**Geographic Information Systems
Strategic Plan
U.S. Fish and Wildlife Service
Department of the Interior**

June 1, 2006

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Executive Summary

Successfully managing geospatial data resources and technology is one key to accomplishing the U.S. Fish and Wildlife Service's mission and goals today. The federal government's emphasis on national geospatial activities and the need to make these activities effective and efficient, along with the major expansion in the use of the Internet for sharing geospatial data and applications, has focused attention on the geospatial arena as never before. This focus has brought not only intense scrutiny on how the geospatial community does business, but immense opportunity to implement better methods of getting the job done. This strategic plan is intended to ensure that the Service is highly efficient and effective in managing geospatial data resources and technology, using them to successfully support the Service's mission.

This plan is tiered to the Service Information Resources and Technology Management (IRTM) Strategic Plan and, indirectly, to the Service and Department of the Interior overall mission strategic plans. It encompasses the geospatial goals and objectives which are laid out in the Service IRTM Strategic Plan and replaces the existing Service GIS Strategic Plan. Since then, new customer demands, laws, technologies, and challenges have emerged that drive the need to update the plan. This Service GIS Strategic Plan is designed to cover all geospatial data resource and technology management activities at a high level in the Service. More detailed plans may be needed for specific programs, offices, or projects as this plan focuses on appointed National, Regional and Program GIS coordinators and advanced GIS and IT practitioners rather than part-time GIS end users. This plan will be re-evaluated on an annual basis to determine the need for updates in the future.

PART ONE – Mission and Background

1.0 Service Mission

The U.S. Fish and Wildlife Service (Service or FWS) is a Bureau within the Department of the Interior (Department or DOI) whose mission is working with others to conserve, protect and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

1.1 The Information Resources and Technology Management Mission

The Information Resources and Technology Management (IRTM) program, along with the Directorate, is responsible for maintaining and enhancing management of the Service's information resources and technology, providing customer support, and developing policies, procedures, and guidance in support of the Service's mission. Due to the technical infrastructure requirements, GIS is considered part of IRTM even though many GIS coordinators, system administrators and end users are located in other programs.

1.2 The Geographic Information Systems Mission

Geographic Information Systems (GIS) users are responsible for managing and coordinating the Service's geospatial data resources and technology, providing customer support, and developing data, policies, procedures, and guidance in support of the Service's mission.

1.3 The GIS Vision

In support of the vision statement in the Service IRTM Strategic Plan, the GIS vision is to make geospatial data resources, technology, and support tools readily available to our employees, customers and partners in an easily accessible format for use in fulfilling the Service's mission.

This plan is intended to guide future management of geospatial data resources and technology in the Service to ensure that we fulfill this vision to the maximum extent possible. This plan attempts to:
- maintain as much local flexibility and creativity as possible while leveraging potential efficiencies of standardization and consolidation;
- focus on customer service and employee needs while complying with external requirements and directions (e.g., laws, regulations, and Departmental policies);
- reduce the total costs of doing business while providing the best services possible;
- minimize the burden of administrative processes while ensuring adequate management controls and accountability;

These tradeoffs must be accomplished within the limitations of available resources – staff, funding, and infrastructure.

1.4 The Need for GIS Strategic Planning in the Service

National GIS Coordination activities in the Service have always emphasized data sharing and data standards, communication, and support to end users. Meeting these goals has been a

difficult challenge due to the decentralized organization of the Service and the tendency of field offices to develop GIS capabilities on their own to meet individual office needs.

To deal with this challenge, the original "FWS GIS Implementation and Management Strategy" and formation of a national GIS Steering Committee was approved by the Director on August 2, 1991. The Director's memo dated August 2, 1991, and original GIS Strategy are available at https://intranet.fws.gov/region9/data/gis/index.html under the heading "USFWS GIS Steering Committee". The Steering Committee was charged with providing coordination and direction on GIS projects and activities within the FWS, in accordance with the approved strategy.

Although considerable progress was being made in GIS coordination and direction across the Service, funding shortfalls and the loss of GIS staff slowed the overall effort. The more technically advanced GIS users were concentrated in several of the 13 national research centers, which were reassigned to the National Biological Survey in 1995 and ultimately to the U.S. Geological Survey (USGS). As a result, the Service lost the majority of its high level GIS expertise, and it has taken a number of years to even partially replace this skill set.

Another challenge to effective coordination of GIS activities is the composition of the GIS user community. The Office of Management and Budget (OMB) classifies GIS as an Information Technology (IT) activity. Looking at the advanced technologies used by GIS staff including Internet portals and geodatabases, it is easy to understand why GIS is classified within IT. A large majority of the GIS users in the Service, however, are not located in the IRTM program nor are they classified as IT professionals. Rather, they are biologists, refuge managers, administrative staff and interpretive specialists – the end users whose day-to-day work actually supports the Service mission. They need the infrastructure support of the IT functions, but are not knowledgeable about what is required to maintain this infrastructure. Centralized GIS and IT staff need to provide support to end users without diverting them from their mission activities.

This Plan focuses on improving communication and collaboration within the Service and with our partners in the geospatial area, making more effective use of all geospatial resources (data, staff, technology), and more fully integrating GIS into FWS business areas.

