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Gulf-wide Information System (G-WIS) Database Specifications Manual

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Louisiana State University

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1.0 Introduction

1.1 Project Background

The Gulf-wide Information System (G-WIS) is designed to provide an authoritative database for oil spill contingency planning and environmental analysis. The U.S. Minerals Management Service (MMS) supports the G-WIS program through the Coastal Marine Institute program within the Center for Coastal, Energy, and Environmental Resources (CCEER) at Louisiana State University (LSU).

The Oil Pollution Act of 1990 (OPA 90) and Executive Order 12777 have mandated a greater role for the MMS in oil spill contingency planning and environmental analysis. G-WIS is designed to support the requirements of government and industry. By using geographic information system (GIS) technology, the GWIS Program provides a substantial environmental database that can be accessed by MMS, other government agencies, and industry for various analyses and products that may be used for contingency planning, environmental assessments, leasing activities, regulatory decision making, and other general management purposes.

The current practice of using disparate data sources for oil spill planning and response fosters inconsistent interpretations and contention among the involved parties. To encourage consensus, G-WIS has established a steering committee with members from industry, federal agencies, and each Gulf state to provide guidance throughout the project. The steering committee is involved in all major decisions concerning the design and composition of the database. The steering committee members of the G-WIS program are listed in **Table 1-1.**

Table 1-1 G-WIS Steering Committee Membership

Minerals Management Service (MMS)	Environmental Protection Agency (EPA)
Louisiana State University (LSU)	Clean Gulf Associates (CGA)
Texas General Land Office (TGLO)	Marine Industry Response Group (MIRG)
LA Oil Spill Coordinator's Office (LOSCO)	Marine Spill Response Corporation (MSRC)
MS Dept. of Environmental Quality (MSDEQ)	National Oceanic and Atmospheric Administration
AL Dept. of Environmental Management (ADEM)	Exxon
FL Dept. of Environmental Protection (FDEP)	Chevron
U.S. Coast Guard (USCG)	Amoco

The Gulf of Mexico coastal states and federal agencies are providing much of the data for the project. MMS and LSU are compiling and augmenting the data using NOAA's environmental sensitivity index (ESI) mapping framework. The GWIS database also includes additional coverages, tables, and items that are part traditional ESI databases. The geographic scope of GWIS also extends seaward to

the natural boundary of a resource that than to the seaward limit of USGS topographic quadrange. These features of the GWIS databse have been added to asure regional consistency, and completeness from local data sources, and to extend the equipability of ESI data to the offshore environment.

While the primary purpose of G-WIS is to develop a database to support oil spill contingency planning, another important objective is to compile a database that can be used for other environmental and planning applications. To ensure this capability, the project, to the extent that resources permit, emphasizes the robustness of the data itself, not the specific application for which the data will be used. The objective is to have G-WIS serve as a model and a first step toward developing a flexible and complete Gulf of Mexico database based on primary data. The G-WIS geographic area of coverage is the coastal regions of Texas, Louisiana, Mississippi, Alabama, and Florida. This specifications manual is intended to be used as a guide as to the coverages with specific information and format.

Table 1-2 lists the database of the Gulf-wide Information into four prioritized data levels determined by the steering committee. This table was the basis to create the data layer specifications listed in Appendix A.

Table 1-2
G-WIS Priority Data Layers for Oil Spill Contingency Planning
Identified by Interagency and Industry Consensus

1. Level One Priority layers
   A. Basemaps
      - 1:2,000,000
      - 1:100,000
      - Texas 1:24,000
      - Louisiana 1:24,000
      - Mississippi 1:24,000
      - Alabama 1:24,000
      - Florida 1:40,000
      - GWIS Basemap 1:24,000

   B. Shoreline Habitat Type
      - Exposed vertical rock shoreline/seawall
      - Sheltered/Rock platform
      - Exposed Rock platform
      - Exposed riprap
      - Sheltered riprap
      - Gravel beaches
      - Mixed sand and gravel beaches
      - Shell beaches

- Coarse sand beaches
- Fine sand beaches
- Exposed mud flats
- Sheltered mud flats
- Mangroves
- Salt-brackish marsh
- Fresh flotant marsh
- Fresh marsh
- Swamps
- Developed/Upland

C. Aquatic Habitat Type
- Seagrass beds
- Oyster reefs
- Coral reefs
- Artificial reefs

D. Terrestrial Biological Resources
- Mammals
- Birds
- Reptiles

E. Aquatic Biological Resources
- Mammals
- Fish
- Mollusk
- Crustaceans
- Reptiles

F. Regulated Endangered and Threatened Species
- Type and distribution

G. Recreational Areas
- Beaches
- Marinas
- Boat ramps
- Diving areas
- Boating/Fishing

II. Level Two Priority Data Layers

A. Location of Protected Areas
- Special management areas
- State parks
- State preserves

- State wildlife refuges
- Federal preserves
- Federal wildlife refuges

B. Coastal Marine Processes
- Wave data
- Currents
- Hydrography
- Water temperature
- Meteorology data
- Climatic data

C. Transportation Infrastructure
- Roads
- Airports
- Helipads

D. USCG Area Contingency Plans
- MSO boundaries
- MSO Protection Priorities
- MSO Response Strategies

E. Access and Staging Areas
- Ramps
- Hoists

F. Modern, Historical, and Prehistorical Cultural Resources

G. Bathymetry

III. Level Three Priority Data Layers

A. Sources of Public/Commercial Water Supplies
- Water intakes

B. Oil and Gas Infrastructure
- Platforms
- Wells
- Pipelines
- Facilities
- Service bases
- Terminals
- Refineries
- Ports

C. Political and Administrative Boundaries and Locations
- Federal
- State
- Municipal
- Federal lease block
- State lease block

D. Preapproved Zones
- Dispersant
- In situ burning zones
- Exclusion areas

E. Navigable Shipping Routes/Channels
- Navigable shipping routes/channels
- Navigation markers
- Anchorage
- Lightering zones

F. Response Equipment Location
- Sources
- Inventory

G. Topography
- Minimum 5-foot contours

H. Place Names
- Names from USGS quads (GNIS)

I. Permitted Waste Disposal Sites
- Incinerators
- Landfills

IV. Level Four Priority Data Layers

A. Land Use
- USGS land use/land cover

B. Database of Historical Spills
- Risk analysis
- Location of spill source
- Spiller

C. Utilities
- Lines
- Generation stations

- Power plants
- Phone
- Power cable crossings

D. Population Data
- Census data
- Residences
- Camps

1.2 Purpose of the Specifications Manual

This Specifications Manual is intended to provide project participants specifications for the development of data for the G-WIS project. The manual outlines specific nomenclature, features, and formats for data development. The primary purpose of the manual is to standardize data development to ensure regional consistency. Some data types, such as the ESI data layers, are highly structured to mirror the NOAA national model for ESI mapping. Other data types, such as Coastal Marine Processes, are less structured because there are no regional/national models and the type of information available regionally will vary. Participants are encouraged to inform the G-WIS project team of pertinent data standards and suggest methods for incorporating these standards. **All project participants are required to observe these specifications, therefore it is imperative that they review and understand all information contained in this manual.** If you have any questions or comments regarding the Specifications Manual, you should contact the Project Manager for clarification.

It should also be noted that the Specifications Manual is an evolving document. As the project continues, new standards and data development issues will emerge. It is the intention of the G-WIS project team to progress with new information and experiences and to utilize the Specifications Manual as a means of documenting these changes. These changes may be in the form of data definitions, data types, or added sections. Each new version of the manual will include a synopsis of revisions. Participants are responsible for observing the specifications as written at the time of contracting, however, they are encourage to incorporate updates as possible.

1.3 Organization of the Manual

The manual is organized into four basic sections. Chapter One provides an overview of the G-WIS project. Chapter Two provides logistical information about contacts, formats, and procedures for the exchange of project data. Chapter Three provides detailed descriptions of each data layers. Appendix A includes examples of metadata and other supporting information.

2.0 Data Exchange Information

2.1 Project Contacts

G-WIS is a cooperative effort of the US Minerals Management Service (MMS) and the Louisiana State University's (LSU) Center for Coastal, Energy, and Environmental Resources (CCEER). Project support is provided by the five Gulf of Mexico states, Florida, Alabama, Mississippi, Louisiana, and Texas and industry co-ops including the Clean Gulf Associates (CGA) and the Marine Industry Group (MIRG). Individual contacts are listed below

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2.2 Data Format and Media Preferences

Software Format

G-WIS data base development utlizes the capabilities of several GIS and database software system. All data should be provided to G-WIS in the following software specific formats.

Digital Maps
- Prefferred: ESRI ArcInfo export format
- Other: Intergraph MGE, ERDAS, and Autocad

Database Files
- Preferred: ArcInfo (Info) or Oracle
- Other: FoxPro

Spreadsheets
- Prefferred: Excell
- Other: Lotus, Quattro Pro

Wordprocessor
- Preferred: Wordperfect
- Other: Word

Other Data Products

Data providers should consult with the LSU Data Manager to determine preferred/acceptable formats for other data products.

Media

Preffered: 4 mm tape, CDROM, 3.25 floppies, and internet transfer via ftp
Other: 8 mil tape

Documentation

The media must be clearly labelled as to:
- data provider organization
- media title/subject (e.g. MS ESI, Southeast TX Transportation)
- date data compile onto media
- data software format

A Readme file must be provided within the media that includes, at a minimum:

- data provider organization
- data provider contact, address, phone, fax, email
- media title/subject (e.g. MS ESI, Southeast TX Transportation)
- listing of all directories and files contained within the media
- date data compiled onto media
- data software format
- comments that will aid in data identification and application

FGDC compliant metadata must also be provided.

The metadata file must be clearly lablelled and may be created for the entire media content or for individual files. Data providers are strongly encouraged to document individual data files when feasible in order to preserve the integrity and viability of their data. A set of minimum data fields is currently under development by the FGDC and will be adopted by the G-WIS program when finalized. Untll that time, users are asked to provide as much content information as possible. An example metadata record is included as Appendix A. Additional information about the Metadata Content Standard and a metadata workbook are available from the FGDC at the NSDI home page (http://fgdc.er.usgs.gov). Metadata files generated in Arc/Info using *document.aml* are acceptable. Metadata generated using other automated tools should be reviewed with the Project Manager prior to submission.

Geographic Projection

Preffered: Latitude/Longitude
Other: UTM (clearly indicate zone and units).
Datum: NAD27 or NAD 83

2.2 Data Management and Processing Procedures

As data are collected, LSU is responsible for integrating the data into the G-WIS program. Upon receipt, the data are logged in and information recorded as to the date, media, format, and data provider. The data are copied into the G-WIS project directory and the original is archived. The copied versions of the data are then subjected to necessary data translation routines and processed for review within the ArcInfo/ArcView environment.

Once formatted for G-WiS use, the data are reviewed and **quality checked** (QC) using three primary criteria: compliance, completeness, and spatial correlation. Compliance is an assessment of how well the data satisfy the data definition, data

base structure, and metadata requirements of *The Gulf-Wide Information Systems Database Specifications Manual.* Completeness is evaluated based upon the attribute information provided and the geographic extent of the data. Spatial correlation is an assessment of geospatial alignment relative existing base maps and related data layers. LSU is responsible for:

- documenting data inadequacies,
- reviewing all data quality problems with the data provider,
- correcting minor errors when feasible, and
- providing specific guidance to contributing agencies with regard to data enhancement/adaptation.

Once QC approval is achieved, these data are then subjected to a series of processes to incorporate them into the G-WIS project. More specifically, LSU will:

- integrate the data file into the G-WIS project directory structure
- select out those elements and attributes pertinent to the project
- compile the data into thematic views (e.g. ESI biology, shoreline type, infrastructure)
- cartographically enhance/coordinate the data with regard to color assignments, placement of text, line widths, etc.
- integrate multimedia reference data such as images, CAD files, text files, and, potentially, video clips.

3.0 Data Descriptions

This section includes a brief description of each coverage that will be included in the Gulf-wide Information System (G-WIS) database. The individual specifications for each coverage were based on the G-WIS Steering Committee recommendations and were documented during a one-week meeting in which project managers from Louisiana State University (LSU), United States Mineral Management Service (USMMS), Research Planning, Inc. (RPI), and Environmental Systems Research Institute, Inc. (ESRI), participated.

Appendix A gives a detailed breakdown of all G-WIS tables and the structure required for each coverage/table.

3.1 Environmental Sensitivity Index (ESI) Data

Responsibility: States

The process of mapping environmental sensitivites in pote tial oil spill impact areas has become a integral part of oil spill response and contingency planning. ESI mapping employs a qualitative ranking system that identifies and characterizes the sensitivity of th shore and associated biota to oiling and cleanup activities. The ESI ranking typically ranges from 1 to 10 with low numbers indicating short persistence of stranded oil and minor susceptibility to environmental degradation and high numbers indicating long-term oil persistence, difficulty of oil ceanup and a high sensitivity to damage. Certain Gulf Coast shorelines, especially in Louisiana and Texas, are dynamic environments that constantly change position and sometimes character duet o erosion and deposition. In some places these processes along with human activities cause changes in physical attributes such as sediment composition, sediment textures, and nearshore slopes. The lengths and type of shores also determine their economic and recreational value, their ability to support certain plant and animal communities, and their value as productive nesting and nursery grounds for certain threatened and endangered species. Knowlng shoreline characteristics also provide a fundamental basis for oil spill response, cleanup and contingency planning for post-spill damage assessments. NOAA has used environmental sensitivity maps furing spill response for many years. By using the NOAA concept, ESI mapping can become an invaluable management tool for the oil spill community.

3.1.1 ESI Biology Data—Coverages

The biological data consists of coverages and tables. This structure makes it redundant to address each coverage separately. The following paragraphs will give a general description of the organization of the biological data, with only the unique details given for the individual coverages. The coverages include CORAL, T_MAMMAL, M_MAMMAL, BIRD, NEST, SHELFISH, REPTILE, and PLANT. All of

the coverages have polygon topology, with the exception of NEST, and use ARC/INFO software's region data model to describe the spatial extent of biological resources. The region data model allows multiple polygons to be grouped as a single entity and assigned a RARNUM value that is a unique combination of species, concentration, and seasonality. These coverages represent the spatial distribution of the species of concern. The item RARNUM must be identified for each coverage (except CORAL) and used to link the coverages to the table BIORES.DAT. The RARNUM is the only item past user-ID# that is in these coverage.

The states are expected to create the completed coverages for delivery to LSU as outlined in the National Oceanographic and Atmospheric Administration (NOAA) Technical Memorandum NOS ORCA 92 "Environmental Sensitivity Index Guidelines. **Appendix A** gives an outline of the data structure that is to be used.

Most of the information is available through various state agencies. The state will be responsible for identifying the sources of data and collecting this information.

Metadata will be maintained for each coverage. However, individual biological species will have source data associated that documents the type and quality of the data used to document the species.

3.1.1.1 CORAL

The coral reef coverage has polygon topology with regions representing the location of coral reefs. Where available, the species of coral should be identified and entered into the linked tables.

3.1.1.2 T_MAMMAL

The T_MAMMAL coverage has polygon topology representing the location of terrestrial mammals within the biological region coverage.

3.1.1.3 M_MAMMAL

The marine M_MAMMAL coverage has polygon topology representing the location of marine mammals within the biological region coverage.

3.1.1.4 BIRD

The bird coverage has polygon topology representing the location of birds within the biological region coverage.

3.1.1.5 NEST

The nest coverage is a point coverage. The data structure is the same but a point is used to represent the location of nesting colonies. The point is typically placed near the center of the nesting colony.

3.1.1.6 SHELFISH

The shelfish coverage has polygon topology representing the location of shellfish within the biological region coverage.

3.1.1.7 REPTILE

The reptile coverage has polygon topology representing the location of reptiles within the biological region coverage.

3.1.1.8 HABITAT

The habitat coverage has polygon topology representing the location of plants within the biological region coverage. The plant coverage includes terrestrial plants and seagrasses as well as any other submerged aquatic vegetation.

3.1.2 ESI Biology Reference Information

The biology reference information consists of data reference tables which provide attribute information in support of the biological coverages.

