc/INFO coverage used to relate the table and the coverage. The ID must be defined the same in the table and in coverage.
PLANTS TBL			
PLANT_TYPE	C	60	Text string describing crop type for this record
PRODUCTION_YEAR	I	4	Year of crop harvest for this record
PRODUCTION_AREA	C	50	Text string describing crop location place (farm, county, etc.)
PRODUCTION_VOLUME	N		Amount of crop harvested in this location and during this harvest year
VOLUME_UNITS	C	10	Production unit of measure
PERCENT_EXPORTED	N		Percentage of crop which left the county or other specified production area
FEED_TYPES			
PLANT_TYPE	C	60	Text string describing crop type for this record
ANIMAL_TYPE	C	60	The type of animal
PLANT_PRODUCTION TBL			
PLANT_TYPE	C	60	Text string describing crop type for this record
FERTILIZER	C	40	Fertilizers used on the plants
PESTICIDE	C	4	Pesticides used on the plants
SEASON_OF_PLANT	C	10	Season the crop was planted
SEASON_OF_HARVEST	C	10	Season the plant was harvested
WATERING_TECH	C	40	Watering technique used on the crop
GARDEN_TYPE TBL			

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
GARDEN_PROFILE	I	5	Key value identifying a particular garden profile (many records compose a garden profile). The sum of the type percent should equal 100 for each garden type.
FOOD_TYPE	C	40	Plant type grown (carrot, peas, etc.)
TYPE_PERCENT	N		Percentage of each type of plant grown
FIELDS TBL			
SOIL_KEY	I	5	The key to the soil table
ACREAGE	N		Number of acres farmed with consumable products.
PRODUCTION_AREA	C	50	May contain city, county, or state
IRRIGATED	B	1	Contains Y for irrigated, N for not irrigated
IRRIGATION_TYPE	C	40	The type of irrigation used on the land
DOMESTIC_ANIMAL_AND_PRODUCTION TBL			
ANIMAL_PRODUCT_TYPE	C	50	Type of animal product (cow, eggs, chicken, etc.)
PRODUCTION_YEAR	I	4	Year the product was processed for food consumption
PRODUCTION_MONTH	I	2	Month the product was processed for food consumption
PRODUCTION_AREA	C	50	Identifies place of product origin (farm, county, etc.)
PRODUCTION_VOLUME	N		Volume associated with product for this record (may be head of cattle, gallons of milk, dozens of eggs, etc.)
VOLUME_UNITS	C	10	Animal type
PERCENT_EXPORTED	N		Percentage of this animal product which left the production area
WILD_GAME_AND_FISH TBL			
GAME_TYPE	C	50	Text string containing type of wild game, fowl, or fish (deer, bear, elk, etc.). Key value.
PRODUCTION_YEAR	I	4	Year the animal was processed for food consumption
PRODUCTION_MONTH	I	2	Month the animal was processed for food consumption
PRODUCTION_AREA	C	50	Describes the place of harvest (state, forest, county, etc.)

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
PRODUCTION_VOLUME	N		Number of animals referenced by this record at this specified time they were processed for food consumption
VOLUME_UNITS	C	10	Units of measure for harvest type
PERCENT_EXPORTED	N		Percentage of the animal type that was exported from the harvest area
PASTURE TBL			
SOIL_KEY	I	5	The key to the soil table
ACREAGE	N		Number of acres used as pasture
PRODUCTION_AREA	C	50	Contains location information: city, county, or state
IRRIGATED	B	1	Contains Y for irrigated, N for not irrigated
IRRIGATION_TYPE	C	40	The type of irrigation used on the land
PASTURE_TYPE	C	40	Type of feed on the pasture: grass, hay, etc.
OCCUPANCY_SEASON	C	30	Time of year the pasture is used by animals
GRAZING_ALLOTMENTS_WILD_LANDS TBL			
SOIL_KEY	I	5	The key to the soil table
ACREAGE	N		Number of acres used as grazing or wild lands for this record (and this location)
PRODUCTION_AREA	C	50	Contains a description of the location of the acreage for this record. May be city, county, forest, or state, etc.
COVER_TYPE	C	40	Type of vegetation on the acreage
OCCUPANCY_SEASON	C	30	Time of year the land is used by grazing animals
SURFACE_WATER TBL			
GAME_TYPE	C	50	Species using this water body
SEASON	C	10	Period of time that the waters are used by this species
SURFACE_HYDROLOGY_KEY	N		Polygon or arc linking this record to the information contained in the appropriate Arc/INFO data layer
RECORDED_CLIMATOLOGY TBL			
STATION	C	40	Meteorology station name as assigned by NOAA or other owning agency. This field must be unique.