1.5 Legislative and Regulatory Background

While there are many motivations for the Service to engage in high level GIS strategic planning, a large network of federal laws, regulations and guidelines mandate active participation by all Government agencies. References to the appropriate documents are listed in Section 1.5 of the IRTM Strategic Plan. The one regulation that relates most directly to geospatial activities is OMB Circular A-16, which focuses on the coordination of geographic information and related spatial data activities across government agencies.

1.6 Current Status

In January 2005, the Service filled a new Assistant Director for Information Resources and Technology Management position that also functions as the Bureau Chief Information Officer. In April 2005, the Service's GIS Steering Committee was revitalized with a new charter signed by the Director, in direct response to the many changes in technology and organizational structure that have occurred over the past 15 years. While all seven Regions and the larger Program Offices are represented on the Steering Committee, the funding, support, and organizational position of the Regional representatives varies widely. An executive Oversight Group, comprised of members of the Directorate, is being formed to provide direction and guidance to the Steering Committee and may be able to assist in standardizing resources and functions across the Service.

This plan covers high level geospatial information resource and technology management activities in the Service. This plan is tiered to the Service IRTM Strategic Plan and, indirectly, to the Service and DOI strategic plans. It expands on the geospatial goals and objectives that are laid out in the Service IRTM Strategic Plan and replaces the existing Service GIS Strategic Plan that was valid for 2001 – 2004. Since then, new customer demands, laws, technologies, and challenges have emerged that drive the need to update the plan.

Many initiatives such as Geospatial One-Stop (GOS), a Federal E-Government (E-Gov) project, the National Spatial Data Infrastructure (NSDI), and DOI Modernization Blueprints (for each line of business within the Interior Enterprise Architecture Program), along with general technology advances (such as Internet portals for data discovery and sharing) offer both opportunity and challenges. The goals in this plan are designed to support these Federal and DOI initiatives, as well as FWS field users, but additional resources will be needed to provide the required IT infrastructure to achieve these goals. The Service has a decentralized structure, with many remote sites housing a small number of employees. It is difficult to leverage large, centralized data repositories and applications without adequate IT infrastructure and providing this infrastructure to all the remote locations is very expensive. Creativity will be needed in order to utilize the best tools to comply with current mandates and also provide strong support to the GIS field users.

1.7 Relationship to the Department, U.S. Fish and Wildlife Service and IRTM Mission Goals

The Department is developing an enterprise architecture based on the Federal Enterprise Architecture Framework. This architecture will guide future investments and facilitate the integration and coordination of IT systems among all DOI Bureaus. The Service Enterprise Architecture will be under this umbrella, and GIS is an important component of the Service IT architecture. This plan focuses on the Department's E-Gov goals for geospatial activities and the need to improve the effectiveness of GIS activities within the Service. It also expands on the geospatial goals laid out in the Service IRTM Strategic Plan, adding the detailed information needed to support the Service and Department's overall mission goals and related E-Gov objectives.

The Department's Strategic Plan for FY 2003-2008 established five mission goals that encompass the major responsibilities of the Department, and the Service has corresponding goals:

    1. **DOI** - **Resource Protection**: Protect the Nation's natural, cultural and heritage resources.
        FWS – (1) Sustainability of Fish and Wildlife Populations; (2) Habitat Conservation: A Network of Lands and Waters
    2. **DOI - Resource Use**: Manage resources to promote responsible use and sustain a dynamic economy.
    3. **DOI - Recreation**: Provide recreation opportunities for America.
        FWS – (3) Public Use and Enjoyment
    4. **DOI - Serving Communities**: Safeguard lives, property and assets, advance scientific knowledge, and improve the quality of life for the communities we serve.
        FWS – (4) Partnership in Natural Resources
    5. **Management Excellence**: Manage the Department to be highly skilled, accountable, modern, functionally integrated, citizen-centered, and result-oriented.

These goals provide a framework for Bureaus to use for developing their Operational Plans that link directly to the Department's Strategic Plan. The Service IRTM Strategic Plan explicitly identifies and incorporates these mission goals and measures.

While the technical aspects of this GIS Strategic Plan most directly relate to the Management Excellence mission goal, the work of GIS users supported by this Plan most directly relates to the Resource Protection mission goal. For the purpose of this Plan, it is assumed that support of the Resource Protection goal is being addressed in Strategic Plans developed by specific Programs, such as Endangered Species; therefore, support of Resource Protection goals will not be tracked or measured here.

The Department's E-Gov strategy includes the following objective for Geospatial Information Management, which relates to the Department's Management Excellence mission goal:

    Objective 5.6: Geospatial Information Management
    Improve methods for tracking and incorporating geospatial information in all Interior business solutions.

The following strategies are included in the E-Gov document to help reach this objective:
- The capability for databases to share geospatial information both inside and outside the Department;
- Global Positioning System (GPS)-based hand-held tools and associated infrastructure improvements that enable Interior employees, volunteers and partners to provide real-time input of observations and events;
- Modification of appropriate IT systems to enable them to use geospatial data and share their legacy geospatial data;
- Integration of geospatial information into core business practices;
- The capability to access geospatial information online;
- Interoperable geospatial data standards that are consistently used in future data acquisition.