3.1.2.1 BIORES.DAT—Biological Resource Table

The BIORES.DAT table is linked to all of the biology coverages listed above by the RARNUM. The data in BIORES.DAT are used to identify what species are present in the region, as well as when they are present and their abundance. It is important that the information contained in BIORES.DAT be recorded at the same time as information is being collected for the biology data polygons. The structure of the table is defined so that there is one species per row in the table. This relationship is shown in **Appendix A.** This table is linked to the tables: SPECIES.DAT by the fields SPECIES_ID and ELEMENT; SEASON.DAT by the fields SPECIES_ID,

ELEMENT, and SEASON_ID; and SOURCE.DAT by the field SOURCE_ID. There may be multiple rows for each RARNUM. The source of the information for this table is the same as the sources for the biological coverages. The field SOURCE_ID is the link to the feature-level metadata for the polygon and the species.

3.1.2.2 SEASON.DAT—Seasonality Table

SEASON.DAT is the table that specifies exactly when the individual species are present and the breeding times for the species. This table is to be completed at the same time as the coverages and the BIORES.DAT table. The state is responsible for collecting and compiling this information. The table is structured so there is one field for each month that a species is present. The field SEASON_ID has no significance other than as a link to the table BIORES. The field BREEDNUM is a link from the season table to the table BREED.DAT.

3.1.2.3 BREED.DAT—Breed Table

BREED.DAT tracks the breeding times for the species. One row of data is entered for each month that the animal is breeding. BREED.DAT is not contained in the traditional ESI data model which maintains information on breeding times as a range of months in SEASON.DAT. Maintaining breeding time data for each month in BRED.DAT enhances the quering and analytical capabilities of the database.

3.1.2.4 SPECIES.DAT Species Table

The species table is compiled from a master list, that is used in the NOAA environmental sensitivity maps. This species master list is linked to SPECIES_ID in the BIORES.DAT table. The species master list provides information used to track species identifications within and across Environmental Sensitivity Index (ESI) atlases. This list is particularly useful where there are several common names used for the same species. This list is also useful when a species is used in the ESI process for the first time. If any species are added to the list the final numbers must be assigned by NOAA.

3.1.2.5 SOURCE.DAT—Source Information Table

The source (metadata) master list is used to provide detailed information on the sources used to compile biological and human-use data. For the biological data, sources for spatial, concentration, seasonality, and life history information need to be documented. The source information is needed for metadata documentation and

the references section of the ESI atlas. The state is responsible for completing the tables when the biological data are collected.

3.1.2.6 SURVEY.DAT —Survey Information Table

This table is linked to the SOURCE.DAT table on the field SOURCE_ID. The SURVEY.DAT table is used to document the study methods used by a particular source (sampling method, spatial referencing and accuracy, and sampling dates and frequency). This information is necessary so that geographic completeness and temporal consistency can be monitored while merging different data sets from many different sources. A separate form should be completed for each source. The data used for this table are extensions of the data used to complete the SOURCE.DAT table. The table is not part of traditional ESI data boxes.

3.1.2.7 INFERRED.DAT—Nonsurvey Information Table

This table is linked to the SOURCE.DAT table on the field SOURCE_CODE. The INFERRED.DAT tables are used to document the method used by a particular source when the information provided is not based on a particular survey. This table is used when the data are derived from habitat models, an expert's personal knowledge, general knowledge, or extrapolated information. The data used for this table are extensions of the data used to complete the SOURCE.DAT table. The table is not part of traditional ESI data structure.

3.1.2.8 SURVEY—Survey Area Coverage

The SURVEY coverage is linked to the SOURCE.DAT and BIORES.DAT tables. This coverage is a polygon coverage that delineates the boundaries of the field surveys used to compile the ESI biology data. The only items present in the INFO table (SURVEY.PAT) are SOURCE_CODE and SURVEY_ID. The table is not part of traditional ESI data boxes.

3.1.3 ESI Non-Biology Data—Coverages

The ESI non-biology data coverages include physical and administrative data pertinent to special environments. Metadata is recorded for each coverage.

3.1.3.1 ESI—Shoreline

The ESI shoreline classification is topologically stored as arcs (shorelines) and polygons (marshes and flats). Therefore, the arc attribute table (ESI.AAT) and the polygon attribute table (ESI.PAT) are defined in **Appendix A.** The item ESI contains values according to the ESI ranking of the shorelines and polygons. The metadata report for the atlas contains the specific ESI rankings used as well as the primary and secondary sources for the shoreline and ESI classifications. There is a feature-level attribute (SOURCE_DES) to indicate any features that came from a source other than the primary source.

3.1.3.2 REC_PT—Special Recreation Points

The REC_PT coverage is a point coverage that shows the location of important recreational features that are best represented by a point such as boating, fishing, and diving areas; boat ramps; and marinas.

3.1.3.3 REC_PLY—Special Recreation Areas

This coverage is based on ARC/INFO software's region data model, and has polygon topology. The information contained in this coverage is the location of all managed recreational and preservation areas including public recreational beaches, state parks, national parks, artificial reef permit areas, marine sanctuaries, national wildlife refuges, Nature Conservancy preserves, and MMS protected areas. The information included with this coverage is to facilitate contacting the appropriate people (NAME, AGENCY CONTACT, PHONE) as well as to further information on the feature (COMMENTS.

3.1.3.4 INTAKES—Surface Water Intake Locations

The intake coverage includes information on location and type of surface water intakes. These are to include industrial, municipal, and private intakes. The field TYPE indicates what type of intake is indicated such as municipal, power plant, industrial, aquaculture, and so forth. In addition to contact information, fields for the depth of the intake, and the volume of water pumped is also included, but are not required information

3.1.3.5 REEF—Artificial Reef Locations

The artificial reefs coverage consists of point locations for artificial reefs in both state and federal waters. States will be responsible for the data within territorial waters

and USMMS will provide data for federal waters. The reef points will be coded for the responsible agency (U.S., FL, AL, etc.) abbreviation and for the material used in each reef.

3.1.3.6 AQUA—Aquaculture Points
3.1.3.7

The AQUA coverage includes the location of all the known aquaculture sites, with the exception of oyster and clam lease beds that are included under the biological coverages. The location of the facility is represented by a point. The information associated with the point is the type of facility (catfish farm, crawfish, etc.) and the necessary contact information

3.1.3.7 CLT_PTS—Cultural Resource Location

The CLT_PTS coverage shows the location of archeological, historic, and shipwreck sites. This information is collected and displayed in accordance with the requirements of the State Historical Preservation Office or appropriate agency. The location of the points can be generalized to mask the exact location. In addition, the only sites to be included are those that would be directly impacted by an oil spill or by the cleanup operations. The state is responsible for collecting and processing state cultural resource information including generalization, if necessary. USMMS will provice an OCS shipwreck database.

3.2 State (Non-ESI) Data
Responsibility: States

Participating state agencies are asked to provide their best available information for the following data sets. When possible, specific elements have been included in the data descriptions. However, LSU/MMS will work with states to adapt and incorporate available state data sets which do not provide information in the specific organizational format presented below. These descriptions are presented in an effort to standardized data representation across the Gulf of Mexico region. The data descriptions will evolve as data are collected and regional trends in data format and definitions emerge.

3.2.1 ROADS—Transportation - Ground

The ground transportation network database is inteneded to provide best available information regarding primary and secondary roads within the state. The data are represented as an arc coverage. The data will often be derived from USGS DLG data and should, at a minimum, include the following elements:

DLG codes shown next to item, Road Type
- Primary route - Class I, No centerline (201)
- Primary route - Class 1, centerline (202)
- Primary route - Class 1, divided lanes (203)
- Primary route - Class 1, one way (204)
- Secondary route - Class 2, no centerline (205)
- Secondary route - Class 2, centerline (206)
- Secondary route - Class 2, divided lanes (207)
- Secondary route - Class 2, one way (208)
- Road - Class 3, centerline (209)
- Road - Class 4, centerline (210)

Number of lanes
Interstate Rouge Number
U.S. Route Number
State Route Number
County Route Number
Restriction - toll (609), private (610), under const4rucjtion (604), proposed (611)

Special - in tunnel (601), bridge overpass (602), underpassing (603), double decked (612), elevted (614), on drawbridge (619), ferry crossing (214), covered bridge (406).

If more current information is available from the State transportation/highway department, the State data set is preferred.

3.2.2 AIR—Transportation - Air

The air transportation data set is intended to capture information about general aviation (GA) and commercial airfields and heliports in the state. The data will be respresented as a point coverage with points located at the estimated center of the airfield. At a minimum, the data set includes information about the name, location: city, state (Atlanta, GA) and type (Commercial, Agricultural) of airfield, services, size, as well as contact information (name, phone, fax). This data set is available from USGS as Digital Line Graphs (DLGs).

3.2.3 LEAS_ST—State Leasing Areas

This coverage is based on the oil and gas lease boundaries in state waters. The data are represented as a polygon coverage and information is to be provided as to the lease block number, leasee, lease_stat (active/inactive)

3.2.4 WELL_ST—State Platforms and Wells

This coverage includes oil and gas production well locations within the state. The data are represented as a point coverage and information is to be provided as to the location, type (platform, well, caisson), product (oil, gas, other), owner, and contact (name and phone).

3.2.5 PROC_FAC—Processing Facilities

The process facility coverage identifies the location of various petroleum processing facilities. The data are represented as a point coverage. Points are to be located at the estimated center of the facility. Each facility is coded for name/owner, type, product transportation methods (pipeline, barge), and contact (name and phone). Facility layout plans (digital) should also be provided when available. This information will be referenced via "hotlink" so that users can view the facility layout.

3.2.6 ADMN_ST—State Administrative Boundaries

This coverage identifies the boundaries of state, county, and municipal governments and organizations pertinent to spill contingency planning (e.g. levee districts, natural resource agency districts, regional response groups). The data are represented as

a polygon coverage and includes, at a minimum, the name of the administrative unit, the type of organization (city, county, state agency, etc.), the primary point of contact in case of a spill evernt (name and phone).

3.2.7 TOPO—Topography

The topography coverage provides best available information about topographic elevations within the state. The data are represented as an arc coverage with isolines generated a minimum of every five feet. This information is available from USGS DLG's. If more current/detailed information is available from State sources, the State data set is preferred.

3.2.8 PLAC_NAM—Place Names

The place name coverage provides an annotated point coverage of all place names included on USGS 7.5 series quadrangle maps. This information is available from the USGS and as the Geographic Names Index System (GNIS). Other available state developed name databases are acceptable if basic information about the location, name, and type of place (city, county, hydrologic feature, population [if known]) are included.

3.2.9 DISP_FAC—Disposal Facilities

The disposal facility locations coverage is a point coverage that identifies the location of disposal sites permitted to receive oil waste. Each facility will be coded for name, type, EPA classification, access, and size

3.2.10 LAND_USE—Land Use

The land use coverage is a polygon coverage that identifies the location and distribution of land use/land cover conditions. Data are compiled using the Anderson Classification System and should be provided at the most detailed level available. This information is available from the USGS LULC map series, but more current/detailed state data sets are preferred when available.

3.2.11 SPILLS—Historical Spills

The historical spills coverage is undefined at this time. Those states able to provide information regarding the location and nature of past spills are encouraged to provide this data in any format and work with the G-WIS project team to standardized data representation.

3.2.12 UTILITY—Utilities

The utiliy coverage is an arc coverage intended to capture information about the distribution of utliliy infrastructure including but not limited to: gas lines, sewer systems, and electrical conduits. This data are highly detailed and therefore out of scale relative to current G-WIS data development. However, states with highly aggregated information are encouraged to contribute and work with the G-WIS project team to determine the best data representation.

3.2.13 DEMOGRAP—Demographic Data

The demographic covergage is intended to represent basic census data regarding the distribution and nature of human populations. The data coverage is not well defined at this time and states with demographic data sets specific to their oil spill contingency planning programs are encouraged to contribute and work with the G-WIS project team to standardize data representation in the Gulf.

3.3 Gulf-wide Data
Responsibility: LSU

3.3.1 BASE_GULF—Gulf-wide Basemap

USGS 1:2,000,000 DLG's have been compiled and editted into a singel arc coverage for the entire US Gulf of Mexico. The primary element is a land/water interface, that serves as a backdrop for other gulf-wide transportation network and administrative boundary data.

3.3.2 BASE_REG—Region-wide Basemap

USGS 1:100,000 DLG's have been compiled and editted into a singel polygon coverage for the entire US Gulf of Mexico. The primary element is a land/water interface, that serves as a backdrop for other region-wide coverages such as transportation and administrative boundary data.

3.3.3 IMAGERY—Gulf-wide Imagery

Imagery coverages will be generated to provide digital image backdrops. Accessible images such as scanned USGS quadrangles (an ESI by-product) will be incorporated early, and more resource intensive products including USGS Digital Orthophoto Quads (DOQ's) and multispectral satellite imagery (TM and SPOT) incorporated as resources permit. Separate raster coverages will be generated for each image source.

3.3.4 TEMPERAT—Ocean Temperature

This coverage identifies average temperature conditions in the Gulf of Mexico. The data are represented as an arc coverage of isotherms. Units of representation have not been determined and will be based upon the units of representation presented by pertinent available regional data sets. This coverage may later be converted to several separate coverages to represent seasonal variations in oceanographic temperature.

3.3.5 SALINITY—Ocean Salinity

This coverage identifies average salinity conditions in the Gulf of Mexico. The data are represented as an arc coverage of isohalines. Units of representation have not been determined and will be based upon the units of representation presented by

pertinent available regional data sets. This coverage may later be converted to several separate coverages to represent seasonal variations in oceanographic salinity.

3.3.6 TIDES—Tide Gauge Data

This coverage identifies average tidal conditions in the Gulf of Mexico. The data are represented as a point coverage of water level measurements. This coverage may later be converted to several separate coverages to represent seasonal variations in tide levels.

3.3.7 CURRENTS—Ocean Currents

This coverage identifies directional current conditions in the Gulf of Mexico. The data are represented as an arc coverage of directional vectors. This coverage may later be converted to several separate coverages to represent seasonal variations in ocean currents.

3.3.8 CG_PLANS—USCG Contingency Planning Data

The CG_PLANS coverage will provide basic information regarding the oil spill planning response districts and contact information for the Gulf of Mexico. The data are represented as a polygon coverage. Additional information extracted from regional USCG plans will be added as available/necessary.

3.3.9 STAGING—Access and Staging Areas

This coverage provides information about the location and capacity of potential staging areas for response equipment assembalage and deployment. This includes commercial-grade ramps and hoist suitable for use in response operations. The data are represented as a point coverage and include the following elements: size of potential area, road and boat access, type of structure (ramp, hoist), weight limitations, owner/operator, contact information (name and phone).

3.3.10 BATHYMET—Bathymetry

The bathymetry coverage provides information about ocean floor surface conditions. The data are represented as an arc coverage of 100 meter contour lines. Additional resolutions may be generated in the future.

3.3.11 LEAS_FED—Federal Leasing Areas

This coverage is based on the oil and gas lease boundaries in federal waters. The data are represented as a polygon coverage and information is to be provided as to the lease block number, leasee, approval date, region code, proaction number ac_lab.

3.3.12 WELL_FED—Federal Platforms and Wells

This coverage includes oil and gas production well locations within the federal waters. The data are represented as a point coverage and information is to be provided as to the location, type (platform - structure #, complex ID#, structure name; well; caisson), product (oil, gas, other), owner, and contact (name, phone, fax).

3.3.13 PIPELINE—Pipelines

The pipelines coverage is an arc coverage that identifies the location of petroleum product pipeline. Each pipeline will be coded for date, company, diameter, and product.

3.3.14 ADMN_REG—Regional Administrative Boundaries

This coverage identifies the boundaries of federal agencies and industrial organizations pertinent to spill contingency planning (e.g. EPA districts, MIRG). The data are represented as a polygon coverage and includes, at a minimum, the name of the administrative unit, the type of organization (federal, industry), and the primary point of contact in case of a spill evernt (name and phone).

3.3.15 APP_ZONE—Preapproved Zones

This coverage will include dispersant zones, insitu burning zones, prohibited zones, and the responsible agency for each zone. The data are represented as a polygon coverage.