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
LOCATION	C	40	Description of the physical location of the station
COUNTY	C	40	County name in which the station is located
STATION_ID	C	10	Point identifier from the Arc/INFO coverage. This both assures uniqueness and allows access to the information contained in the INFO database (location, topology, etc.).
STATION_INFO TBL			
OPERATION_START_DATE	D		Start of operation
OPERATION_END_DATE	D		End of operation
LEVEL_OF_SENSORS	C	50	The level of the sensors
ELEVATION	N		Elevation of station
STATION_ID	C	10	Point identifier from the Arc/INFO coverage. This both assures uniqueness and allows access to the information contained in the INFO database (location, topology, etc.).
SOURCE_TERM TBL			
RELEASE__ID	C	20	The release identifier. This is a user-generated, unique key that will be used to relate all of the tables in the source term relation. This field must be unique for each record. Release ID is the key into the Arc/INFO coverage that has coordinates for the release.
RELEASE_DATE	D		The date and time stamp that specifies when the release information for this record was collected.
RADIONUCLIDE	C	1	A Boolean indicating whether there was one or more radionuclide components for this release identifier
CHEMICAL	C	1	A Boolean indicating whether there was one or more chemical components for this release identifier
AIR	C	1	A Boolean indicating whether this release has an atmospheric component
LIQUID	C	1	A Boolean indicating whether this release has a liquid component
SOLID	C	1	A Boolean indicating whether this release has a solid component

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
RELEASE_AREA_SIZE	N		For nonpoint source releases, a measurement of the release area is referenced by this field
RELEASE_AREA_UNITS	C	10	The associated units for the release area size field
RELEASE_TIME_TYPE	C	20	This field describes the type of release with respect to time: periodic, episodic, single event, etc.
MATERIALS_SHIPPED TBL			
SHIPMENT_ID	C	20	The shipment identifier. This is a user-generated key that will be used to relate all of the shipment-oriented tables in the source term relation.
MATERIAL	C	40	For each shipment_id there may be several materials, one for each record
MATERIAL_AMOUNT_UNITS	C	20	The units associated with the amount value for this record
MATERIAL_AMOUNT	N		The quantity of material associated with this record and this shipment
SHIPMENT_ROUTE TBL			
ROUTE_ID	C	20	A user-assigned identifier that references a collection of roadways that is repeatedly used for shipping waste products to waste repositories or temporary storage sites
DATE_RANGE	C	30	Range of dates that this route was used for shipping waste
SHIPMENT_ROUTE_ARC			
ARC_SEGMENT_IDS	N		Each route_id is composed of several arc_segment identifiers from the Arc/INFO data layer
ROUTE_ID	C	20	The shipment route arc
SHIPMENT TBL			
ROUTE_ID	C	20	A user-assigned identifier that references a collection of roadways that is repeatedly used for shipping waste products to waste repositories or temporary storage sites
EXTERNAL_EXPOSURE_RATE	N		Measured exposure rate for the route identified by this record