These specific E-Government objectives relating to Resource Protection also specify the use of technology to help meet these objectives:
- Integrated tools to enable collection of electronic resource data by automatic means and by field personnel;
- Automated analysis tools that support NEPA and other environmental analyses of land health, water quality and quantity, air quality and other appropriate assessments;
- Tools to coordinate with, offer appropriate technical assistance to, and foster two-way information exchange with other federal agencies, state, local and tribal governments, citizen stewards, and private sector partners;
- Tools that increase public outreach to stakeholders, including communication of policies;
- Capabilities to analyze data, activities, and trends related to threatened, endangered, and other federal Trust species, their habitats, and invasive species.

The Service IRTM Strategic Plan includes a specific objective for GIS under Goal 2, Improve the Delivery of IRTM Products and Services:

> **Objective 2.2: Improve the use of Geographic Information Systems (GIS)**.
> Enhance delivery of geospatial data to partners and the public and increase the ability of FWS employees to use GIS data and tools to accomplish mission goals.

Target results to achieve the objective for GIS in the Service IRTM Strategic Plan include:
- Increased centralization of geospatial databases
- Inclusion of spatial references in non-geospatial databases wherever appropriate
- Increased participation in E-Gov projects
- Maintenance of Web mapping servers to provide data access
- Adequate staffing and infrastructure to support the above initiatives
- Compliance with all applicable data standards

There is obviously a great deal of overlap between the DOI and FWS objectives identified above, and both have several related goals or target areas. The Service GIS Strategic Plan has been designed to assist the Service in supporting the goals listed above and to measure the Service's performance in achieving these goals over time.

PART TWO - Goals

2.0 GIS Strategic Goals

This plan, like the Service IRTM Strategic Plan, has a five year horizon, with annual reviews and updates to address changes in priorities, circumstances, and technology. The GIS Strategic Goals are as follows:

Goal 1: **Improve spatial data management.** This requires educating users on the development, use, and implementation of data standards and procedures related to data collection and data sharing, including the creation, publication, and use of metadata that is fully compliant with the Federal Geographic Data Committee (FGDC) standards. The Service has both an established data standards process and a Memorandum of Understanding (MOU) with the USGS National Biological Information Infrastructure (NBII) Program for the creation and publication of metadata on geospatial data sets. Increased user awareness and participation in the data standards and metadata processes is needed at all levels of the Service. Spatial metadata has been a requirement since 1994, but users continue to struggle with the complexities involved in creating and sharing metadata that is compliant with the FGDC standard and accessible via the GOS Portal. The goal is to help users establish good data management practices and to clearly delineate the consequences of noncompliance with Federal policies, standards, and requirements that promote and improve geospatial information management practices at all levels of the Government.

Goal 2: **Increase efficiency and effectiveness of geospatial data servers and related infrastructure.** The location and configuration of geospatial data servers has not been formally coordinated in the FWS. The goal is to determine the most efficient and cost effective way to manage and maintain geospatial data servers in the FWS taking into account the network costs, bandwidth requirements, quality and usability of the data, security requirements and potential impacts of the DOI Geospatial Modernization Blueprint currently in development.

Goal 3: **Increase standardization of GIS staffing levels and position descriptions**. GIS staffing levels and position descriptions vary widely between Regions and Programs, making effective coordination difficult. Increased standardization would clarify expectations and increase efficiency in coordination and task completion at the Regional and National level.

Goal 4: **Increase integration of GIS into the Service mission**. GIS is most valuable as a tool used to meet mission goals, not as an 'extra' task or requirement. Because GIS is also a complex technology, the value of an integrated GIS function is often unclear to managers and natural resource professionals. The goal here is to illustrate that value and assist with the integration of GIS into mission-related activities.

Goal 5: **Identify and address GIS and GPS training needs.** It has been several years since a complete review of the GIS training program has been done. The DOI has more cooperative training opportunities available and the technology has changed considerably. A review and refresh of the training program will assist the Service in providing the most relevant GIS training to its staff.

Goal 6: **Promote compliance with IT policies**. The number and complexity of IT policies and requirements has exploded over the past few years. Both knowledge and understanding of these policies is lacking, particularly among FWS staff members who are not in the professional IT series. Increased education and communication on these policies and requirements is needed.

2.1 Relationship between GIS Goals and the Service's IRTM Mission Goals

The following table shows how the Service's GIS Goals relate to the Service IRTM Strategic Plan Mission Goals.

	GIS Goals					
FWS IRTM Mission Goals	**Improve Spatial Data Management**	**Increase Efficiency and Effective-ness of Geospatial Data Servers**	**Increase Standardi-zation of GIS Staffing Levels and Position Descriptions**	**Increase Integration of GIS into FWS Mission**	**Identify & Address GIS and GPS Training Needs**	**Promote Compliance with IT Policies**
Improve Management of IRTM Assets	Necessary	Necessary	Necessary	Supports	Supports	Necessary
Improve Delivery of IRTM Products & Services	Necessary	Necessary	Necessary	Supports	Supports	Necessary
Enhance IRTM Skills of FWS Employees	Supports	Supports	Necessary	Supports	Necessary	Supports
Improve IRTM Communications	Supports	Supports	Necessary	Supports	Supports	Necessary

2.2 Relationship between GIS Goals and Departmental E-Government Scorecard

A central part of this plan focuses on areas of GIS that link to broad IRTM goals articulated in the Department's E-Gov Scorecard by which all Bureaus are graded. These areas are:

IRTM Scorecard Criteria	GIS Goal/Objective
Criterion 1: DOI Enterprise Transformation	N/A
Criterion 2: IT Security	N/A
Criterion 3A: Enterprise Architecture	Goal 2/Objective 2/3, Goal 6/Objective 5
Criterion 3B: IT Investment Management	Goal 6/Objective 2/3
Criterion 3C: Implementing E-Gov Strategy	Goal 2, Objective 2/3/4
Criterion 4: Government-wide E-Gov and Line of Business (LOB) Initiatives	Goal 6/Objective 5

PART THREE - OBJECTIVES, TARGETS, AND MEASURES

3.0 GIS Strategic Plan Goals and Objectives

The following table breaks each of the strategic goals described in Section 2.0 into a set of objectives designed to achieve that goal. Section 3.1 identifies the target results and performance measures of progress in achieving the objectives for each goal.