3.3.16 NAV_AID—Aids to Navigation

This coverage provides information about the location of various navigation aids including. The data are represented as point data with specific elements for type

(light house, channel marker, buoys). The primary source for this information is (Burea of Standards CD)

3.3.17 NAV_CHNL—Navigation Channels

This coverage includes shipping channels, fairways/anchorage, and lightering zones. The data are represented as an arc coverage with specific elements such as name, state, mile point, length & depth. The primary source for this information is (Burea of Transportation Statistics CD)

3.3.18 NAV_PORT—Navigation Port Locations

This coverage provides information about the location and capacity of navigation port facilities along the Gulf of Mexico. The data are represented as point data with specific elements for name, latitude and longitude. The primary source for this information is (Burea of Standards CD)

3.3.19 EQUIPMENT—Response Equipment Locations

The EQUIPMENT coverage is intended to provide information about the location of oil spill response equipment (e.g. boom, skimmers). This information may be collected from contingency plans or purchased from oil spill data providers. The data are represented as a point coverage with specific elements for: type of equipment, number/ft stocked, cost, owner/operator, and contact (name and phone).

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APPENDIX A

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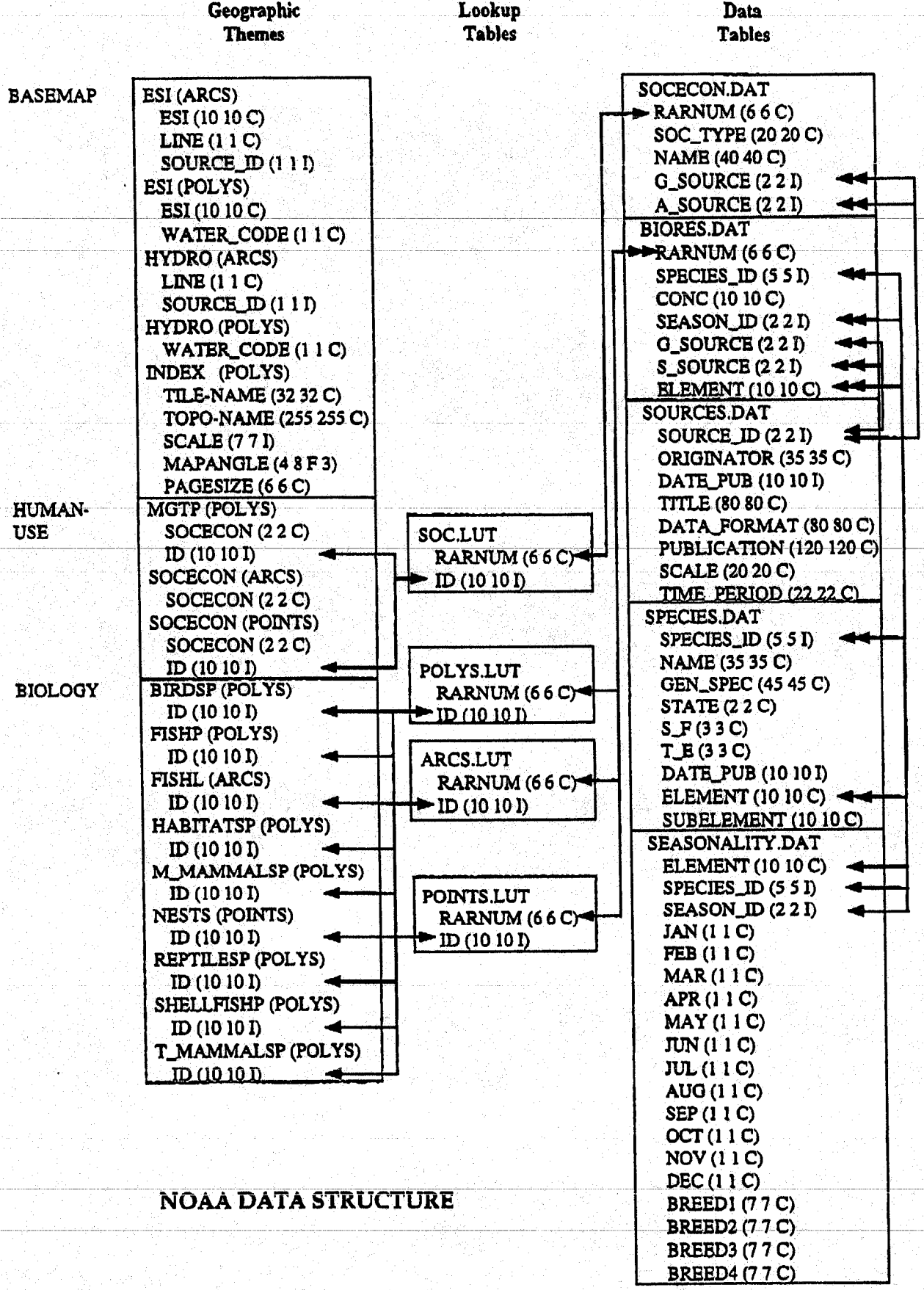
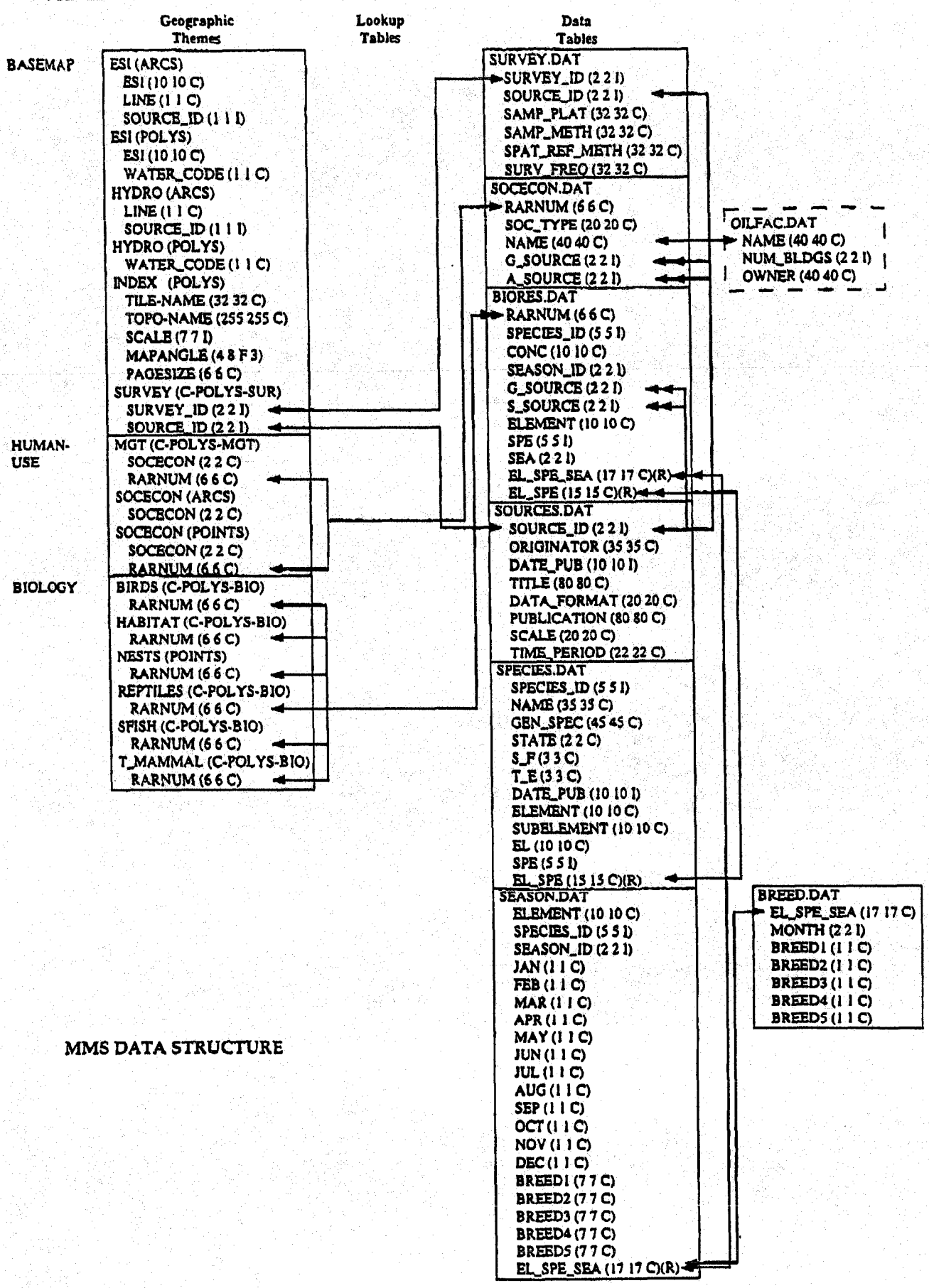
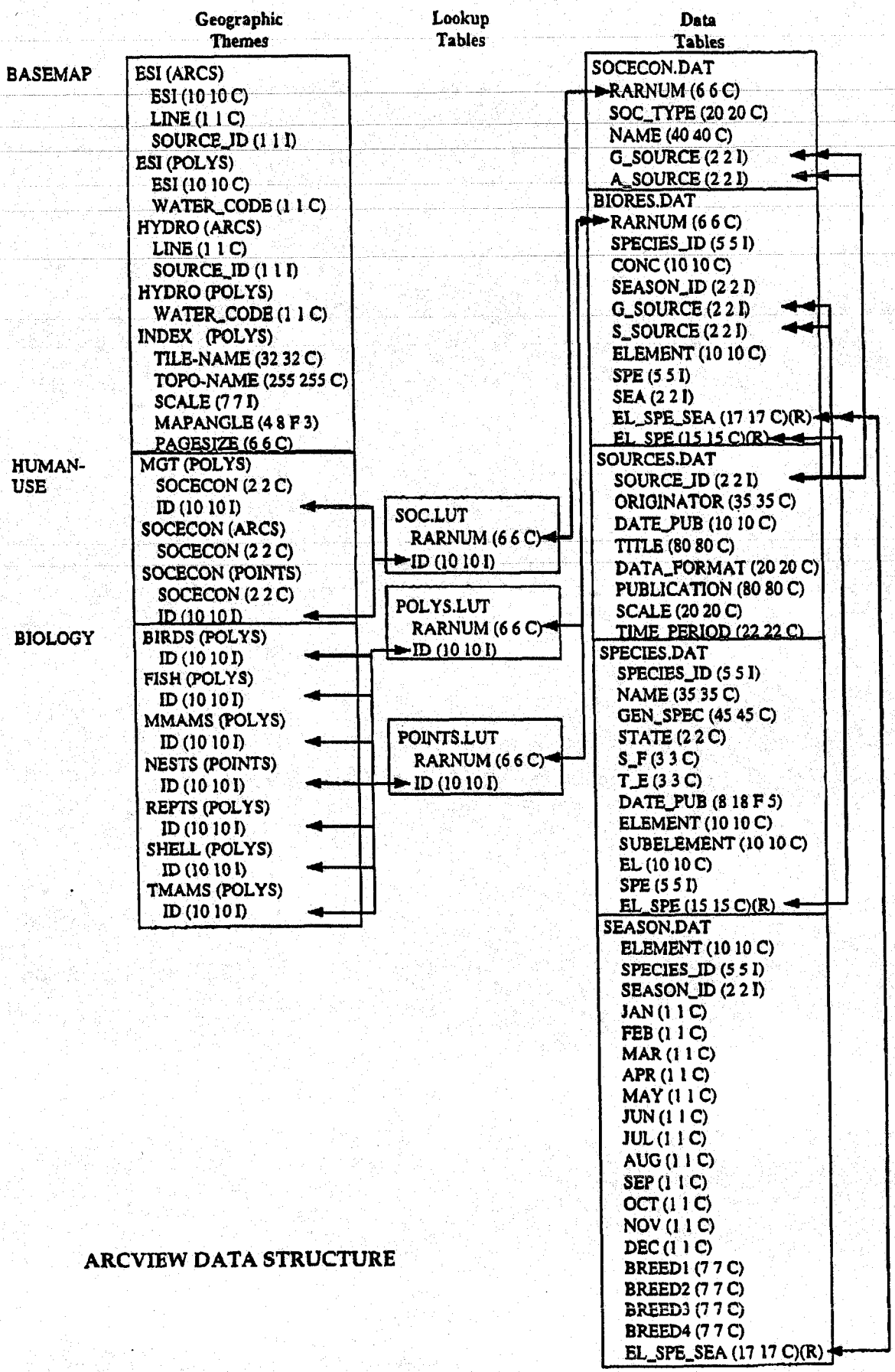


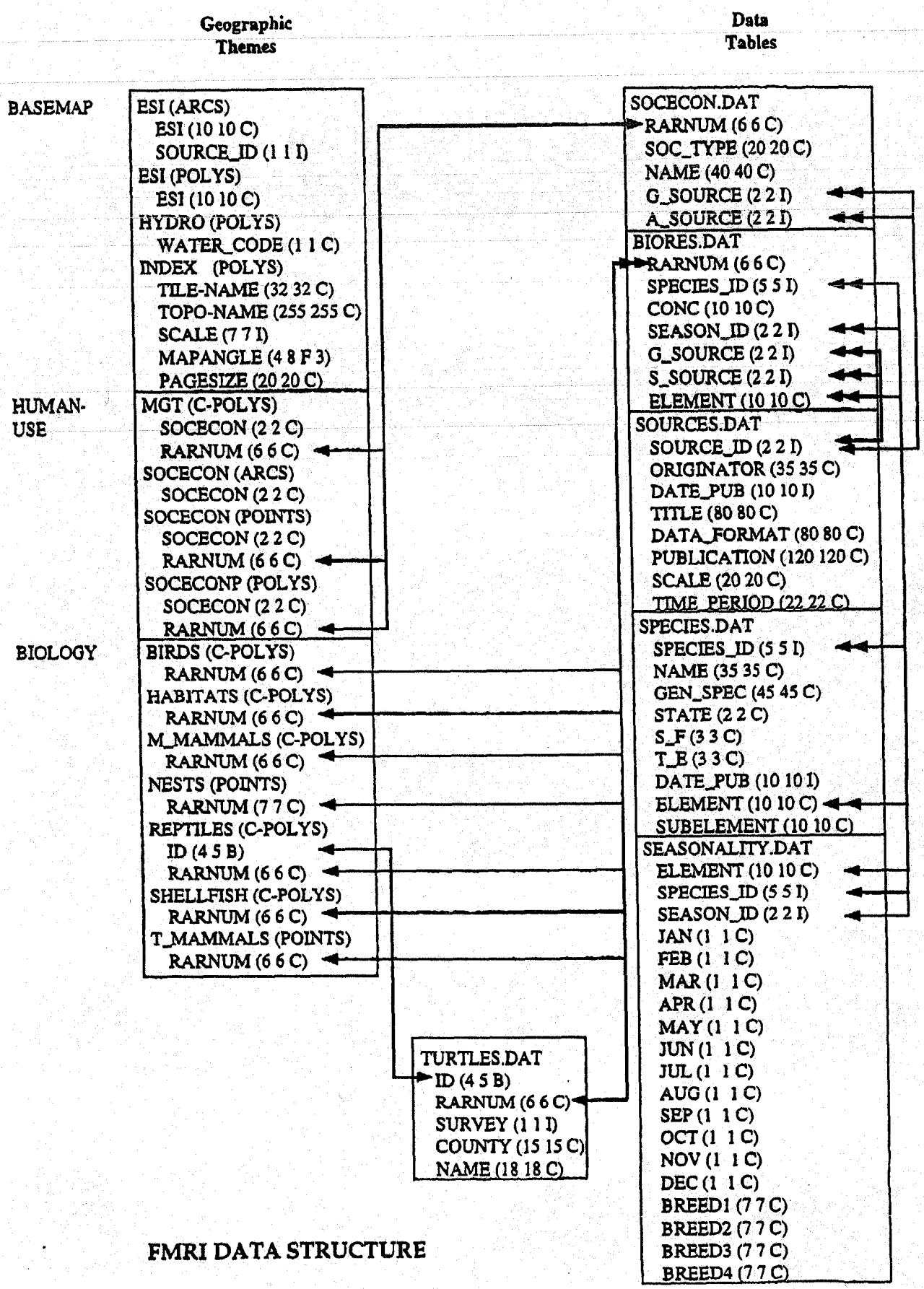
NOAA DATA STRUCTURE



MMS DATA STRUCTURE



ARCVIEW DATA STRUCTURE



FMRI DATA STRUCTURE

Appendix A—G-WIS Second Year Item Source Summary

The coverage specifications that are included in this section were developed jointly by LSU, MMS, RPI, and ESRI staff during a one week meeting at the LSU and MMS offices in Baton Rouge and New Orleans. Each coverage and table was identified, discussed, and defined for both structure and content. The results of these discussions were then documented in the following table.