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
EXPOSURE_RATE_UNITS	C	20	Units associated with the exposure rate units measured for this record
SHIPMENT_DATE	D		The date and time stamp that specifies when this shipment was moved from start
SHIPMENT_ID	C	20	Shipment identifier as defined in the MATERIALS_SHIPPED.TBL relation
LIQUID TBL			
RELEASE_ID	C	20	The release identifier. This is a user-generated, unique key that will be used to relate all of the tables in the source term relation.
RELEASE_DATE	D		The date and time stamp that specifies when this release occurred
SORPTION_CHARACTERISTIC	C	40	Sorption characteristics associated with the material identified in this record
RATE_OF_RELEASE	N		Measured rate of release for the release identified in this record
RATE_UNITS	C	20	Units associated with the rate of release measurement
ATMOSPHERIC TBL			
RELEASE_ID	C	20	The release identifier. This is a user-generated, unique key that will be used to relate all of the tables in the source term relation.
RELEASE_DATE	D		The date and time stamp that specifies when this release occurred
RELEASE_VELOCITY	N		Measured stack release velocity
RELEASE_VEL_UNITS	C	20	Units associated with the release velocity from the stack
RELEASE_TEMPERATURE	N		Temperature of the exit gas
RELEASE_TEMP_UNITS	C	10	Units of measure for the release temperature for this record
PARTICLE_SIZE	N		Associated particulate size, if this record documents a particulate release
SIZE_UNITS	C	10	The units of measure associated with the particulate size measurement for this record
STACK_HEIGHT	N		The height of the stack from the ground
STACK_HEIGHT_UNITS	C	10	The units of measure associated with the stack height
RATE_OF_RELEASE	N		Release volumetric rate measurement

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
RATE_UNITS	C	20	Units associated with the volumetric release measurement
SOLID_WASTE_DISPOSAL_SITE TBL			
RELEASE_ID	C	20	The release identifier. This is a user-generated, unique key that will be used to relate all of the tables in the source term relation. Several records may be associated with this field.
DISPOSAL_DATE_RANGE	C	30	The range of dates that this site was in operation. mm/dd/yy-mm/dd/yy
DISPOSAL_AMOUNT	N		Amount of the material that is disposed at this repository.
DISPOSAL_UNITS	C	20	Units associated with this volume or amount measurement
CONTAINER	C	20	Type of container for this site
CONTAINMENT_TYPE	C	20	Type of containment (barrier, clay liner, etc.) in place for this disposal site
CHEMICAL_SPECIFICS TBL			
RELEASE_ID	C	20	The release identifier. This is a user-generated, unique key that will be used to relate all of the tables in the source term relation. Several fields may be associated with this field.
RELEASE_DATE	D		The release date for this chemical type if different than the parent source term information
CAS_NUMBER	C	15	The chemical abstract system number associated with this material, as released
CHEMICAL_NAME	C	80	The chemical name, as identified by the researchers, for the chemical material released at this release point, for this record
CHEMICAL_FORM	C	20	Form of the chemical material released
RELEASE_VOLUME	N		Volume of the released material corresponding to this record
RELEASE_VOLUME_UNITS	C	20	Units associated with the release volume for this record
RATE_OF_RELEASE	N		Release volumetric rate measurement for this material for this release episode
RATE_UNITS	C	20	Units associated with the rate of release measurement for this record

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
RADIOLOGICAL_SPECIFICS TBL			
RELEASE_ID	C	20	The release identifier. This is a user-generated, unique key that will be used to relate all of the tables in the source term relation. Several fields may be associated with this field.
RELEASE_DATE	D		The release date for this chemical type if different than the parent source term information
RADIONUCLIDE	C	20	Radionuclide name for the material described in this record
RELEASE_VOLUME	N		The volume of material released in this event
RELEASE_VOLUME_UNITS	C	20	The units associated with the release volume
RATE_OF_RELEASE	N		The volumetric release rate for the event referenced by this record
RATE_UNITS	C	20	The volumetric release rate units
RECEPTOR TBL			
ID	N	10	Unique id
AGE	N		Age of receptor
SEX	C	1	Sex of receptor
RACE	C	15	Race of receptor
CENSUS_BLOCK_ID	C	20	Census block identifier associated with this record. This value is carried as an attribute in the Arc/INFO data layer and allows the tabular information in these relations to be spatially related.
LIFESTYLE_KEY	C	15	This is the key value associated with the lifestyle relation
DEMOG_KEY	C	15	This is the key value associated with the demographic profile relation
FOOD_KEY	C	15	This is the key value associated with the food profile relation
DEMOGRAPHIC_PROFILE TBL			
RACE	C	15	Race associated primarily with this demographic profile
INCOME	C	15	Income range associated with this demographic profile