Goal 1: Improve spatial data management.
    Objective 1.1 Actively promote and participate in the development, adoption and implementation of new FWS data standards.
    Objective 1.2 Educate users on the existence of FWS data standards and increase compliance with established standards.
    Objective 1.3 Ensure that new data acquisitions comply with FWS data standards and are published on the GOS Portal when applicable.
    Objective 1.4 Provide training and education on metadata creation and the need for compliance with FGDC metadata standards.
    Objective 1.5 Maintain a partnership with the USGS NBII Program to support metadata activities.

Goal 2: Increase efficiency and effectiveness of geospatial data servers and related infrastructure.
    Objective 2.1 Create a comprehensive list of FWS data sources (i.e. clearinghouses and web sites) for national, regional, and state level FWS data.
    Objective 2.2 Research and recommend the best approach for managing and maintaining FWS Internet Map Servers (IMS, also called Web Map Servers) and FWS Geodatabase servers (what, where, how many).
    Objective 2.3 Improve sharing of data and servers with other agencies to improve public access and information dissemination.
    Objective 2.4 Assess technical needs and develop a modernization strategy.

Goal 3: Increase standardization of GIS staffing levels and position descriptions.
    Objective 3.1 Evaluate and recommend standard tasks that should be completed by staff holding the official position of Regional or Program GIS Coordinators.
    Objective 3.2 Evaluate required GIS coordination and management tasks at the National level and recommend an appropriate staffing level.
    Objective 3.3 Create standard Position Descriptions, Critical Elements and Performance Standards for GIS staff; include both full time and collateral duties.

Goal 4: Increase integration of GIS into the Service mission.
    Objective 4.1 Complete a review of non-geospatial databases and projects in the DOI Enterprise Architecture Repository (DEAR).
    Objective 4.2 Develop a plan to add geospatial links or attributes to non-geospatial databases (legacy and new).
    Objective 4.3 Educate FWS managers and project leaders on the need for, and benefits of, integrating GIS into FWS activities.
    Objective 4.4 Document reasonable FTE levels to support geospatial integration activities.
    Objective 4.5 Document existing geospatial software tools and publish a catalog of these tools to promote sharing and reuse.

Goal 5: Identify and address GIS and GPS training needs.
    Objective 5.1 Establish a GIS Training Subcommittee.
    Objective 5.2 Complete a user needs analysis of GIS training needs across the Regions and Programs.
    Objective 5.3 Review existing GIS curriculum to ensure applicability and usefulness.
    Objective 5.4 Collaborate with the National Park Service (NPS), USGS, Bureau of Land Management (BLM), and other federal agencies in the development and delivery of geospatial training.
    Objective 5.5 Identify off-site courses that will allow regional or field office staff to conduct their own training using National Conservation Training Center (NCTC) materials.
    Objective 5.6 Encourage FWS staff to utilize available on-line geospatial training classes offered by commercial vendors (e.g., Environmental Systems Research Institute [ESRI]).

Goal 6: Increase FWS compliance with IT policies.
    Objective 6.1 Increase outreach to FWS staff concerning IT policies and requirements.
    Objective 6.2 Provide technical advice on geospatial policies and priorities for capital planning, budget, security, strategic plans, etc.
    Objective 6.3 Formalize a process to assist with geospatial data calls, particularly OMB budgetary data calls.
    Objective 6.4 Participate in the process of creating the DOI Geospatial Modernization Blueprint.
    Objective 6.5 Increase coordination with the FWS Chief Technology Officer (CTO) Council.

3.1 Target Results and Performance Measures

Goal 1: Improve spatial data management. This requires educating users on the development, use, and implementation of data standards and procedures related to data collection and data sharing, including the creation, publication, and use of metadata that is fully compliant with the Federal Geographic Data Committee (FGDC) standards. The Service has both an established data standards process and a Memorandum of Understanding (MOU) with the USGS National Biological Information Infrastructure (NBII) Program for the creation and publication of metadata on geospatial data sets. Increased user awareness and participation in the data standards and metadata processes is needed at all levels of the Service. Spatial metadata has been a requirement since 1994, but users continue to struggle with the complexities involved in creating and sharing metadata that is compliant with the FGDC standard and accessible via the GOS Portal. The goal is to help users establish good data management practices and to clearly delineate the consequences of noncompliance with Federal policies, standards, and requirements that promote and improve geospatial information management practices at all levels of the Government.
Objective 1.1 Actively promote and participate in the development, adoption and implementation of new FWS data standards. *This objective will enhance the understanding of the importance, necessity, and process required to develop, maintain and implement FWS data standards.*