The following column descriptions document the content of each column in the table and how the column relates to the other columns in the table.

Layer Description: This column lists a general name for the layer that will be recognizable to the average user. The layer name will not necessarily be the same as the ARC/INFO coverage name. The layer description is repeated in the column for every row that is used to describe the coverage.

ARC/INFO Cov/LUT Name: This column lists the ARC/INFO coverage name that will be implemented for the G-WIS layers to be converted. The coverage name is repeated in the column for every row that is used to describe the coverage.

ARC/INFO Coverage Type: This column lists the ARC/INFO feature type of the coverage. The possible coverage types that will be listed are as follows:

LINE	Source layers will be converted with line topology (AAT)
POINT	Source layers will be converted with point topology (PAT)
LINK	Source layers will be converted with line and point topology (AAT and a point PAT)
NETWORK	Source layers will be converted with line and polygon topology (AAT and poly PAT), the point features from the source layers will become the polygon labels for the polygon topology

INFO Table Name: This column lists the INFO table names that will be used for the coverage. Coverages that contain LINK or NETWORK in the **ARC/INFO Coverage Type** will have both an AAT and a PAT INFO table name in this column. The INFO table name is repeated in the column for every row that is used to describe the coverage.

Item Name: This column lists the items names that will be present in the INFO table. The item name is repeated in this column to match the valid item values in the next column over.

Item Def: This column describes the INFO item definition that will be created.

Valid Item Values: This column lists the item values that have been identified at this time. These may change due to findings in the pilot study.

Item Description: This column lists the item descriptions that were identified during the G-WIS database specifications meeting. These may change due to findings in the pilot study.

High Priority Attribute: This column identifies high priority items. High priority items are defined as items that are necessary for oil spill contingency planning.

Present in Pilot: This column identifies which layers and items will be tested during the pilot study.

Initial Database Source: This column identifies the source for the initial database. This includes the compilation and automation of the data layer in question. The following describes the responsibilities for the source agency (STATE, MMS, LSU)

State: When state is listed as the initial database source, each state will be responsible for collecting and automation the data to match the specifications.

LSU: When LSU is listed as the initial database source, LSU will be responsible for collecting and automation the data to match the specifications.

MMS: When MMS is listed as the initial database source, MMS will be responsible for collecting and automation the data to match the specifications.

Any combination of the above entries indicates that the data layer in question crosses the normal state/federal boundaries and may be collected from more than one source (e.g., Leasing Boundaries).

Final Format Source: This column identifies the source for the final database. This includes formatting the data layer to match the final G-WIS database specifications for the data layer in question. The following describes the responsibilities for the source agency (STATE, LSU):

State: When state is listed as the final database source, each state will be responsible for providing the data to match the specifications. The data will be directly reviewed by LSU and loaded into the LSU ARC/INFO based data management system. The ESI data is a good example of this kind of data. It is expected that LSU will not be required to process any ESI data after delivery from the individual states.

LSU: When LSU is listed as the final database source, LSU will be responsible for processing data from a variety of sources (including state data). The data from the various sources will be reformatted and edgematched where necessary to create the final database. The administrative boundaries coverage is a good example of this type of situation.

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present In Pilot	Initial Database Source	Final Format Source
Coral Reefs	CORAL	POLY	CORAL.PATBIO	SPECIES	20,20,C	(text)	Text item for the various coral species.	•	•	State	State
Mammals	MAMMALS	POLY	MAMMALS.PATBIO	RARNUM	10,10,I	1 - n	Resource At Risk Number for the polygon. Unique through entire database. This item is the relate item from this PAT to BIORES.DAT.	•	•	State	State
Birds	BIRDS	POLY	BIRDS.PATBIO	RARNUM	10,10,I	1 - n	Resource At Risk Number for the polygon. Unique through entire database. This item is the relate item from this PAT to BIORES.DAT.	•	•	State	State
Nests	NESTS	POINT	NESTS.PAT	RARNUM	10,10,I	1 - n	Resource At Risk Number for the polygon. Unique through entire database. This item is the relate item from this PAT to BIORES.DAT.	•	•	State	State
Shellfish	SHELFISH	POLY	SFISH.PATBIO	RARNUM	10,10,I	1 - n	Resource At Risk Number for the polygon. Unique through entire database. This item is the relate item from this PAT to BIORES.DAT.	•	•	State	State
Reptiles	REPTILES	POLY	REPTILES.PATBIO	RARNUM	10,10,I	1 - n	Resource At Risk Number for the polygon. Unique through entire database. This item is the relate item from this PAT to BIORES.DAT.	•	•	State	State
Plants	PLANTS	POLY	PLANTS.PATBIO	RARNUM	10,10,I	1 - n	Resource At Risk Number for the polygon. Unique through entire database. This item is the relate item from this PAT to BIORES.DAT.	•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	SPECIES_ID	10,10,I	1 -n	Species number, unique within each of the 5 element groups.	•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	ELEMENT	9,9,C	Mammals		•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	ELEMENT	9,9,C	Birds		•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	ELEMENT	9,9,C	Shellfish		•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	ELEMENT	9,9,C	Reptiles		•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	ELEMENT	9,9,C	Plants		•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	SEASON_ID	2,2,I	1 - n	Unique value for the temporal distribution of a species.	•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	ABUNDANCE	32,32,C	(text)	Descriptor item for the abundance of a species (high, med, low, etc...	•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	COMMENTS	80,80,C	(text)	Comments	•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	SOURCE_CODE	10,10,I	1-n	Relae item to SOURCE.LUT	•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	RARNUM	10,10,I	1 - n	The relate item to MAMMALS.PAT, BIRDS.PAT, NESTS.PAT, SHELLFISH.PAT, REPTILES.PAT, and PLANTS.PAT	•	•	State	State

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present In Pilot	Initial Database Source	Final Format Source
Biores LUT	BIORES	LUT	BIORES.DAT	SP_EL_SE	REDEF		Redefined item that covers SPECIES_ID, ELEMENT, and SEASON_ID. To be used when relating to SEASONALITY.DAT	•	•	State	State
Biores LUT	BIORES	LUT	BIORES.DAT	SP_EL	REDEF		Redefined item that covers SPECIES_ID and ELEMENT. To be used when relating to SPECIES.DAT	•	•	State	State
Source Lookup Table	SOURCE	LUT	SOURCE.LUT	SOURCE_CODE	10,10,I	I-N	Relate item to BIORES.DAT				
				SOURCE_ID	10,10,C	B1-Bn	Relate item to SOURCE.DAT				
Seasonality LUT	SEASON	LUT	SEASON.DAT	SPECIES_ID	10,10,I	1 -n	Species number, unique within each of the 5 element groups.	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	ELEMENT	9,9,C	Mammals		•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	ELEMENT	9,9,C	Birds		•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	ELEMENT	9,9,C	Shellfish		•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	ELEMENT	9,9,C	Reptiles		•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	ELEMENT	9,9,C	Plants		•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	SEASON_ID	2,2,I	1 - n	Unique value for the temporal distribution of a species.	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	JAN	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	FEB	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	MAR	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	APR	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	MAY	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	JUN	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	JUL	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	AUG	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	SEP	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	OCT	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	NOV	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	DEC	1,1,C	X	Present during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREEDNUM	5,5,I	I-u	Link to the breeding activity	•	•	State	State
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM	5,5,I	I-n	Link to the table season.dat	•	•	State	State
				MONTH							
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM	2,2,I	1 = Jan	Breeding during month	•	•	State	State
				MONTH							
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM	2,2,I	2 = Feb	Breeding during month	•	•	State	State
				MONTH							
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM	2,2,I	3 = Mar	Breeding during month	•	•	State	State
				MONTH							
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM	2,2,I	4 = Apr	Breeding during month	•	•	State	State
				MONTH							
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM	2,2,I	5 = May	Breeding during month	•	•	State	State
				MONTH							
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM	2,2,I	6 = Jun	Breeding during month	•	•	State	
				MONTH							

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM MONTH	2,2,I	7 = Jul	Breeding during month	•	•	State	State
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM MONTH	2,2,I	8 = Aug	Breeding during month	•	•	State	State
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM MONTH	2,2,I	9 = Sep	Breeding during month	•	•	State	State
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM MONTH	2,2,I	10 = Oct	Breeding during month	•	•	State	State
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM MONTH	2,2,I	11 = Nov	Breeding during month	•	•	State	State
Breeding LUT	BREED	LUT	BREED.DAT	BREEDNUM MONTH	2,2,I	12 = Dec	Breeding during month	•	•	State	State
Breeding LUT	BREED	LUT	BREED.DAT	BREED1	1,1,C	Y = nesting for birds	Breeding activity during month	•		State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED1	1,1,C	Y = spawning for fish	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED1	1,1,C	Y = spawning for shellfish	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED1	1,1,C	Y = nesting for reptiles	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED1	1,1,C	Y = calving for mammals	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED2	1,1,C	Y = laying for birds	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED2	1,1,C	Y = outmigration, for fish	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED2	1,1,C	Y = juv/larvae for shellfish	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED2	1,1,C	Y = hatching for reptiles	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED2	1,1,C	Y = pupping for mammals	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED3	1,1,C	Y = hatching for birds	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED3	1,1,C	Y = juv/larvae for fish	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED3	1,1,C	Y = molting for mammals	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	BREED4	1,1,C	Y = fledging for birds	Breeding activity during month	•	•	State	State
Seasonality LUT	SEASON	LUT	SEASON.DAT	SP_EL_SE	REDEF		Redefined item that covers SPECIES_ID, ELEMENT, and SEASON_ID. To be used when relating to BIORES.DAT	•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	SPECIES_ID	10,10,I	1 -n	Species number, unique within each of the 5 element groups.	•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	ELEMENT	9,9,C	Mammals		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	ELEMENT	9,9,C	Birds		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	ELEMENT	9,9,C	Shellfish		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	ELEMENT	9,9,C	Reptiles		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	ELEMENT	9,9,C	Plants		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	NAME	40,40,C	(text)		•	•	State	State

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
Species LUT	SPECIES	LUT	SPECIES.DAT	GEN_SPEC	40,40,C	(text)		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	S_F	3,3,C	s = state	State / Federal Flag	•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	S_F	3,3,C	f = federal	State / Federal Flag	•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	S_F	3,3,C	s/f = state & federal	State / Federal Flag	•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	T_E	3,3,C	T = threatened		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	T_E	3,3,C	E = endangered		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	T_E	3,3,C	T/E = threatened endangered		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	SUBELEMENT	10,10,C	(text)		•	•	State	State
Species LUT	SPECIES	LUT	SPECIES.DAT	SP_EL	REDEF		Redefined item that covers SPECIES_ID and ELEMENT. To be used when relating to BIORES.DAT	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	SOURCE_ID	10,10,C	B1-Bu	Relae item to SOURCE.LUT	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	ORIGINATOR	40,40,C	(text)	The author of the data set	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	DATE	10,10,D	date	Date of data collection or publication	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	TITLE	120,120,C	(text)	Title of data source	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	DATA_FORMAT	40,40,C	hardcopy map	Includes aerial photographs used in a survey	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	DATA_FORMAT	20,20,C	digital map	Includes digital imagery	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	DATA_FORMAT	20,20,C	hard copy table	Format of data	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	DATA_FORMAT	20,20,C	digital table	Format of data	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	DATA_FORMAT	20,20,C	text description	Format of data	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	PUBLICATON	120,120,C	(text)	Additional citation information	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	SCALE	32,32,C	(text)	Mapping scale	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	START_DATE	10,10,D	date	Begining date of study or survey	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	END_DATE	10,10,D	date	Ending date of study or survey	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	TYPE	1,1,I	1 = survey quality data	Flag to relate to SURVEY.DAT	•	•	State	State
Sources LUT	SOURCES	LUT	SOURCES.DAT	DATA_QUALITY	1,1,I	2 = inferred quality data	Flag to relate to INFERRED.DAT	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	ORIGINATOR	40,40,C	(text)	The author of the data set	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SOURCE_ID	10,10,I	1-n	Relate item to BIORES.DAT and SOURCE.DAT	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_PLAT	32,32,C	overflight	Sampling platform	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_PLAT	32,32,C	foot	Sampling platform	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_PLAT	32,32,C	boat	Sampling platform	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_PLAT	32,32,C	vehicle	Sampling platform	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_PLAT	32,32,C	satellite	Sampling platform	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	visual observation	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	photo interpretation	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	remote sensing	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	trawls	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	seine	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	traps	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	dredges	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	passive sonar	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	remote trakking	Sampling method	•	•	State	State

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
Survey LUT	SURVEY	LUT	SURVEY.DAT	SAMP_METH	32,32,C	lease boundaries maps	Sampling method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SPAT_REF_METH	32,32,C	landmarks (map reference)	Spatial reference method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SPAT_REF_METH	32,32,C	compass triangulation	Spatial reference method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SPAT_REF_METH	32,32,C	aerial	Spatial reference method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SPAT_REF_METH	32,32,C	satellite imagery	Spatial reference method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SPAT_REF_METH	32,32,C	surveying	Spatial reference method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SPAT_REF_METH	32,32,C	Public Land Survey	Spatial reference method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SPAT_REF_METH	32,32,C	LORAN C	Spatial reference method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SPAT_REF_METH	32,32,C	GPS	Spatial reference method	•	•	State	State
Survey LUT	SURVEY	LUT	SURVEY.DAT	SURV_FREQ	32,32,C	(text)	Survey frequency - a text field for description	•	•	State	State
Inferred LUT	INFERRED	LUT	INFERRED.DAT	SOURCE_ID	10,10,I	1-n	Relate item to BIORES.DAT and SOURCE.DAT	•	•	State	State
Inferred LUT	INFERRED	LUT	INFERRED.DAT	BASIS	16,16,C	model	Basis for inference	•	•	State	State
Inferred LUT	INFERRED	LUT	INFERRED.DAT	BASIS	16,16,C	extrapolation	Basis for inference	•	•	State	State
Inferred LUT	INFERRED	LUT	INFERRED.DAT	BASIS	16,16,C	expert knowledge	Basis for inference	•	•	State	State
Inferred LUT	INFERRED	LUT	INFERRED.DAT	BASIS	16,16,C	anecdotal	Basis for inference	•	•	State	State
Survey Area Coverage	SURVEY	POLY	SURVEY.PATSUR	SOURCE_ID	10,10,I	1-n	Relate item to BIORES.DAT and SOURCE.DAT	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	1A = Exposed rocky cliffs/Exposed rocky banks	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	1B = Exposed seawalls	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	2 = Exposedwave-cut platform/Rocky shoals or bedrock ledges	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	3 = Fine-tomedium-grained sand beaches/Exposed, eroding banks in unconsolidated sediments	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	4 = Coarse-grained sand beaches/Sandy bars and gently sloping banks	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present In Pilot	Initial Database Source	Final Format Source
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	5 = Mixed sand and gravel beaches/Mixed sand and gravel bars and gently sloping banks	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	6A = Gravel beaches/Gravel bars and gently sloping banks	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	6B = Riprap	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	7 = Exposed tidal flats	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	8A = Sheltered rocky shores/Vegetated, steeply sloping bluffs	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	8B = Sheltered seawalls	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	9 = Sheltered tidal flats/Vegetated low banks	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	10A = Salt marshes	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	10B = Freshwater marshes	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	10C = Freshwater swamps	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	10D = Mangroves	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	ESI	10,10,C	10E = Flotant marsh	May be combined with other ESI (Line) values, seperated by slashes (/). The first ESI value is landward, with each subsequent ESI moving seaward.	•	•	State	State