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
AGE_RANGE	C	8	Range of ages associated with this demographic profile
SEX	C	1	The primary sex of this demographic profile, if applicable
RELIGION	C	20	The primary religion of this demographic profile
MOBILITY	N		Mobility of the typical constituent of this demographic profile, as measured in years residence
PERCENT_OUTDOORS	N		Percent of time spent outdoors, by the typical constituent of this profile
COMPOSITE_FOOD_PROFILE TBL			
FOOD_PROFILE_KEY	C	15	This is the key value that relates this entity with the food consumption profile entity
DEMOG_KEY	C	15	The key value that associates this record with the demographics profile
SEASON	C	10	The keys in this table relate the food profile to the demographic group depending on the season indicated in this record
FOOD_CONSUMPTION_ PROFILE TBL			
FOOD_PROFILE_KEY	C	15	This is the food_profile key, a user-defined unique value that is used to indicate the composite food group profile
FOOD_TYPE	C	30	This is the food type (milk, cheese, wheat products, etc.)
PERCENT_OF_DIET	N		This is the percent of the food profile that consists of this food_type
LIFESTYLE TBL			
LIFESTYLE_KEY	C	15	The user-defined, unique key value that defines this lifestyle profile record
OCCUPATION	C	80	The predominant occupation, or class of occupation, that is found in this lifestyle profile
URBAN	C	1	A Boolean indicating urban (= T) or rural (= F)

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
RECREATION_TYPE	C	80	Categories of recreation activity associated with this lifestyle profile
SOILS TBL			
SOIL_KEY	I	5	The key to the soil table
SOIL_TYPE	C	40	The type of soil
SORPTION	N		
CEC	N		
PERCENT_ORGANICS	N		
ENVIRONMENTAL_ MEASUREMENTS TBL			
MEDIA	C	40	The media of the measurement
MEASUREMENT_TYPE	C	40	
MEASUREMENT_VALUE	N		
MEASUREMENT_UNITS	C	10	The units associated with the measurement value
LOCATION	C	40	Description of the physical location
MEASUREMENT_TIME	D		The time of the measurement
UNCERTAINTY	N		The uncertainty of the measurement value
LOOKUP TABLES			
ANIMAL_TYPE TBL			
ANIMAL_TYPE	C	50	The list of animal types
CONTAINER TBL			
CONTAINER	C	20	The list of containers
CONTAINER_TYPE TBL			
CONTAINER_TYPE	C	20	The types of containers
COVER_TYPE TBL			
COVER_TYPE	C	40	The types of covers
FOOD_TYPE TBL			
FOOD_TYPE	C	40	Types of foods
GAME_TYPE TBL			
GAME_TYPE	C	50	Types of game
GARDENS TBL			
SOIL_KEY	I		
ACREAGE	N		
IRRIGATED	C	1	
GARDEN_PROFILE	I		
IRRGATION_TYPE	C	40	
PRODUCTION_AREA	C	50	
IRRIGATION_TYPE TBL			
IRRIGATION_TYPE	C	40	Irrigation methods

Table F-4. Data Dictionary

Table or Field name	Type	Length	Description
MEASUREMENT_TYPE TBL			
MEASUREMENT_TYPE	C	40	Types of measurements
MATERIAL TBL			
MATERIAL	C	40	Materials that can be shipped
PASTURE_TYPE TBL			
PASTURE_TYPE	C	40	Types of pastures
PLANT_TYPE TBL			
PLANT_TYPE	C	60	Plants
PRODUCTION_AREA TBL			
PRODUCTION_AREA	C	50	Production areas
RACE TBL			
RACE	C	15	Race
RATE_TYPE TBL			
RATE_TYPE	C	50	Rate types
RELEASE_TYPE TBL			
RELEASE_TIME_TYPE	C	20	Release time types
SEASON TBL			
SEASON`	C	10	Seasons
UNITS TBL			
UNITS	C	10	Units of measure
WATER_TECH TBL			
WATER_TECH	C	40	Watering techniques

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