Target Results	Responsible Parties	Date
New standards relevant to geospatial data will be identified and proposed for review and adoption according to the established data standards process.	GIS Steering Committee, FWS National Data Administrator	2006
Update and continue to maintain a list of all applicable standards and their status, e.g. in work, in review, adopted, etc., that is accessible to all FWS employees and the general public.	GIS Steering Committee, FWS National Data Administrator	2006

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Identify, develop, and propose new data standards to improve geospatial data management. All standards with an identified data steward will be developed and proposed for Service-wide review and adoption.	100%	100%	100%	100%
Complete, publish and maintain an inventory of geospatial data standards on the FWS Internet and Intranet sites.	-	100%	100%	100%

Objective 1.2 Educate users on the existence of FWS data standards and increase compliance with established standards. *This objective will enhance user understanding of what data standards are accepted and currently adopted by the FWS. Data is a valuable asset, but it is much more valuable when properly and consistently documented. Metadata is data documentation, and the FGDC metadata standards were created to make it easier to share data, reduce redundancy in data creation and increase data reuse.*

Target Results	Responsible Parties	Date
Links to the FWS Data Standards home page on appropriate Regional and Program web pages to advertise the existence of data standards and stewardship.	GIS Steering Committee, FWS National Data Administrator	2006
Increased user knowledge of FWS policy to create metadata; improved guidance and examples on metadata requirements and formats required.	GIS Steering Committee, CTO Council, FWS National Data Administrator	2006
FWS employees understand that "point of contact" information for each original data set collected in the field must be recorded even if complete metadata is not required.	GIS Steering Committee, NCTC	2006
Standard language concerning the requirement for metadata creation that can be included in contract solicitations and statements of work.	GIS Steering Committee, FWS National Data Administrator	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Investigate, with assistance from the FWS Web Council, how to get links to the FWS Data Standards home page added from the appropriate Program and Regional web sites, including the FWS Centralized Library of Servicewide Policies managed by the Division of Policy and Directives Management (PDM).		X		
Develop an IRTM Bulletin explaining the requirement for creating compliant metadata for new and existing data sets before they can be shared or made available on the FWS Internet.	X			
Update NCTC GIS course materials to reflect "point of contact" requirement.	X			
Develop, with assistance from the FWS Division of Contracting and Facilities Management, standard contract language (paragraph) requiring metadata creation whenever data is purchased or collected for FWS geospatial projects and activities. Standard contract language will be published on the appropriate FWS web sites.		X		

Objective 1.3 Ensure that new data acquisitions comply with FWS data standards and are published on the GOS Portal when applicable.
The purpose of this objective is to protect the quality and usability of data acquisitions. This includes data compiled in-house, purchased and converted from other formats. Standards compliance will insure that data can be shared with partners, in different applications and across the Service. Geodatabase technology will assist in enforcing standards. Proposed external data purchases need to be published in the GOS Portal Marketplace.

Target Results	Responsible Parties	Date
Geodatabase technology with rules and domains that accurately reflect and support FWS data standards.	Field Stations, Regional Offices, and Washington Program Offices	2007
FWS data acquisitions are compliant with relevant data standards and acquisition guidelines including GOS requirements.	GIS Steering Committee, FWS National Data Administrator	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Geodatabases that are implemented will meet existing standards including having complete metadata and related geodatabase documentation.	-	100 %	100%	100%
Documentation on acceptable data acquisitions including GOS requirements is complete and available on FWS web sites.	-	100%	100%	100%

Objective 1.4 Provide training and education on metadata creation and the need for compliance with the FGDC metadata standards.
Standard documentation of FWS data will enhance delivery of geospatial data to partners and the public and increase the ability of FWS employees to use GIS data and tools to accomplish mission goals. FWS field staff must have increased education and resources in this area to fully document data.

Target Results	Responsible Parties	Date
Updated FWS metadata web site with information on the MOU between the FWS IRTM and USGS NBII Program; the process for requesting assistance in creating, processing, and publishing metadata records for FWS data sets on the NSDI Clearinghouse network.	GIS Steering Committee National GIS Coordinator FWS National Data Administrator	2007
Metadata training and education are available via the FWS National GIS Workshop, Regional GIS newsletters and workshops.	GIS Steering Committee	2006 - 2009

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Web site with helpful information on creating and publishing metadata for publication on the NSDI Clearinghouse network and harvesting by GOS, as well as examples of metadata records for various types of geospatial data (e.g., base cartographic, biological, etc.).		X	X	X
Metadata training and/or educational sessions offered at all National and Regional GIS workshops	X	X	X	X

Objective 1.5 Maintain a partnership with the USGS NBII Program to support metadata activities.
Use of metadata clearinghouses will minimize data redundancy and promote more effective data

sharing and participation in cross-cutting projects. Partnerships make participation in the clearinghouses much more time and cost effective.