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
ESI Shoreline Lines	ESI	LINE	ESI.AAT	LINE	1,1,C	S = shoreline	Used to reselect and display land-water interface	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	LINE	1,1,C	I = index for map/quad boundary	Used to select non-ESI coded tile boundary lines	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	LINE	1,1,C	H = hydrography or streams/river line features		•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	LINE	1,1,C	P = pier		•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	LINE	1,1,C	B = breakwater		•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	LINE	1,1,C	F = non shoreline arc that form the boundary for flat polygons	Flat polygons are classified in the ESI PAT	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	LINE	1,1,C	M = non shoreline arc that form the boundary for marsh polygons	Marsh polygons are classified in the ESI PAT	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	SOURCE_DES	1,1,I	0 = digital	Value that identifies where the shoreline arcs were derived from	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	SOURCE_DES	1,1,I	1 = low-alt overflight	Value that identifies where the shoreline arcs were derived from	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	SOURCE_DES	1,1,I	2 = aerial photograph	Value that identifies where the shoreline arcs were derived from	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	SOURCE_DES	1,1,I	3 = digitized from paper USGS quadrangle	Value that identifies where the shoreline arcs were derived from	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	SOURCE_DES	1,1,I	4 = digitized from scanned USGS quadrangle	Value that identifies where the shoreline arcs were derived from	•	•	State	State
ESI Shoreline Lines	ESI	LINE	ESI.AAT	SOURCE_DES	1,1,I	5 = National Wetlands Inventory (NWI) digital data	Value that identifies where the shoreline arcs were derived from	•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	ESI	3,3,C	2 = Exposedwave-cut platform/Rocky shoals or bedrock ledges	ESI polygons will be coded with only one (1) ESI attribute	•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	ESI	3,3,C	7 = Exposed tidal flats	ESI polygons will be coded with only one (1) ESI attribute	•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	ESI	3,3,C	9 = Sheltered tidal flats/Vegetated low banks	ESI polygons will be coded with only one (1) ESI attribute	•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	ESI	3,3,C	10A = Salt marshes	ESI polygons will be coded with only one (1) ESI attribute	•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	ESI	3,3,C	10B = Freshwater marshes	ESI polygons will be coded with only one (1) ESI attribute	•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	ESI	3,3,C	10C = Freshwater swamps	ESI polygons will be coded with only one (1) ESI attribute	•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	ESI	3,3,C	10D = Mangroves	ESI polygons will be coded with only one (1) ESI attribute	•	•	State	State

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
ESI Shoreline Polys	ESI	POLY	ESI.PAT	ESI	3,3,C	10E = Flotant marsh	ESI polygons will be coded with only one (1) ESI attribute	•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	WATER_CODE	1,1,C	L = land		•	•	State	State
ESI Shoreline Polys	ESI	POLY	ESI.PAT	WATER_CODE	1,1,C	W = water		•	•	State	State
Special Rec Points	REC_PT	POINT	REC_PT.PAT	TYPE	2,2,C	RF = boating / fishing areas	Cloropleth for recreational boating and fishing areas (point identifing polygon areas)	•	•	State	State
Special Rec Points	REC_PT	POINT	REC_PT.PAT	TYPE	2,2,C	DA = diving areas	Point location for diving spots	•	•	State	State
Special Rec Points	REC_PT	POINT	REC_PT.PAT	TYPE	2,2,C	BR = boat ramps	Point locations for boat ramps	•	•	State	State
Special Rec Points	REC_PT	POINT	REC_PT.PAT	TYPE	2,2,C	M = marinas	Point locations for marinas	•	•	State	State
Special Rec Points	REC_PT	POINT	REC_PT.PAT	NAME	80,80,C	(text)	Name of the feature, where applicable	•	•	State	State
Special Rec Points	REC_PT	POINT	REC_PT.PAT	COMMENTS	80,80,C	(text)	Hoists will be listed in this item	•	•	State	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	TYPE	2,2,C	RB = beaches		•	•	State	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	TYPE	2,2,C	WR = preserves / wildlife refuge		•	•	State	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	TYPE	2,2,C	MS = marine sanctuaries	Will come from states for state waters, MMS for Fed. waters	•	•	State / MMS	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	TYPE	2,2,C	RP = reef permit areas	Will come from states for state waters, MMS for Fed. waters	•	•	State / MMS	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	TYPE	2,2,C	MM = MMS protected features		•	•	MMS	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	TYPE	2,2,C	NC = private protected areas		•	•	State	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	TYPE	2,2,C	NP = national parks		•	•	MMS	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	TYPE	2,2,C	P = state parks		•	•	State	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	NAME	40,40,C	(text)	Will come from states for state waters, MMS for Fed. waters	•	•	State / MMS	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	AGENCY	80,80,C	(text)	Will come from states for state waters, MMS for Fed. waters	•	•	State / MMS	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	CONTACT	80,80,C	(text)	Will come from states for state waters, MMS for Fed. waters	•	•	State / MMS	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	PHONE	20,20,C	(text)	Will come from states for state waters, MMS for Fed. waters	•	•	State / MMS	State
Special Rec Polys	REC_PLY	POLY	REC_PLY.PAT	COMMENTS	80,80,C	(text)	Will come from states for state waters, MMS for Fed. waters	•	•	State / MMS	State
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	AGENCY_NAME:	40,40,C	EPA	Not well defined, To Be Determined	•	•	Varied	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	AGENCY_NAME:	40,40,C	COAST GUARD	Not well defined, To Be Determined	•	•	Varied	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	AGENCY_NAME:	40,40,C	COE	Not well defined, To Be Determined	•	•	Varied	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	AGENCY_NAME:	40,40,C	OCS	Not well defined, To Be Determined	•	•	Varied	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	AGENCY_NAME:	40,40,C	MMS	Not well defined, To Be Determined	•	•	MMS	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	AGENCY_NAME:	40,40,C	STATE RESPONSIBLE AGENCIES	Not well defined, To Be Determined	•	•	State	LSU

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	AGENCY_NAME:	40,40,C	COUNTIES	Not well defined, To Be Determined	•	•	State	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	AGENCY_NAME:	40,40,C	CITIES	Not well defined, To Be Determined	•	•	State	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	CONTACT	80,80,C	(text)	Not well defined, To Be Determined	•	•	State	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	PHONE	20,20,C	(text)	Not well defined, To Be Determined	•	•	State	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	FAX	20,20,C	(text)	Not well defined, To Be Determined	•	•	State	LSU
Admin Boundaries	ADMIN	POLY	ADMIN.PAT	BOUNDARY TYPE	80,80,C	(text)	Not well defined, To Be Determined	•	•	State	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	LABEL	12,12,C	blocks	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	LABEL	12,12,C	protractions	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	AREA_DES	40,40,C		Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	ST_FED	2,2,C	US	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	ST_FED	2,2,C	FL	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	ST_FED	2,2,C	AL	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	ST_FED	2,2,C	LA	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	ST_FED	2,2,C	MS	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	ST_FED	2,2,C	TX	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	LEASE_STAT	8,8,C	active	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Oil/Gas Lease Polys	LEASE	POLY	LEASE.PAT	LEASE_STAT	8,8,C	inactive	Data in state waters from states, fed waters from MMS. State bnds will need to be matched to fed bnds	•	•	State / MMS	LSU
Pre-Approved Zones	APP_ZONE	POLY	APP_ZONE.PAT	ZONE_TYPE	4,4,C	disp = dispersants	Pre-approved dispersant use zones		•	MMS / LSU	LSU
Pre-Approved Zones	APP_ZONE	POLY	APP_ZONE.PAT	ZONE_TYPE	4,4,C	burn = in-situ burn	Pre-approved in-situ burning zone		•	MMS / LSU	LSU

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
Pre-Approved Zones	APP_ZONE	POLY	APP_ZONE.PAT	ZONE_TYPE	4,4,C	excl = exclusion area	Area of prohibited insitu burn or dispersent use		•	MMS / LSU	LSU
Pre-Approved Zones	APP_ZONE	POLY	APP_ZONE.PAT	AGENCY	40,40,C	(text)	Responsible agency		•	MMS / LSU	LSU
Art Reef Locations	REEF	POINT	REEF.PAT	ST_FED	2,2,C	US	Data in state waters from states, fed waters from MMS.	•	•	State / MMS	LSU
Art Reef Locations	REEF	POINT	REEF.PAT	ST_FED	2,2,C	FL	Data in state waters from states, fed waters from MMS.	•	•	State / MMS	LSU
Art Reef Locations	REEF	POINT	REEF.PAT	ST_FED	2,2,C	AL	Data in state waters from states, fed waters from MMS.	•	•	State / MMS	LSU
Art Reef Locations	REEF	POINT	REEF.PAT	ST_FED	2,2,C	LA	Data in state waters from states, fed waters from MMS.	•	•	State / MMS	LSU
Art Reef Locations	REEF	POINT	REEF.PAT	ST_FED	2,2,C	MS	Data in state waters from states, fed waters from MMS.	•	•	State / MMS	LSU
Art Reef Locations	REEF	POINT	REEF.PAT	ST_FED	2,2,C	TX	Data in state waters from states, fed waters from MMS.	•	•	State / MMS	LSU
Art Reef Locations	REEF	POINT	REEF.PAT	MATERIAL	20,20,C	(text)	Data in state waters from states, fed waters from MMS.	•	•	State / MMS	LSU
Water Intake Loc	INTAKE	POINT	INTAKE.PAT	TYPE (if available)	20,20,C	(text)			•	State	State
Water Intake Loc	INTAKE	POINT	INTAKE.PAT	NAME	40,40,C	(text)			•	State	State
Water Intake Loc	INTAKE	POINT	INTAKE.PAT	CONTACT	40,40,C	(text)			•	State	State
Water Intake Loc	INTAKE	POINT	INTAKE.PAT	PHONE	20,20,C	(text)			•	State	State
Water Intake Loc	INTAKE	POINT	INTAKE.PAT	FAX	20,20,C	(text)			•	State	State
Water Intake Loc	INTAKE	POINT	INTAKE.PAT	DEPTH (if avail)	20,20,C	(text)			•	State	State
Water Intake Loc	INTAKE	POINT	INTAKE.PAT	VOLUME (if avail)	20,20,C	(text)			•	State	State
Aquaculture Points	AQUA	POINT	AQUA.PAT	TYPE	20,20,C	(text)			•	State	State
Aquaculture Points	AQUA	POINT	AQUA.PAT	NAME	40,40,C	(text)			•	State	State
Aquaculture Points	AQUA	POINT	AQUA.PAT	CONTACT	40,40,C	(text)			•	State	State
Aquaculture Points	AQUA	POINT	AQUA.PAT	PHONE	20,20,C	(text)			•	State	State
Aquaculture Points	AQUA	POINT	AQUA.PAT	FAX	20,20,C	(text)			•	State	State
Cult Resource Loc	CLT_PTS	POINT	CLT_PTS.PAT	TYPE	2,2,C	SW = shipwreck	Data in state waters from states, fed waters from MMS. (Can be randomized by the state if necessary)	•	•	State / MMS	LSU
Cult Resource Loc	CLT_PTS	POINT	CLT_PTS.PAT	TYPE	2,2,C	HS = historic	Data in state waters from states, fed waters from MMS. (Can be randomized by the state if necessary)	•	•	State / MMS	LSU
Cult Resource Loc	CLT_PTS	POINT	CLT_PTS.PAT	TYPE	2,2,C	AS = archeological	Data in state waters from states, fed waters from MMS. (Can be randomized by the state if necessary)	•	•	State / MMS	LSU
Cult Resource Loc	CLT_PTS	POINT	CLT_PTS.PAT	NAME	80,80,C	(text)	If available, data from state waters from states, fed waters from MMS	•	•	State / MMS	LSU
Cult Resource Loc	CLT_PTS	POINT	CLT_PTS.PAT	STATE_ID	20,20,C	(text)	State or fed unique identification number, data from state waters from states, fed waters from MMS	•	•	State / MMS	LSU

change to SE ES

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
Ground Trans	ROADS	LINE	ROADS.AAT	TIGER Attributes	-		This layer was not defined. Research needs to be done to determine necessary level of data coverage and attributes. Possibly test in Pilot Study.		•	State	LSU
Air Transportation	AIR	POINT	AIR.PAT	TYPE	2,2,C	A = airport	Possibly use DCW airport layer		•	Varied	LSU
Air Transportation	AIR	POINT	AIR.PAT	TYPE	2,2,C	HP = heliport	Inc MMS platforms in gulf		•	Varied	LSU
Air Transportation	AIR	POINT	AIR.PAT	SERVICES (Comment	40,40,C	(text)	Type of fuel		•	Varied	LSU
Air Transportation	AIR	POINT	AIR.PAT	SIZE (Comments)	20,20,C	(text)	Number of pads, length of runway		•	Varied	LSU
Air Transportation	AIR	POINT	AIR.PAT	NAME	40,40,C	(text)	Facility name		•	Varied	LSU
Air Transportation	AIR	POINT	AIR.PAT	CONTACT	40,40,C	(text)			•	Varied	LSU
Air Transportation	AIR	POINT	AIR.PAT	PHONE	20,20,C	(text)			•	Varied	LSU
Air Transportation	AIR	POINT	AIR.PAT	FAX	20,20,C	(text)			•	Varied	LSU
Basemap Image							To be determined		•	Varied	LSU
Navigation Information	NAVINFO	POLY	NAVINFO.PAT	NAV_FEATURE	20,20,C	Lightering zone	Designated areas for vessel lightering		•	Varied	LSU
Navigation Information	NAVINFO	POLY	NAVINFO.PAT	NAV_FEATURE	20,20,C	Anchorage	Designated anchorage areas		•	Varied	LSU
Navigation Information	NAVINFO	POLY	NAVINFO.PAT	NAV_FEATURE	20,20,C	Fairway	Designated fairways		•	Varied	LSU
Navigation Information	NAVINFO	POLY	NAVINFO.PAT	NAV_FEATURE	20,20,C	Channel	Mapped navigation channels		•	Varied	LSU
Aids to Navigation	ATON	POINT	ATON.PAT	ATON	20,20,C		Aids to navigation		•	Varied	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	YR_INST	10,10,D	Date	Year installed		•	State / MMS	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	TYPE	2,2,C	W = well			•	State / MMS	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	TYPE	2,2,C	PF = platform			•	State / MMS	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	COMPANY			Company responsible for cont. plan		•	State / MMS	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	PRODUCT	20,20,C	oil	Could be a combination with / sep		•	State / MMS	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	PRODUCT	20,20,C	gas	Could be a combination with / sep		•	State / MMS	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	PRODUCT	20,20,C	condensate	Could be a combination with / sep		•	State / MMS	LSU

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
Platforms/Wells	WELLS	POINT	WELLS.PAT	CONTACT	40,40,C	(text)			•	State / MMS	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	PHONE	20,20,C	(text)			•	State / MMS	LSU
Platforms/Wells	WELLS	POINT	WELLS.PAT	FAX	20,20,C	(text)			•	State / MMS	LSU
Facility Locations	FAC_LOC	POINT	FAC_LOC.PAT	PORT_NAME	40,40,C	(text)	Port name		•	State	State
Facility Locations	FAC_LOC	POINT	FAC_LOC.PAT	FACILITY_NAME	120,120,C	(text)	List of facility names within the port		•	State	State
Facility Locations	FAC_LOC	POINT	FAC_LOC.PAT	PORT_CONTACT	40,40,C	(text)			•	State	State
Facility Locations	FAC_LOC	POINT	FAC_LOC.PAT	PORT_PHONE	20,20,C	(text)			•	State	State
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	TYPE	2,2,C	TM = terminals			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	TYPE	2,2,C	GP = gas plants			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	TYPE	2,2,C	RN = refineries			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	NAME	40,40,C	(text)			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	OPERATOR	40,40,C	(text)			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	PHONE	20,20,C	(text)			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	FAX	20,20,C	(text)			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	REC_METH	40,40,C	(text)			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	SHIP_METH	40,40,C	(text)			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	TOT_STORAGE	20,20,C	(text)			•	State / MMS	LSU
Processing Facilities	PROC_FAC	POINT	PROC_FAC.PAT	THROUGHPUT	20,20,C	(text)			•	State / MMS	LSU
Waste Disposal Facilities	DISP_FAC	POINT	DISP_FAC.PAT	TYPE	2,2,C	LR = land farm	Disposal method at facility		•	State	LSU
Waste Disposal Facilities	DISP_FAC	POINT	DISP_FAC.PAT	TYPE	2,2,C	LL = land fill	Disposal method at facility		•	State	LSU
Waste Disposal Facilities	DISP_FAC	POINT	DISP_FAC.PAT	TYPE	2,2,C	IN = inceneration	Disposal method at facility		•	State	LSU
Waste Disposal Facilities	DISP_FAC	POINT	DISP_FAC.PAT	EPA_CLASS	?,?,?	see EPA	LSU research		•	State	LSU
Waste Disposal Facilities	DISP_FAC	POINT	DISP_FAC.PAT	ACCESS	5,5,C	road	Access method to facility		•	State	LSU
Waste Disposal Facilities	DISP_FAC	POINT	DISP_FAC.PAT	ACCESS	5,5,C	rail	Access method to facility		•	State	LSU
Waste Disposal Facilities	DISP_FAC	POINT	DISP_FAC.PAT	ACCESS	5,5,C	barge	Access method to facility		•	State	LSU
Waste Disposal Facilities	DISP_FAC	POINT	DISP_FAC.PAT	SIZE (if available)	10,10,C	(text)	Legal capacity of facility		•	State	LSU