Target Results	Responsible Parties	Date
Maintain MOU with the USGS NBII Program for review/compliance checks of FWS metadata and assistance in loading metadata to the NBII and NSDI clearinghouse network for harvesting by GOS.	FWS National Data Administrator	2006 - 2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
MOU in place with USGS NBII Program and results clearly demonstrate a benefit to the FWS.	X	X	X	

Goal 2: Increase efficiency and effectiveness of geospatial data servers and related infrastructure. The location and configuration of geospatial data servers has not been formally coordinated in the FWS. The goal is to determine the most efficient and cost effective way to manage and maintain geospatial data servers in the FWS taking into account the network costs, bandwidth requirements, quality and usability of the data, security requirements and potential impacts of the DOI Geospatial Modernization Blueprint currently in development.
Objective 2.1 Create a comprehensive list of FWS data sources (i.e., clearinghouses and web sites) for national, regional, and state level FWS data. *It is impossible to make educated decisions on what data to share unless we know what data we have. An organized method for both creating and maintaining a comprehensive data inventory is needed.*

Target Results	Responsible Parties	Date
A comprehensive list of FWS data sources is current and available for use by Service staff, partners and the public.	GIS Steering Committee, FWS Data Stewards	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
A list of FWS data sources is created, posted, and maintained on the web site. All related data requirements (for example metadata, posting to GOS, etc) will also be met.		X	X	X

Objective 2.2 Research and recommend the best approach for managing and maintaining FWS Internet Map Servers (IMS, also called Web Map Servers) and FWS Geodatabase servers (what, where, how many). *These are complex technologies involving GIS, network, IT security and web disciplines. Production servers can be much more effectively managed in central locations where staff members with all these skills are located and adequate network bandwidth exists.*

Target Results	Responsible Parties	Date
Standard guidelines for maintaining and updating data and metadata on FWS geospatial servers.	FWS CTO Council, FWS Data Stewards, GIS Steering	2007

	Committee	
A recommended design for the location and number of IMS servers needed for FWS applications	Division of IRTM (Security, Wide Area Network (WAN), GIS and Data staff), GIS Steering Committee	2007 - 2009
A recommended design for the location and number of Geodatabase servers needed for FWS applications.	GIS Steering Committee	2007 - 2009

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
IRTM Bulletin developed, approved, and issued with guidelines for maintaining and updating data and metadata on FWS geospatial servers		X		
Completion of a recommended design configuration for IMS servers		X		
Completion of a recommended design configuration for geodatabase servers		X		

Objective 2.3 Improve sharing of data and servers with other agencies to improve public access and information dissemination.
Several E-Gov initiatives require that agencies share data wherever possible to avoid duplication of effort and improve the delivery of information and data to the public. The creation of standard MOUs with agencies that establish and maintain central data repositories will improve public access and information dissemination. These data repositories could be at national, regional and state levels: examples include the FGDC, NSDI Clearinghouse Network, Alaska Geographic Data Committee, FWS Critical Habitat Portal, FWS Geospatial Data Portals, GOS Portal, The National Map, etc.

Target Results	Responsible Parties	Date
The creation of MOUs with The National Map, National Integrated Lands System (NILS) and other existing data repositories to make FWS data accessible from secure, central sites, and to use data from non-FWS sources.	Regional GIS Coordinators, National GIS Coordinator, Division of IRTM - BDSS (metadata creation and processing), impacted FWS Data Stewards	2006 - 2009

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
MOU Template completed	X			
MOUs enacted as necessary		X	X	X

Objective 2.4 Assess technical needs and develop a modernization strategy.
Technology is changing and getting more complex at a rapid rate. The pace of change in modernization within FWS is not keeping pace. A cross-disciplinary approach will be needed to develop a reasonable process for choosing and implementing those technical tools that will assist

FWS GIS users to effectively support the mission in the future.		
Target Results	**Responsible Parties**	**Date**
An established process to determine GIS technical requirements for software and hardware and to initiate changes to approved items when needed.	GIS Steering Committee, FWS CTO Council	2007

Performance Measures	**FY 2006 goal**	**FY 2007 goal**	**FY 2008 goal**	**FY 2009 goal**
Conduct an annual review of the DOI Technical Reference Model (TRM) in coordination with GIS users to determine if new geospatial software or hardware is needed to meet their needs.		X	X	X
Document proposed additions to the TRM for submission to the DOI Office of the Chief Information Officer (OCIO) and inclusion in the TRM.		X	X	X

Goal 3: Increase standardization of GIS staffing levels and position descriptions. GIS staffing levels and position descriptions vary widely among Regions and Programs, making effective coordination difficult. Increased standardization will clarify expectations and increase efficiency in coordination and task completion at the Regional and National level.
Objective 3.1 Evaluate and recommend standard tasks that should be completed by staff holding the official position of Regional or Program GIS Coordinators. *The workload required to coordinate technical areas such as GIS in the Regions and Programs has increased greatly. Unless there is a common understanding across the Service on what work needs to be done and who does it, getting tasks accomplished will become increasingly difficult, if not impossible.*

Target Results	**Responsible Parties**	**Date**
Common understanding of required tasks to be accomplished at the Regional and Program level.	GIS Steering Committee, National GIS Coordinator	2007

Performance Measures	**FY 2006 goal**	**FY 2007 goal**	**FY 2008 goal**	**FY 2009 goal**
A report on recommended tasks and responsibilities for Regional and Program GIS Coordinator positions and the staffing level required to carry out those items completed and shared with IRTM management.		X		

Objective 3.2 Evaluate required GIS coordination and management tasks at the National level and recommend an appropriate staffing level. *The amount of work that is required at a national level has increased greatly over the past few years, but the staffing level has not changed. There needs to be a definition of what tasks should be accomplished at the National level, versus the Regional and Program level, in order to determine an adequate staffing level.*

Target Results	**Responsible Parties**	**Date**
Common understanding of required tasks to be	GIS Steering Committee,	2006

accomplished at the National level.	National GIS Coordinator	

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Report on recommended tasks and responsibilities and the staffing level required to carry out those items completed and shared with IRTM management.	X			

Objective 3.3 Create standard Position Descriptions, Critical Elements and Performance Standards for GIS staff; include both full time and collateral duties.
Standard position descriptions, task descriptions, critical elements, and performance standards will make it easier for managers and staff to understand what is required of a position, and to move from one office to another within positions without disrupting the work of the office. The Office of Personnel Management (OPM) has supplied items like this for many positions, but not for GIS staff.

Target Results	Responsible Parties	Date
Standard position descriptions, critical elements, and performance standards for various grade levels and specialized expertise available for FWS staff to use.	GIS Steering Committee	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Compilation of standard position descriptions, critical elements, and performance standards for various grade levels and specialized expertise completed and published on web site, in coordination with the FWS Division of Human Resources.		X		

Goal 4: Increase integration of GIS into the Service mission. GIS is most valuable as a tool used to meet mission goals, not as an 'extra' task or requirement. Because GIS is also a complex technology, the value of an integrated GIS function is often not clear to managers and natural resource professionals. The goal here it to illustrate this value and assist with the integration of GIS into mission-related activities

Objective 4.1 Complete a review of non-geospatial databases and projects in the DOI Enterprise Architecture Respository (DEAR).
It is impossible to make educated decisions on what data can be integrated with GIS technology unless we know what data we have.

Target Results	Responsible Parties	Date
Have sufficient information available to make an educated decision on what data should be integrated with GIS and which databases should have priority in this process (i.e., what will benefit FWS the most).	GIS Steering Committee, Program GIS staff	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal

Data extracted from the DEAR and recommendations given on which (if any) FWS databases or projects warrant additional effort to integrate GIS.		X		

Objective 4.2: Develop a plan to add geospatial links or attributes to non-geospatial databases (legacy and new).
There needs to be an organized effort to get geospatial links added to non-geospatial databases without creating a burden on field staff. This will take some planning and will need to be done over time; it will also require resources, although the impact will be spread out if information is added as databases undergo updates.

Target Results	Responsible Parties	Date
Approved plan to add geospatial links to target databases according to a priority ranking.	GIS Steering Committee, Program GIS staff	2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Completed plan.			X	

Objective 4.3 Educate FWS managers and project leaders on the need for, and benefits of, integrating GIS into FWS activities.
Many FWS managers and project leaders believe that geospatial data is an extra, non-essential piece of the management picture. Good education efforts can show them that GIS data benefits the resource far in excess of the costs to create or incorporate GIS data.

Target Results	Responsible Parties	Date
FWS managers who understand the benefits of GIS and can make educated decisions on GIS activities.	GIS Steering Committee, GIS Community	2007 - 2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Education materials produced or found (presentations, etc.) and presentations created illustrating the benefits of GIS integration and distributed via web site.		1	1	X

Objective 4.4 Document reasonable FTE levels to support geospatial integration activities.
Continuing to try and accomplish FWS Mission activities that include geospatial components with shoestring budgets and staff does a disservice to the Service and its mission. Management needs the information to understand what the adequate FTE levels are, along with the budget to support the activities.

Target Results	Responsible Parties	Date
Increased understanding of the resources (staff and budget) needed to do a good job of geospatial activities, compliance with policies and mandates (metadata, etc.).	GIS Steering Committee, ADs, RDs	2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Document outlining FTE needs and costs completed and distributed via web site.			X	

Objective 4.5 Document existing geospatial software tools and publish a catalog of these tools to promote sharing and reuse.
Many offices perform similar functions but recreate tools to perform these functions because they cannot find existing tools. This will make more effective use of resources.

Target Results	Responsible Parties	Date
Reduce redundant programming and related actions.	GIS Steering Committee, Division of IRTM - BDSS	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Geospatial software tools catalog.		X	X	X

Goal 5: Identify and address GIS and GPS training needs. It has been several years since a complete review of the GIS training program has been done. DOI has more cooperative training opportunities available and the technology has changed considerably. A review and refresh of the training program will assist FWS in providing the most relevant GIS training to its staff.

Objective 5.1 Establish a GIS Training Subcommittee.

Target Results	Responsible Parties	Date
A subcommittee made up of FWS GIS Regional Representatives, GIS Specialists, and field GIS users.	GIS Steering Committee	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Creation of GIS Training Subcommittee.		X		
Meet annually and quarterly via phone conference.		X	X	X

Objective 5.2 Complete a user needs analysis of GIS training needs across the Regions and Programs.
User input is needed to do a good quality job of designing curriculum. FWS participants will be directed through email to the on-line questionnaire, which will ask them to identify specific training on tools and/or processes needed to accomplish their mission-related tasks.

Target Results	Responsible Parties	Date
On-line questionnaire to assess the training needs of all registered users of geospatial software and hardware (e.g., ESRI, Trimble, ERDAS).	GIS Training Subcommittee	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Develop, distribute, and collect on-line questionnaire.		X		
Results compiled in a report and published on the FWS Intranet.		X		

Objective 5.3 Review existing GIS curriculum to ensure applicability and usefulness.
With the increasing changes in technology, training periodically needs to be reviewed and updated to keep pace.