Layer Description	ARC/INFO Cov/LUT Name	A/I Coverage Type	INFO Table Name	Item Name	Item Def	Valid Item Values	Item Description	High Priority Attribute	Present in Pilot	Initial Database Source	Final Format Source
Pipelines	PIPELINE	LINE	PIPELINE.AAT	YEARINST	10,10,D	date	Date of installation (where available)		•	State	LSU
Pipelines	PIPELINE	LINE	PIPELINE.AAT	COMPANY	20,20,C	(text)	Responsible company		•	State	LSU
Pipelines	PIPELINE	LINE	PIPELINE.AAT	DIAMETER	4,4,I	1-n	Diameter in inches		•	State	LSU
Pipelines	PIPELINE	LINE	PIPELINE.AAT	PRODUCT	10,10,C	oil			•	State	LSU
Pipelines	PIPELINE	LINE	PIPELINE.AAT	PRODUCT	10,10,C	gas			•	State	LSU
Pipelines	PIPELINE	LINE	PIPELINE.AAT	PRODUCT	10,10,C	condensate			•	State	LSU

Appendix B

Research Planning, Inc. Metadata Document

(Draft)

NAME OF ATLAS
ENVIRONMENTAL SENSITIVITY INDEX
META DATA

Prepared By:

Research Planning, Inc.
1200 Park Street
Columbia, South Carolina 29201 USA

FILE DESCRIBES: Digital data for NAME OF MAP Environmental Sensitivity Index. Data were compiled and digitized at NAME OF ORGANIZATION RESPONSIBLE FOR COMPILATION OF DATA

FILE CREATED BY: NAME, TITLE, STREET ADDRESS, EMAIL ADDRESS, AND TELEPHONE AND FAX NUMBERS OF PERSON RESPONSIBLE FOR CREATING THE METADATA FILE

FILE CREATED ON: 19950712 (DATE: MUST BE IN THIS FORMAT)

COMMENTS: GENERAL INFORMATION ABOUT THE METADATA, SUCH AS: Information was developed using the U.S. Federal Geographic Data Committee's Content Standards for Digital Geospatial Metadata, June 8, 1994. The numbering scheme matches the Meta Data Standard in order to facilitate referencing definitions of the elements. The items in **bold** are required elements and the others are optional elements. The Spatial Data Transfer Standard, ver. 03/92, was referenced to properly identify the geographic entities.

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1.0. IDENTIFICATION INFORMATION

1.1. CITATION

1.1.1. ORIGINATOR:

IDENTIFY WHO IS THE ORIGINATOR OF THE DATA SET.

EXAMPLE: National Oceanic and Atmospheric Administration (NOAA), Office of Ocean Resources Conservation and Assessment, Seattle, Washington 98115

1.1.2. PUBLICATION DATE:

DATE THE MATERIAL WAS PUBLISHED OR COMPLETED, IN THIS FORMAT: 19950809

1.1.4. TITLE:

TITLE OF THE PRODUCT.

EXAMPLE: Sensitivity of Coastal Environments and Wildlife to Spilled Oil: Southern Lake Michigan

1.1.5. EDITION:

WHAT EDITION OF THE PRODUCT IS THIS DATA. IN MOST CASES, THIS WILL BE FIRST, UNTIL THERE ARE UPDATES.

1.1.6. GEOSPATIAL DATA PRESENTATION FORM:

INDICATE IN WHAT FORM THE DATA IS PRESENTED.

EXAMPLE: Atlas

1.1.7. SERIES INFORMATION

1.1.7.1. SERIES NAME:

NAME OF THE SERIES. ESI ATLASES ARE NOT PUBLISHED AS A SERIES; THEREFORE, None

1.1.7.2. ISSUE IDENTIFICATION:

NAME OF THE ESI ATLAS

1.1.8. PUBLICATION INFORMATION

1.1.8.1. PUBLICATION PLACE:

WHERE THE INFORMATION IS PUBLISHED.

EXAMPLE: Seattle, Washington

1.1.8.2. PUBLISHER:

WHO PUBLISHED THE INFORMATION.

EXAMPLE: NOAA, Office of Ocean Resources Conservation and Assessment

1.1.9. OTHER CITATION DETAILS:

INCLUDE ANY OTHER CITATION INFORMATION HERE THAT WAS NOT ALREADY IDENTIFIED.

1.1.10. ONLINE LINKAGE:

IS THIS AVAILABLE ONLINE, AND IN WHAT FORMAT?

1.1.11. LARGER WORK CITATION:

IS THIS A SUBSET OF A LARGER PROJECT? IF YES, CITE THE LARGER PROJECT.

1.2. DESCRIPTION

1.2.1. ABSTRACT:

A BRIEF DESCRIPTION OF THE DATA SET SHOULD BE INCLUDED HERE.

EXAMPLE:

This data set comprises the Environmental Sensitivity Index (ESI) maps for the shoreline of Southern Lake Michigan. ESI data characterize coastal environments and wildlife by their sensitivity to spilled oil. The ESI data include information for three main components: shoreline habitats; sensitive biological resources; and human-use resources.

1.2.2. PURPOSE:

WHAT IS THE PURPOSE OF THE DATA SET. DEFINE BRIEFLY SO THE END USER CAN UNDERSTAND THE LIMITATIONS OF THE DATA.

EXAMPLE: The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response. The Clean Water Act with amendments by the Oil Pollution Act of 1990 requires response plans for immediate and effective protection of sensitive resources

1.3. TIME PERIOD OF CONTENT

1.3.1. TIME PERIOD INFORMATION

BRIEF DESCRIPTION OF WHEN THE INFORMATION WAS COLLECTED AND WHAT TIME FRAME IT ENCOMPASSES.

EXAMPLE: The intertidal habitats were mapped during aerial and ground surveys conducted from 18-21 April 1994. The biological and human use data were compiled by regional biologists. The dates for these data vary and are documented in Section 2.5.1.

1.4. STATUS

1.4.1. PROGRESS:

WHAT STAGE OF DEVELOPMENT IS THE DATA SET IN?

EXAMPLE: Complete, Only Habitat Completed, etc.

1.4.2. MAINTENANCE AND UPDATE FREQUENCY:

DESCRIBE THE MAINTENANCE AND UPDATE FREQUENCY PLANNED FOR THE DATA SET.

EXAMPLE: None planned, etc.

1.5. SPATIAL DOMAIN

ALL COORDINATES IN DECIMAL DEGREES

1.5.1. BOUNDING COORDINATES

1.5.1.1. WEST BOUNDING COORDINATE:

EXAMPLE: 87.88

1.5.1.2. EAST BOUNDING COORDINATE:

EXAMPLE: 87.125

1.5.1.3. NORTH BOUNDING COORDINATE:

EXAMPLE: 42.5

1.5.1.4. SOUTH BOUNDING COORDINATE:

EXAMPLE: 41.5

1.6 KEYWORDS

1.6.1. THEME

1.6.1.1. THEME KEYWORD THESAURUS:

GIVE THE FORMAL THESAURUS NAME, OR: None

1.6.1.2. THEME KEYWORD:

KEYWORDS THAT CAN BE USED IN A KEYWORD SEARCH BASED ON SUBJECT.

EXAMPLE: Sensitivity maps; ESI; coastal resources; oil spill planning; and coastal zone management

1.6.2. PLACE

1.6.2.1. THESAURUS:

GIVE THE FORMAL THESAURUS NAME, OR: None

1.6.2.2. PLACE KEYWORD:

KEYWORDS THAT CAN BE USED IN A KEYWORD SEARCH BASED ON LOCATION.

EXAMPLE: Shoreline of Southern Lake Michigan, to encompass the coastal areas of Menomenee, Delta, Schoolcraft, Mackinac, Emmet, Charlevoix, Antrim, Grand Traverse, and Leelanau counties

1.7. ACCESS CONSTRAINTS:

STATE IF THERE ARE ANY LIMITATIONS ON ACCESS TO THE DATA.

EXAMPLE: None

1.8. USE CONSTRAINTS:

IDENTIFY ANY RESTRICTIONS IN HOW THE DATA MAY BE USED.

EXAMPLE: DO NOT USE ESI MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on this data. Acknowledgment of NOAA and other contributing sources would be appreciated in products derived from these data

1.11. DATA SET CREDIT:

IDENTIFY WHO WAS RESPONSIBLE AND INVOLVED IN THE PROJECT AND WHAT THEIR CONTRIBUTIONS WERE.

1.13. NATIVE DATA SET ENVIRONMENT:

IDENTIFY THE FORMAT/SOFTWARE USED TO CREATE AND STORE THE DATA AND ALL FILE NAMES IN THE DATASET.

EXAMPLE: The software packages used to develop the atlas are Environmental Systems Research Institute's Arc/Info (version 7.0.3) and Oracle RDBMS (version 6.0.36.1.1). The hardware configuration is Hewlett Packard work-stations (models 715/50 and 712/80 with 4 X-terminals) with unix operating system (HP-UX Release A.09.01). The following files are included in the data set: biores.dat.e00, seasonality.dat.e00, socecon.dat.e00, species.dat.e00, points.lut, polys.lut, soc.lut, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, nests.e00, plants.e00, and socecon.e00. The entire data set is approximately 60 megabytes.

1.14. CROSS REFERENCE:

IDENTIFY OTHER SIMILAR MATERIALS FOR THIS TYPE OF INFORMATION.

2.0. DATA QUALITY INFORMATION

2.1. ATTRIBUTE ACCURACY

2.1.1. ATTRIBUTE ACCURACY REPORT:

DESCRIPTION OF THE ATTRIBUTE ACCURACY. THIS INFORMATION IS FURTHER DETAILED IN THE FEATURE LEVEL DATA, WHERE APPROPRIATE.

2.1.2. QUANTITATIVE ATTRIBUTE ACCURACY ASSESSMENT

QUANTITATIVE ASSESSMENT OF THE ACCURACY OF THE ATTRIBUTES, NO THE SPATIAL DATA.

2.2. LOGICAL CONSISTENCY REPORT:

DESCRIBE WHAT TESTS WERE CONDUCTED TO ENSURE THAT THE DATA WAS LOGICALLY CORRECT AND CONSISTENT.

EXAMPLE:

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. In order to facilitate digitizing, the entire study area is split into individual quadrangles using the INDEX coverage. The first layer of information digitized is the ESI shoreline. Upon completion of digitization the data are checked for completeness and topological and logical consistency and then plotted and checked by the mapping geologists. Any errors in the shoreline classification are updated prior to digitization of the biological and socio-economic layers. All layers use the shoreline as the geographic reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:24,000 USGS topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, and written descriptions of wildlife distributions. The data are digitized, checked using both digital and on-screen procedures, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists review the entire series of maps, check all data, and make final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy.

2.3. COMPLETENESS REPORT:

DESCRIBE THE INFORMATION THAT IS INCLUDED IN THE DATASET. EXAMPLE:

Shoreline Habitat Mapping:

The shoreline habitats of Southern Lake Michigan were mapped during overflights conducted from 7 May 1993. The surveys were conducted at elevations of 300-500 feet and slow air speed, using a H-65 helicopter provided by the U.S. Coast Guard. An experienced coastal geologist delineated the coastal types directly onto 1:24,000 scale USGS topographic maps, using a standardized classification scheme. Where appropriate, multiple habitats were delineated for each shoreline segment. For complicated areas or where the shoreline had changed significantly from that shown on the base maps, color infrared aerial photographs provided by the Department of Natural Resources were used to update the maps.

Prediction of the behavior and persistence of oil on intertidal habitats is based on an understanding of the dynamics of the coastal environments, not just the substrate type and grain size. The vulnerability of a particular intertidal habitat is an integration of the following factors:

1) Shoreline type (substrate, grain size, tidal elevation, origin)
2) Exposure to wave and tidal energy
3) Biological productivity and sensitivity
4) Ease of cleanup

All of these factors are used to determine the relative sensitivity of intertidal habitats. Key to the sensitivity ranking is an understanding of the relationships between: physical processes; substrate; shoreline type; product type; fate and effect; and sediment transport patterns. The intensity of energy expended upon a shoreline by wave action, tidal currents, and river currents directly affects the persistence of stranded oil. The need for shoreline cleanup activities is determined, in part, by the slowness of natural processes in removal of oil stranded on the shoreline.

These concepts have been used in the development of the Environmental Sensitivity Index (ESI), which ranks shoreline environments as to their relative sensitivity to oil spills, potential biological injury, and ease of cleanup. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, and low biological activity rank low

on the scale, whereas sheltered areas with associated high biological activity have the highest ranking.

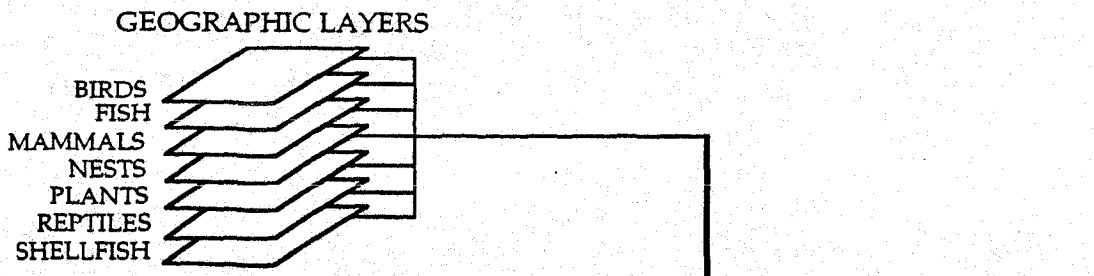
Sensitive Biological Resources:

Regional biologists compiled the biological data. These data denote the key biological resources that are most likely at risk in the event of an oil spill. Three major categories, or elements, of biological resources were considered during data compilation: birds, fish, and plants.

Each ELEMENT corresponds to a coverage or geographic theme. There are three attribute tables, BIORES.DAT, SEASONALITY.DAT, and SPECIES.DAT, that are used to store the complex biological data (Fig. 1). Each biological coverage (BIRDS, FISH, and PLANTS) is linked to the Biological Resources table (BIORES.DAT) using the item ID and the associated look up tables. The look up tables contain ID and RARNUM. RARNUM is the resources at risk number and is determined for each unique combination of SPECIES_ID, SEASON_ID, and CONC. The items in BIORES.DAT are: RARNUM, SPECIES_ID, CONC, SEASON_ID, SOURCE_ID, and ELEMENT. SPECIES_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and can be LOW, MEDIUM or HIGH or an actual count of the numbers of species present in the polygon. SEASON_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced.

The SEASONALITY.DAT table stores the monthly presence of each species and the characteristics of the presence (life history information). The BIORES.DAT table is linked to the SEASONALITY.DAT table using the SPECIES_ID, ELEMENT, and SEASON_ID items. The categories of the variables BREED1 through BREED4 for each ELEMENT are:

ELEMENT	BREED 1	BREED 2	BREED 3	BREED 4
BIRD	nesting	laying	hatching	fledging
FISH	spawning	juvenile	outmigration	
MAMMAL	calving	pupping	molting	
REPTILE	nesting	hatching		
SHELLFISH	spawning	juvenile		



BIORES.DAT

SPECIES_ID	ELEMENT	SEASON_ID	CONC	SOURCE_ID	RARNUM
1	BIRD	1	LOW	B1	10
1	BIRD	2	MEDIUM	B2	10
1	FISH	1	HIGH	F1	10
1	FISH	2	200	F2	10

SEASONALITY.DAT

SPECIES_ID	ELEMENT	SEASON_ID	JAN...DEC	BREED1	BREED2	BREED3	BREED4
1	BIRD	1	X	_	_	_	_
1	BIRD	2	X	MAY-JUN	MAY-MAY	JUN-JUN	JUN-JUL

SPECIES.DAT

SPECIES_ID	ELEMENT	NAME	GEN_SPEC	S_F	T_E	SUBELEMENT
1	BIRD	Common loon	Gavia immer	S	T	diving
1	FISH	Sablefish (blackcod)	Anoplopoma fimbria			special
1	M_MAMMAL	Northern (Steller) sea lion	Eumetopias jubatus	F	T	sea_lion
1	PLANT	Eelgrass	Zostera marina			sav
1	REPTILE	American Crocodile	Crocodylus acutus			alligator/crocodile

SOURCES.DAT

SOURCE_ID	B1	B2
ORIGINATOR	David Church, Lisa Burns, and Rich Murphy, San Luis Obisbo Dept. of Planning and Building	Dan Anderson, UC Davis
DATE	1992	1990
TITLE	Coastal Resources Inventory, Biological Resource Distribution	Brown Pelican Roosting Areas
DATA_FORMAT	Digital map, hardcopy map, book	Digital, points
PUBLICATION	Unknown	None
SCALE	Varies	Unknown
TIME_PERIOD	Unknown	Unkown

FIGURE 1. Relationships between biology coverages and attribute files.