Target Results	Responsible Parties	Date
Identification of any curriculum deficiencies and recommendations for any needed changes, updates or new offerings.	GIS Training Subcommittee	2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Report produced and published on the FWS Intranet. GIS Training Subcommittee meetings will be scheduled as needed to complete the report.			X	

Objective 5.4 Collaborate with the NPS, USGS, BLM, and other federal agencies in the development and delivery of geospatial training. *Other land management bureaus also have geospatial training. Some of these course offerings share the same overall objectives and goals, possibly clearing opportunities to share materials, instructors, modules.*

Target Results	Responsible Parties	Date
Identification of courses offered by other bureaus that share the same objectives and goals and opportunities to share curriculum, materials, instructors and modules.	GIS Training Subcommittee	2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Report produced and published on the FWS Intranet. GIS Training Subcommittee meetings will be scheduled as needed to complete the report.			X	

Objective 5.5 Identify off-site courses that will allow regional or field office staff to conduct their own training using NCTC materials.
Limited travel funds are impacting the ability of staff to travel to the NCTC. Providing professional training materials and instruction on-site (away from NCTC) will allow greater numbers of staff to be trained for the same cost

Target Results	Responsible Parties	Date
Identification of existing NCTC GIS classes	GIS Training Subcommittee	2007

suitable for on-site (field office) instruction.		
Development of procedures for each on-site training course identified.	GIS Training Subcommittee	2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
List of potential off-site training courses.		X		
Report with procedures for each course identified.			X	

Objective 5.6 Encourage FWS staff to utilize the availability of on-line geospatial training classes offered by commercial vendors (e.g., ESRI).
There is good on-line training available at no added cost through existing contracts: staff members need to be aware of these training opportunities and offered assistance in choosing appropriate classes.

Target Results	Responsible Parties	Date
Educate and inform FWS staff on educational opportunities that are available on-line through various media, meetings and workshops.	GIS Training Subcommittee	2007

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Publish on-line training information on FWS web sites (expired and current postings).		X		

Goal 6: Increase FWS compliance with IT policies. The number and complexity of IT policies and requirements has exploded over the past few years. Both knowledge and understanding of these policies is lacking, particularly among FWS staff members that are not in the professional IT series. Increased education and communication on these policies and requirements is needed.

Objective 6.1 Increase outreach to FWS staff concerning IT policies and requirements.
The number and complexity of IT policies is rapidly increasing. Staff outside the IT arena cannot be expected to comply with policies they are not aware of or do not understand.

Target Results	Responsible Parties	Date
Become GIS communication focal point for the Service. Increase communications to GIS community, managers and IT staff.	National GIS Coordinator, FWS National Data Administrator, FWS CTO Council	2006

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
GIS web page updated and maintained with relevant links to IT policies and requirements (e.g., IRTM Bulletins, OMB directives, DOI policies and procedures).	X			

Objective 6.2 Provide technical advice on geospatial policies and priorities for capital planning,

budget, security, strategic plans, etc.
GIS staff should provide advice and expertise on which policies and priorities should be addressed in documents like the GIS Strategic Plan. Budget staff, managers and project leaders need to rely on technical staff for this information.

Target Results	Responsible Parties	Date
Ensure that documents related to capital planning, budget, security, GIS, and other IT related areas accurately reflect geospatial policies and priorities.	GIS Steering Committee	2007 - 2009

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
All applicable CPIC documents are reviewed by impacted GIS staff prior to implementation.		X	X	X

Objective 6.3 Formalize a process to assist with data calls, particularly OMB budgetary data calls. *These data calls come with limited response times, require cross Program coordination, and have major implications for impacting Service programs if incorrect data are reported. Having a formal process will make it easier to provide good data in a shorter time period.*		
Target Results	Responsible Parties	Date
Generic process and workflow for responding to GIS related data calls across FWS Programs and Regions.	Chief, Division of IRTM and Deputy CIO, GIS Steering Committee, FWS Division of Budget (budget staff), FWS CPIC Coordinator	2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Formal process described in IRTM Bulletin for approval by FWS CTO Council.			X	

Objective 6.4 Participate in the process of creating the DOI Geospatial Modernization Blueprint. *FWS staff will need to comply with the DOI Geospatial Architecture when completed: providing input into the process will ensure that the architecture supports FWS GIS needs.*		
Target Results	Responsible Parties	Date
Increased participation in the creation of DOI GIS policies and blueprints.	GIS Steering Committee	2006 - 2008

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
Active participation on the DOI Geospatial Modernization Blueprint Team as documented by meeting attendance and document reviews.	X			

Objective 6.5 Increase coordination with the FWS CTO Council.

The FWS CTO Council reviews and approves all IT related policies. Better coordination between the GIS Steering Committee and FWS CTO Council will provide improved outcomes for both groups and GIS users.

Target Results	Responsible Parties	Date
Improved understanding of GIS needs and IT policies and requirements.	GIS Steering Committee, FWS CTO Council	2006

Performance Measures	FY 2006 goal	FY 2007 goal	FY 2008 goal	FY 2009 goal
National GIS Coordinator attends biweekly IRTM meetings with FWS Regional and Program CTOs.	X	X	X	X
Official designation of GIS Champion on the FWS CTO Council.	X	X	X	X