NOTE: There are no BREED variables for PLANTS.

The SPECIES.DAT table contains the common name (NAME), the scientific name (GEN_SPEC), the state and federal status (S_F), and the threatened or endangered status (T_E). The item SUBELEMENT refers to the grouping of the species. The SUBELEMENTS, by ELEMENT, are:

ELEMENT	SUBELEMENT
Bird	Alcid
	Diving Coastal Bird
	Gull/Tern
	Passerine
	Pelagic
	Raptor
	Shorebird
	Wading Bird
	Waterfowl
Fish	Anadromous
	Beach Spawner
	Kelp Spawner
	Reef Fish
	Special Concentration
Marine Mammal	Dolphin
	Manatee
	Sea Lion
	Sea Otter
	Seal
	Whale
Plant	Marsh
	Submerged aquatic vegetation
	Shrub
Reptile	Alligator/Crocodile
	Sea Turtle
Shellfish	Abalone
	Cephalopod
	Clam
	Conch/Whelk
	Echinoderm
	Gastropod
	Mussel
	Oyster
	Scallop
	Squid/Octopus

	Crab
	Lobster
	Shrimp
Terrestrial Mammal	Bear
	Deer
	Mustelid
	Rodent

Human Use Resources:

Several human use, or socio-economic, features are included in ESI atlases. Entity points and complete chains are digitized into the coverage SOCECON. The data set is linked to the database SOCECON.DAT using the item ID found in the SOC.LUT.

ENTITY POINTS (.PAT)		COMPLETE CHAINS (.AAT)	
Item	**Type**	**Item**	**Type**
SOCECON	C	SOCECON	C
ID	C		

The SOCECON item may contain the following values:

Entity Points		**Complete Chains**	
Feature	**SOCECON**	**Feature**	**SOCECON**
Access	A2	Indian Reservation	IR
Airport	A	International Border	IB
Aquaculture	AQ	Marine Sanctuary	MS
Archaeological Sites	AS	National Park	NP
Beach	B	Park	P
Boat Ramp	BR	Pipeline	PL
Campground	CP	Regional or State Park	SP
Coast Guard	CG	State Border	SB
Commercial Fishing	FA	State Beach	B/RB
Factory	F2	Wildlife Refuge	WR
Ferry	F		
Fishery Area	FA		
Historical Site	HS		
Hoist	H		
Log Storage	LS		
Marina	M		
Marine Sanctuary	MS		
Mining	M2		
National Park	NP		
Native American Lands	NAL		
Oil Facilities	OF		
Platforms	PF		
Public Fishing	PF		
Recreational Beach	RB		
Recreational Fishing	RF/PF		
State Park	SP		
Subsistence	S		
Village	V		
Water Intake	WI		
Wildlife Refuge	WR		

The table SOCECON.DAT contains the feature type, contact person, the owner of the facility, and any comments regarding the site. The RARNUM value is

distinguished from the biology RARNUM values by an "H" preceding the unique number.

2.4. POSITIONAL ACCURACY

2.4.1. HORIZONTAL POSITIONAL ACCURACY

2.4.1.1. HORIZONTAL POSITIONAL ACCURACY REPORT:

DESCRIBE THE HORIZONTAL ACCURACY OF THE DATA, AND THE BASIS FOR THAT ACCURACY MEASUREMENT.

EXAMPLE:

The ESI data uses USGS 1:24,000 topographic quadrangles as the base map. It is estimated that the ESI has a minimum mapping unit of 50 feet. The biological data sets are developed primarily using regional experts who estimate concentration areas. Unlike shorelines, which maintain relative spatial stability through time, the biological data by nature migrate across the landscape. Therefore, the 1:24,000 USGS quadrangles are used as a base map in gathering the data but the data have "fuzzy" boundaries which must be understood when utilizing this information.

2.4.1.2. QUANTITATIVE HORIZONTAL POSITIONAL ACCURACY ASSESSMENT

DESCRIBE THE ASSESSMENT DONE ON THE HORIZONTAL POSITIONAL ACCURACY.

EXAMPLE: None

2.4.2. VERTICAL POSITIONAL ACCURACY

2.4.2.1. VERTICAL POSITIONAL ACCURACY REPORT:

DESCRIBE THE ACCURACY OF THE DATA, AND THE BASIS FOR THAT ACCURACY MEASUREMENT.

EXAMPLE: None

2.5. LINEAGE

LIST ALL SOURCES FOR EACH DATA ELEMENT.

2.5.1. SOURCE INFORMATION:

Coverage or theme name: BIRDS

2.5.1.1. SOURCE CITATION

INCLUDE THE SOURCE INFORMATION FOR THE DATA IN THIS SECTION. THIS IS THE SAME INFORMATION THAT IS IN THE TABLE SOURCE.DAT. BELOW ARE EXAMPLE TABLES.

2.5.1.1.1 Originator	2.5.1.1.2 Publication Date	2.5.1.1.4 Title	2.5.1.1.6 Geospatial Data Presentation Form	2.5.1.1.8 Publication Information	2.5.1.2 Source Scale Denominator	2.5.1.4 Source Time Period
M. Martin, Indiana Natural Heritage Program	None	T/E Birds in IN	Digital; ASCII database	Unpublished database, IN Natural Heritage Program	None	1962-1992

2.5.1. SOURCE INFORMATION:

Coverage or theme name: ESI

2.5.1.1. SOURCE CITATION

2.5.1.1.1 Originator	2.5.1.1.2 Publication Date	2.5.1.1.4 Title	2.5.1.1.6 Geospatial Data Presentation Form	2.5.1.1.8 Publication Information	2.5.1.2 Source Scale Denominator	2.5.1.4 Source Time Period
U.S. Army Corps of Engineers, Detroit District	1989	Indiana and Illinois Shorelines	Digital; line data	Digitized by USACOE from 1989 Aerial Photographs	1:24,000	1989

2.5.1. SOURCE INFORMATION:

Coverage or theme name: FISH

2.5.1.1. SOURCE CITATION

2.5.1.1.1 Originator	2.5.1.1.2 Publication Date	2.5.1.1.4 Title	2.5.1.1.6 Geospatial Data Presentation Form	2.5.1.1.8 Publication Information	2.5.1.2 Source Scale Denominator	2.5.1.4 Source Time Period
M. Martin, Indiana Natural Heritage Program	None	T/E Fish in Indiana	Digital; ASCII database	Unpublished database, IN Natural Heritage Program	None	1962-1992

2.5.1. SOURCE INFORMATION:

Coverage or theme name: PLANTS

2.5.1.1. SOURCE CITATION

2.5.1.1.1 Originator	2.5.1.1.2 Publication Date	2.5.1.1.4 Title	2.5.1.1.6 Geospatial Data Presentation Form	2.5.1.1.8 Publication Information	2.5.1.2 Source Scale Denominator	2.5.1.4 Source Time Period
M. Martin, Indiana Natural Heritage Program	None	T/E Plants in IN	Digital; ASCII database	Unpublished database, IN Natural Heritage PRrogram	None	1962-1992

2.5.1. SOURCE INFORMATION:

Coverage or theme name: SOCECON

2.5.1.1. SOURCE CITATION

2.5.1.1.1 Originator	2.5.1.1.2 Publication Date	2.5.1.1.4 Title	2.5.1.1.6 Geospatial Data Presentation Form	2.5.1.1.8 Publication Information	2.5.1.2 Source Scale Denominator	2.5.1.4 Source Time Period
J. Michel, RPI	None	Boat Ramps, Marinas, Access	Maps, hardcopy	Notes made on USGS topos during overflights, digitized by RPI	1:24,000	1993

2.5.2. PROCESS STEP

2.5.2.1. PROCESS DESCRIPTION:

DESCRIBE THE PROCESSES USED TO CREATE THE COVERAGES AND DATA.

EXAMPLE:

The digitization of ESI, biological resources, and human-use resources is a complex and highly quality controlled process. In order to facilitate digitizing, the entire study area was split into individual quadrangles using a map index coverage. The first layer of information digitized is the ESI. Upon completion of digitization the data is checked for completeness, topological and logical consistency and then plotted and checked by the over-flight/field specialists. Any errors in the shoreline classification are updated prior to digitization of the biological and socio-economic layers. All data use the shoreline as the geographic reference so that there are no slivers in the geographic layers. The biological information is compiled onto 1:24,000 USGS topographic quadrangles by an in-house biological and GIS expert using the data from regional specialists in the form of maps, tables, charts, and written descriptions of wildlife distributions. The data are digitized, checked using both digital and on-screen procedures, plotted, and sent out for review by the regional specialists. The edited maps are updated on the computer, checked once again, and plotted at final map scale. A team of specialists review the entire series of maps, check all data, and make final edits. The data are merged to form the study-wide layers which are described in this document. The data merging includes a final quality control check where topological consistency, rules for geography, and database to geography are checked and reported to the GIS manager.

2.5.2.3. PROCESS DATE:

DATE THE PROCESSING WAS COMPLETED. EXAMPLE: 199409

2.5.2.6. PROCESS CONTACT

2.5.2.6.1. CONTACT PERSON PRIMARY

2.5.2.6.1.1. CONTACT PERSON:

NAME OF PRIMARY PERSON FOR PROCESS INFORMATION

2.5.2.6.1.2. CONTACT ORGANIZATION:

NAME OF PRIMARY ORGANIZATION

2.5.2.6.3. CONTACT POSITION:

PRIMARY PERSON'S POSITION

2.5.2.6.4. CONTACT ADDRESS

2.5.2.6.4.1. ADDRESS TYPE:

PHYSICAL ADDRESS

2.5.2.6.4.2. ADDRESS:

STREET ADDRESS

2.5.2.6.4.3. CITY:

CITY

2.5.2.6.4.4. STATE OR PROVINCE:

STATE

2.5.2.6.4.5. POSTAL CODE:

DIGITAL ZIP CODE

2.5.2.6.5. CONTACT VOICE TELEPHONE:

PRIMARY PERSON'S TELEPHONE NUMBER

2.5.2.6.7. CONTACT FACSIMILE TELEPHONE:

PRIMARY PERSON'S FAX NUMBER

2.5.2.6.8. CONTACT ELECTRONIC MAIL ADDRESS:

PRIMARY PERSON'S EMAIL ADDRESS

2.5.2.6.9. HOURS OF SERVICE:

ROUTINE DAILY OPERATING HOURS

3.0. SPATIAL DATA ORGANIZATION INFORMATION

3.2. DIRECT SPATIAL REFERENCE METHOD:

Vector

3.3. POINT AND VECTOR OBJECT INFORMATION

3.3.1. SDTS TERMS DESCRIPTION:

3.3.1.1. SDTS POINT AND VECTOR OBJECT TYPE, and

3.3.1.2. POINT AND VECTOR OBJECT COUNT:

BELOW IS A SAMPLE TABLE WHERE THEME CORRESPONDS TO ARC/INFO COVERAGE:

Theme	Universe Polygon	GT-Polygons	Area Points	Complete Chains	Line Segments	Label Points	Entity Points	Nodes
BIRDS	1	74	74	149	3,186			107
ESI	1			504	4,762			515
FISH	1	46	46	87	6,095			66
HYDRO	1	74	74	271	11,163			267
INDEX	1	11	11	47	47			37
NESTS							2	
PLANTS	1	3	3	3	554			6
SOCECON				21	549		67	56

4.0. SPATIAL REFERENCE INFORMATION

4.1. HORIZONTAL COORDINATE SYSTEM DEFINITION

4.1.2. PLANAR

4.1.2.1. MAP PROJECTION

4.1.2.1.1. MAP PROJECTION NAME:

NAME OF THE MAP PROJECTION.

EXAMPLE: TRANSVERSE MERCATOR

4.1.2.1.2. MAP PROJECTION PARAMETERS :

LIST THE MAP PROJECTION PARAMETERS

4.1.2.1.2.2. LONGITUDE OF CENTRAL MERIDIAN:
-85.0

4.1.2.1.2.3. LATITUDE OF PROJECTION ORIGIN:
0

4.1.2.1.2.4. FALSE EASTING:
500,000

4.1.2.1.2.5. FALSE NORTHING:
0

4.1.2.1.2.6. SCALE FACTOR AT CENTRAL MERIDIAN:
0.99960

4.1.2.4. PLANAR COORDINATE INFORMATION

4.1.2.4.1. PLANAR COORDINATE ENCODING METHOD:
Coordinate Pair

4.1.2.4.2. COORDINATE REPRESENTATION:

4.1.2.4.2.1. ABSCISSA RESOLUTION:
50 feet

4.1.2.4.2.2. ORDINATE RESOLUTION:
50 feet

4.1.4. GEODETIC MODEL

4.1.4.1. HORIZONTAL DATUM NAME:

SPECIFY THE DATUM USED. USUALLY ONE OF THE FOLLOWING:

North American Datum of 1927 (NAD27)

North American Datum of 1983 (NAD83)

4.1.4.2. ELLIPSOID NAME:

USUALLY ASSOCIATED WITH A CERTAIN DATUM.

Clarke, 1866 (NAD27)

GRS 1980 (NAD83)

4.1.4.3. SEMI-MAJOR AXIS:

BASED ON THE SELECTED ELLIPSOID

4.1.4.4. DENOMINATOR OF FLATTENING RATIO:

BASED ON THE SELECTED ELLIPSOID

5.0. ENTITY AND ATTRIBUTE INFORMATION

THE FOLLOWING SECTION PROVIDES A GUIDELINE AND EXAMPLE FOR THE ATTRIBUTE SECTION OF THE METADATA FORM. APPENDIX A HAS MOST OF THE INFORMATION NEEDED TO COMPLETE THIS SECTION.

5.1. DETAILED DESCRIPTION: BIRDS

The coverage BIRD contains the polygons with bird species.

5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
GT-Polygons	ID	integer

5.1.2. ATTRIBUTES:

5.1.2.1. ATTRIBUTE LABEL:

ID

5.1.2.2. ATTRIBUTE DEFINITION:

A unique identifier which links to the POLYS.LUT table. The POLYS.LUT is a lookup table with two attributes: ID and RARNUM. The value of RARNUM is determined for each unique combination of SPECIES_ID, SEASON_ID, and CONC. The items in BIORES.DAT are: RARNUM, SPECIES_ID, CONC, SEASON_ID, SOURCE_ID, and ELEMENT. SPECIES_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and can be LOW, MEDIUM, or HIGH or an actual count of the numbers of species present in the polygon. SEASON_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced. SOURCE_ID is a variable which holds meta data information. The information for this variable was unavailable during compilation of this atlas.

The following BIRD species are found in the Southern Lake Michigan ESI atlas.

SPECIES ID	NAME
1	Common loon
2	Arctic loon
4	Red-necked grebe
5	Horned grebe
7	Western grebe
8	Double-crested cormorant
12	Canada goose
13	Black brant
16	Mallard
17	Pintail
18	Green-winged teal
20	Northern shoveler
21	Canvasback
22	Greater scaup
23	Lesser scaup
24	Common goldeneye
26	Bufflehead
27	Oldsquaw
28	Harlequin duck
29	White-winged scoter
30	Surf scoter
32	Common merganser
33	Red-breasted merganser
34	American coot
38	Herring gull
40	Ring-billed gull
42	Bonaparte's gull
44	Thayer's (herring) gull
45	Common tern
54	Great blue heron
56	Spotted sandpiper
58	Greater yellowlegs
59	Lesser yellowlegs
60	Red knot
61	Pectoral sandpiper
62	Least sandpiper
63	Dunlin
64	Short-billed dowitcher
67	Sanderling
69	Semipalmated plover
70	Killdeer

71	Black-bellied plover
73	Ruddy turnstone
76	Bald eagle
77	Osprey

SPECIES ID	NAME
82	Glaucous gull
88	Great egret
90	Black-crowned night heron
92	Great black-backed gull
93	Cattle egret
97	Green heron
98	Laughing gull
100	Black-legged kittiwake
107	Peregrine falcon
124	Redhead
136	Caspian tern
138	Forster's tern
148	Ruddy duck
153	Piping plover
155	Willet
156	Semipalmated sandpiper
162	Gadwall
169	American wigeon
172	Sandhill crane
178	Least bittern
179	Pied-billed grebe
180	Ring-necked duck
182	American kestrel
184	King rail
185	American bittern
186	Black duck
187	Virginia rail
188	Sora rail
190	Blue-winged teal
191	Wood duck
193	Black tern
195	American woodcock
197	Black scoter (common)
198	Hooded merganser
214	Solitary sandpiper
216	Belted kingfisher
217	Mute swan
223	Upland sandpiper
234	Purple sandpiper
237	Baird's sandpiper
238	White-rumped sandpiper
241	Franklin's gull
1,001	Gulls
1,002	Shorebirds

1,003	Waterfowl
1,004	Wading birds
1,008	Terns

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:

integer

5.1. DETAILED DESCRIPTION: ESI

The Coverage ESI contains arc (Complete Chains) features for the ESI shoreline classification. The classification of the features is based upon *Guidelines for Developing Digital Environmental Sensitivity Index Atlases and Data-bases* (Michel, J. and J. Dahlin, 1993, Hazardous Materials Response and Assessment Division, NOAA). The ESI classification was performed 18-21 April 1994.

5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
Complete Chain	ESI	character
	SOURCE_ID	integer

5.1.2. ATTRIBUTES:

5.1.2.1. ATTRIBUTE LABEL:

ESI

5.1.2.2. ATTRIBUTE DEFINITION:

The item ESI contains values according to the ESI ranking of the shorelines and polygons. The ESI rankings progress from low to high susceptibility to oil spills. In many cases, the shorelines are also ranked with multiple codes such as 10A/5. The first number is the most landward shoreline type, fringing wetlands, with mixed sand and gravel beaches being the shoreline type closest to the water. The Southern Lake Michigan shoreline types are listed below.

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:	5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:
10A	Fringing Wetlands
10B	Extensive Wetlands (not present in study area)
1B	Exposed, Solid Man-made Structures
1B/5	Exposed, Solid Man-made Structures/Mixed Sand and Gravel Beaches
1B/6B	Exposed, Solid Man-made Structures/Riprap Revetments, Groins, and Jetties
1B/8B	Exposed, Solid Man-made Structures/Sheltered, Solid Man-made Structures

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:	5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:
2	Shelving Bedrock Shores (not present in study area)
3	Eroding Scarps in Unconsolidated Sediments (not present in study area)
4	Sand Beaches
4/2	Sand Beaches/Shelving Bedrock Shores
5	Mixed Sand and Gravel Beaches
6A	Gravel Beaches (not present in study area)
6B	Riprap Revetments, Groins, and Jetties
6B/5	Riprap Revetments, Groins, and Jetties/Mixed Sand and Gravel Beaches
7	Exposed Flats (not present in study area)
8A	Sheltered Scarps in Bedrock (not present in study area)
8B	Sheltered, Solid Man-made Structures
8B/1B	Sheltered, Solid Man-made Structures/Exposed, Solid Man-made Structures
9A	Sheltered, Vegetated Low Banks
9B	Sheltered Sand/Mud Flats (not present in study area)

5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:

Ordered

5.1.2.1. ATTRIBUTE LABEL:

SOURCE_ID

5.1.2.2. ATTRIBUTE DEFINITION:

Data source for the ESI

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:	5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:
0	Digital
1	Overflight
3	Tablet Digitization from USGS Quadrangle

5.1.2.4.1.3. **ENUMERATED DOMAIN VALUE DEFINITION SOURCE:**
U.S. Army Corps of Engineers, digitized by State of Michigan from 1989, 1:24,000 aerial photographs

5.1.2.5. **ATTRIBUTE UNITS OF MEASUREMENT:**
nominal

5.1. DETAILED DESCRIPTION: FISH

The coverage FISH contains the polygons with fish species.

5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
GT-Polygons	ID	integer

5.1.2. ATTRIBUTES:

5.1.2.1. ATTRIBUTE LABEL:

ID

5.1.2.2. ATTRIBUTE DEFINITION:

A unique identifier which links to the POLYS.LUT table. The POLYS.LUT is a lookup table with two attributes: ID and RARNUM. The value of RARNUM is determined for each unique combination of SPECIES_ID, SEASON_ID, and CONC. The items in BIORES.DAT are: RARNUM, SPECIES_ID, CONC, SEASON_ID, SOURCE_ID, and ELEMENT. SPECIES_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and may be LOW, MEDIUM, or HIGH. SEASON_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced.

The following FISH species are found in the Southern Lake Michigan ESI atlas.

SPECIES ID	NAME
68	Chinook salmon (king)
69	Coho salmon (silver)
74	Rainbow trout (steelhead)
84	Rainbow smelt
85	Alewife
100	Brown trout
104	Striped bass
152	Yellow perch
162	Carp

SPECIES ID	NAME
163	Gizzard shad
166	Brook trout
167	Lake trout
168	Spottail shiner
175	White sucker
176	Yellow bullhead
178	Rock bass
179	Largemouth bass
180	Smallmouth bass
181	Black crappie
182	Bluegill
183	Green sunfish
185	Northern pike
188	Walleye
201	Channel catfish
202	White crappie
211	Brown bullhead
212	Pumpkinseed
232	Trout perch
233	Ninespine stickleback
234	Johnny darter
237	Burbot
243	Longear sunfish
246	Black bullhead
247	Emerald shiner
251	Tiger musky
252	Yellow bass

5.1.2.3. **ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

5.1.2.4.1.3. **ENUMERATED DOMAIN VALUE DEFINITION SOURCE:**

Research Planning, Inc.

5.1. DETAILED DESCRIPTION: HYDRO

The Coverage HYDRO contains polygonal water and land features as well as linear features for rivers/streams that are tidally influenced. This coverage was created using the digital shoreline provided by the U.S. Army Corps of Engineers.

5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
GT-Polygons	WATER_CODE	character

The LINE, SOURCE_ID, and WATER_CODE attributes are the same as in the ESI coverage. This coverage contains all annotation used in producing the atlas. The annotation features are categorized into three subclasses in order to simplify the mapping and quality control procedures: geog or geographic features, soc or soceo-economic features and hydro or water features.

5.1.2. ATTRIBUTES:

5.1.2.1. ATTRIBUTE LABEL:
WATER_CODE

5.1.2.2. ATTRIBUTE DEFINITION:
Specifies a polygon as either water or land

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:
Research Planning, Inc.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:	5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:
W	Water
L	Land

5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:
Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:
Ordered

5.1. DETAILED DESCRIPTION: INDEX

The coverage INDEX contains the map boundaries for each quad/map in the atlas.

5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
GT-Polygons	TILE-NAME	character
	TOPO-NAME	character
	SCALE	integer
	MAPANGLE	fraction
	PAGESIZE	character

5.1.2. ATTRIBUTES:

5.1.2.1. ATTRIBUTE LABEL:
TILE-NAME

5.1.2.2. ATTRIBUTE DEFINITION:
The tile-name contains the map number according to the specified layout of the atlas. During the map production process the value of tile-name is plotted on the map product to order the maps in a coherent manner. The values for each polygon are unique and range from 1 through 41.

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:
Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:
Ordered

5.1.2.1. ATTRIBUTE LABEL:
TOPO-NAME

5.1.2.2. ATTRIBUTE DEFINITION:
USGS 1:24,000 topographic map name. Some polygons straddle two or more maps and all map names are included in this attribute. The date (latest/revised) of the USGS maps are also included in this field.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:

5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:
Research Planning, Inc.

CHICAGO LOOP, ILL. (1993)
EVANSTON, ILL. (1978)
GARY, IND. (1991)
HIGHLAND PARK, ILL. (1980)
JACKSON PARK, ILL. (1972)
LAKE CALUMET, ILL.-IND. (1991)
OGDEN DUNES, IND. (1991)
PORTAGE, IND. (1992)
WAUKEGAN, ILL. (1980)
WHITING, IND. (1991); HIGHLAND, IND. (1991)
ZION, ILL.WIS. (1980)

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:
Nominal

5.1.2.1. ATTRIBUTE LABEL:
SCALE

5.1.2.2. ATTRIBUTE DEFINITION:
SCALE contains the value of the denominator of the scale at which the INDEX polygon is plotted in the final map product.

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:
Research Planning, Inc.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:

43,500

5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:
Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:
Nominal

5.1.2.1. ATTRIBUTE LABEL:
MAPANGLE

5.1.2.2. ATTRIBUTE DEFINITION:

MAPANGLE contains a value (usually negative) to rotate the final map product so that it is situated straight up and down.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:

0.000
0.142
0.143
0.225
0.310
0.388
0.450
0.475
0.538
0.550

5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:

Nominal

5.1.2.1. ATTRIBUTE LABEL:

PAGESIZE

5.1.2.2. ATTRIBUTE DEFINITION:

PAGESIZE contains the value of the width and height of the map in the final map product.

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:

11,17

5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:

Nominal

5.1. DETAILED DESCRIPTION: NESTS

The coverage NEST contains entity points representing nesting sites.

5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
GT-Polygons	ID	integer

5.1.2. ATTRIBUTES:

5.1.2.1. ATTRIBUTE LABEL:

ID

5.1.2.2. ATTRIBUTE DEFINITION:

A unique identifier which links to the POLYS.LUT table. The POLYS.LUT is a lookup table with two attributes: ID and RARNUM. The value of RARNUM is determined for each unique combination of SPECIES_ID, SEASON_ID, and CONC. The items in BIORES.DAT are: RARNUM, SPECIES_ID, CONC, SEASON_ID, SOURCE_ID, and ELEMENT. SPECIES_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and can be LOW, MEDIUM, or HIGH or an actual count of the numbers of species present in the polygon. SEASON_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced.

The following NESTS are found in the Southern Lake Michigan ESI atlas.

SPECIES ID	NAME
38	Herring gull
40	Ring-billed gull
92	Great black-backed gull
107	Peregrine falcon
136	Caspian tern

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:

integer

5.1. DETAILED DESCRIPTION: PLANTS

The coverage PLANT contains the polygons with plant species.

5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
GT-Polygons	ID	integer

5.1.2. ATTRIBUTES:

5.1.2.1. ATTRIBUTE LABEL:

ID

5.1.2.2. ATTRIBUTE DEFINITION:

A unique identifier which links to the POLYS.LUT table. The POLYS.LUT is a lookup table with two attributes: ID and RARNUM. The value of RARNUM is determined for each unique combination of SPECIES_ID, SEASON_ID, and CONC. The items in BIORES.DAT are: RARNUM, SPECIES_ID, CONC, SEASON_ID, SOURCE_ID, and ELEMENT. SPECIES_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and may be LOW, MEDIUM, or HIGH. SEASON_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced.

The following PLANT species are found in the Southern Lake Michigan ESI atlas:

SPECIES ID	NAME
59	
60	

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.4.1.3. **ENUMERATED DOMAIN VALUE DEFINITION SOURCE:**
Research Planning, Inc.

5.1.2.5. **ATTRIBUTE UNITS OF MEASUREMENT:**
integer

5.1. DETAILED DESCRIPTION: SOCECON

The coverage SOCECON contains the entity points and complete chains for the human use data.

5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
Complete Chain	SOCECON	
Entity Points	SOCECON	character
	ID	character

5.1.2. ATTRIBUTES:

5.1.2.1. ATTRIBUTE LABEL:

ID

5.1.2.2. ATTRIBUTE DEFINITION:

A unique identifier which links to the POINTS.LUT table. POINTS.LUT is a lookup table with two attributes: ID and RARNUM. RARNUM is the link to the socio-economic data found in the SOCECON.DAT table. The table SOCECON.DAT contains feature type, contact person, owner of the facility, phone number, and any comments regarding the site. The RARNUM value is distinguished from the biology RARNUM values by an "H" preceding the unique number.

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:

integer

5.1.2.1. ATTRIBUTE LABEL:

SOCECON

5.1.2.2. ATTRIBUTE DEFINITION:

Identifies a line or point with a socio-economic, or human-use, feature. This attribute allows direct access to the type of feature instead of linking to the more detailed SOCECON.DAT table.

5.1.2.3. ATTRIBUTE DEFINITION SOURCE:

Research Planning, Inc.

5.1.2.4.1.3. **ENUMERATED DOMAIN VALUE DEFINITION SOURCE:**

Research Planning, Inc.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:	5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:
A	Airport – Points
BR	Boat Ramp – Points
CG	Coast Guard – Points
M	Marina – Points
NP	National Park – Points and Chains
SB	State Beach – Chains
SP	State Park – Chains
WI	Water Intake – Points
WR	Wildlife Refuge – Points and Chains

5.1.2.5. **ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

6.0. DISTRIBUTION INFORMATION

6.1. DISTRIBUTOR

6.1.1. CONTACT PERSON PRIMARY

6.1.1.1. CONTACT PERSON:

PERSON RESPONSIBLE FOR DISTRIBUTION OF THE DATA

6.1.1.2. CONTACT ORGANIZATION:

PRIMARY CONTACT PERSON'S COMPANY AFFILIATION

6.1.4. CONTACT ADDRESS

6.1.4.1. ADDRESS TYPE:

PHYSICAL ADDRESS

6.1.4.2. ADDRESS:

PHYSICAL STREET ADDRESS

6.1.4.3. CITY:

CITY

6.1.4.4. STATE OR PROVINCE:

STATE

6.1.4.5. POSTAL CODE:

NUMERICAL ZIP CODE

6.1.5. CONTACT VOICE TELEPHONE:

PRIMARY CONTACT PERSON'S TELEPHONE NUMBER

6.1.7. CONTACT FACSIMILE TELEPHONE:

PRIMARY CONTACT PERSON'S FAX NUMBER

6.2. RESOURCE DESCRIPTION:

THE NAME OF THE DATA SET (ESI ATLAS) TO BE DISTRIBUTED

6.3. DISTRIBUTION LIABILITY:

INCLUDE ANY DISCLAIMER STATEMENTS NECESSARY ABOUT THE PRODUCT

6.5. CUSTOM ORDER PROCESS

STATE THE PROCESS BY WHICH A COPY OF THE DATA CAN BE OBTAINED

7.0. METADATA REFERENCE INFORMATION

7.1. METADATA DATE:

DATE THE METADATA REPORT WAS CREATED (i.e., 19950710)

7.2. METADATA REVIEW DATE:

DATE THE METADATA REPORT WAS REVIEWED (i.e., 19941115)

7.4. METADATA CONTACT

7.4.1. CONTACT PERSON PRIMARY

7.4.1.1. CONTACT PERSON:

PRIMARY CONTACT PERSON'S NAME

7.4.1.2. CONTACT ORGANIZATION:

PRIMARY CONTACT PERSON'S COMPANY AFFILIATION

7.4.3. CONTACT POSITION:

PRIMARY CONTACT PERSON'S JOB TITLE

7.4.4. CONTACT ADDRESS

7.4.4.1. ADDRESS TYPE:

PHYSICAL ADDRESS

7.4.4.2. ADDRESS:

PHYSICAL STREET ADDRESS

7.4.4.3. CITY:

CITY

7.4.4.4. STATE OR PROVINCE:

STATE

7.4.4.5. POSTAL CODE:

NUMERICAL ZIP CODE

7.4.5. CONTACT VOICE TELEPHONE:

PRIMARY CONTACT PERSON'S TELEPHONE NUMBER

7.4.7. CONTACT FACSIMILE TELEPHONE:

PRIMARY CONTACT PERSON'S FAX NUMBER

7.4.8. CONTACT ELECTRONIC MAIL ADDRESS:

PRIMARY CONTACT PERSON'S EMAIL ADDRESS

7.5. METADATA STANDARD NAME:

Content Standards for Digital Geospatial Metadata

7.6. METADATA STANDARD VERSION:

19940608

The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Minerals Revenue Management** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.